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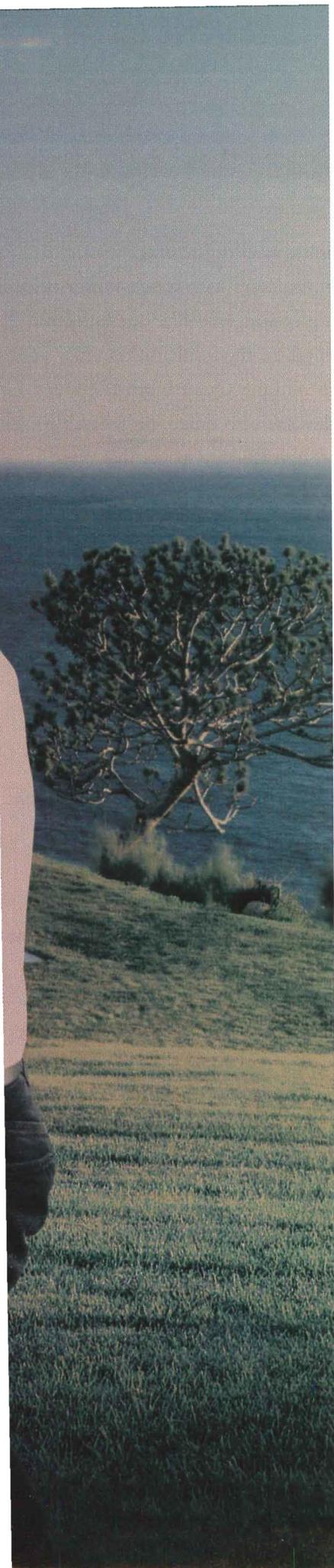
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Outlook

SUSTAINABLE DESIGN AND FABRIC CARE

Mark R. Johnson, FAIA, AIBD

What do sustainability and fabric care have in common? Potentially, a lot. Water and energy savings, plus extended life for the clothes you wear, are just a few of the benefits that KitchenAid® has designed into the Ensemble™ washer and dryer pair (see opposite page). They are exceptionally good looking and provide a lasting solution to the sustainable design specification for any home. The ENERGY STAR® rated Ensemble™ washer saves roughly two-thirds the water and energy of an average top-loading washer.

How do they do it? The Ensemble™ washer helps reduce water usage by measuring load size, fabric type, and



KitchenAid® Pro Line® laundry pair with optional pedestals.

suds level, and then only introduces the amount of water needed for effective cleaning. Precision dispensing and a lather pretreatment using a cradle action before the wash cycle optimize cleaning by accurately combining detergent, water and energy. The Stepped Spin™ System matches spin speed to fabric type, from zero RPM for fine delicates up to 1200 RPM for heavy-duty fabrics. By maximizing water extraction in the washer's spin cycle, the Ensemble™ dryer's cycle time is minimized, saving energy.



Touch-sensor control panel

If that sounds intriguing, read on about the new Pro Line® Series laundry pair from KitchenAid® that we'll be launching later this year (pictured on this page). Everything from drain hoses to drum suspensions is designed to be durable and quiet. The interior/exterior

stainless steel finish, dryer with two motors, along with touch-sensor controls bring commercial-like durability and strength to the residential laundry pair. The Whisper Quiet Ultima™ system makes them so quiet you'll be able to design laundry spaces that open into the house for convenience and accessibility.

In addition, both the Pro Line® Series and Ensemble™ laundry pair provide a universal design solution when you specify the optional pedestal drawers. They elevate the appliances a full 13"

to make loading and unloading easier with less bending and reaching.

So next time you're thinking about sustainable products for the laundry

space, we hope you'll consider specifying KitchenAid®. If you have some thoughts about product ideas you think we should pursue, let me know at mark_r_johnson@whirlpool.com.



Mark R. Johnson, FAIA, AIBD
Manager, Architectural and Design Marketing

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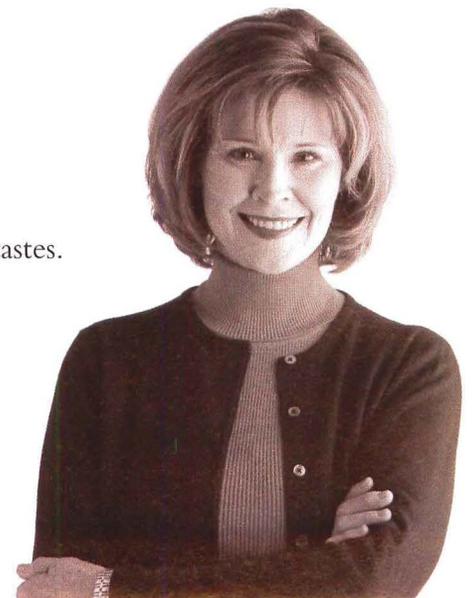
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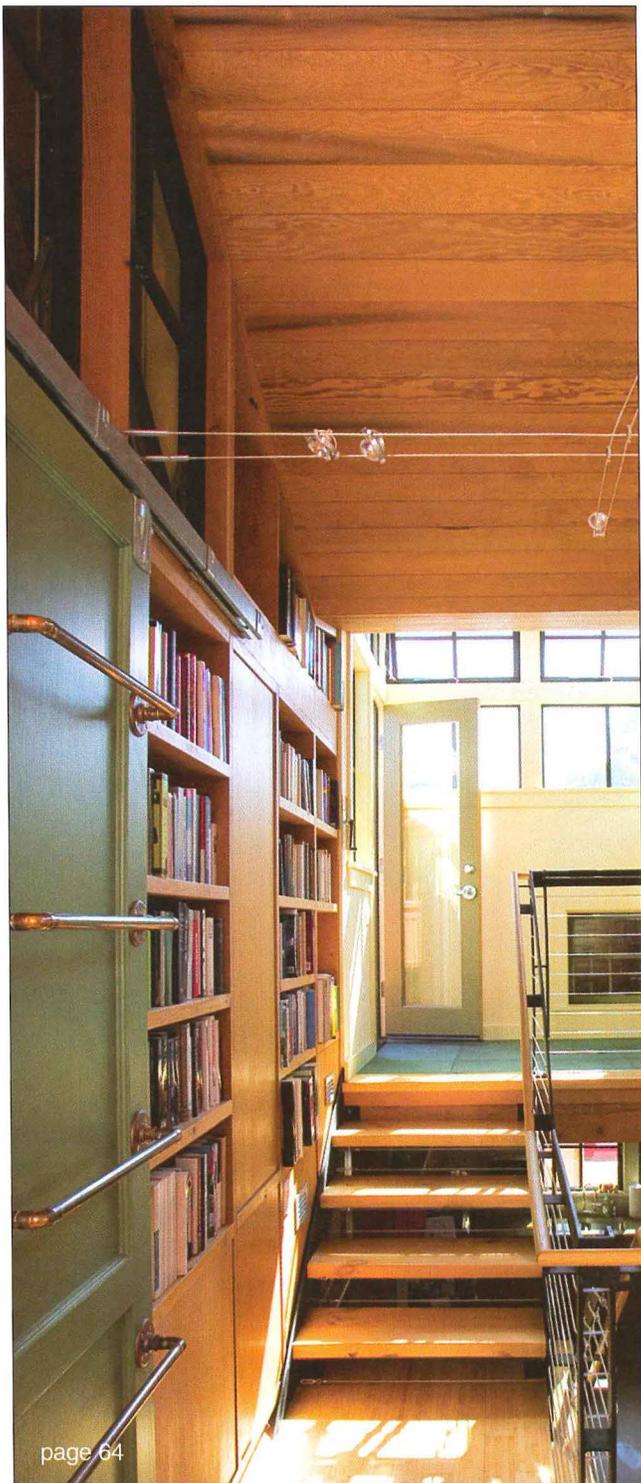
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Arkin Tilt wasted no space or natural light in this combination stairwell and library. Photo: Ed Caldwell. Cover photo: Danny Turner.

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William McDonough + Partners applies its customary care to let nature shine at this 8-acre wooded site in Charlotte, N.C.

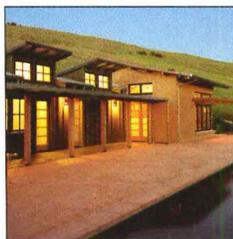
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Allan Shope delivers a sharp warning to his fellow architects:
The battle to save our planet starts at home.



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Green design is no longer the fringe movement it once was. Huge advancements in building products mean that today's residential architects can spec green with growing confidence.



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natural habitat

Arkin Tilt has made a highly successful habit of crafting cozy enclosures that benefit client and planet alike.

by Cheryl Weber



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Three green-leaning firms cast sustainable spells that wow their like-minded clients.

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Renzo Piano's courtyard composition.



It's impossible to picture a home without it. Trim is the difference between designing a house and making an architectural statement. And no trim gives you more freedom to bring your vision

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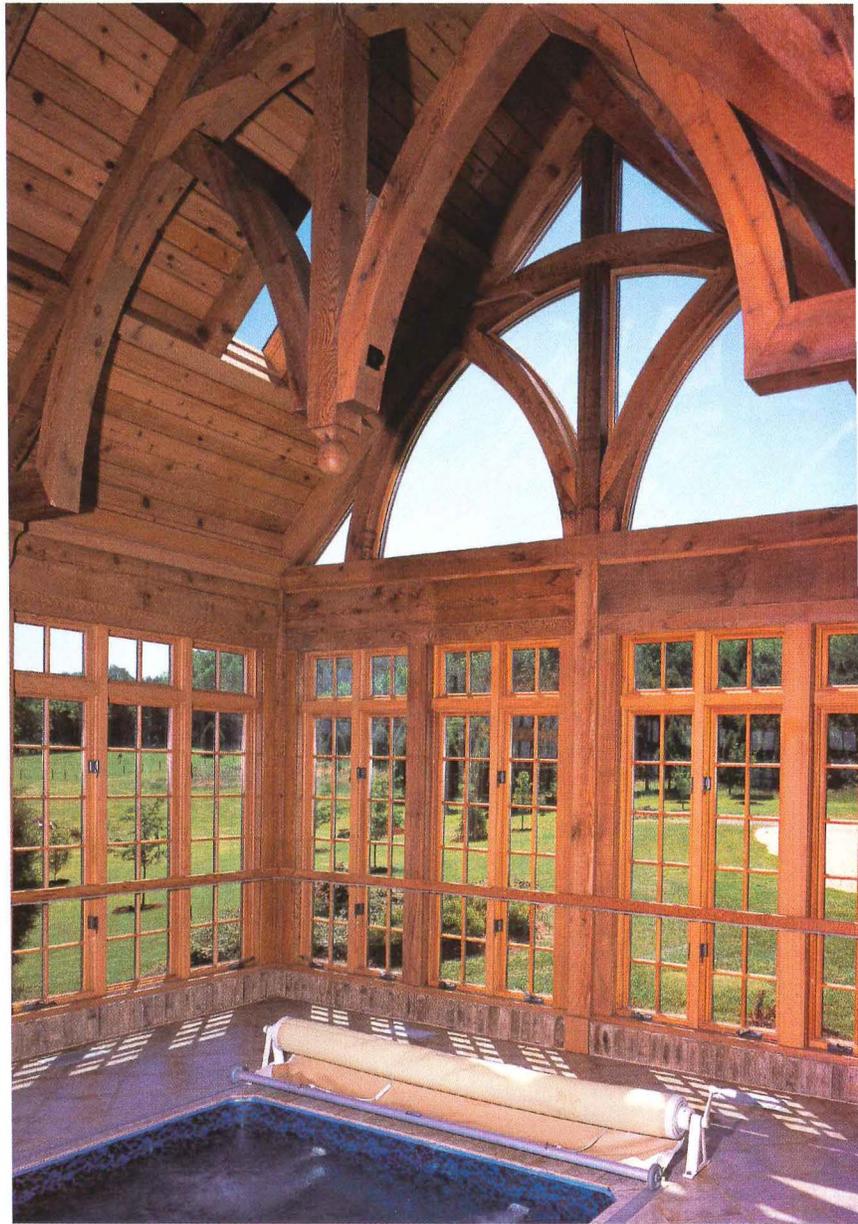
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we're running out of excuses for making the wrong choices.

by s. claire conroy

few sensible people dispute the fact that we'll have to pay the piper someday soon for the harm we've wrought upon our environment. And none of us, if we're honest with ourselves, can refute that architecture contributes substantially to the damage done. Building is an act of tearing down. Living is a process of consumption. All we can really do is mitigate our incursions. So we continue to subscribe to the print edition of our local newspaper—even though we can read it now online—but we'll put it in a bin at the curb on recycling day. Small steps indeed, but in this battle small steps do make a difference.

We're all overwhelmed by the number of decisions we must weigh as good citizens of the world. Do we buy a flat of 12-ounce bottles of water, a six-pack of larger liter bottles, or get home delivery of those 5-gallon refillable behemoths? Maybe we're wrong to drink bottled water in the first place. Silly elitist conundrum, surely—but one that thousands of

good-intentioned people face every day. How much do we change our habits and our desires to lessen our impact on the planet? Which changes will prove most meaningful and which can we reasonably take on and maintain amid our hectic lives? Ultimately, what are we willing to give up?

Do we give up the dream of creating something beautiful because it means we must, in some measure, destroy something else beautiful and valuable? Both you and I are taking down trees to pursue our chosen professions. And we both hope we turn them into something useful and artful. If you design a home that delights and endures, maybe you've done your part to build something sustainable. After all, longevity consumes fewer resources. If you're lucky enough to find a client with deep pockets and an even deeper conscience, you can probably do substantially more to soften the blow of that house on the land for years to come.

The good news is it's getting easier all the time to make better decisions.



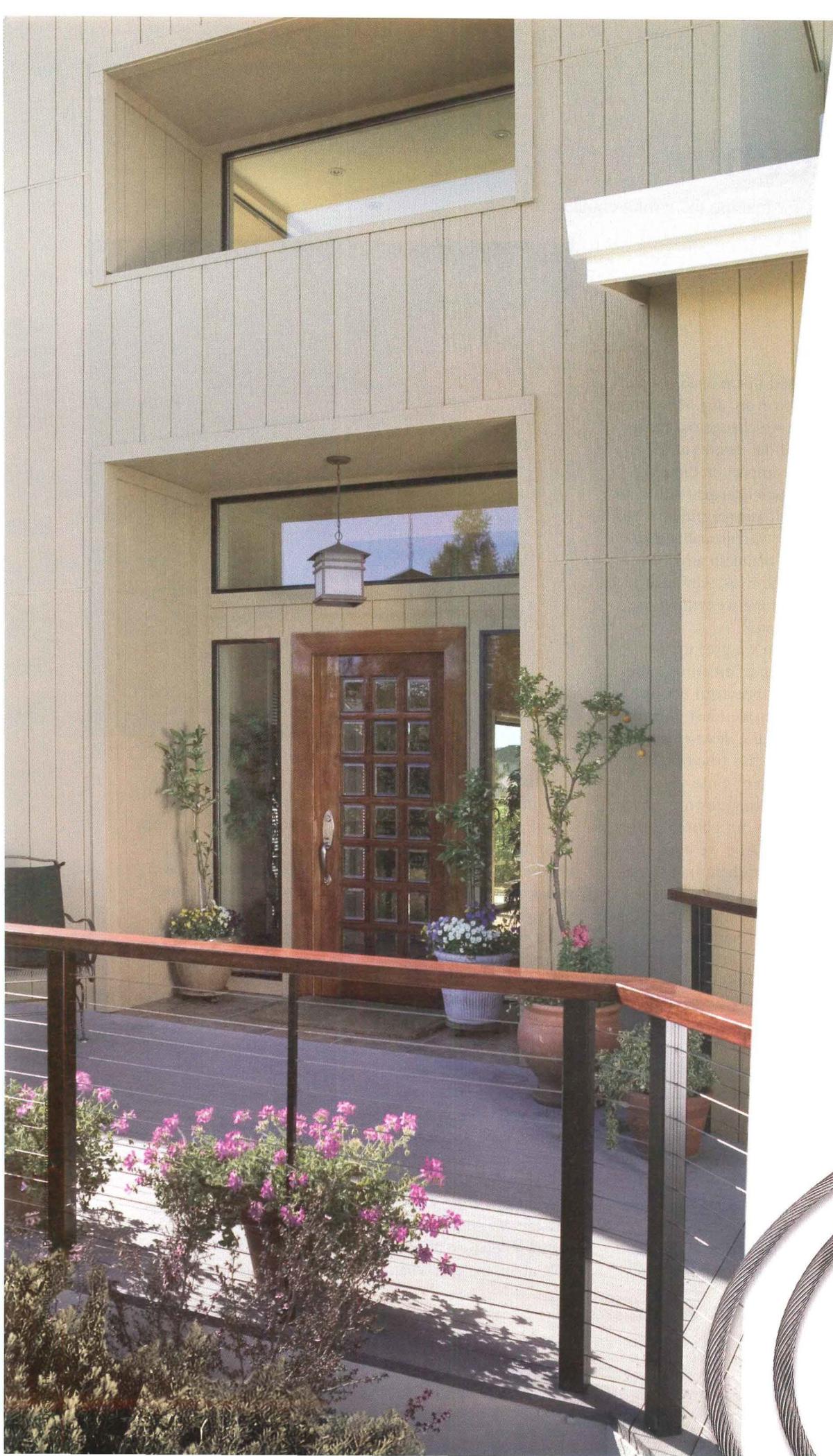
Mark Robert Halper

The sacrifices are less debilitating, less life-altering. You can still drive a car, but now you can choose one that minimizes emissions and maximizes mileage. My neighborhood has a Toyota Prius on almost every block. The car has no maintenance history or proven life span—and frankly it's a little homely—but people are snapping it up. There are just enough rationales in the win column to make a difference: tax incentives, access to carpool lanes on overcrowded highways, and that smug feeling while passing gas stations without slowing down. What do I love about the car? That

golden silence as it glides to a stop.

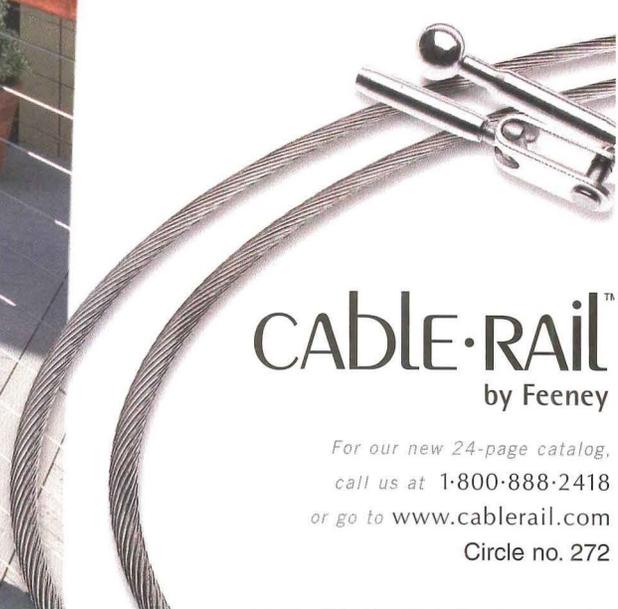
As your options for green choices grow wider, deeper, and less homely, you have fewer excuses for making uninformed or careless decisions in your residential practice. Someday soon—maybe even today—you won't have to convince your clients to build themselves a green house. You'll just design it that way, from the ground up. **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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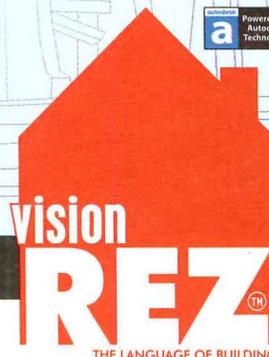
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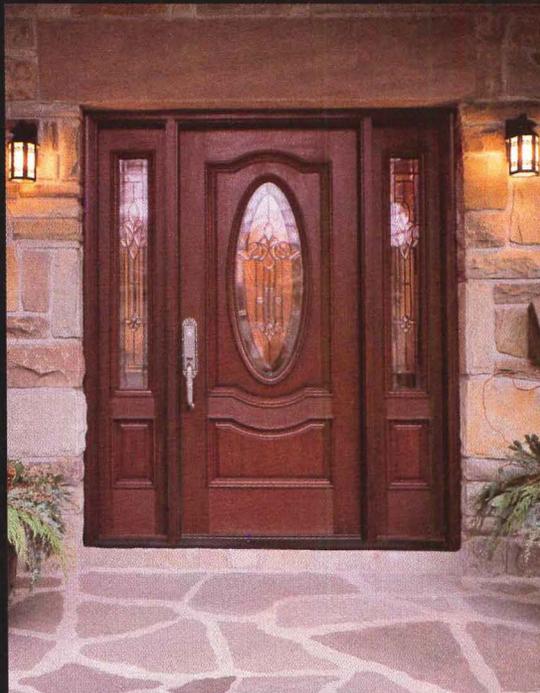


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letters

exercise your right to write.

come together

So the AIA can't regulate fees ("The Charge Brigade," August 2004, page 13). True. But the real estate agents' organizations can't regulate theirs either. Yet somehow they have all managed to get on the same page and create a baseline industry standard of 6 percent. It's infuriating.

As architects, we need to get together and self-regulate, create a basic bottom line so we are not completely undercutting each other. OK, the builders with free plans and the "designers"—we can't control them. But we aren't, in truth, in competition with them. They aren't delivering the same product as we are. We could support each other as professionals by creating a general "suggested" guideline. Maybe it needs to be done outside of the AIA.

With so many forces working against the residential architect, can we not come together on this?

*Sonya Sotinsky
FORSarchitecture +
Interiors
Tucson, Ariz.*

the disconnect about architects' fees isn't really that hard to understand. People who buy an "average" home in a small town in the

Midwest are entirely different from people commissioning an "architect" home in one of our coastal cities. A top-notch design architect spends hundreds of hours creating a custom home, and that work, if done well, makes all the difference in the final valuation of the property. Highly compensated professionals generally earn their pay. Otherwise they wouldn't last that long.

*Rich Pierce
Middleburg, Va.*

architects offer a service that has a value to it. And if the "buyer" does not see the value in our services, fee is a moot issue.

The consensus seems to be that plan books are the enemy of the architect and designer, especially as related to fee. But if the custom-home buyer is satisfied by this choice, how do we turn the tables? We must stop quibbling over whether one is a member of the AIA or AIBD or licensed or not and instead pool our ideas into communicating the true value of our services.

Our firm has discovered that where we have success in the residential market is where our clients have a great appreciation for the services we provide. And when that value is a priority

for our clients, fees are easily negotiated and our profit margins are solid. We know we cannot be all things to all possible clients, but we have focused on two segments in residential design where the value of services is greatly desired: remodeling and coastal resort housing.

Architects are good problem-solvers. Home additions or major remodeling projects are generated by a problem: the need for more space, some functional disorder, disrepair, etc. And most people want the addition or remodel to become a transformation of the existing home. They want an "expert" and therefore are seeking an architect, and they are usually willing to pay because they value the services rendered.

As for our coastal resort housing market, these are usually baby boomers who are becoming empty-nesters and are in search of the ultimate buy. The kids are either off to college or on their own. Our clients want this home, which will be their final home, to be perfect. When the value is realized by our clients, only then will we command the marketplace and achieve the fees everyone desires.

*Kevin B. Oldland, AIA, CSI
AWB Engineers
Salisbury, Md.*

how I wish I could put everything into every design I do. Many clients don't want or need that level of creativity. With resale in mind, they don't want something so unique it won't sell, and they don't want a home that would be on the cover of a design awards program. Most people don't want the full services that we provide. I could go on.

I have found that only one in 50 projects requires that kind of effort—and that kind of fee. My designs are well received by my clients and their neighbors, which is what most clients are striving for. And I know I have given the world a better alternative than it would have had without my input.

Simply put, it's like trying to be Leonardo da Vinci in an Andy Warhol world.

*Anthony Adesso, AIA
Adesso Architecture-
Design-Consulting
Midland Park, N.J.*

your story is a two-part problem. On the one hand yours is the too often typical client who wants the Cadillac for the price of a Chevy. On the other hand,
continued on page 22

letters

he is a rare client who wants Modern design but lacks sufficient respect for a professional architect to pay a professional fee for custom design. It's another example of the architect's dwindling image from sculptor of home design to a drafting service that can get plans through the building department.

Because there are relatively few modern design houses built, there is no "plan book" to choose from. Most Modern houses

are highly customized to a particular client and/or site. I would try to educate this client about the uniqueness of the product he seeks and the nonstandard value the product will be worth.

I think his only viable way to get "inexpensive Modern design" is to find an architect willing to sell a previously built design for a repeat fee, alas, just as the large home builders do.

*Jeffrey Igoe, AIA
Fort Lauderdale, Fla.*

ast week I went on a fishing trip. My new friend, a successful attorney, picked me up at my office and apologized for running a little late. He had had an early morning golf date with an accountant friend at their country club.

I loaded up my rusting fishing tackle in the back of his wife's Lexus SUV (his BMW was in the shop for a \$1,000 oil change), and off we went to his boathouse, from where we set off in his 40-foot twin-screw cruiser.

We finished fishing as the sun set. On the way back, he invited me to his home for drinks. He asked me what I thought of his 4,000-square-foot house. "A lot of house for a \$4,000 set of drawings," he said.

Now, you house designers, who are the Wal-Marts of our profession, tell me if there is something wrong with this picture.

As for Realtors' fees being acceptable because they are at the back end of the transaction while an



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architect's fees are unacceptable because they are at the front end, I contend that those clients make large front-end payments when they buy cars, boats, and plasma screen TVs, and even pay the full sticker price for things that depreciate over a short period of time, yet they won't pay a full fee for a house they'll have for a lifetime and which will appreciate in value. Go figure.

*Lloyd Rosen, architect
New Orleans, La.*

here in New England, I wish I could muster enough nerve to tell "one" of my clients that my fee is \$60,000 on a construction budget of \$440,000. I'm sure we have all been there when the sticker shock comes on the client's face and the phrase "But I just need a drawing of the plans" comes out of their mouth.

Even with *This Old House*, HGTV, and the myriad design programs avail-

able to the public, the question of design fees—a taboo topic among architects—is skirted.

The best way to explain the cost of our services is to tell clients what we will provide for the proposed project and tie it to the fee structure. Most clients, even if they do watch those TV programs, don't have an idea of the work we do in detail or realize the time and effort we put into a project. That is why we hear that phrase: "But I just need a plan drawn."

I am neither the cheapest nor the most expensive but am proud of the design and related services I provide for a fair price. So bring on those clients with the sticker shock. If we can educate them a little more about what we do, we can rescue them from themselves or, worse yet, the million-dollar box that looks like the one next door and doesn't address their individual needs.

*Joseph R. Gluse, AIA
Trumbull, Conn.*

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the best of both worlds



achieving visual integrity without compromising function

Some of the more common features on today's homes are there purely for the sake of visual integrity. Consider window shutters, for example. When originally designed, they served an important function – especially on homes in the path of hurricanes or tornadoes. Today, however, most window shutters merely hang in place for aesthetics.

Not that there's anything wrong with that.

However, far more pleasing to both architect and homeowner alike are those features that achieve visual integrity without compromising – or completely eliminating – function.

cupolas on the comeback

With recent advances in soffit design that dramatically increase air intake, ridge vents alone do not always provide proper airflow. On such homes, cupolas not

only provide a dramatic visual statement, they also serve an important function.

I find that this frees me to explore various looks for a home's design that I might not otherwise have considered. Today the cupolas can serve a useful function, they can't be considered "frivolous" extras by a homeowner looking to trim costs.

carriage doors really swing

Like the window shutter, carriage doors once graced a lot of properties. With the advent of overhead garage doors and electronic garage door openers, however, carriage doors fell out of fashion.

