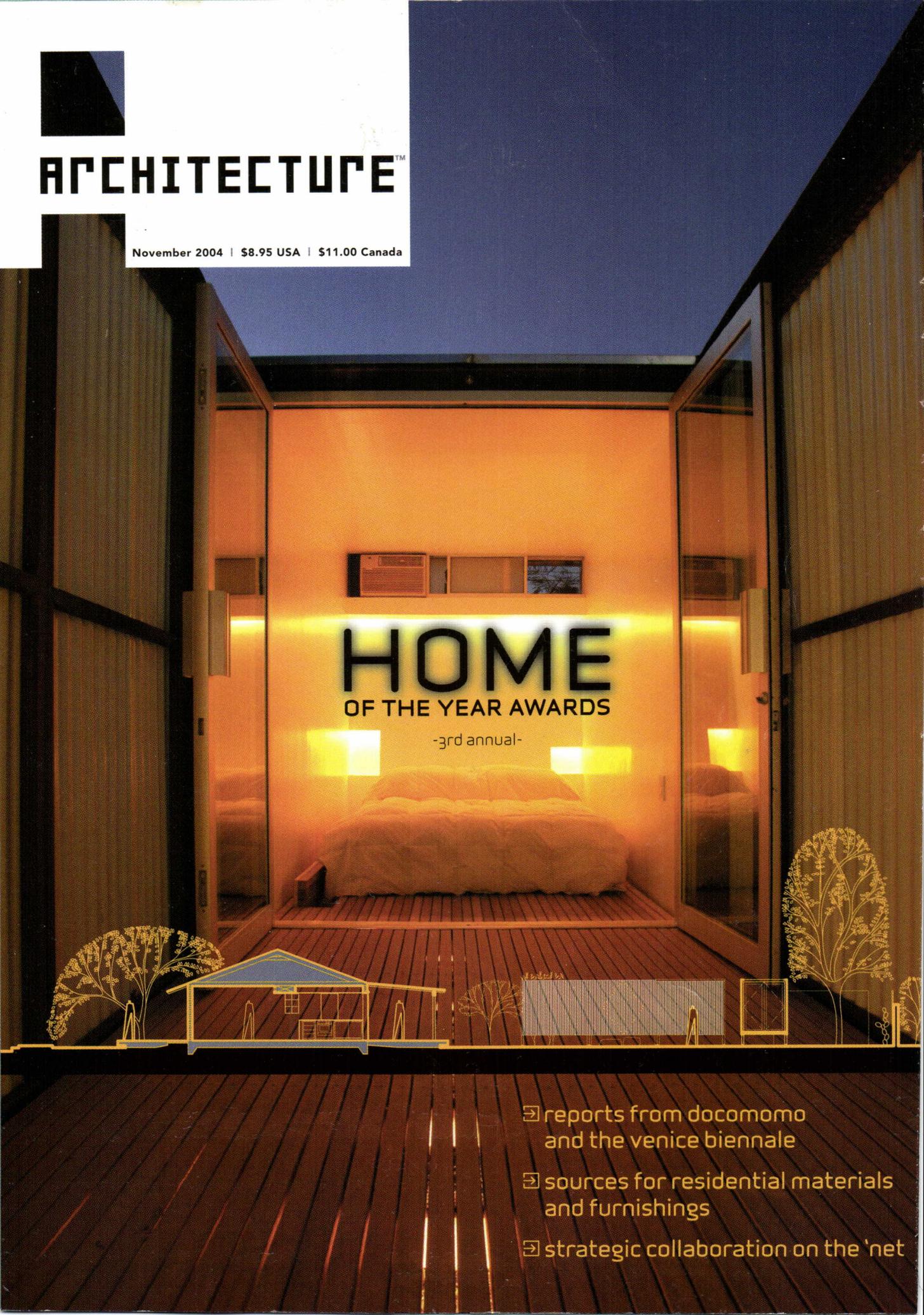




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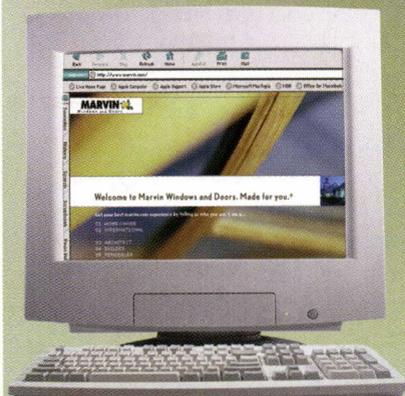
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I love responsibility!

Your editorial "Creative Time" was spot on [September 2004, page 9], but it missed the greatest benefit of moonlighting: Responsibility. Almost every firm discourages moonlighting. But if handled properly, it would benefit them to encourage a bit of independence. Until your seal is on the drawings, the project still belongs to others. Being an architect makes you responsible; being responsible makes you an architect.

Eric D. Kuritzky

Orlando, Florida

Theme-park perils

Dalki looks like fun for kids [September 2004, page 49]. But I wonder about the practically invisible glass fence around the rooftop play area—with nothing to alert a child who might run full-tilt into it. The wall-hung boxes are real head-bangers, and the utilities appear to be poorly integrated, projecting above grade as tripping-hazards.

Ralph Hueston Kratz

Richmond, California

Left out

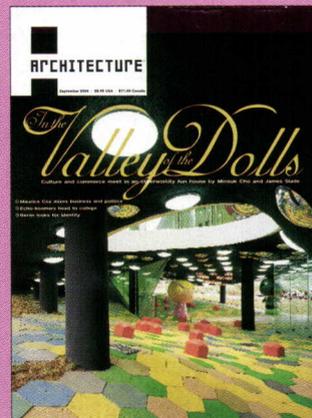
I have come to accept in the design profession an abundance of liberal views on many political issues, but the Protest on Iraq's Abu Ghraib prison [September 2004, page 104] is insulting to me. The article's tone is purely political, anti-Bush discussion, and it has no place in your magazine. How one can even write about the abuse by American soldiers and totally ignore the brutality and ruthlessness of Saddam Hussein's regime is beyond belief. The two cannot even be compared, nor can they be the basis for an architectural critique.

Robert Mercer

Huntsville, Alabama

'Twas TWA

Many of us in the preservation community were in support, from the beginning, of the construction of a new terminal for JetBlue at Kennedy Airport [September 2004, page 19]. Our principal



09 | 2004

focus was on the conservation, restoration, and adaptive reuse of the Eero Saarinen building.

Peg Breen, President

*New York Landmarks Conservancy
New York City*

Density in L.A.? No, thanks

Regarding the Southern California Association of Governments [August 2004, page 16]: "Improved transportation options" sounds good on paper only—the public won't take anything but their own SU-vehicles. Reducing pollution here is a joke. Denser housing only attracts more people and doesn't alleviate congestion by reducing commute time.

Jessica Kurland

Marina del Rey, California

Face-to-face thanks

Thanks for the excellent conference in Chicago [Places That Heal, September 28]. I came away with useful information that I can take back to my clients and apply; I also came away with professional resources for data. I am looking forward to the conference on school design this month.

Michael Molinelli

Briarcliff Manor, New York

CORRECTION

The September cover, which depicted I Like Dalki in Seoul, Korea, neglected to credit Ga.A Architects, the Korean firm that collaborated on the project.

SUPREME COURT TO JUDGE LIMITS OF EMINENT DOMAIN



New London, Connecticut, population 25,000, may become the center of the world for developers and landowners' rights groups now that a legal battle there has gone all the way to the U.S. Supreme Court. The case calls into question the limits of a city's right to eminent domain after a group of homeowners there refused to give up their properties in the face of a pending hotel, office, and residential redevelopment scheme along the Thames River.

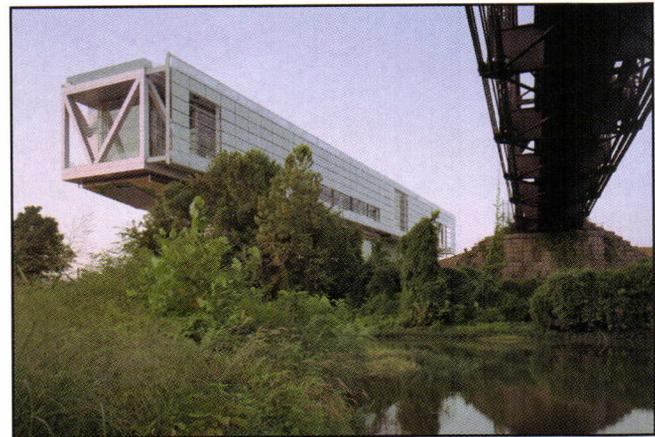
An extension of the Constitution's Fifth Amendment, eminent domain is the power of a municipality to seize private land for "public use" in exchange for "just compensation." In the New London case, the city and its development arm, the New

London Development Corporation (NLDC), laid claim to a 90-acre parcel, hoping to capitalize on an earlier announcement by pharmaceutical company Pfizer to build a research facility nearby. Seven homeowners have held out, arguing on the exact nature of the "public use" in question and claiming their rights are being violated. The city countered that the development will create jobs and boost tax revenues in the economically depressed area. The Connecticut Supreme Court earlier ruled in favor of the municipality; the case has since been appealed, and in late September it was accepted by the U.S. Supreme Court.

"It's going to affect property owners throughout the country," contends Scott Bullock, a lawyer at the Washington D.C.-based Institute for Justice who is representing the homeowners. "If the government can take your home because they feel a business can make a profit, then no one's home is safe." (Calls to the NLDC were not returned.)

Historically, local governments have used eminent domain to seize, condemn, and then improve impoverished neighborhoods. Increasingly, though, municipalities have been taking over land that may not be in total decline, but can be viewed as a profitable redevelopment locale. The issue has been brewing in several states, and the case is expected to be one of the most closely watched items on the court's docket. **Jamie Reynolds**

CLINTON'S BRIDGE TO THE TWENTY-FIRST CENTURY OPENS



On November 18 in Little Rock, Arkansas, the William Jefferson Clinton Presidential Center opens its doors to the public, offering 165,000 feet of all things Clintonian, with a naturally lighted museum, a theater, meeting rooms, research offices, and a café. Designed by Polshek Partnership of New York City, the center occupies a bridgelike structure in a new 28-acre park on the south bank of the Arkansas River. The presidential archives are housed in an adjacent building.

GREEN HOUSING GETS BOOST

A new broad-based campaign is pushing green housing closer to the mainstream. The collaborative Green Communities Initiative aims to supply some 8,500 sustainable homes to low-income families across the country.

Sponsored by the Enterprise Foundation/Enterprise for Social Investment Corporation, the Natural Resources Defense Council, the American Institute of Architects, the American Planning Association, and other charitable and corporate entities, Green Communities will offer training and funding to builders and developers across the country who make environmental and social issues a focus of their work. The \$550 million five-year initiative is expected to enlist local, grassroots building groups for the majority of the construction work.

The announcement coincides with a call for entries for the new C2C International Housing Design Competition, whose name echoes the title of *Cradle to Cradle: Remaking the Way We Make Things*, a book by über-green architect William McDonough and partner Michael Braungart on the nature of sustainability. Sponsored by the AIA and the American Society of Interior Designers, among other groups, the contest's registration deadline is November 15; submissions are due a month later. See www.c2c-home.org for details. **Jamie Reynolds**

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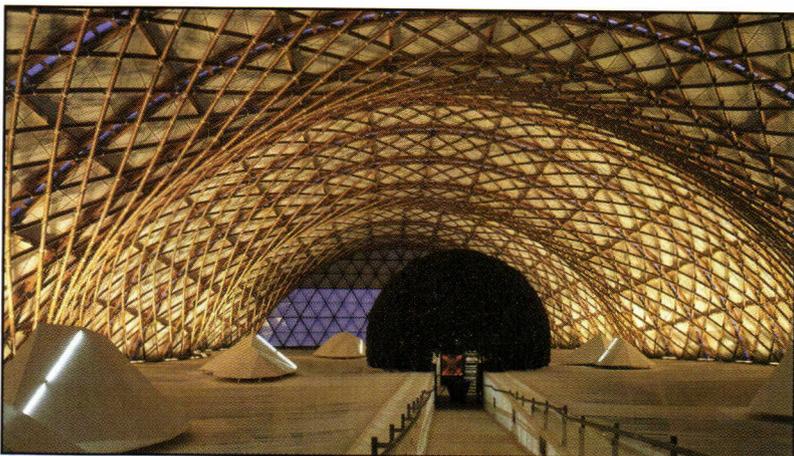
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FREI OTTO WINS RIBA GOLD MEDAL



Architect and structural engineer Frei Otto has won the Royal Institute of British Architects' Royal Gold Medal for Architecture, to be presented February 16. Otto is known for his pioneering tensile structures and grid shells, reflecting the influence of the principles of aerodynamics he learned as a German air force pilot in World War II. Often supported by cables under stretched membranes, his works include the West German Pavilion at the Montreal Exposition in 1967, the roofs covering several structures at the 1972 Olympic Park in Munich, and the Japanese Pavilion at Expo 2000 in Hannover, Germany (above), a collaboration with Japanese architect Shigeru Ban. The award is for a lifetime's work that has had an international influence; the winner is approved by the Queen of England. **Katie Gerfen**

NIH'S HEALTHCARE BENCHMARK

Yet another sign of the robustness of the healthcare market, the National Institutes of Health (NIH) opened a new 320-bed hospital on its campus in Bethesda, Maryland, last month. The largest patient-research facility in the world, the 870,000-square-foot Mark O. Hatfield Clinical Research Center has a number of cutting-edge features, the result of a collaborative effort led by architect Zimmer Gunsul Frasca Partnership of Portland, Oregon.



Speaking for the NIH, center director Dr. John I. Gallin hailed the building as "a remarkable resource for science because it has been designed in concert with the patients who come here, and the scientists and clinicians who work with them." For example, the center incorporates such innovations as flexible floor plans that allow rooms to be converted easily from lab space to offices or patient rooms, and nurses' stations that are positioned so each nurse serves no more than four patients. A rehabilitation room also features a floor built independently of the rest of the building for a vibration-free platform. Named for the former U.S. senator from Oregon, the facility will begin receiving patients next month. **Jamie Reynolds**

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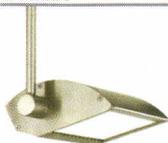
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EDWARD LARRABEE BARNES, 1915-2004



A diehard modernist who never succumbed to the whims of postmodernism, Edward Larrabee Barnes died in September at the age of 89. Trained at Harvard in the 1940s under Walter Gropius, Barnes was part of the second generation of American modernists that included Philip Johnson, I.M. Pei, and Paul Rudolph.

One of Barnes's most beloved works was his 1961 Haystack Mountain School of Crafts, a grouping of linked shingled pavilions overlooking the ocean in Deer Isle, Maine, that garnered the 25-Year Award from the AIA in 1994; the jury noted it as an "early and profound example of the fruitful and liberating fusion of the vernacular building traditions with the rationality and discipline of Modern architecture." In 1989, Barnes

told *Architecture*: "I've always been drawn to making things as simple as possible, if you can do that without making them inhuman or dull or oppressive."

Barnes got his start after World War II, working for industrial designer Henry Dreyfuss on low-cost, prefabricated housing in California. For the young architect, there was an inextricable link between modern architecture and social commitment, if not enough money. Regardless, after establishing his firm in Manhattan in 1949, he kept his hand in housing, albeit designing private homes, such as Osborn House (above) in Salisbury, Connecticut. Other lauded works by Barnes include the 1971 Walker Art Center in Minneapolis and the IBM Corporate Headquarters tower on Manhattan's Madison Avenue. **Bay Brown**

⇒ Philip Johnson has retired from architectural practice. The 98-year-old design icon left his firm, Philip Johnson/Alan Ritchie Architects, on October 7.

⇒ Daniel Libeskind has settled his suit with developer Larry Silverstein. Under terms announced last month, Libeskind will accept \$370,000 for his design work on the Freedom Tower, which is to be erected at the World Trade Center site in New York City. The project is now being led by David Childs of Skidmore, Owings & Merrill.

⇒ Kansas City banker Jonathan Kemper has been elected chairman of the board of trustees of the National Trust for Historic Preservation.

⇒ Richard D. Baron has won the Urban Land Institute's J.C. Nichols Prize for Visionaries in Urban Development. Working with the firm McCormack Baron Salazar, Baron has developed 11,500 housing units in 25 American cities over his 32-year career.

⇒ A recent study by the Rand Corporation has found that individuals living amidst suburban sprawl are more likely than city dwellers to develop health problems such as arthritis and high blood pressure. The report is reminiscent of an earlier survey suggesting that sprawl increased the risk of obesity.

⇒ After years of bitter dispute, the timber-clad interiors designed by Jørn Utzon for the Sydney Opera House are now complete. Utzon was responsible for the overall structure of the soaring edifice, but abandoned the internal scheme after a series of disagreements with Australian officials in 1966.

⇒ Terence Conran, the founder of London's Design Museum, has publicly threatened to resign from that institution's board of trustees, citing what he claims is the museum's emphasis on style over serious design in recent exhibitions. His departure would follow that of former fellow-boardmember James Dyson, the industrial designer and vacuum-cleaner entrepreneur, who left the museum over similar concerns.

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CALIFORNIA BROWNFIELDS BILL PASSED

A new approach to brownfield rehabilitation has sparked controversy in the Golden State. Similar to a 2002 rule passed in New Jersey, the California Land Reuse and Revitalization Act of 2004—which Governor Schwarzenegger signed into law in September—eases restrictions and reduces liability for post-contamination purchasers of brownfield sites. Its goal is to promote the development of neglected urban spaces to reduce sprawl and help alleviate a widespread housing crisis in the nation's most populous state. The act does not remove the cost of cleanup for the toxic sites, but it does streamline the process: It limits developers' liability if they can prove they're not responsible for the original contamination. The buyer must assess remedies according to state health standards, and in doing so, is protected from potential lawsuits.

The environmental community, however, is split on the law's merits. The Sacramento-based Planning and Conservation League (PCL), for example, tepidly supports the act. "Brownfield redevelopment, assuming it takes into account concerns of public health, is a positive thing," says Karen Douglas, PCL's general counsel. "Although we do wish the bill had better measures for public participation," such as notice to communities affected by a cleanup, access to plans before approval, hearings if warranted, and multilingual information so all citizens understand new proposals. "The actual process of site cleanup can cause significant exposure to contaminants," notes Douglas, although her group considers the

bill a sufficient safeguard for public health.

Far more critical is Jane Williams, executive director of California Communities Against Toxics, who calls this new law "the worst environmental bill in the state's legislative history." Citing the limited liability borne by developers, Williams says the law is "one of the most sweeping immunities I have ever seen," and it does not begin to address the necessary health provisions. She also claims that the final form of the cleanup bill resulted from insertions of elements of another State Senate bill that was denied approval by the Assembly. The only saving graces of the new rule, in Williams' mind, are a provision requiring the decontamination of groundwater and a sunset clause that makes the law valid for only five years.

The act does have outright supporters, like Shiraz Tangri, senior associate in the Environmental Group of Greenberg Glusker—a Los Angeles-based law firm that represents land developers—who believes that the bill will "redevelop urban areas and put investors back into inner city neighborhoods." As for environmental concerns, "the bill doesn't change any existing cleanup standards," says Tangri. "We think the standards in place, which are constantly being revised due to new science, are as good as they get." Regardless, he says, it will be hard for developers to take advantage of the limitations on liability until the legal precedent of cases tried in the state's Supreme Court defines the extent of coverage. **Katie Gerfen**



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A BAROQUE BIENNALE

A new international style coalesces far, far beyond the modernist box. by Aaron Betsky

Every two years, architecture holds its biggest trade show (no, not the AIA convention), the Venice Biennale. Throngs of architects and groupies descend on this drowning city to be flooded by images, and to gawk and gossip. And every two years, the question is: What does this huge set of exhibitions tell us about architecture? First of all, that enough people care about something other than producing the cheapest, most efficient, and most comfortable buildings—a fact that makes the whole circus viable. Second, that, for better or worse, the Venice Biennale presents the state of the art in architecture.

In 2002, architecture director Deyan Sudjic, then editor of the Italian magazine *Domus*, presented a Biennale with the title “Next” as the revenge of modernism. Clean-lined, monumental, and serious, his selections shone forth in boxes designed by British minimalist master John Pawson to contrast with the barely renovated brick vaults of the *cordiere* of the Arsenale, the city’s old military rope-making factory. This year’s architecture director, prolific Swiss-born author and academic Kurt W. Forster, gave us a baroque Biennale which ran from September 12 to November 7. Modernist principles were not abandoned, but exaggerated. Here the box was drowned in rhetoric about breaking out of the box.

THE NEW NEW INTERNATIONAL STYLE

To support Forster’s theme, “Metamorph” (not metamorphosis, or change from one being into another, but meta-morph,

or beyond and yet about form), New York City firm Asymptote designed an abstraction of the cords that were once twisted in the *cordiere*—and then sliced this half-mile long computer model into undulating pedestals that, when built, Forster compared to gondolas. Emanating from these forms, the Arsenale exhibition featured blobs, “topographies” (buildings designed as if they were landscapes), and other nonorthogonal structures that stretched the limits of the modernist box as they perched, cantilevered, or sometimes oozed in all directions.

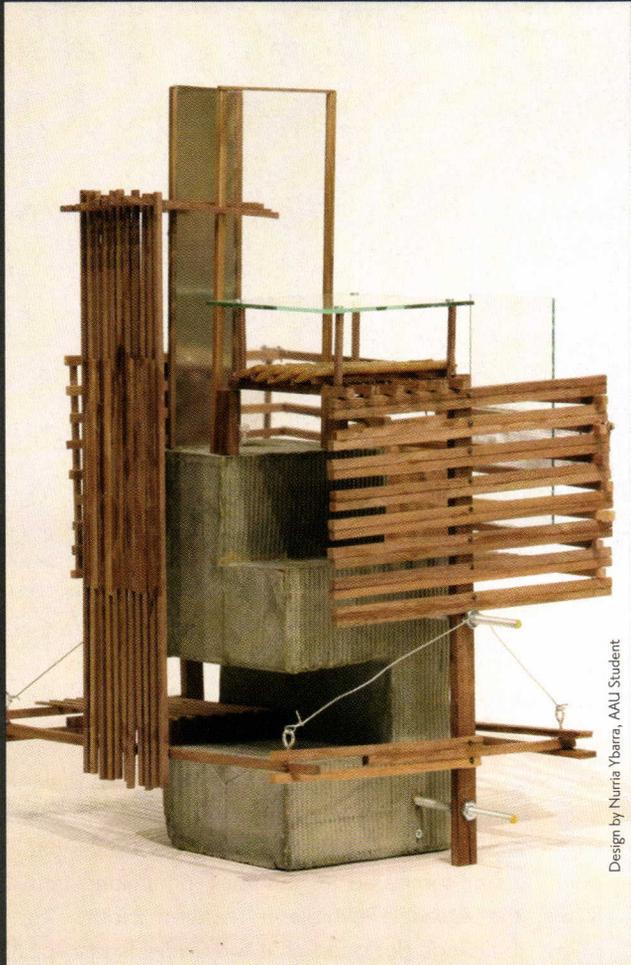
Even the architects whose buildings were in the exhibition remarked that the whole collection looked like it could have been designed by only two or three of them. Perhaps that is because of Forster’s unequalled ability to discern and classify salient characteristics in architecture. As a result, not the individual buildings, but the emergence of an overarching typology of twenty-first-century generic forms, stood out. It is an international style of folds, blobs, landscapers, and functionalizing megastructures that always seem to be engineered by Ove Arup. Certain trends were visible, such as the revival of Buckminster Fuller’s spaceframes and the tendency for skins to begin to operate more and more separately from their structure. Buildings as sculpture, as minimal boxes, and as remnants of trainwrecks all appear to be, well, so *last Biennale*.

