

# ARCHITECTURAL

# R E C O R D

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## A new case

# Editorial

By Robert Ivy, FAIA

**A** RCHITECTURAL RECORD loves the single-family house. For almost 50 years, since we published architect Ulrich Franzen's own home near Rye, New York, in 1956, this magazine has promoted Record uses as laboratories for design. No other issue of the magazine is more popular with readers than this, serving up a platterful of innovative solutions to the modestly scaled freestanding building. Demonstration projects, these issues provide case studies, incorporating social ideals, formal concerns, and aesthetic or material evolution into three-dimensional time capsules.

The temptation today might be to expand the franchise, commissioning a new generation of case-study houses, widening the explorations begun by John Entenza for Arts & Architecture magazine. As Thomas H. Collins observes on page 112, who wouldn't wish to build another Eames house? Yet, as excellent as that groundbreaking program proved to be, the case-study houses addressed a specific milieu: California in the years following 1945, where Modernist steel-framed structures were created for a burgeoning middle class in a paradisiacal, benign climate.

What, we wondered, is the case in 2003? To answer that question, ARCHITECTURAL RECORD convened a panel of housing experts last month, inviting a select group of architects and a demographer to lunch, where we discussed contemporary issues in houses and housing. You will be able read about the results of that luncheon in a subsequent article. The single-family house, the group declared, seemed to be well served, continuing to attract thoughtful work on custom homes for the educated or affluent and provoking attention to new processes, including prefabrication.

While ARCHITECTURAL RECORD will continue to report on advances in single-family residential design, the experts asked us to consider housing in the aggregate. What happens when we put houses together, exploring how the pieces fit together and how the individual modules relate? The question of multifamily housing has never been more important. Achieving greater residential density, a problem vexing most architects, constitutes design's Holy Grail—decelerating the centrifugal

force of sprawl and reducing our need for petroleum products.

Programmatically, the case for multifamily offers a variety of issues. Its vast potential clientele encompasses a range of house types and inhabitants, from ready-to-wear to blue chip. Solutions range beyond shape and array: economic, social, even legislative questions span across the demographic spectrum. Projects need not remain frozen in time, but can evolve, allowing the housing to expand or shrink with changing social demands.

At the same time, by soliciting and showing the best new examples of multifamily housing, we are describing a new urban framework. Think of a low-rise/high-density multiplication problem in which duplexes double to quads, to blocks, to neighborhoods in an iterative approach. The ideal stretches from the English New Town to today.

Throughout the coming months, ARCHITECTURAL RECORD will proceed to highlight examples of the best solutions for proximate living, scouring the newest additions of Amsterdam's Borneo Sporenberg and downtown San Diego. At the same time, we will formulate a new case study, to result in demonstration housing for the coming year: multiple, evolving, reflecting the new dynamics of society.

The new case raises questions. In the era of the megahouse and the S.U.V., can we find satisfaction in compression? Does the American ideal demand a fulsome plot of earth? Will we discover the next chapter to New Urbanism? What is the meaning of family? While we treasure our editorial legacy, and will expand on it, we ask if it is possible to expand the creative American ideal beyond the Record House. Join us on the case.

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# Letters

## City-town contemporary

I have just returned from America's Architectural Mecca, Fort Worth. I am in complete agreement with the words of David Dillon and his article on Tadao Ando's new Modern Art Museum of Fort Worth [March, page 98]. It is a gem, hard for me to put words to, to describe this quiet, meditative, handsome, and utterly appropriate setting for an art museum. The non-id-driven design has to be compared with many of the new museums that make statements about the architects rather than museums for art. And it is perfect that it is "partnered" with Kahn's Kimbell museum.

Together, they stand as possibly the best buildings created in the United States in the past 100 years. Viewing these buildings reminds me of the highest aspirations I had as a young architect but never achieved.

A visit to these buildings should be a must, a pilgrimage, for practicing architects and students. Incidentally, the Fort Worth Museum has published a small book by Michael Auping, titled *Seven Interviews with Tadao Ando*, which is a thoughtful, insightful, and enlightening window into the man and his thoughts about architecture and museums.

Bob Goldfeder  
Diego

## City-town copycat?

Tadao Ando blew it. RECORD couldn't have been more right than to say that the outside is never as important as the inside for Ando. This building reminds me of the Kennedy Center by Edward Durell Stone, right down to the water feature. Joseph La Rocca  
Charlotte

## Late for Urban Design?

"Rebuilding Lower Manhattan"

[February, page 46], James Russell noted that critics, led by *New York Times* critic Herbert Muschamp, have pitted the "progressive" architectural projects against "neo trad" urban concerns and states that the so-called progressives see "architecture as urban design." To date, there has been much discussion about the skyline and little about urban design. It seems as if most critics are uninterested or incapable of discussing what good urban space is and analyzing the proposals in relation to it. Robert Campbell's critique in that issue [page 75] stated, "What are the virtues of traditional urbanism that we should hang on to?" It is about time that these concerns come out.

In the February 6 *New York Times* article "Balancing Reason and Emotion in Twin Towers Void," Herbert Muschamp declared that until the Enlightenment, in the 18th century, there had been no secular urban space, only religious space. However, the Greek Agora and the Roman Forum were a balance of both, and from the Middle Ages on there were civic spaces and market spaces as well as religious spaces. The Campo in Siena, Piazza Signoria in Florence, Campidoglio in Rome, and the Louvre, Place des Voges, and Place Vendôme in Paris, as well as so many canonical urban spaces, were not religious. Until the late 20th century, urban space accommodated and symbolized *civitas*. To copy the style of the past is certainly reactionary, but to utilize the principles gleaned from the great precedent of urban space could be, as it so often has been, successfully progressive. "Instead," as Robert Campbell says, "both in program and in design, the architects and the LMDC are rehashing the late 20th century."

At a recent conference on Urban Design, organized by

Columbia and Harvard Universities with the Van Alen Institute, in which I participated, there was a general sense that we have lost the art of urban design—that is, the making of urban space. A challenging question was raised to name any successful urban space that has been made since Rockefeller Center.

It is interesting that only the Peterson/Littenberg project presented a plan in their proposal. One of the critical means of visually rendering and comprehending urban design has been with the plan, or the urban map. The urban plan, like the architectural plan, often tells us a lot about the quality of the design, how a project relates to its context, what relation it has to the form of the city, and even suggests its role in the social patterns of the city.

It was interesting to see the hypergeometry of most of the projects in a site where the grid of Broadway and that generated from the Hudson River provide so much potential as context as well as geometry. Provided here are simple figure-ground diagrams of several of the projects. I believe these are very revealing for Robert Campbell's question, "What would be a good downtown neighborhood for our own time, now in the 21st century?" These plans were not revealed and not discussed. Rather, the images that first came out and are still being used show a fixation with tall, image-making buildings. To stand at the fine urban street intersection of 5th Avenue and 34th Street in New York City and not necessarily notice that on one corner is a tall building, the Empire State Building, is an important lesson. It's not about style, but rather an example of how to make tall buildings and simultaneously make urban space and place—a problem that is yet to be discussed. I trust that it is not too late.

—Michael Schwarting  
Director, Graduate Program in  
Urban and Regional Design,  
New York Institute of Technology

## Dramamine dreams

I was one of the AIA members fortunate enough to tour Lord Foster's new GLA building [February, page 110] last August. Whilst Brian Curtain and Foster and Partners are justifiably proud of the advancements in design, particularly their pioneering use of 3D technology, there are several flaws with the building that your reporter should have mentioned.

The public courtyard is very hard and completely lacking any landscaping or human scale. Unfortunately, the courtyard has been taken over by the teenage skateboarders who congregated downriver at the National Film Institute.

Arups' air-conditioning/ventilation engineering may be ingenious and energy-efficient, but it apparently does not work. On the upper floors, virtually every worker had a small portable fan on their desk.

Finally, I personally found the combination of ramped floors and ceilings, angled walls and differently angled columns very disconcerting.

After an hour in the building, I felt a sort of seasickness, with a need to get some sort of reference back to the square and true. Strangely, I felt the same sort of relief upon exiting the building onto the embankment as I have when leaving a sailboat or an airplane.

Ken Livingstone and Foster and Partners deserve credit for bringing a very progressive new building to London. However, in my opinion, it must be judged a noble failure.

—Tom Giannini, AIA  
London

## Out with der old

In his commentary on the Saxon

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## Letters

State Library in Dresden by Ortner and Ortner [Building Types Study, February, page 152], David Cohn states that this building stands for a "suggestive image of a new Germany in the making." It can only be hoped his proposition will not come true, and my belief is it won't. While functionally sound, this library shows an institutional, oblique, even unfriendly face to the public and to its visitors. If this monolithic architecture were to be representative, it would suggest a retrogressive Old Germany, indeed. Fortunately, there is a wide variety of current work in Germany that points to the contrary. The open and inviting Landesbank by Behnisch and Partners in Hannover [February, page 124] is a much better example of things to come, as is the Max Planck Institute [January, page 110], located in Dresden not far from the Ortner's library. Behnisch designed a widely appreciated library for Eichstaett University some time ago, which has become a trademark for a friendly, youthful approach to that building type—and still stands for a progressive image of German architecture, as well.

—Oswald W. Grube  
Herrsching, Germany

### The eyes have it

In your December editorial ["Another Pair of Eyes," page 17] you wrote about *The New York Times'* coverage of architecture being left solely in the hands of Herbert Muschamp.

Muschamp's major failing is that he does not seem the least concerned about how buildings fit into their environment. It was very interesting, therefore, to turn the page and see an article about the proposed RISD building in Providence, by Rafael Moneo [News, page 23], who must be one of Muschamp's favorites. The article quotes Moneo as touting the building as being "so contextual," which is clearly absurd from the photograph. The proposal has been rightly

decided by David Brussat, *The Providence Journal's* urban design critic, as antithetical to the character of College Hill. Visible in both photos, however, is the Providence County Courthouse, a tour de force of contextual architecture, breaking up its huge mass into residential-size pieces marching up the hill. Not content with being a blight in the daytime, the proposed building promises to upstage the lighted steeples of College Hill at night, too. There might be a right place for the design, but this isn't it.

—Larry Cole  
Silver Spring, Md.

### Corrections

In the March issue, on page 190, the top image (for the Brazil Rendering System) of the Viking Research Center in Mississippi should have been credited to hypertecture and Richard Meier & Partners. Also in March, in the Building Types Study beginning on page 140, the school featured is P.S. 156, I.S. 392. For the March profile on page 252, the portrait should have been credited to Brad Baskin. In February News, on page 52, the photo of the Kate and Laurance Eustis Chapel should have been credited to Neil Alexander. Also on that page, the Federal Building United States Courthouse in Central Islip, New York, was designed by Richard Meier & Partners and the Spector Group. Also in February News [page 54], the proposal by Wickham and Zawadzki, of In Situ Design, for the Pentagon Memorial should have stated that the victim names are engraved collectively on the table surface, and the table is made of cast bronze. In our special March Healthcare Supplement, the photos of the Bronson Methodist Hospital on page 11 should have been credited to Peter Mauss/ES

Send letters to editor in chief Robert Ivy at [rivy@mcgraw-hill.com](mailto:rivy@mcgraw-hill.com). Letters may be edited for style, format, or length.

## REBUILDING LOWER MANHATTAN

### Libeskind design chosen for WTC site, but process and time-frame questions remain

John E. Czarnecki, Assoc. AIA, with Kevin Lerner

One of the most widely publicized architect selections ever, the design Daniel Libeskind was chosen February 27 for the World Trade Center (WTC) site. The Lower Manhattan Development Corporation (LMDC) and the Port Authority of New York and New Jersey selected the scheme by architect Daniel Libeskind, with Gary Kohn, Hargreaves Associates, and Michael Sorkin, but the rebuilding process and Libeskind's ongoing role remain unclear.

Libeskind's face and his scheme topped the front pages of newspapers worldwide, but will the entire site be built according to Libeskind's design? Will the office buildings, transportation hub, or museum be designed by other architects based on Libeskind's master plan? And what's the time frame for any rebuilding?

The LMDC gave Libeskind a \$30,000 contract extension in February-March, which increases the total that Libeskind has earned thus far to \$548,817. The contract extension allows Libeskind to do further modifications to the open area intended for a memorial. But what will his role be with the design of the transportation component, for example. *The New York Times* reported on March 12 that Michael J. Rinaldi, a spokesman for the Port Authority, said, "We haven't made decisions yet. We would expect that Mr. Libeskind would be involved in some fashion in all the different aspects" of rebuilding. As of mid-

March, it was also unclear if Larry Silverstein, the developer who holds the lease on the WTC office space, will continue as the leaseholder as the rebuilding proceeds or if he will bow to pressure and abandon his interests once the insurance claim

is settled in court. And if Silverstein does intend to rebuild, will he have an option to select another architect(s) or an obligation to work with Libeskind?



Daniel Libeskind withstood the media crush at the February 27 announcement (right), when he showed a modified design with a lawn on the sunken memorial area (above) and less-angular buildings (above right).

is settled in court. And if Silverstein does intend to rebuild, will he have an option to select another architect(s) or an obligation to work with Libeskind?

The City of New York appeared to be jockeying to gain a greater role in WTC redevelopment decision-making. Daniel Doctoroff, deputy mayor for economic development and rebuilding, sent a proposal to Governor George Pataki that called for a new commission, with the governor as chair, to lead the rebuilding. With the new commis-

proposal as of press time.

Plans call for a competition to be announced soon for the design of a memorial for the site. The LMDC announced in March that the memorial will honor all victims as a single group rather than honor separate groups, such as firefighters, police, or tenants, individually.

#### Modified proposal

Libeskind made a few distinct modifications to his plan in February. The most striking change was that the memorial area was raised from 70



feet below ground level to 30 feet below grade with a green lawn underfoot rather than rock. The slurry wall is still visible on the western edge of the site. Libeskind says the memorial was raised to allow the slurry walls to be stabilized with lateral structure. While that may be true, it appeared that the memorial was also raised to allow for the possibility of a bus terminal or PATH train access underneath. A navelike space, as Libeskind called it—about 300 feet long and 30 feet wide—at the northwest corner of the memo-

## REBUILDING LOWER MANHATTAN

### OFF THE RECORD

Niall Kirkwood will succeed George Hargreaves as chair of the Department of Landscape Architecture at the Harvard Design School effective July 1.

Robert Fox, Jr., AIA, has left New York firm Fox & Fowle Architects to start his own practice. The parting was "with mutual goodwill," according to the firm, which will keep its name. Daniel Kaplan, AIA, will join cofounder Bruce Fowle, FAIA, as senior principal.

San Francisco architect Stanley Saitowitz is designing the conversion of a factory into a new home for the University of Waterloo School of Architecture building in Cambridge, Ontario. The facility will open in May 2004.

I.M. Pei, FAIA, will receive the Henry C. Turner Prize for Innovation in Construction Technology at the National Building Museum in Washington, D.C., on April 15. The prize is sponsored by the museum and Turner Construction Company.

French architect Jean Nouvel has designed a new branch of the Guggenheim Museum in Rio de Janeiro. Construction may begin this summer, with an opening in 2006.

Denver firm Fentress Bradburn Architects won a GSA Design Excellence competition to design a \$50 million federal courthouse in Cape Girardeau, Missouri.

Shelley Poticha is resigning as executive director of the Congress for the New Urbanism effective July 1.

British architect Peter Smithson died March 3 at age 79. Smithson, a partner in practice with his wife, Alison, who died in 1993, was an influential British Modernist who designed the Economist Building in London.

(continued from previous page)  
rial area would be on bedrock.

His plan still called for the world's tallest building to reach 1,776 feet to the top of its spire. But the uses in the top of that building no longer included the "Gardens of the World," as he called it in December, but a more modest restaurant and other public space. The remainder of the office buildings have somewhat wider floor plates and are less angular than in the December iteration [RECORD, February 2003, page 34].

An inclined circular walkway that had been planned to connect the site to the World Financial Center across West Street has been eliminated. Instead, Libeskind presented two possibilities for what he referred to as West Street Park. One plan calls for a sunken West Street with a park above, and an alternate plan has West Street at grade level, surrounded by landscaping.

Libeskind emphasized the new intersection of Fulton and Greenwich Streets as a crossroads at the site. The four corners of the intersection would include the

**Think's towers were 225 feet shorter and narrower in the final version.**



**PHASE ONE**  
**Urban and Landscape Development:**  
Connect Greenwich Street, connect Fulton Street, establish Wedge of Light and Heroes Park  
**Ground Zero Memorial Site:**  
Ground Zero Memorial Site, Museum  
**Lot C Station Development:**  
Lower Manhattan station  
Underground access, public concourse, retail and access to subway and PATH, loading dock, bus parking, car parking

**PHASE TWO**  
**Lot A:**  
Antenna tower with garden and office tower, retail on Fulton Street, Greenwich Street, and Vesey Street, performing arts center

**PHASE THREE**  
**Lot C:**  
Offices, retail on Greenwich Street, Fulton Street, and Church Street, retail on Cortlandt Street  
**Lot D:**  
Offices, retail on Greenwich Street, Church Street, and Liberty Street, retail on Cortlandt Street

**PHASE FOUR**  
**Lot B:**  
Hotel, offices, retail on Greenwich Street, Fulton Street, Church Street, and Vesey Street  
**Lot E:**  
Offices, retail on Greenwich Street and Liberty Street  
**Lot F:**  
Offices

**Libeskind proposes development in multiple phases, as shown in this illustration. The establishment of streets, a transit hub, and a memorial are in the first phase.**

tallest tower, a performing arts center, entrance to the transit station, and a memorial museum.

### Think revisions

Although it was not selected, the design by the Think team, led by Rafael Viñoly, FAIA, Frederic Schwartz, AIA, Shigeru Ban, and landscape architect Ken Smith, was modified (pictured, left) in February. Think changed its latticework towers from 1,665-foot-tall structures of steel to 1,440-foot-tall towers, each with a smaller circumference and made of lighter-weight stainless steel. Schwartz told RECORD that the new version of the towers was designed to cost \$300 million less than the previous one. Within the latticework towers, the museum component was moved down from about the 70th floor to the 35th

floor. On the ground level in the latest version, much of the ground immediately around Think's latticework towers that was initially proposed as a reflecting pool became a park.