It has always bothered me that such a large expanse of exterior space was devoted to a basically bland wall. A standard garage door reminds me of a stretched canvas, waiting to be painted.

Now, however, there are garage doors that have the visual integrity of carriage doors, yet function as overhead doors. The best of both worlds. These doors provide an

aesthetic so appealing I, for one, don't always hide garage doors at the side of a home, but will face them directly onto the street as shown above.

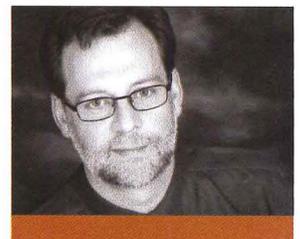
re-creation

Cupolas, carriage doors, even window shutters are being re-created to provide the visual integrity they once lent to America's homes without compromising function. It's a trend that's struck a chord with today's homeowners who are seeking cost-effective ways to individualize the look of their homes.

It's a trend that I salute, both for the options it provides and the respect it shows for the traditions of the American home.



Wayne Visbeen
AIA, IIDA



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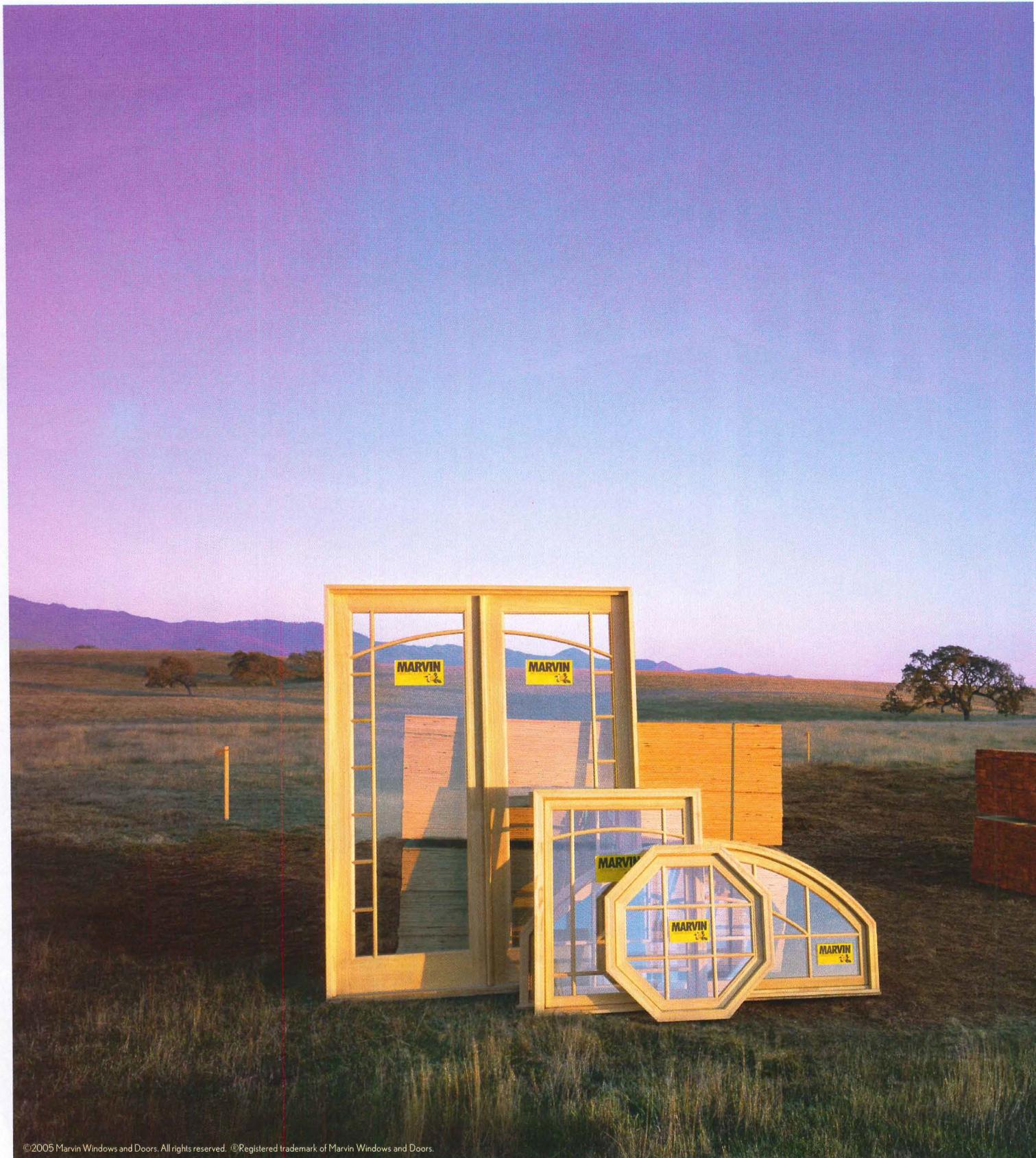
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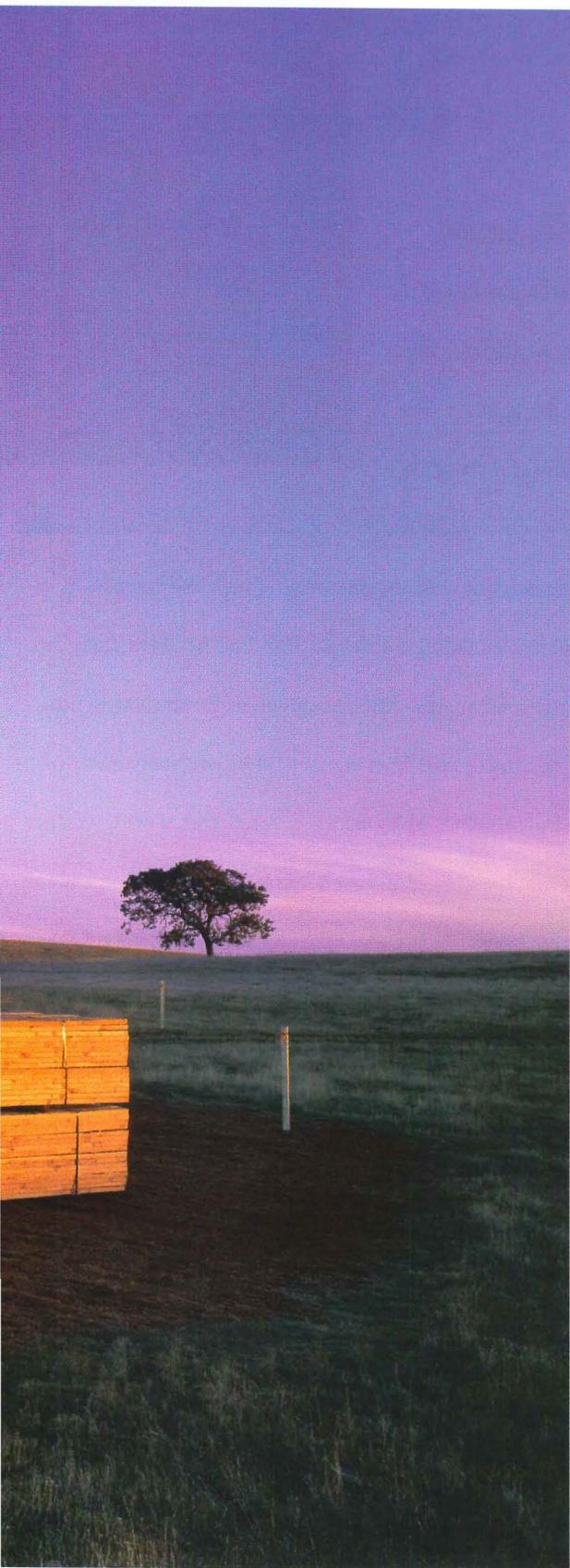
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home front

news from the leading edge of residential design

the not so wasteful house

As Sarah Susanka's Not So Big Showhouse aptly illustrates, we've come a long way from the days when sustainability was unsightly. Thousands of attendees at this year's International Builders' Show in Orlando toured the 2,660-square-foot house, which marries earth-friendly features with innovation and style. Energy efficiency is designed right into its bones. For starters, Susanka gave the house a compact square shape that's easily insulated, with porches and a breezeway and garage radiating around

it. Deep overhangs and covered porches modulate Florida's scorching sunlight, and glazing on the east and west walls is kept to a minimum to block the sun's low angles.

"Part of what I try to do when designing a house is to make it a place that inspires you daily, and a place where you'll want to stay for

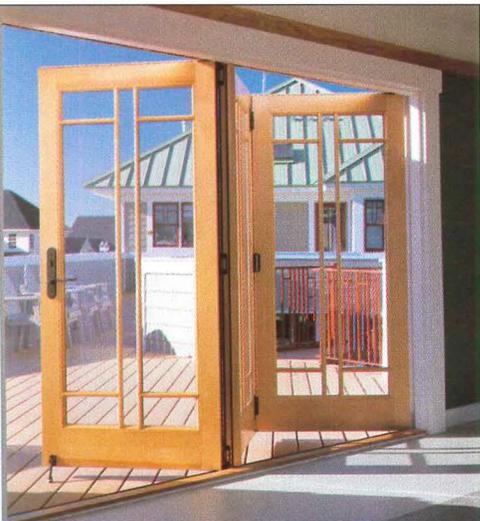
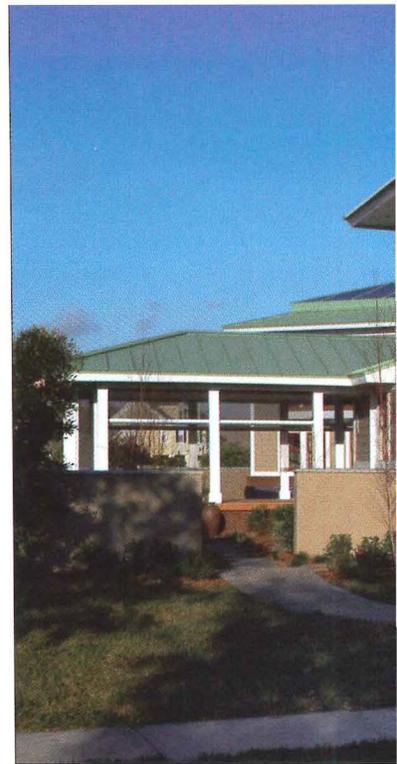
the long haul," Susanka says. "So daylight becomes an important quality of the interior." Because direct sunlight can be too harsh in Florida, she created surfaces that bounce it around. Some of the windows are carefully positioned next to side walls that redirect the light. And the bottoms of soffits, which

keep ductwork and recessed lights inside the conditioned space, also reflect the light.

Where site-sensitive design reaches its limits, high-performance materials take over.

Susanka worked with a small army of building science consultants, including the DOE's Building America teams, to devise optimal energy-efficient strategies for the lowest cost. Under the stucco and fiber cement siding are walls made of R-24 structural insulated panels, covered with a snug weather barrier that breathes. Soy-based spray foam insulation battens down the thermal breaks. And flashing is made of butyl rubber, which bonds better and lasts longer than conventional materials, says building science consultant Steve Easley, SC Easley & Associates, Chicago.

Technology takes the Showhouse's roof and windows to the next level too. The metal roof is treated with a low-E coating that reflects 38 percent of the sun's rays. Spectrally selective windows reflect 70 percent of the sun's heat without filtering the light, and electrochromic skylights can be made opaque with the touch of a button. "You can easily get 40



Courtesy Marvin Windows and Doors



Photos: Above: courtesy Gilbert A. Ihrig; below: courtesy Wasco Skylights



Structural insulated panels, a roof with low-E coating, and electronically tintable glass windows and skylights help to create a durable, energy-efficient building envelope at the Not So Big Showhouse.

percent of your cooling load as solar gain through windows, even in parts of the Midwest,” Easley says.

Other energy-conserving technologies include two 16-SEER heat pumps and solar hot water panels. Consultants who are monitoring the house expect heating costs to run \$15 a year and cooling costs to average less than \$175. For more information on the Not So Big Showhouse and links to consultants, visit www.entsobigshowhouse.com. —*cheryl weber*

sofa so good

your newly completed house may be green, but what about the furniture? Fear not! New York City-based Q Collection offers an inspiring line of fine furniture and accessories made primarily of environmentally-friendly materials.



Courtesy Q Collection

Founded by Anthony Cochran and Jesse Johnson, the 2-year-old company manufactures 22 case goods and upholstered pieces and offers 50 fabric styles and a variety of accessories. Pieces feature Forest Stewardship Council-certified woods, zero-VOC water-based paints, nontoxic polishes and stains, and formaldehyde-free water-based glues. The company also recycles vintage vases into lamps.

“There was nothing that existed in the marketplace that took into consideration health and the environment and good design,” says Cochran, who, as creative director, designs many of the pieces. Products fit, more or less, into the murky middle of the style spectrum, appropriate for both traditional interiors and urban lofts.

Cochran says his architect clients favor such pieces as the Charles coffee table, Tod Hunter sofa (shown), and the Cale & Brady cocktail table. For more information visit www.qcollection.com. —*nigel f. maynard*

clean water cottage

the owners of this cottage sought to savor the water, the picturesque convergence of the Hull Creek and Potomac River into the Chesapeake Bay. In response, architect Rick Harlan Schneider, principal of Washington, D.C.-based Inscape Studio, designed a 2,000-square-



Courtesy Inscape Studio

foot pier house that preserves the vital resource and view-maker. “So often people go to a beautiful place and destroy the very thing that makes it beautiful,” says Schneider, who recently won an AIA Young Architect’s Award for his dedication to environmentally sensitive work. “Green architecture for us is about respecting the site.”

Many facets of the project attempt to protect surrounding wetlands and estuaries, most notable among them is the use of rainwater as its exclusive water source. Gutters and downspouts on the butterfly roof will drive water into an underground cistern. And pumping and filtration systems will convert it into an ample, potable water supply—enough to sustain two nature-lovers year round. —*shelley d. hutchins*

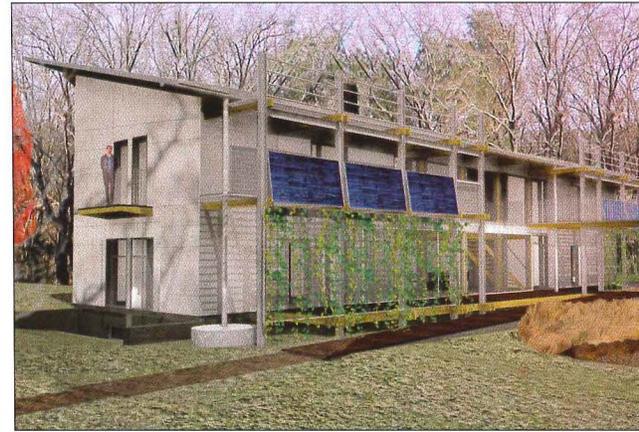
on the boards / the perfect dorm

about a year ago, a group of Duke University students approached Raleigh, N.C., architect Frank Harmon with an intriguing request. They asked him to draw up a proposal for an environmentally friendly student residence that could double as a laboratory for studying and developing green building technologies. The project, they told Harmon, would serve as a constantly evolving experiment, allowing them to collect data on their own energy use as well as try out new ideas and products.

Harmon, who teaches at North Carolina State University, rose to the challenge. With the help of research papers written by the Duke students, he designed a 4,200-square-foot house powered by a variety of sources, including geothermal heat pumps and photovoltaic panels. A series of “smart walls” contains energy-monitoring equipment behind perforated metal doors, so the students can access and adjust the building’s mechanicals and electricals at any time. And a rainwater collection system, a “green screen” of deciduous vines that cool the house during summer, and a vegetated roof are just a few of the house’s additional interactive, flexible green features.

Walls, floors, and ceilings are constructed in sections that residents can easily remove and change as technology evolves. “The idea is that the students can create innovations for now and in a decade,” says Harmon. They’ll be able to start soon, for he and his undergraduate collaborators persuaded Duke’s Pratt School of Engineering to back the project. Known as the DELTA (Duke Engineering Living Technology Advancement) Smart House and slated for completion in January 2006, the building will be home to 10 engineering students each year.—*meghan drueding*

Well-placed operable windows and skylights naturally control air circulation in the DELTA (Duke Engineering Living Technology Advancement) Smart House at Duke University, Durham, N.C.





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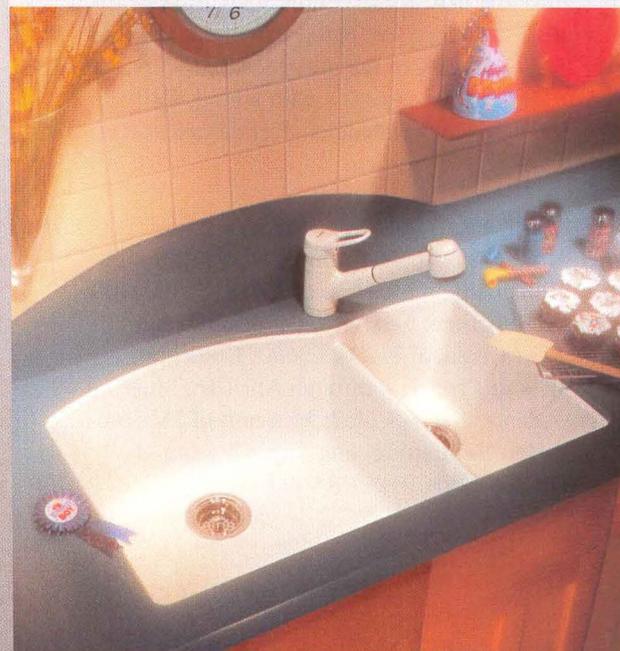
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calendar

accessible design

deadline: april 11
boston society of architects

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custom home design awards 2005

binder deadline: april 18

Houses designed for a specific client and site may be submitted by builders, architects, remodelers, designers, and other industry professionals. Categories include custom home (grouped by square footage), custom kitchen, custom bath, renovation, accessory building, and custom detail. Winners will be featured in the September

2005 issue of CUSTOM HOME magazine and honored at the 2005 AIA National Convention in Las Vegas. Shown: the grand award for renovation by Herbert Lewis Kruse Blunck Architecture, Des Moines, Iowa. For details, call 202.736.3407, or visit www.customhomeonline.com.

tools of the imagination

march 5–october 10
national building museum,
washington, d.c.

Architects have used myriad tools over the past 250 years to transfer the buildings of their imaginations to paper. Historical apparatuses, from the perspectograph through to today's high-tech menagerie, are

on display; reproductions are available for hands-on investigation. The exhibit also examines the connection between the development of particular tools and advancements in architectural design. Drawings, renderings, and sketches from well-known architects past and present are also included. For related events, call 202.272.2448 or go to www.nbm.org.

carlos garaicoa

march 6–june 12
MOCA pacific design center, los angeles

Cuban artist Carlos Garaicoa uses contemporary architecture to tell the tale of Cuba's politics and ideologies. Featured are the artist's architectural models, renderings, drawings, photographs, and videos that convey the "despair and longing of the country's failed social and architectural programs." Shown: *Nuevas arquitecturas* (2003), 76 rice-paper lamps that project a futuristic city. Call 213.626.6222 or visit www.moca.org for details.



Ela Bialkova

daylighting institute

april 10–11
jacob k. javits convention center, new york city

Part of Lightfair International, the Daylighting Institute offers two-day intensive courses about daylighting techniques in architecture and design. AIA credits are available. For course specifics, call 888.886.7931 or go to www.lightfair.com.

traditional building exhibition and conference

april 27–30
pennsylvania convention center,
philadelphia



This trade show (formerly Restoration & Renovation) provides courses in preservation, restoration, and renovation; traditional new construction; new urbanism; classicism; and Modernism. Hundreds of appropriate products are on display to the architects, builders, developers, and preservationists who attend. Call 781.779.1560 or visit www.traditionalbuildingshow.com to register.

continuing exhibits

Florence Knoll Bassett: Defining Modern, through March 15, Philadelphia Museum of Art, 215.763.8100; **Chicago Architecture: Ten Visions**, through April 3, Art Institute of Chicago, 312.443.3600; **Emerging Voices/Works in Progress**, through April 16, Museum of Design, Atlanta, 404.688.2467; **Museum of Modern Art Manhattan Reopening**, ongoing, Museum of Modern Art, New York, 212.708.9400.

—shelley d. hutchins



Farshid Assassi



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kitchen: green in the city

This 8-acre wooded site is a rare treasure in urban Charlotte, N.C. As such, it deserved a thoughtful, gentle intervention of the kind championed by William McDonough + Partners of Charlottesville, Va. The firm, known for its commitment to environmentally and socially responsible architecture, began by siting the house with meticulous care. A limited palette of colors keeps the structure humble, allowing the natural setting to shine. And an impressive array of green attributes helps preserve other resources elsewhere. “Our inclination was to

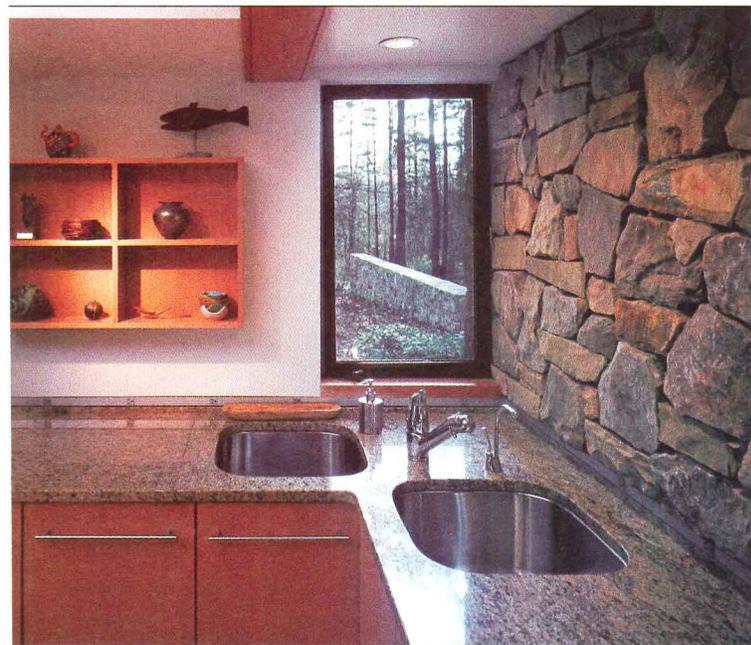
make a pavilion in the trees,” says project architect Katherine Grove. “The kitchen ties into that idea by anchoring a thickened bar of service areas that are clustered along the northern exposure, so the south-side public spaces could be left open and connected to the outdoors.”

Taking full advantage of the north-south axis plays a key role in passively heating and cooling the house. The kitchen runs along the shady north wall, pushing past the building’s exterior envelope and terminating in windows at each end for cross ventilation. A wall of stacked local fieldstones creates a tactile element in the otherwise sleek space and, with the limestone flooring, acts as a thermal mass to retain warmth or cool in

the appropriate seasons. Deeply recessed grout lines and a tightly-fitted random pattern add to the wall’s natural appearance. Forest Stewardship Council–certified beech cabinets with a no-VOC clear finish present a smooth contrast to the stone and match cabinetry in the living area.

Other sustainable features are equally stealthy, which is exactly what the clients and architects sought. With the exception of the halogen cable lights above the island, lamping is fluorescent. Geothermal energy powers radiantly heated and cooled floors. Clerestory windows are part of a daylighting plan to reduce the need for artificial lighting, and recycled-content drywall further adds to the home’s green luster. Grove does admit some appliances fall short of the firm’s typical standards for efficiency, but chuckles that the clients don’t cook that frequently anyway.

project continued on page 40

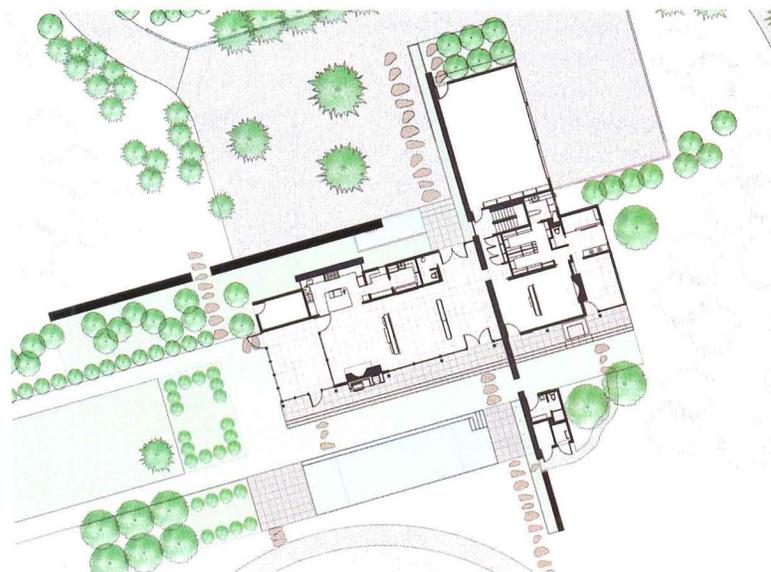


A corner sink welcomes views and breezes from the casement window. The stone landscape wall runs parallel with the kitchen wall to give visual continuity.



The clients “were very interested in stone,” says Grove, “but instead of building a heavy stone house, we used stone walls as a kind of archeological element—a symbolic connection to earth and place. They were built as freestanding walls, and the house was attached to them and organized around them.” A clear seal on the stone makes it easier to clean, and a stainless backsplash above the stove protects it from major splatters.

Photos: Philip Beaurline



architect: William McDonough + Partners, Charlottesville, Va.; Allison Ewing, AIA, principal in charge; Katherine Grove, AIA, project architect

general contractor: Philip R. Thomas Construction, Charlotte, N.C.; **landscape architect:** Nelson Byrd Woltz Landscape Architects, Charlotte; **interior designer:** William McIntosh Design, New York City

resources: dishwasher: Fisher-Paykel; hardware: Hafele, FSB; plumbing fixtures: Dornbracht, Duravit, Franke, Kohler; windows and patio doors: Hope’s Windows

first floor and site

k + b studio

bath: background check

d Deceptively simple and serenely understated, the master bath belies the effort it took to design and build. For example, the owners shunned the usual tile walls because of a strong distaste for grout and joint lines. So, throughout the 8-by-14-foot room, the architects specced hand-troweled plaster with integrated color in earth tones. Monolithic but not dull: Subtle variations in color and trowel marks give the finish movement and vibrancy as it reacts to changes in light.

“We minimized the number of materials and used the same details repeatedly to act as a quiet background to views of the trees,” says project architect Katherine Grove.

Pale limestone floors, also in a neutral tone, meet the plaster walls with grace and a little bit of cunning. “A recessed base allows the floor plane to slip beneath the walls, leaving the walls floating above,” says Grove. The same detail is found in the rest of

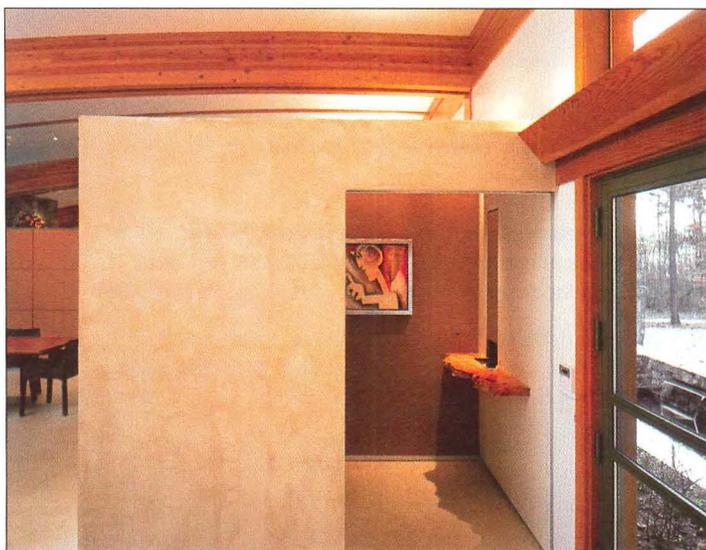
the house, anywhere planes or materials intersect. Standard half-inch aluminum reveals join wall to ceiling and window to wall. Grove adds, “It gives a real crispness to the planes.”