The Giardini, the portion of the exhibition where pavilions were arranged by country, was, by general consensus, not as

Architects Hani Rashid and Lise Anne Couture of Asymptote designed the exhibition in the Arsenale (above). The preponderance of folds, blobs, and other nonorthogonal structures suggests yet another new international style.



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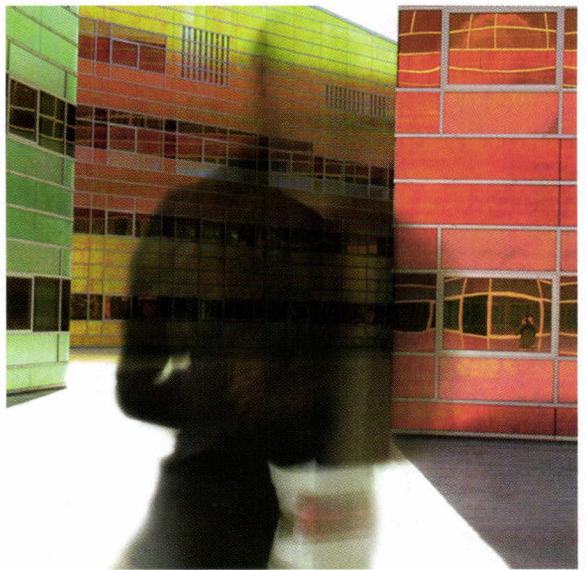
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Architect Ben van Berkel's photograph, "A Life in the Day," was in an exhibition on architecture and collective memory in the Italian pavilion.

strong as it has been in the past. Most interesting was the Danish pavilion, which showed proposals for that country's future amid its classic modern designs (see Views, page 79). The American pavilion concentrated on the work of several seemingly unrelated architects: the fluid shapes of Kolatan/MacDonald Studio and Reiser + Umemoto, RUR Architecture; the post-Koolhaas disquisitions of George Yu on shopping; a poetic installation piece on Venice as a city of water, carried out in a scrim of nylon threads, by Predock Frane Architects; and difficult-to-see panels of an urban theater by Lewis.Tsurumaki.Lewis that was reminiscent of Diller + Scofidio's work. The choices were all very democratic and the displays were beautifully produced, but the pavilion was mainly memorable for the projects' sophisticated sheen. These were art installations completely outside of an American mainstream that has never been able to abide such experiments except as baubles at an international fair.

What remains in this critic's memory are not all the ambitious gestures trying, as Forster claimed, to escape from the box in which modernism had put them while preserving that movement's ideals, but rather a collection of photographs hidden away in the heart of the gigantic Italian pavilion. Here, curator Nanni Baltzer displayed recent images that find a quality in the reflections, transparencies, implied spaces, and shadow patterns of both recent and historic buildings. In these seemingly disconnected images taken by professional photographers as well as architects, a metamorphosis truly took place, from buildings built for a particular purpose at a time and in a place, into images that made us realize that it is indeed worthwhile finding something in architecture beyond the building itself.

Aaron Betsky, director of the Netherlands Architecture Institute, was the commissioner of the Biennale's Dutch pavilion in 2002 and 2004.

DESIGNING FOR THE PAST

At Docomomo's biennial conference, the divide between design and preservation got smaller. by Bay Brown

In part because of its much-publicized efforts to help save many modern landmarks from the bulldozer—including Eero Saarinen's TWA Terminal and numerous landmarks of early modernism in Europe—Docomomo, the 16-year-old international preservation organization committed to the modern movement, has succeeded in raising public awareness of the value of modern architecture. Likewise, academic and professional interest in the organization's work has grown. This fall, organizers reported record attendance at their biennial conference, which focused on the postwar era and, in particular, the false polarity that Docomomo leaders feel exists between design work and preservation work.

With the inception of the preservation movement in the 1960s, the issue arose as to whether or not contemporary materials and methods of construction should be used. Of course, this is particularly relevant to works of modern architecture, which are often razed or disfigured before reaching the 50-year mark, the determinant of significance for many landmark agencies. Thus, one of the main goals of the conference, "Import/Export: Postwar Modernism in an Expanding



World, 1945–1975," held at Columbia University in New York City in September, was to overcome the inherent tension between designing and preserving.

Due to the great number of topics submitted for review, organizers separated technical presentations into their own seminar program after the three-day main conference (see "To Preserve Modernity," below) and sponsored four days of architectural tours for attendees, who came from 41 countries.



New York City may restore Philip Johnson's New York State Pavilion built for the 1964 World's Fair.

TO PRESERVE MODERNITY, MORE TECHNOLOGY (AND COLOR!)

In a controversial but prescient move, the organizers of the eighth international Docomomo conference elected to segregate their technical offerings into a three-day, four-track program that boasted more than 50 presentations, with topics ranging from the visually inspiring to the decidedly wonky. While the separate, postconference seminars betrayed a fixation on the cladding and curtain-wall systems that proliferated during the postwar period—one irreverently titled session called Edward Durell Stone's work "thin-skinned"—the program included a provocative track on color, a key feature of modern architecture often neglected in its current minimalism-dominated revival.

"The color issue was my pet project because today's modern architects know squat about color, and we've been looking at black-and-white photos of these buildings for so long," admits Theodore H.M. Prudon, president of Docomomo US

and an expert in historic preservation. The track opened with Prudon's own survey of color in modern architecture, followed by eye-pleasing sessions on William Lescaze and Luis Barragán, as well as more scientific views on paint and color research in the Netherlands, Finland, and Italy.

Seminars in other tracks focused on what were cutting-edge materials at the time, such as new concrete mixes and Cor-Ten steel, and discussed challenging bodies of work, including Pier Luigi Nervi's domes.

While technology has always been integral to Docomomo's conferences—the group has published several "dossiers" culled from topics at past international meetings—the huge effort this year, shepherded by preservation architect Kyle Normandin of local firm Wiss, Janney, Elstner Associates, will result in what is easily the world's largest technical resource on preserving modernist structures. All that stands in the way is time: The initial proceedings are already available through www.docomomo-us.org, but the final document won't be complete for a couple of years.

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Concerned about legal risk, many architects insist on contract clauses that limit their liability in a project. But along with limiting liability, practitioners have consistently continued to limit their role in many areas, such as **environmental management**, site safety, cost estimating, scheduling, change-order negotiation, and dispute resolution. After 20 years of collectively reducing their roles, firms are now frequently selected based mainly on the amount of their **fees**. To many owners, architects are no longer the owner's confidant, offering them professional advice; instead, design services are seen as a commodity.

But, in fact, **architect empowerment** is always a good idea for both the architect and the owner. Liability claims are less likely when firms are in on decision-making and problem solving. Claims can be almost entirely eliminated by better strategic planning at project inception, and become much less likely when the architect has the ear of the owner, helping to set strategy and make decisions. Being responsive and strategic are not simply good concepts by which to guide business development, they are also essential ingredients for **managing risk**.

Today's standard owner-architect contract reflects the architect's desire for diminished responsibility, but to provide the best service, a firm must be in a position of trust with the client where quality, professionalism, and clear communications guide the relationship. Positive affirmations, not **limitations of liability**, need to be the basis of interaction, and architects need to have a stake in the process and be in the best position to protect the client's interests.

A few basic tenets underly healthy and productive architect-owner relationships:

- ▣ All project information and requirements are provided by the owner.
- ▣ Necessary levels of preproject **due diligence** are carried out.
- ▣ **Indemnity clauses** do not go beyond reasonable limits.
- ▣ Limitation-of-liability clauses have a fair balance of risk.
- ▣ A **written agreement** is concluded before professional services begin.
- ▣ Details are spelled out to manage contractor means and methods and **site safety**.

Regarding **compensation**, the architect should be adequately remunerated, and responsibility for dispute resolution should be clear. The owner should agree to make timely payments to the architect. (Proper consideration must be given to professional competence.) As most architects know, firm selection should never be made merely on the basis of price. In fact, contract clauses should entitle the architect to **increased compensation** for expanded project roles.

Last, be ready to act even if the contract allows the architect to "sit it out." For example, because controlling mold is part of the architect's core competency, the mold buck should stop with the architect.

This kind of empowerment promotes the owner's respect of the practitioner's skill and professionalism. When they assume a role that is both proactive and strategic in planning, design, and troubleshooting, architects are best protected against potential liability—and the project is more likely to finish on time, on budget, and without claims.

John E. Osborn is an attorney with more than 30 years of experience in construction-contract litigation, professional-liability defense, and environmental law.

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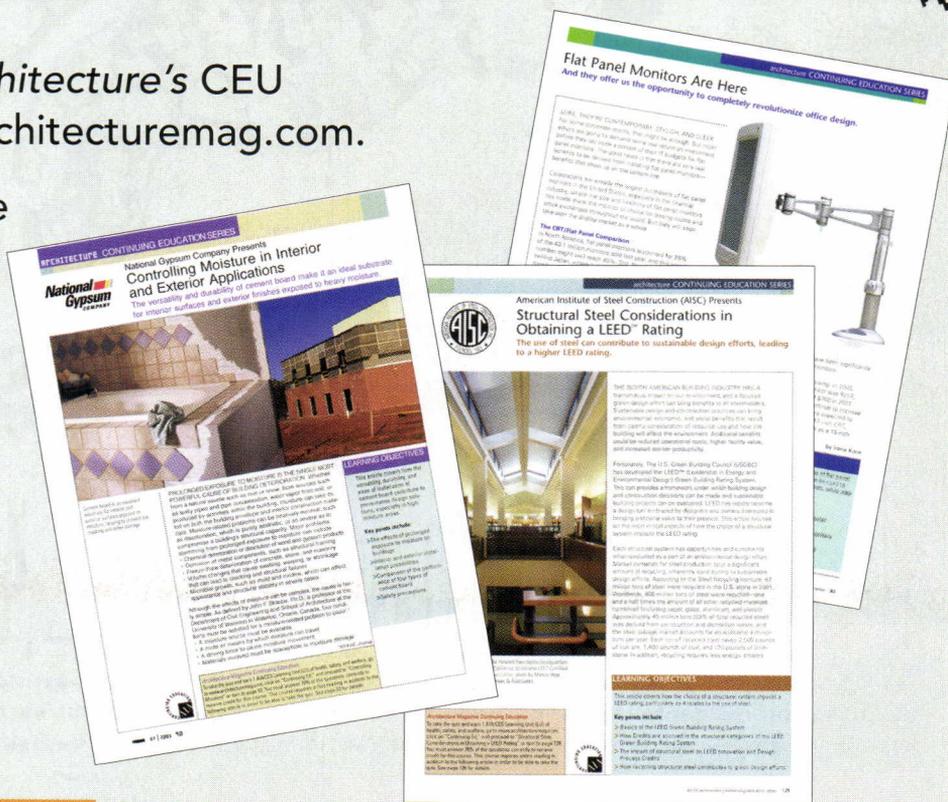
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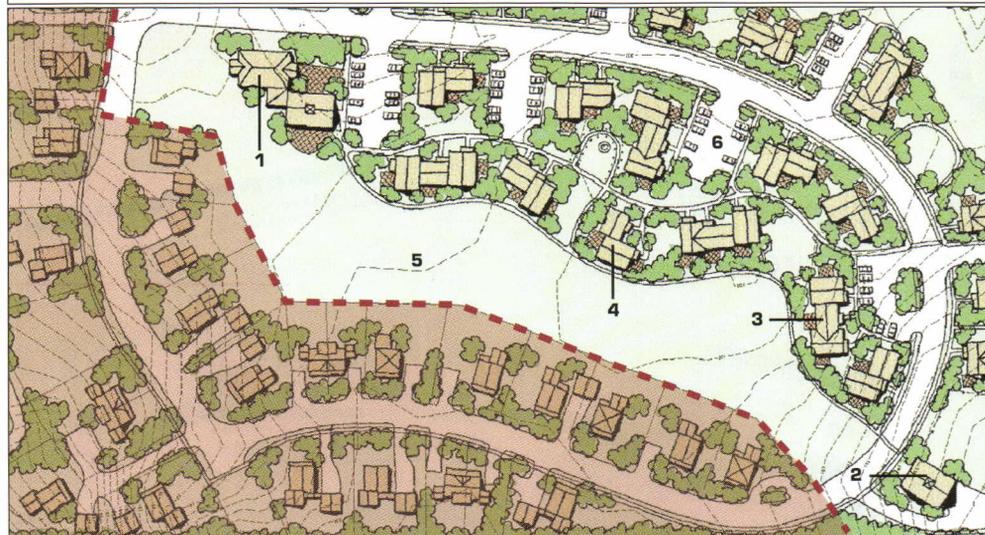
PRELLWITZ/CHILINSKI ASSOCIATES | THE TREEHOUSE COMMUNITY | EASTHAMPTON, MASSACHUSETTS

Working with The Treehouse Foundation, a nonprofit group aiding children in foster care, and developer Beacon Residential Properties, Prellwitz/Chilinski Associates of Cambridge, Massachusetts, has created a 46-acre intergenerational community intended to be a stable environment for foster children (with a preference for sibling groups), families committed to permanent adoption, and seniors who wish to serve as mentors to the children. Based on Chicago's successful Hope Meadows, which converted air-force-base housing into a similar community in 1994, the greenfield site includes 12 family rental homes—two per building, each ranging from three to five bedrooms—and 48 senior rental apartments in two- to four-unit buildings, all subsidized. The novel typologies, rendered in a New England farmhouse-style, are commingled to boost inter-

action between families and senior residents. Families have access to after-school programs and social services in a 5,000-square-foot community center. Housing a petting zoo, the "Big Red Barn" offers another communal activity.

While this is its first large-scale development, the foundation is already working with public schools in the area on student-run gardens. Such grassroots efforts—and local recognition—have alleviated the concerns of nearby residents about creating a higher-density neighborhood in this primarily rural community.

The \$6 million project breaks ground in spring 2005, pending final funding approval, and will receive its first families one year later. In addition, forty-eight other modest homes are also planned for the site, to be built by a local contractor. **Katie Gerfen**

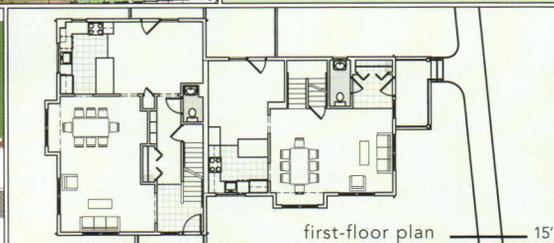


The site plan for the intergenerational community includes foster-family residences and senior apartments. The shaded area indicates an adjacent market-rate development.

- 1 community center
- 2 Big Red Barn
- 3 typical senior residence
- 4 typical family residence
- 5 shared open area
- 6 parking



two-family residence



first-floor plan 15'

The prospect of a high-density residential development in a low-density community initially worried Easthampton residents. However, ongoing community projects and outreach by The Treehouse Foundation have made three-unit senior residences and two-family units more acceptable to future neighbors.



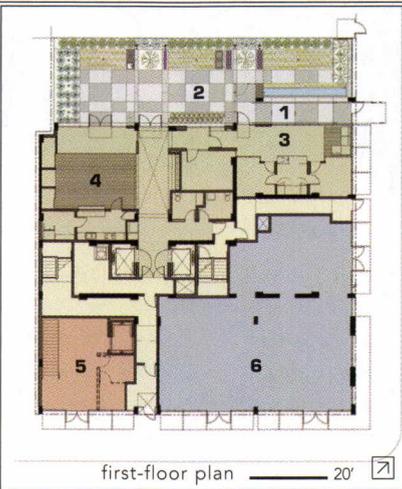
three-unit senior apartments



first-floor plan 15'

The Public Initiatives Development Corporation, a not-for-profit established by the city of San Francisco to encourage the production of low-income housing, has teamed up with local firm Leddy Maytum Stacy Architects in association with Paulett Taggart Architects to replace a "substandard" single-room-occupancy (SRO) structure in the South of Market area by next fall. Plaza Apartments is a nine-story, 106-unit SRO with ground-floor retail, a black-box theater, and social-services offices. Wood-veneer infill panels and an aluminum window system are applied in a variety of configurations to

the exposed, poured-in-place concrete structure, articulating the building mass to respond to the surrounding urban fabric. The 300-square-foot units maximize living space by combining the kitchen and entry foyer, and a landscaped courtyard on the ground floor doubles as building entry and common area for residents. Spatial efficiencies are echoed in the building's energy-efficient strategies and use of recycled and renewable resources, from sustainably harvested woods, bamboo flooring, and photovoltaic cells to individual climate controls in the apartments. **Abby Bussel**

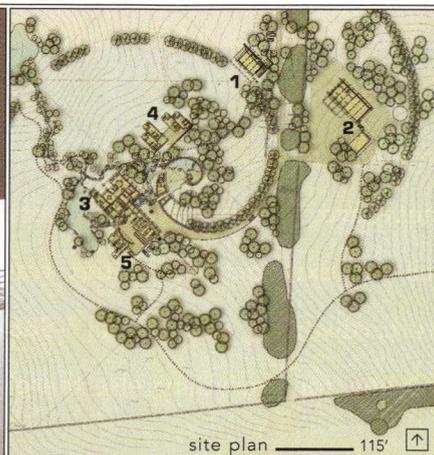
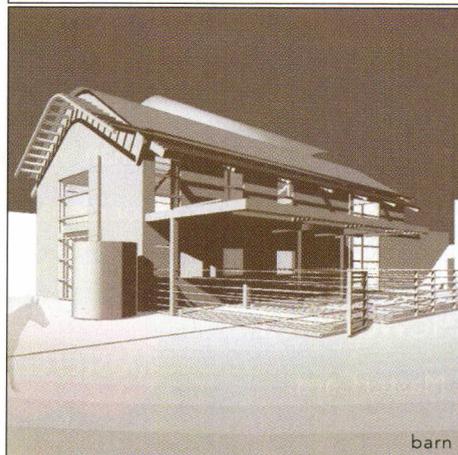


- 1 residential entry
- 2 courtyard
- 3 lobby
- 4 community room
- 5 theater lobby
- 6 retail

OLSON SUNDBERG KUNDIG ALLEN ARCHITECTS | HALE KUMAU | KOHALA REGION, HAWAII

A 60-acre windswept site on the northwest slope of Hawaii's Kohala Mountain is the stage for an oasis of green design. The client, the leader of an environmental foundation, is building his own retreat, a working ranch, and wants ecological principles to come through in the design. The master plan calls for nine structures—a main house (in Hawaiian, *hale*); a master bedroom hale; two guest hailes; a barn; a shop for farm equipment; a garage; and a multipurpose studio—all capable of generating their own electricity. Photovoltaic panels are mounted on

each building, and cisterns collect rainwater. The clients also hope to harness wind for power use in the future. The goal is to generate surplus energy and donate it to the community. The structures are being built in three phases: the first, encompassing the 1,200-square-foot studio, the 3,800-square-foot barn, and 1,700-square-foot shop, is expected to get underway next month. While it will initially serve as a second home, the ranch will eventually become the client's primary residence. **Katie Gerfen**



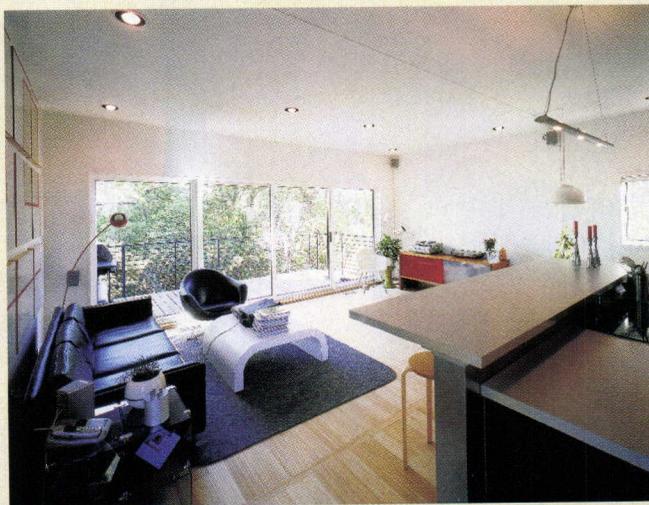
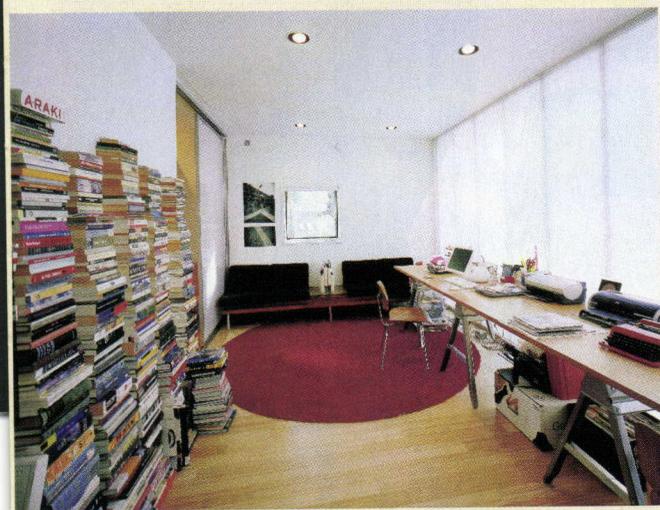
- 1 studio
- 2 barn
- 3 main hale
- 4 guest hailes
- 5 master hale

stick-to-itiveness...and several

FIRST AWARD



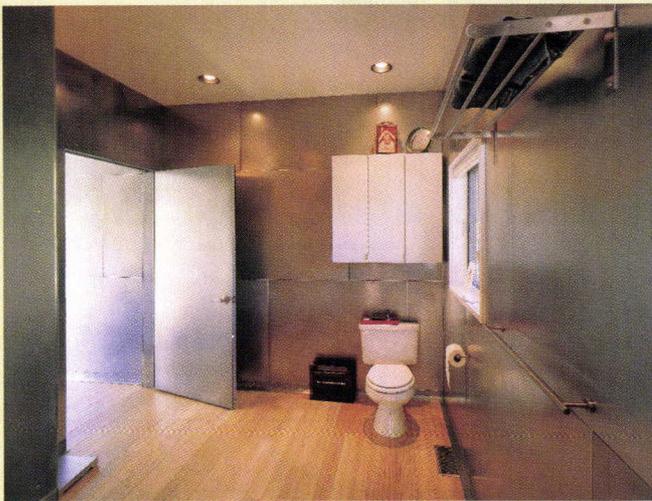
TWO OF THE FIVE 12-FOOT-BY-20-FOOT MODULES ARE COMBINED TO CREATE A LARGE FLOWING SPACE FOR THE LIVING ROOM AND KITCHEN (ABOVE, BELOW RIGHT). OTHER MODULES, LIKE THE ONE HOLDING THE BEDROOM/STUDY (BELOW LEFT), ARE LEFT AS DISCRETE SPACES.

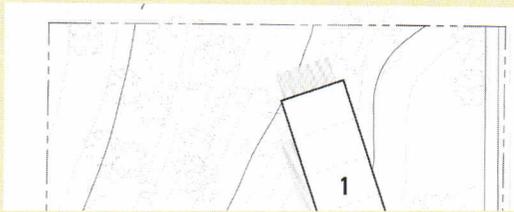
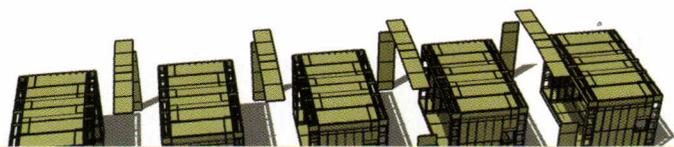


TIMOTHY HURLEY/THE ARKANSAS OFFICE



THE MODULES FOR THE KITCHEN (ABOVE) AND FOR THE BATHROOM AND UTILITIES AREA (BELOW) SHARE A WALL FOR EFFICIENT AND ECONOMICAL INSTALLATION OF THE PLUMBING SYSTEM. BOTH SPACES ALSO EMPLOY THE SAME RECYCLED-ALUMINUM WALL COVERING. BAMBOO FLOORING IS USED THROUGHOUT THE HOUSE.