### Weiss/Manfredi on board

New York firm Weiss/Manfredi Architects, retained in November 2002 as an in-house urban design consultant to the LMDC, received assignment in March to develop plans for residential, commercial, and waterfront precincts near the WTC

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## Design by young New York architects selected for Pentagon's 9/11 memorial

Design by New York architects Julie Beckman and Keith Kaseman—their first major commission together and their first competition entry—has been selected as the memorial to the victims of the September 11 terrorist attack at the Pentagon. Beckman and Kaseman were chosen by the U.S. Department of Defense in late February from six competition finalists [ENR, February 2003, page 52] among 1,126 competition submissions.

Beckman and Kaseman's design for the memorial, called *Light Benches*, includes a bench, or "memorial unit," for each of the 184 victims from the Pentagon and American Airlines

**Set in a field of trees, the memorial has 184 benches cantilevered over pools of water lit from below.**

Flight 77. The cast-aluminum benches will cantilever from gravel paving, and narrow pools of water, lit from below, will be under each unit.

Beckman and Kaseman created opportunities for individual and collective memorialization. A victim's name will be inscribed in each bench. The direction that each bench faces will indicate whether the victim was a passenger of the flight or a person in the

Pentagon. The benches are also arranged according to the ages of the victims, and the memorial overall is positioned to follow flight 77's path.

Kaseman adds that the units' tactility, plus the crunching of gravel and placement of maple trees, activates multiple senses so that "this atmosphere really emphasizes life in general and has some kind of sublime beauty behind it."

The Department of Defense estimates that the memorial's construction cost will range between \$4.9 and \$7.4 million, which will be primarily raised in private contributions. Completion is scheduled for no later than September 11, 2004. *David Sokol*

## Beckman and Kaseman "overwhelmingly honored" to be chosen

Equipped with a sense of responsibility, Julie Beckman, 30, and Keith Kaseman, 31 (pictured below), said they were "overwhelmingly honored" to have won the competition to design a memorial to the September 11, 2001, victims at the Pentagon. A couple, who live together in a 275-square-foot New York City studio, Beckman and Kaseman met as graduate architecture students at Columbia University. Since graduating in 2001, they've completed a few architectural projects as Kaseman Beckman Amsterdam while working for other firms.



obligation to do something. All we wanted to do was contribute to the conversation.

**AR:** *What is the core idea for the benches?*

**JULIE BECKMAN:** This is a tribute to 184 unique individuals. We wanted to provide families, friends, and colleagues with a unique and special place to go to and feel good about themselves and the people they're remembering.

**KK:** We wanted a sense of place that is highly crafted and articulated—more than just a bench or a pool—with a layer of trees as well.

**AR:** *You both took a leave of absence from other jobs to develop this design. What are your plans for the immediate future?*

**KK:** The memorial is definitely our top priority.

**JB:** There are so many people depending on us to realize the memorial as it has been designed.

*Interview by David Sokol*

**ARCHITECTURAL RECORD:** *What inspired you after this competition?*

**KEITH KASEMAN:** First and foremost, it was being in New York on September 11. Once we were notified of the competition, we just felt a natural

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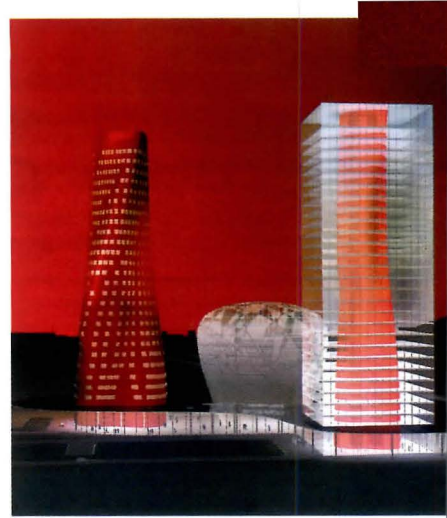
## Record News

### Toyo Ito unveils twists and curves for Barcelona project

Tokyo-based architect Toyo Ito has been chosen to oversee the expansion of Barcelona's Gran Vía Trade Fair Campus, located on the southwestern limits of the city and the neighboring municipality of L'Hospitalets.

Ito will design representative buildings, including a meeting center, a vaulted entry hall, a serpentine circulation spine (below left), and a pair of landmark 28-story towers containing offices and a hotel. These buildings accompany 2.6 million square feet of exhibition space in six pavilions on the campus. Ito's project was chosen earlier this year in a competition with Dominique Perrault, Foster and Partners, Weil Arets of Holland, Madrid architects Abalos and Herreros, and Argentine architect Clorindo Testa.

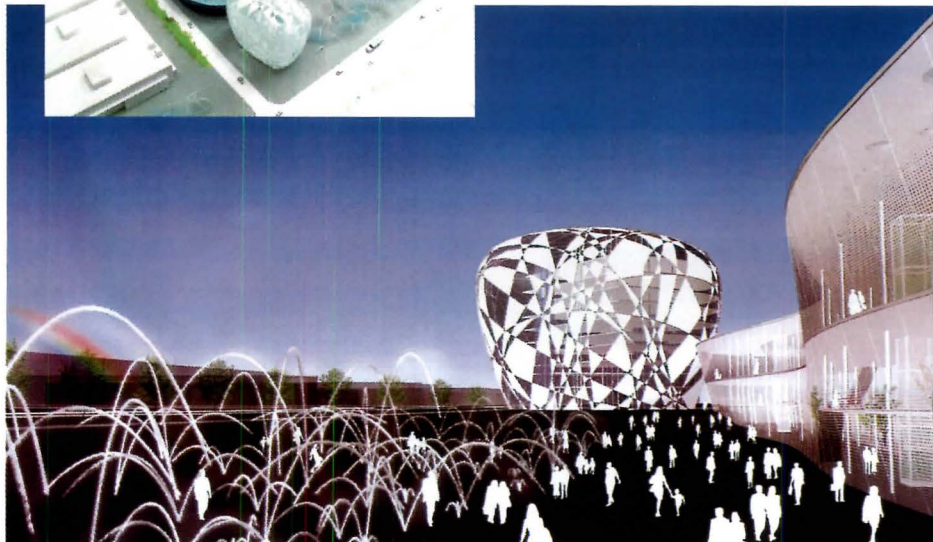
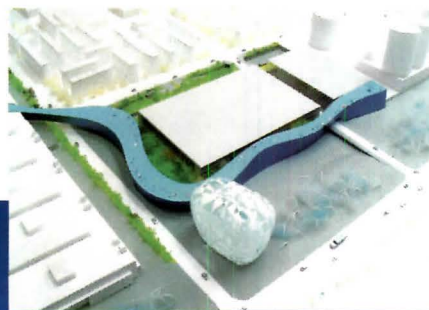
The design plays off the contrast between organic and orthogonal forms and uses moving water as both a theme and a major cooling element. "I wanted the expression of the entire complex to be about oscillation and fluidity," Ito says. The rippling, twisting shaft of the hotel tower, for example, is repeated in the central core of the glass-walled office tower, which will be visible at night, transforming it into a ghostly twin. The large rectangular hall of the meeting center contains the organically shaped volumes of two auditoriums. It opens to a sunken, water-covered plaza



Ito's design includes a pair of 28-story towers (above), a serpentine circulation spine (below left) and auditoriums opening onto a plaza (bottom).

and a promenade of fountains along the southern facade. The multilevel circulation spine includes restaurants and other services. It winds through the exhibit pavilions like a river, with flowing water across its roofs that is visible through skylights.

Together with existing facilities at Montjuïc about 1.5 miles to the east, the Trade Fair will be the second largest in Europe after Milan's. The new buildings are scheduled to open in 2007 at a cost of \$500 million. Project financing is led by Catalonia's regional government. Other developments under construction or planned nearby include a 10-building office complex designed by Jean Nouvel, a hotel tower by Richard Rogers, a judicial complex by David Chipperfield, and an office park by Arata Isozaki and Foreign Office Architects' Alejandro Zaera. *David Cohn*



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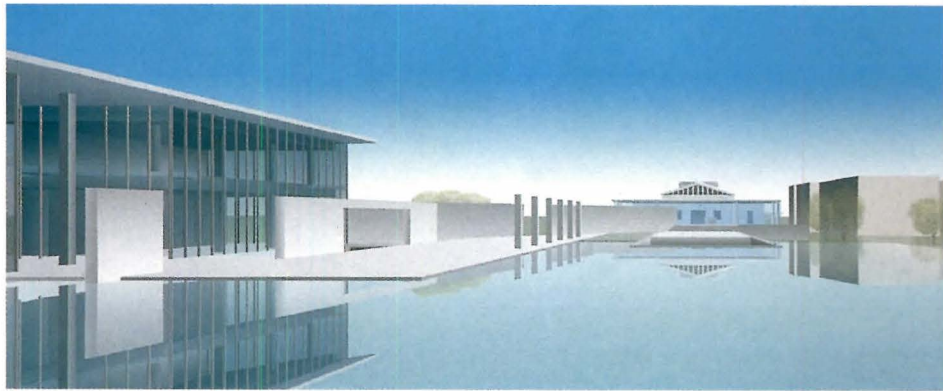


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## Record News



### Ando designs centerpiece for Clark Art Institute

A new building designed by Tadao Ando will form the centerpiece of a major renovation of the Clark Art Institute, in Williamstown, Massachusetts.

The building will add 95,000 square feet of space to the institute without increasing the amount of above-ground floor space on the campus. More than three quarters of the new Ando building will be below ground, and an existing service building and parking lot will be demolished to make room for the new structure.

The Ando building will be a two-story glass-and-red-granite structure with a terrace overlooking a new reflecting pool. Below-grade courtyards will allow light into the underground portions of the new building. The addition will



house 11,500 square feet of gallery space, as well as a restaurant, café, and bookstore. It will also include office, classroom, and research facilities for the institute's graduate art history program. The red granite incorporated into the structure will match the cladding of an existing 1973 library and office building on Clark's campus.

Ando has also designed a new entrance pavilion for the institute's original 1955 building, a white marble Neoclassical structure. The 2,700-



Ando's building (above and top, at left) will be adjacent to reflecting pool (model, below) at the campus center.

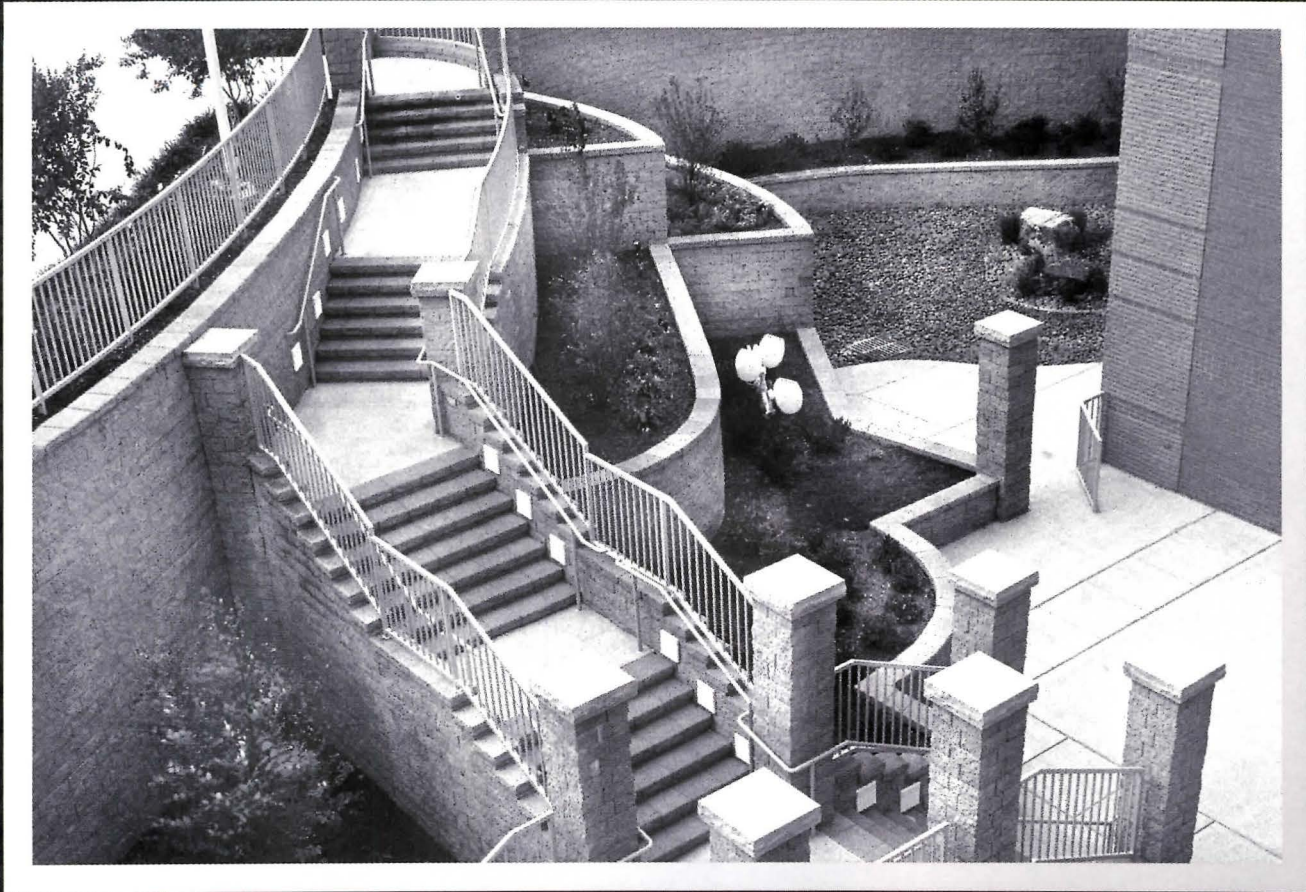
square-foot foyer will be clad in transparent glass and will restore a grand entrance to the building. The original entrance was closed when an addition was built in 1973.

Reed Hilderbrand Associates has designed a new landscape plan for the campus, focusing on the new reflecting pool at the center of the building cluster. Existing walking trails around the rest of the site will be preserved, and traffic will be rerouted through tree-lined drives to unobtrusive parking lots surrounded by trees.

The Clark Institute opened in 1955 and now holds a collection of more than 8,000 objects, with concentrations in Old Master, Impressionist and 19th-century American art. In addition to being a public art museum, the institute conducts research in art history and criticism and offers a master's degree in conjunction with nearby Williams College.

The institute is currently fund-raising for the project. A time frame for construction has not been established. An exhibition of Ando's work is currently on view at the institute through April 27. An exhibition of Ando's design for the institute its *Art in Nature: The Clark Art Institute Today and Tomorrow*, is on view now through summer. That show includes models and drawings of the new designs, including a campus model. *Kevin Lern*

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## Record News

### Swedes to make modern statement with embassy on Potomac

Sweden is planning to build the first embassy ever to grace the historic Potomac River in Washington, D.C.

If the "House of Sweden" gains approval from the U.S. Commission of Fine Arts (CFA) on April 17, construction should begin next year. The U.S. Department of State and a local city advisory group have already given their informal approval for the combination embassy and condominiums at the edge of Georgetown near the Kennedy Center.

Sweden's trademark blond wood and winter-white stone will clad many interior surfaces of the angular concrete-and-glass embassy, according to the Swedish firm Wingårdh Architects, which designed the building.

Wingårdh won the commission, which is part of a commercial American venture, in a juried competition in January. The firm also designed the Swedish embassy in Berlin in 1999.

In addition to displaying Sweden's hallmark simple elegance, a chief goal for the new embassy "was to make it as accessible as possible," said codesigner Tomas Hansen. Layers of transparent and opaque glass will make the building appear open.

Because the embassy borders the river and the National Park Service's Rock Creek Park, retaining public waterfront access while trying to prevent flooding will be a challenge. Steel floodgates will help protect the 70,000-square-foot building. Most of Washington's Potomac shoreline has been reserved as riverfront park. No building has been erected directly on the riverfront since the 1980s.



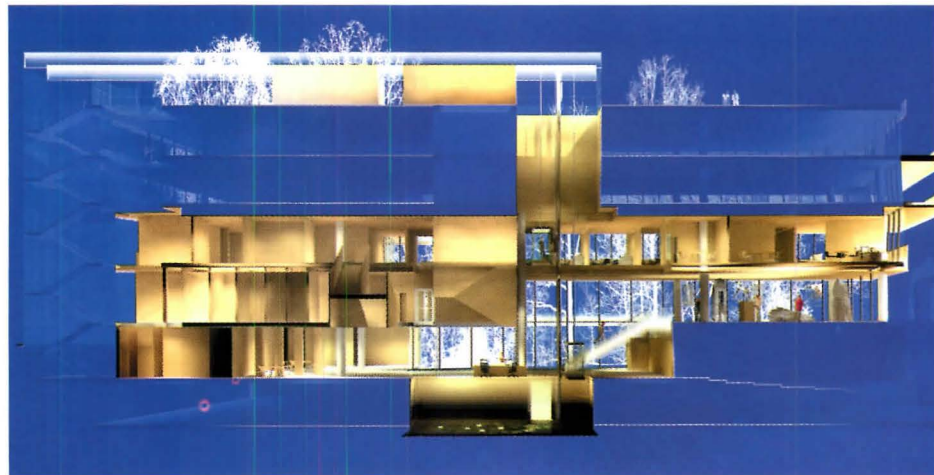
The Swedish Embassy (above and section, below) will be cantilevered and clad in glass and concrete.

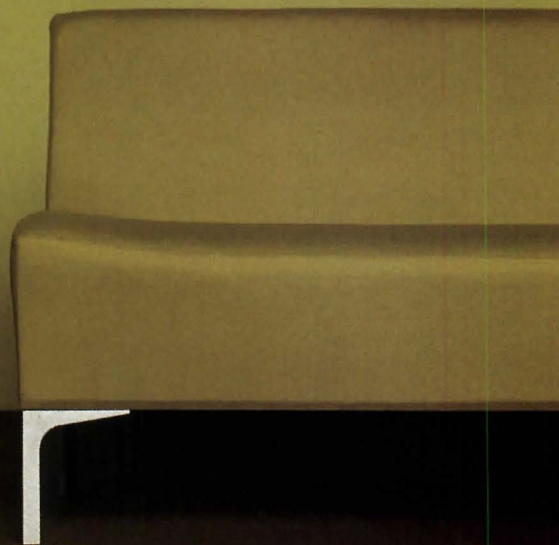
The embassy itself will occupy the basement through the second floor of the four-story building. Parking will be in the subbasement, a conference center and 100-seat auditorium will be in the basement. The transparent first floor will feature public exhibition space, and the second floor is dedicated to embassy offices. rooftop garden will be shared with residents in condominiums on the top two floors.