Masking the lesser functions in the room keeps distractions at bay. A trench running the length of the double shower camouflages drains. A light cove measuring 5 by 7 feet conceals most of the room’s fixtures and sheds a uniform glow. Vanity lighting and medicine cabinets blend into a mirror that segues seamlessly from the window. “This also allows the outdoors to continue through reflection, so whoever is showering can enjoy the view in privacy,” says Grove. Serene and scenic, all at once. — *shelley d. hutchins*

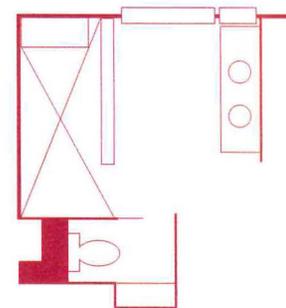


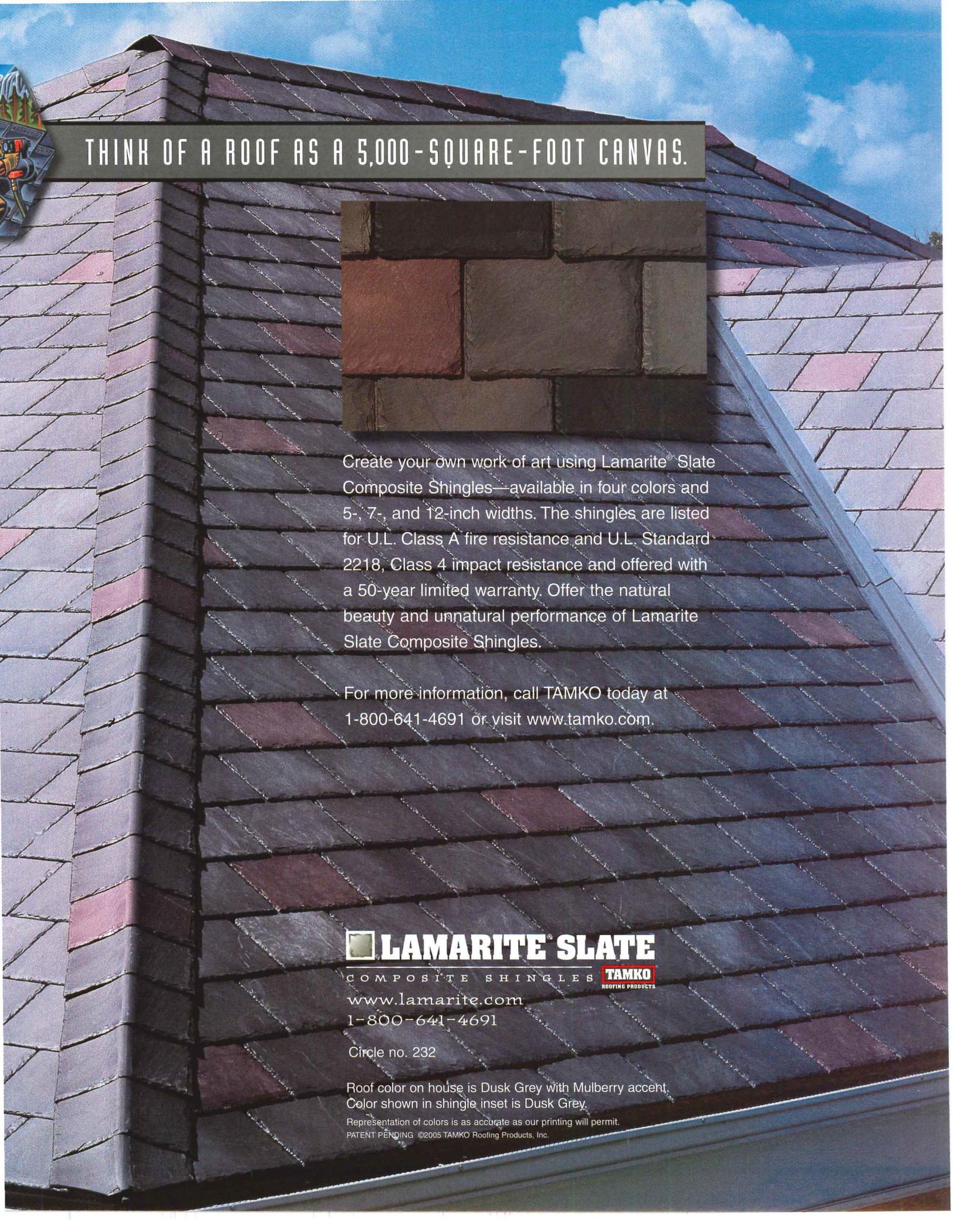
Photos: Philip Beaurline

FSC-certified teak cabinets flank the full-length vanity, its aluminum piping doubling as towel bars. The cabinets roll wherever they are needed, and the welded aluminum frames are repeated on cabinetry throughout the house.



In the powder room cum art niche, a piece of George Nakashima sculpture conceals a copper trough sink, and a flush mirror slips down to cover the faucet.





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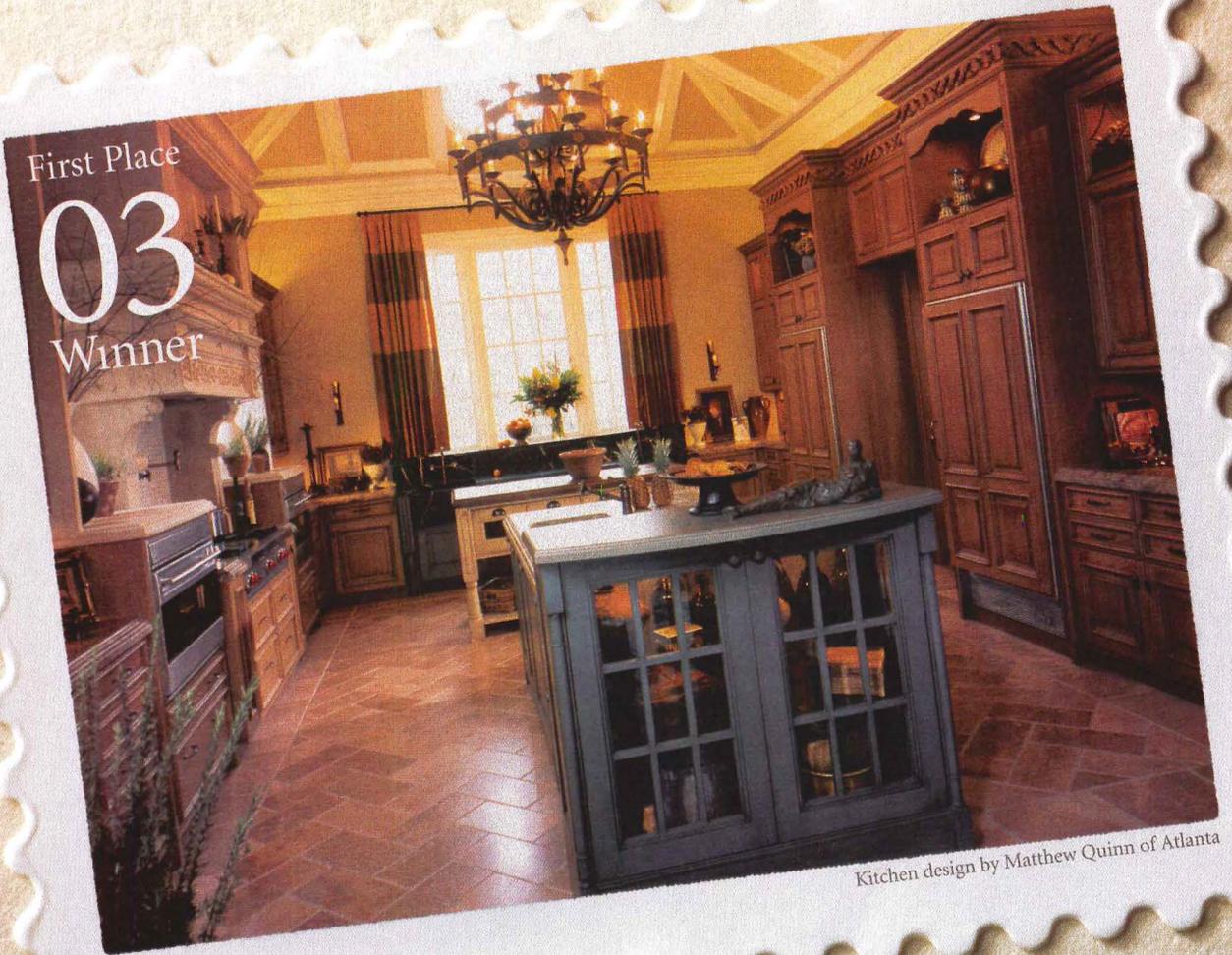
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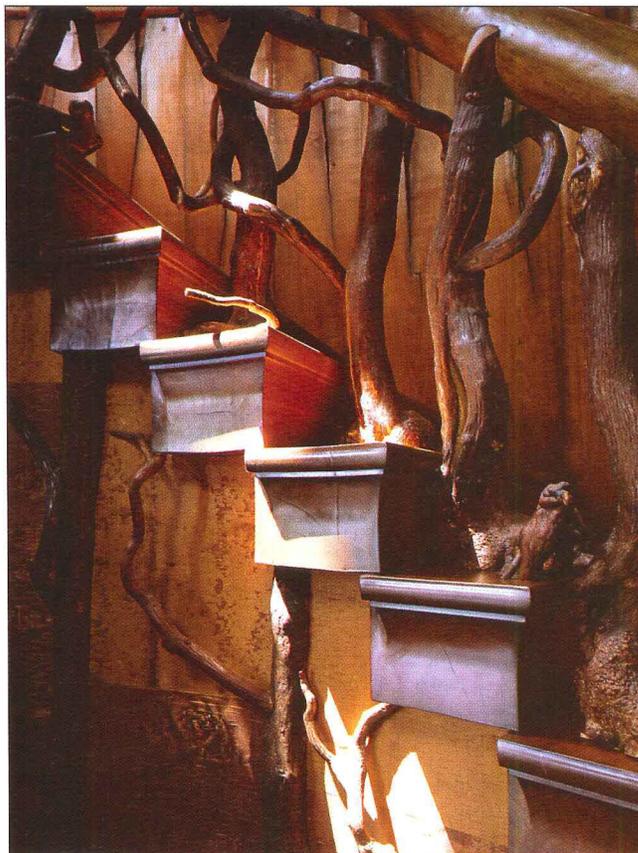
a call to arms

if we truly want to clean up the planet,
we'd better start with our own profession.

by allan shope, aia

We had a Chinese exchange student staying at our house recently, and one evening we got onto the topic of sustainability in architecture. He proposed that sustainability could be seen in the Great Wall, the Parthenon, or any other ancient stone ruin that has endured through the centuries. Build with stone, and it will last forever. As the discussion progressed we began to look at the extension of the word “sustainable” and incorporated the stone quarry and the human labor component into the formula as finite resources. What had appeared to be sustainable then became low maintenance, with excellent longevity but not sustainable. Something that is sustainable is something you can just keep on doing.

Fossil fuels are not sustainable. They took 200 million years to make, and we will use all of them in less than two centuries, with the end of those two centuries falling within most of our lifetimes. Solar and geothermal energies are sustainable; harvesting lumber from a certified forest that never cuts more lumber than it grows annually, and only



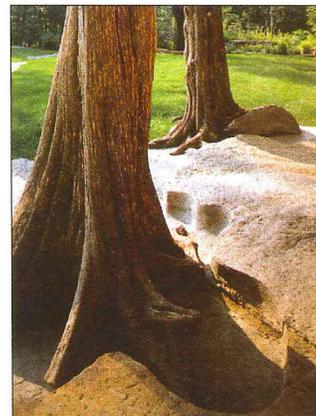
Photos: Durston Saylor

harvests during seasons that will cause the least damage to the forest's ecosystems, is sustainable. The world is filled with wonderful sustainable products that most architects know nothing about. Drywall is currently available in two forms: the traditional one we all know, made of gypsum produced by enormous strip mines defacing the earth, or a type of drywall made of the particulate residue from the combustion scrubbers of Midwestern power plants that help eliminate acid rain. Both products cost the same

amount and have the same fire ratings and the same specification standard for all forms of uniform testing. They are indiscernibly different visually. Most architects I know aren't aware of this material, although it has been available for 20 years. Why aren't we as a profession using these materials as the rule and not as the exception? Do we not care? Or do we not know any better?

run the numbers

We, as a species, contribute 60 billion tons of particulate emissions to the Earth's

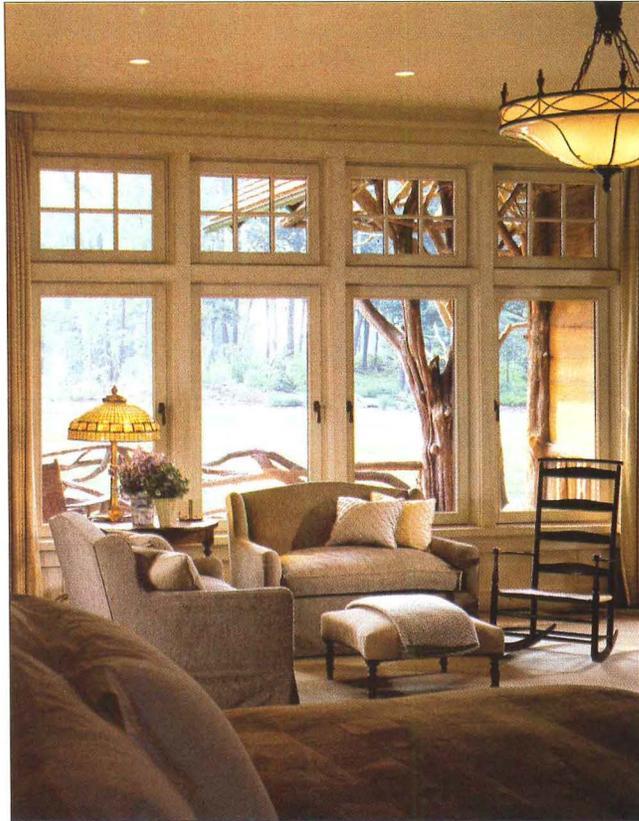


At a home the author's firm designed, most of the building elements, including birch bark wallpaper and cherry and mountain laurel stairs (left) and a terrace of stone and aromatic cedar (above), come from the site, requiring no fossil fuels for transport.

atmosphere every year. These emissions contribute to every imaginable health and environmental hazard, from global warming to lung cancer. The polar ice sheets are disappearing before our very eyes. How much do we as architects contribute to this situation in *our* decisions? Let's stop blaming the rest of the world and look at ourselves.

The average 4,000-square-foot house in the United States uses the equivalent of 6,000 gallons of fossil fuels every year if you account for heating fuels, natural gas, electricity generation, and other associated fossil fuels used for such things as snow plowing and yard maintenance. Six thousand gallons of fuel

continued on page 46



Durston Saylor

The particulate residue that is left over from the process of cleaning dirty air at power plants forms a key ingredient of the sustainable drywall in the house's sitting room.

weighs approximately 54,000 pounds at the point of combustion and emits about 9 percent of its weight as particulate emissions, or about 4,860 pounds per year per house. If the average American residential architect designs two houses per year, and each house has an average lifetime of 100 years, and the architect practiced from age 25 to 65 and then retired, he or she would

have designed a total of 80 houses. Eighty houses times 4,860 pounds of particulate emissions times an average house longevity of 100 years comes out to 38,800,000 pounds of particulate emissions per career. If each of us did only 10 percent better on this topic, by specifying high-efficiency boilers and better insulation methods, for example, we each could be responsible for a very

“let’s stop blaming the rest of the world and look at ourselves.”



Charles Steck

significant reduction in what is completely screwing up the Earth.

knowledge gap

I gave a short test to 20 well-established residential architects I know. Each one was asked five questions about sustainable energy design in residential buildings in the United States. (Answers are at the bottom of this page.) They were asked to use only their current knowledge and not to do research. The questions were: 1. How much does a kilowatt of electricity cost where you practice architecture? 2. For each kilowatt of electricity generated in America, how much is lost through line voltage loss *between the point of generation and the point of use*? In other words, what percentage of the electricity we generate gets used by a consumer, and what percentage is wasted in transmission? 3. How much energy does a typical 4,000-square-foot house use over the course of a probable lifetime of 100 years? That includes electricity, natural gas, fuel oil, propane, etc., per year multiplied by 100 years. 4. What is the total weight of the emissions from that one 4,000-square-foot house that goes into the atmosphere over the lifetime of the house from all energy sources used? And 5. How long does it take to grow a 10-inch-wide red cedar vertical grain roofing shingle?

Seven of the 20 architects got the first question right, and none of the 20 got any of the next four questions correct, given a 20 percent margin of error. And we as a profession are the experts making these critical decisions.

Aldo Leopold wrote, “We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect ... that land as a community is the basic concept of ecology, but that land is to be loved and respected is an extension of ethics.”

In our arrogance as a species and as a profession, we’ve overlooked one of the most obvious requirements of being architects. In my opinion, we are not in a good place with respect to sustainability in architecture, and this is something that we must work to change. **ra**

allan shope, aia, is a principal at shope reno wharton associates in greenwich, conn. this article is adapted from his presentation at the inaugural meeting of the congress of residential architects (CORA) in december 2004.

Answers: 1. 13 cents in Connecticut. 2. Two-thirds. 3. 600,000 gallons of fossil fuel. 4. Approximately 9 percent of its original burn weight, which equals about 486,000 pounds, assuming an original burn weight of 9 pounds per gallon. 5. 150 years.



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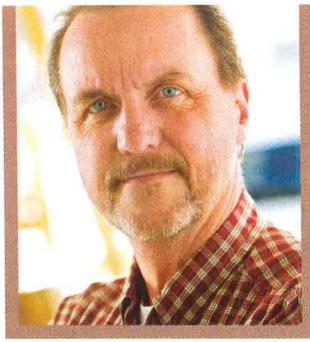
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the green house effect

eco-friendly design grows more practical and more acceptable.

by cheryl weber

So much for our nation's red and blue recent past. America is turning green, and the change is only partly related to politics. If you looked at a time-release map of the United States over the past five years, you would see the color seeping across the country, as environmentally-friendly building has become more desirable and more doable—no longer a buzzword but the bedrock of sound design and construction. The sea change started in the late 1990s, with the U.S. Green Building Council's system for rating the environmental impact of commercial buildings, and now sustainability is tugging the residential tributary toward the mainstream as well.

Two decades ago, green design was an oxymoron, a fringe movement that was narrowly focused and produced buildings that were often uninspiring. More recently, it was seen as a luxury for those who could afford to tinker with building-integrated photovoltaics and fancy air filtration systems. Theoretically, private clients wanted a resource- and energy-efficient home, but they didn't know how to



Michael Morgenstern

ask for it, and they certainly didn't want to pay more for it. Architects didn't understand it either, at least not in any sophisticated way. That is changing measurably, driven by several far-reaching developments.

It's been five years since the USGBC's Leadership in Energy and Environmental Design (LEED) rating sys-

tem took effect, giving commercial developers a rigorous way of determining whether or not a building had good environmental performance. "My sense is that there's been a dramatic leap in interest in sustainability and in the knowledge of it," says Alex Wilson, president of BuildingGreen, Brattleboro, Vt. "The number of

LEED-accredited professionals has increased from 8,000 a year ago to 19,000 today." The new LEED Home certification program, slated to be applied around the country in 2006, will push residential architecture in the same direction.

Huge advancements in mainstream building
continued on page 52

products have also allowed residential architects to spec green with greater confidence. Wilson notes that the use of high-performance glazing, such as low-E coatings and glass filled with argon and krypton gas, now represents half the market of window manufacturers such as Andersen and Marvin. Paints, sealants, and adhesives have stepped into the ecologically aware 21st century too. "Emissions of harmful chemicals have dropped tremendously in the last five years," Wilson says. "Paint products have become much greener, without a significant change in price. Now we have mainstream manufacturers offering products with zero volatile organic compounds, and very-low-VOC products that exceed even the toughest standards in California." Cabinet manufacturers have begun to change their toxic ways too, by offering formaldehyde-free kitchen cupboards.

eco-conundrum

As encouraging as that trend is, it will be some time before eco-specs become second nature. Fortunately, there are a growing number of online resources architects can turn to for help in determining a construction method's or a material's shade of green. Perhaps the best-known arbiter of green products is the 5-year-old *GreenSpec Directory*, updated each year by BuildingGreen (www

.buildinggreen.com).

So what does make a product true-green? In some categories, green is quantified by establishing thresholds for what the directory's editors want to measure. For example, they won't consider a paint with more than 50 grams of VOCs per liter. "We want to list just the greenest products, so we're aiming for the top 5 percent to 10 percent of products," Wilson says. "As a result, we change our criteria constantly. When we look at all paints, we find that 95 percent have VOC levels higher than 50 grams per liter, so we set a threshold at 50 grams."

Products that consume energy are fairly easy to evaluate too, by setting a standard for performance. Most of the energy consumed by clothes washers, for example, is used to heat the water, so as water consumption drops, energy performance rises. "Since we started the directory, we've dramatically tightened those standards," Wilson says. "Today, only front-loading or horizontal-axis and the very best vertical-axis washers meet those criteria. The energy cycle has to do with the amount of water extraction, too, which affects how much energy it takes to dry the clothes." To evaluate wood products, the editors rely on certification from the Forest Stewardship Council, an independent nonprofit group. They also set standards for recycled content on certain materi-

green stamps

In the past, the green building movement has suffered from a lack of nationally recognized standards to define a green home. This spring, two national agencies introduced initiatives that will set some measurable benchmarks. The Washington, D.C.-based U.S. Green Building Council, which gave us LEED commercial guidelines in 2000, has launched a pilot program that tweaks that framework. Working with research institutions, utilities, builders, and local chapters of the USGBC, the agency plans to test its rough draft of the technological makeup of green houses, to ensure the bar isn't set too high or too low. The agency aims to have official guidelines established by 2006.

"Our national program is designed to create some consistency in the marketplace, recognize people who are doing really progressive things, and verify it's the right approach from a green standpoint," says Jim Hackler, LEED Home program manager. "Is it understandable, is it affordable, does it have an impact? The whole strategy is market transformation." The pilot includes custom homes, multifamily, affordable, and production housing. "Our biggest target is builders," Hackler says. "On paper you can have a house that's solid green, but if builders don't make sure these specs take place with subs, the end product may be the farthest thing from green."

In January, the National Association of Home Builders unveiled a pilot version of green guidelines that home builder associations can tailor to their local markets. "It's not a program but a primer on green building, with a scoring methodology for line items and a user guide," says Richard Dooley, an environmental analyst at the NAHB Research Center. "Local HBAs can use it to develop green building programs."—c.w.

als. "We look at what's out there, what's achievable, and what's reasonable," Wilson says.

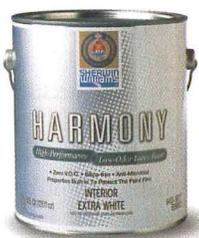
Even with the help of vetted lists, choosing materials and products based on their environmental impact is like comparing apples to oranges, trying to weigh a material's harvesting practices against the manu-

facturing process, how far it must be shipped, and the effects on indoor air quality. Of course, green design has a hierarchy. Energy performance trumps recycled materials, for example. "A lot more resources get used on energy to heat and cool a house over its lifetime than on the materials to

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practice

says Henry Siegel, FAIA, Siegel & Strain Architects, Berkeley, Calif. And, given the choice, durability is more important than embodied energy. Recycled content also warrants close scrutiny. “A lot of recycled materials have nasty stuff in them,” Siegel says. “We avoid things that use vinyl, formaldehyde, and other known carcinogens. *Green-Spec* tells you a lot, but sometimes we’ll ask manufacturers for material safety data sheets, and if we don’t know what an ingredient is, we’ll call and ask.”

Efforts are under way to hold industry’s feet to the fire. Working with Pliny Fisk from the Center for Maximum Potential Building Systems in Austin, Texas, and Greg Norris from the Harvard School of Public Health, BNIM Architects, Kansas City, Mo., has developed BaseLineGreen, a for-hire software system that details the social, environmental, and economic impact of every material used in a building. (The software links to the EPA and GIS mapping for pollution data, and to the Department of Commerce for labor statistics.) Designed to give developers advice on the materials to use or avoid on large-scale projects, it is industry- rather than product-specific—comparing, say, the impacts of steel to wood to concrete framing—and far too costly for use on residential projects. “When it’s used on the city, county, or state level, it could start

to drive policy about trying to attract certain industries over others, showing what industries do the best job of increasing employment while minimizing the environmental footprint,” says Jason McLennan, a partner at BNIM Architects, author of *The Philosophy of Sustainable Design*, *The Dumb Architect’s Guide to Glazing Selection*, and the founder of Ecotone Publishing (www.ecotonedesign.com).

“Green design is getting easier, but doing the right thing shouldn’t be so darn hard,” he continues. “I think industry has a responsibility to provide materials labels, just like nutrition labels, that give their life-cycle analysis.

“my sense is there’s been a dramatic leap in interest in sustainability and in the knowledge of it.” —alex wilson

Industries should be required to do the research and to provide unbiased information, so architects can select products that work from the traditional standpoint of beauty, cost, and durability, and just compare environmental impact numbers across products. We need to keep encouraging the building industry to be more responsible so we don’t have to be so smart.”

collaborative science
Better labeling will allow architects to make more informed decisions about what goes into the homes they design. Even so, sustainable building is a multi-faceted science that ranges from design and construction techniques that make sense for every project and budget, to solutions for clients who want to invest in a higher-tech, long-term vision of their home. One deterrent to investing in sustainability is the lack of a nationally accepted definition of what constitutes a green home. The several dozen local programs that offer ratings for green buildings are all different, so there are few standards homeowners trust, and there’s no buy-in from nationwide mortgage lenders. This lack of standards, however, has not stopped some architects from playing all along the tonal spectrum.

Although Siegel & Strain may use ecologically hip PVs on high-end projects, it starts with a low-tech approach to sustainability. The firm uses old-fashioned bioclimatic design as a way to innovate, so that the building’s orientation, shape, and massing provide energy for free. It’s an approach some architects give lip service to, but few rigorously follow. “In our experience, a lot of people start off that way, but if they have a great design idea

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they think is new and cool, all that stuff goes out the window," Siegel says. "We think you need to do everything to get a building climatically right before you put in heating and cooling. With this approach, all the mechanical systems get smaller."

New York City architect Dennis Wedlick, AIA, also practices what he calls resource-first design. Once the project gets past programming and site analysis, he searches for sustainable design ideas. Architects who preconceive a building's form and materials and then

look for alternatives are limiting themselves, he believes. "By looking at resources first, you get an opportunity to find flooring made out of coconut shells and mechanical systems that are more efficient and comfortable to be around," Wedlick says. "You get to find options that the design could possibly take advantage of."