RAVINE HOUSE

AWARD

KUWABARA PAYNE MCKENNA BLUMBERG ARCHITECTS

SITE

The house is on a deep half-acre lot surrounded on two sides by a heavily treed ravine in Rosedale, a wealthy neighborhood located just northeast of downtown Toronto, Ontario.

PROGRAM

A residence for a family with six children. It is also designed for entertaining and accommodating a range of social, business-related, and cultural events, including fundraisers that often involve large numbers of guests.

SOLUTION

The house is a rare example of modernist design in a traditional nineteenth-century suburb where the typical palette tends toward Victorian, Edwardian, and other revivalist styles. Both discreet and distinctive, the L-shaped house takes the form of a pair of two-story, oversized buff-brick volumes joined by a single-story pavilion clad in mahogany. The vertical volumes contain the private functions—bedrooms, studies, family rooms—while the pavilion contains dining/living and kitchen/service functions that flow together. The dining room opens onto the back terrace through large glass doors, which dissolve the sense of inside and outside. Interior spaces are flexible, accommodating an informal family home and serving as a more formal venue for large gatherings and entertaining by means of a series of sliding and pivoting doors used throughout. The client's collection of modern art and twentieth-century furniture reinforces the neomodernist sensibility of the architectural composition.

The approach to the house is through a landscaped forecourt. A backlit teak fence with a zinc liner surrounds the property, creating a sense of privacy and containment for a series of outdoor rooms, in particular the convivial limestone terraces in the back courtyard, which contains a small pool and affords views to the ravine.

The structural system is hybrid, putting together conventional wood framing with localized steel framing to support cantilevered projections and entrance canopies. The house's construction techniques combine a refined, artisanal level of custom workmanship with contemporary building technologies. Custom-profile doors and windows are milled from mahogany and finished with a dark stain. The interior material palette includes elm floors, plaster-coated drywall, and stainless-steel flatbar. Mahogany and wenge millwork are combined in extensive built-in elements. **BETH KAPUSTA**

CREDITS

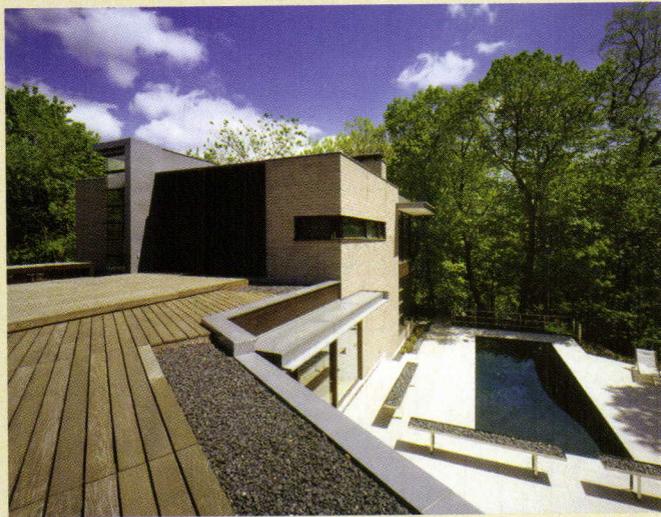
client: Gerald Sheff and Shanitha Kachan **architect:** Kuwabara Payne McKenna Blumberg Architects (KPMB), Toronto—Bruce Kuwabara (partner-in-charge); Kevin Bridgman, Paulo Rocha (project architects) **landscape architect:** NAK Design (planting design); Cornelia Hahn Oberlander (landscape consultant); KPMB (built landscape) **engineers:** Yolles Partnership (structural); Merber (M/E/P) **general contractor:** Eisner-Murray Developments **lighting:** Suzanne Powadiuk **area:** 11,000 square feet **cost:** withheld

Specifications begin on page 75.

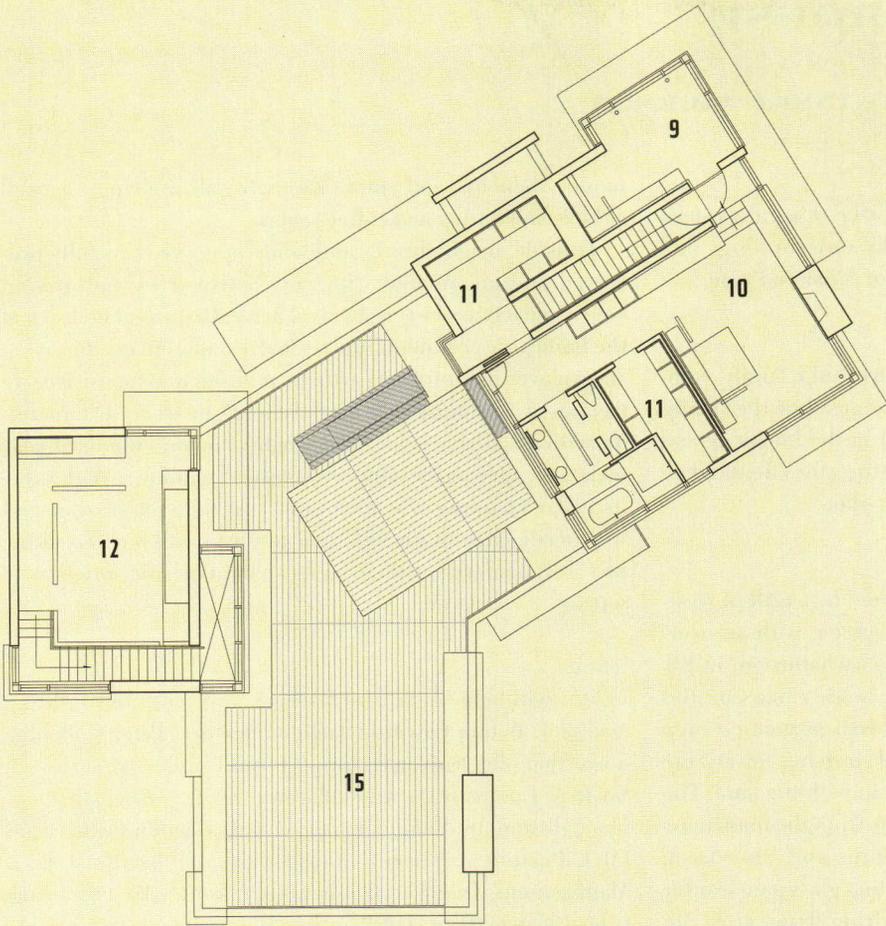




THE HOUSE (ABOVE, BELOW RIGHT) SITS ON THE SPYLED FOOTPRINT OF THE SITE'S FORMER 1959 DWELLING, ALLOWING THE OWNERS TO MAINTAIN PREVIOUS SETBACKS AND PROXIMITY TO AN ADJACENT RAVINE. ENCLOSING THE REAR LENGTH OF THE PROPERTY, A BACKLIT FENCE MADE OF TEAK ANCHORS THE HOUSE TO THE LANDSCAPE (FACING PAGE, BELOW LEFT). INSIDE, WOOD—ELM FLOORS AND MAHOGANY AND WENGE BUILT-INS—CREATES A SENSE OF WARMTH (BOTTOM LEFT, RIGHT).

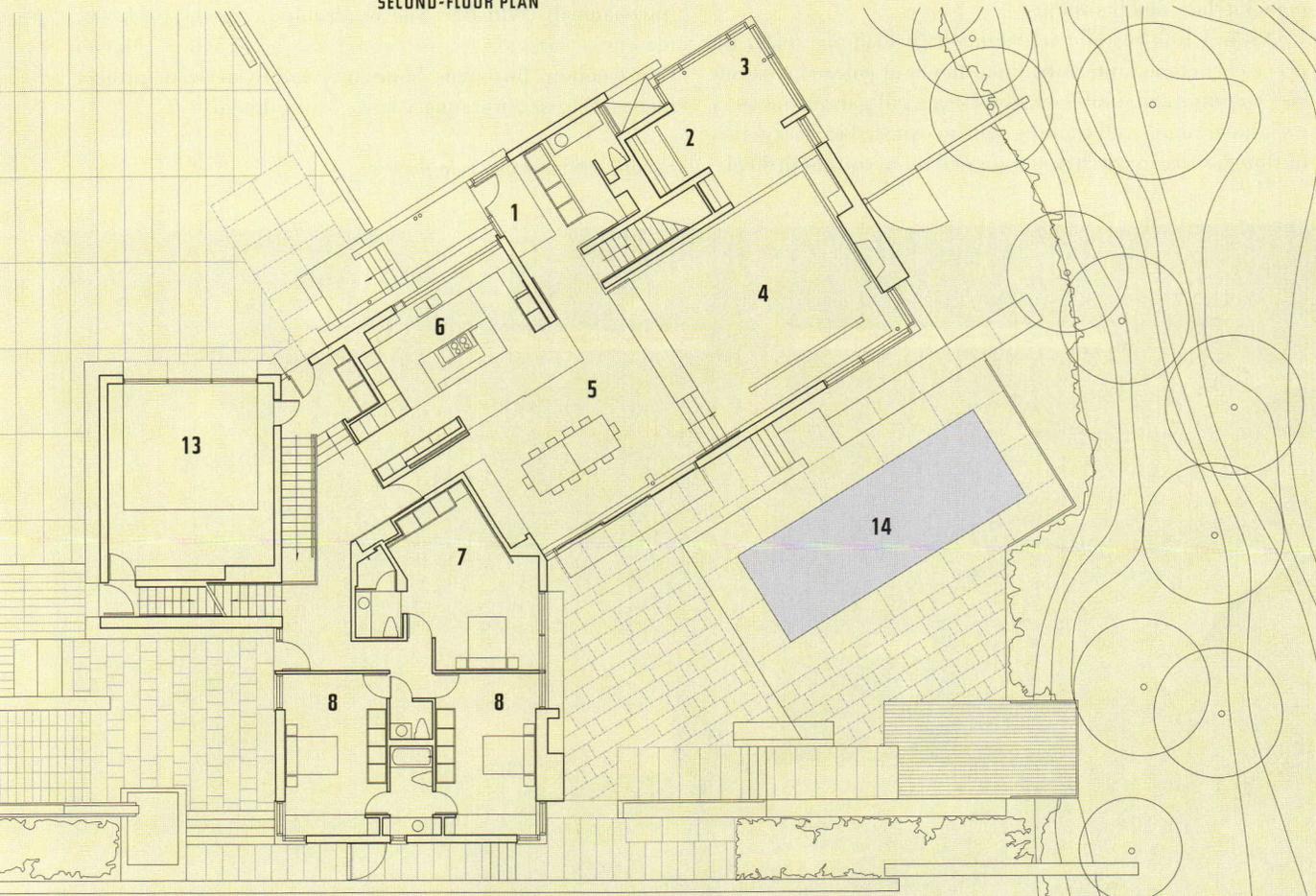


THIS PAGE: TOM ARBAN; EXCEPT LEFT, MIDDLE: PETER SELLAW/KLIK



SECOND-FLOOR PLAN

- 1 ENTRY
- 2 LIBRARY
- 3 SITTING ROOM
- 4 LIVING
- 5 DINING
- 6 KITCHEN
- 7 GUEST BEDROOM
- 8 BEDROOM
- 9 DEN
- 10 MASTER BEDROOM
- 11 DRESSING ROOM
- 12 FAMILY ROOM
- 13 GARAGE
- 14 POOL
- 15 DECK



FIRST-FLOOR PLAN 8'

SITE

The point of a wooded peninsula on a lake in rural western Montana marked by a spine of rocky outcroppings and flanked by dense wetlands and a forest of cedar and pine.

PROGRAM

A hub of daytime activities for a year-round family compound, as well as a quiet retreat for the head of the family. Avid deer and birdwatchers interested in the longevity and sustainability of this two-bedroom structure, the clients advocated for the least intrusive solution possible.

SOLUTION

A linear, horizontal composition anchored by a wall of western red cedar siding and Cor-Ten rainscreen, with an overhanging copper shed roof and two outboard bathroom/utility zones clad in heavy cedar planks. The house's mass nestles among the trees and into the uplifted rock formation on a board-formed concrete foundation, and stretches toward the foot of the wetlands, its long roof sloping with the land. The bathroom volumes are held slightly away from the main mass by glass "gaskets." An enclosed study affords a private retreat, while glass walls and maple-framed sliding glass panels offer ample views of the lake and wetlands from living areas, an open kitchen, and bedrooms.

Natural finishes and understated furnishings mark the precisely detailed interiors: From floors of colored concrete rise columns and double-channel beams of galvanized steel, reclaimed wood-stud framing, and an exposed roof structure of Douglas fir. The architect designed numerous built-in ele-

ments—benches and ample through-wall shelving—as well as beds and dining and coffee tables.

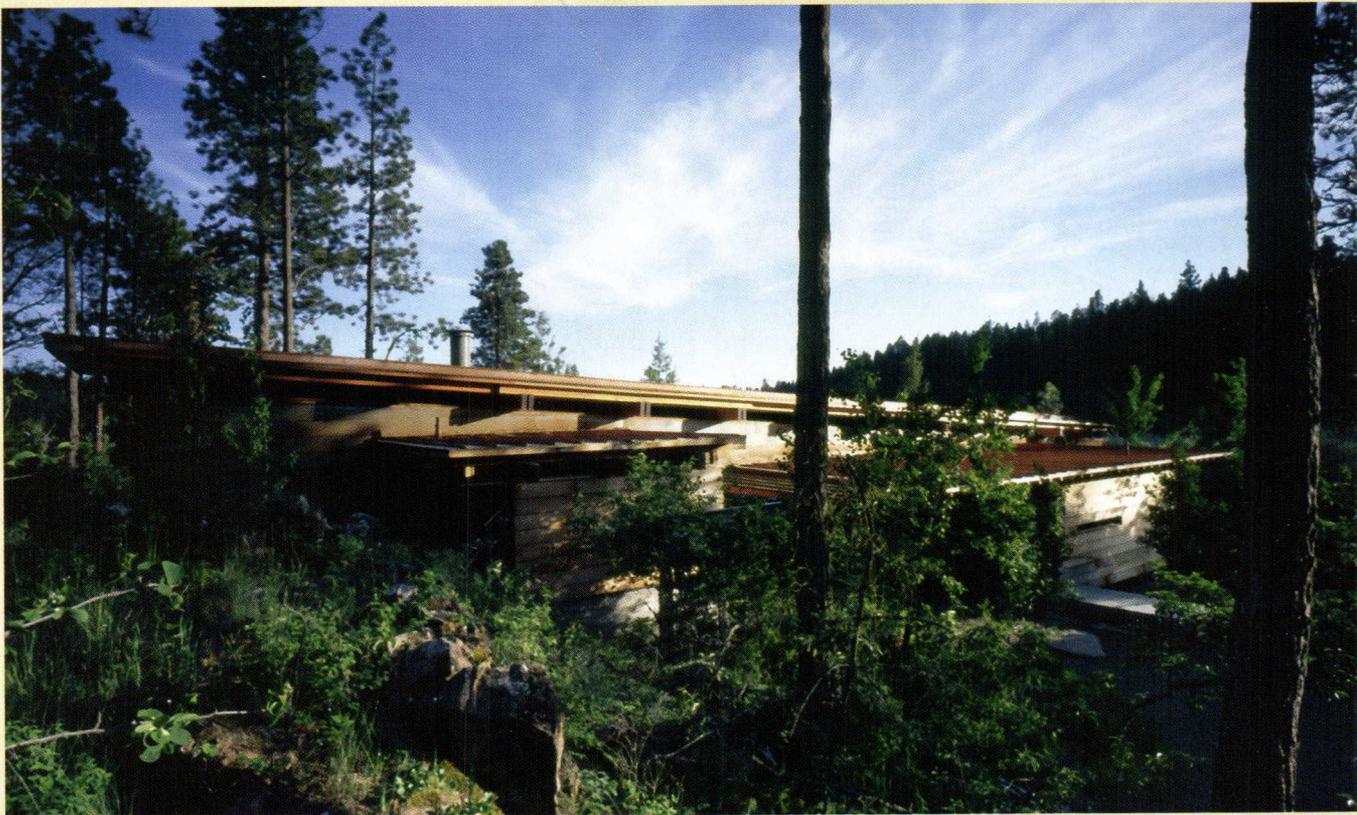
Outside, original trees and landscape were carefully preserved and augmented with new native trees and ground cover, and a grass-covered gravel drive. Disturbed bedrock at the building's perimeter was restored, and pine needles were strewn over the finished earth. In addition to its sensitive site treatment, the house reflects the client's focus on sustainability, with its passive-solar functionality and one-hundred-year materials, such as the copper-clad wood windows. With time, its cedar cladding will turn gray, and the copper roof and weathering-steel walls will tend toward earth tones, making this "soft modern" cabin even more humane and suited to its setting. *C.C. SULLIVAN*

CREDITS

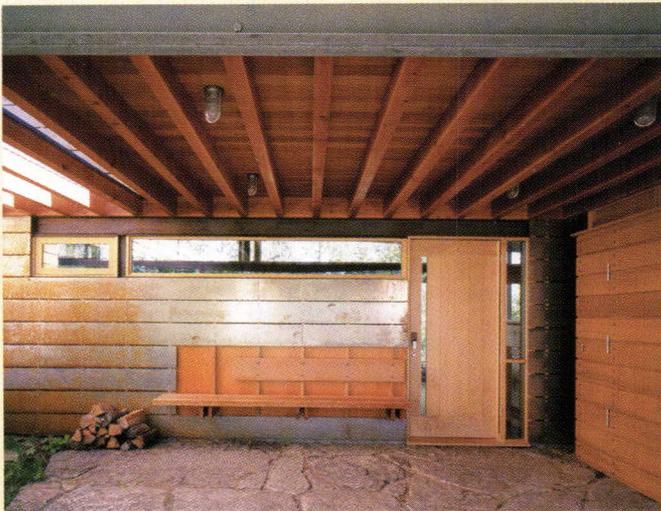
client: withheld **architect, interior designer, and lighting designer:** Bohlin Cywinski Jackson, Seattle—Peter Q. Bohlin, Steve Mongillo, Nguyen Ha (project team) **landscape architect:** Swift & Company, Seattle—Barbara Swift (principal) **engineers:** Beaudette Engineers (structural); Gordon Prill Drapes (M/E/P) **subcontractors and fabricators:** Bradford Roof Management; Doepker (landscaping); Fontecilla Plastering; Giles Electric; Hagestad Painting; Roscoe Steel; Waterworks (mechanical); Whistler Tile & Marble **general contractor, master carpenter, and concrete contractor:** Martel Construction, Bozeman, Montana—Todd Goertzen (project manager) **area:** 2,100 square feet **cost:** withheld

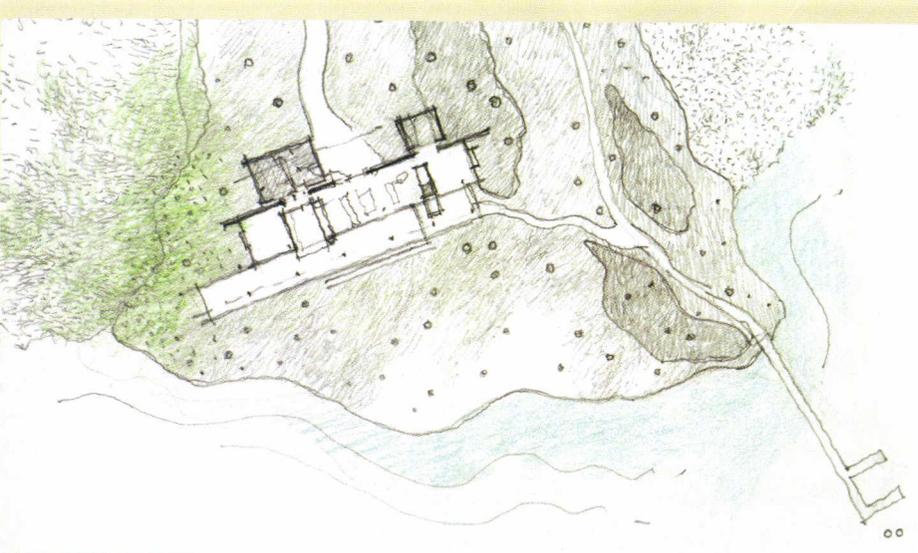
Specifications appear on page 75.





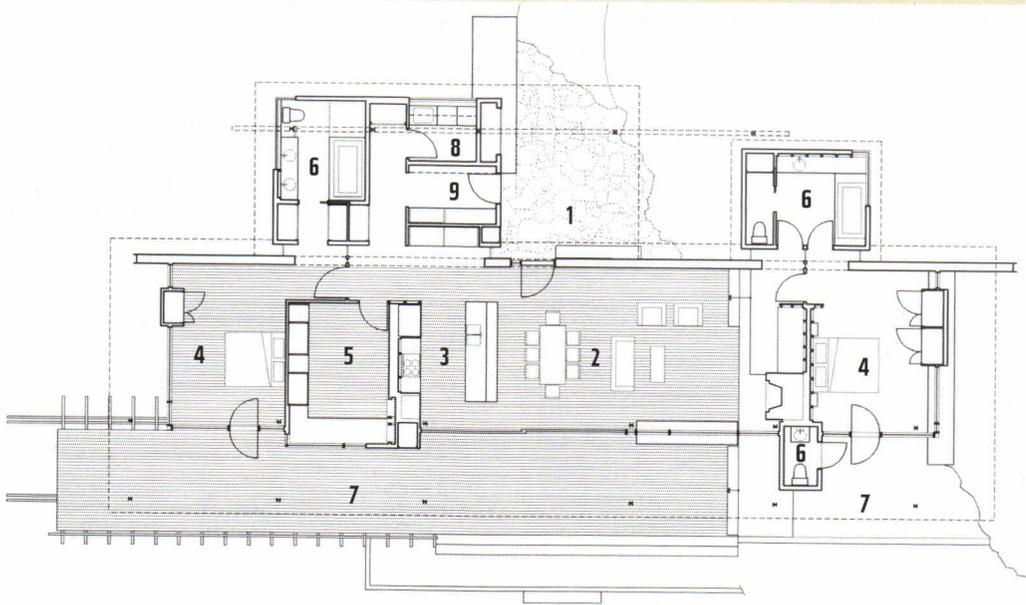
AT ONE END, THE HOUSE NESTLES INTO THE BEDROCK AND TREES OF ITS SITE (ABOVE); AT THE OTHER, IT OPENS TO WETLANDS AND LAKEFRONT (FACING PAGE). NUMEROUS BUILT-INS MARK ITS MAIN ENTRY AND LIVING AREAS (BELOW), WITH EXPOSED CONCRETE, COR-TEN AND GALVANIZED STEEL, AND WOOD FINISHES.