American developer Lano-Armada Harbourside will sell the condos. Although Sweden is designing the building, it will actually be renting the space from the developer.

Sweden is now leasing embassy space in office building five blocks from the White House. Most countries have built their embassies along one of Washington's two main embassy rows.

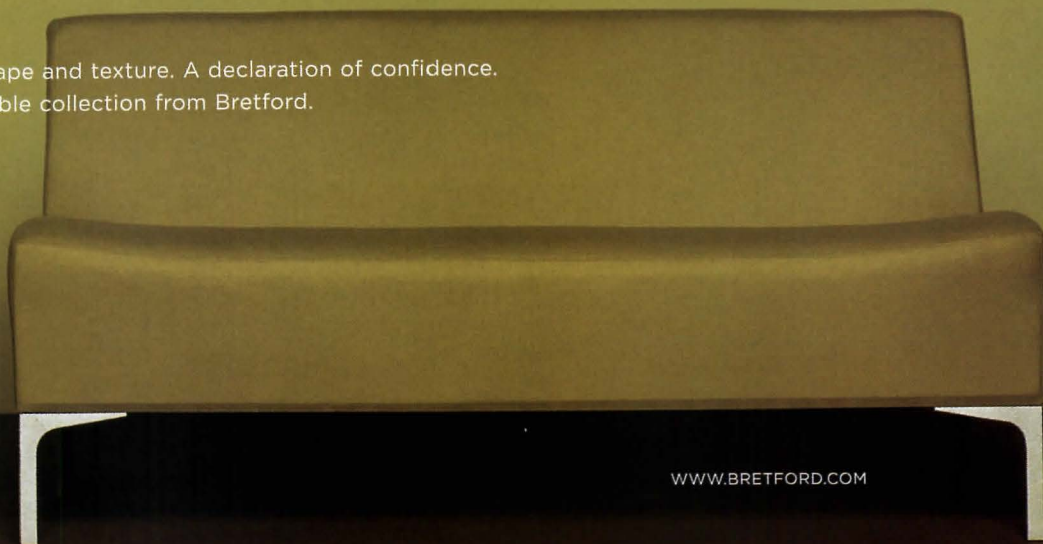
Barbara J. Saffir





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### Freed's design for Air Force Memorial near Pentagon is approved

Shortly after its unveiling in mid-March, the National Capital Planning Commission approved the design by James Ingo Freed, FAIA, for a new Air Force Memorial in Arlington, Virginia. Freed, of Pei Cobb Freed & Partners, was chosen from an invited competition that included Morphosis, Urban Instruments, Moore Ruble Yudell, and student and faculty submissions from the Washington-Alexandria Center.

The centerpiece of the Air Force Memorial comprises three attenuated, arcing stainless-steel spires; the tallest of the spires stands 270 feet high. Freed explains that the spires' asymmetrical configuration creates a "constant dynamic relationship that's always changing," and evokes the image of flight. Observers have noted that the triumvirate resembles the peel-away maneuver performed by the Air Force Thunderbird Demonstration Team.

The memorial will be constructed on a three-acre promontory from which "the idea of soaring came quickly, but the idea of how it

should soar was a long, drawn-out development." The design's verticality will form a counterpoint to the memorial to the victims of the September 11 attack on the Pentagon (see page 3), which the promontory immediately overlooks.

Other elements of the Air Force Memorial include a bronze Honor Guard by sculptor Zenos Frudakis as well as a roofless "contemplation chamber" of translucent glass panels.

This is not Freed's first design for a memorial for the Air Force, which has been the only military branch without a memorial in the Washington

D.C., area. Established in 1992, the Air Force Memorial Foundation had commissioned Freed to design a memorial for a site along Arlington Ridge, between the Marine Corps' Iwo Jima Memorial and the Netherlands Carillon about a mile and a half from the current site. That 1999 design featured a five-pointed star suspended above the ground, the corners of which were extruded to form pilotis for the structure. In 1999 the Marine Corps filed suit to block the neighboring Air Force memorial because of its close proximity. The lawsuit was dropped, and the Air Force selected its current site in late 2001. To create the site, the easternmost wing of the National Annex will be demolished by 2004. The Air Force Memorial Foundation has raised \$33 million of the \$38 million estimated construction cost. Completion is scheduled for 2006. D.S.



The Air Force Memorial (shown in context near the Pentagon, top) will have three stainless steel spires (left) and a "contemplation chamber" of translucent glass panels.





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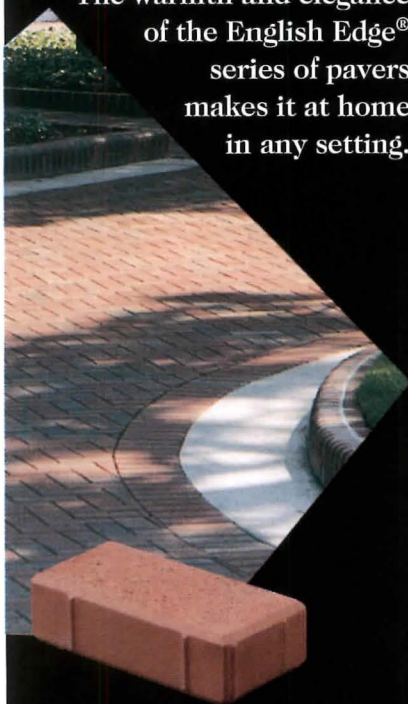
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## Record News

### Safe rooms: Steel cubicles as safe havens for terrorist attacks

With the continued threat of domestic terrorism, Jeff Quante believes he has a solution to keeping your homeland secure.

Amid the French tablecloths and hot tubs at last month's Washington, D.C., Home and Garden Show, Quante was hawking one of Zytech

go up to more than \$80,000. They range from phone-booth size—34 inches by 34 inches by 82 inches high and weighing 2,600 pounds—to 8 feet by 10 feet by 8 feet. Custom sizes can be ordered.

Wealthy individuals and security companies

have been the chief customers of the (self-described) "fear-driven" firm that Quante, a security designer for two decades, cofounded eight months ago. But now he is aiming to hook "middle-income Americans" into buying the freestanding refuges for their homes. He seized on the safe-room idea when a Virginia security firm asked him to build one and he could not locate a manufacturer.

Only eight rooms have been produced so far at Dunn Industries,



The safe rooms can protect against chemical and biological agents.

Engineering's steel "safe rooms." The contraption, with high-security locks and bullet-resistant glass, looks like an armor-plated phone booth with gun-turret-shaped windows.

Designed chiefly to resist bullets and forced entry, Quante said the steel vaults can also ward off terrorist attacks from "known" chemical and biological agents when equipped with an optional air-filtration system, which costs about \$3,000. The units themselves start at about \$16,000 and

a storage tank manufacturer in North East, Maryland. Quante hopes to sell 300 this year.

Sometime in the near future, Quante and partner, glass specialist Nelson Bolton, plan to subject the safe rooms to bomb testing. Quante said a Maryland testing lab already has certified that the structures will withstand bullets and battering rams. "These rooms will last forever," said Quante, who expects to equip his own semirural home with one of the rooms. *B.J.S.*

### Diller + Scofidio to redesign Lincoln Center public spaces

New York City's Lincoln Center for the Performing Arts has selected a team led by Diller + Scofidio to design the 6.3 acres of outdoor public space at its west side complex. The Diller + Scofidio team includes Fox & Fowle Architects; Cooper, Robertson & Partners, as planners; lighting designer L'Observatoire; landscape architect Olin Partnership; and graphic designer 2x4.

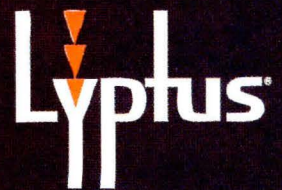
Diller + Scofidio, which currently has a major exhibition at the Whitney Museum of American Art through May 25 (see story, page 103), won the five-month competition against firms including Foster and Partners and Richard Meier. The redesign of the outdoor areas, budgeted at \$150 million, is part of Lincoln Center's \$1.2 billion construction project. Images of Diller + Scofidio's Lincoln Center design were not made public at press time.

A major component of the public space design will be a transformation of 65th Street from Broadway to Amsterdam Avenue into Lincoln Center's "Main Street." The new 65th Street will be a more pedestrian-friendly thoroughfare, with new entrances to the Juilliard School, Lincoln Center Theater, Alice Tully Hall, and the Walter Reade Theater. Construction on 65th Street will likely begin in 2004. *J.E.C.*

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## Record News

### Two Chicago architecture exhibitions look to future

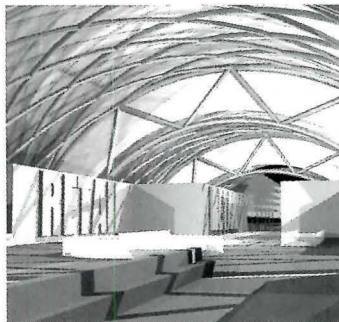
Two recently organized architecture exhibitions in Chicago highlight the widely divergent view of the future by architects in that city and the Midwest.

Organized at Chicago's Gallery 400 by a group of curators at the University of Illinois, *Speculative Chicago: A Compendium of*

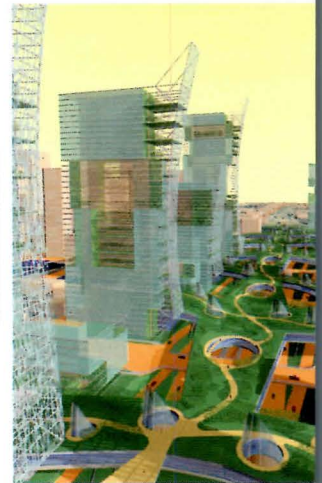
*Architectural Innovation* included 52 entries by architects and designers from the Chicago region. The exhibition, which was on view in March, was developed with the premise that innovation is alive and well in Chicago's architectural community.

McLain Cutter's Bucktown House, a consciously contorted riff on a traditional gabled worker's house, was designed for Chicago's trendy artist neighborhood. On the rural front, Douglas Pancoast's "cowbot" was a spherical object programmed to roam a farm as "prairie light, seeder, and herder." Architect and engineer Joseph Burns showed actual nuts and bolts in elegant computer renderings of complex steel connections for the renovated Soldier Field. A catalog of the show, including additional projects originally submitted for exhibition, will be published in August by Gallery 400.

*Invisible City: Planning for Chicago's Future* looks considerably more pragmatic in comparison. Building on several expansive planning initiatives currently under development for the Chicago region, the Chicago Architecture Foundation (CAF)



**Invisible City schemes by Brininstool and Lynch (top), Searl and Valerio (above), and Ralph Johnson of Perkins & Will (right) are on view at CAF through April 27.**



asked three teams of local architects to propose projects based on the new Central Area Plan, the revised Chicago Zoning Ordinance, and the Chicago Metropolis 2020 plan. The exhibition is at the CAF's gallery through April 27.

Each team stresses transportation as part of a larger development in a specific location. The husband-and-wife team of Linda Searl and Joseph Valerio create a futuristic solar tower above a proposed intermodal transit center in suburban Berkley, Illinois. Ralph Johnson and Todd Snapp of Perkins & Will suggest that the city's previously endorsed decking of a sunken expressway west of downtown can become a series of amorphous park bridges bounded by



**Work by Studio Gang Architects (above) and Julie Flohr and Jason Sachs (right) for Speculative Chicago.**



aerodynamically sculptural towers that funnel winds through the open area. Partners David Brininstool and Brad Lynch redevelop a Central elevated station as an elegantly arched structure that ties directly adjacent buildings. The three schemes portray exciting alternatives to the larger "official" plan. *Edward Keegan*

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## Record News



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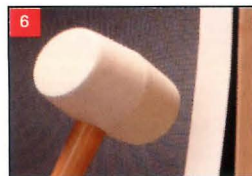
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## Eisenman's Arizona Cardinals' stadium to include movable field



A revised design for a football stadium for the NFL's Arizona Cardinals was unveiled by New York architect Peter Eisenman just prior to a March groundbreaking ceremony.

The most unique feature of the Glendale, Arizona, stadium will be a natural grass field that can be moved on a 234-by-400-foot, 12-million-pound tray. The field will be inside the stadium only on game day and moved outside for access to sunlight and rain. The tray, which will take 45 minutes to move, will be on tracks with wheels powered by electric motors.



The stadium will have a curved steel exterior (top) and a fabric roof (above).

The stadium's exterior steel skin will be curved in a form similar to a barrel cactus. The roof will have two retractable panels that can be closed and the facility can potentially be fully air-conditioned. Vertical slots and a fabric roof will allow light to penetrate when the retractable panels are open.

HOK Sport is working with Eisenman Architects on the stadium, which will have 63,000 permanent seats and an ability to expand to 73,000 seats for major events, such as the Tostitos Fiesta Bowl or a Super Bowl. Eighty-eight luxury suites will be included on two levels. The 165-acre site will include parking for 16,000 cars.

This is the latest design by Eisenman, who has been developing designs for a Cardinals' stadium since the late 1990s. The design and design have changed due to local politics. Construction is scheduled to begin this summer on the stadium, which will be built adjacent to a hockey arena and mixed-use entertainment development opening in December. *J.E.C.*

## Canadians propose national architectural policy

The Royal Architectural Institute of Canada (RAIC) hopes to create a Canadian national architectural policy—if it can agree on what it should say.

"We are trying to lobby the federal government to help create and implement a policy document that would guide how the federal government invests in infrastructure to make sure of its value in a variety of ways—through sustainability and improving the quality of life," Jon Hobbs, executive director of the RAIC, said.

But how a policy would provide that guidance remains open to debate.

Ottawa architect and RAIC president Ron Keenberg has ambitious plans to organize a series of public forums around Canada to raise the public's consciousness about architecture before embarking on a grand replanning of Canada's cities. "Everybody has different views," he said. "Mine is that I intend to ask the government for U.S. \$166 million, and that will fund international open competition for master plans for 10 to 15 Canadian cities. There would be nothing that these master plans would not touch. By 2070, there could be radical and wonderful changes."

Jack Diamond, principal of the Toronto firm Diamond & Schmitt, has more modest expectations than Keenberg for a national architectural policy. "My view is that we need performance standards and we need to raise consciousness about the importance of design and urban design in order to indicate to people how significant a role they play in the world and in the quality of their lives."

Finland, Sweden, the Netherlands, and Scotland currently have architectural policies that focus on the quality of architecture and design as a key element of social health. *Andrew Blum*

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WE DON'T GET THEM CONFUSED.**

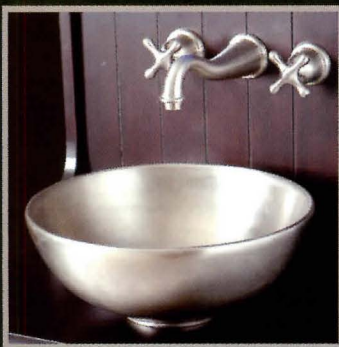
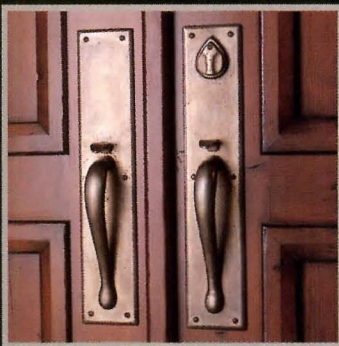
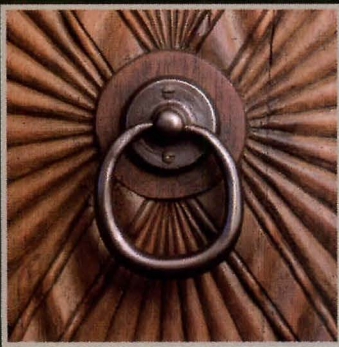


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## News Briefs

### Pelli-designed performing arts center under construction

In February, the Orange County Performing Arts Center, in Costa Mesa, California, celebrated ground breaking for its first major expansion since 1986.

Designed by Cesar Pelli, FAIA, the addition (pictured at right) will include the 2,000-seat Renée and Henry Segerstrom Concert Hall for the Pacific Symphony, as well as the 500-seat Samueli Theater. The limestone facade of the new building features an undulating glass wall that Pelli has likened to a stage curtain. The \$200 million building will open in fall 2006.



The Orange County expansion (above) has a 2,000-seat hall (right)

### The Institute of Peace will have winglike roof forms.



### Curt Dale, FAIA, dies

Denver architect Curt Dale, FAIA, a partner in Anderson Mason Dale, died in late February in an avalanche while skiing. He was 57. Dale was skiing at the Pine Creek Trailhead, in California, with his son Chris and a friend, Bob Redwine, a structural engineer with Redwine-Rezian. Both Chris Dale and Redwine survived.

Dale joined his practice in 1978 and became a partner in 1980. Partner John Anderson, FAIA, was the American Institute of Architects (AIA) national president in 2001. Andy Nielsen, AIA, a principal with Anderson Mason Dale, told RECORD, "Curt was a role model and an exceptional architect in the biggest sense of the word. He put his heart and soul in all aspects of the profession, and he will certainly be missed." J.E.C.



Curt Dale, FAIA

### Safdie design for peace building approved

Moshe Safdie and Associates' design for the United States Institute of Peace headquar-

ters in Washington, D.C., has been approved by the U.S. Commission of Fine Arts. Safdie was awarded the commission in August 2001 from a shortlist that included Cesar Pelli, Michael Graves, Polshek Partnership, and Weiss/Manfredi.

Located on one of the last available construction sites adjacent to the National Mall, the new 125,000-square-foot headquarters will house administrative offices, a library and archives, a conference center, and a museum, arrayed around two atria, which face the Potomac River and the Lincoln Memorial, respectively. The atria are covered by segmented spherical and toroidal roof forms constructed of white translucent glass on a steel frame.

The Institute of Peace is currently raising funds for the \$65 million project; the federal government donated the site. Construction completion is tentatively scheduled for 2005. Leo A. Daly is the associate architect.