Staff interior designer Kate Splane keeps the samples library and database current with notes on material content, life cycle, and how far a product has to travel. Wedlick ferrets out other eco-information early

on in a project by involving consultants, suppliers, builders, and the clients themselves. "We're all grateful for things like LEED ratings and sources that have neatly collected information," Wedlick says. "But we'll be in a lot of trouble if we use them as a crutch, because we won't have accomplished the objective of a sustainable society, which is more of an organic process."

Vivian Loftness, FAIA, a professor of architecture at Carnegie Mellon University, Pittsburgh, and chair of the AIA Committee on the

Environment, agrees, pointing out that the goal of residential architecture should be buildings that are environmentally superior and also beautiful to look at, that demonstrate both technical and sensory prowess. "Architects have to become more versed in interiors, engineering, and construction, and they need to internalize that knowledge base but also collaborate more," she says.

"You can no longer pitch the drawings over the fence. You have to work it out together."

Indeed, it's not enough to simply design for
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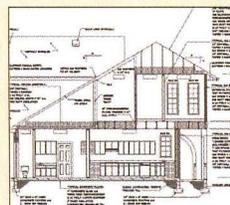
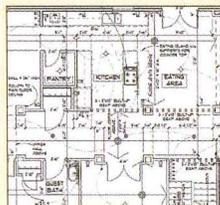
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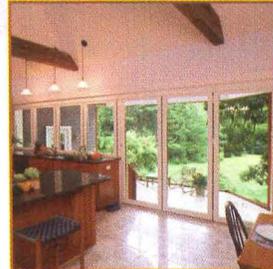
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sustainability. All too often, construction detailing and follow-up are overlooked. Steven Winter, FAIA, Steven Winter Associates, Norwalk, Conn., says architects sometimes permit contractors to install mechanical systems incorrectly. Ducts should be kept inside the thermal envelope rather than run through the attic. And just as cars get annual exams, due diligence requires periodic checkups to make sure the high-efficiency mechanical system is operating properly.

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efficient air conditioners, and structural innovations. To owners who are risk-averse, the upfront costs of new technologies are a barrier, and architects who don't know how to think about the project holistically can't translate the cross-ramifications to clients. David Hertz, AIA, of Synthesis, Santa Monica, Calif., says green design requires an art of the long view. "High-performance glass will be 30 percent to 50 percent more expensive as a first cost than if you used an inefficient glass. If you do an energy calculation and model the building, you can immediately offset that increase in cost by specing a smaller mechanical system, not to

mention the space you save on housing the equipment. On every project we build, we work with consultants who have those energy modeling programs."

Winter endorses the use of such software, which crunches data on how much energy different design schemes will consume. "The software is available at modest costs," he says. "Just have someone in the office get smart about it. This stuff isn't that complex, and it's a service that architects can sell."

Fortunately, as interest in sustainability builds and the supply stream turns greener, premium costs are dropping precipitously. Bob Berkebile, FAIA, BNIM Architects, says a lot of the higher projected costs were due to fear of the

unknown in estimating. He cites a 2003 study showing that the average capital expense for all LEED-certified projects in California was just 1.8 percent more than the cost of conventional buildings. "Our experience is that it costs us more money to do this education and research, but it doesn't cost more money to construct an intelligent house once you have done all the right things with the envelope," says Berkebile. He notes that high costs usually occur in one or two categories: Either the clients insist on a pricey product or material because they love its quality, or they're off the grid and want their south-facing roof to be photovoltaic.

With so many smart, affordable technologies flooding the market, Winter predicts that 10 years from now the term "green" will be obsolete. If so, architects have an important role to play. "One of the barriers to green building is lack of confidence," Wilson says. "There's a very reasonable skepticism as to whether a product will hold up. Architects and builders won't use something unless it's been on the market 10 years. With that approach, it takes a lot of time to get new products into widespread use. There's also an investment of time required to keep up with what's going on with these products. Investing in ongoing education should be a higher priority." **ra**

cheryl weber is a contributing writer in severna park, md.

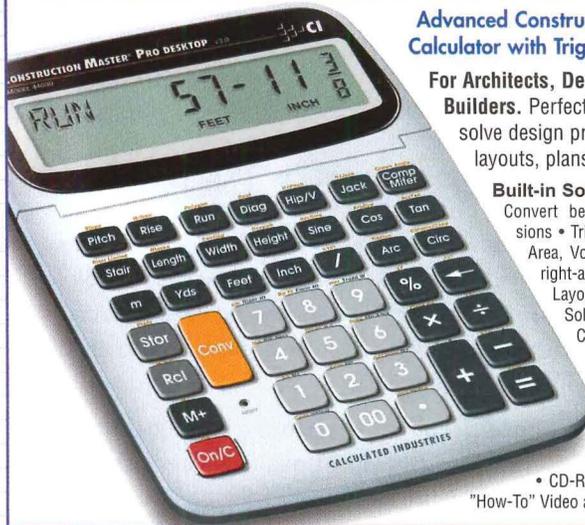
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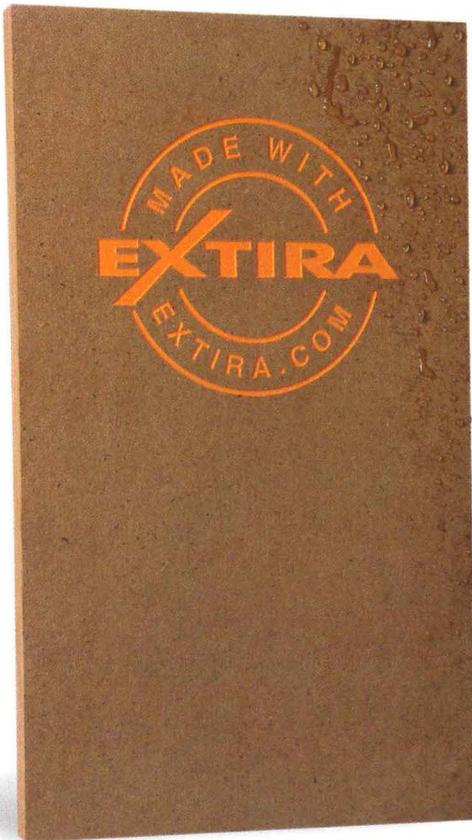
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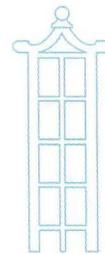
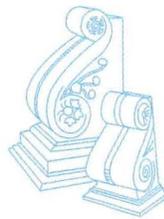
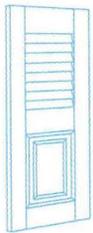
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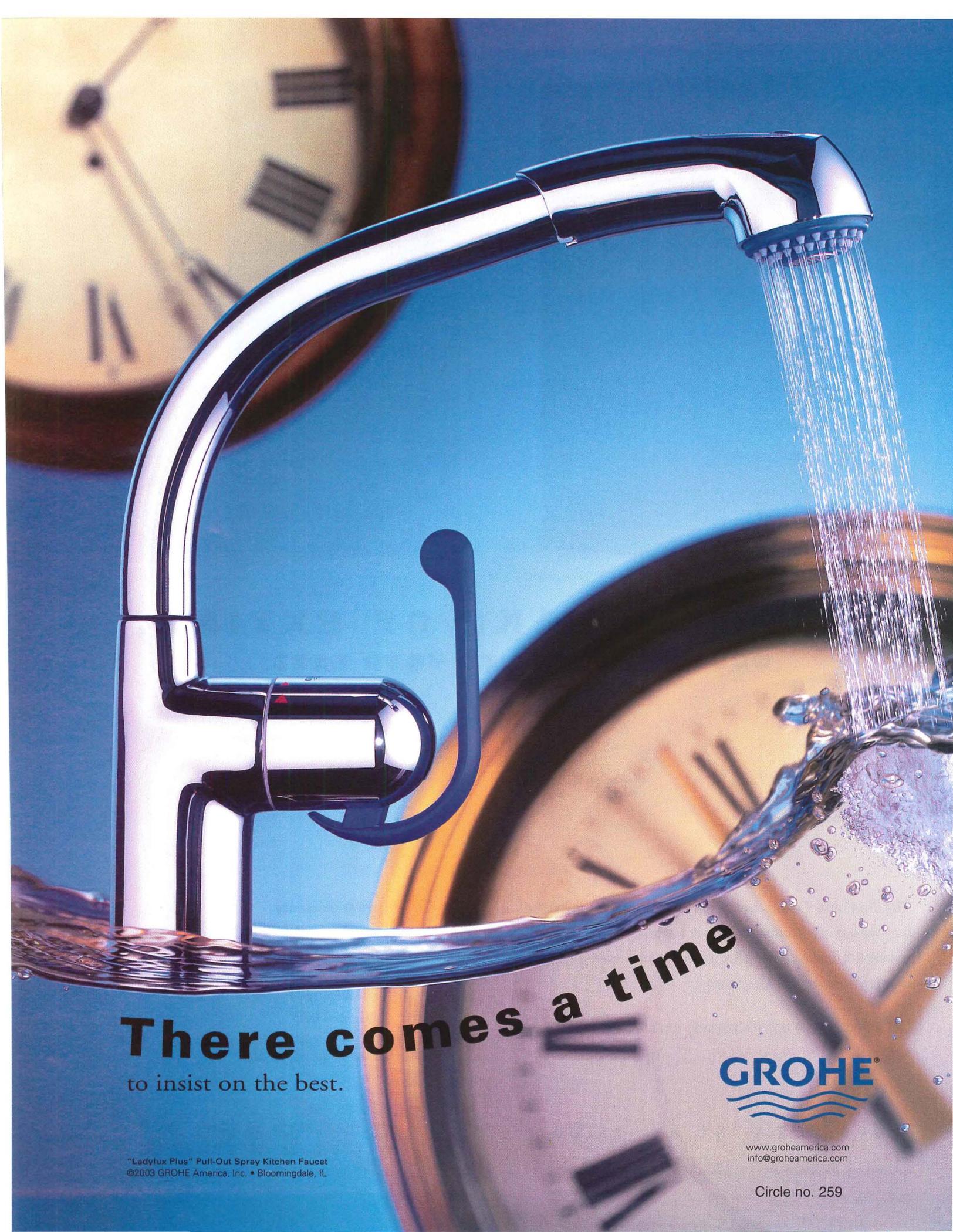
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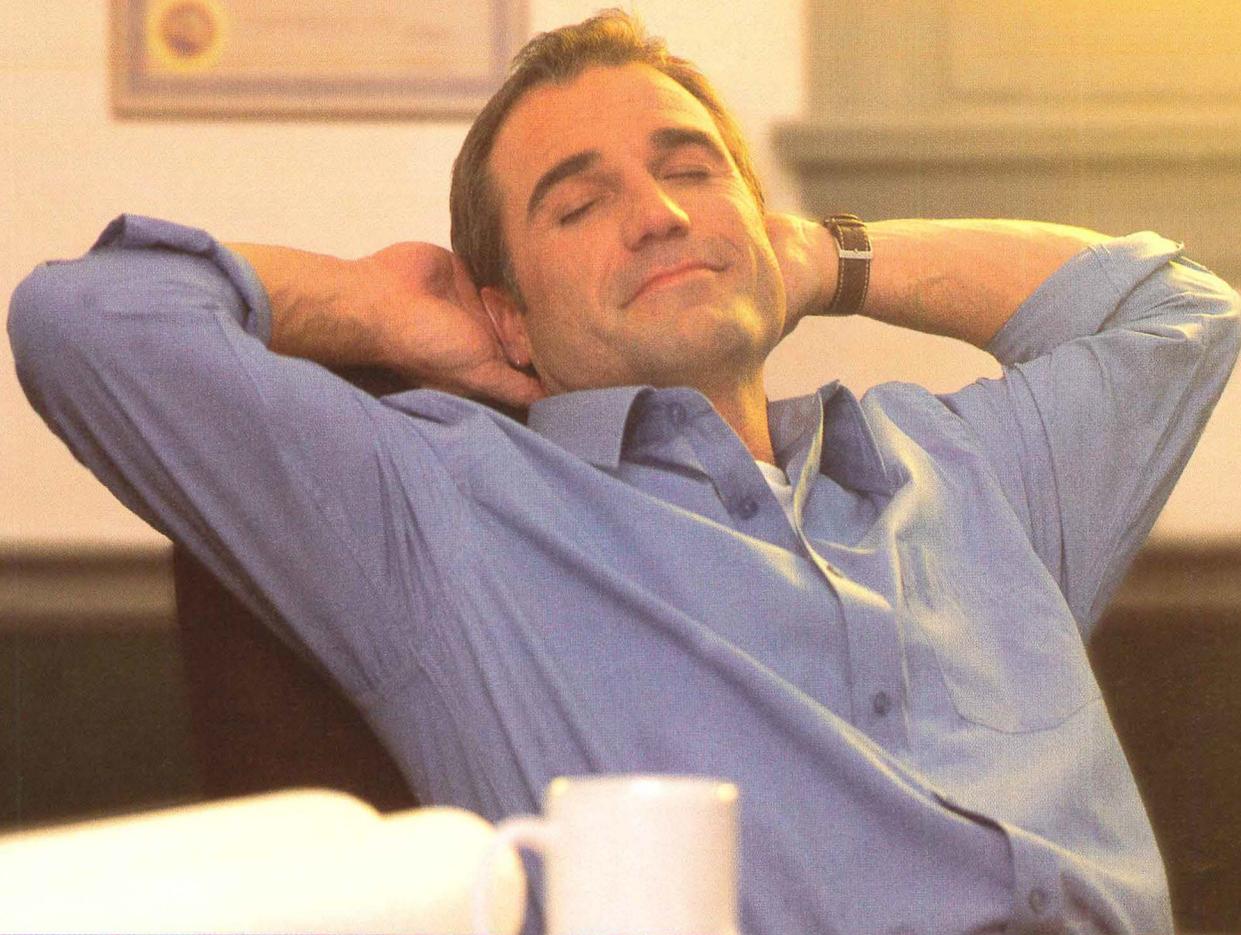
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# natural habitat

by cheryl weber

David Arkin and Anni Tilt, husband-and-wife architects in Berkeley, Calif., live with their two children in a refurbished 1910 farmhouse outfitted with solar panels and a wind turbine. They walk or bike the five blocks to their solar-powered office, a new building beside a creek. It's located three blocks from their son's school and 60 feet from the home plate where he plays baseball. A red electric Beetle is plugged in at the house, charged up for trips into San Francisco. Arkin and Tilt didn't grow up in this progressive university town, which welcomes dedicated environmentalists, but they met here during graduate school at the University of California and then stayed to perfect a certain kind of architecture: clean, lyrical buildings that assimilate resource-efficiency into everyday life. Since co-founding the firm in 1997, the two have produced passive solar houses made out of straw bales, rammed earth mixed with quarry waste, and recycled and salvaged materials, and garnered nearly 20 design awards in the process.

Clients seem to like Arkin and Tilt because they do the job of architects, creating handsome elevations and bright, airy interiors that flow. The houses reach out to the landscape, and the landscape reaches into the houses. But clients soon discover the other unexpected perks of buildings designed to live lean. A great deal of time is spent studying the sun's seasonal angles, capturing or controlling it with clerestories and tilted roof planes. Open floor plans enhance the sensation of light in the round, and salvaged materials add vintage flair to pristine surfaces. With their straightforward gestures and careful response to the site, the firm's buildings mix modern and vernacular forms. But unlike the thin veil between inside and out that characterizes Modernist dwellings, the thick earthen walls of some of Arkin Tilt's homes provide a cozy enclosure that breathes, maintaining comfortable temperatures with minimal need for mechanical heating and cooling. The firm's work isn't just about bringing the outdoors in, it's about the way clients feel when they're inside.

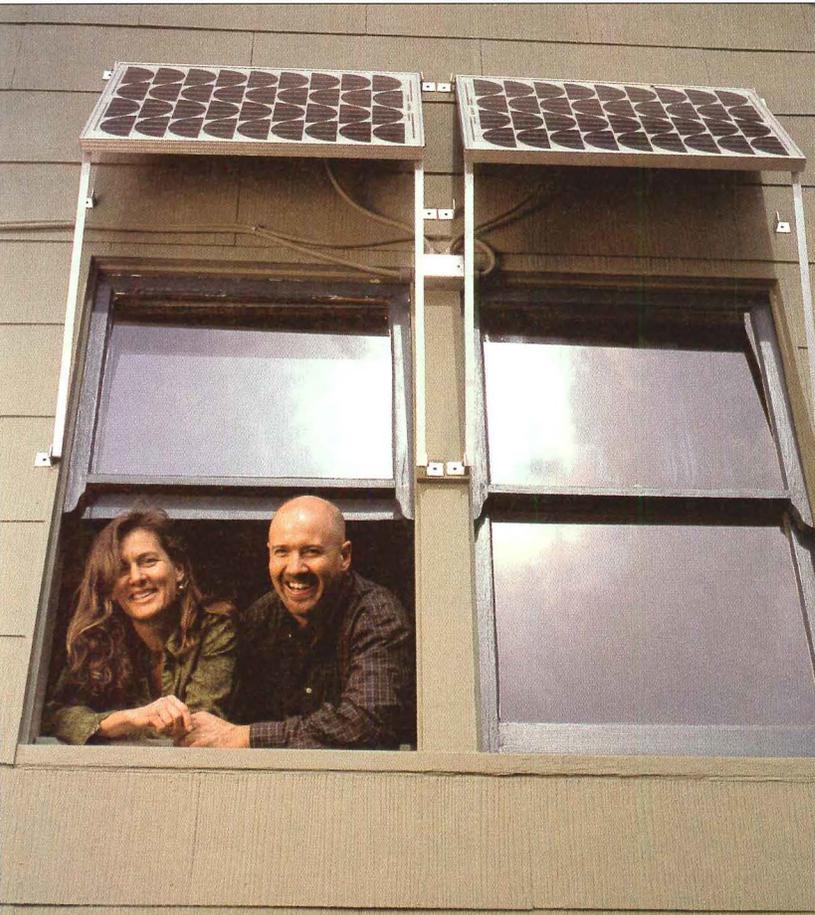
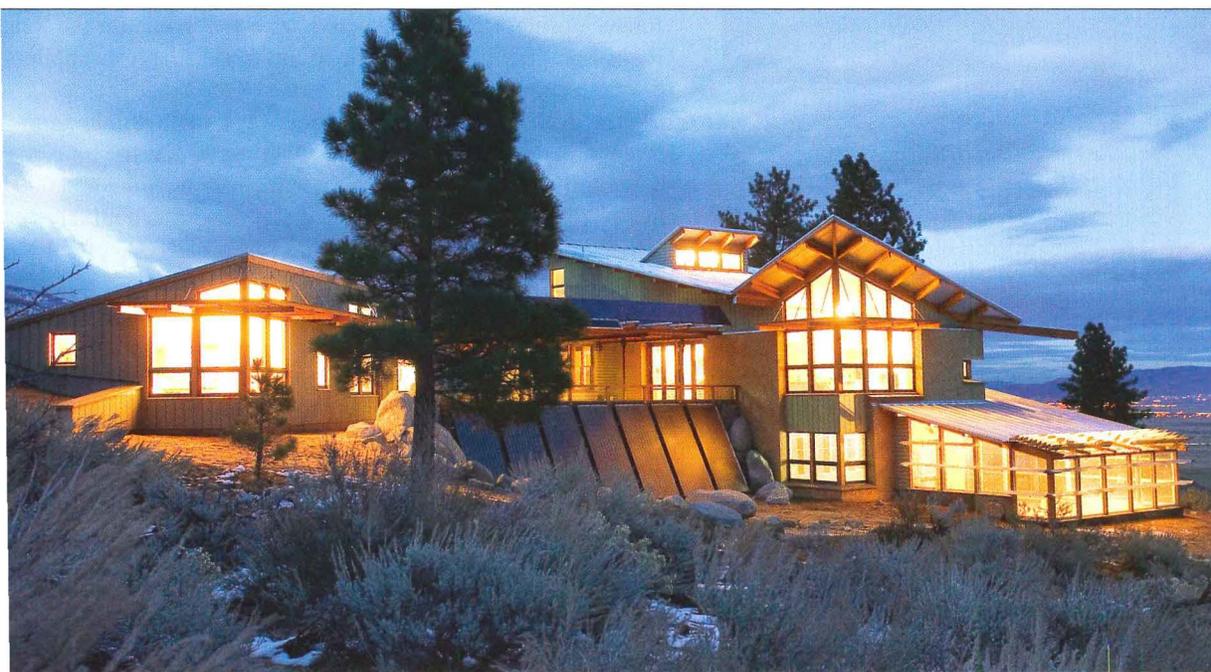
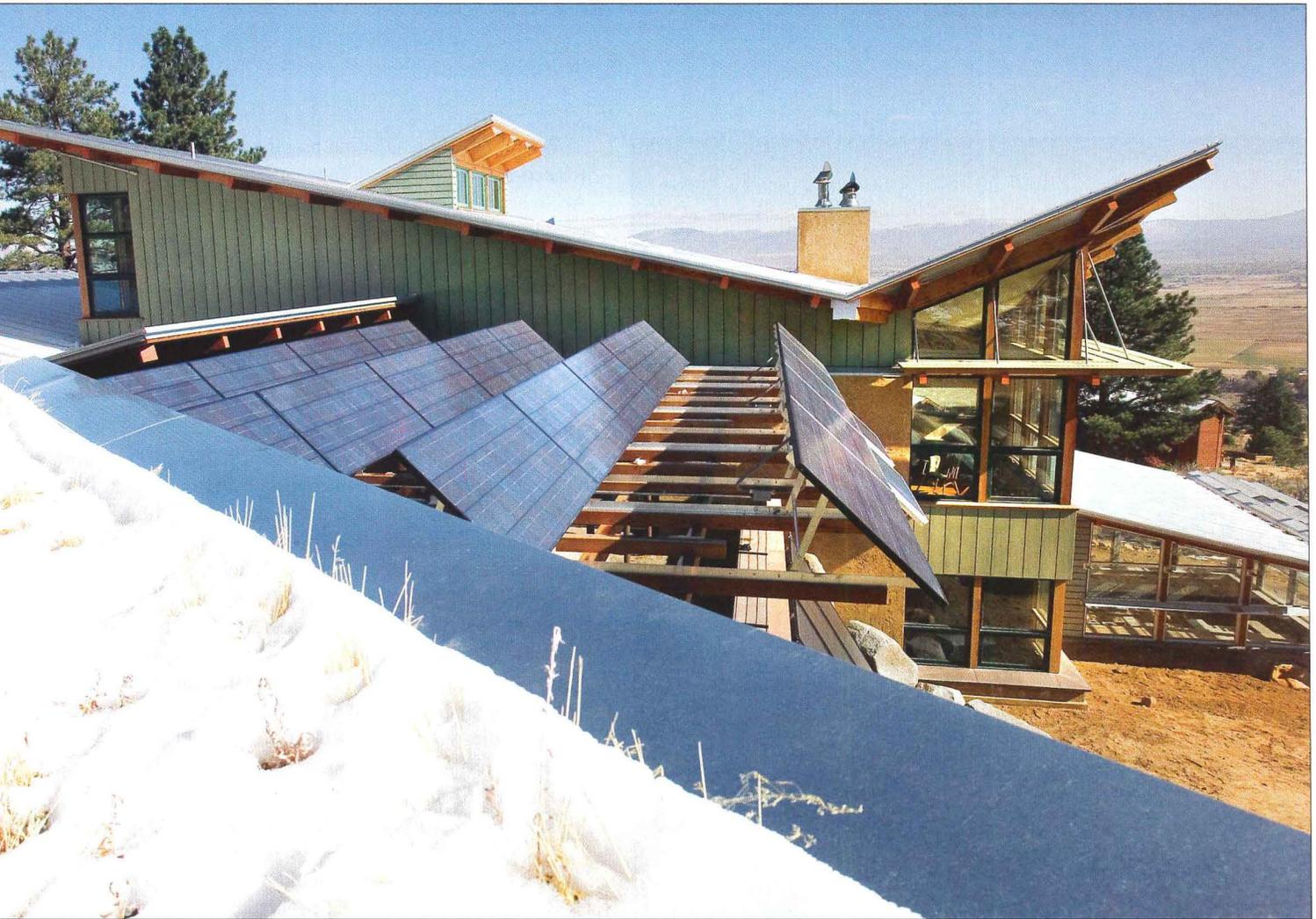


Photo: Danny Turner

Anni Tilt and David Arkin have built a successful practice that combines thoughtful design, resource efficiency, and waste reduction. With an electric car and an office powered by solar electricity, their green principles begin at home.



The straw bale Johnson residence in the Sierra Nevada Mountains is virtually free of the power grid. Uprturned roofs collect sunlight and offer views of Job's Peak. Photovoltaic panels generate electricity, and solar thermal panels combined with radiant sand beds beneath concrete slabs provide heat and hot water.

*"we try to make sure our clients feel passionate about both ecology and good design, because we do."*

— anni tilt

Photos: Ed Caldwell

# natural habitat



Inside the Johnson house, salvaged fir slats echo the exterior siding, and glass panels on the floor transmit light to a hallway below. Above: the “truth” window; the fireplace is shaped with sprayed earth.

With a mostly residential practice balanced by commissions for eco-resorts, park buildings, and religious facilities, Tilt and Arkin are helping to work out the green building movement’s growing pains. “When we founded this thing eight years ago, we decided we were going to wear our environmentalism on our sleeves rather than making it something we did on the sly,” Arkin says. Tilt adds, “We try to make sure our clients feel passionate about both ecology and good design, because we do. It makes for much stronger relationships.”

## green light

Arkin, AIA, grew up in rural Wisconsin and spent summers during high school and college as a camp counselor, living in a tent. “I think that cemented my relationship with the natural environment,” he says. “One of the things we’re always striving to be within any building is outside.” After finishing a five-year bachelor of architecture program at the University of Minnesota, Arkin worked for Obie Bowman at Sea Ranch, Calif., for two years. In 1991, he enrolled in UC Berkeley’s joint master’s degree program in architecture and planning. There he befriended professor Sim Van der Ryn, a visionary pioneer in green building and a former California State Architect under Governor Jerry Brown, and worked with him on several planning projects.

Following a brief stint during grad school with the architecture and planning firm Calthorpe Associates, Arkin approached Van der Ryn in search of a job. Van der Ryn put him to work for the next four years doing ecological design and analysis. One project in particular planted him firmly on the path to sustainable design. He was appointed project architect for the Real Goods Solar Living Center, one of the world’s largest suppliers of solar technology and now the home of the Solar Living Institute in Hopland, Calif. “In many ways, that rekindled my love of architecture and building,” Arkin says. “At the time, the showroom was the world’s largest straw bale building at 5,000 square feet. It completely heats and cools itself, and all the electricity is generated on site. To this day, that’s one of our goals for all of our projects.”