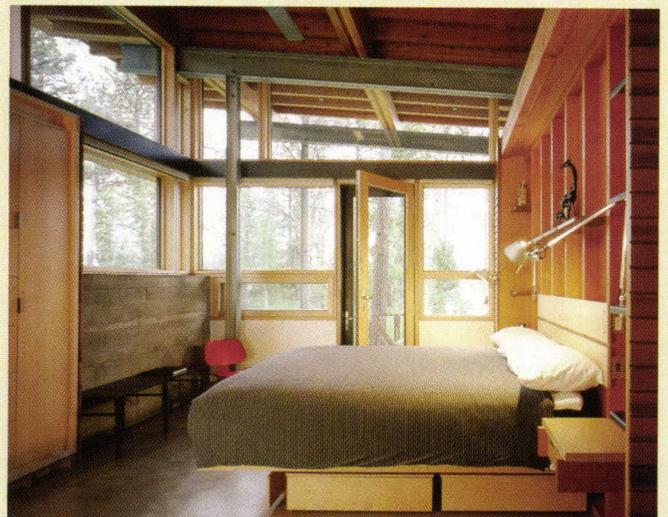
- 1 ENTRY
- 2 LIVING
- 3 KITCHEN
- 4 BEDROOM
- 5 STUDY
- 6 BATHROOM
- 7 DECK
- 8 LAUNDRY
- 9 MUDROOM

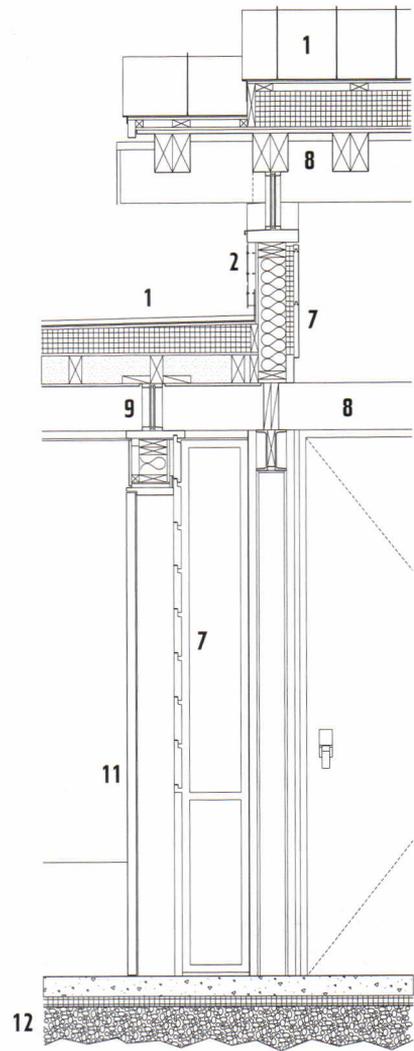
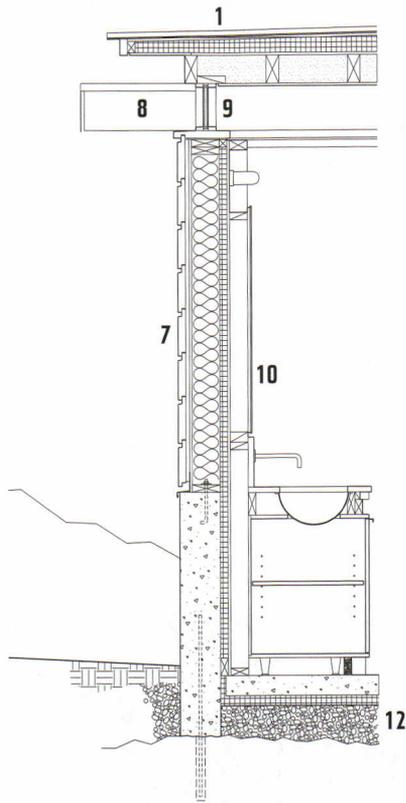
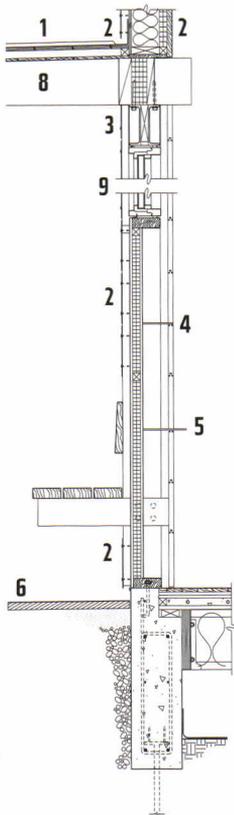
SITE SKETCH



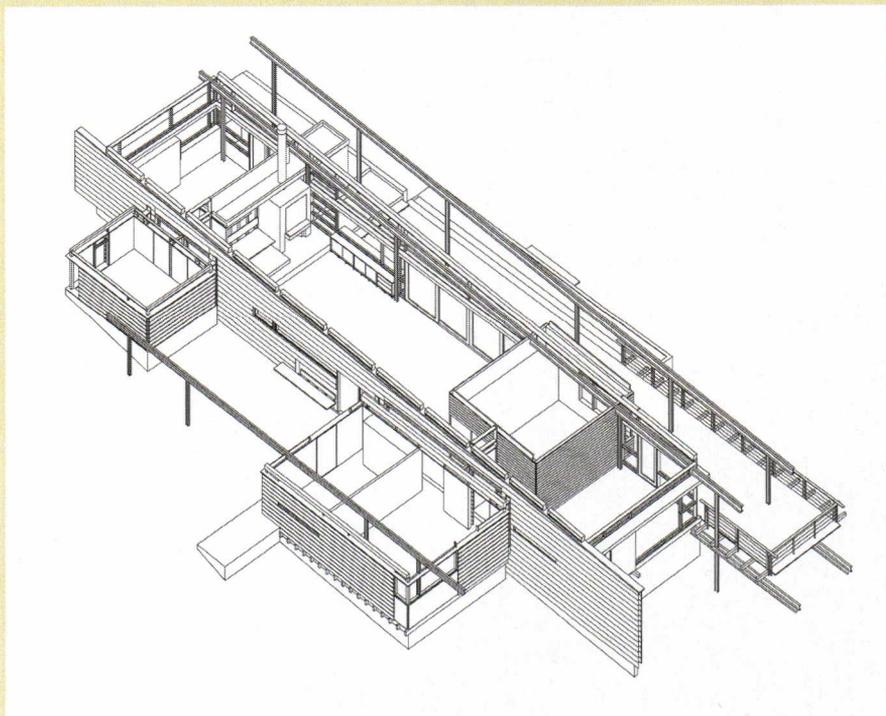
FLOOR PLAN 8' ↑

A HEAVY WALL OF COR-TEN STEEL AND CEDAR SIDING TO THE NORTH AND A PRIMARILY GLASS WALL FACING THE SOUTH ORGANIZE THE STRUCTURE (FACING PAGE). AN EXPOSED DOUGLAS FIR ROOF, GALVANIZED-STEEL BEAMS, AND RECLAIMED TIMBERS ARE VISIBLE WITHIN, AND AALTO CHAIRS COMPLEMENT THE ARCHITECT'S CUSTOM-DESIGNED TABLES AND BUILT-INS, INCLUDING BEDS, CABINETS, AND THROUGH-WALL SHELVING (BELOW LEFT AND RIGHT).





DETAIL SECTIONS AT MAIN ENTRY AND EAST BATHROOM



- 1 COPPER ROOF
- 2 COR-TEN STEEL PLATE
- 3 COR-TEN CHANNEL BEAMS
- 4 GLASS SHELF
- 5 STEEL SHELF
- 6 MONTANA MOSS STONE SET IN SAND
- 7 CEDAR SIDING
- 8 FIR BEAM WITH METAL FLASHING CAPS
- 9 INSULATED WINDOW
- 10 MIRROR
- 11 DOOR
- 12 CONCRETE SLAB WITH RADIANT HEAT ON RIGID INSULATION

AXONOMETRIC VIEW 10'

SITE

A small lot in Venice, California, abutting one of the local canals. The area is zoned for single-family dwellings, with a 30-foot height limit.

PROGRAM

The owner-architect sought to develop a live-work space that would be internally delineated in a subtle way. The tightness of the site meant that the scheme needed to fit a variety of functions into a relatively small space, particularly in the “live” portion of the structure.

SOLUTION

Canal House is composed of three cubes: one raised above street level to hold a studio space, and two others conjoined to accommodate domestic areas. The raised studio cube is partially clad in a system of horizontal metal fins spanning the opaque portion of a double-height curtain wall; a band of clear, uncovered glazing admits more direct light. The other portion of the same cube, which is sufficiently above grade to accommodate a carport below, is sheathed in vertical planks of perforated metal. Separated from the studio volume by a

narrow, metal-mesh-enclosed courtyard are the stacked living spaces. Here, novel use of materials reinforces the notion of tightly programmed volumes almost pouring in on themselves. What the architect calls a “Möbius strip” of sanded acrylic encircles a double-height atrium that opens above the dining area, serving as partition, safety rail, and ornament over both floors. (The same dining space is elegantly framed by black-painted steel pipe and cross-braces.) Stairs of bent 1/2-inch steel plate, a kitchen counter of custom folded polycarbonate, and a privacy screen of parachute nylon all contribute to the house’s sense of fluidity. **JAMIE REYNOLDS**

CREDITS

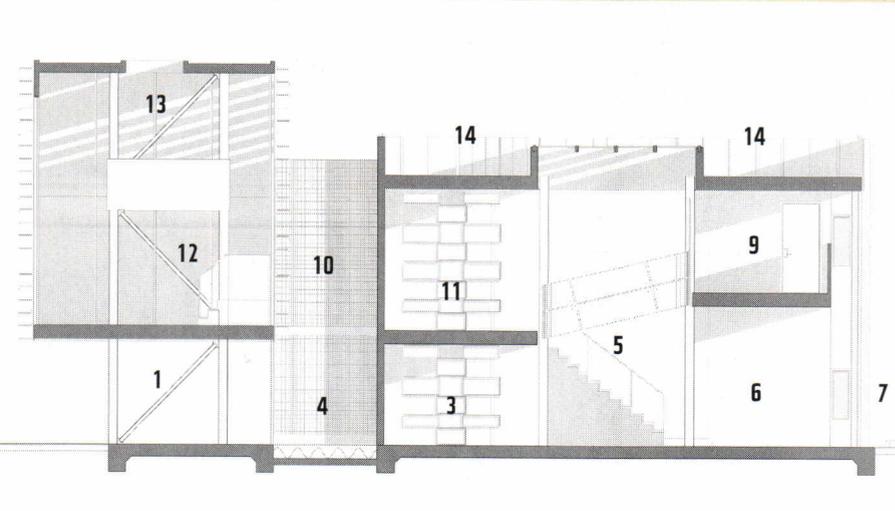
client: Whitney Sander **architect and landscape and lighting designer:** Sander Architects, Marina del Rey, California—Whitney Sander (principal); Summer Williams (assistant) **structural engineer:** Oxford Engineering **subcontractors:** J.F. Novel (resin/plastics); Angeles (steel) **construction manager:** Herman Hernandez **general contractor:** Ruiz Brothers; Herman Hernandez **area:** 2,100 square feet **cost:** \$380,000

Specifications appear on page 75.



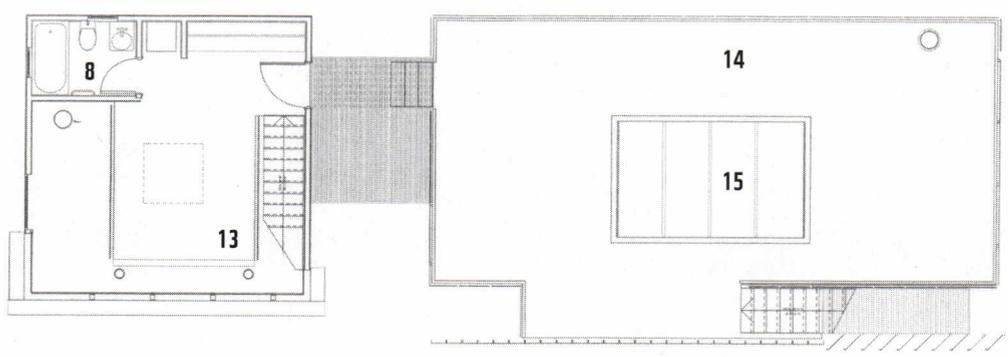


CANAL HOUSE GLOWS LANTERNLIKE THROUGH THE STEEL FINNS CLADDING THE STUDIO PORTION OF THE HOME (FACING PAGE). RIBBONS OF SANDED ACRYLIC BEGIN ABOVE THE DOUBLE-HEIGHT DINING ROOM (ABOVE LEFT) AND CLIMB TO THE TOP OF THE ATRIUM IN THE RESIDENTIAL PORTION OF THE BUILDING (TOP LEFT), SERVING AS A PARTITION TO PRIVATE SPACES, SUCH AS THE MASTER BEDROOM (TOP RIGHT) AND MASTER BATHROOM (ABOVE RIGHT).

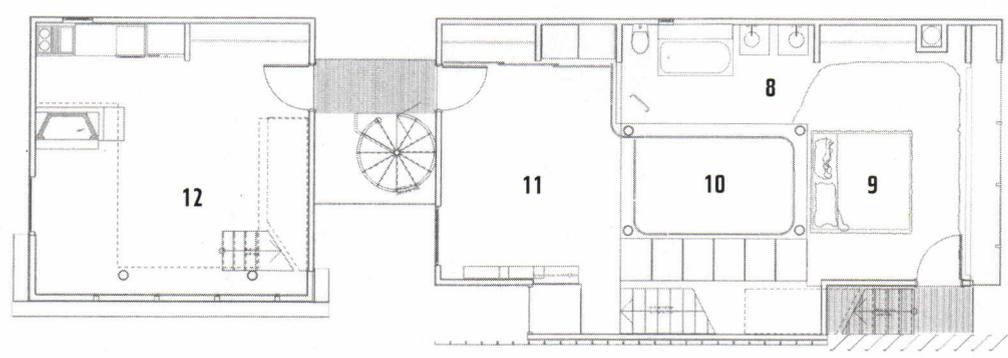


- 1 CARPORT
- 2 POOL
- 3 KITCHEN
- 4 COURTYARD WITH SPIRAL STAIR
- 5 DINING
- 6 LIVING
- 7 PATIO
- 8 BATHROOM
- 9 BEDROOM
- 10 LIGHT WELL
- 11 FAMILY ROOM
- 12 STUDIO
- 13 LOFT
- 14 ROOFTOP DECK
- 15 SKYLIGHT

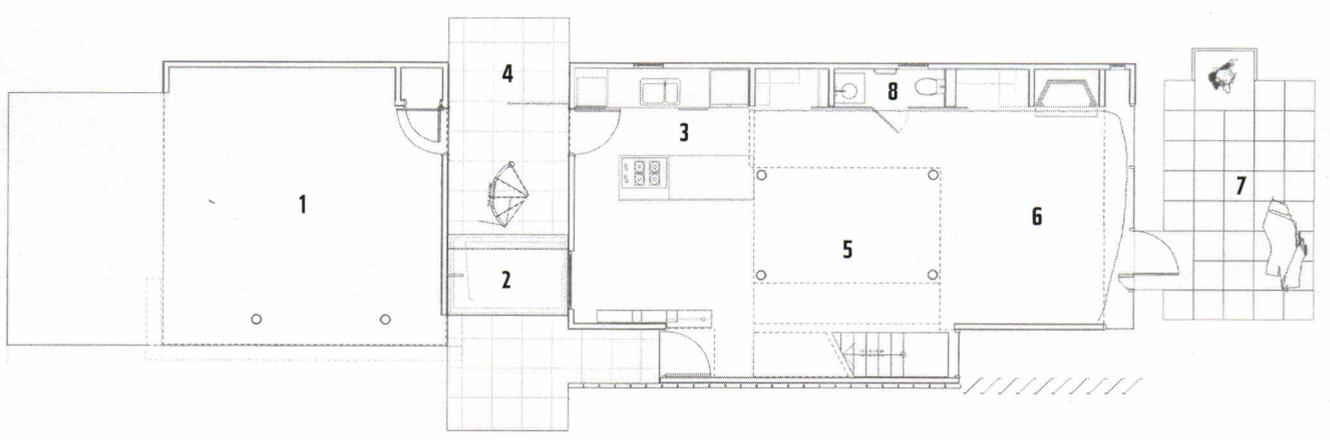
EAST-WEST SECTION ——— 8'



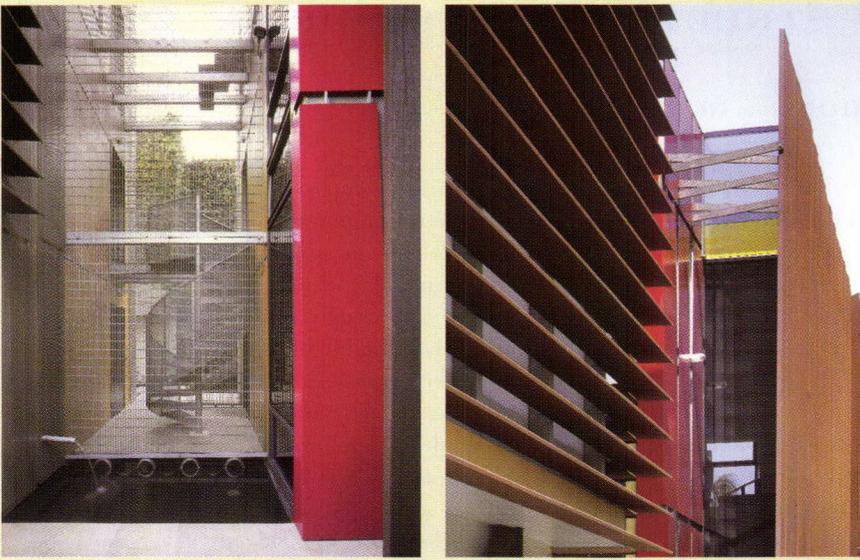
THIRD-FLOOR/ROOF PLAN



SECOND-FLOOR PLAN



FIRST-FLOOR PLAN ——— 6' ↑



VIEWS FROM THE CANAL SIDE, THE LIVING VOLUMES ARE FRAMED BY EXPOSED STEEL PIPE (BELOW). THE OWNER-ARCHITECT'S STUDIO FACES SOUTH, WITH METAL HORIZONTAL FINES PROVIDING SHADE FROM THE SOUTHERN CALIFORNIA SUN (LEFT). A COURTYARD ENCLOSED BY METAL MESH LINKS THE LIVING AND WORKING VOLUMES (FAR LEFT).



SITE

A 50-foot-by-48-foot lot previously occupied by a liquor store on a busy corner in an area considered the gateway to San Francisco's rapidly changing Mission and Dolores districts, where housing sits cheek by jowl with nightclubs, cafés, tattoo parlors, and other businesses.

PROGRAM

A trio of three-bedroom triplex units with rooftop lounge areas, a 1,200-square-foot ground-floor commercial unit, and six off-street parking spaces. Zoning limits the building height to 40 feet, with exclusions for parapets, and requires a secondary means of egress from the third and fourth floors directly to the street, as well as outdoor space for all residential units.

SOLUTION

With mixed-use programs on the rise at every scale, projects with both residential and commercial components such as this one are an increasingly common challenge. For the architects of this residential and retail development, the solution was to design both public and private "personas" for the building. To achieve this—and meet zoning requirements for off-street parking and a minimum rear-yard setback—they conceived of a south-facing courtyard that establishes secure building access for residents and a respite from the busy intersection; the installation of mechanical parking lifts doubled the

required number of off-street spaces in a compact manner.

The cladding palette combines glazed bays, which show off the double-height interior spaces, with dark stucco and corrugated copper panels. Aluminum casement, fixed, awning, and hopper windows diversify the envelope, reducing the building mass and highlighting internal functions.

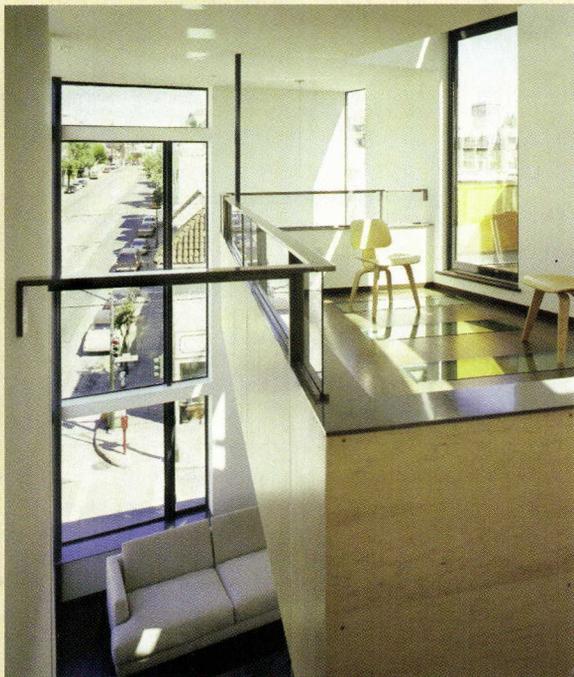
The interior vocabulary leans toward equally warm colors and finishes, all accentuated by the natural light that fills the residential units' multilevel volumes: The ceiling panels are maple plywood; the flooring is bamboo in two units and ebony-stained white oak in the third; cabinets are finished with anigre, fir, and ebony veneers; and entry foyers and bathrooms are lined with black slate tiles and gray slate slabs or bush-hammered limestone tile. **ABBY BUSSEL**

CREDITS

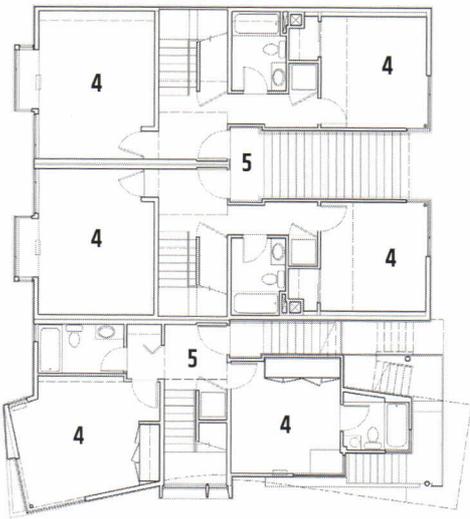
client: Werner and Associates **architect:** Kennerly Strong Architecture, San Francisco—Owen Kennerly (principal-in-charge); Addison Strong (principal); Jonathan Oelschig (project assistant) **consulting architect:** John Winder **engineers:** Santos & Urrutia (structural); David Penney (mechanical); Shen, Milsom & Wilke/Paoletti (acoustics); North Coast Engineering (geotechnical) **general contractor:** Werner & Associates **area:** 10,000 square feet **cost:** \$2.4 million

Specifications appear on page 75.

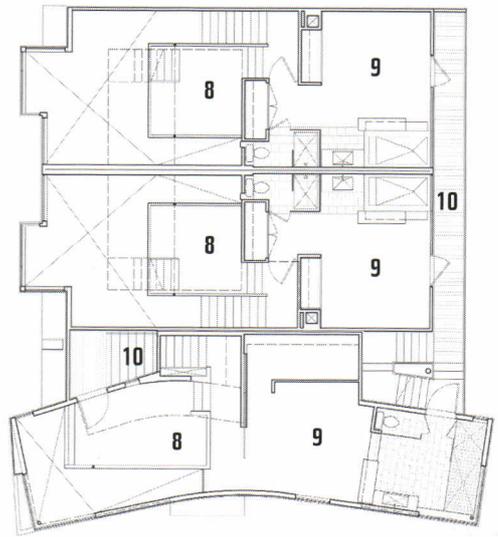




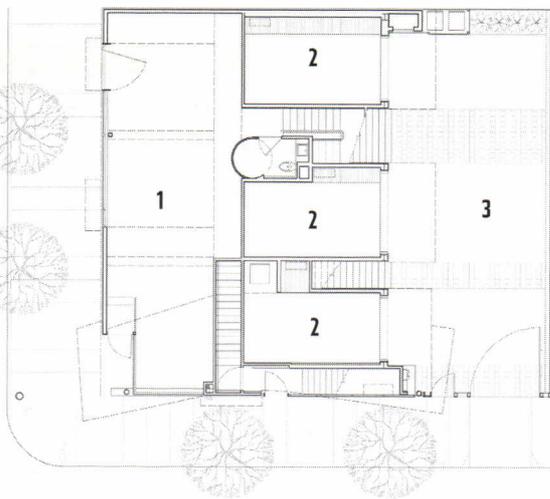
STUCCO CLADDING IDENTIFIES THE GROUND-FLOOR STORE, WHILE PROTRUDING GLASS-ENCLOSED BAYS MARK TWO APARTMENTS ABOVE (FACING PAGE) AND CORRUGATED COPPER WRAPS A THIRD UNIT AT THE CORNER. MULTILEVEL INTERIORS WITH A FLOATING MEZZANINE AND OUTDOOR SPACES, SUCH AS THE MASTER BEDROOM TERRACE, TAKE ADVANTAGE OF THE WEST COAST CLIMATE (TOP, MIDDLE, BOTTOM).