### Landscape architect Robert M. Hanna dies

Philadelphia landscape architect Robert M. Hanna, who established the firm Hanna/Olin in 1976 with Laurie Olin, died on March 8 at age 67 due to complications following surgery. With Olin, Hanna designed the landscape for the Johnson & Johnson headquarters in 1977 and developed the master plan for Battery Park City in New York City, with Cooper Eckstut Architects. Hanna established a separate firm in 1995, Hanna Landscape Architects, and completed the master plan for the University of Washington Tacoma. Hanna taught for more than three decades at the University of Pennsylvania. J.

### Meet your mentor online

The American Institute of Architects (AIA) is sponsoring an online program to connect mentors with young architects based on personal profiles including interests, experience, and expertise. The program has an initiation and annual fee. For more information, visit [www.colaboro.ws/AIA](http://www.colaboro.ws/AIA). News briefs by David Sokol unless otherwise noted.



# Dates & Events

## Now & Upcoming Exhibitions

### Check Out: Six Months in Rome New York City

April 9–May 2, 2003

Over 80 works by American Academy in Rome fellows in Design will be on view in New York City. Among the works will be Tupperware designs by late Morison S. Cousins, FAAR'85; Stow/Davis chairs by Robert DeFuccio, FAAR'76; V8 splash by Paul Shaw, FAAR'02, and lamps designed by Kevin Walz, FAAR'94. The exhibition's title was inspired by the acronym FAAR, short for Fellows of the American Academy in Rome. At the ADC Gallery. Call 212/643-1440 or [www.aarome.org](http://www.aarome.org).

### Design Series 1

#### San Francisco

July 19–August 24, 2003

An exhibition of groundbreaking design solutions. South African-born architect Lindy Roy will launch the first of an ongoing series devoted to showcasing the work of contemporary designers in architecture, graphic design, and industrial design. At the San Francisco Museum of Modern Art. Call 415/357-4000 or visit [www.sfmoma.org](http://www.sfmoma.org).

### Architecture and Design

#### Permanent Collection

#### San Francisco

July 19, 2003–ongoing

This exhibition will inaugurate a newly installed, ongoing presentation of the museum's architectural and design collection. Featuring some 100 years of architecture, graphic design, and industrial design from a permanent collection of more than 4,000 objects, the survey will include well-known classics and works by up-and-coming designers and will highlight special strengths of the collection, including experimental architectural and digital design. At the San Francisco Museum of Modern Art. Call 415/357-4000 or [www.sfmoma.org](http://www.sfmoma.org).

### Designing the Rose

#### Boston

May 23–June 1, 2003

Part of the planning process for Shakespeare & Company's Rose Playhouse U.S.A. and celebrating

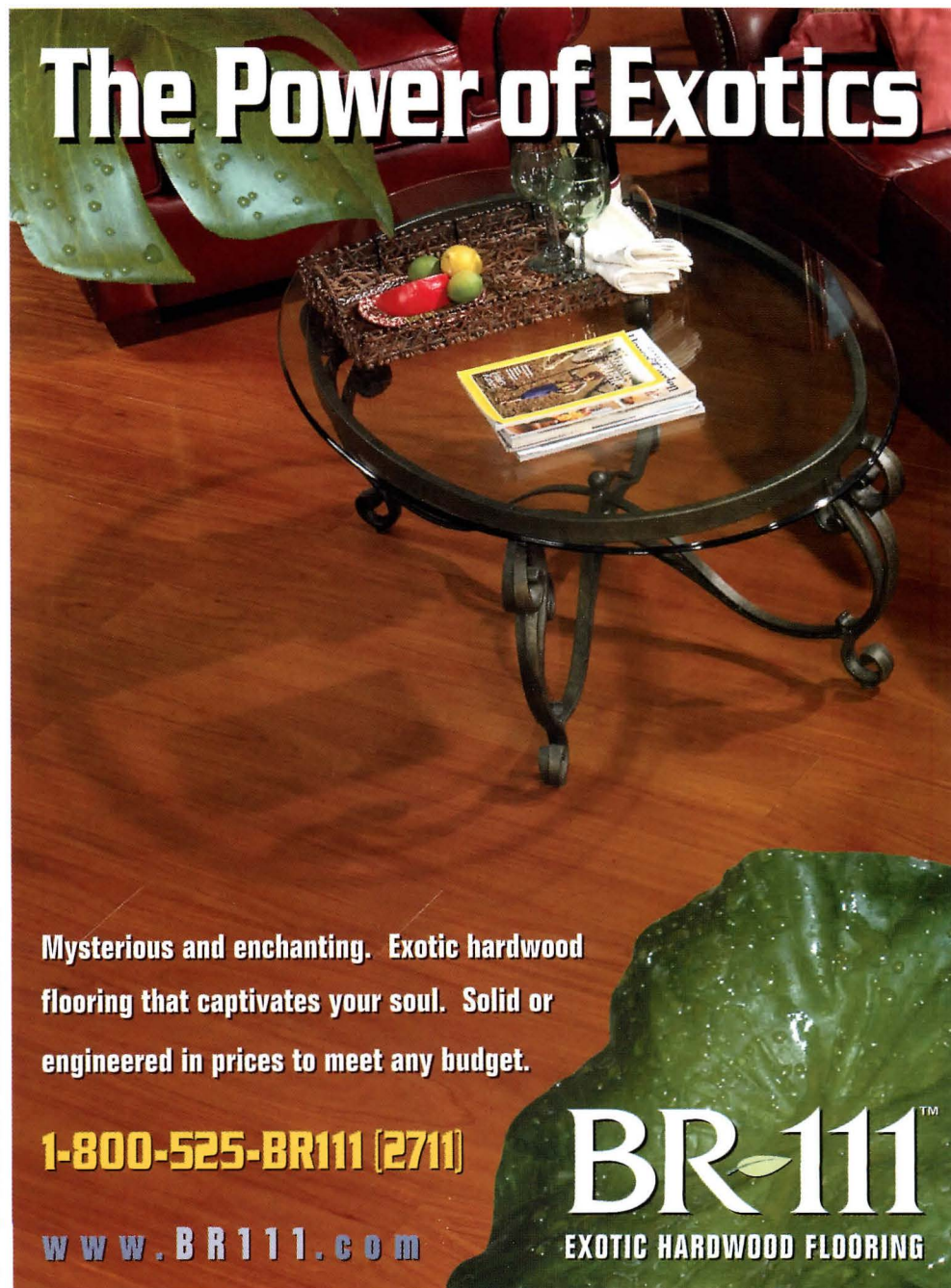
Shakespeare's birthday, this exhibition will feature innovative designs for the world's first historically accurate replication of London's 1587 Rose Playhouse. Curated by architect George Marsh and the Boston architectural firm Payette Associates, the show, through photographs, illustrations, architectural drawings, and text, traces the history of the playhouse and the present-day plans to rebuild the theater using traditional building methods and

materials. At the Boston Architectural Center. Call 617/262-5000 or visit [www.the-bac.edu](http://www.the-bac.edu).

### Both/And: Building Modern in the Context of Historic Architecture Seattle

May 2003

The exhibition focuses on built and unbuilt projects that juxtapose modern architecture with



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## Dates & Events

historic buildings—architecture that is built in a decidedly modern manner but retains, refers to, and sheds light on the adjacent historic buildings. Exhibition projects will be drawn from the Seattle area, along with select projects from other cities in the U.S., Europe, and Canada, including projects from Foster and Partners; Coop Himmelb(l)au; Dan Hanganu with Provencher Roy and Associates; Schwartz/Silver Architects; Kohn Pederson Fox Architects; and Saucier + Perrotte Architects. At the AIA Seattle Gallery. Call 206/448-4938 or visit [www.aiaseattle.org](http://www.aiaseattle.org).

### **Alessi 2003 Coffee and Tea Piazza: City of Towers New York City**

May 2003

This exhibition will feature the North American premiere of Alessi's new selections for the Coffee and Tea Piazza, designed by a stellar roster of contemporary architects. Promising to define contemporary and digitally driven architecture at the beginning of the 21st century, this new edition will feature coffee and tea sets by William Alsop, Wiel Arets, Juan Navarro Baldeveg,

Shigeru Ban, Gary Chang, David Chipperfield, Denton/Corker/ Marshall, Deszo Ekler, Massimiliano Fuksas, Zaha Hadid, Tom Kovac, Greg Lynn, Morphosis, MVRDV, Jean Nouvel, Dominique Perrault, Kazuyo Sejima, and UN Studio. At the Max Protetch Gallery. Call 212/633-6999 or visit [www.maxprotetch.com](http://www.maxprotetch.com)

### **Other Architects Barcelona**

May 2003–May 2004

A part of the Year of Design 2003, this exhibition links the constructions built by animals with the architecture created by human beings. At the Zoology Museum, Natural Science Museum. Visit [www.designyear2003.org](http://www.designyear2003.org).



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### **50/50: Fifty Years of Boffi and Vespa Santa Monica, Calif.**

May 1–May 8, 2003

Boffi and Vespa, two pioneers of high-tech, avant-garde Italian design, have organized a joint exhibition at the Boffi kitchen showroom that traces the evolution of their respective products—kitchens by Boffi and scooters by Vespa—from the post-World War II years through the present. Using lifesize models of its most recent kitchen designs as a backdrop, Boffi will display images of the Italian kitchen's evolution through the postwar decades. There will be a display of actual scooters, including several vintage Vespas and newer models. At the Boffi Los Angeles showroom, in Santa Monica. For information, call 310/458-9300.

### **Harlem Lost and Found New York City**

May 3, 2003–January 4, 2004

This exhibition traces the history of Harlem from pre-Revolutionary times to World War I. Working with consulting curator Michael Henry Adams, author of the book *Harlem Lost and Found: Architectural and Social History, 1765–1911*, the museum has drawn from its rich collection to add a unique dimension to the story of the neighborhood's architectural richness. At the Museum of the City of New York. Call 212/534-1672 or visit [www.mcny.org](http://www.mcny.org).

### **Garofalo Architects: Between the Museum and the City Chicago**

May–October 2003

An architecturally distinctive, pavilionlike structure designed by architect Doug Garofalo will be the first in a series of MCA commissions for emerging and mid-career architects. At the Museum of Contemporary Art. Call 312/280-2660 or visit [www.mcachicago.org](http://www.mcachicago.org).

"Giant Sequoia"  
Kings Canyon National Forest  
Photographer: Khaled AlKotob

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## Dates & Events

### Ongoing Exhibitions

#### **Do It Yourself: Home Improvement in 20th-Century America** **Washington, D.C.**

October 19, 2002–August 10, 2003

This show is an examination of modern American housing and its products, with cultural implications regarding gender roles and leisure time in the domestic sphere. At the National Building Museum. Call 202/272-2448 or visit [www.nbm.org](http://www.nbm.org) for more information.

#### **David Adler, Architect: The Elements of Style** **Chicago**

December 6, 2002–May 18, 2003

This will be the first major retrospective of the architect David Adler's work, featuring approximately 100 pieces, including plans, drawings, photos, models, and decorative arts. At the Art Institute of Chicago. For information, call 312/443-3600 or visit [www.artic.edu](http://www.artic.edu).

#### **Big & Green: Toward Sustainable**

#### **Architecture in the 21st Century** **Washington, D.C.**

January 17–June 22, 2003

Through in-depth profiles of approximately 50 contemporary green projects worldwide, along with a broad examination of global ecological and economic forces, this exhibition demonstrates the transformative powers of sustainable design. At the National Building Museum. For more information, call 202/272-2448 or visit [www.nbm.org](http://www.nbm.org).

#### **The Art of Structural Design: A Swiss Legacy** **Princeton, N.J.**

March 8–June 15, 2003

From New York's George Washington Bridge to Boston's new Bunker Hill Bridge, some of the country's most acclaimed structures are the products of Swiss design. This exhibition celebrates the contributions of a group of highly influential Swiss engineers widely recognized as the most innovative structural designers of the 20th century. At the Princeton University Art Museum. Call 609/258-3788 or visit [www.princetonartmuseum.org](http://www.princetonartmuseum.org) for information.

#### **Fantastic** **North Adams, Mass.**

March 8, 2003–Spring 2004

In *Fantastic*, MASS MoCA showcases contemporary artists—Miguel Calderon, Gregory Crewdson, Alicia Framis, Nils Norman, and the artist collective Temporary Services—all of whom embrace a world of hallucinatory, visionary, utopian, and otherwise "fantastic" ideas. At the Massachusetts Museum of Contemporary Art. Call 413/662-2111 or visit [www.massmoca.org](http://www.massmoca.org).

#### **Picture This: Windows on the American Home** **Washington, D.C.**

March 29–August 11, 2003

*Picture This* presents windows through multiple perspectives and offers an entertaining two-century history of a building element that opens a view into the changing nature of American domestic life. Actual windows, advertisement film and television clips, models, drawings, and photographs help to explore how windows establish architectural character and shape our understanding of the world inside and outside our dwellings. At the National Building Museum. Call 202/272-2448 or visit [www.nbm.org](http://www.nbm.org).

#### **Roy McMakin: A Door Meant as Adornment** **Los Angeles**

March 23–June 29, 2003



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McMakin became a strong presence in the design scene in 1987, when he founded the Domestic Furniture Company in Los Angeles. The exhibition is a mid-career survey of the Seattle-based artist, tracing the development of his career in art and design and his unique manipulations of the traditional definitions of furniture and sculpture. At The Museum of Contemporary Art. Call 213/621-2766 or visit [www.MOCA-LA.org](http://www.MOCA-LA.org).

### The Swiss Section Architecture Exhibition

#### New York City

*Through April 23, 2003*

The Swiss Section exhibits cutting-edge Swiss design for cities, public spaces, and infrastructures by both emerging designers and the renowned practices of Gigon/Guyer, Conzett, Bronzini, Gartmann, and Herzog & de Meuron. At the Van Alen Institute. For more information, visit [www.vanalan.org](http://www.vanalan.org).

#### Ron Arad: Taking Liberties Barcelona

*Through May 12, 2003*

The work of Ron Arad is well known and respected for its fusion of sculptural freedom and industrial flexibility, showing that a personal and imaginative work can also exist as an attractive and marketable product. Arad was the winner of the Barcelona International Design Prize 2001 and now, in this solo exhibition, shows some of the key works of his career. At Centre d'Art Santa Monica in conjunction with the Year of Design 2003 exhibition series. Visit [www.designyear2003.org](http://www.designyear2003.org).

#### Living in Motion: Design and Architecture for Flexible Living Barcelona

*Through May 25, 2003*

In this exhibition, architects and designers attempt to adapt homes and artifacts to the new demands of contemporary living. As part of the Year of Design 2003 at the Museum of Decorative Arts. For further information, visit [www.designyear2003.org](http://www.designyear2003.org).

#### Futures2come Copenhagen

*Through June 9, 2003*

An exhibition curated by Christian Bruun that started at the Max Protetch Gallery in New York City in December 1999 and has continued on in Europe. At the Dansk Architecture Center. Call 32/57 19 30 or visit [www.gammeldok.dk](http://www.gammeldok.dk).

#### Luxury Textiles East and West Los Angeles

*Through August 15, 2004*

Commemorating the 50th anniversary of LACMA's Department of Costume and Textile, this exhibition highlights extraordinary examples of the textile arts of America, Asia, and Europe from the department's extensive holdings. At the Los Angeles County Museum of Art. Call 323/857-6000 or visit [www.lacma.org](http://www.lacma.org) for more information.

#### Pere Noguera: Lands Barcelona

*Through August 31, 2003*

A poetic reflection on the design of elements of earth used in architecture, in the home, for domestic utensils, for furniture, decoration, the garden, and everything that surrounds us. At the Ceramics Museum, as part of the Year of Design 2003. Visit [www.designyear2003.org](http://www.designyear2003.org) for further information.

#### Of Our Time: 2002 GSA Design Awards Show Washington, D.C.



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## Dates & Events

March 27–October 19, 2003

Through models, drawings, and photographs, this exhibition documents the 24 public projects that received the design award honor last year. The projects show how regional heritage can be integrated with the latest building technology to create dynamic, functional, and attractive structures, spaces, and artworks for the 21st century. At the National Building Museum. For more information, call 202/272-2448 or visit [www.nbm.org](http://www.nbm.org).

### Conferences, Symposia, Lectures

**Frank O. Gehry**  
New York City

April 23, 2003

Frank O. Gehry will lecture on architectural modeling techniques used for award-winning buildings, including the Richard B. Fisher Center for the Performing Arts at Bard College. At the Sir John Soane's Museum Foundation. For information, call 646/654-0085 or [www.soane@mindspring.com](mailto:www.soane@mindspring.com).

**Rick Joy: Desert Works**  
New York City

April 24, 2003

Joy, a finalist for the 2002 National Design Award in Architecture, discusses how sensory experience and the desert landscape influence his thinking and making of space, resulting in architecture that is both visually stunning and environmentally sensitive. In the Tishman Auditorium at New School University. Call 212/849-8380 or visit [www.si.edu/ndm](http://www.si.edu/ndm).

**Winy Maas**  
New York City

May 2, 2003

A principal of the Rotterdam firm MVRDV, Winy Maas is trained as a landscape architect, architect, and planner. The architecture of MVRDV has been shaped by the firm's ongoing exploration of density and the informational processes involved in design. Its work includes large housing projects in Amsterdam, The Hague, Vienna, and Madrid. As part of the Architectural League of New York's lecture series at the Great Hall, Cooper Union. Call 212/753-1722 or visit [www.archleague.org](http://www.archleague.org).

**Talking About Living Inside the Grid**  
New York City

May 3, 2003

An all-day symposium inspired by the group exhibition *Living Inside the Grid*, at the New Museum

through June 15, 2003, will feature discussion on three themes: the history of the grid in contemporary art and culture; the relationship of the body to the grid; and current theories on how to "get around" the grid. In the Great Hall, Cooper Union. Call 212/219-1222 for reservations or visit [www.newmuseum.org](http://www.newmuseum.org) for further information.

**Lightfair International**  
New York City

May 5–8, 2003

This year's Lightfair promises to be the biggest and most comprehensive annual architectural and commercial lighting conference to date, with more than 550 exhibiting companies occupying more than 1,460 booths, and an expected attendance exceeding 19,000 architectural, engineering, design, and end-user professionals from around the world. At the Javits Convention Center. Call 404/220-2215 or visit [www.lightfair.com](http://www.lightfair.com).