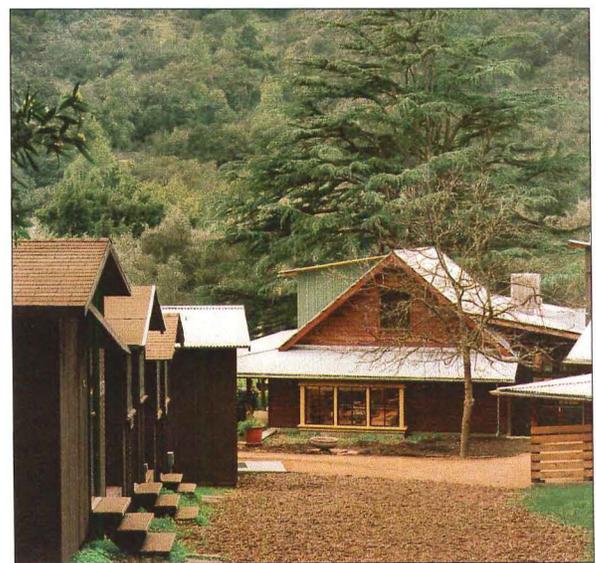
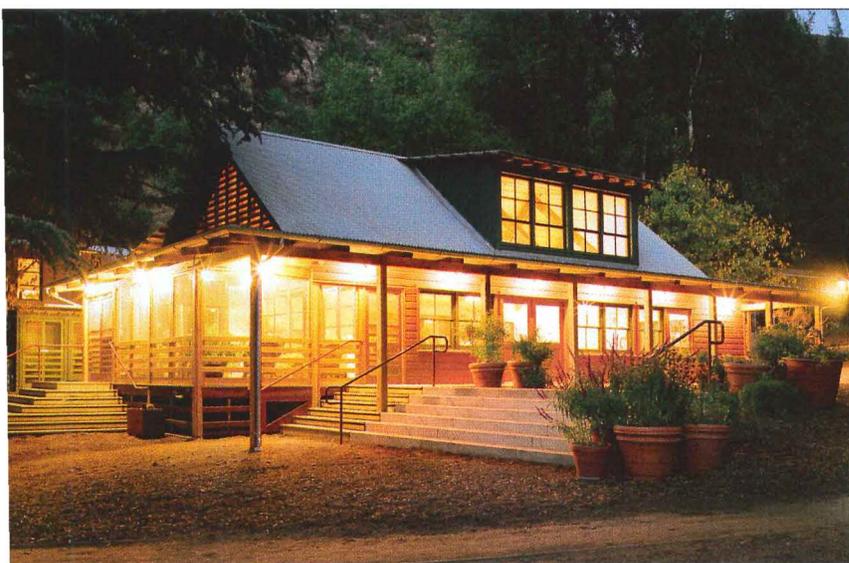
Although solar panels and other technological interventions crop up on many of the firm’s commissions, its focus is on natural materials and building systems, recycled content, and salvaged resources. The two share a compatible design philosophy, and their talents intertwine. David’s strengths run to what the buildings are made of and how they’re spanned structurally, while Tilt pays attention to the sense of space and light. Her undergraduate degree in civil engineering and their combined experience teaching structures classes at UC Berkeley underpin the firm’s willingness to venture into uncharted territory. “When we’re working with straw bale, or any systems that are not conventional, it’s about not being afraid but thinking about how



*"it's because we've become disconnected from the process of working with place that we have to come to it this way."*

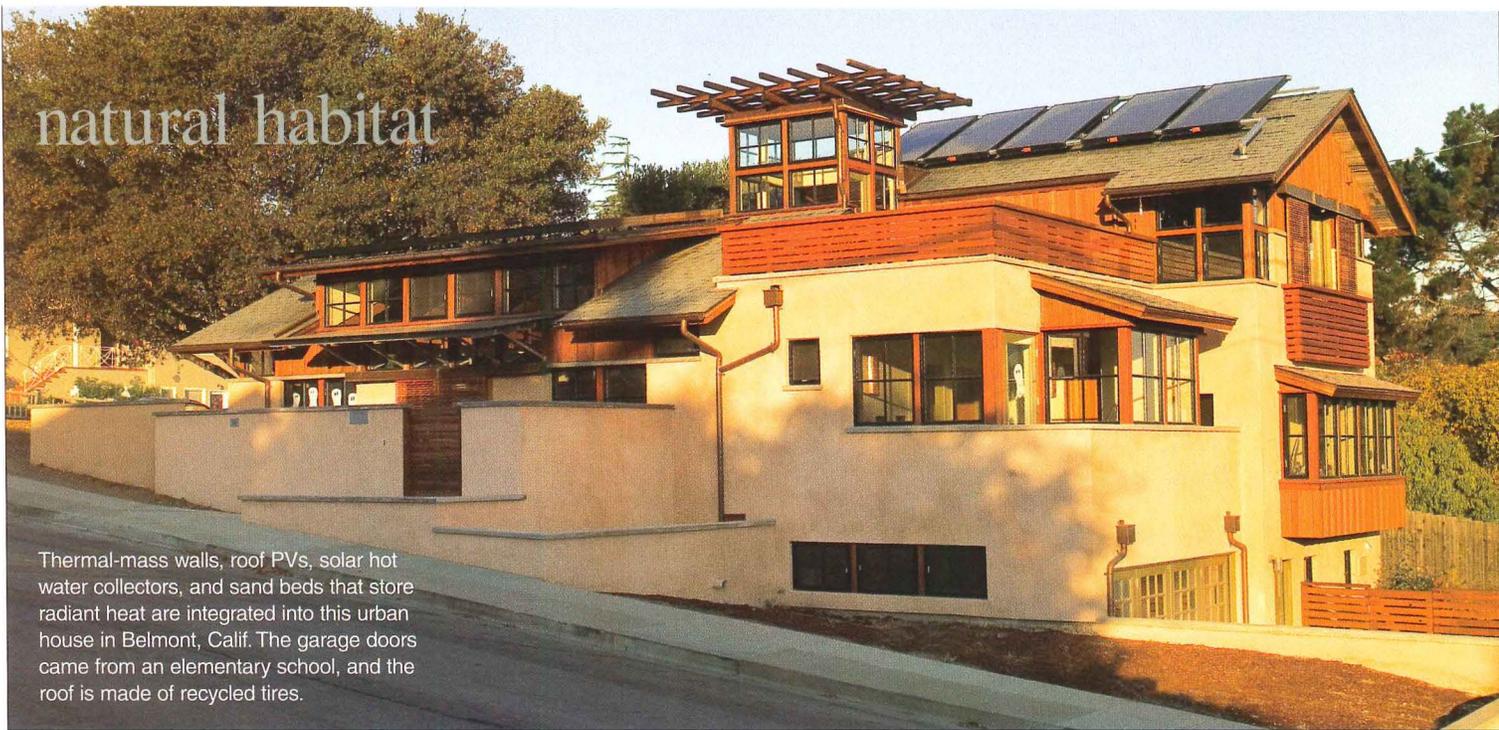
—david arkin, aia

At Hidden Villa Youth Hostel in the heart of Silicon Valley, Arkin and Tilt replaced the old gathering hall, positioning it for better solar exposure and opening up views from the cabins. The old exterior cladding reappears as wainscoting in the new building, and the old doors are built into a frame that folds open like a Shoji screen, merging the main space with the screened porch.

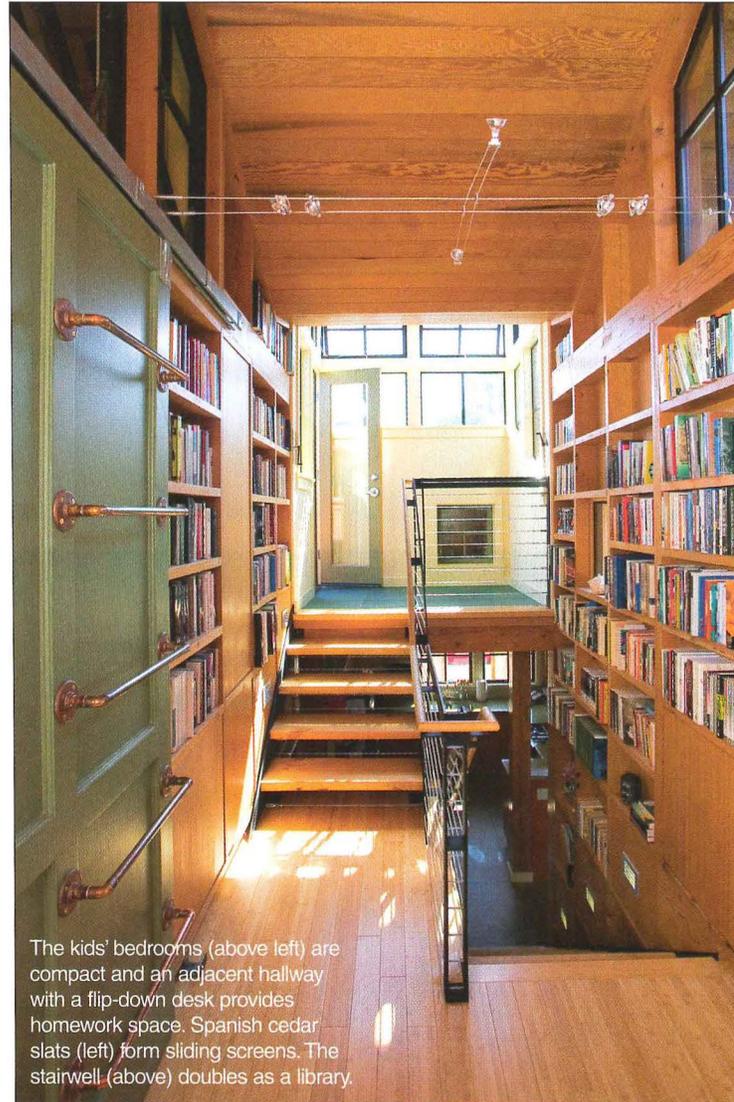
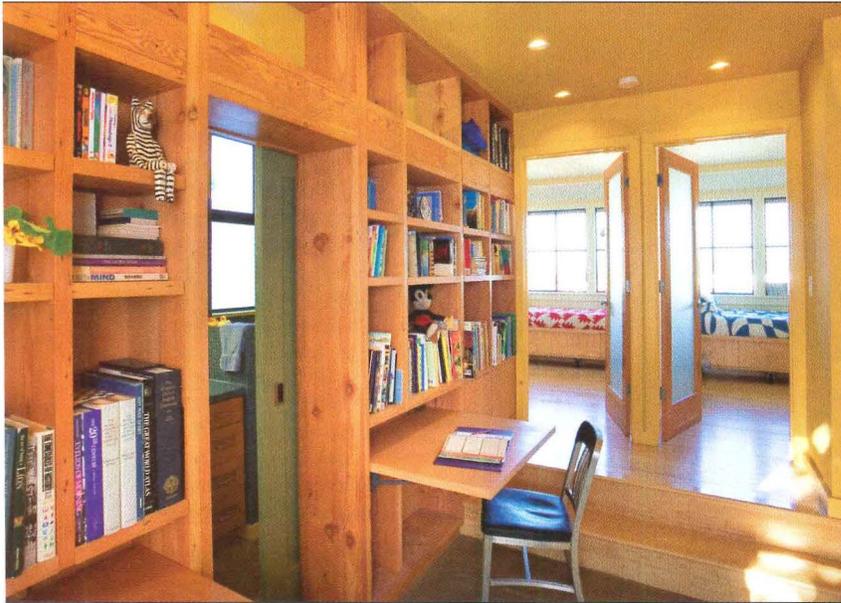


Photos: Ed Caldwell

# natural habitat



Thermal-mass walls, roof PVs, solar hot water collectors, and sand beds that store radiant heat are integrated into this urban house in Belmont, Calif. The garage doors came from an elementary school, and the roof is made of recycled tires.



The kids' bedrooms (above left) are compact and an adjacent hallway with a flip-down desk provides homework space. Spanish cedar slats (left) form sliding screens. The stairwell (above) doubles as a library.



*"more recently i've become aware of the impending crisis we face over energy resources." —david arkin, aia*

's working on all these different levels," Tilt says. "When you make some attempt to understand new ways of building, you're more open to the possibility of alternative solutions."

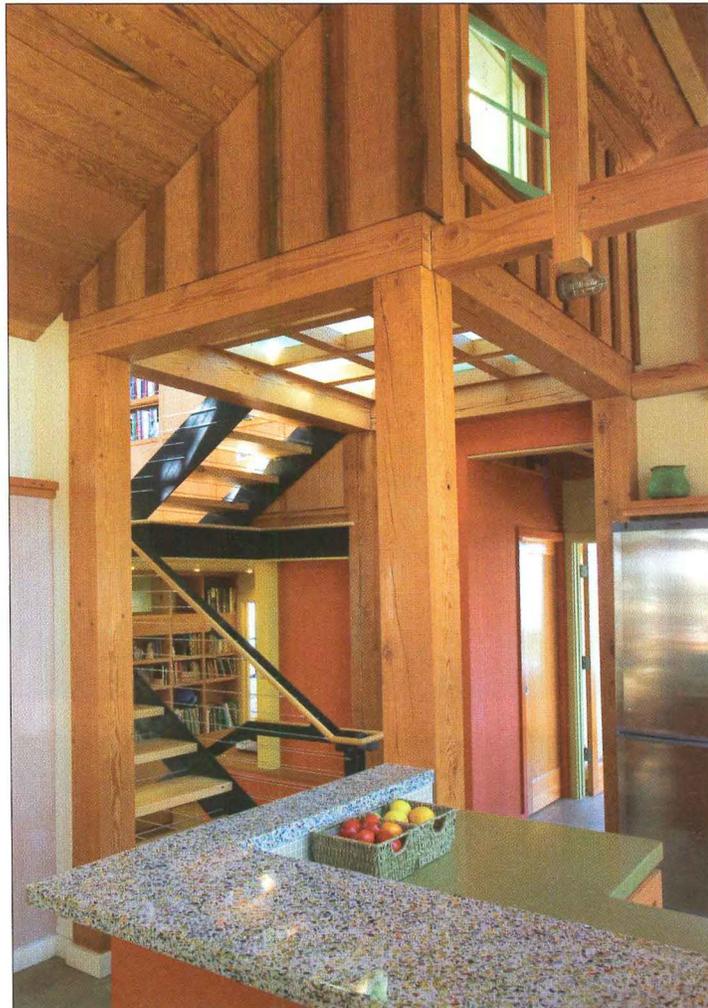
A native of Northern California, Tilt spent parts of her childhood living in Greece, Ghana, and Brazil, where her father worked as an engineer. Her twin interests in ecology and design took root in the early 1990s. After graduating from Princeton University she spent a year in London designing office interiors and spent another year doing construction management and shop drawings for a large Seattle construction firm. By 1990, she had caught the eye of Fernau & Hartman Architects in San Francisco and worked there for the next eight years. During that time, she also attended UC Berkeley's College of Environmental Design, earning her master of architecture degree in 1992. Her thesis explored the ecology of wood-frame buildings. "A lot of people at grad school were interested in ecology," Tilt recalls. "My sister works for Weyerhaeuser, and I got to thinking about what those issues mean."

Tilt also absorbed the design culture at Fernau & Hartman, founded in 1977 by Richard Fernau and Laura Hartman. "Coming out of the 1970s and '80s, green design was not concerned with aesthetics, only a technical undertaking," Tilt says. "But they saw it as much more, as something with a lot of life and soul in itself. At some point I began trying to interject more salvaged materials into the projects I was doing. They showed me, as Obie Bowman did for David, that you can do good design and incorporate environmental solutions into buildings. I don't see how you do good architecture without paying attention to these things."

### design jujitsu

Arkin Tilt's design process is far less linear than that of most architects. After gathering the usual information about program, topography, climate, and where the breezes and storms come from, the architects diagram the sun's path for clues as to what time of day and year solar power is available. Local buildings constructed before the days of mechanical heating and cooling also inform the design. "People have been shaping their buildings in response to climate and building with locally available materials for years in inventive ways," Arkin says. "It's because we've become disconnected from the process of working with place that we have to come to it this way."

After sketching out three very different design schemes, they and their clients choose one to develop, doubling up on room functions where they can. "The goal we take most seriously is to build as little as possible," Arkin says. As the design starts to gel, a study model is made out of cardboard and discarded Tazo tea boxes, using their colors and phrases to express the different kinds of materials and textures. "We're recycling while we're designing," jokes Arkin. Then,



A recycled glass countertop animates the kitchen. Some thoughtful details, such as a glass floor in the tower and operable transoms, bring light and air deep into the house.

Photos: Ed Caldwell

# natural habitat



Arkin and Tilt transformed a 1950s ranch house by reorganizing the floor plan and opening the roof with a venting cupola. A harvested madrone tree in the entryway reaches toward the trees outside.

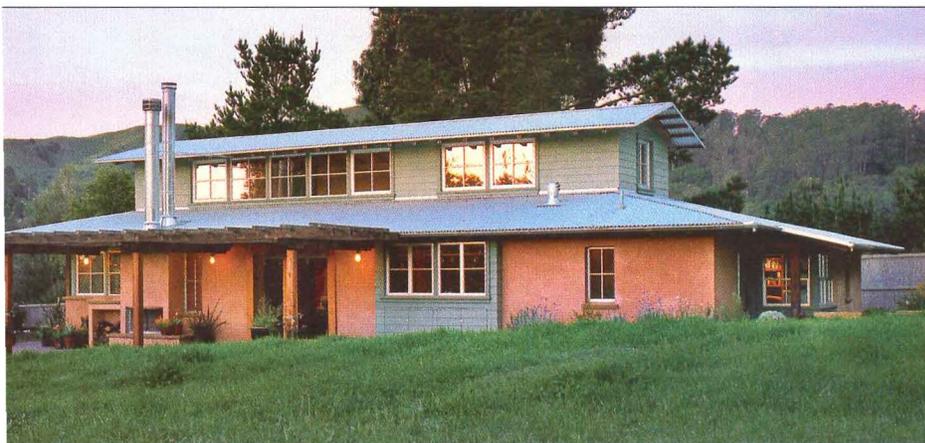
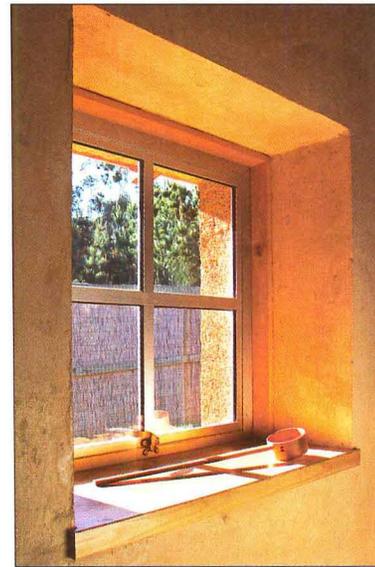
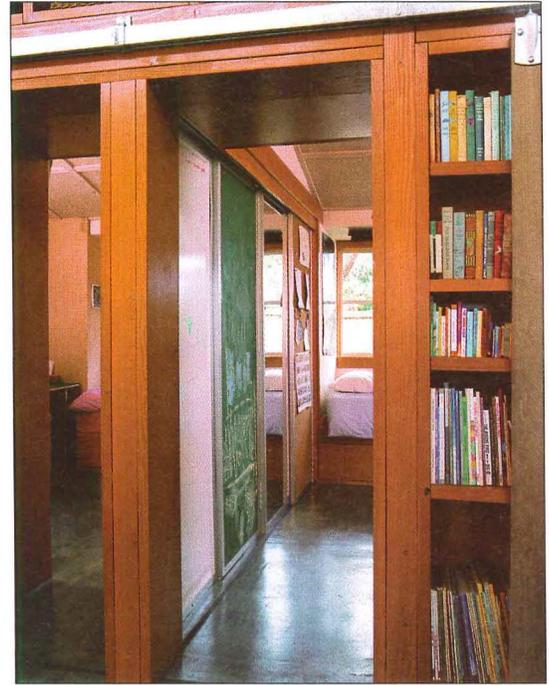
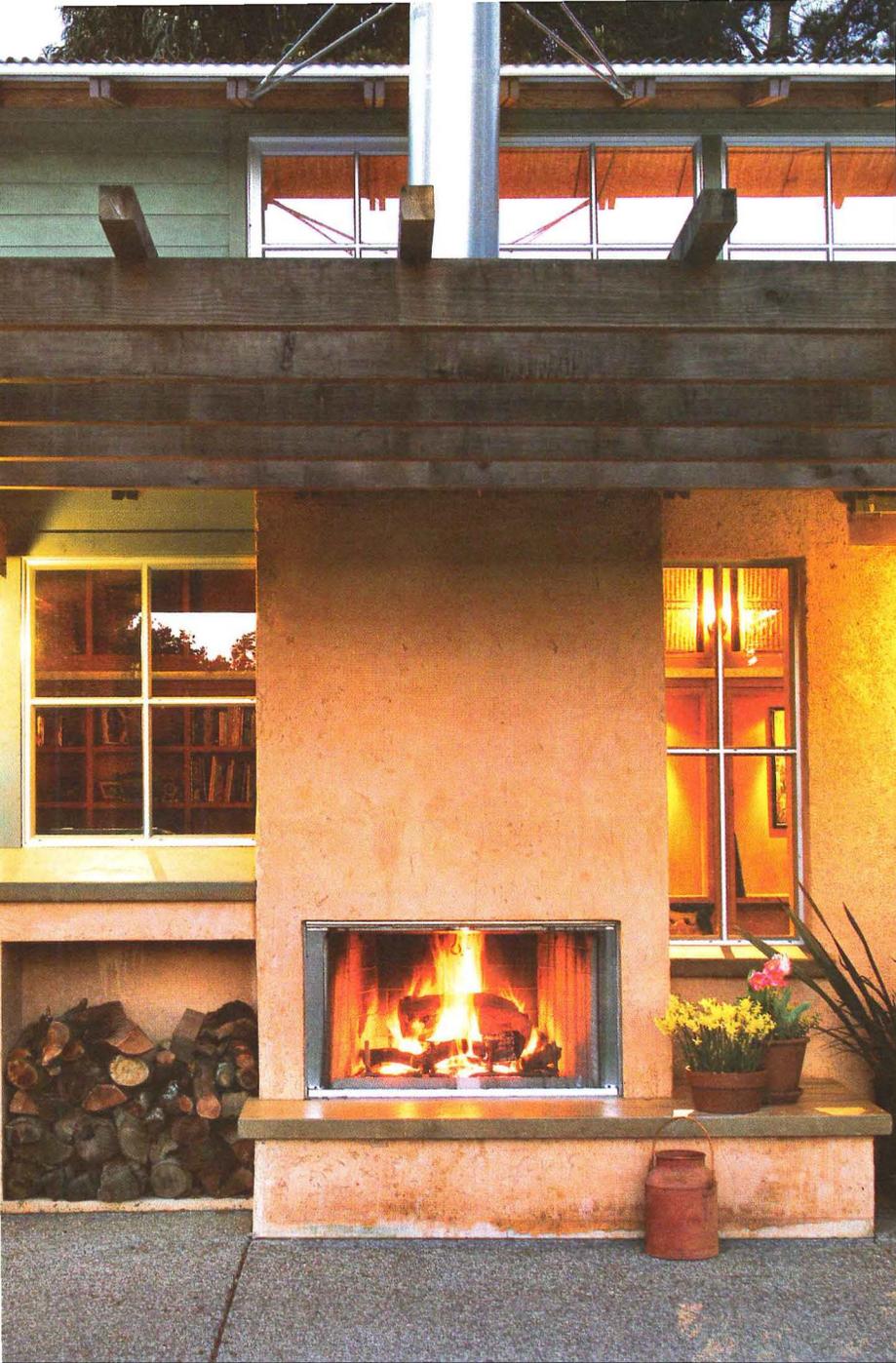
depending on the project, it's off to the Pacific Gas and Electric Co.'s Energy Center, where the architects use a heliodon to study the model's interaction with the sun. A spotlight shines on a table that rotates to mimic the sun's path across the house at different times of year. On one project, the heliodon helped the architects size the overhang on a cupola and observe the effects of clerestory windows on the spaces below. Often they'll make a time-lapse video to show the client, taken with a fiber-optic lens placed inside or outside the model.

Tilt insists that, rather than limiting the creative possibilities, green thinking subtracts data that's essentially arbitrary. "I always feel there's an overwhelming number of design possibilities out there," she says. "Sustainable design is a way of honing those possibilities. You throw out an idea and test it—how it works with the sun in winter—and that eliminates a lot of things. You narrow down pretty fast, which isn't to say there aren't still a million solutions. In that way I find sustainability a really useful approach."

Salvaged materials add serendipity and wit to every project. In a remodel, old decking may adorn a new wall; a glazed door will reappear on the other side of the house. On custom homes, the architects think salvage when they want to add interest to a simple space. "We're identifying items that have the potential for being met by a salvage material—interior or exterior siding, an old window or door—with the idea that we'll find something between the time of design and the time the builder needs it," Arkin says. "We've done it enough times that we're comfortable putting it in the plans; we'll build an allowance into the construction contract that covers it, and we'll help the clients find it."

The back half of their garage is stashed with a stretch of old bowling alley, fabulous metal doors, chalkboard slate, corrugated wire glass, and windows in shapes they like. And at some point in the design, clients may be taken on a treasure hunt for a funky fixture or countertop at one of the East Bay's well-stocked salvage yards. Arkin and Tilt accompany clients on the first trip, showing them what to look for and what to leave behind, like doors out of square. Over the years, they've developed an A-list of salvaged wood suppliers—a handy source for the 32-foot beams they needed for one recent project.

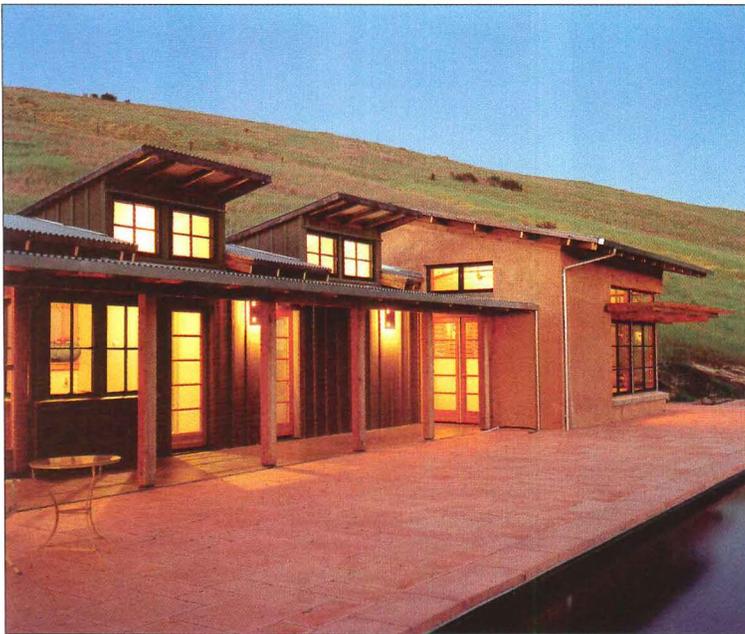
When specing old stuff, Arkin says they're always asking what's appropriate. "While we're inclined to take some risks, we don't do it without thorough understanding and research," he explains. "There are craftspeople we work with on a regular basis to implement those details." However, Tilt adds, "At some level it's not for everyone. You can't spec the thickness of a material, the kind of wood, or the color of tile. You have to be loose about it, do a little design jujitsu."



Photos: Ed Caldwell

This 1,860-square-foot house near Mill Valley is a showcase for eco-friendly design: passive solar orientation, radiant heat, cellulose insulation, and straw bale construction, covered with sprayed earth.

*“people have been shaping their buildings in response to climate and building with locally available materials for years in inventive ways.” —david arkin, aia*



The 18-inch-thick main walls of this vacation compound in Sonoma County are made from rammed earth. Smaller buildings house the bedrooms and baths. A 3-inch-thick bowling lane tops the kitchen island; old glass bottles form the bathroom counter.