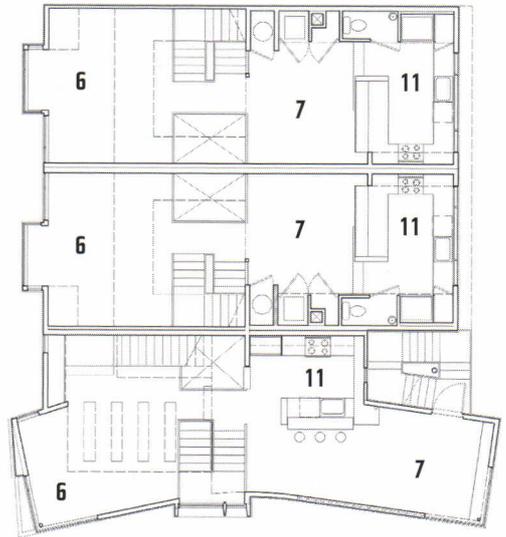
SECOND-FLOOR PLAN



FOURTH-FLOOR PLAN

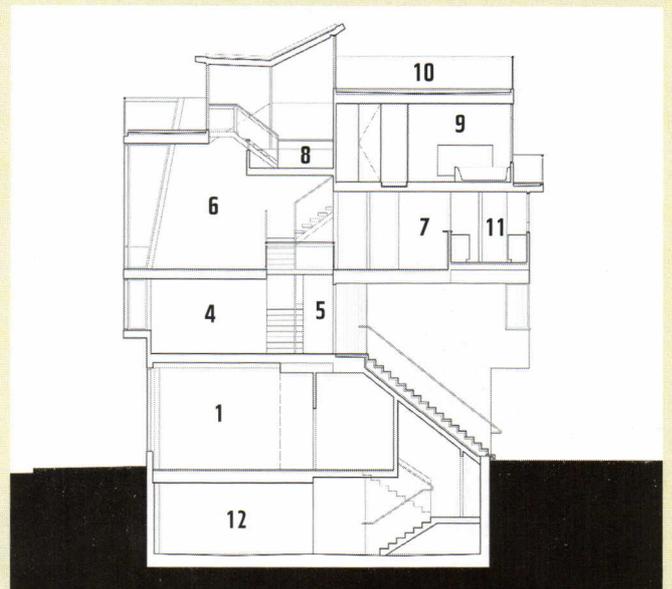


FIRST-FLOOR PLAN

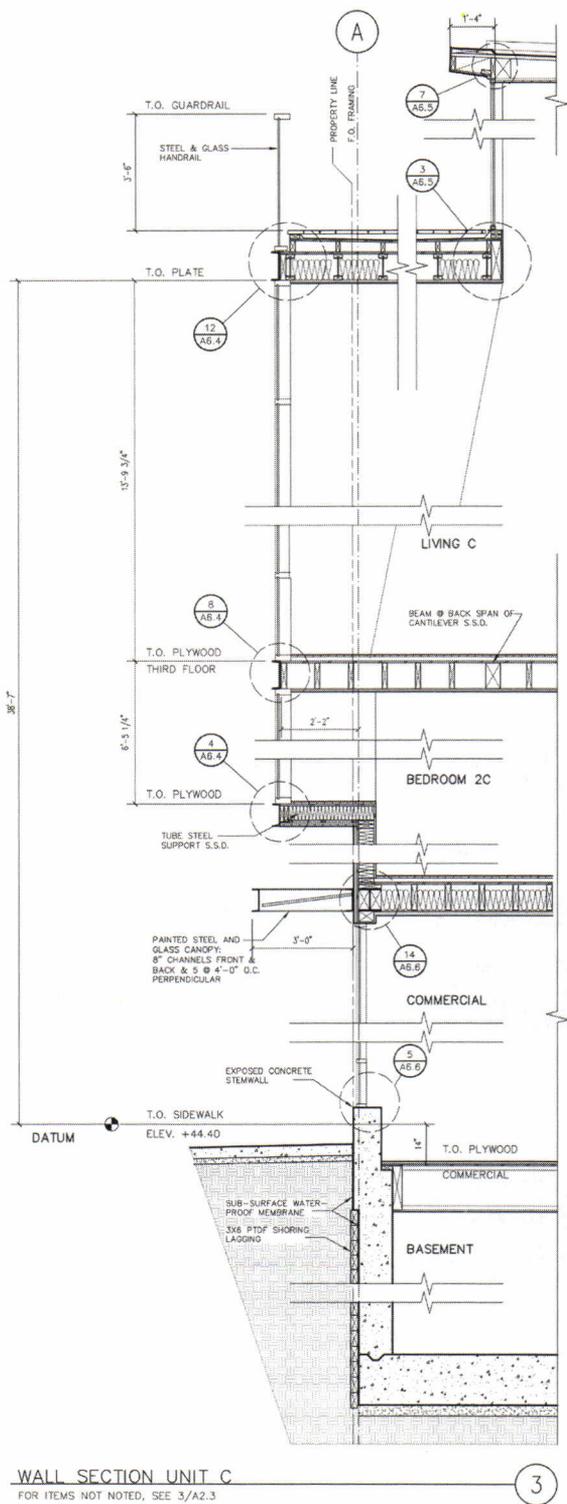


THIRD-FLOOR PLAN 10' ←

- 1 COMMERCIAL
- 2 PARKING LIFT
- 3 COURTYARD
- 4 BEDROOM
- 5 ENTRY
- 6 LIVING
- 7 DINING
- 8 MEZZANINE
- 9 MASTER BEDROOM
- 10 DECK
- 11 KITCHEN
- 12 BASEMENT



NORTH-SOUTH SECTION THROUGH MIDDLE UNIT 12'



SECTION THROUGH NORTH WALL

MAPLE PLYWOOD CEILING PANELS AT THE MEZZANINE AND VERTICALLY LAMINATED BAMBOO FLOORING ARE USED IN THE UNITS FACING GUERRERO STREET (TOP). QUARTER-SAWN WHITE OAK WITH EBONY STAIN AND OIL-BASED FINISH ARE FOUND IN THE CORNER UNIT (MIDDLE, BOTTOM).



CASA LARGA

AUGUSTO QUIJANO ARQUITECTOS

CITATION

SITE

A long, flat lot in Merida, Mexico, along a dirt road in an undeveloped suburb. The site is oriented lengthwise along a north-south axis, with prevailing winds from the east.

PROGRAM

The client sought to draw visitors into a series of increasingly intimate spaces in this year-round, three-bedroom residence, while providing areas for entertaining, swimming, and relaxing that take advantage of local weather conditions. For security reasons, the property is completely walled off.

SOLUTION

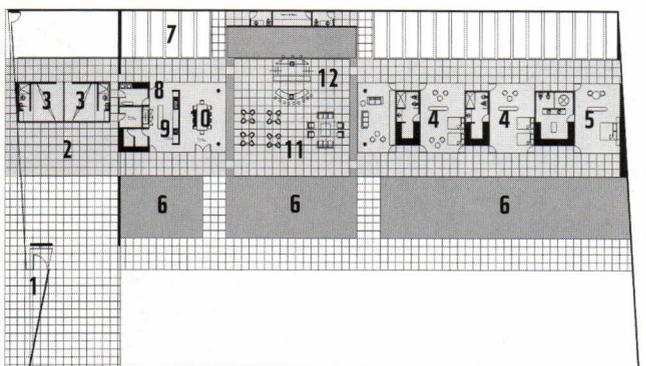
A series of glass-enclosed boxes begins with kitchen and communal spaces at the edge of the lot adjacent to the street, and moves to an open-air entertainment area in the center and then to a trio of nearly identical bedroom-bathroom pairings at the far end. By setting the linear arrangement of volumes slightly to the western side of the site, the designers capitalize on the cool-

ing effect of easterly breezes moving across the blue-tiled swimming pool that runs almost the entire length of the lot. A garden spanned by cement-board rafters opposite the pool area provides limited shading at the height of the day's heat. A U-shaped "water mirror" that shares water with the pool hugs the borders of the central area and draws visitor's eyes toward one of the few purely ornamental features of the house: an imposing copper-hued mural of natural stone blocks. **JAMIE REYNOLDS**

CREDITS

client: withheld **architect:** Augusto Quijano Arquitectos, Merida, Mexico—Augusto Quijano Axle (principal); Gaspar Pérez Axle (project architect) **engineers:** Enrique Escalante Galaz (structural); Ignacio Acevedo (civil) **construction manager:** Ignacio Acevedo **lighting designer:** 333 Luxes **interior designer/architect:** Hector Arellano **area:** 9,395 square feet **cost:** \$600,000

Specifications begin on page 75.



FLOOR PLAN ——— 30' →

ONCE VISITORS PASS THROUGH ITS NEARLY SEAMLESS ENTRY (TOP LEFT), CASA LARGA REVEALS ITSELF TO BE A SERIES OF GLASS-ENCLOSED VOLUMES (TOP RIGHT). THE OPEN-AIR LIVING ROOM RECEIVES EASTERLY BREEZES FROM ACROSS A POOL (ABOVE RIGHT), WHILE A PARTIALLY COVERED GARDEN (ABOVE LEFT) PROVIDES SOME SHADE FROM SIESTA-HOUR SUN.

- | | |
|------------------|-----------|
| 1 ENTRY | 7 GARDEN |
| 2 GARAGE | 8 LAUNDRY |
| 3 BATHROOM | 9 KITCHEN |
| 4 BEDROOM | 10 DINING |
| 5 MASTER BEDROOM | 11 LIVING |
| 6 POOL | 12 BAR |

CEDAR STREET REMODEL

coLAB

CITATION

SITE

A flat suburban lot in a typical postwar community of Tempe, Arizona. Flood irrigation provides adequate water to support landscaping.

PROGRAM

Unlike designers of house expansions who tend to take space away from backyard gardens, the architect-owners of this residence aimed to retain outdoor space while capturing more live-work area and increasing privacy for the property.

SOLUTION

Two significant alterations were made to the conventional domestic order of the 1950s single-story residence. First: All interior bedroom walls were removed, producing a U-shaped living space for cooking, dining, lounging, and working. (The removal of the walls also allowed views from the front of the house to the back garden.) And second: The architects inserted

two rectangular, partially enclosed “pods” into the backyard. Raised above the ground to allow air cooled by plantings to rise through the structures, the pods are designed as luminous shelters clad in corrugated fiberglass on steel framing. Echoing the shape of storage sheds and porch materials found on neighboring properties, the 200-square-foot enclosures sit parallel to each other on the east and west edges of the lot, establishing a relatively private courtyard. **ABBY BUSSEL**

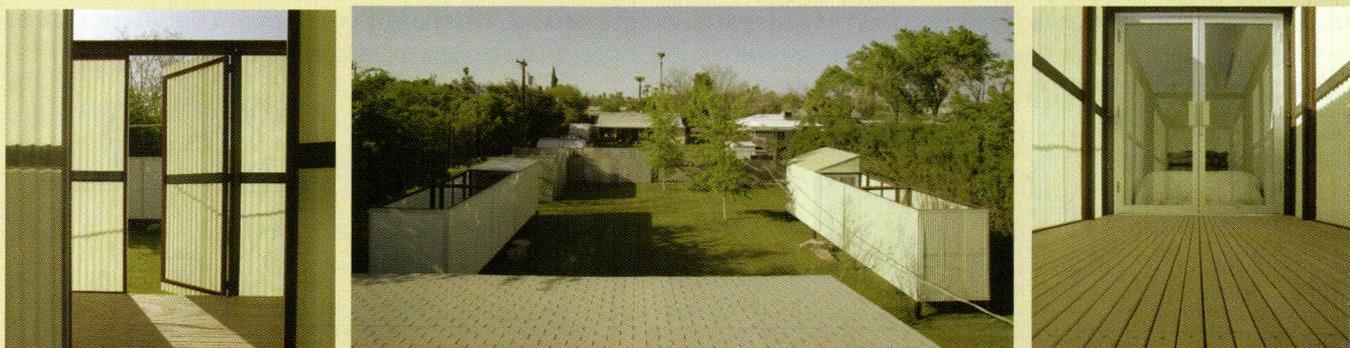
CREDITS

client, architect, landscape architect, and general contractor: coLAB, Tempe, Arizona—Matthew Salenger, Maria Salenger (principals) **consultants:** Wolfgang Heating & Cooling (HVAC); Ferguson Electric (electrical); Dennis McQuillen (plaster); Steve McKnight (carpentry) **area:** 1,150 square feet (remodel); 400 square feet (pods) **cost:** \$42,000

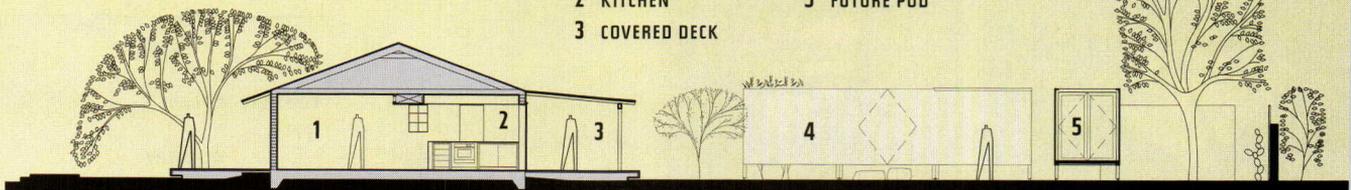
Specifications begin on page 75.



SUPPORTED BY BOULDERS BURIED IN THE GROUND, THE BACKYARD SLEEPING PODS ARE ALSO MEANT TO BE MOBILE—THEY CAN BE REUSED AS SHIPPING CONTAINERS FOR THE OWNER'S BELONGINGS WHEN IT COMES TIME TO SELL THE HOUSE. AIR CONDITIONING AND ELECTRICITY IN THE PODS ARRIVE THROUGH A STANDARD EXTERIOR OUTLET.



- 1 LIVING SPACE
- 2 KITCHEN
- 3 COVERED DECK
- 4 SLEEPING POD
- 5 FUTURE POD



NORTH-SOUTH SECTION 10

CREEKSIDE RESIDENCE

LAKE | FLATO ARCHITECTS

CITATION

SITE

Sited next to a ravine amid towering pine trees, the house is located in the Memorial area of Houston, Texas, an established community of large estate homes.

PROGRAM

The client, a couple with two young sons, wanted a modern house that could accommodate both large family gatherings and the more intimately scaled needs of their everyday lives.

SOLUTION

Decidedly modern—albeit with a regionalist inflection in style and use of materials—the steel structural system allows for a generously glazed house with an open plan and views of the nearby creek. The exterior is clad in copper siding, acid-stained stucco, and steel and aluminum window frames, with brises soleil, fencing, arbors, and a shoji-style paneled carport all made of durable ipe wood. From the inside, glass, heavy

steel, and rift-cut white oak meld the house with its site. With a separate guest house/cabana, the house easily accommodates large groups. The parent's and children's bedrooms are connected by a bridge across the two-story living room. **BAY BROWN**

CREDITS

client: withheld **architect:** Lake | Flato Architects, San Antonio, Texas—Ted Flato (principal-in-charge); Karla Greer (partner-in-charge); Billy Johnson (project architect) **landscape architect:** McDugald Steele Landscape **engineer:** Steven G. Persyn (structural); Gulf Coast Air Conditioning (M/E/P) **consultants:** Bill S. Jensen Architectural Lighting (lighting); Media Designs (audio-visual); Elegant Editions (plumbing) **general contractor:** Renaissance Builders—Chandler Robinson (project manager) **area:** 9,000 square feet **cost:** withheld

Specifications begin on page 75.



THE VARIED USE OF COPPER SIDING, ACID-STAINED STUCCO, AND IPE WOOD GIVE CREEKSIDE RESIDENCE A DIVERSE PALETTE THAT SERVES AS A RICH BACKDROP FOR THE MANY SOCIAL GATHERINGS THE OWNERS HOST POOLSIDE IN THEIR BACKYARD. LIKEWISE, THE USE OF WOOD AND METAL INSIDE BRINGS THE OUTSIDE IN.



FIRST-FLOOR PLAN 15'

- | | |
|---------------|----------------------|
| 1 LIVING | 4 ENTRY |
| 2 DINING | 5 POOL |
| 3 FAMILY ROOM | 6 GUEST HOUSE/CABANA |

4001 BOWSER

RUSSELL BUCHANAN:ARCHITECT

CITATION

SITE

A corner lot in the Oak Lawn neighborhood of Dallas, in a suburban fabric of colonial and Mediterranean-style homes.

PROGRAM

The developer requested three two-bedroom residential units in a building that uses the maximum possible space on a lot with stringent zoning constraints, including setbacks, on-site parking requirements, and height allowances.

SOLUTION

The building is separated into three 2,300-square-foot vertical units of three floors each: the ground floor of each unit consists of a two-car garage and an entry; the second encompasses a kitchen, dining area, living room, and powder room; and the third holds two bedrooms, two full bathrooms, and a utility room. All three units share a driveway, though each has its own zoning-required two-car garage. The top two levels cantilever over the communal driveway, increasing the occupiable volume. Despite the primary goal of maximizing living area on a

small site—the architect uses every available inch permitted under existing zoning, save for half a foot of height allowance—the project is also characterized by careful attention to detail and a high level of craft. Screws are aligned along the polished birch soffit under the cantilever, and recessed lighting is centered along the living room ceiling. Even safety features are worked into the clean-lined aesthetic: Requisite roof access is achieved by a stainless-steel ladder that serves as an extension of the third-floor staircase handrail. **KATIE GERFEN**

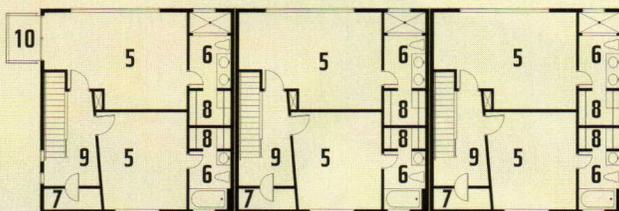
CREDITS

client: Fairfax Development **architect:** russell buchanan:architect, Dallas, Texas—Russell Buchanan (lead designer); Jordan Yamada (designer) **engineer:** McHale Engineering **subcontractors:** Nationwide Slate and Metal (roofing, sheet metal); Galvan Landscaping (landscape); Mata Masonry (CMUs); Trinity Hardwoods (floors) **general contractor:** Fairfax Development **area:** 6,900 square feet **cost:** withheld

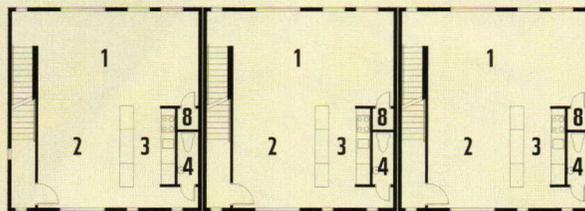
Specifications begin on page 75.



AWNINGS AND BALCONIES WERE EXEMPT FROM STRICT ZONING SETBACKS, SO THE ARCHITECT INCLUDED A STAINLESS-STEEL AWNING OVER EACH ENTRY DOOR AND A STAINLESS-STEEL AND POLYCARBONATE BALCONY ON THE CORNER APARTMENT (ABOVE), WHICH TAKES ON A LUMINOUS QUALITY AT NIGHT.



THIRD-FLOOR PLAN



SECOND-FLOOR PLAN 11'

- | | | |
|---------------|-------------|------------|
| 1 LIVING | 5 BEDROOM | 9 HALL |
| 2 DINING | 6 BATHROOM | 10 BALCONY |
| 3 KITCHEN | 7 UTILITIES | |
| 4 POWDER ROOM | 8 CLOSET | |



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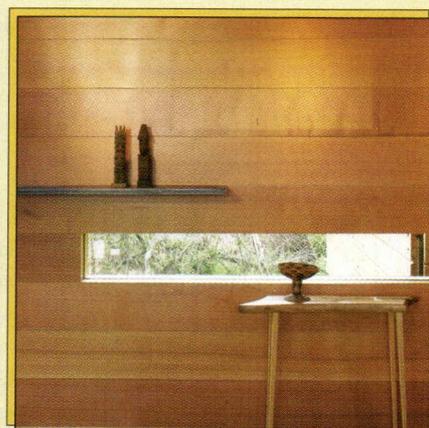
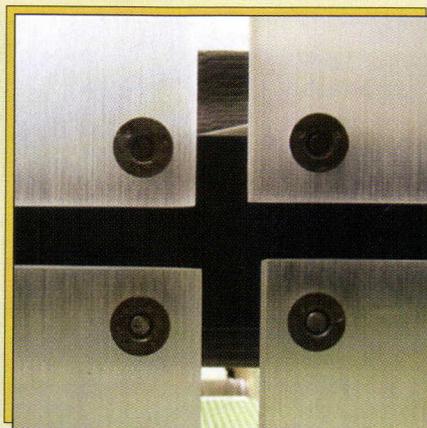
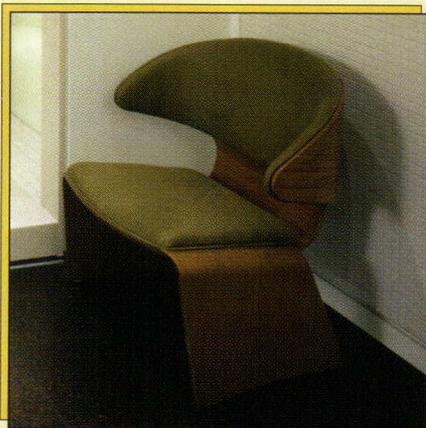
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THE INSIDE SCOOP: FURNISHINGS AND LIGHTING

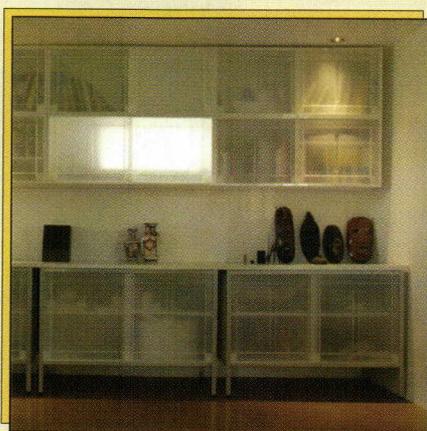


From Mexico's Yucatan Peninsula to a ravine-side site in Canada, and spanning influences pre-Colombian to proto-blob, the interiors of this year's Home of the Year Award-winning houses showed deft choices in materials and products that bring customization and comfort to the nine residential spaces.

In the starkly minimal volumes of Casa Larga (page 60), a towering mural of **Indian stone** rises out of the "water mirror" that is an indoor extension of the property's lot-length pool. Highlighted at night by **Troll** (www.troll.es) ambient lighting, the mural serves as a central gathering spot in a large entertainment area peppered with **Habitare** (www.habitare.de) seating.