**Public Architects Training Workshop**  
San Diego

May 7, 2003

A preconvention workshop presented by the American Public Architects PIA that will cover such topics as sustainable design, building security, the design-build process, child-care-facility requirements, community involvement, how to win and establish design awards, real estate, innovative and public schools. At the San Diego Convention Center. Call 202/626-7386 or visit [www.aia.org](http://www.aia.org).

**National Design Triennial Conference**  
New York City

May 16, 2003

This cross-disciplinary conference will explore the major forces shaping design today through keynote addresses and multimedia presentations from curators and designers of products, interiors, architecture, furniture, graphics, film, and fashion. The program features work by studios featured in the National Design Triennial, including BluDot, Diamond + Baratta, Escher + GuneWardena, Fuseproject, Champion Graphics, and Toledo/Toledo. In the Great Hall at Cooper Union. Call 212/849-8380 or visit [www.si.edu/ndm](http://www.si.edu/ndm).

**Tour Abitare Italia**  
New York City

May 19, 2003

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## Dates & Events

conferences. Call 212/353-1383 or visit [www.abitareitalia.com](http://www.abitareitalia.com).

### SIDIM

#### Montreal

May 22-24, 2003

The Montreal International Interior Design Show (SIDIM) will celebrate its 15th anniversary. More than 300 international manufacturers, importers and designers will present their furniture and designs for office, commercial, and residential space-planning applications. At Place Bonaventure. For information, call 514/284-3636 or visit [www.sidim.com/](http://www.sidim.com/).

### 37th International Making Cities Livable Conference

#### Siena, Italy

June 15-19, 2003

Call for Papers Deadline: April 15

An international conference for architects, urban designers, landscape architects, city officials, planners, historic preservationists, and social scientists, where practitioners and academics from around the world share ideas and establish working relationships. Call 831/626-9080 or visit [www.livablecities.org](http://www.livablecities.org).

### The 2nd Beijing International Green Building Materials Exhibition

#### Beijing

September 17-20, 2003

With the 2008 Olympic Games construction and bid for the 2010 World Expo, the 2nd Beijing International Green Building Materials Exhibition will be held with the theme of green production, green products, and green consumption, and the mission of promoting the application of green building materials in the construction of engineering projects. At the China International Exhibition Center. Call 86/10-8808-2303 or visit [www.gbm.com.cn](http://www.gbm.com.cn).

### The International Concrete Repair Institute 2003 Fall Convention

#### Tampa

October 23-24, 2003

The convention theme is high-rise repair and will consist of a full slate of technical presentations covering all aspects of high-rise restoration and repair. In addition to the technical presentations, the convention will host technical and administrative committee meetings, exhibits, networking luncheons, and live demonstrations. At the Marriott Tampa Waterside Hotel. Call 847/827-0830 or visit [www.icri.org](http://www.icri.org).



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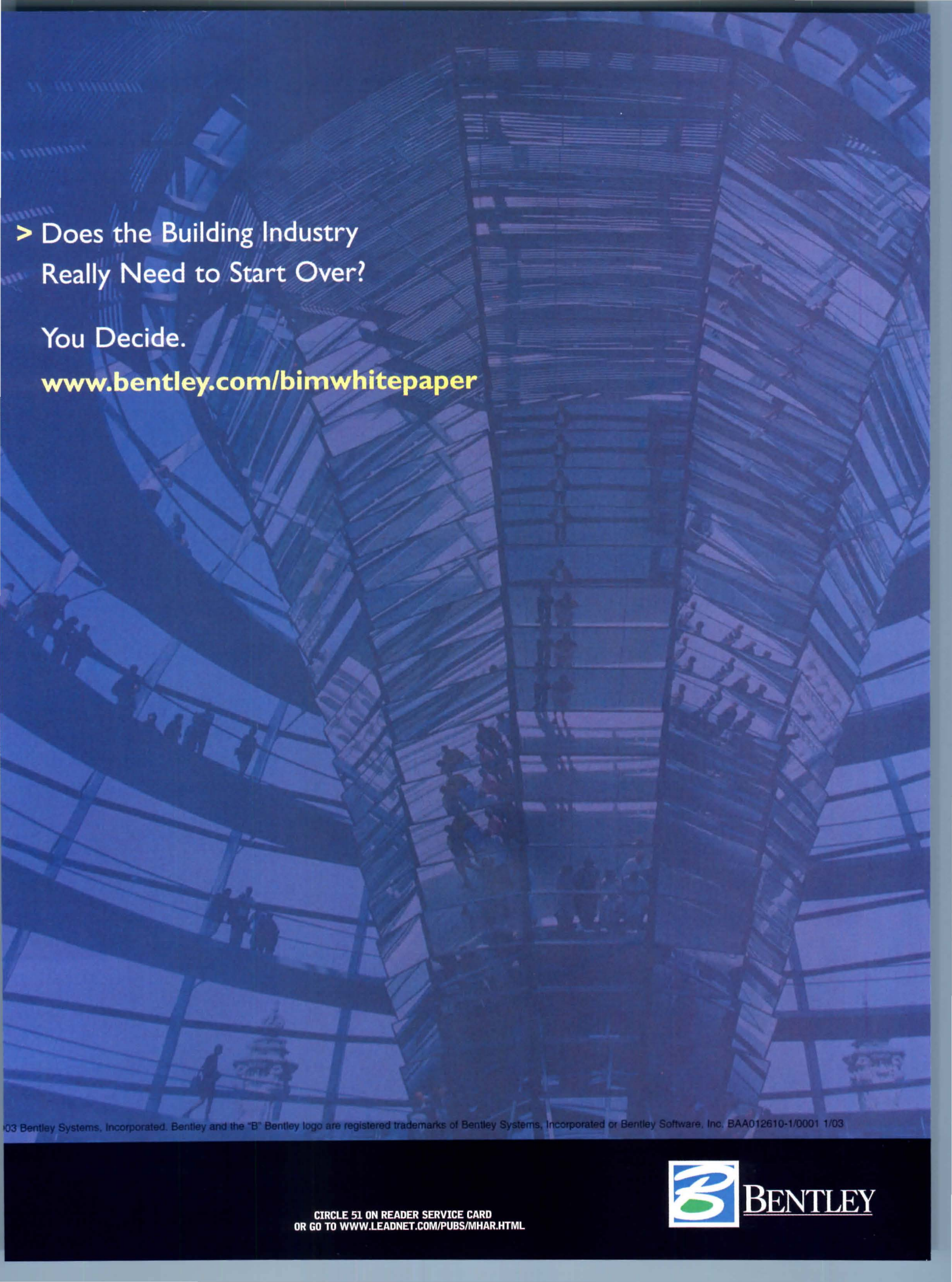
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## Dates & Events

### Competitions and Awards

#### AIA New York State 2003 Design Awards Program

##### New York

*Registration Deadline: April 11, 2003*

Architects currently registered in New York State are invited to participate in the program and submit their work for review by this year's distinguished AIA New York State 2003 Design Awards jury. The seven categories for the Design Awards are residential, institutional, commercial/industrial, mixed use, urban planning design, historic preservation/adaptive reuse, and universal design. Call 518/449-3334 or visit [www.aianyc.org](http://www.aianyc.org).

#### Designing the High Line

##### New York City

*Registration Deadline: April 25, 2003*

*Late Registration Deadline: May 16, 2003*

Designing the High Line is the first-ever international ideas competition seeking visionary design proposals for the reuse of the High Line elevated rail structure on the west side of Manhattan. Sponsored by Friends of the High Line, the open ideas competition will culminate in a large-scale exhibition in Grand Central Terminal's Vanderbilt Hall in July 2003. For information call 212/631-9188 or visit [www.thehighline.org](http://www.thehighline.org).

#### 12th Ermanno Piano Scholarship

##### Paris

*Submission Deadline: June 30, 2003*

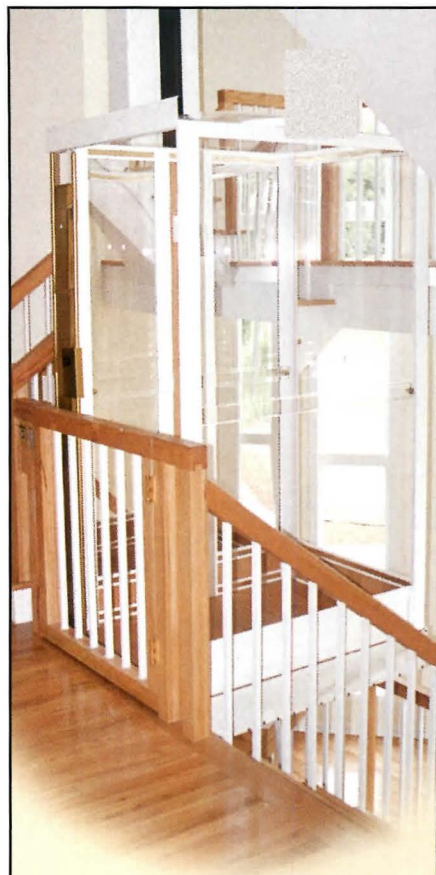
The Ermanno Piano Scholarship has been created for newly graduated architects to give them the opportunity to improve their education through a six-month internship with the Renzo Piano Building Workshop. For further information, call 01/44 61 49 00 or visit [www.rpbw.com](http://www.rpbw.com).

#### International Achievement Awards

*Deadline for entries: July 1, 2003*

Sponsored by the Industrial Fabrics Association International (IFAI), this competition offers architects an opportunity to gain recognition for projects that have creatively used fabric. Project entries include photos of outstanding specialty fabric projects and descriptions of their unique and important characteristics. To request a brochure and entry form, contact Christine Malmgren at 800/225-4324 or 651/222-2508, e-mail [cmmalmgren@ifai.com](mailto:cmmalmgren@ifai.com), or visit [www.ifai.com](http://www.ifai.com).

*E-mail event information two months prior to the event or competition to [ingrid\\_white-head@mcgraw-hill.com](mailto:ingrid_white-head@mcgraw-hill.com).*



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# Cairo, once the Paris of the Nile, tries to regain design stature

## Correspondent's File

By Paul Bennett

largest urban area in Africa, Cairo, Egypt, has evolved over the past 20 years into a sprawling megacity. Its 17 million inhabitants are jam-packed into the labyrinthine urban city, a maze of narrow streets and tenements dating back to the 19th century, and the Paris-inspired modern city, planned and built in the 19th century with its radial street plan and wide promenades. Architecturally, Cairo features stunning Islamic monuments (more than 100, according to a recent survey) surrounded by vast swaths of so-called "informal" housing—unzoned, unregulated development that often extends to the horizon. The housing is so bad that squatters have taken root in the cemeteries adjacent to the Islamic center, the so-called Cities of the Dead.

Contemporary design in Cairo is in a similar state of disarray. The most visible projects are the luxury hotels lining the Nile designed and built by international developers and their in-house architectural firms, usually to rather bland effect. Local architects, with some exceptions, have been confined to the classrooms of Cairo University. There is a general agreement among critics that today, 14 years after the country's most influential architect, Hassan Fathy, died, that profession in Egypt is in crisis. Lack of building restrictions, outdated laws for licensure, and inequitable education reached a

breaking point in 1992 when a number of poorly built structures collapsed during a major earthquake. The situation may have slightly improved—there have been no notable collapses in the past few years—but no one is claiming that Cairo has yet regained the status of "Paris of the Nile."

### Setting a standard

The wholesale relocation of the American University (AUC) may shake things up in Cairo. This small liberal arts college is relocating from its downtown Tahrir Square main campus, where it has been since 1919. Ground breaking was held in February for the AUC's 260-acre, \$250 million campus that will be built from scratch in New Cairo, one of several new settlements being built along a ring road that surrounds Cairo in order to alleviate the population pressures in the city. New Cairo is being planned as a middle-to-high-income city for an expected population of 2.5 million people.

AUC representatives say that the school intends to raise standards and demonstrate proper building methods as a result of a Western-style planning and design process. That process began in 1999 with an international competition for a master plan for a campus with up to 7,000 full-time students. Distinguished jurors included Charles Correa, Ricardo Legorreta, and Ismail Serageldin, the director of the new Alexandria Biblioteca. A small firm called Boston Design



**The American University in Cairo (model, above right) will be built on what is now desert (above). The campus will include an administrative building by Abdelhalim CDC (below) and a campus center by Legorreta (below right).**



Collaborative took top prize with a compact, topographically sensitive proposal for clustering campus buildings around a green spine. The AUC hired Sasaki Associates of Watertown, Massachusetts, and Abdelhalim Community Design Collaborative (CDC) of Cairo, to flesh the plan out, portion it into bids, and eventually manage a design team that includes Legorreta + Legorreta (in charge of student housing and the campus center), Ellerbe Beckett (athletic facility), and Hardy Holzman Pfeiffer (library). Sasaki and Abdelhalim CDC



divided the rest of the campus buildings between them, with the former taking most of the academic buildings, and the latter in charge of the theater, administration building, and bookstore. Carol R. Johnson Associates has been hired to design the landscape. The new campus is expected to be ready for fall 2006 classes.

"The developing world too often looks to the West for its building forms," commented Victor Legorreta, Ricardo's son and a partner in the practice. "But the AUC wanted to do something different. They wanted 'modern Egyptian architecture.' What does that look like if it doesn't look Bauhaus, Brutalist, or USAID? That's the challenge."

The AUC architects, without

Writer based in Rome, Paul Bennett is a former editor at Landscape Architecture magazine.

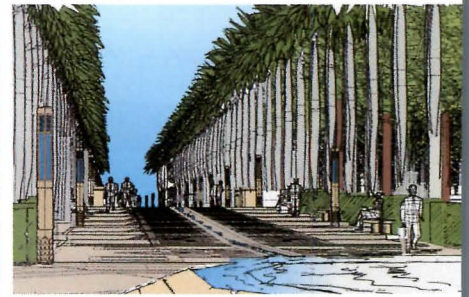
## Correspondent's File

exception, talked about avoiding pastiche. During 12 months of workshops in Cairo, they undertook an in-depth study of Egyptian architecture. The seemingly haphazard and hypergeometrical pattern of spatial relationships in the medieval Islamic city, rather than any specific form, inspired much of the campus design, in which buildings and interior spaces are shifted and canted in innovative ways.

### Urbanism abandoned?

Egyptian architects and planners have openly expressed concern that the AUC is abandoning Cairo for the suburbs. Although the university hopes that New Cairo will someday

Museum is planning to build a new facility in Giza, 12 miles outside of the city. Although it will continue to use its 100-year-old Neoclassical building in the center of town for storage, the museum's primary collection (and the several thousand daily visitors that come to see it) will be moved out of the city. With the help of the International Union of Architects, the museum has embarked on a two-stage anonymous design competition for the \$350 million project. At press time, the first stage had been completed and 20 firms were requested to submit fur-



On what has been a garbage hill (left), the Aga Kahn Trust for Culture is planning a park (above).

AKTC selected local landscape architect Maher Stino to complete the design. Stino has been challenged to work with an unforgiving topography: The site features three municipal water tanks sunk below grade, and a fine powder soil. Several structures will be included in the park, including a restaurant by architect Rami Al-Dahhan.

In addition to building the park, the Aga Kahn is involved in restoring several monuments in the neighborhood, including a minaret and an aristocratic house, and providing low-interest loans to homeowners for architectural improvements.

### Investing in Cairo

Although words like "crisis" and "problematic" are constantly used by Cairo architects when describing the state of local architecture, there is a small but growing body of exceptional projects being built that indicate an undercurrent of vibrant creativity.

Abdelhalim CDC has garnered local praise for interpreting traditional Islamic architectural ideas into a modern milieu. Its recent Palace of Fine Art is an impressive conversion of an old exhibition hall, in which interior spaces alternately open and close around a central open atrium to create an interplay of light.

Another notable project is the Om Kalthoum Museum located near the ancient Nilometer river gauge. Designed by Egyptian archi-

tect Akram El-Magdoub in collaboration with Italian architects Maurizio di Puolo and Enzo Serr, the museum is a richly textured building that showcases one of the first uses of multimedia programming in the city. In the garden, situated between the museum and the river, stands a 23-foot steel tower with a radiating fan of wires acting like a prow to connect two Cairo's most potent symbols, the mesmerizing singer Om Kalthoum and the Nile.

Ahmad Hamed, an architect who teaches at the American University in Cairo, has executed several small but impressive projects, including the 1999 conversion of a chicken coop into a guesthouse and prayer room for a Syrian businessman on the outskirts of Cairo. The project has a high level of detail, including stained-glass windows and an ornate wooden screen, both abstracted from traditional Islamic design.

### Building without drawing

Hamed, who was educated in Scotland, blames weak laws—and the fact that the regulation governing practice are 50 years old—for the limited amount of great architecture in Cairo. But he also tries to frame this moment as an opportunity. He says that, ironically, being constrained to do small projects with even smaller budgets is liberating because he is forced to get closer to the design, and, in a way, to be a more honest architect.

"I've built things without drawings," he says proudly, "using car marks in the sand like a medieval. You can't build like that in America



The Palace of Fine Art by Abdelhalim CDC (above and right) is a renovated exhibition hall.



be a metropolitan center of its own standing, planners have noted that this city in utero lacks any urban design guidelines or zoning restrictions. "New cities are a failure in Egypt," a planner, Khalid El-Adli, flatly stated. "Planning occurs here in a vacuum."

In order to break loose of international Modernism, which dominated Cairo architecture in the midcentury, local architects have embraced historical revivalism, according to Ashraf Salama, a professor of architecture at Al Azhar University. Anything antique, from pharaonic geometries to Islamic details, are employed to "foster a sense of belonging" and create an idea of Egyptian-ness.

In tandem with AUC's decision to move to New Cairo, the Egyptian

ther drawings. The jury will select a winner in late April.

One institution that's attempting to buck the anti-urbanist trend is the Aga Kahn Trust for Culture (AKTC), a branch of the sprawling Aga Kahn network of agencies. AKTC is in the construction stage of an 80-acre urban park on the eastern edge of the medieval city. The park actually reclaims a hillock of garbage that residents have been throwing over the city's wall for the past 1,000 years. Part of the design includes an excavation of this wall, which hasn't been seen for centuries.

After working with several architects, including both Sasaki Associates and Abdelhalim CDC, the

The guesthouse by Ahmad Hamed abstracts traditional Islamic design.