*“when we founded this thing eight years ago, we decided we were going to wear our environmentalism on our sleeves rather than making it something we did on the sly.”—david arkin, aia*

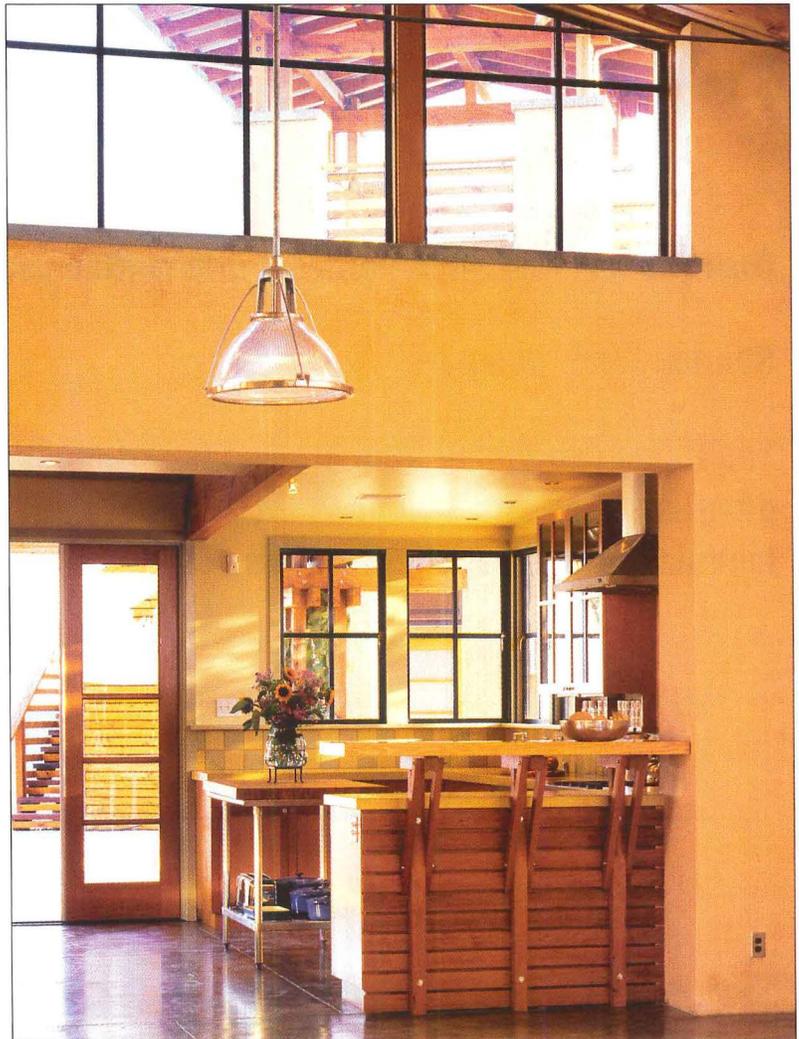
## beyond the bale

Those slightly offbeat flourishes get played out on the larger scale, too. As founding members of the California Straw Bale Building Association, Arkin and Tilt have constructed more than a dozen buildings from straw, which is super-insulating, durable, and abundant. The walls are clad in a vapor-permeable, sprayed-earth technology known as *Pisé*. Utterly maintenance free, it's a warm natural finish, sometimes with salmon- or ochre-colored striations, and can be troweled smooth or scraped vertically for a rough finish. It's possible that their work in straw bale, a material devoid of standard detailing specs, has pushed Arkin and Tilt to reinvent just about everything they get their hands on. Solar panels often double as shade structures. A solar-panel awning shelters their office entryway and announces the firm's interest in solar energy. The two have also developed seasonally adjustable brackets for horizontal and vertical mounting that they've dubbed *Arc 'n'* Tilt, tongue firmly in cheek.

With a project architect, a draftsman, an office manager, and occasional interns, the firm intends to lead sustainable design into an ever more sophisticated future. Arkin and Tilt cultivate a variety of connections that keep them on their toes. Arkin is past president of the national office of Architects/Designers/Planners for Social Responsibility. Its Northern California chapter established a Green Resource Center in downtown Berkeley and produces an annual trade show called Green Materials Showcase. He also teaches at the Solar Living Institute, and both teach and lecture at UC Berkeley. “More recently I've become aware of the impending crisis we face over energy resources,” Arkin says. “Buildings offer an opportunity to reduce our dependence on oil, because they use 35 percent of the energy resources in this country. We as architects have a responsibility to make that transition possible by designing self-sufficient projects.”

As eco-conscious design catches on, Arkin and Tilt's decision to make their firm a showcase for the environmental cause has turned out to be a smart one. “Our clients have a world view that's much bigger than just themselves,” Tilt says. “That's the delight of what we do—the wonderful people we meet.” Two such former clients are Randy Hester and his wife, Marcia McNally, both professors at UC Berkeley. Arkin and Tilt added an efficient addition to their tiny 1920s bungalow, animating it with clerestory and transom windows and innovative materials such as a terrazzo-like countertop of crushed automotive glass. “They're just brilliant at inventiveness at the smallest scale,” Hester says. “Those countertops make me smile almost every day. Anni and David reduced our energy consumption by 40 percent, and did all those good things. But mostly their design just gladdens our lives.” **ra**

*Sheryl Weber is a contributing writer in Severna Park, Md.*



Salvaged cedar slats add a graphic element in the kitchen and bathroom. All of the beams in the house came from a dismantled military building.

Photos: Ed Caldwell

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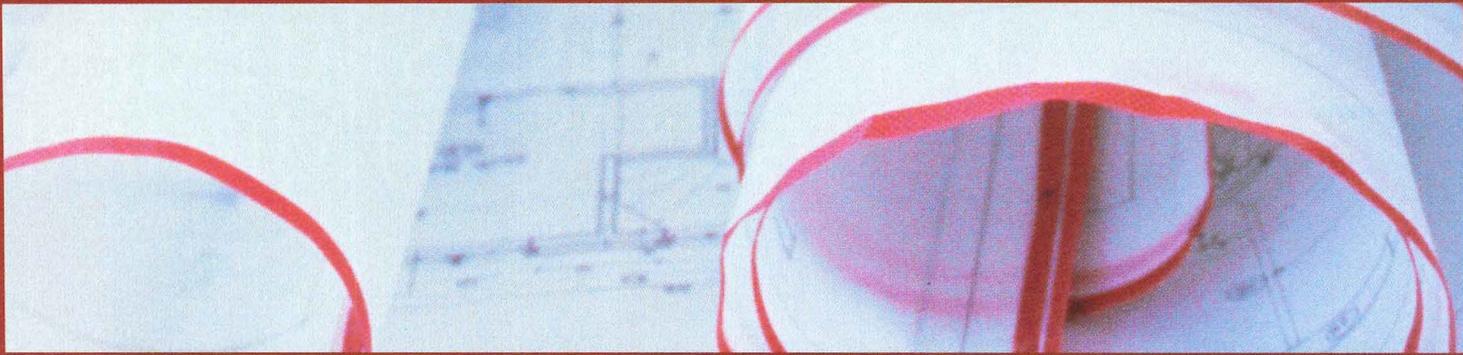
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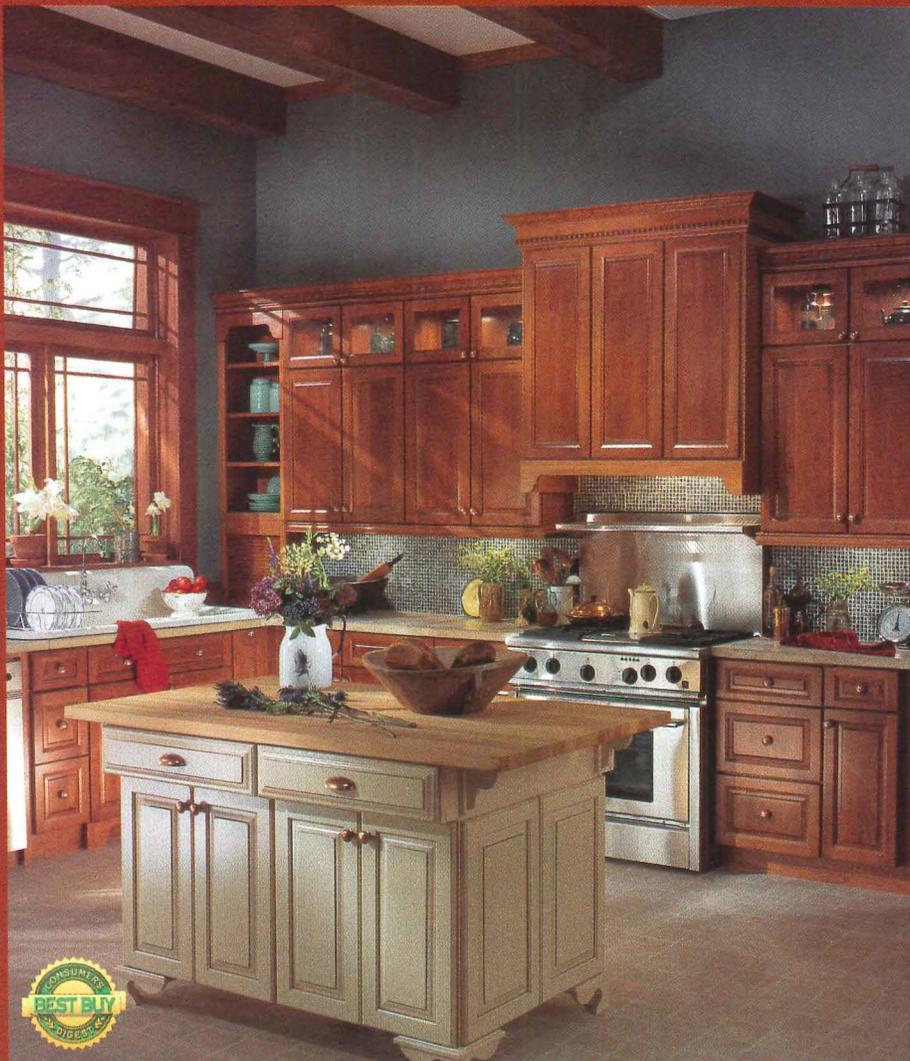
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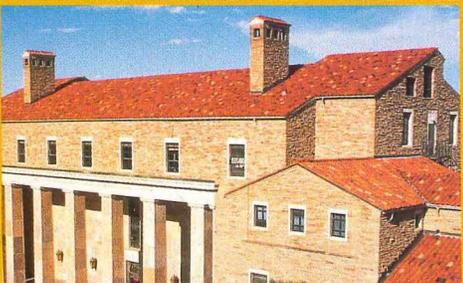
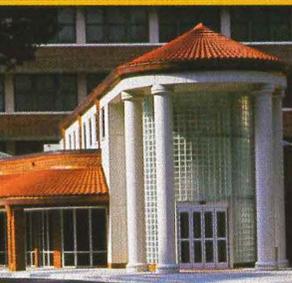
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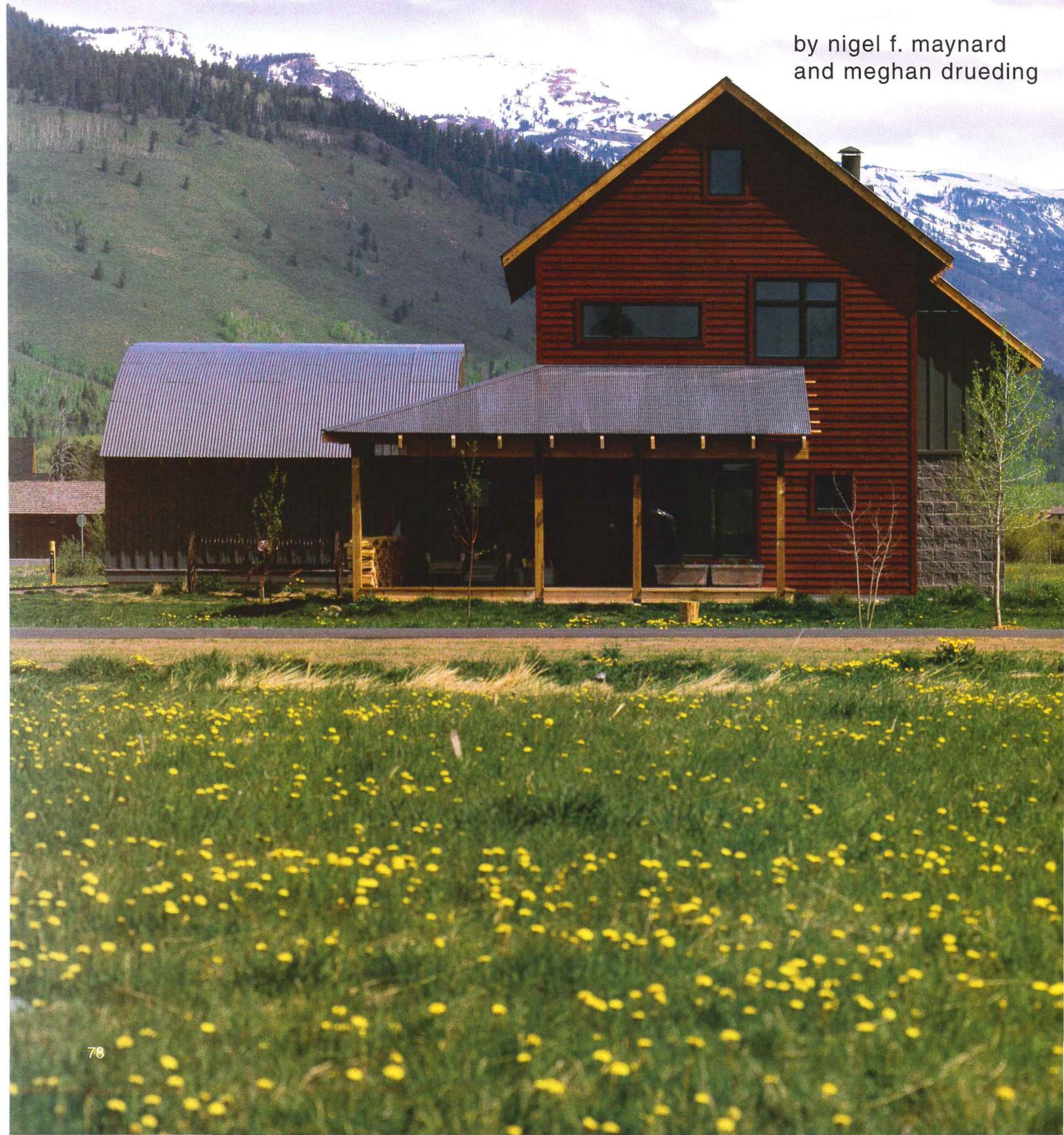
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# mindful choices

when going for green, every decision is earthshaking.

by nigel f. maynard  
and meghan drueding



## duncker residence, wilson, wyo.

**architect:** paul duncker, handson design and peggy duncker, tobler duncker architects, wilson

**general contractor:** Paul and Peggy Duncker, Wilson; **project size:** 1,900 square feet; **site size:** 0.5 acre; **construction cost:** \$95 per square foot; **photos:** Greg Hursley



## green pastures

It's one thing for architects to design environmentally friendly houses for well-heeled, right-thinking clients; it's another for them to put their own money where their principles are.

Material decisions, budgetary limitations, and faith in emerging technologies take on new meaning when you're footing the bill and living with the results. The advantage is that the money goes exactly where it's needed most. That's how Peggy and Paul Duncker managed to design and build this energy-efficient green home for an astoundingly thrifty \$95 per square foot in the pricey Jackson Hole, Wyo., area

Transplants from New York City, the Dunccker are environmentally conscious architects who are also acutely sensitive to context. So they shunned the Miesian glass box and instead drew inspiration from the site's agrarian roots. "Most of the buildable area is old agricultural fields," says Paul. Located about a 1/4-mile from the Teton Mountain range, the site nestles into the valley floor "in the lowest and coldest point in Jackson Hole Valley," adds Paul, a principal at HandsOn Design; his wife, Peggy, is a principal at Tobler Duncker Architects.

To combat the harsh climate, the couple built the house's shell with double-glazed low-E windows and structural insulated panels (SIPs)—rigid foam insulation sandwiched between two layers of plywood or oriented strand board. The system yielded an R-23 wall and an R-40 roof. "When we compared SIPs to [building with] stick framing, sheathing, and housewrap, there were

# mindful choices

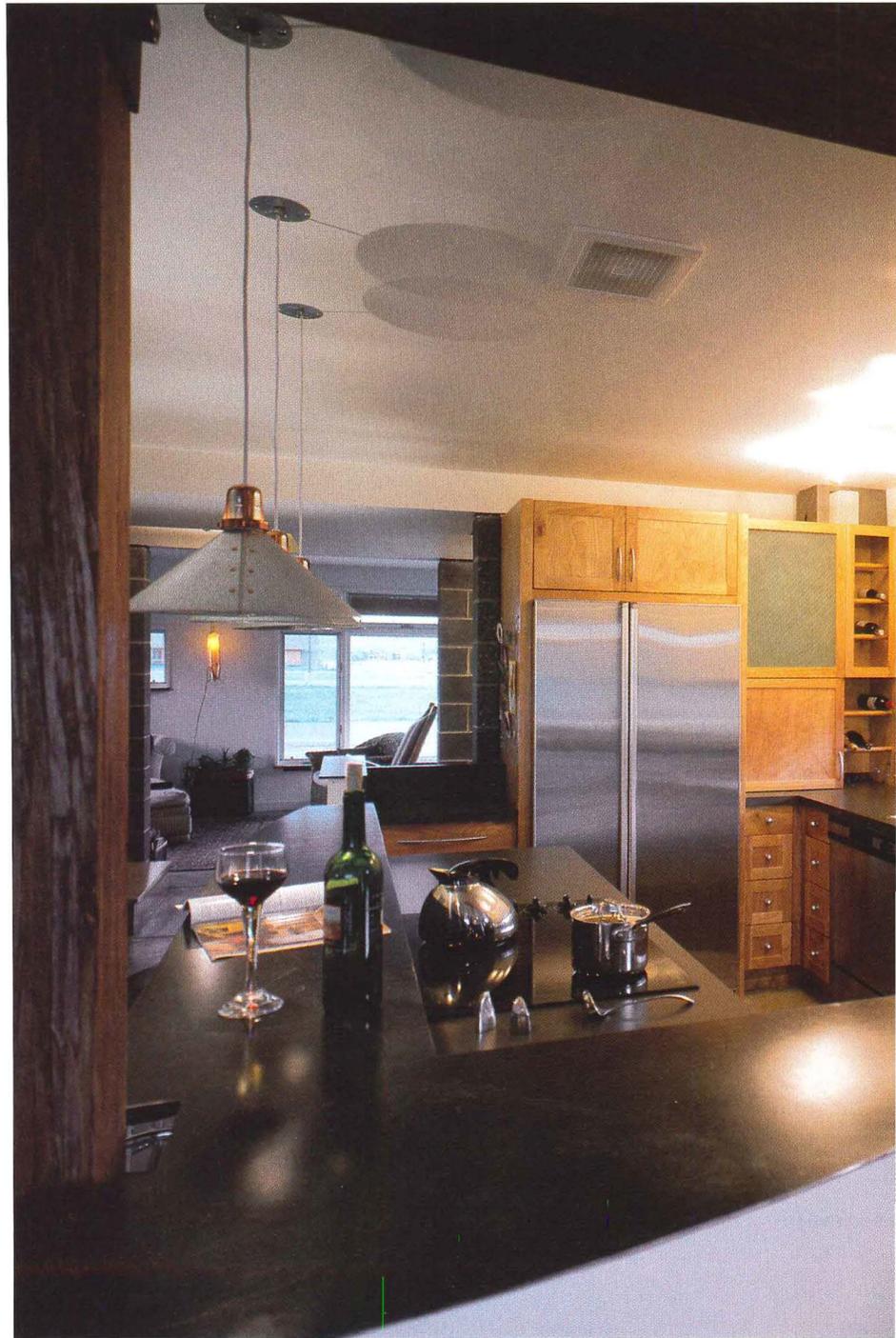
“a true green house can look like anything you want want it to.”

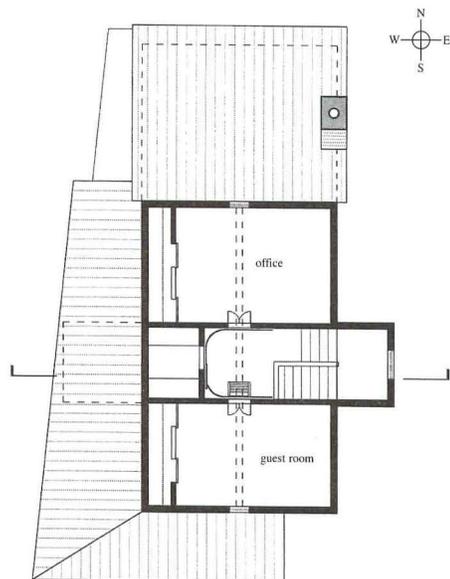
—paul duncker



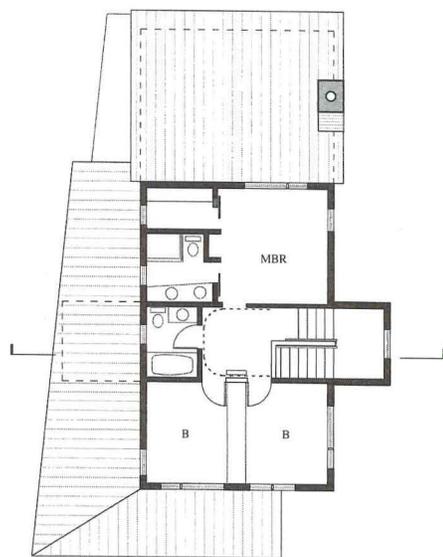
A windowless powder room (above) tucked below the staircase uses sand-blasted wire safety glass risers to borrow daylight.

The kitchen's industrial chic elements, such as steel plate countertops, parallax post and beam, and concrete slab floors contrast with the exterior's farmhouse aesthetic.

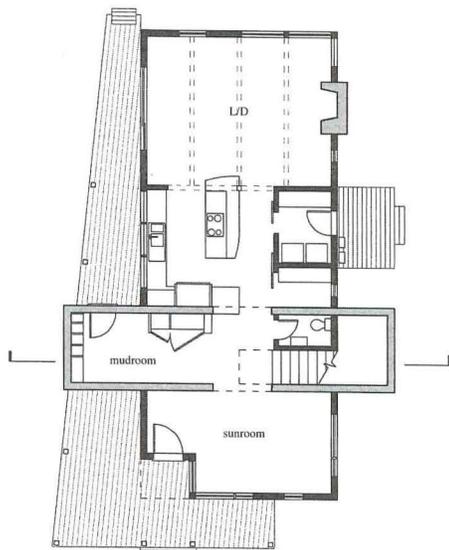




loft



second floor



first floor

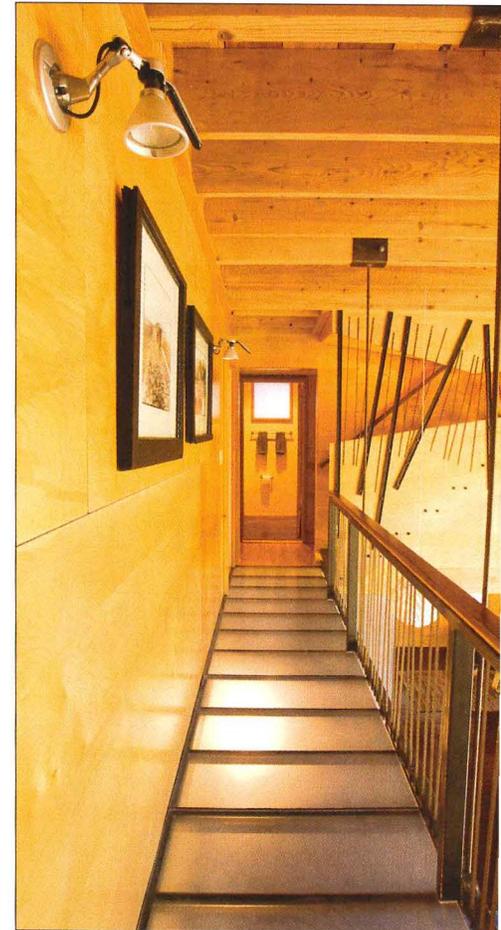
significant benefits,” Paul says. Along with providing the tight envelope, SIPs minimized the use of solid timber. “Instead of a stud every 16 or 24 inches,” Paul explains, “the walls only have a spline every 8 feet.”

The Dunccker's went an extra step, rejecting a conventional HVAC system in favor of a ground-source geothermal heat pump for radiant heat. Although it's one of the most energy-efficient systems around, it's also expensive. At \$10,000, the Dunccker's system cost about \$3,000 more than forced-air, but a \$3,000 credit from the local utility covered the difference. “The electricity just runs the machinery,” says Paul.

The mudroom features post-tension concrete masonry units filled with a spray foam insulation made from tree sap. Left unfinished, they eliminated the need for paint. Further winnowing the new timber order, the Dunccker's used parallam posts and beams, engineered floor joists, MDF cabinetry, and reclaimed wood elsewhere in the house.

Budget challenges notwithstanding, the home was an excellent technical exercise for the couple, who've been adding more green principles to their respective practices. Their stealth agenda was accomplished too: to demonstrate that an earth-friendly house doesn't have to look, well, earthy. “That's an inaccurate preconception,” says Paul. “A true green house can look like anything you want it to.”—*n.f.m.*

mindful choices



An oversized south-facing window (left and right) provides supplementary passive solar heating, flooding the double-height concrete-floored living room with sunlight. The second-floor catwalk borrows the extra warmth and illumination and continues the building's theme of transparency and opacity.

## nowhaus 01, minneapolis

architect/builder: locus architecture, minneapolis

landscape architect: Shaw Design Associates, Minneapolis; size: 3,089 square feet;

construction cost: \$130 per square foot; photos: John Christenson



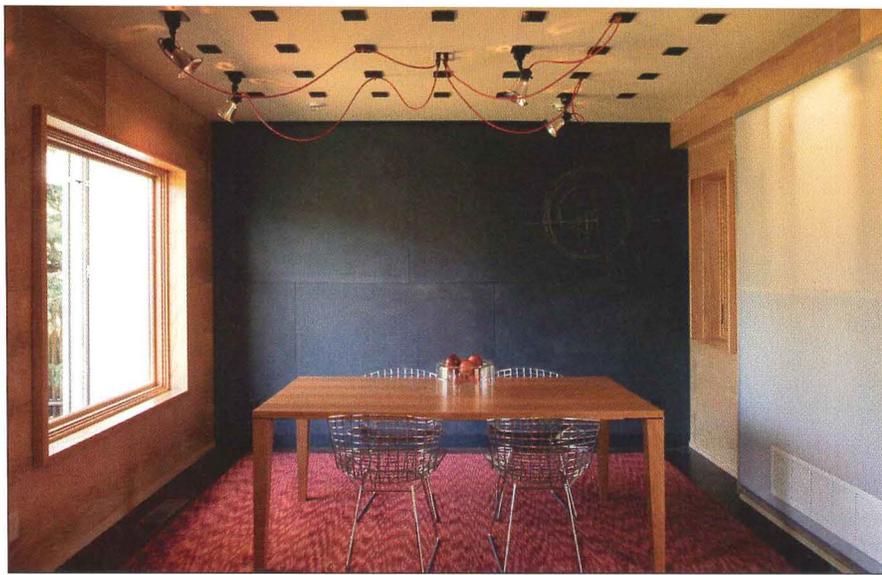
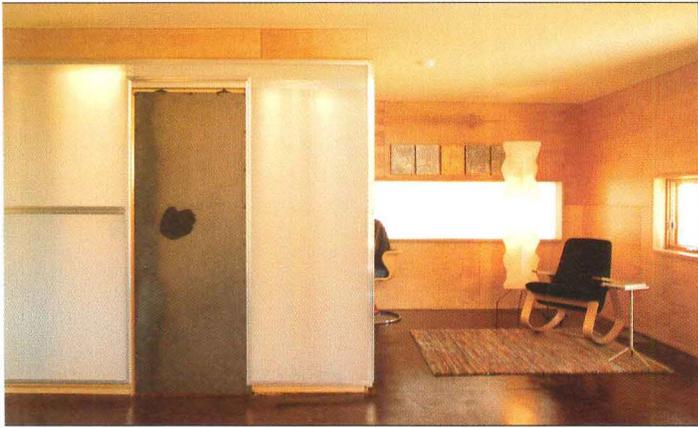
## saving grace

remember your grandmother who never threw anything away? She saved old magazines, used wrapping paper, and out-of-style clothes because she never knew when she might need them. Wynne Yelland, AIA, and Paul Neseth, AIA, know how she felt. The partners at Minneapolis design/build firm LOCUS Architecture habitually hang onto leftover building elements for possible future use. “We keep stuff around, in my garage and Wynne’s garage and our construction supervisor’s garage,” says Neseth. “It’s both an asset and a disease.”