In contrast, warm woods highlight many of the homes found farther north, such as the **rift-cut white oak** that permeates the walls and cabinetry of the Creekside Residence (page 62) and the **cedar siding** throughout the Point House (top right; page 48). In the latter, copper-framed **Point Five Windows** (www.point-five-windows.com) allow in the Montana daylight, with lighting fixtures by **Artemide** (www.artemide.com), **BK** (www.bklighting.com), **Juno** (www.junolighting.com), and **Stonco** (www.stoncolighting.com) casting a glow at night amid furnishings from **Bombast** (www.bombastfurniture.com) and **Urban Ease** (www.urbanease.com).

Toronto's Ravine House (page 44) meanwhile, takes a largely custom route,



with cabinetry by the architect, Kuwabara Payne McKenna Blumberg, throughout, and furniture from **intare** (top left; www.intare.com). In the Canal House (page 52), **midcentury pieces** by Eero Saarinen and George Nakashima provide a counterpoint to the residence's dominant conceit: a custom-made "Möbius strip" of horizontally sanded **Panelite** (www.e-panelite.com) ribbons (top middle). The organic-looking form spirals up through the two-story structure, allowing opaque light from the **Luceplan** chandelier (www.luceplan.com) and fixtures from **Sander Products** (www.sander-products.com), an offshoot of the designer's firm, Sander Architects, to filter light throughout the tight volumes. Translucence dominates the Cedar Street Remodel (above left; page 62) too, in furnishings and spare sleeping "pods" in the property's backyard clad in **corrugated fiber-**

glass from **Home Depot** (www.homedepot.com). Products in Modular 1 House (page 38) are from an equally no-nonsense source: **Ikea** cabinetry (www.ikea.com) offers ample storage.

Predominantly glass curtain wall spans several of the multilevel spaces of the Guerrero Street Mixed-Use Development (above right; page 56) and gives glimpses of furnishings from **Design Within Reach** (www.dwr.com)—an orange Cubica Swivel chair provides a spark of color against the ebony-stained oak flooring in one unit. More conservative fenestration is in place at 4001 Bowser (page 63), but the residence features a similar move to dissolve the line between interior and exterior: From the northeast side of the building, an **enclosed polycarbonate-clad balcony** glows at night, an elegant extension of one unit's sleekly appointed inner volumes.

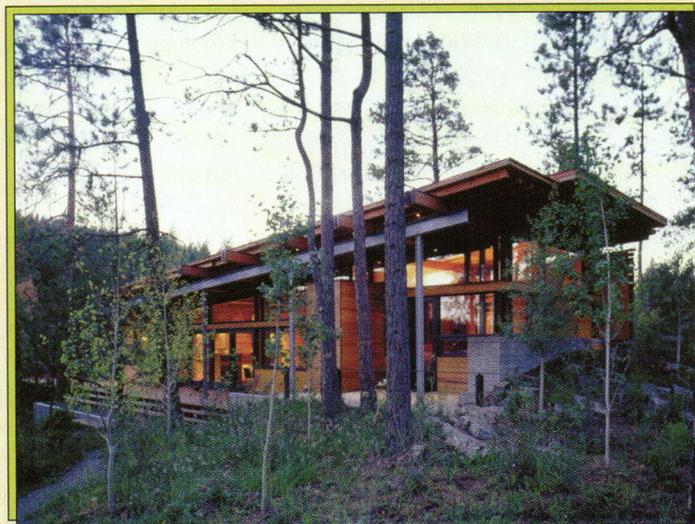
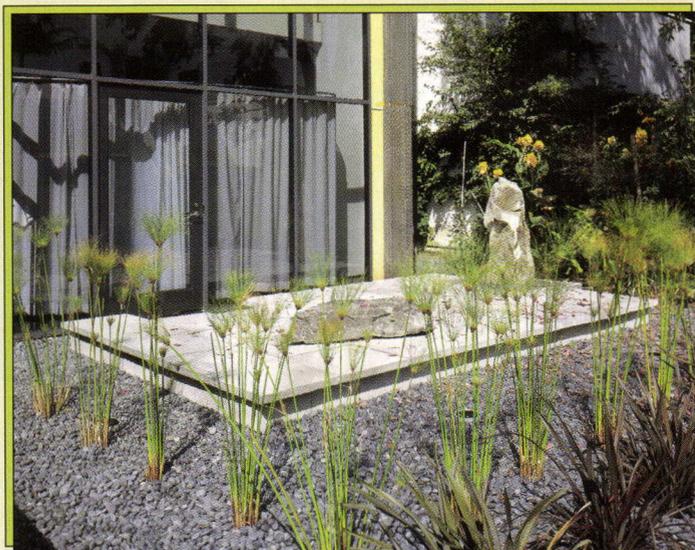
FOR INFORMATION ON INTERIORS SOURCES, CIRCLE 125 ON PAGE 97.

THE LOW-IMPACT LANDSCAPE

Landscapes invited into buildings—and, equally, interiors that radiate out into nature—is a recurring motif among the 2004 Home of the Year awardees. Emblematic of this in form and specification is Cedar Street Residence (page 61), where composite decking of recycled plastic and wood by **Trex** (www.trex.com) brings continuity to indoor-outdoor living in Arizona. A similar extension, in this case a stained concrete floor using L.M. Scofield's **Lithochrome** (www.scofield.com), brings living areas of the Creekside Residence (page 62) out under cable-supported arbor structures. For Toronto's Ravine House (page 44), interior finishes of native **Wiarion** stone and Ontario limestone from the Owen Sound Ledgerrock quarries (www.ledgerrock.com) grace outdoor walls, benches, and terraces; fences are detailed like the house's indoor screens, with long-weathering Brazilian ipe from **Greenheart-Durawoods** (www.paulope.com) and prefinished zinc panels meticulously assembled by local contractor Eisner-Murray (right, top). Even the cast-in-place step lights and flush disk fixtures by **Martini** (www.martinilight.com) are found in the house and on the terrace, alongside pivoting rectangular bollards of cast aluminum outside. For Point House (page 48), a surface-mounted, aimable outdoor fixture by **B-K Lighting** (www.bklighting.com) called "Nite Star" found its way into living areas.

Another persistent theme is the low-impact landscape. Rather than building grassy berms and decorative fountains that make yards "look like golf courses," in the words of one premiated designer, architects opted for hardscape, dry "**xeriscape**" (www.xeriscape.org), and native, naturalistic plantings. At Point House, a local quarry supplied **Montana Moss** flagstones for paving, and a mounded septic system was layered with planted camouflage, including trailing strawberry, low Oregon grape, and **kinnikinnick**, which indigenous peoples smoked like tobacco. A new gravel drive was overlaid with topsoil and seeds, and native trees were added to the lot, including aspen, Rocky Mountain juniper, and the sculptural **snowberry** (right, bottom).

The setting for Canal House (page 52) in Venice, California, reveals an artistic urban xeriscape, with its 5-foot-by-9-foot patch of square **concrete pavers** ringing a pair of Noguchi-inspired boulders, set against a backdrop of hardy flax, papyrus, and horsetail (right, middle). The mixed-use housing on Guerrero Street (page 56) in land-strapped San Francisco employs mechanical parking lifts by **Klaus** (www.klausparking.com) to stretch capacity without disturbing the bedrock.



FOR INFORMATION ON LANDSCAPE PRODUCTS AND EXTERIOR LIGHTING, CIRCLE 126 ON PAGE 97.

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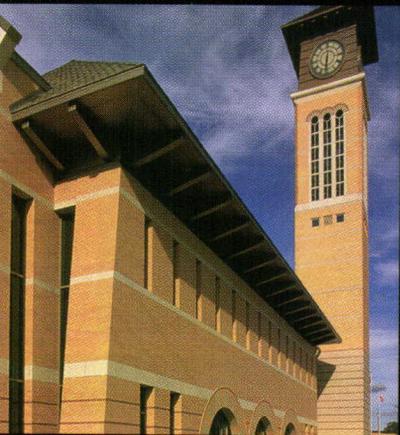
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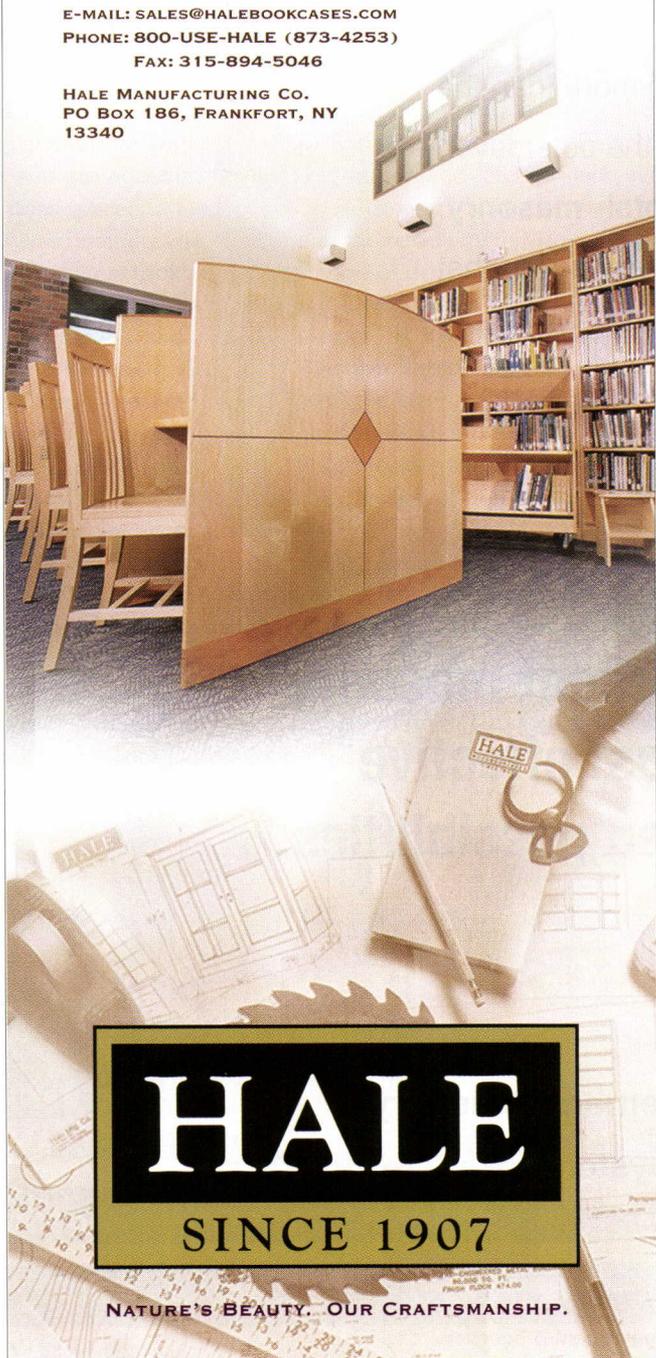
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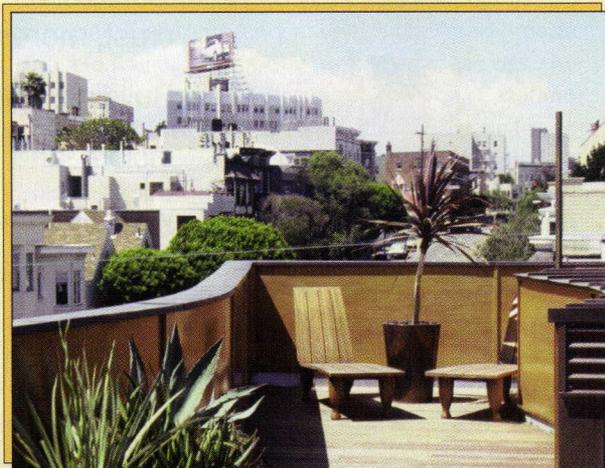
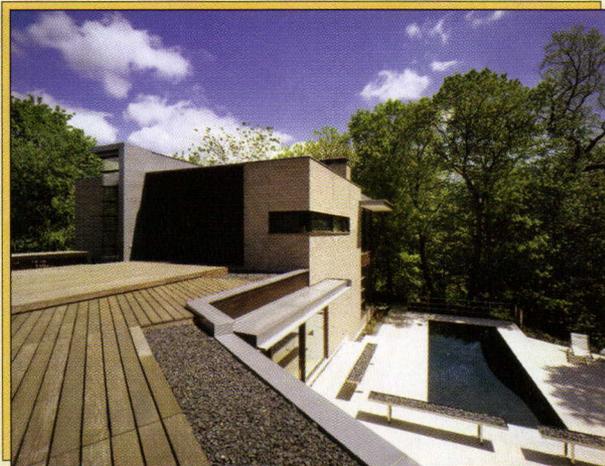
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Home of the Year Awards

COPPER AND IPE ON HIGH



You've got your flat roofs. You've got your slightly sloped roofs. And you've got your steeply sloped roofs. What you don't have in this year's crop of Home of the Year Awards honorees are barrel vaults or amorphous shapes. And the materials are fairly conventional too. There are no fish-scale-shaped zinc or titanium roof tiles that slither downward to become walls, but there is widespread use of copper roofing and ipe roof decking.

Kuwabara Payne McKenna Blumberg's Ravine House (page 44, top) in Toronto combines a torch-applied modified bitumen roofing system called **Sopralene** from Soprema (www.sopremaworld.com) with a sloped rigid insulation by Posi-Slope (www.posislope.com) and plywood sheathing; the flat roof has a 2-percent slope to internal drains. On top of this is a stretch of decking made of Pau Lope (also known as ipe) with a **Penofin** oil finish (www.penofin.com), both supplied by Nu-Forest Products (www.nuforest.com).

At the Guerrero Street Mixed-Use Development (page 56, above) in San Francisco's Mission District, Kennerly Strong Architecture specified a nonproprietary **modified-bitumen built-up roofing system**, which is typically used on flat-roofed speculative residential buildings in the city. The system included 90-pound felt pad and tapered sleepers; the portions of the



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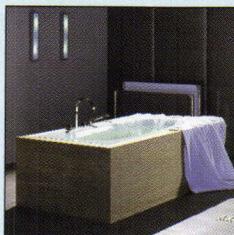
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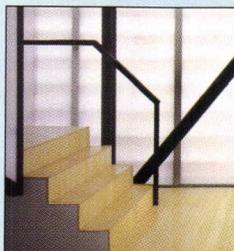
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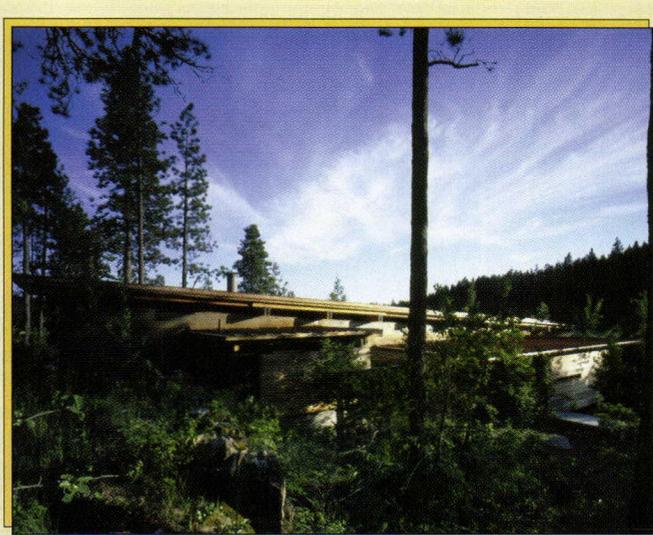
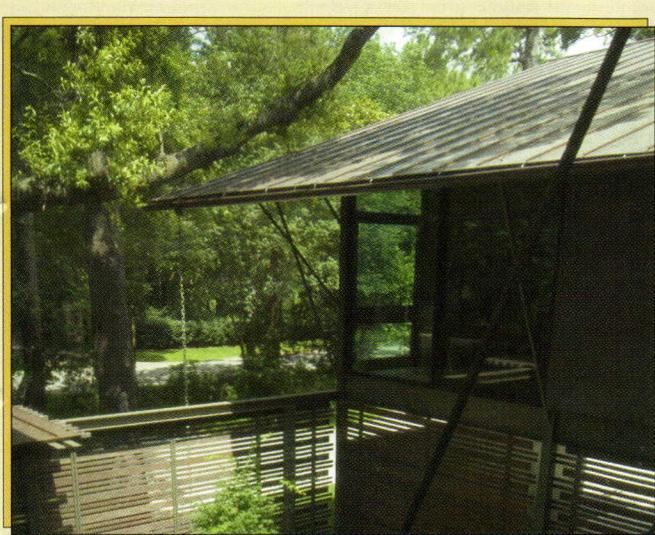
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roof earmarked for the occupants' use were topped with **ipe** planks. Another instance of **torch-applied roofing**, sans deck, is found a few hours south in Venice, California, on the Canal House (page 52) by Sander Architects.

In the **copper roofing** category are Point House (page 48) by Bohlin Cywinski Jackson in rural Montana and the Creekside Residence (page 62) by Lake | Flato in Houston, Texas. Two popular suppliers of copper roofing materials are Copper Sales (www.unaclad.com) and Revere Copper (www.reverecopper.com). Lake | Flato turned to Tile Roofs of Texas (www.tilerooftexas.com) for installation of the cop-

per roofing, siding, and gutters on the steeply sloped rooflines of both the main house and the guest house/cabana of the Creekside project (left). Point House (right) employs a **copper standing seam** product installed by Bradford Roof Management (www.bradfordroof.com) on its low-slung sloped roof. The 16-ounce cold-rolled copper was site-fabricated into 97-foot-long panels with 1.5-inch mechanically hemmed seams, stainless-steel fixed and slider clips, and a self-adhered membrane underlayment called **Vycor Ultra ice and water shield** from Grace Construction Products (www.na.graceconstruction.com).

FOR INFORMATION ON ROOFING, CIRCLE 128 ON PAGE 97.



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Be it exposed framing or simply floors, wood was a resounding theme in this year's premiated houses. Winning entries used elm and maple flooring, but bamboo, specified in three houses, was the most popular. Desirable for the knotty patterns it makes when cut, bamboo has been used for centuries because of its density and durability. But today, it has seen a revival because it is environmentally sound and fast-growing, reaching maturity in only six years or less—versus the 30 to 120 years traditional hardwoods can take. Furthermore, bamboo is a highly fibrous wood that can be harvested without harm to the plant. And when flooring, it also expands and contracts 50 percent less than hardwoods.

The designers of Modular 1 House (page 38) selected **EnviroChoice Bamboo Flooring** (right), which comes in both horizontal and vertical cane, 3-inch-wide strips in lengths of three or six feet, and in red or yellow in light, medium, and dark shades. Studio 804 purchased their bamboo from **ifloor** (www.ifloor.com), an online supplier that carries more than 100 bamboo products and features educational information on the appropriate use and installation of this popular floor material. At the Guerrero Street Mixed-Use Development (page 56), Kennerly Strong Architecture used vertical-grain



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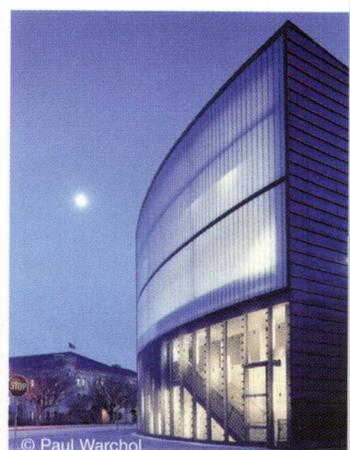
bamboo strips manufactured by **Timbergrass** (www.timbergrass.com).

The architects of the Cedar Street Remodel (page 61) wanted the wood look, but not the maintenance required. coLAB used **Trex** (top right), an indoor/outdoor material made of reclaimed wood and plastic. There is no need to maintain the boards with stain, and their plastic content shields the wood from moisture and insect damage; the wood in turn protects the plastic from UV damage. Trex has a higher percentage of wood than other popular composites which, according to coLAB partner Matthew Salenger, allows for a more interesting weathering process. Salenger says the material is a great alternative to wood in dry areas, where timbers are prone to splitting and disintegrating.

A number of award-winning houses used colored or stained concrete flooring. The Point House (page 48) has concrete floors (bottom right) treated with color by **Davis Colors** (www.daviscolors.com). After the concrete was poured in place, it was given a smooth-trowel finish, then a brown color was applied, etching itself into the concrete. Next a clear, water-based acrylic sealer from **L.M. Scofield** (www.scofield.com) was put on; and last, a matte wax completed the process. At the Canal House (page 52), Sander Architects chose a concrete stain, also from L.M. Scofield.



FOR INFORMATION ON FLOORING,
CIRCLE 129 ON PAGE 97.



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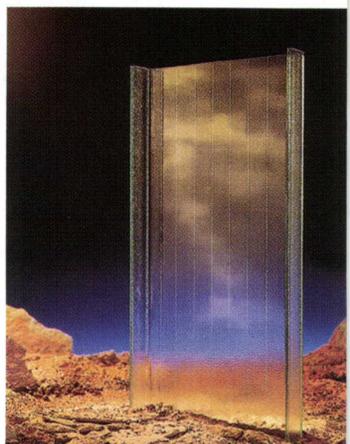
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HOME OF THE YEAR AWARDS SPECIFICATIONS

Modular House (page 38)

wood cladding: massaranduba EPDM roofing: Genflex glazing: Polygal windows and doors: Jeld-Wen hardware: Schlage cabinets: Ikea paints and stains: Benjamin Moore bamboo flooring: EnviroChoice

Ravine House (page 44)

exterior cladding: IXL Canada (brick); mahogany roofing: galvanized-aluminum flashing, Pau Lope planking windows: Tradewood Windows flooring: Floorworks (cork tile); Barwood Flooring (red elm); Enmar Stone (limestone) door hardware: FSB lighting: Martini (step lights); Iris (potlights) bathroom fixtures: Duravit, Vola, Dornbracht

Point House Residence (page 48)

board-formed concrete foundation, cedar siding, cabinetry: Martel Construction concrete color: Davis Colors galvanized-steel columns and A588 weathering-steel cladding: Roscoe Steel standing-seam copper roof: Copper Sales, Revere Copper Products roof underlayments: DuPont, Grace Construction Products copper-clad windows: Point Five Windows cabinet hardware: Blum, Sugatsune, Hafele concrete sealant: L.M. Scofield wood surfacer: Sherwin-Williams bathroom and floor tile: Heath Ceramics furniture: Bombast, Urban Ease ambient lighting: Cooper Lighting/Halo, Juno, Stonco task lighting: Artemide, B-K Lighting exterior lighting: B-K Lighting, Sea Gull Lighting plumbing fixtures: Elkay, KWC Faucets, Kohler, Vola/Kroin appliances: Bosch, Daacor, Sub-Zero

Canal House (page 52)

structural system: slab on grade, steel columns, wood framing metal/glass curtain wall, skylights, doors: United States Aluminum metals: perforated aluminum GSM, 10-gauge steel woods: MDO plywood roofing: torch-applied rolled roofing eavesment windows: Fleetwood offset pivot locksets: Schlage com-

posite wall panels: Panelite cabinetry: Masonite paints and stains: Benjamin Moore flooring: vertical-grain bamboo concrete stain: L.M. Scofield furnishings: Saarinen dining-room chairs, Nakashima living-room set interior ambient lighting: Sander Products chandeliers: Luceplan plumbing fixtures: Dornbracht, Newport Brass, Sander Products (resin sink),

Guerrero Street Mixed-Use Development (page 56)

corrugated copper panels: UnaClad exterior insulation and finish system: Dryvit aluminum casement, fixed, awning, and hopper windows: Bonelli door hardware: Valli & Valli (interior); Cal-Royal (exterior) glass-faced cabinets: Semolina Design stone flooring: ASN National Stone furnishings: Design Within Reach, Green Couch, Kennerly Strong Architecture lighting: TechLighting, Elco (interior); Lumiere (exterior) faucets: KWC Faucets toilets: Toto lavatories: Kohler stainless-steel kitchen sinks and counters: Berlin Food Equipment

Continued on page 76.