# For and about the new generation of architects

## archrecord2

FOR THE EMERGING ARCHITECT

What is it about the Midwest? It seems as if there's a sort of migration going on among the vanguard of the design professions toward the middle of the country. This month, archrecord2 marks its fourth architect from Michigan to be featured in the Design section in its two years of existence. One might even call it a trend. Plus, in Live, you can find an innovative first-year design program being taught at the University of Cincinnati. Maybe there's something to this.

### DESIGN

#### Short story about Erik Hemingway



To Erik Hemingway, a peripatetic architect who for the past few years has been based in the Detroit area, architecture is a movable feast. In his view, architects should not come to projects with fixed ideas, but should react to conditions, using their knowledge to develop solutions.

"I'm not really interested in a formula for projects," Hemingway says. "Each particular project creates a moment of opportunity, given its time, its context, its client. It inspires a kind of event-based architecture, rather than one based on the thought that 'that was a really nice detail on the last project, let's do that again.'"

Hemingway earned his undergraduate degree at California Polytechnic State University in San Luis Obispo before an expatriate stint in London working for Zaha Hadid. He then returned to U.S. and worked with Arquitectonica, both in Miami and San Francisco. Then, after earning a graduate degree at Columbia University, in New York City, he returned to San Francisco, where he founded Hemingway+Associates and stopped moving around several years.

It was in San Francisco that Hemingway developed his firm's working style, dividing time among competitions, installations, and actual built work. "The competitions support the ideas for the projects," he says, "and then those small projects and the small flows that they bring in support the budget for the competitions."

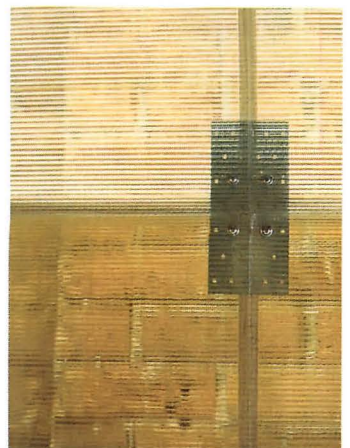
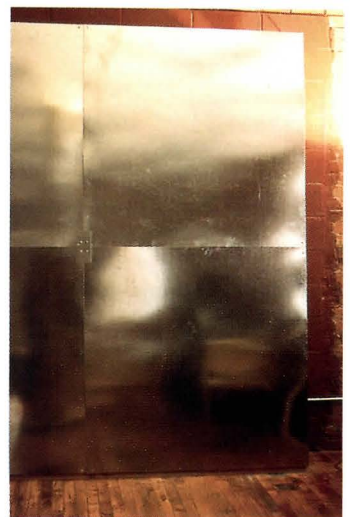
Still working in San Francisco in 1999, Hemingway felt that the city's economic bubble would burst. He began to think about leaving. Around that time, his partner Allison Warren was accepted for graduate study at the Cranbrook Academy of Art, near Detroit.

"Practically the same day," Hemingway says, "Lawrence Technical University called me up about a teaching job." He hadn't heard of the school. "I asked them how far they were from Cranbrook," he says, "and they said 15 minutes. So it seemed like the next phase for us."



OCT[an]E,  
Detroit, 2002

*Hemingway+A/studio designed and built this 2,000-square-foot graphic design studio using unorthodox materials to reflect the sensibility of the clients, rather than approaching the project with a preconceived architectural idea.*



DEPARTMENTS

(continued from previous page) Despite never having lived in the Midwest, Hemingway found Detroit appealing, so he accepted a position with Lawrence.

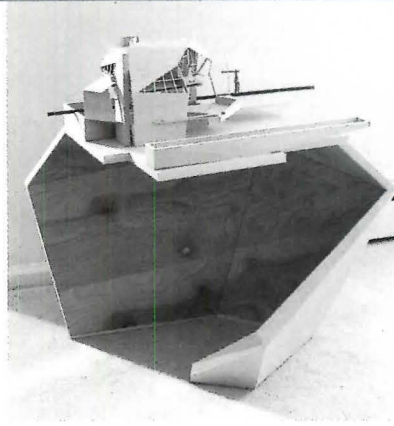
"My thesis at Columbia was on how Los Angeles was a 20th-century construction of industry and the automobile," he says. "And in a strange way, Detroit and Los Angeles have a lot of similarities. The weather is different and the industry is different, but they have the same sort of relationship to the decentralized urbanism that I'm very interested in."

He and Warren share a house north of Detroit, which serves as their home, their studio, and an ongoing project for the firm, which was renamed Hemingway+A/studio after the move. This blurring of different aspects of Hemingway's life extends outside the house as well.

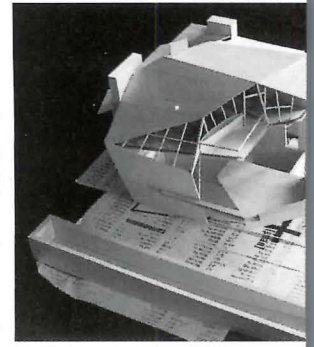
"There's not a large distinction between my studio at school and my studio at home," he says. "I have a lot of students work with me."

The working arrangements lead to a fairly informal atmosphere around the studio: "I'm sort of intense in my relaxed mode," Hemingway says. "I give everybody the time to finish what they're working on, since I know I'm on the slower side myself. But then when the deadlines approach, I ratchet up the pressure a little bit to get the project out on time. It's an ebb and flow."

His relaxed attitude may hint at his flexibility, but when he states his firm's mission, that flexibility becomes a precept: "The position of the practice is to pursue critical architectural ideas," Hemingway says, "and somehow manifest them in whatever form they need to be manifested, whether it's on paper or an exhibition, or taken to some kind of finality." *Kevin Lerner* Go to [architecturalrecord.com/archrecord2](http://architecturalrecord.com/archrecord2) to see more projects from Hemingway+A/studio.



**sub[URBAN] lawn,**  
Beverly Hills, Mich., 2003  
A renovation of a 1950s ranch house adds three levels: the "sub"



level contains studio space; the "urban" level adds an upstairs bedroom; the "lawn" level transforms an overgrown backyard.



**exhibition[ISM],**  
Southfield, Mich., 2001  
At the new Gwathmey Siegel building at Lawrence Technological University, Hemingway projected alternating images of advertising and his own architecture on an exterior wall while he lectured inside.

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## Beyond the humming refrigerator



Group Six Hand Movements, playing homemade musical instruments.

Goethe famously described architecture as “frozen music.” A less canonized poet, Elvis Costello, said that writing about music is like “dancing about architecture.” But aside from esoteric bons mots, the arts of architecture and music appear to have little in common.

So leave it to a university to finally figure out the relationship.

About 120 first-year University of Cincinnati architecture and interior design students

worked in groups to design, build, and play musical instruments constructed from discarded appliances and a few parts picked up at local hardware stores. The students then had to

perform original compositions on their instruments. The concert, on January 22, played to a packed house.

Marc Swackhamer, an assistant professor of architecture, helped to organize the project, along with the rest of the first-year studio professors.

“The idea here is that students should stretch themselves beyond what they’re accustomed to or comfortable with,” Swackhamer said.

Susan Strike, a first-year architecture student, built a slide guitar, using a discarded refrigerator shelf as a base. The strings of the guitar, however, were purchased.

“We could spend money on our project, as long as most of it was built from trash,” Strike said.

The appliance parts

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(continued from previous page)

used for these instruments came from an earlier first-year studio project, the disassembly of appliances. The students used the parts as models for drawing practice, but their reuse as instruments also taught a lesson in resourcefulness.

"Our whole first-year program is about creativity and using resources," Strike said.

The students built the instruments on their own, but they were grouped together into bands for the performance.

"We didn't know who we would be playing with when we designed our instruments," Strike said, "so we couldn't pick a group of instruments that would go together. We had to make it work."

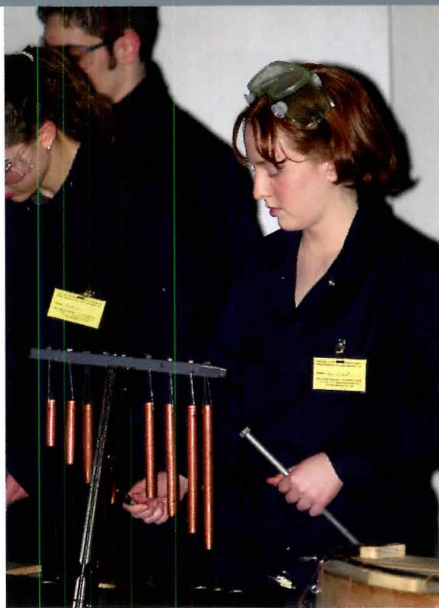
The range of instru-

ments made for an eclectic mix onstage: PVC-pipe saxophones, harps made from ovens, zithers, whistles, and an array of percussion instruments.

The instruments didn't always sound like their builders planned them to. Justin Smith, a student, said that his copper-pipe wind instrument "makes a sound more like a choo-choo train than music."

Despite the unexpected, the concert went off well, and the students have moved on to building something more overtly architectural: staircases. But the lessons learned from the pairing of the seemingly unrelated disciplines of architecture and music will stick with them, or at least their professor hopes so.

"We can learn a lot



about design issues from everyday life, everyday objects," Swackhamer said. "We can learn the principles of design from cuisine, art, a movie, a magazine, a building, and yes, from old appliances." Kevin Lerner

For more stories about architecture students, and for information on how to submit your story, go to: [architecturalrecord.com/archrecord2](http://architecturalrecord.com/archrecord2)

Amy Everard plays the chimes with her group, The Mechanic (top), and Will Yokel poses with his elaborate wind instrumen

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A BIG Production

# Will Libeskind's plan for the World Trade Center site become a massive design swap?

## Commentary

By Joseph Giovanni

iel Libeskind, beaming, may have cured front page headlines when "bathtub" scheme won the competition for the World Trade Center. But the real winner is developer Daniel Silverstein and his architects, not more, Owings & Merrill (SOM). Libeskind actually secured only 4,000 square feet of the project for cultural facilities, while Silverstein's architects—if the developer prevails on insurance claims—get the 10 million square feet of office space equivalent to the square footage of the trade towers. SOM would handle roughly 96 percent of the project; Libeskind, 4 percent.

Having been exposed to Libeskind's design for the whole site through the massive publication of the scheme, the public has been led to believe that his office buildings will be built substantially as designed. They will not. Nor will Libeskind's 70-foot-deep bathtub be as originally conceived, with exposed slurry walls and bedrock. The pit as now planned will be a shallow 30 feet, with a controversial terminal for tour buses being exposed beneath the memorial pit. A sleight of hand now under way amounts to one of architecture's great deceptions, a design of colossal proportions slipping under the nose of a world saturated with watchful media.

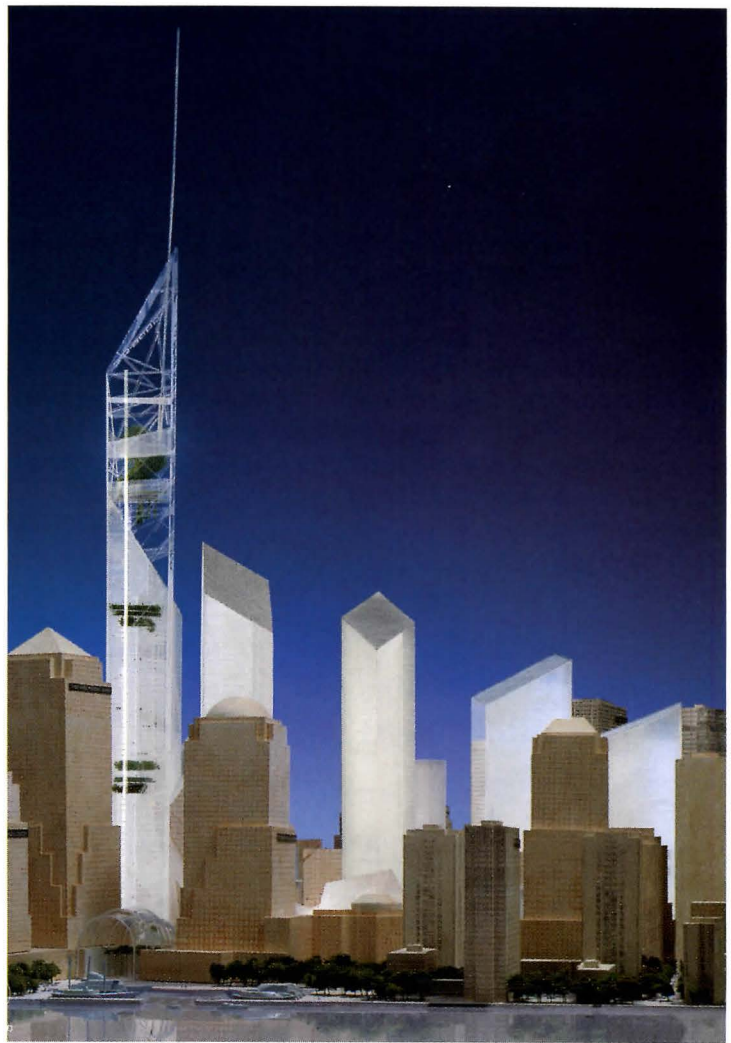
The capitulation to the commercial interests essentially occurred in the Lower Manhattan

Joseph Giovanni is a New York City architect and the architecture critic for *New York magazine*.

Development Corporation and the Port Authority reduced a field of seven teams to the two semifinalists—Libeskind and the Think group—which both proposed strong memorials that effectively became Trojan horses hiding developers. From the beginning, Think reasoned that funds for cultural facilities were better protected if isolated in a memorial precinct rather than dissipated through the whole site. The architects Rafael Viñoly, Frederic Schwartz, and Shigeru Ban decided to forgo the design of the office buildings and proposed only scaffolds with several cultural buildings suspended high in their framework.

At the heart of his project, Libeskind left the deep bathtub, which he bounded on two edges with low-rise cultural buildings that were framed in turn with high-rise office towers. Though basically conventional, the freestanding office buildings were designed with facades that shared the ethos of the rest of the project. Libeskind based his design on a secondary geometry representing the paths of arrival of rescuers, which he overlaid on a newly recreated street grid. Writ into the facade, the fractal geometries mystified the towers and eluded easy understanding. The apparent irrationality acknowledged yet transformed the history of the troubled site.

When, in his initial presentation, Libeskind noted his crystalline office towers could be designed by other architects, the developer and officials obviously listened. Prior to Libeskind's selection, Silverstein laid claim pub-



Libeskind's skyline includes a plan for the tallest building in the world, at 1,776 feet, with communication instead of gardens on the top floors.

licly to the towers, saying they were his alone to rebuild, with architects of his choosing. Whatever his actual motives may be, the terms of his insurance claim force him to display intent to build. SOM, one of the seven contenders in the recent competition, withdrew, citing conflict of interest.

Silverstein's court architects, SOM, was about to lose the competition but get the bigger commission.

This winter, the architectural politics surrounding 9/11 emerged as a huge chess game, and officials and developers essentially checkmated a public playing blind. The

## Commentary

Libeskind design could be stripped down to the bathtub and 400,000 square feet of attendant cultural facilities, and Libeskind would still appear to be the winner.

In his bid to get the job, Libeskind not only conceded towers that were not really his to give away, but also compromised the bathtub at the core of his poetic idea. In one of his more cloying analogies, he said that the 70-foot-high slurry walls had withstood the attacks, like America's democracy. Ironically, they apparently couldn't withstand the putatively democratic process of rebuilding the site. The Port Authority, which hasn't acted as a visionary institution since the Twin Towers were built, has forced acres of bus parking into the bathtub, a myopic strategem that will take visitors off New York's ample public transportation systems while clogging the city's vehicular arteries. The parking decks cost the tub its proportions, aura, and sense of authenticity. Visitors will no longer descend into the depths of the disturbed site as though into another emotional and environmental state, but will head

### THE CITY AND STATE HAVE LOST THEIR WILL AND ABILITY TO CREATE THE INFRASTRUCTURE OF A PUBLIC REALM.

down to what looks like a putting green growing on elevated decks buttressing the weakened slurry walls. The slurry walls do in fact need to be reinforced, but they could be buttressed in a way that retains the raw materiality that gave the Libeskind proposal its character. The pit now looks sanitized.

A project that now fails at the ground also fails in the sky. Libeskind maintains that the master plan can survive a change of architects if the volumetric massing remains roughly intact, spiraling up to his 1,776-foot-tall tower. But the gardens originally conceived within the tower as a symbol of renewal are now gone, replaced by a restaurant and communications

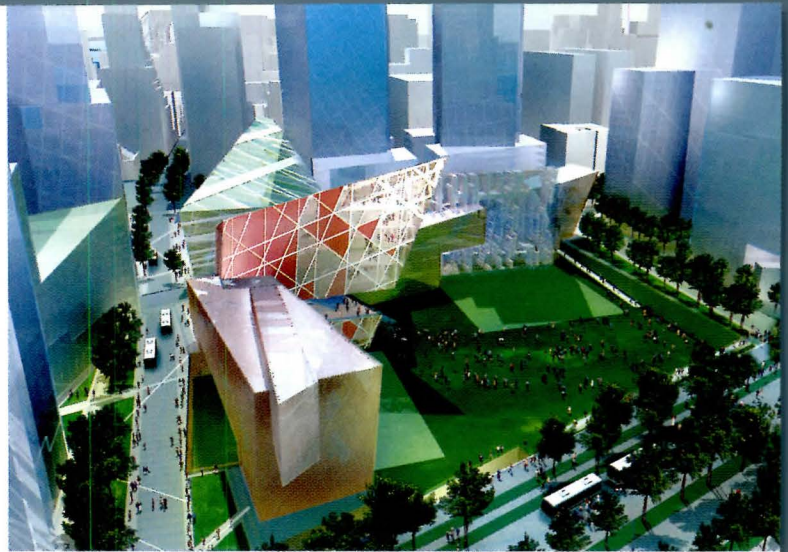
needle. The tower has virtually no occupancy and will count in the skyline only as slender anecdotal punctuation.

Frank Gehry once said that a project can't lose more than about 15 percent of its core ideas and still survive. Libeskind's plan, even at the outset, has already lost much more. The *New York Post* headlined the scheme "A Sham" on one of its covers. The deep bathtub, now shallow and manicured, has lost its presence, and the towers, once thin and mysterious, have been fattened for market. The footprints have been squared, eliminating most of the secondary geometries that distinguished the plan, lending it edge. The virtually unprogrammed tower that might have reclaimed the skyline is too slim to consummate a spiral of chunky office buildings. The needle doesn't have the necessary visual mass.