When their firm experienced a slowdown in 2003, it seemed like the perfect time to try out a long-cherished idea—a sustainable, progressively designed house, built on spec, that would showcase their ability to turn salvage into splendor. They bought an outdated 1950s ranch house in Minneapolis, dubbed it nowhaus 01, and started in on demolition. “We had a lull in our construction schedule, and it gave us something to keep our guys busy,” says Yelland. They remodeled the old house substantially, adding a floor and a half and opening up the plan. And they kept and reused original fixtures, framing lumber, and sheathing, designing a temporary rack in the garage to keep salvaged parts organized and close at hand.

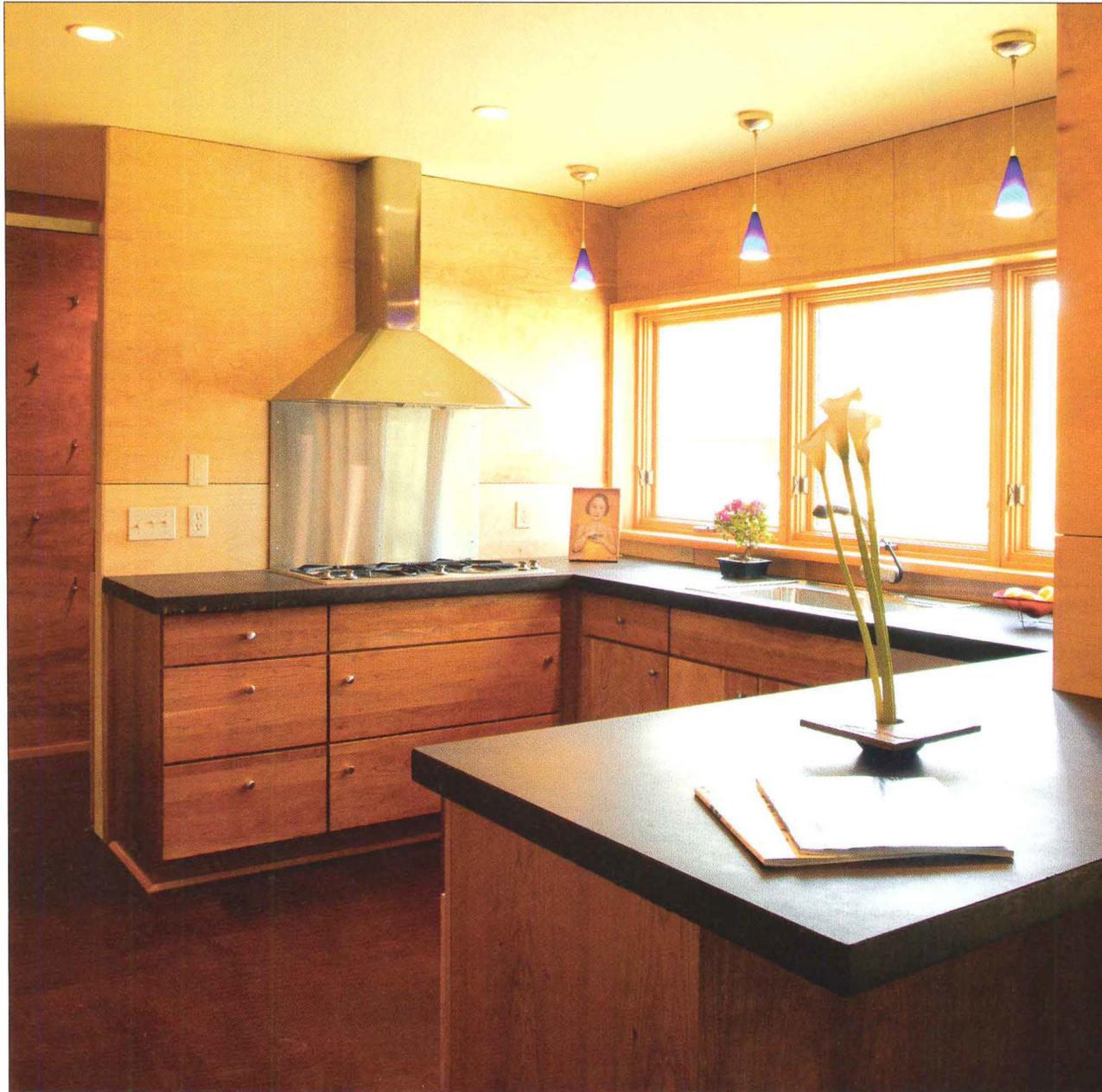
In addition to its own stockpiles, LOCUS also seeks out reclaimed materials in the off-cut and remnant stacks at local factories. During construction of nowhaus, for example, an artist friend of Yelland and Neseth’s tipped them off to a local

# mindful choices

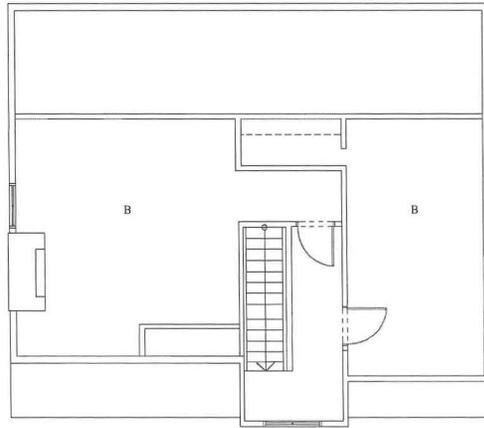
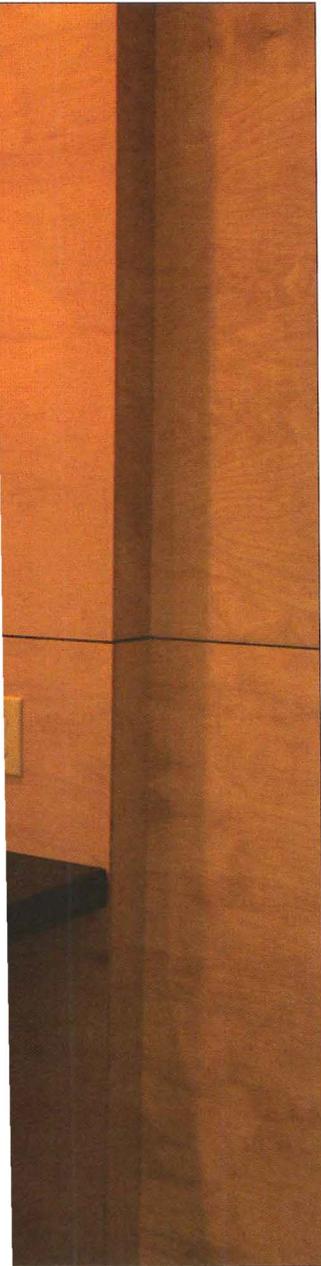


“if you build a project that’s beautiful, people will want to take care of it longer.”

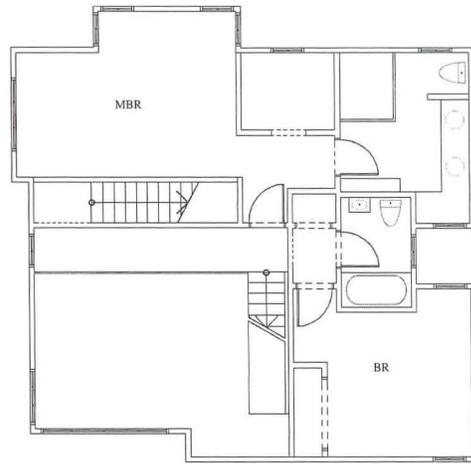
—wynne yelland, aia



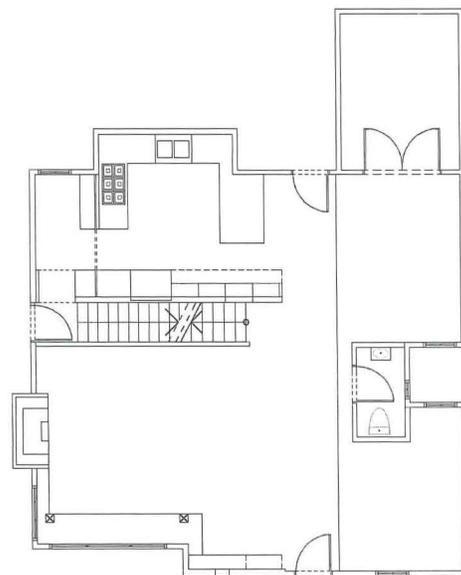
LOCUS minimized wall surface area in the open kitchen and dining room (below and left) to reduce the amount of finish product required. Details such as magnetic light fixtures (left) and a translucent bathroom enclosure (far left) confer a custom cachet on the project.



third floor



second floor



first floor

billboard company with a warehouse full of scraps. The discarded billboard pieces ended up as backing for the house's translucent plastic siding, and the resulting ghostlike graphics patterning the exterior walls became one of the project's most striking features. Other recycled materials came from a local salvage contractor. LOCUS's design/build nature gives it the ability to accommodate found building elements at any stage in the construction process, which cuts down on material costs, jobsite waste, and embodied energy.

The architects placed nowhaus's insulation outside its framing to provide an unbroken layer of warmth. High-efficiency Loewen windows, one of their favorite products, also help lower energy use. The billboard-backed siding floats an inch and a half off the project's structure to guard against water damage. "If any moisture gets behind the siding, it will evaporate in that dead space before it reaches the frame," says Neseth. "So the siding prolongs the life of the house." The longer the house lasts, he and Yelland reason, the fewer of its parts will end up in landfills.

The home's many custom details serve no particular green purpose—at least, not at first glance. "Our contention is that if you build a project that's beautiful, people will want to take care of it longer," says Yelland. "To us, that's sustainable." He and Neseth are asking \$829,000 for nowhaus 01, and they're currently looking for land for nowhaus 02.—*m.d.*

mindful choices

A photograph of a bedroom interior. The ceiling is a complex, vaulted structure made of light-colored wood, with a diamond-shaped pattern of shingles. A wood-burning stove is positioned in the center of the room, with a chimney pipe extending to the ceiling. A bed with white linens is in the foreground, enclosed in a wooden frame. Large windows and glass doors provide a view of the outdoors. The walls are a light color with a horizontal wood panel at the base. Two tall, narrow stone pillars are placed on either side of the stove. The floor is made of dark, large tiles.

Keith Moskow, AIA, and Robert Linn liken the Arbor House's curvilinear building components surrounded by grape fences to fish caught in a net. Diamond-shaped scale-like roof shingles atop the house and two open-air climbing towers reinforce the fish metaphor.

## arbor house, chilmark, mass.

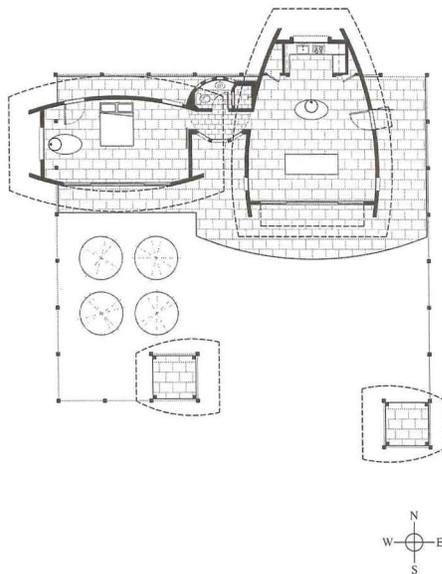
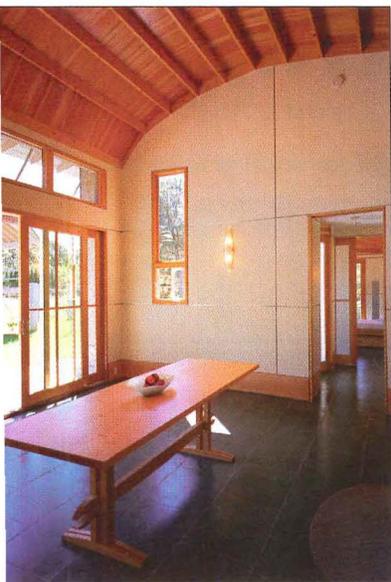
**architect:** moskow architects, boston

**builder:** McGrath Carpentry Service, Quincy, Mass.; **structural engineer:**

Reginald Roome, Boston; **environmental consultant:** Mark E. Kelley,

The Hickory Consortium, Harvard, Mass.; **size:** 800 square feet; **construction**

**cost:** Withheld; **photos:** Greg Premru Photography



## sun catcher

The Massachusetts island of Martha's Vineyard may be a summer paradise, but come winter, bone-chilling New England weather takes over. Boston architect Keith Moskow's clients visit their Vineyard vacation home year-round, though, and they wanted a four-season guesthouse to go with it. The catch? They envisioned a building that could be entirely heated and cooled without fossil fuels. They approached Moskow, AIA, and asked him to design them a passive solar guesthouse.

Working with environmental consultant Mark Kelley, Moskow and partner Robert Linn followed basic passive solar design principles. They aligned the house along an east-west axis, orienting windows toward the south for solar gain. Kelley assigned them a ratio of eight square feet of thermal mass surface area to one square foot of glazing, a formula they faithfully adhered to. The 800-square-foot guesthouse's slate floors make up most of its thermal mass, in addition to concrete subfloors and chimneys. "The mass stores heat to be used later," says Kelley. "It also absorbs heat during the daytime so the house doesn't get too hot."

Two wood-burning stoves serve as supplemental heat sources. "The idea is that in winter the house will be warm when one arrives," says Moskow. "Then the guests can tweak it up with the wood-burning stoves." In another low-tech, high-yield maneuver, an inline duct fan takes heat that's risen to the ceiling and circulates it back down to the floor. A "summer fan" performs in a similar fashion, forcing warm ceiling air out through a chimney. Carefully planned thermal breaks and a well-insulated foundation and footing help the house maintain a high level of energy efficiency. And a tankless hot-water heater provides warm water on demand, rather than consuming energy 24 hours a day. No matter how strong winter winds blow, this low-impact little house will block their chill.—*m.d.*

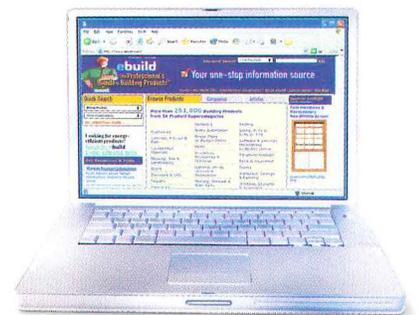
In the winter, the house will be warm when one arrives."

—keith moskow, aia



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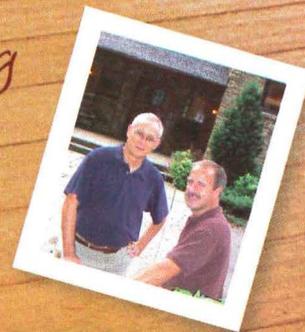
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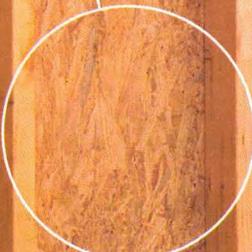
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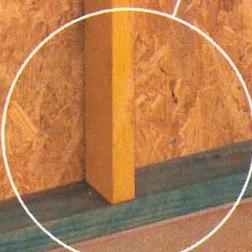
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# from the ground up

new bio-based building products look good while doing good.

by nigel f. maynard

As public interest in eco-friendly houses grows, so too does demand for green building products. Made with ingredients that are less harsh than conventional sources, these materials are easier to live with and, presumably, healthier for the environment. Presumably. And that's the problem. Defining what's truly green and what's merely green-tinged isn't easy. Is the priority for your spec energy conservation, sustainable origins, or health concerns? Should it also be recyclable and easy to maintain? Or is it simply enough that it lasts a good long time and will be preserved and cherished by others? Well now there's another shade of green on the rise for your consideration: bio-based building products.

## natural selections

Unlike products that use so-called safer man-made solvents, bio-based materials derive primarily from natural raw ingredients, making them as benign as their origins. Once a small subcategory, bio-products now cover a gamut of building applications, among them panels made from agricultural waste



Connie Moberley

Bio-based building products perform best when they co-exist with thoughtful design, says architect Peter L. Pfeiffer. His own residence (above) integrates appropriate solar orientation, large roof overhangs, and light-colored exteriors. The home achieved the highest rating in the history of Austin's Green Building program.

fiber, soybean foam insulation, and paints and adhesives almost safe enough to swallow. Forward-thinking architects, builders, and even consumers have known about some of these products for years but now have a more mature industry to plumb.

Architect Theresa K. Phelan uses nature-based products in as many projects as she can. The president of Issaquah, Wash.-based Living Shelter Design Architects enjoys the products' intrinsically different look and believes they're clearly better for the environment and much healthier for her clients. Among her favorites are earthen-based plasters and water-borne finishes.

Bio-based products also

promise performance advantages over conventional specs. "These types of products often have characteristics that are better [than traditional products]," says architect Nancy Malone, a senior associate and product researcher at Siegel & Strain in Emeryville, Calif. Malone says, for example, that wheat-based paneling is "hard and durable and has a unique aesthetic that other paneling does not have."

Wane Fuday, CEO of Lake Oswego, Ore.-based Humabuilt, a healthy building systems supplier, agrees. His company offers what he calls the first affordable interior door made of wood veneers blessed by the Forest Stewardship Council, engineered cores of wheat

(a rapidly renewable fiber), and water-based adhesives. "At least 85 percent of our doors are made with a product that would have been thrown away," he says. He also claims they're much denser than other products on the market, resulting in greater sound insulation and warp resistance.

Another agriculture-based building material is Kirei by San Diego-based Kirei USA. This eco-friendly building panel is made of 100 percent sorghum stalks, a drought-tolerant and water-conserving grain, and formaldehyde-free adhesives. What's more, the company says, the product removes stalks from their usual fate as landfill waste,

*continued on page 94*

another eco-good deed. The panel is well suited to architectural applications such as cabinetry and countertops. Similarly, Portland, Ore.-based Isobord Enterprises fabricates particle board from straw.

Sprayed polyurethane foam, a petroleum-based product, is a popular insulation material among architects who seek an extremely tight house. But green-minded designers can spec a natural alternative in BioBase 501, a spray-in-place insulation made from soybean oil. Manufactured by BioBased Systems in Rogers, Ark., the product emits no VOCs or chlorofluorocarbons, and contains no formaldehyde. "It behaves much like petroleum-based plastic foam, without any of the environmental side effects," the company says.

**bio debatable**

Paints comprise perhaps the most prominent eco-product category in the mainstream. But their green rigor is debatable, says Amrita Khalsa, vice president of marketing at Santa Fe, N.M.-based EcoDesign, a company that specializes in nontoxic paints and wood finishes.



Courtesy BioBased Systems

BioBased Systems says its soybean oil-based foam insulation emits no volatile organic compounds or other harmful emissions.

"A lot of these paints still have solvents that are as harmful [as the VOCs] and worse. Some have solvents to make the paint dry faster, glossy, or flat." Her company's BioShield line of natural paints and finishes is made from naturally-derived raw materials, including citrus peel extracts, seed oils, tree resins, and tree and bee waxes, among others. The Old Fashioned Milk Paint Co. in Groton, Mass., also offers nontoxic paint made with all-natural milk protein, lime, clay, and earth pigments.

No matter how seemingly benign, earth-based products have their own set of issues. For one, architects can become distracted into thinking the products are primary problem-solvers. But loading up on bio-based materials in an otherwise energy-inefficient home is like putting a Porsche engine in a Pinto. "I like to call it the vitamin-enriched cigarette," says Peter L. Pfeiffer, FAIA, principal of Barley & Pfeiffer Architects in Austin, Texas. "A cigarette enriched with vitamin C is still not good for you." The architect says green products must work in conjunction with thoughtful design. So, for example, Pfeiffer says, if you're concerned about off-gassing paint products, you should also ensure the humidity is under control in the house, because one has a great effect on the other.

"Too many architects and builders and homeowners lose sight of the forest through the trees by getting



Courtesy Old Fashioned Milk Paint Co.

Milk paint contains only all-natural ingredients such as milk protein, lime, clay, and pigments. It comes in 16 colors.

too hung up on nifty sounding green products," he says. "The value of green products always has to be put in perspective to the overall goal." Pfeiffer says 95 percent of green building benefits are found in the first 5 percent of a house's design process, so pay attention to proper solar orientation, adequate roof overhangs, light-colored building exteriors in warm climates, and appropriately sized HVAC systems.

Other concerns are durability and maintenance. Will the products hold up as well as conventional materials or require more time and perhaps additional, volatile products to maintain? "It is important to look at the benefits and drawbacks of each," says architect Joe Prudden, principal of Salt Lake City-based Ark-Ology. "Each material has its correct application, so it is important to use it appropriately."

Susan A. Maxman, FAIA, principal of Susan Maxman & Partners, Architects in Philadelphia, says many green products are equal to, and sometimes better than, conventional ones. Theresa Phelan sees it another way. "While the performance of these products has been fairly comparable, they are not as bulletproof," she says. "But

they're easier to repair." For instance, a hole in a plastic product is harder to patch than one made from a natural material, she points out. Architects and homeowners need to get over the notion of the silver bullet maintenance-free product, she continues. "People want a maintenance-free home, but it's just not possible. It covers up something going on under the surface. Natural products have more of a permeability factor, which is a healthier thing."

**cost and effect**

In many cases, nature-based products will be pricier than their conventional counterparts, so architects need to educate clients about the merits of their selections. Prudden appeals to his client's interest in a healthier space; Phelan encourages people to look at the long-term savings as well as the health benefits.

Because many bio-based products are fairly new, it pays to research them thoroughly. "A third-party certification is a good way to know what you're getting," says architect Nancy Malone. Ultimately, it's worth the extra effort to give your clients the healthiest possible products to go along with your thoughtful design. **ra**



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# architects' choice

product picks from the pros.



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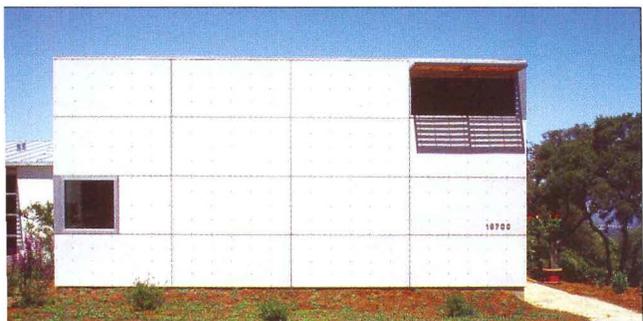
colors to suit different specs. Colors for its

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## slide away

Fleetwood Windows and Doors is highly regarded for its energy-efficient windows and sliding glass doors. MinlDay is also a fan of the company's breadth of offerings. The Norwood 3070-EX multi-slide door (seen here on the Burt Pool House) allows the architects to design houses with a stronger connection to the great outdoors. "The [door] opening we were looking for was approximately 8 feet tall by 15 feet 6 inches wide, and the Fleetwood door worked perfectly," says Jeff Day. The firm also likes the track's low profile. Fleetwood doors answer a range of performance specs and come with anodized and painted finishes. Fleetwood Windows and Doors, 951.279.1070; [www.fleetwoodusa.com](http://www.fleetwoodusa.com).

## meritorious minerit

Like many architects, MinlDay appreciates the performance characteristics and easygoing industrial aesthetic of fiber cement panels. One of the firm's favorites is Minerit (shown here on the firm's Misha/Twadell project) from American Fiber Cement Corp. Made of cement and cellulose fibers, Minerit is moisture- and impact-resistant, smooth, and strong. "We selected the panels for both their noncombustible properties in this fire-hazard area [California] and for their very clean, smooth appearance," says Min. Minerit comes in an interior or exterior version, a variety of thicknesses, and in 4-by-8-foot and 4-by-10-foot sizes. American Fiber Cement Corp., 800.688.8677; [www.americanfibercement.com](http://www.americanfibercement.com).

—nigel f. maynard

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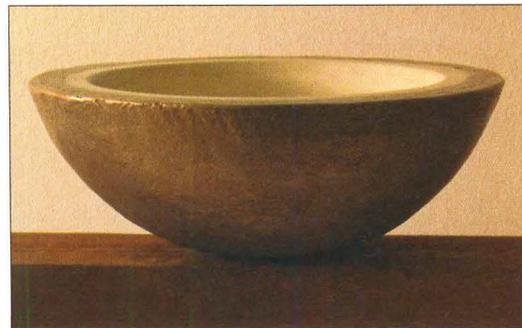
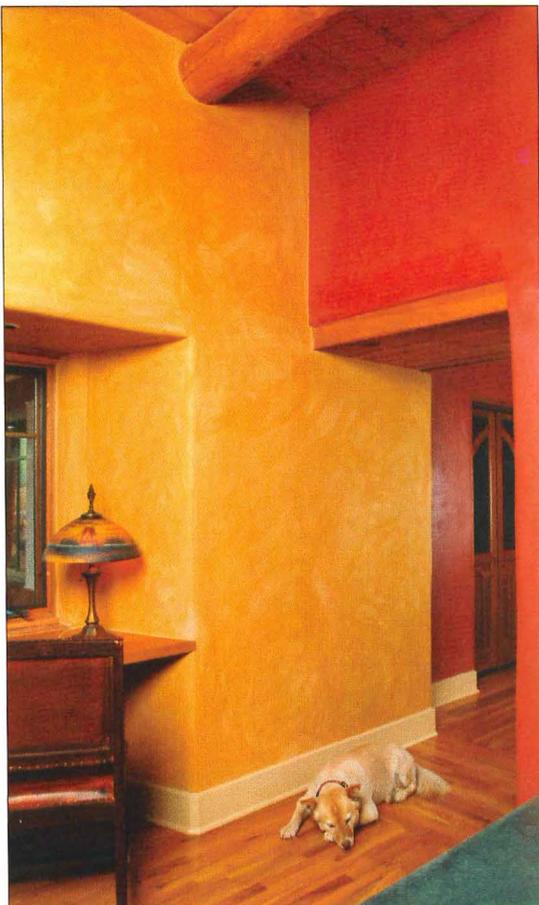
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### beautiful clay

Gypsum wallboard is versatile and economical but often needs some dressing up. Paint is one option, but this clay-based plaster might also fit the bill. The 100 percent natural product is made from a combination of clays, aggregates, and natural pigments and can be used to create a variety of looks that do not require paint. In addition to being green, the clay naturally controls the indoor climate by absorbing and releasing moisture in response to environmental changes, keeping interiors cool in summer and warm in winter. It's available in three finishes and 30 colors. American Clay, 866.404.1634; [www.americanclay.com](http://www.americanclay.com).