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HOME OF THE YEAR AWARDS SPECIFICATIONS

Casa Larga (page 60)

structure: concrete masonry units **exterior:** metal and tempered-glass curtain wall **masonry:** Indian stone **interior wall finish:** plaster **roof:** prestressed, precast concrete beams, polystyrene blocks **flooring:** cedar **ceiling:** gypsum board **furnishings:** Habitare **interior ambient lighting:** Magg, Troll,

Technolite **exterior lighting:** Phillips

Cedar Street Remodel (page 61)

masonry: surface boulders **metal roofing:** 20-gauge galvanized steel **flooring and decking:** Trex **doors, windows, wall board, corrugated fiberglass:** Home Depot **bathroom sink:** Kohler **kitchen sink:** Elkay **kitchen faucet:** Price Fister **dishwasher:** Bosch **air conditioner:** Trane

Creekside Residence (page 62)

structure: steel (main framing); wood (roof and walls) **copper roofing, siding, and gutters:** Tile Roofs of Texas **exterior cladding:** acid-stained stucco; Mason's Mill and Lumber (ipe) **doors:** Fleetwood (exterior sliding); Kawneer (exterior swinging); custom white oak (interior) **windows:** Kawneer **flooring:** stained concrete **interior walls:** rift-cut white oak, stained stucco **cork finish:** Jelinek **cabinetry:** rift-cut white oak

4001 Bowser (page 63)

structure: stiffened concrete slab with perimeter drilled piers; reinforced and grout-filled concrete masonry units **CMU finish:** Chemrex, United Coatings **cladding:** galvanized-steel standing-seam panel system; Baltic birch soffit, stainless steel, Polygal fiberglass polycarbonate **balcony masonry:** TXI **windows:** Kawneer **roof:** GAF **roof hatch:** Bilco **wall board:** National Gypsum **paint:** Sherwin-Williams **tile:** Dal-Tile **hinges:** Hager **locksets:** Omnia **red-oak floor finish:** Duraseal **carpet:** Atlas **stainless-steel countertops and awnings:** Baldwin Metals **cabinetry:** Mike Henry Cabinets (custom woodwork) **cabinet hardware:** Hafele **lighting:** Lightolier (downlighting); Stonco (specialty) **sinks, toilets:** Duravit **powder-room sinks:** Ceramica Catalano **appliances:** KitchenAid

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WORKING TOGETHER ON THE WEB

Internet sites and Web-based applications provide better, faster communication.

by H. Edward Goldberg

In the twenty-first century, minds meet in cyberspace. New technology is exponentially advancing the capabilities of the virtual office, and architects, along with the rest of the A/E/C industry, are prime beneficiaries. Collaboration software tools—some designed to meet the needs of this sector, others with more general applications—are streamlining all phases of design, construction, and

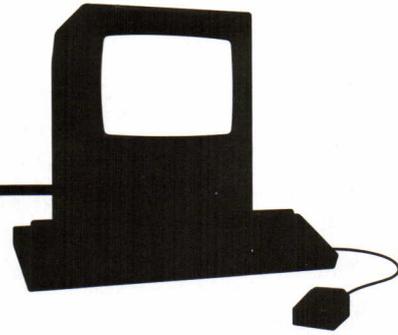
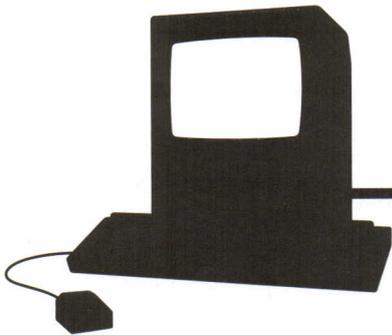
lients can read the documents accurately without having the actual program that created them. DWF and PDF have overlapping but not identical capabilities. The PDF format is the elder of the two and has been accepted by the federal government as an open format. **Adobe Reader**, a free downloadable program for viewing PDFs, has as many as 100 million users worldwide. Autodesk's DWF is a more recent compression scheme and is used to create small native AutoCAD Drawing (DWG) files. **Autodesk** also provides a free downloadable **DWF Viewer**.

A VIRTUAL FILE CABINET

While compressing drawings and sending them as e-mail attachments saves the cost of physical transport, digital collaboration offers additional advantages. For example, a **storage site** could be your newest Internet address: There, designers can store, codify, and distribute drawings; send notifications; and keep a history of activity on given projects. **Bentley** (bentley.com) and Autodesk have each created software that works in this way, known as **ProjectWise** and **Buzzsaw**, respectively. Each is a repository for dig-

in parallel. The service then transforms content into standard digital-delivery formats (such as PDF files) and ensures that only authorized team members have access. ProjectWise manages file operations for **MicroStation**, AutoCAD, and many desktop applications, such as **Microsoft Office** (microsoft.com) and some Adobe products.

Consultants, suppliers, and contractors using Buzzsaw can be invited to the project site via an e-mail message from the subscriber, and they do not have to purchase any special software to participate in the service. On the site, all project documents—including design drawings, bid documents, construction RFIs, submittals, and meeting minutes—are centralized for easy access at any time. The service also includes viewing and markup tools for design files, including DWG, DWF, DGN, and Drawing Exchange Format (**DXF**), so clients can review projects without AutoCAD software.



project and facilities management. Instead of paper documents, couriers, and face-to-face meetings, much of the communication and interaction in today's architectural environment is digital. Document compression and correction schemes, project interaction and storage sites, and real-time collaboration are just some of the new offerings.

SMALL AND CHANGEABLE

Document-compression and correction has been a critical area of change; drawing web format (**DWF**) files from Autodesk (autodesk.com) and portable document format (**PDF**) files from Adobe (adobe.com) are two familiar acronyms in this realm. The files are smaller and thus travel faster, and recip-

ital documents with a method to control access and notification for participants when a change has taken place. ProjectWise is purchased outright, and the documents reside on a firm's own computers; Buzzsaw is subscription-based, and while most users store information on servers controlled by the manufacturer, there is also a version that can be installed behind a firewall for secure self-hosting.

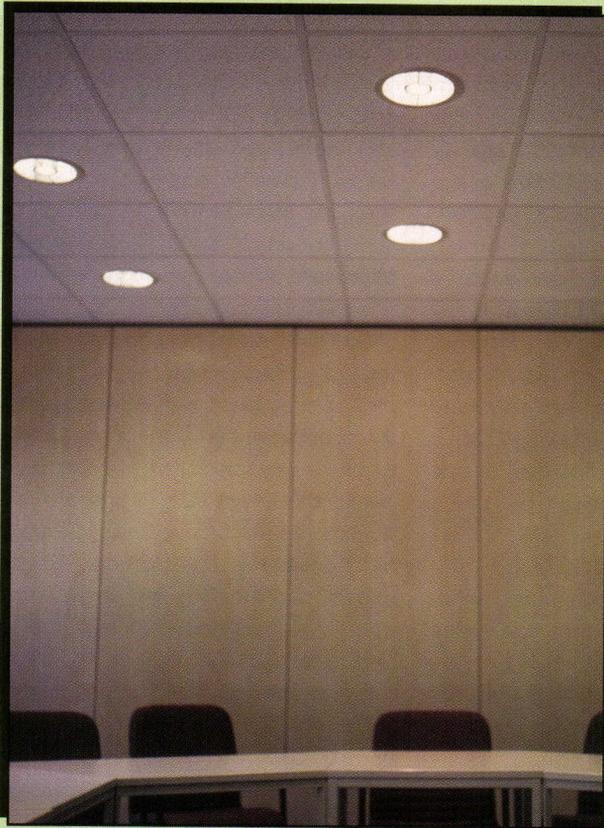
ProjectWise stores and manages all types of A/E/C project content, including MicroStation file format (**DGN**), DWG, and PDF files. Features include: the ability to search, query, and navigate all content in databaselike fashion; produce project-wide reports and statistics or create specific queries; and manage document life cycles from creation through approval. Users can also define workflows and automate distribution of project documents, on schedule or on demand. Project teams can work on separate tasks

Autodesk has also teamed up with **Sepialine** (sepialine.com), a leader in "cost recovery" for design professionals to offer a program called **Argos Data Exchange**—Buzzsaw Edition. This software creates reports that facilitate billing procedures. Buzzsaw design-collaboration features include version control, file locking, check-in and check-out, notifications, and automatic scanning of **xrefs**—drawings referenced by other drawings—for all AutoCAD documents during upload and download.

H. Edward Goldberg is a practicing architect, industrial designer, and A/E/C industry analyst; he also wrote Autodesk Architectural Desktop 2005: A Comprehensive Tutorial.

CHRIS BOCKEY

➔ **Bye-bye, Boardrooms: New Software for Meetings in Cyberspace**



The latest batch of interactive Web- and video-conferencing software for online meetings may be the most important means of Internet collaboration for architects and designers. Web-based services such as **eZmeeting** (ezmeeting.com), **Citrix GoToMeeting** (citrix.com), **Microsoft's Live Meeting**, formerly called PlaceWare (livemeeting.com), and **WebEx** (webex.com) allow users to discuss, view, change, and transport drawings and documents in real time among many participants. Citrix GoToMeeting and eZmeeting can be used for online tutorials and client communication. Using a Tablet PC or Wacom Cintiq "writable" monitor (wacom.com), a meeting leader can sketch and correct drawings while participants watch from their desks. Citrix's product is likely the least expensive at about \$40 per month and includes telephone-conference capability. All of these solutions are available by the month and year. They offer real-time white boards for interactive markups and allow users to operate any Windows-based program for viewing by multiple participants. The Internet-based collaborative solutions are a real bargain compared to the cost of a traditional one-hour meeting (with off-site consultants incurring travel expenses), and important information can still be exchanged without meeting face-to-face. All of the programs offer free trial periods, too. **H. Edward Goldberg**

FOR INFORMATION ON ONLINE MEETING SOFTWARE,
CIRCLE 130 ON PAGE 97.

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EXHIBITION **Too Perfect: Seven New Denmarks | Power Plant Contemporary Art Gallery at Harbourfront Centre, Toronto | Through November 21**

The Danish Architecture Center invited design arbiter Bruce Mau and five Danish design firms to change our perception of modernism in Denmark. The result is *Too Perfect: Seven New Denmarks*, an exhibition of “pragmatic utopias” that employ architecture and design as tools for social change.

Curated by Mau in collaboration with the Danish firm PLOT, the show asks big-picture questions (in giant chartreuse letters on slanting walls) such as “What if Greenland was Africa’s water fountain?” and “What if Denmark was the port to the New Europe?” One ambitious proposal is Arkitema’s *HouseExpress*, a conveyer belt on which models of new housing types roll along, suggesting how a factory could produce and distribute alternative housing to the global market. In imagining the future, Mau also looks to the past: A portion of the show is dedicated to familiar images of Danish modernism, including Arne Jacobsen’s SAS Royal Hotel (1960), to illustrate the vitality of design in the postwar era. Through *Too Perfect* Mau suggests that design can again affect all aspects of life. **Nyla Matuk**



BOOK **The House You Build | Duo Dickinson | The Taunton Press**

Modesty is undervalued in today’s design scene, but Duo Dickinson, a cheerful, loquacious architect from Connecticut, has made it a mainstay of his residential practice. His is a voice of reason that’s often ahead of its time—he finished two books on small houses well before Sarah Susanka’s *crazelet*—so one expects a strain of prescient, thoughtful restraint in this, his sixth effort. It’s straightforward: For the same cost as a comparable spec home, clients can get one-of-a-kind houses that reflect their needs alone. Supporting case studies showcase attractive, aesthetically diverse solutions for unassuming modern occupants: the double household, the downsizing empty-nesters, the working home, the family readying for a live-in grandmother. Geared toward lay folks, this book might convince waffling prospective clients to choose architecture over today’s production mediocrity. **C.C. Sullivan**



EXHIBITION **Ant Farm: 1968–1978 | Institute of Contemporary Art, Philadelphia | Through December 12**

In 1973, Ant Farm won a P/A Award for an anatomically inspired design called “House of the Century.” The ferro-cement structure was built on a lake in Angleton, Texas, and became an instant icon of the art-and-architecture collective’s maverick agenda. Much of its other work—displayed in a traveling exhibition of the group’s decade-long collaboration first presented by the Berkeley Art Museum earlier this year—focused on installations, videos, and performance art. Led by Chip Lord and the late Doug Michels, Ant Farm blazed a trail of interdisciplinary activism with projects such as inflatable structures for living, working, and learning (the group’s *Inflatocookbook* was published in 1970); the famous *Cadillac Ranch* of 1974, which involved planting 10 cars in a Texas wheat field; and *Convention City*, a 1976 proposal for a giant television studio where presidential elections would be held, game-show style. (They weren’t far off.) A catalog echoes the exhibit’s timeline format and complements it with essays and interviews. **Abby Bussel**



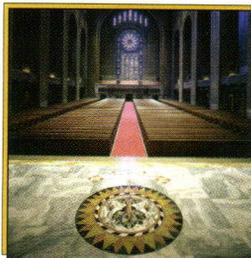
TOP: COURTESY OF NORD AND BRICE; MAU DESIGN; MIDDLE: KEN GUTMAKER; BOTTOM: CHIP LORD

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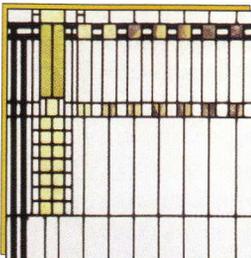
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National Gypsum Presents Specifying Wall Systems for High-Traffic Areas

The use of specialized high-performance gypsum wallboard contributes both to durability and design flexibility in high-traffic areas.



Schools are a prime candidate for high-performance wall systems.

"High-traffic" is a relative term when it comes to a building project. Any residential, institutional, or commercial building can include such a space, but the amount of wear and tear in store for a residential garage, for example, is quite different from that expected for a psychiatric ward. Regardless of the application, however, there are two types of potential damage that architects must consider when specifying a wall system for a high-traffic area:

Surface damage—Abrasion or scuffing due to high traffic during standard use, and indentation of the wall surface from occasional impact

Penetration—Damage due to high-energy or continual impact that breaks into the stud cavity

Using appropriate materials to resist damage not only contributes to long-term aesthetics but also decreases maintenance costs of repairing scuffs and dents on the wall surface or intrusion into the wall cavity. Until recently, however, material selection has been limited for high-traffic spaces. To increase wall strength, many architects have specified concrete masonry

units (CMU), which provide excellent damage resistance for both surface damage and penetration, but the masonry units can significantly limit design choices while increasing material and labor costs (see chart 2 and "The Value Proposition" in online material).

In response to this, the gypsum wallboard industry has developed specialized high-performance wall panels to provide architects with appropriate and cost-effective resistance to damage, while keeping design flexibility high. These materials, along with proper assemblies,

Learning Objectives

This article covers how the choice of wall systems contributes to the durability, design flexibility, and long-term cost efficiency of high-traffic and intense-use areas.

Key points include:

- Potential damages to wall systems
- Proposed industry standard testing methods for high-performance wall systems
- Categories of high-traffic areas
- Performance comparison of six types of wall systems
- Specifying proper assemblies for high-traffic spaces



Architecture Magazine Continuing Education

To take the quiz and earn 1 AIA/CES Learning Unit (LU) of health, safety, and welfare go to www.architecturmag.com, click on "Continuing Ed." and proceed to "Specifying Wall Systems for High-Traffic Areas" or turn to page 84. You must answer 70% of the questions correctly to receive credit for this course. This course requires online reading in addition to the following article in order to be able to take the quiz. See page 84 for details.

Specifying Wall Systems for High-Traffic Areas

Fighting Moisture

Fighting moisture has become a major topic of concern to many architects. Problems stemming from prolonged exposure to moisture can include:

- Deterioration or dissolution of wood and gypsum products
- Corrosion of metal components, such as structural framing
- Freeze-thaw deterioration of concrete, stone, and masonry
- Volume changes that cause swelling, warping, or shrinkage that can lead to cracking and structural failures
- Microbial growth, such as mold and mildew, which can affect appearance and structural stability in severe cases

Abuse-resistant gypsum wallboard with fiberglass scrim outperforms all other gypsum-based, high-performance wall systems when it comes to moisture resistance. Subjected to ASTM C 473, abuse-resistant gypsum wallboard with fiberglass scrim absorbed only 4 percent of its weight in water, while abuse-resistant gypsum wallboard, fiber-reinforced gypsum wallboard, and fiber-reinforced gypsum wallboard with fiberglass scrim absorbed anywhere from 38 to 51 percent of their weight in water (see testing results below).

As a result, abuse-resistant gypsum wallboard with fiberglass scrim can withstand a wider range of applications than other types of high-performance wall panels, and will protect finishes from the cracking and warping that volume changes can cause. Such applications can include bathroom walls (excluding tub or shower surrounds) or moisture transitional spaces, such as around doors and windows.

Testing Water Absorption (ASTM C 473)

Method: Three dry board samples are cut and weighed. Each sample is submerged in a 3" water bath for 2 hours. The samples are removed, wiped, and weighed again. Weight gain is calculated and reported as a percentage of the original sample weight.

Product Type	Weight Gain
Abuse-resistant gypsum wallboard with fiberglass scrim4%
Abuse-resistant wallboard38%
Fiber-reinforced gypsum wallboard44%
Fiber-reinforced gypsum wallboard with fiberglass scrim51%

have helped bridge the gap between strength and design.

- **Type X gypsum wallboard**—Originally designed for fire resistance, this wallboard is enhanced with fiberglass to achieve fire resistance ratings but provides minimal resistance to surface damage and penetration.
- **Fiber-reinforced gypsum wallboard**—Designed for use where surface abrasion is a concern, this wallboard is enhanced with the manufacturer's proprietary materials.
- **Abuse-resistant gypsum wallboard**—Designed for use where surface abrasion is a concern, abuse-resistant gypsum wallboard features an enhanced gypsum core wrapped with abrasion-resistant paper.
- **Fiber-reinforced gypsum wallboard with fiberglass scrim**—Enhanced gypsum fiberboard with a core reinforced by glass mesh; designed for use where both surface abrasion and stud cavity penetration are concerns.
- **Abuse-resistant gypsum wallboard with fiberglass scrim**—An enhanced moisture-resistant core is reinforced by PVC-coated fiberglass mesh and wrapped with heavy abrasion- and moisture-resistant backing (see "Fighting Moisture," at left); designed to resist surface abrasion and stud cavity penetration.

PROPOSED INDUSTRY TESTING

While the American Society for Testing and Materials (ASTM) has testing methods in place for surface and impact resistance, these methods do not impose enough abuse and impact to test specialized wall system materials. The following tests for high-performance wall systems have been proposed by the industry to ASTM and are under consideration (see chart 1 in online material for testing results of wallboard samples):

Surface Abrasion (Modified ASTM D 4977)

Original purpose: To test granule adhesion to mineral surfaced roofing
Modified purpose: To

For related information on testing results for wall systems, go to www.architecturmag.com, click on on "Continuing Ed," and proceed to "Specifying Wall Systems for High-Traffic Areas."

measure the ability of a wall system to withstand scuffs and abrasions.

Method: A sample is laid flat and subjected to 50 abrasion cycles of a wire brush weighted with an additional 25 lbs. The depth of the abrasion in three consecutive samples is measured and the mean depth of abrasion is reported in inches.

Surface Indentation (ASTM D 5420 Gardner Impact)

Original purpose: To test the ability of flat, rigid sheets of plastic to resist dents.
Modified purpose: To measure the ability of a wall system to resist dents.
Method: A sample is laid flat and impacted by a 5/8" hemispherical rod raised to a height that provides 72 in./lbs. of impact energy. The depth of the indentation is measured from three board samples. The mean of the indentation depth of the three samples is reported in inches.

Single Drop Soft Body (Modified ASTM E 695)

Original purpose: To measure relative resistance of wall, floor, and roof construction to impact loading.
Modified purpose: To measure the ability of a high-performance wall system to withstand single impact force from a soft object.
Method: A sample wall system is assembled to the manufacturer's guidelines. A leather bag is loaded with steel pellets to a weight of 60 lbs. The bag is suspended and dropped at an angle. When the panel breaks, the height of the drop and weight of the bag are calculated to provide the ft.-lbs. measurement required to break the panel.
Modification: The weight of the steel pellets increased from 60 to 120 lbs for wallboard that is reinforced with fiberglass scrim.

Progressive Soft Body (Modified ASTM E 695)

Original purpose: To measure relative resistance of wall, floor, and roof construction to impact loading.
Modified purpose: To measure the ability of an assembled wall system to withstand continual and increasing impact force.
Method: A sample wall system is assembled to the manufacturer's guidelines. A leather

bag is loaded with steel pellets to a weight of 60 lbs. The bag is suspended and dropped at an angle until the sample is impacted. The sample is impacted in one stud cavity repeatedly by progressively higher drop distances until structural failure occurs. The maximum force that the sample can withstand without penetration into the stud cavity is reported in ft.-lbs.

Modification: The weight of the steel pellets increased from 60 to 120 lbs. for wallboard that is reinforced with fiberglass scrim.

**Hard Body Impact
(ASTM Proposed Standard)**

Original purpose: This is a new test proposed by manufacturers of high-performance wall panels. It measures the ability of an assembled wall system to withstand the impact of a hard object such as a hammer or the heel of a boot.

Method: A 2' x 2' wall panel sample is mounted to a 3-5/8", 20-gauge steel frame and runners using drywall screws. The sample is impacted with a ram mounted on a pendulum, faced with a 2-3/4" steel cylinder. The pendulum is dropped from a fixed height. Weights are added to increase the impacting energy. The maximum force that the sample can withstand without penetration into the stud cavity is reported in ft.-lbs.

APPLICATIONS

Applications for abuse- and impact-resistant wall systems can be separated into four categories, with each category requiring increased durability needs. Every building is different, so there is no industry standard for specifying materials for such areas—the architect needs to understand the utility and potential damage conditions of the area before making a final decision.

Category 1 – Standard Duty

Generally, there is no need to specify specialized high-performance materials in standard duty spaces, such as professional offices and single-family homes. A quality wall system, using type X gypsum wallboard, will stand up to normal wear and tear.

Category 2 – Moderate Duty

Moderate duty spaces can be found in

residential, institutional, and commercial buildings, and only require resistance to surface abrasion and indentation. Abuse-resistant gypsum wallboard or fiber-reinforced gypsum wallboard are two good choices for these areas. In residential properties, areas such as stairwells and garages are the most intuitive applications. Institutional applications can include hospital observation rooms, operating rooms, cafeterias, dormitories, and day care centers. Commercial properties need extra durability in corridors and public areas that experience high traffic.

Category 3 – Heavy Duty

Multi-family housing is one of the only residential applications that qualifies for heavy duty materials, due to the very high-traffic stairwells and corridors. Institutional applications are the most prevalent in the heavy duty category and can range from high school classrooms and gymnasiums to public areas, workshops, and psychiatric wards. Commercial applications are common as well, with mailrooms and loading areas (or any area where heavy machinery is operated regularly) topping the list. Very heavily trafficked corridors and public areas could also qualify. In all of these areas, CMU, abuse-resistant gypsum wallboard with fiberglass scrim, and fiber-reinforced gypsum wallboard with fiberglass scrim are appropriate choices. Design versatility and cost are often the deciding factors in these cases.

Category 4 – Maximum Duty

Residential applications are rare in this category, while institutional applications are many. Low-risk detention facilities, courthouses, and police stations are excellent candidates for maximum-duty specifications. Psychiatric wards and observation rooms occasionally require this treatment as well. Commercial applications are also few, but busy mail rooms or payroll rooms could fall into this category. CMU is a classic choice for this type of space, but can run the risk of over engineering. Abuse-resistant gypsum wallboard with fiberglass scrim and fiber-reinforced gypsum wallboard with fiberglass scrim have proven very durable with a two-layered assembly (see figures 1 and 2 for proper assemblies).