All along, the LMDC and Port Authority have maintained that they were not undertaking an architect-

ture competition but a search for a land-use plan that would serve as the basis for reconstructing the site. However, the sex appeal of Libeskind's scheme helped sell a plan that, ironically, is hardly different from two of the schemes presented in July by the hapless Beyer Blinder Belle. That firm lost the battle because the architects simply planted dummy models as space holders rather than show-stoppers like Libeskind's fractalized crystals. The architecture that sold the project has now been removed.

Beyond the conspicuous deception lies an expanse of missed opportunities. Burying West Street could have yielded land for thousands of self-paying apartments,



The Libeskind scheme includes large open areas sunk 30 feet below grade.

but the idea was summarily taken off the table, removing a residential population that could have both breathed life into downtown and jump-started demand for New York's neglected harbor and waterfront. Nowhere did the Port Authority encourage designers to reconnect the city to a body of water that ranks as a potential national park and recreation area. Faced by the glut of office space, officials did not try hard enough to convert office to residential use: The token amount of residential space in Libeskind's scheme was removed.

New York still runs on its great old public works—its bridges, tunnels, subways, and parks. But, strangely, nothing of a monumental scale has been built in the city since the Twin Towers. The city and state have lost their will and ability to create the infrastructure of a public realm: Clearly this competition has made obvious that the model of a public/private partnership hits a glass ceiling when it comes to vision. New York now faces the prospect of a downtown skyline around Ground Zero that is indistinguishable from Houston's or Dallas's—cold, conventional, and corporate, even if dressed in the latest curtain walls.

So much for transparency in the process and integrity in the vision. But no amount of rhetoric and PR will be able to spin the commercial juggernaut about to engulf the site if the developer prevails. The Libeskind scheme, sadly, is now a decoy. The televised renderings that

depict a rebuilt Ground Zero from the pit mask 10 million square feet of high-rise buildings of unknown design. The new non-Libeskind vision from the other side, however, has never been presented to the public.

Ironically, Libeskind's proposal has shrunk so much that there is not enough room after the bathtub and his cultural buildings for a new competition to design the site. Alternatively, the original contenders could now be reconsidered, such as the inspired project by United Architects or a variant of the same idea of interconnected buildings, by the Richard Meier team. Libeskind is now basically designing a cultural park, leaving the rest of the site up for grabs.

There are only two hopes. The first is that Libeskind will rally to reclaim what he had to concede to get the job. He owes it to himself and the public because his talent has been used as a vehicle to dupe the public. The second hope is that Silverstein is unhappy with his insurance settlement, the city and state will step in and buy out his stake and initiate other plans to rebuild the city.

Governor Pataki stood in front of Libeskind's deceptively outdated model with the original high-rise structures and pronounced the use of bromides, no doubt thrilled that his administration survived its architectural trials in the aftermath of 9/11. But this is a sacred design trust that cannot be broken: The buildings that emerge should act as a cast reserve no less than the soul of our nation. Pulling a fast one just won't do. ■

# What becomes a legend most? Restoring Wright's greatest work raises some sticky questions

## Critique

By Robert Campbell, FAIA

DEPARTMENTS

be it could be in New York City  
the Whitney Museum of American  
Maybe at the Museum of  
ern Art? Wherever. Somebody  
uld mount an exhibition on  
sin East.

I've stolen this idea from Neil  
ne, the noted architectural histo-  
and Frank Lloyd Wright scholar  
arvard. Such an exhibition would  
present Taliesin as a finished  
k of art, because it never was  
such thing. That would be the  
le point: to understand Taliesin  
l by extension, all architecture)  
process. Taliesin East is not so  
h a built object as an architec-  
l garden that Wright seeded and  
ded for almost half a century.

A work of architecture is  
ays a narrative, unfolding over  
e. It is a story that never ends,  
f future chapters still to be  
ten. Even if the building remains  
same physically—which rarely  
pens—it changes anyway  
ause of alterations in the climate  
ppreciation by which it is known.  
as T.S. Eliot who wrote that  
never we make something new,  
alter the past. Taliesin is the  
l case study.

### ing from the ashes

sin East is, of course, the house  
Wright built for himself near  
ng Green, Wisconsin, in the  
land where he spent much of  
oyhood. In my opinion, it is his  
test work. (Levine, by the way,

tributing editor Robert Campbell  
e Pulitzer Prize-winning archi-  
ure critic of *The Boston Globe*.

shares that opinion.) Twice Taliesin  
burned and was rebuilt. Each  
rebuilding incorporated fragments—  
sometimes charred—of an earlier  
house. The house also changed  
whenever Wright's life changed: He  
altered it to fit, like clothes.

"It's exciting to think about  
reconstructing the history of Taliesin,"  
says Levine. "It's like these great old  
sites that had many layers, like Troy.  
And the documentation is there."  
He'd like to see the house presented  
in an exhibition in six parts:  
1911, 1914, 1924, 1937, 1949,  
and 1959. He thinks we'd learn  
a lot not only about Wright, but  
about the nature of creativity.

There's another reason for  
an exhibition on Taliesin. The  
place is falling apart. It needs  
our love and our money.

As Wright often said, he  
built Taliesin not on the hill but  
of it. That's part of the problem.  
The house functions as an unin-  
tended retaining wall. The soil is  
only about 6 feet deep, resting  
on rock. As water tries to perco-  
late down the slope, it builds up  
behind the foundation walls,  
creating hydrostatic pressure.  
Twice in recent years the result  
has been a mud slide. Chunks  
of the hill's earth have slipped  
laterally, in a shear failure  
against the rock beneath. So  
far, there's little damage to the  
house, just "long-term creep," in  
the words of Tony Putman of the  
Taliesin Associated Architects,  
who still use the house. But  
repairs are urgent.

John Eifler is a Chicago

architect who is consulting on  
plans to solve these problems.  
"First, we have to stabilize the hill  
on which the building sits," Eifler  
says, "and then we have to stabi-  
lize the way the building sits on the  
hill. Both of those are pretty tall  
orders. They require a lot of under-  
pinning and concrete, and it all has  
to be done in a way that is gentle  
and not noticeable."

The sliding hill is only one of  
Taliesin's problems. Wright built his

house like a stage set. Outdoor  
stone terraces rested on wood  
joists, which predictably rotted.  
Glass met stone without engaging it,  
so you can sometimes put your fin-  
ger between. The heating system no  
longer works, and in winter there  
are icicles indoors.

### Designing for an audience

Beyond the natural decay, there  
have been unexpected disasters,  
such as the storms the locals call



Wright built Taliesin on the side of a hill (top), which turns out to be a slippery slope. The house (above) needs as much as \$60 million in renovation work.

## Critique

"microbursts." An icon of Taliesin was the great oak that occupied the main courtyard. A microburst sent it crashing into the roof of the old drafting studio several years ago. That damage has now been repaired, but at the cost of money that might have been spent on other repairs.

"I guess Wright decided that

set them to pouring concrete on the bare earth, in order to build his latest brainstorm. (You can argue that Taliesin—like Jefferson's Monticello—was in part erected on the backs of a slave culture, the difference being that the apprentices paid for the privilege.)

Vermonters Bob Burley is another architect who has worked

## WE SHARE THE VALUES OF A PACK OF VANDALS, PRIZING COLLECTIBLE OBJECTS MORE THAN CREATIONS LIKE TALIESIN.

the next generation would take care of things," says Eifler. "Taliesin was theater design. The point was to impress clients on a very tight budget." The late Wesley Peters, Wright's leading disciple in the Taliesin Fellowship, once told me that the master would sometimes rout his young student apprentices out of bed in the early morning and

on Taliesin. "There are very few places where construction is first rate," he says. "I think Wright would say that being able to carry out the idea physically and have people see it and enjoy it is more important than making a timeless monument. Maybe a little bit like Palladio: Let's get it up with plaster if we have to, to at least get the

form. And of course he didn't have the money." Ten years ago, Burley led a team to analyze the building. He guessed then that it would take \$20 to \$30 million to fix it. He figures the number should be at least doubled today.

### Too big to hang

But \$60 million for Taliesin is chump change. A single Van Gogh can cost as much. We preserve with devotion our heritage of paintings and sculptures. Yet we let our masterpieces of architecture deteriorate. Taliesin East, taken as a whole, is a far greater work of art than any American painting. But in our culture we tend to share the values of a pack of vandals. We see collectible objects as more valuable than holistic creations like Taliesin. That's because Taliesin is too big to be acquired and hung on the wall of a museum or a living room as proof of wealth and taste.

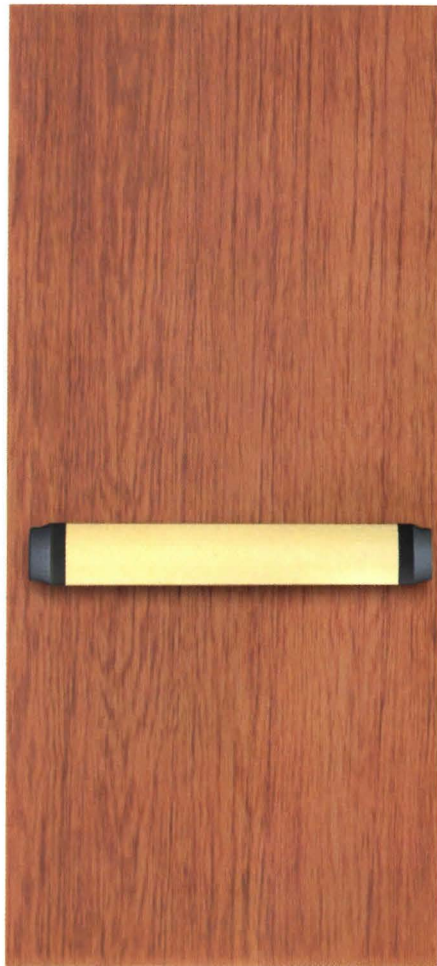
It's not that nobody is doing anything. Taliesin is owned by the Frank Lloyd Wright Foundation, and

the foundation is embarked on a capital campaign. Its president, J. Goulka, grew up across the street from the Oak Park home and studied near Chicago. He's a businessman with an art history degree from Yale. At Yale, Goulka attended a Vincent Scully lecture where, he says, "the lights went off and he started talking and my world changed." Goulka and his board, with advice from the National Park Service and others, will make the decisions about Taliesin. A federal grant of \$1,140,000 will help solve the subsurface drainage problem. But that's a small beginning. If you figure the whole estate, barns and school, windmill, farm, and all—a you should, because everything is part of the holistic vision of life that Wright created—you're talking about 100,000 square feet of building plus a lot of historic landscape. Not to mention the contents: works of art of every kind, carriages and sleds and skis, even Wright's old movie projectors, all of which help tell the story of the communal life



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## Critique

Wright strove to create.

Two issues dominate the question of preservation. Issue One: How do you keep the sense of Taliesin as an improvisation? Taliesin was an act of creation as joyous and careless as a dance. It was an open-ended experiment, a place in a state of continual transformation and invention. Restore it

### AFTER 1938, WRIGHT NO LONGER CONSIDERED TALIESIN EAST TO BE HIS PRIME PLACE OF EXPERIMENTATION.

too carefully, and you lose that sense. But just how does an architect walk that tightrope?

Issue Two: To what date do you restore a building that never stopped changing? Nobody quite agrees. "Our reference date for the restoration is 1959," says Goulka. "It will be a restoration in the precise sense, to the Secretary of the Interior stan-

dards." John Eifler is less sure. "I think we're using 1959 as a guide, there's no question about that, but we are considering everything on an individual basis. We might elect to keep something that Olgivanna [Wright's third wife] did [after Wright's death], because you can't ignore her influence on these buildings." He points to the Oak Park

house and studio as an example of a restoration that was perhaps too zealous. "They had a very rigid date for their restoration. In the process, they removed an entry vestibule that Wright did a little later on. So that you had real stuff getting removed for kind of ersatz stuff."

A third position is that of Neil Levine. He'd like to restore the

house to about 1925, when he thinks it peaked. "Certainly before 1938," he says, the year he believes Wright's passion shifted to Taliesin West in Arizona. Levine thinks that after 1938, Wright "sort of trashed Taliesin East or, let's put it this way, he no longer considered it to be the prime place of experimentation."

These are questions that deserve a national debate. They shouldn't be resolved by a few inside players. A public exhibition could put them on the table.

#### A hometown favorite

A contrast to Taliesin is the fate of another indispensable Wright house, the Darwin Martin House, in Buffalo. Preservationists have acquired and demolished an apartment building that long occupied the site of the Martin's former carriage house. The carriage house is being rebuilt, together with the famous pergola that linked it to the main house. Is this preservation, or is it re-enactment? I don't know, but I'm glad it's happening.

Buffalo is my hometown and also Bob Burley's (he once worked on the top floor of Sullivan's Guaranty Building, with the circular window). Our city has seen tough times economically in recent years. One result is that Buffalo is prouder than ever of the treasures it still has, whether those are sports trophies or Wright houses, of which Buffalo possesses four. Buffalonians, who once tore down the Larkin Building, now see Wright as an emblem of past greatness and future potential. Taliesin lacks that kind of patriotic setting. It's up to the nation as a whole to become, for Taliesin, the constituency that Buffalo is for the Martin.

I won't try to describe Taliesin. Suffice it to say that there is no greater work of American art. A museum show would bring its greatness into the consciousness of a large public and would help preserve it for the future. If we don't do those things, we might as well forget our pretensions to culture or civilization. ■

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The Unico Sys



# Home on the shelf: A roundup of titles on residential design

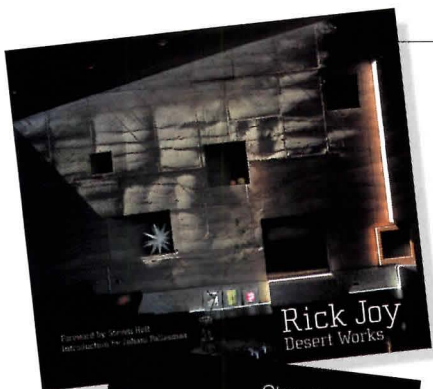
## Books

**Rick Joy: Desert Works**, by Rick Joy; introduction by Hanni Paalasmaa. New York: Princeton Architectural Press, 2002, 176 pages, \$40.

about this version of the American dream: a house by Rick Joy in Arizona's gorgeous Sonoran desert as simple yet emotionally resonant as the desert itself?

Joy, who spent 12 years as a musician and carpenter before going to architecture school, says, "As a drummer I was always more interested in the ways to make the music as certain way than in attempts to be flashy. As with the music of Miles Davis—the silence is often more profound than the sound." Paalasmaa writes in a heartfelt introduction that Joy's work seems informed by a wisdom derived from secular and historical buildings as well as the entire heritage of humanity." Joy has little patience for dogmas or architectural pretensions and is unusual for tackling all aspects of construction as well as design. Joy's firm builds primarily with teams of recent architecture graduates.

The book's nine houses are accompanied by quietly beautiful photographs, most of them by Bill Sherman, and by short descriptions written by Joy. Often the author describes more feeling than formal description. About Tucson's Catalina House (1998), for instance, he writes: "The house's gaze is transfixed on the view of the dramatic Catalina Mountain Range to the northeast—then. Three forms, arranged in a stance like a wagon train,



**Glenn Murcutt: A Singular Architectural Practice**, by Haig Beck and Jackie Cooper. Melbourne: Images, 2002, 255 pages, \$65.

In their lively journal, *UME*, Australians Haig Beck and Jackie Cooper have developed an intimate way to discuss a work of architecture by recreating architects' explorations. Using sketches, diagrams, and working drawings, the result of mind-eye-hand connections, they provide evidence of an architect's ideas and values. Applying this lens, Beck and Cooper's new book about Murcutt provides a fresh look at the 2002 Pritzker Prize winner's work, most of it houses. Here, numerous drawings combine with excellent photographs and revealing commentary to uncover insights not usually revealed in more historically oriented monographs on Murcutt.

The book is organized into three sections: theory, practice, and technique. In the first section, Murcutt, Beck, and Cooper clarify Murcutt's work as a rationalist, trace his hallmark linear plans back through Le Corbusier and Wright to the vernacular, and look at Murcutt's working process through drawings for the unbuilt Broken Hills Museum. Murcutt talks about being inspired by the poetics of utilitarian architecture, reflects on his frustration with the loss of a fundamental connection between building and site in architectural education, and—in a discussion of detail and product choices—demonstrates his enthu-

siasm for the making of buildings. The essay concludes, "Eliminate complexity. Minimize the number of joints. Keep it simple."

In the practice section, chronological presentations of 23 projects, completed over 30 years, are accompanied by commentary by both authors and Murcutt and give an overview of the architect's work to date. This feast of drawings and photographs leaves us wanting more, a desire partly satisfied in the section on technique by a wordless collection of design-development and working drawings for the 23 projects. The legendary Murcutt sectional drawings are particularly engaging. With characteristic economy of means, the entire drawing is densely notated on one sheet, demonstrating the way systems of foundation, floor, wall, and roof all relate to one another. Unfortunately, publishing decisions compromised the legibility of many drawings.

Beck and Cooper are advocates for Minimalism's ability to empty out symbolism in favor of unadorned tectonic clarity. However, they also continue Colin St. John Wilson's exploration of the "other tradition of Modernism," in which the particulars of climate, landscape, and available materials give Minimalism a poetics of inhabitation. Murcutt's work falls into this category but goes further. The Glenn Murcutt we get to know here is a moral rationalist who frames his design decisions in terms of his client, the site, and life-cycle material, labor, and environmental costs. His drawings show an endless will-



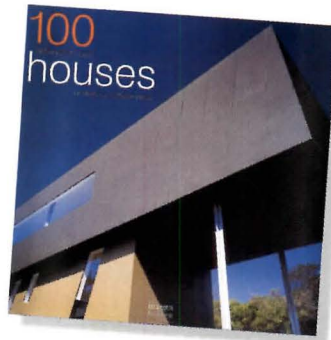
camp around a fragile complex of saguaro cactuses, mesquite trees, and burrowing fauna..." It reminds you of what he said about drumming. The text may not have enough detail for some architects, but what it lacks in specifics it makes up for in its corresponding lack of archispeak. As with his architecture, Joy's writing is eloquent in the absence of pretense. *Andrea Oppenheimer Dean*

## Books

ingness to explore and a rigor and precision of detailing that pushes his work beyond the poetic and into the sublime. The drawings in this book reveal, quite simply, a man who loves building—and who inspires us to do the same. *Lisa Findley*

**Open House: Unbound Space and the Modern Dwelling**, by *Adi Shamir Zion*. New York: *Rizzoli*, 2002, 224 pages, \$75.

*Open House* stands out from the recent flood of books about contemporary houses because of Adi Shamir Zion's provocative writing, which is enhanced by Dung Ngo's crisp, intelligent design. The first half of the book uses essays, supported by quotes, photographs, and plans, to trace the idea of openness in house design from the free plan to the endless house and beyond. In the more conventional second part,



Ngo and Shamir Zion present 12 contemporary house projects by UN Studio, Glenn Murcutt, LOT/EK, and others through photographs, drawings, and a brief text.