### cold fusion

Just when you thought concrete might have reached its limit as a sophisticated interior spec, Denver-based Metallo Cast Sinks and Surfaces has taken the material one step further: The company fuses concrete and metal to create an inventive line of basins, vessel sinks, and countertops. The handmade sinks are cast in concrete and then coated in bronze, copper, nickel-silver, aluminum, brass, or pewter. A sealer is then applied to give the products a “living” finish—allowing the concrete and metal to age naturally. Metallo Cast Sinks and Surfaces, 303.307.8898; [www.metallodesigns.com](http://www.metallodesigns.com).

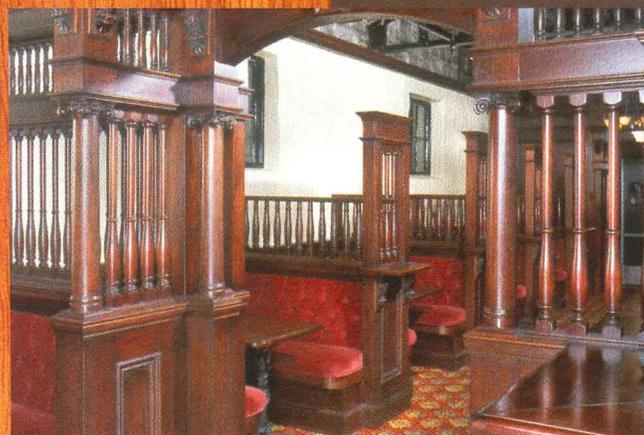
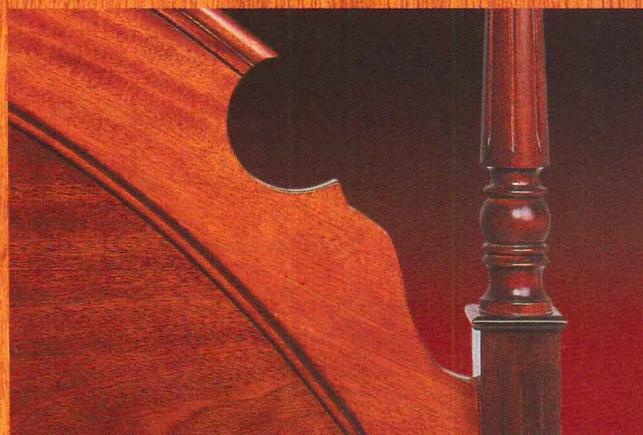
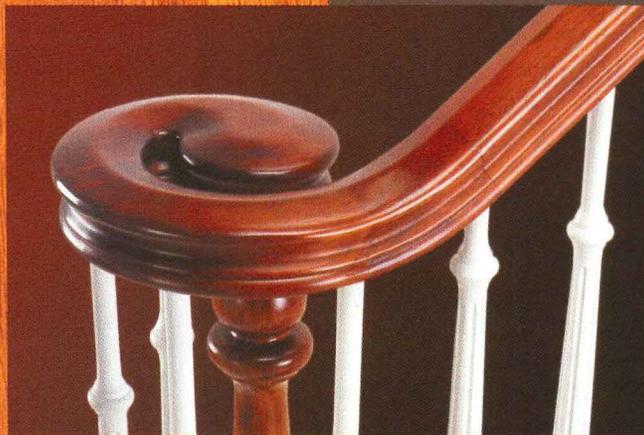


### pleasure dome

This Dome pendant is perfect if you want to trick out a loft or simply give your custom home a hint of commercial chic. Ideal for a host of other interior applications, the fixture has a dome-shaped acrylic shade, a ballast compartment made from perforated metal circled by evenly spaced rings, and a polished metal trim. It measures 11<sup>3</sup>/<sub>4</sub> inches high and comes in a broad range of colors, and with incandescent, halogen, or compact fluorescent lamping. D'ac Lighting, 914.698.6061; [www.daclighting.com](http://www.daclighting.com).

—nigel f. maynard

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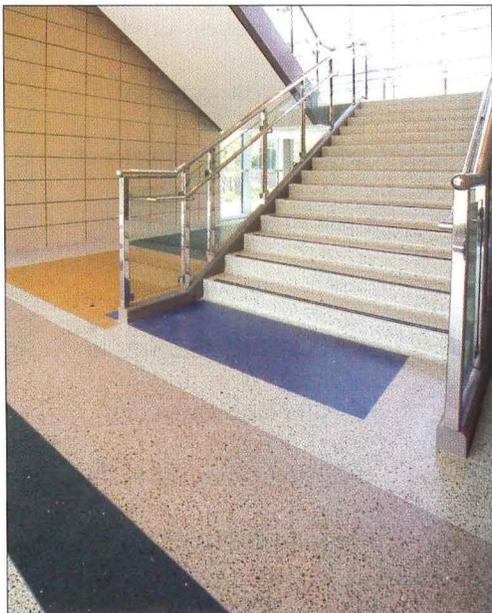
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# reclaim to fame

recycling is all the rage among flooring aficionados.

## shard thing

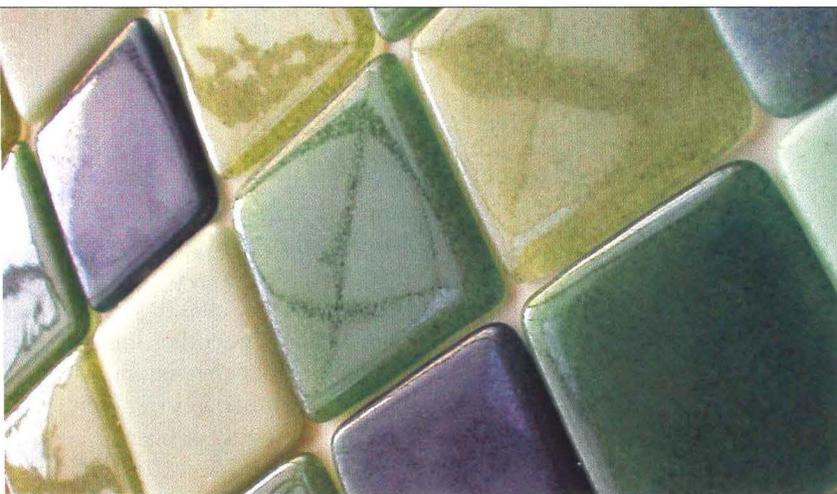
EnviroGLAS Terrazzo takes crushed, 100 percent recycled glass and bonds it with a color-pigmented resin to produce durable, poured-in-place countertops and floors. This stain- and bacteria-resistant material doesn't off-gas and is easily maintained with common soaps and cleansers. Colorful concoctions can be matched to paints and fabrics; standard collections include mixed bottle, amber, green, cobalt, and mirrored glass. American Terrazzo, 866.TERRAZZO; [www.enviroglasproducts.com](http://www.enviroglasproducts.com).



## cool composite

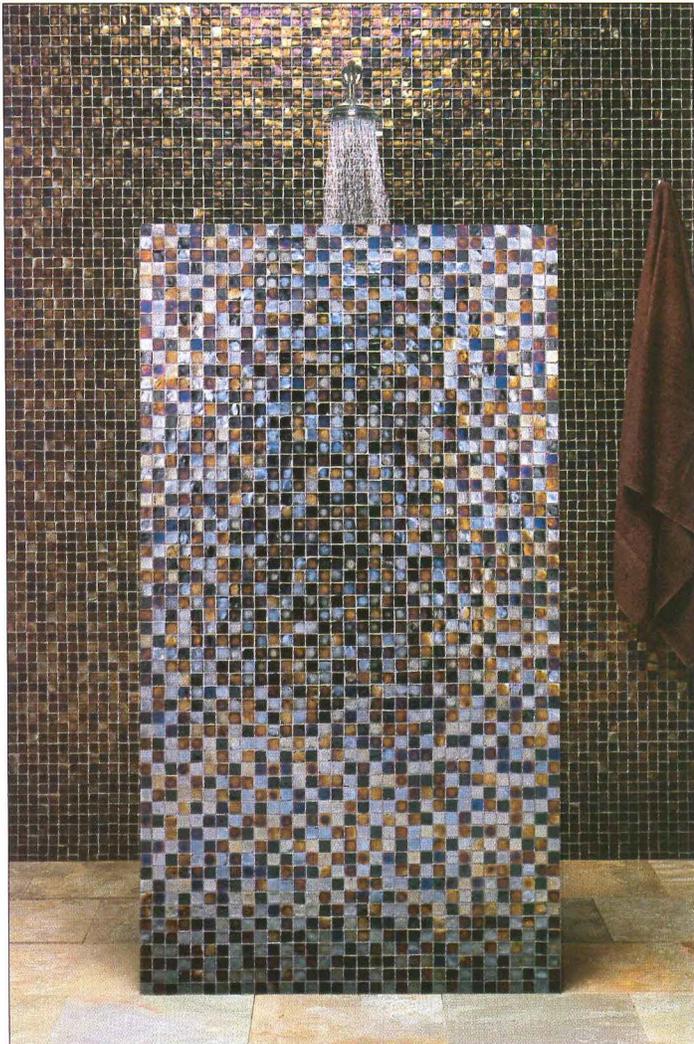
A mix of recycled glass and concrete makes up IceStone. The composite doesn't contain fillers, resulting in a product that looks and handles like natural stone but is less porous and more heat-resistant. Appropriate for vertical or horizontal applications, the 52 $\frac{1}{2}$ -inch-by-8-foot slabs can also be cut into large format tiles. Along with its 20 standard colors, the company offers the option of adding custom pigments to the background mix and hand-selecting glass pieces. IceStone, 718.624.4900; [www.icestone.biz](http://www.icestone.biz).

*continued on page 102*



## tile revival

Beer and wine bottles become Blazestone mosaic tiles' earth-tone patterns, while stained glass waste results in the company's brighter selections. Fused from 100 percent recycled glass without added pigments or fillers, the tiles come in 28 colors and 11 shapes (among them, 2-, 4-, or 5-inch squares; plus leaf, diamond, circle, and rosetta configurations). Bedrock Industries, 377.283.7625; [www.bedrockindustries.com](http://www.bedrockindustries.com).

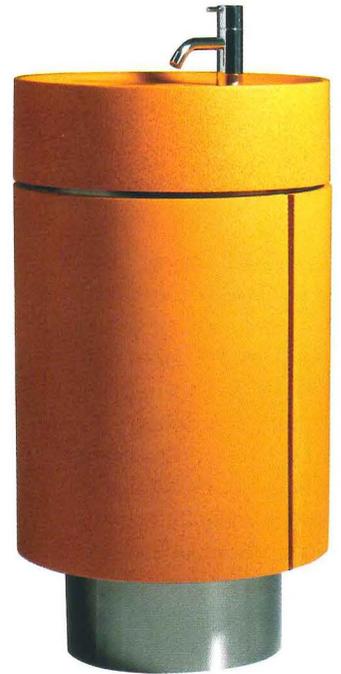


### climate control

Oceanside Glasstile combines up to 85 percent recycled glass with raw sand to generate many of its glass tile offerings. The freeze- and thaw- resistant products come in more than 40 colors and finishes, including mosaics, textured designs, and smooth field tiles. The company's manufacturing process reclaims more than 800 tons of discarded glass each year, it says. Oceanside Glasstile, 760.929.4000; [www.glasstile.com](http://www.glasstile.com).

### plastic redux

Durat solid surfaces contain 50 percent recycled plastic and are 100 percent recyclable, according to the company. The polyester-based material stands up to heat, humidity, scratches, and stains, the maker claims, and comes in sheets for countertops and vanities. Bathtubs and basins



are also available in contemporary shapes and vivid colors. Light sanding renews and restores the low-maintenance product. European Home, 781.662.1110; [www.durat.com](http://www.durat.com) or [www.europeanhome.com](http://www.europeanhome.com).



### retired tires

Yemm & Hart offers three different surface materials made from discarded tires, detergent bottles, and PVC plastic scraps. Choose Tire Veneer tiles for a nontoxic floor covering in 18- or 36-inch squares of bright flecks against gray or black backgrounds. Or select Flexisurf, PVC discards turned into matte, grid, and weave textured sheets or tiles. The material's seams may be welded for high-traffic areas. And Origins resuscitates detergent bottles into colorfully blended panels for use as partitions or countertops. Yemm & Hart, 573.783.5434; [www.yemmhart.com](http://www.yemmhart.com).

—shelley d. hutchins



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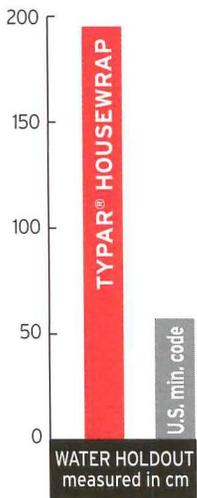
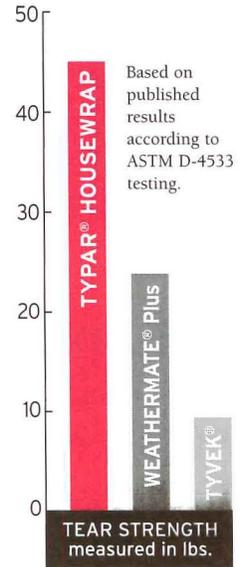
Does it really matter how a housewrap performs after your clients have moved in? Absolutely. Surfactants—including oils and tannins from siding and OSB, and soaps from powerwashing—can decrease the ability of other housewraps to block moisture, allowing water to penetrate the surface. Typar's superior surfactant resistance keeps water from seeping into the wall cavity and protects against the damaging effects of moisture—after the final inspection and for many years to come.

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Granted, using a housewrap is better than not using any housewrap at all. But what if there's a construction delay and the home is exposed to the elements? Typar sets the standard as a primary line of defense against the elements during construction, and a secondary water barrier after the cladding is up. Even in coastal or other high wind and water areas.



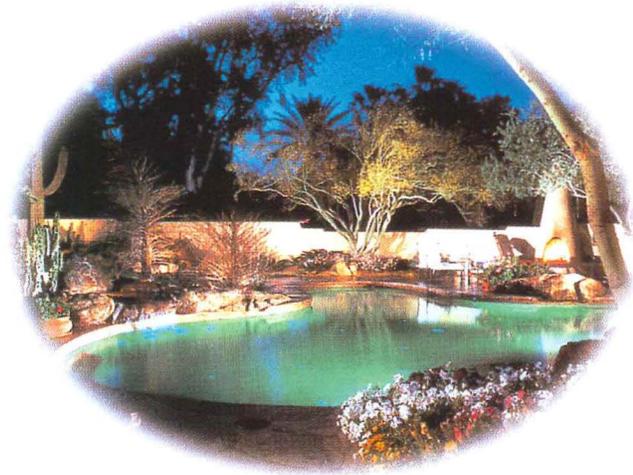
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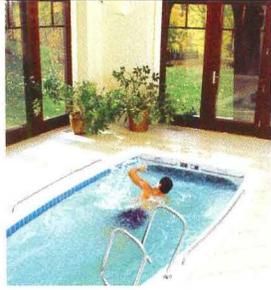


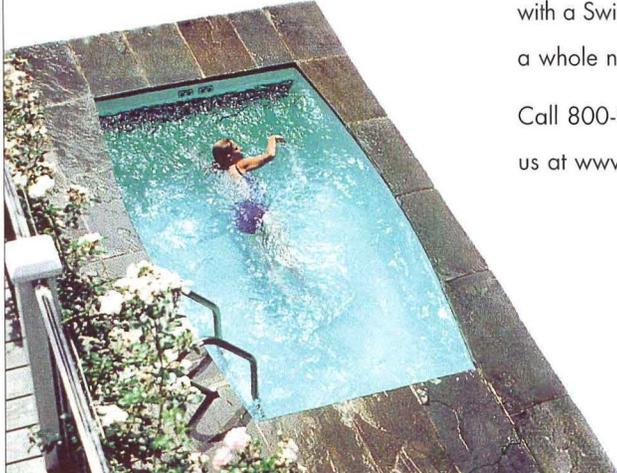
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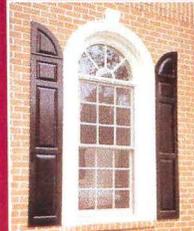
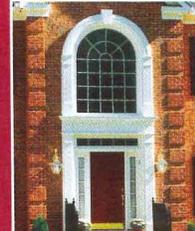





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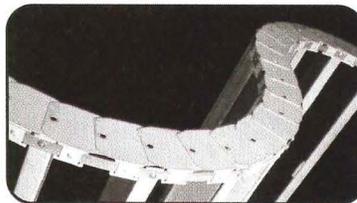
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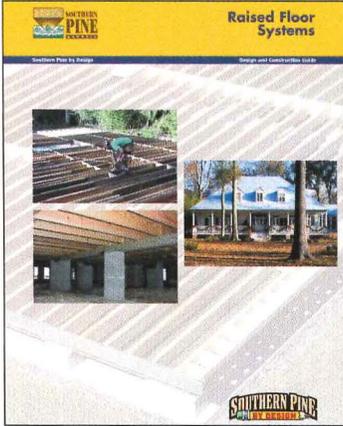
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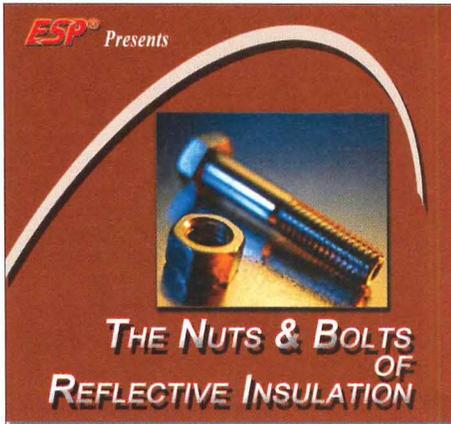
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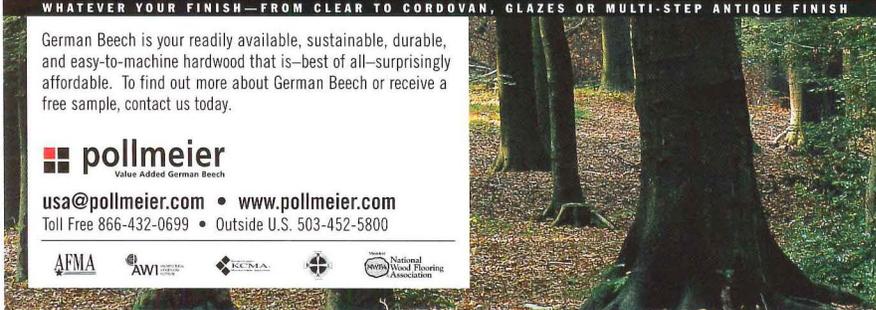


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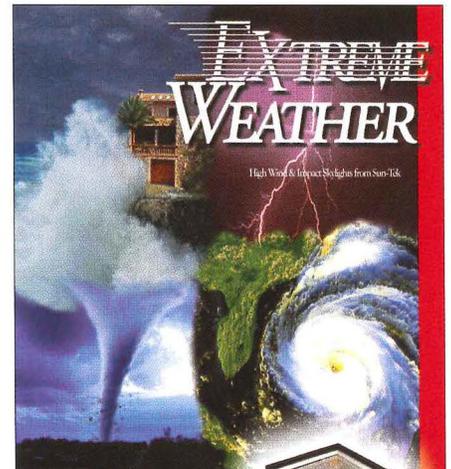
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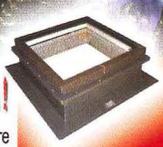
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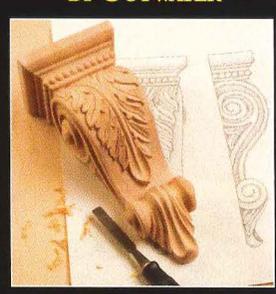
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end quote

## green peace

rue de meaux housing, paris, 1987–91

renzo piano building workshop

*“the home should be a refuge of peace and quiet.”*

*—renzo piano, hon. faia*

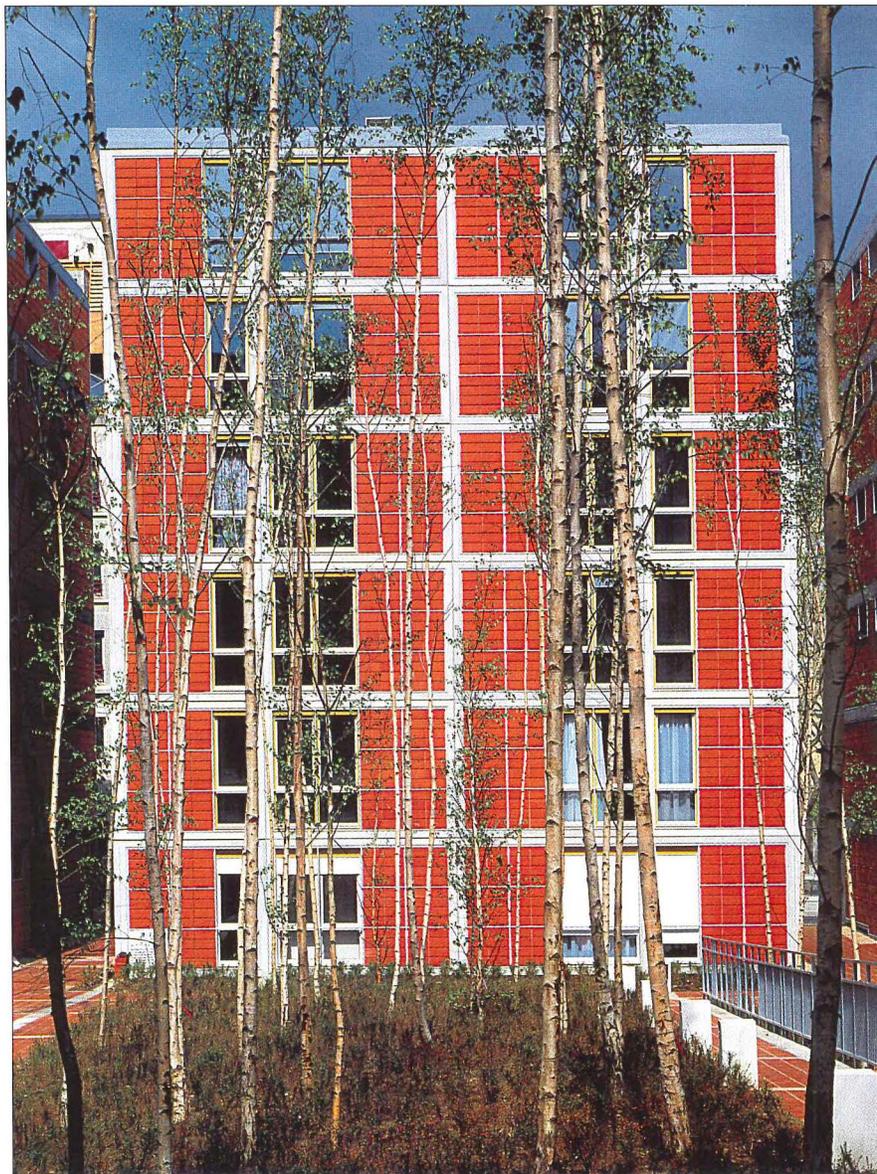
The city of Paris’ original plan for this 200-unit affordable housing complex included a public street passing through the middle of the project.

Then it hired the Renzo Piano Building Workshop.

Dismayed at the thought of the daily chaos the street would bring to residents, Piano and his colleagues convinced the city to drop its idea.

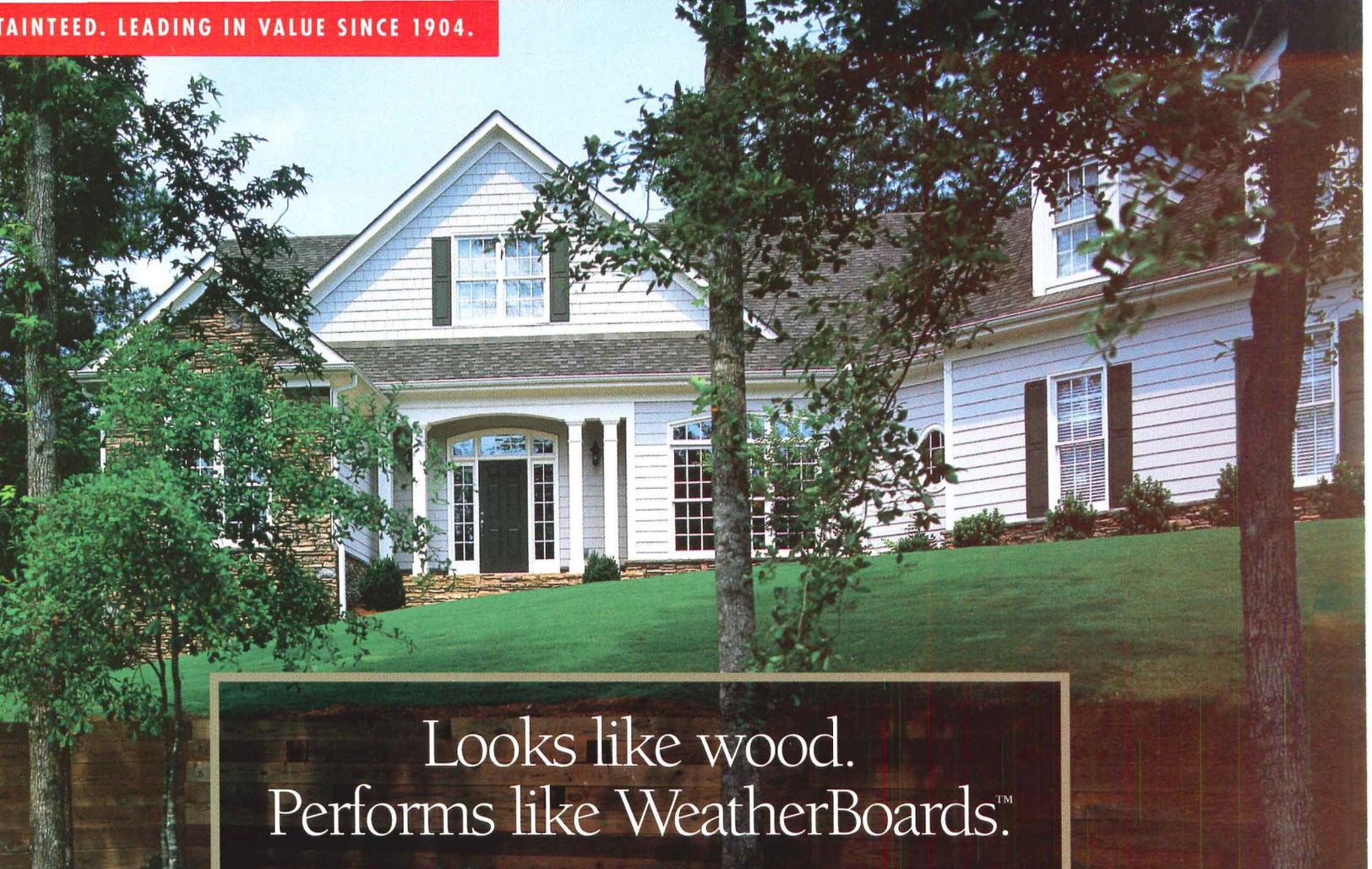
Instead, they designed four six-story buildings around a central garden filled with silvery birches. The trees provide a visual filter that lends residents some privacy without blocking light, and the surrounding buildings muffle the outside sounds of honking cars and other city noises. The courtyard serves as a contemplative zone as well as a common area for casual socializing.

In addition to the garden, Piano applied his customary emphasis on light and transparency to the buildings themselves. Their “double skin” of fiber-reinforced concrete and terra-cotta tiles creates subtle reflections and a quality of weightlessness.—*meghan drueding*



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