Proper Assembly for High-Performance Wall Systems

- Figure 1:**
Standard, moderate, and heavy duty
- Single layer 1-hour fire assembly
 - 3-5/8", 20-gauge steel studs, 16" O.C.
 - Standard duty—Type X gypsum wallboard
 - Moderate duty—Abuse-resistant gypsum wallboard or fiber-reinforced gypsum wallboard
 - Heavy duty—Abuse-resistant gypsum wallboard with fiberglass scrim or fiber-reinforced gypsum wallboard with fiberglass scrim

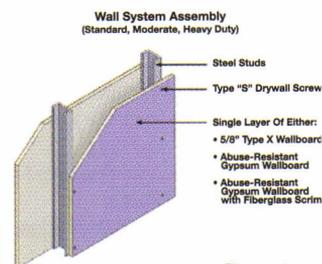


Figure 1

- Figure 2: Maximum duty**
- Double layer 1-hour fire assembly
 - 3-5/8" 20-gauge steel studs, 16" O.C.
 - Two layers abuse-resistant gypsum wallboard with fiberglass scrim or two layers of fiber-reinforced gypsum wallboard with fiberglass scrim

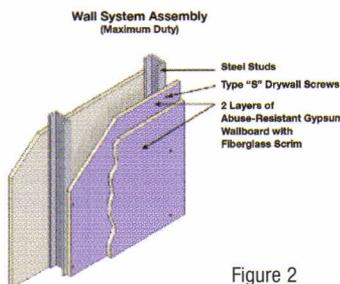


Figure 2

Beyond Maximum

High-performance gypsum wallboard systems discussed in this CEU are not recommended for use in high-risk facilities, such as maximum-security prisons, bank vaults, or political embassies. Such areas are beyond the scope of this article.

The following quiz includes questions derived from online material not included in this printed article. You are required to read the additional online material in order to take the quiz and complete this continuing education unit. Please go to www.architecturemag.com, click on "Continuing Ed," and proceed to "Specifying Wall Systems in High-Traffic Spaces" for the additional information.

Test Questions

- What are the two types of potential damage that architects should consider when specifying wall systems in high-traffic spaces?
 - Surface damage and abrasions
 - Scuffs and scrapes
 - Scratches and dents
 - Surface damage and penetration
- What is the formula for a ft.-lb.?
 - Height x weight
 - Weight x speed
 - Force x distance
 - None of the above
- When testing high-performance wall systems, the ft.-lb. is used to measure...
 - Resistance to abrasion
 - Resistance to impact
 - Both a. and b.
 - Neither a. nor b.
- Abuse-resistant gypsum wallboard and fiber-reinforced gypsum wallboard protect against what types of damage?
 - Abrasion or scuffing due to high traffic, and indentation on the surface from occasional impact
 - Damage due to high-energy or continual impact that breaks into the stud cavity
 - Both a. and b.
 - Neither a. nor b.
- What are the industry standard tests for high-performance gypsum wallboards?
 - There are no industry standard tests for high-performance gypsum wallboards
 - Surface Abrasion (Modified ASTM D 4977)
 - Hard Body Impact
 - Single Drop Soft Body Impact (Modified ASTM E 695)
- What is the only type of high-performance gypsum wallboard that is moisture resistant?
 - Fiber-reinforced gypsum wallboard with fiberglass scrim
 - Abuse-resistant gypsum wallboard with fiberglass scrim
 - Abuse-resistant gypsum wallboard
 - Fiber-reinforced gypsum wallboard
- A gymnasium falls into which of the following categories?
 - Standard duty
 - Heavy duty
 - Maximum duty
 - Both b. and c., depending on the specific building and intended use
- Which statement about a maximum-duty wall system assembly is true?
 - The assembly requires two layers of abuse-resistant gypsum wallboard with fiberglass scrim or fiber-reinforced gypsum wallboard with fiberglass
 - The panels must be assembled on 3-5/8", 20-gauge steel studs, 16" O.C.
 - According to Hard Body Impact results, this assembly will resist penetration at impacts at greater than 250 ft.-lbs.
 - All of the above
- What are some of the reasons to choose a high-performance gypsum wallboard over a CMU?
 - Design flexibility
 - Ease of repairs
 - Material and labor cost
 - All of the above
- Can maximum-duty gypsum wallboard assemblies be used in maximum-security prisons or other high-risk facilities?
 - Yes
 - No



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Developments in window construction and performance standards have opened up options for residential applications.



Simple or elaborate, window choice is integral to the aesthetics and performance of a home.



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According to a recent survey conducted by the National Fenestration Ratings Council (NFRC)—an organization dedicated to providing accurate performance ratings for the windows, doors, and skylights industry—the most important considerations to architects when choosing windows for any kind of building project are availability and durability. While the question of availability is relatively easy to answer, durability is not so straightforward. Durability relates to the type of material that makes up the exterior portion of a window's frame and sash. These are the parts of a window exposed to the elements throughout the life cycle of the product and need to stand up to constant changes in temperature, moisture, wind, direct sunlight, and more.

In addition to durability, architects must also consider design flexibility (availability of special shapes, colors, etc.) and energy efficiency when making a final decision about which products to use. Windows can vary dramatically in each of these areas, and recent advances in technology have provided more options than ever before (see "Residential Window Market" chart on the following page for usage statistics).

COMMONLY USED MATERIALS

There are relatively few materials that perform well as window frames and sashes, and each of these materials provides specific benefits and drawbacks that will affect window choice in residential construction. The following are the most commonly used materials:

Wood

Pros—Availability, Design Flexibility

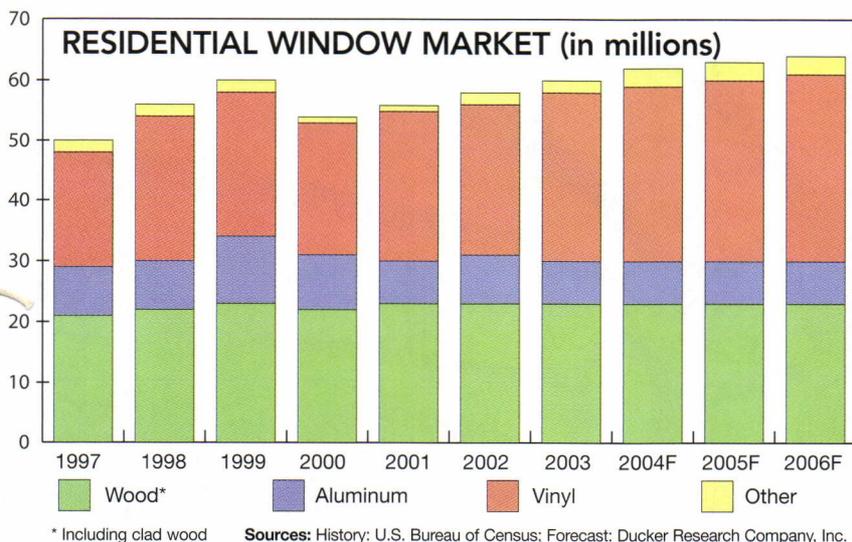
Wood is a widely available resource in multiple species types. Additionally, due to its structure, wood can be molded or milled into intricate shapes more readily than other materials.

Learning Objectives

This article covers developments in window construction, overall window performance, and how both affect product choice in residential applications.

- A comparison of four different types of window construction materials
- Energy performance ratings as defined by the National Fenestration Ratings Council
- Importance of climate considerations and recent changes in Energy Star requirements

Choosing Windows for Residential Construction



In the Know: Cladding

A variation of the wood window is to clad the exterior face of the frame and sash with either vinyl or aluminum. This creates a protecting weather-resistant surface that reduces the occurrence of rot and decay. Clad frames, as a result, have lower maintenance requirements, while retaining the attractive wood appearance in the interior of a home. Because the majority of a clad window is wood (a natural insulator), U-factor ratings are generally good.

Vinyl Cladding—Offers much of the same benefits as a full-vinyl frame, giving the wood frame a protective exterior that is both low maintenance and resistant to outside elements. Vinyl does not add strength to the window and is available in limited colors.

Extruded Aluminum Cladding—Lends its excellent durability and design flexibility to a wood window.

This material is especially well suited to intricate, high-market projects that require sharp profiles. Added strength and color variety are other benefits.

Roll-Formed Aluminum Cladding—As opposed to extruded aluminum, this type of cladding is produced from rolled aluminum sheets that are bent to wrap around the exposed exterior surfaces of wood components.

Roll-formed aluminum offers good color variety and does not add a lot of weight to the window. Because of its thin nature, however, roll-formed aluminum does not add strength to a window and can dent easily.

Cons—Durability

Although wood is very flexible, it is vulnerable to rot and decay if not properly maintained. Paint and other sealants can help protect the surfaces and allow for easy change in color. The exterior portion of a wood window frame and sash can also be clad in aluminum or other materials to increase durability and resistance to the elements. Clad wood accounts for a large portion of today's wood window market (see "In the Know: Cladding" at left).

Vinyl

Pros—Durability, Low Maintenance

Plastics are relative newcomers as window frame materials in North America. Also known as polyvinyl chloride (PVC), vinyl is extremely versatile and durable. Vinyl windows have gained in popularity because vinyl is considered a low-maintenance material; it does not need to be treated with paint or sealant to resist outside elements. It is also lightweight and resistant to both corrosion and dents.

Cons—Design Flexibility, Heat Resistance, Strength

While the color of the material goes all the way through the frame and sash, color options are fewer with vinyl than with other material types, which limits the design options for this material. This is in part due to the fact that dark colors may fade or warp when exposed to intense sunlight and high

temperatures. Shapes are not as sharp or detailed as those possible with other materials, and vinyl does not generally enhance the structural strength of the window.

Extruded Aluminum

Pros—Design Flexibility, Durability, Strength
Extruded aluminum can be cut and bent to the exact shape required for a window unit. It offers a large variety of colors and provides sharp profiles and shadow lines for high-market projects. The material is painted during the manufacturing process and is less likely to fade over time. Extruded aluminum also enhances the structural strength of the window unit.

Cons—Weight, Energy Efficiency

Of the commonly used frame and sash materials, extruded aluminum adds the most weight to the window unit, which can limit its applications. In addition, it is often less energy efficient since aluminum is a good conductor of heat and cold (see "The Efficiency Factor" below for more information).

Fiberglass

Pros—Strength, Durability, Energy Efficiency

Fiberglass is one of the newest materials to enter the residential window market, and represents the smallest portion of the market. Its benefits are similar to extruded aluminum when it comes to strength and stability; it is also energy efficient, resistant to dents and corrosion, and does not warp.

Cons—Design Flexibility

Although color permeates a fiberglass frame and sash, there are not many color choices on the market right now. Additionally, while the material can be formed into intricate shapes, profiles are not as sharp as extruded aluminum.

THE EFFICIENCY FACTOR

The majority of architects who participated in the NFRC survey indicated that energy efficiency is also a top concern when choosing windows for a building project. Because the frame and sash material can make up as much as 30 percent of a window unit, it is important to consider how that material affects a product's overall energy performance ratings. Following are the



efficiency factors examined by the NFRC:

U-Factor

U-factor measures how well a product prevents heat from escaping a building and is given in Btu/hr-sq. ft.-°F. U-factor ratings generally fall between 0.2 and 1.2. The lower the U-factor rating, the greater a window's resistance to heat flow and the better its insulating value.

Solar Heat Gain Coefficient (SHGC)

SHGC is the fraction of incident solar radiation admitted through a window. This rating measures how well the product blocks heat caused by sunlight. SHGC is measured on a scale of 0 to 1. The lower the SHGC, the less solar heat the window transmits. Values typically range from 0.25 to 0.80.

Visible Light Transmittance (VT)

VT measures the amount of light a window lets through. The higher the VT, the more light you see. VT is measured on a scale of 0 to 1; values generally range from 0.20 to 0.80.

Air Leakage (AL)*

AL measures the air loss or gain by infiltration through cracks in the window assembly. It is expressed as the equivalent in cubic feet of air passing through a square foot of window area (cfm/sq. ft.). The lower the AL, the less air will pass through.

Condensation Resistance*

This rating measures how well the window resists water build-up (condensation) on the inside of the window, and is scored on a scale of 0 to 100. The higher the condensation resistance factor, the less build-up the window allows.

NFRC RATINGS

While manufacturers are not required by law to provide NFRC ratings, the vast majority of manufacturers provide the information voluntarily on an NFRC label attached to their products (see figure 1). When it comes to frame and sash materials, the U-factor is the most important rating, as this measurement rates the heat transfer of the entire window unit.

Wood is a good natural insulator, and performs well when it comes to U-factor. For the frame and sash measured without the glazing, wood ratings lie between 0.3 to 0.5 Btu/hr-sq. ft.- °F.

Vinyl is also a very good insulator and compares with wood in this area, with minor differences depending on the frame design (see figure 2). Small hollow chambers within a vinyl frame reduce heat transfer, while some vinyl windows also include an insulating material for additional performance. For superior thermal performance, fiberglass is the best window frame material. Similar in design to vinyl frames, fiberglass frames have air cavities that protect against heat transfer and are commonly filled with insulation.

Aluminum poses the most challenging thermal properties of all window construction. It readily conducts heat, raising the overall U-factor of a window unit considerably. Especially in cold climates, architects should be aware of the condensation resistance of aluminum frame windows. A simple aluminum frame can become cold enough to condense moisture or frost on the inside surfaces of the window.

Aluminum's low condensation resistance and heat loss characteristics have led to the development of more sophisticated construction for this type of frame. The most common solution to the heat conduction problem of full-aluminum frames is to provide a "thermal break" by splitting the frame components into interior and exterior pieces using a less conductive material to join them. This prevents heat loss and gain from transferring through the entire width of the window frame.

Current technology with standard thermal breaks has decreased aluminum frame U-factors from roughly 2.0 to about 1.0 Btu/hr-sq. ft.-°F. For projects that require the durability of aluminum on the exterior of a window, using an aluminum clad wood window is another solution (see figure 3). Because wood is a natural insulator, aluminum cladding does not adversely affect overall efficiency ratings.

For related information on energy efficient windows and new Energy Star regulations, go to www.architecturemag.com, click on "Continuing Ed," and proceed to "Choosing Windows for Residential Construction."

	NFRC MANUFACTURER NUMBER: CPD# 084-A-123 Model 820 Awning, Clad wood, 3/4 inch Glazing, Low-E, Argon Fill,		RES 97
	ENERGY PERFORMANCE RATINGS		
U-Factor (U.S./I-P)	Solar Heat Gain Coefficient	0.33	0.31
ADDITIONAL PERFORMANCE RATINGS			
Visible Transmittance	Air Leakage (U.S./I-P)	0.50	—
<small>Manufacturer certifies that these ratings conform to applicable NFRC procedures for determining whole product energy performance. NFRC ratings are determined for a fixed set of environmental conditions and specific product sizes.</small>			

Figure 1: NFRC Label

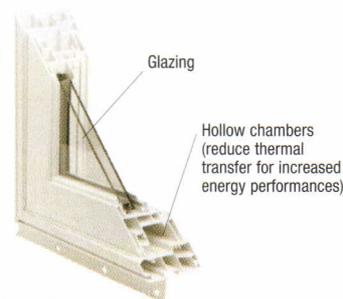


Figure 2: Full-vinyl window construction

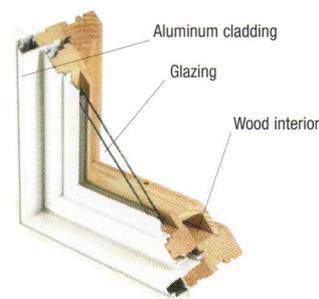


Figure 3: Aluminum-clad window construction

*Not required on NFRC labels

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Test Questions

1. According to the survey of architects conducted by the National Fenestration Council, what are the most important aspects of choosing a window for any type of building construction?
 - a. Energy ratings and size
 - b. Availability and design flexibility
 - c. Availability and durability
 - d. The type of window construction
2. What is the most energy-efficient window framing construction?
 - a. Vinyl
 - b. Wood
 - c. Fiberglass
 - d. Aluminum
3. What is the U-factor of a window?
 - a. Amount of heat that escapes a building
 - b. Amount of heat that enters a building
 - c. Amount of light a window lets into a building
 - d. Amount of solar heat a window lets into a building
4. True or false. You should always choose the highest energy ratings, regardless of the climate where a building is being constructed.
 - a. True
 - b. False
5. Which of the following statements is true?
 - a. Energy Star is a voluntary labeling program created by the Environmental Protection Agency
 - b. Energy Star labeling is required by law
 - c. Energy Star is a voluntary labeling program created by the National Fenestration Ratings Council
 - d. None of the above
6. Which of the following statements is false?
 - a. Extruded aluminum is the heaviest of the four most common window framing materials
 - b. Extruded aluminum offers the most design flexibility of the four most common window framing materials.
 - c. Extruded aluminum is the most energy efficient of the four most common window framing materials
 - d. All of the above
7. Which of the following statements is true?
 - a. Vinyl windows have experienced the highest growth in the residential marketplace in recent years
 - b. Fiberglass windows are the second-most popular in the residential market
 - c. Roll-formed aluminum adds structural strength to a window
 - d. Extruded aluminum windows should not be used in high-wind areas
8. Which NFRC rating takes the frame and sash materials into consideration?
 - a. Solar Heat Gain Coefficient (SHGC)
 - b. U-Factor
 - c. Visual Light Transmittance (VT)
 - d. All of the above
9. What is the Energy Star qualifying U-factor for the Southern region?
 - a. Any
 - b. Less than 0.65
 - c. Less than 0.35
 - d. Greater than 0.65
10. Which of the following is the best reason to put cladding on a wood window?
 - a. To achieve greater energy efficiency
 - b. To achieve greater durability
 - c. To achieve greater strength
 - d. To maintain an attractive finish for the interior of a home



Choosing Windows for Residential Construction

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AIRPORTS ARE GETTING BIGGER, BUT SO IS THEIR POLLUTING POTENTIAL AND SPRAWL-EXPANDING EFFECT ON OUR CITIES AND SUBURBS. BY JANE HOLTZ KAY

Once upon a time, glamour rode the airways. So what if land-loving passengers clutched their armrests and phobic flyers refused to ascend at all? The Wright brothers' invention changed the world. Carrying aviators and passengers aloft in what approximated ecstasy, early airplanes soon demanded new and evolving styles of airport architecture.

Alastair Gordon's well-written, if limited, *Naked Airport: A Cultural History of the World's Most Revolutionary Structure* (Metropolitan Books, 2004) launches his tale of this nation-defining building type through Charles Lindbergh's eyes: The pilot tucks fear in his leather cap, soars off into the skies, and finally finds a landing pad. "Yes, it's definitely an airport ..." he observed prosaically in 1927, a portent, one might say, of the twenty-first-century's non-love affair with the reality of aviation. Today, as suitcases are ransacked and planes are delayed, airport design panders to the lowest common denominator of the walkable, the edible, and the readable.

Still, this is now. That was then, when the dashing hero ended his famous 3,610-mile, 30-hour flight by descending in front of an ecstatic crowd, igniting the world into skybound delirium. Gordon's history of this and other events is both architecturally sound and workmanlike, as he describes the evolution of air travel from mail service to massive consumer of both the spacious skies and the zone of silence that once characterized the cities and suburbs of America.

Along his more or less merry way, Gordon details the architects' and planners' plotting of new types and places to park the new vehicle and their styles of architecture. They range from the early, artfully compact terminals to the recent era of jutting, expanding, commanding

shapes that to this generation seem to gracefully swallow the landscape.

Who can deny the early thrill of seeing the world from on high? The shrinking of space that made the planet a global village? Who can deny, as well, today's sorry effects: the monoculture of McDonald's, the outsourcing of jobs, and the pollution and land alterations produced by the hardtopping of runways and roads to the terminal itself? For all the ill effects on the landscape, the architectural display that followed—from the Beaux-Arts airports of Europe to the modernist splendor of Eero Saarinen's TWA terminal—began the air age with a clash of symbols.

The airplane, Americans exulted, would advance the "horizontal age." And so it did. Like the automobile, the plane's need for access shaped space, defining "a new kind of peripheral zone" for the urban fabric, writes

Ⓢ **Airport design panders to the lowest common denominator of the walkable, the edible, and the readable.**

Gordon. Propped early on by the federal government—\$27 million from the Works Progress Administration for the 1939 New York City Municipal Airport (now LaGuardia Airport)—so it stayed, with no tax on airplane fuel to this day, giving the skybound the same subsidies as the car-bound.

But, alas, *Naked Airport* seems as barren of questions on the ills of air life as the Emperor is of new clothes. Little heed is paid to the end result of subsidized air travel cluttering our environs, polluting our skies, and shattering our eardrums on terra firma. Meanwhile, airport sprawl is added to the land planner's vocabulary, thanks in no small part to the "upgrading" and expanding of airports nationwide, not to mention abroad: in China, where some 30 medium-sized airports are now under

construction, or in Ireland, where Dublin's new expansion moves ahead despite local protests. No matter the angst of nail-biting passengers and harassed travelers in ungainly and unwalkable terminals, or the cost to economically stressed airline owners.

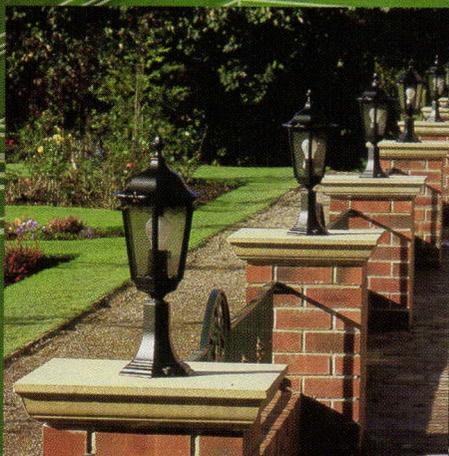
For all the thrills and glories of airports past and future, September 11 and the more recent toppling of a new terminal at De Gaulle symbolize the shaky-kneed status of today's flying culture. The epoch of "getting there is half the fun" has vanished as we remove our boots for inspection, wait for late planes, scurry to make delayed connections, and sit in traffic on highways that take us home to sleep beneath flyover jets spraying pollutants across the skies.

The fact that the airplanes' contrails produce more of such pollution and greenhouse-gas emissions than any other single artifact (including cars)—while airport siting undermines rail transportation and increases sprawl—rarely enters the government planners' handbook. Nary a word goes to the thin foundations of airport architecture, which rest on subsidized bailouts as congressmen get PAC money from industry handouts and passengers get ever more shoddy treatment.

It is a shame that the author of this competent history, like many an architect, perhaps, looks to the sticks and stones of design and not the overall structure of mobility, compatibility, and comfort. Like the designer who creates a pretty picture window while his client rues the day when the windows don't open, America's air empire is as "naked" in form and function as Gordon's title proclaims.

Jane Holtz Kay, architecture critic of *The Nation* and author of *Asphalt Nation*, is currently writing *Last Chance Landscape: Taking the Earth in for Repair*.

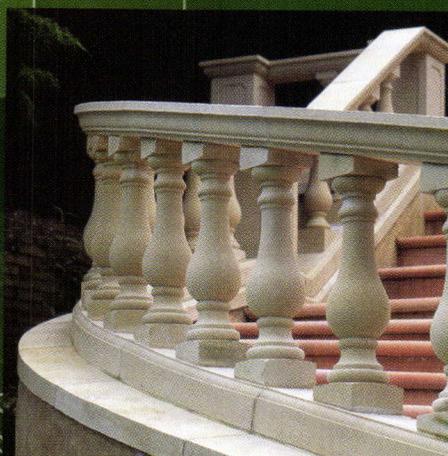




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