In her lively essays, Shamir Zion argues that openness comes from one of three basic qualities or intentions: liberation, universality, and continuity. She traces the evolution of each from its early Modernist roots to today. Braided into the discussion are explorations of openness in art, film, dance, and literature, together with break-

throughs involving openness in psychology and physics, new building technology, and changes in urban, economic, cultural, and family structure. The essays range widely, tracking influences, disagreements, responses to criticism, and experiments that succeeded as well as others that failed. As a result, they are idiosyncratic and speculative in the best sense. They remind us of the less-well-known open house designs of Oscar Niemeyer, of Brazil, and José Antonio Coderch, of Spain. They cause us to wonder what visionaries like Buckminster Fuller and Frederick Kiesler would have done with access to today's digital and material technology, or why Schindler, Neutra, and Eichler did not have a more significant impact on suburban housing in California. And they purposely leave us without a conclusion, making clear that the exploration of unbound space is still very much a subject for architects to debate and push forward.

The design of the first half of the book moves beyond illustration

to collaborate with the text. Side-by-side quotes pull the reader out of the flow of the text—suggesting that reading as well might become more open. Pale plans float behind text toward the edge of the page, suggesting depth and a space beyond the book. Photographs also flirt with the edge, some bleeding off the page, other clearly bounded by white space.

The projects in the second part range widely. Building on their historic predecessors, some attempt to liberate space, others to make it more universal or continuous. Full-page photographs are carefully selected to support ideas of openness, so that taken together the projects provide a kind of catalog of design strategies for unbinding space. It is no accident that this beautiful book opens the reader's thinking about the nature of openness in architecture. *Lisa Findley*

**100 of the World's Best Houses** Introduction by *Catherine Sless*. Melbourne: *Images*, 2002, 360 pages, \$60.

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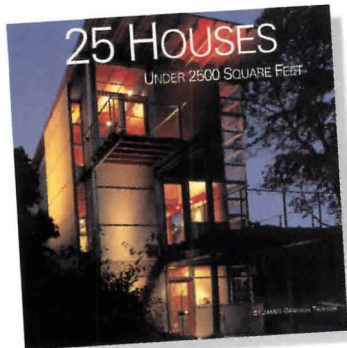
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d worlds."

She acknowledges, however,  
he basic house program hasn't  
ged much, and the very simple-  
the dwelling "makes it perhaps  
ly building type for which an  
ect can exercise complete  
n control and establish a gen-  
intimate client relationship,  
rom the inhibiting influence of

developers, cost managers, and  
bureaucrats." As a result, there is  
great variety among the authors'  
100 of the world's best. AOD

**25 Houses Under 2500 Square Feet**, by James Grayson Trulove. New York: Harper Design, 2002, 272 pages, \$40 (paper).

While too many Americans dream of supersized McMansions, this



book shows small can be beautiful. The book itself, though, is bigger than average (1 foot square) and offers generous coverage (up to 14 pages) of each of its featured

houses. The collection ranges from a 640-square-foot live-work studio in Los Angeles by Dry Design to a 2,500-square-foot house in Seattle by Olson Sundberg Kundig Allen Architects. Along the way, it includes work by Rick Joy, Stan Allen, Mack Scogin and Merrill Elam, Obie Bowman, Turner Brooks, and Bohlin Cywinski Jackson. All of the houses are American, except for one by Gabriel Poole in Australia and one by Jacques Moussafir in France. Clifford A. Pearson

**House: American Houses for the New Century**, by Cathy Lang Ho and Raul A. Barreneche. New York: Universe, 2001, 224 pages, \$55.

The 20 North American houses shown in *House* were chosen to illuminate changing ideas that are shaping the American dream. The authors say they had difficulty finding houses that fit the bill.

The book's first section showcases designs that push materials and building techniques to new

expressions. The residences in the second section take their cues from their sites and impact them as little as possible—ideas aligned not with high Modernism but with environmentalism and social responsibility. The book's final segment is erroneously called "Revolutions." Indeed, the authors say they "are not so much suggesting that the architecture in this chapter is revolutionary, as much as we are saying that it creatively responds to the rapidly changing demands, functions, and conceptions of the contemporary house." Ho and Barreneche showcase three multigenerational dwellings, among them Steven Holl's Y-House, a tree house by Marlon Blackwell, and a house by Kennedy & Violich containing a home office, gallery, and lap pool.

None of the solutions shown in *House* are revolutionary or mind-popping, a point reinforced by the authors' conclusion that the "the most significant revolution in domestic space in the late 20th century" is the residential loft. AOD

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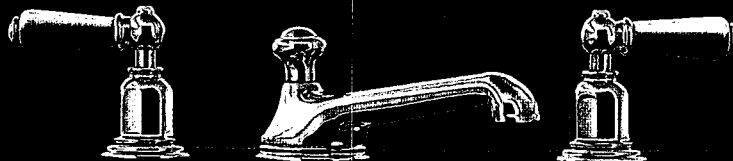
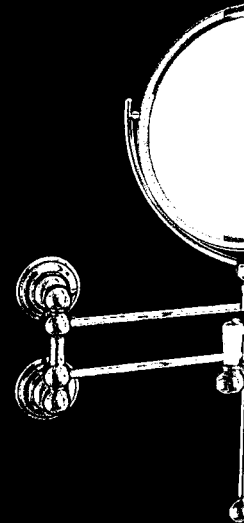
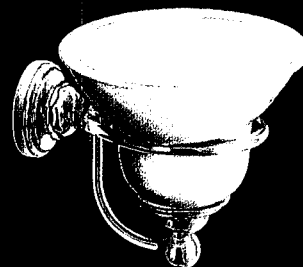
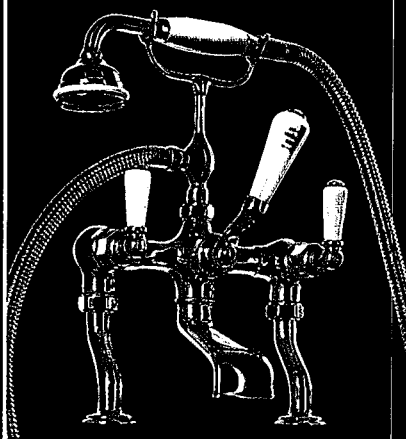
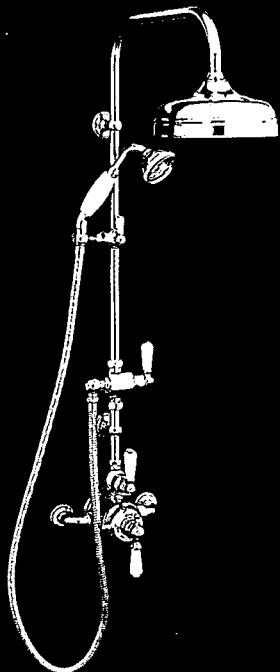


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# Diller + Scofidio challenge assumptions in first major American exhibition

## Exhibitions

By John E. Czarnecki, Assoc. AIA

DEPARTMENTS

**Scanning: The Aberrant Architectures of Diller + Scofidio.** Curated by Aaron Siskin and K. Michael Hays; designed by Diller + Scofidio. The Whitney Museum of American Art, New York City, through May 25, 2003.

Challenging assumptions underlying the design of physical space, place, objects, and their meaning, New York architects Elizabeth Diller and Ricardo Scofidio, in their first major American museum show, lure onlookers into a commentary on contemporary society. With an exhibition comprising a divergent selection of work that is both witty and engaging, Diller and Scofidio demonstrate that the creation of order and beauty is superficial without an understanding of the world around us.

**Scanning: The Aberrant Architectures of Diller + Scofidio,** the Whitney Museum of American Art is more about art and design than about the design of buildings. The husband-and-wife team, who have collaborated for more than two decades on art and architecture projects, is fast emerging from the New York avant-garde and academia to gain national attention and major commissions, including the landscape design for the planned Lincoln Center renovation in New York (see page 46).

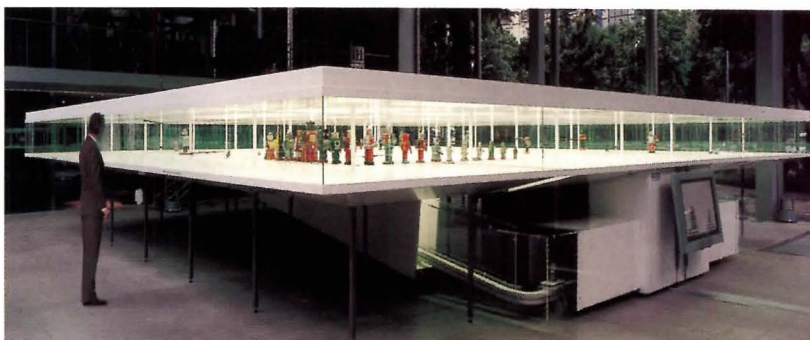
Other conceptual artists have explored material and concepts similar to Diller + Scofidio's: the experience of objects and environments, display, ritual, inside versus outside, transparency versus opacity,

and public versus private—but it is important to see architects take on these themes on a large scale. Diller + Scofidio challenge the assumed territorial nature of physical space, encouraging other architects and designers to question, and ultimately to make richer places. The show includes video installations, design for buildings and interiors, temporary museum installations, theater design, public art, toy robots, and a drill.

As visitors arrive on the Whitney's fourth floor, they may hear the drill piercing the exhibition's walls. Suspended from a track running 320 linear feet along the walls, the computer-controlled tool, with a half-inch drill bit, slowly moves along the track until it reaches a random point, where it punctures a hole both in the wall surface and in the silence of the space. Called *Mural*, this portion of the exhibition calls attention to the white walls—usually neutral supports for art that are not noticed as objects in themselves. By the end of the exhibition, a number of holes will have perforated the walls and interrupted their continuity.

Another wall intervention, *Uncovered*, is more subtle, but striking upon closer inspection: The architects have inserted an original gypsum-board wall from the Museum of Modern Art (now closed for an extensive renovation and expansion) into the exhibition wall at the Whitney. The differences in texture and shade of white paint, with markings where art used to hang, force the viewer to contemplate the wall segment's place, function, and history.

Another installation, *Bad*



The exhibition of the work of Ricardo Scofidio and Elizabeth Diller (above) includes the installation *Tourisms: suitcase Studies* (top); *Master/Slave* (second from top), with toy robots on a track; and the aberrant creases of *Bad Press: Dissident Housework Series* (left).

## Exhibitions

*Press: Dissident Housework Series*, showing shirts that are pressed and folded into imperfect and irregular forms, questions the aesthetics of efficiency, refinement, and cleanliness that we take for granted.

Diller + Scofidio's wry sense of humor mixed with social commentary is apparent in both *Master/Slave* and *Tourisms: suitCase Studies*. *Master/Slave* features toy robots—from the collections of Rolf Fehlbaum and Fifo Stricker—along a conveyor belt in a large steel and glass vitrine. The robots move, one by one, along the belt into an X-ray scanner and past surveillance cameras mimicking the way people pass through airports. *Tourisms: suitCase Studies*, with 50 suitcases that each have a postcard and text from one of 50 tourist attractions in the U.S., examines the issue of authenticity in place-making.

Models and drawings of the

firm's architectural projects seem in aggregate more like an aside to the other installations. A large-screen video of the Blur Building shows the museumgoer what a walk through the steam-filled structure is like. However, the drawings and models of buildings on the boards, like the Institute of Contemporary Art, in Boston, and Eyebeam Atelier, in New York, although beautifully designed projects, do not have the same impact or offer the ironic commentary of other portions of the show.

With *Interclone Hotel*, an ad campaign for an invented hotel chain, Diller + Scofidio present a critique of the role of architecture in contemporary life. While the information and hotel decor vary for six cities, the room itself and the skyline views change very little—a formula of sameness intended to confer comfort. ■



Images, video, and drawings of the Blur Building (top), completed last year in Switzerland, are included in the exhibition. *InterClone Hotel* (above) is an ad campaign for an invented hotel chain in cities with emerging economies.

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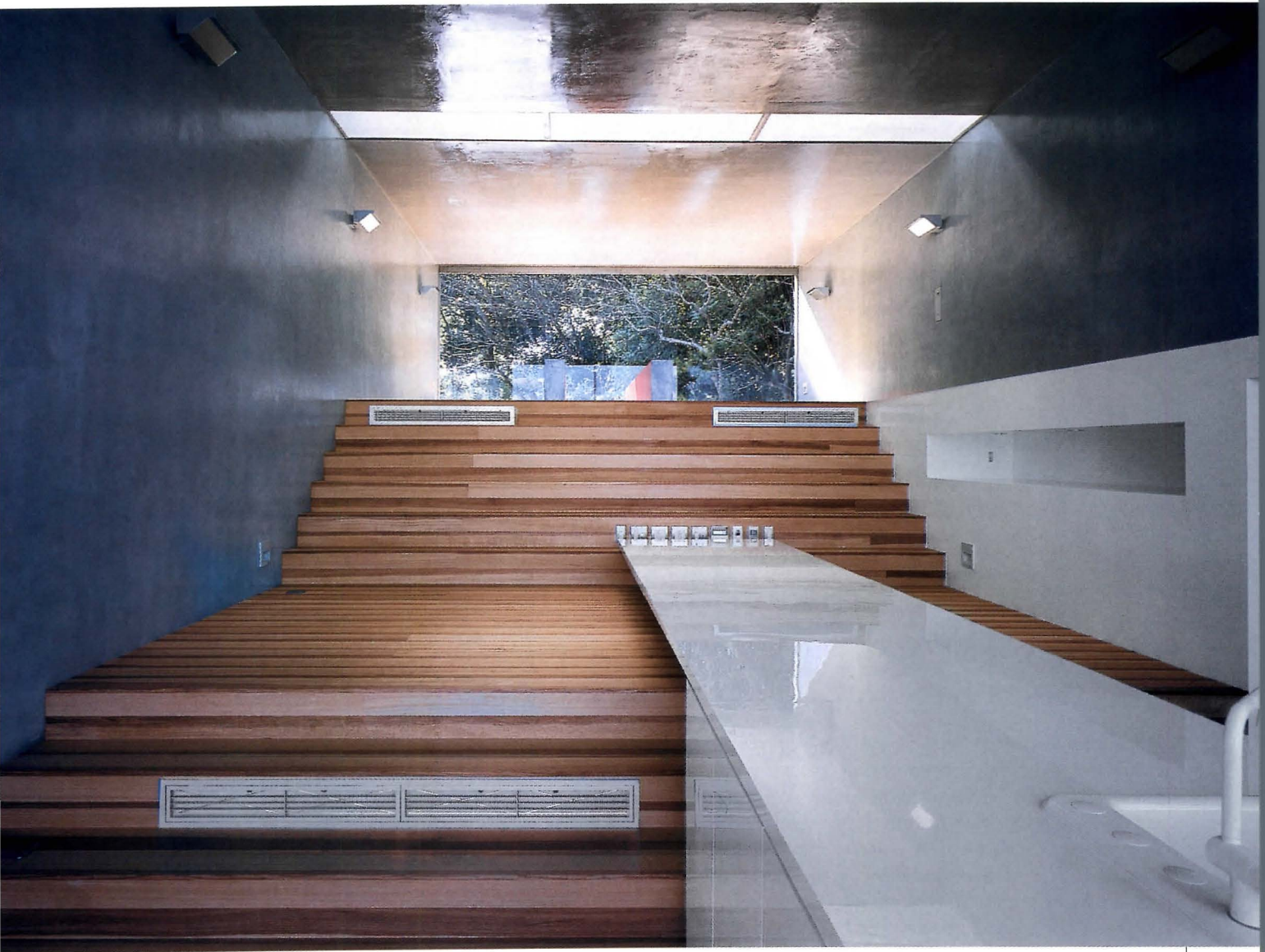
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**Naomi Pollock**

Work and no play is no fun. But visitors to the Nigaki Chemical Company on the island of Kyushu, Japan, haven't had to worry about that since the business completed its guesthouse. Instead, they can look forward to being wined and dined while gazing out at Saeki Bay. To accommodate the steady stream of colleagues

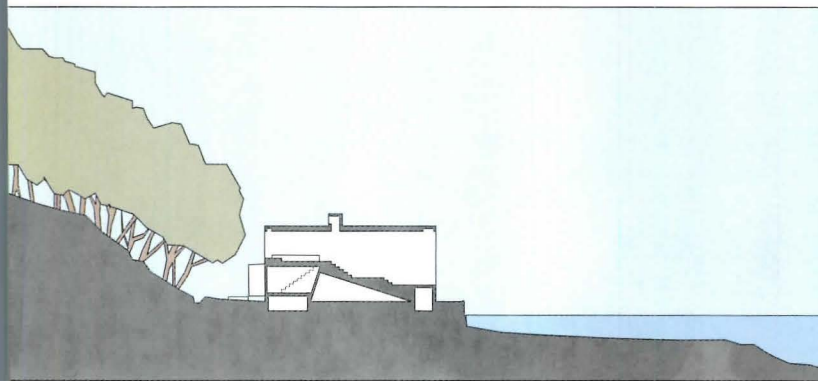
## A sloping Japanese guesthouse is all about the bay

making the 6-hour trek down from Tokyo and Osaka, the company owner wanted an entertainment space adjacent to his factory. In hiring Oita City architect Takao Shiotsuka, he also got a whole new way to experience the sea.

Considering that he's been looking at Saeki Bay all his life, this was no mean feat. But Shiotsuka pulled it off with a simple, rectangular concrete box designed to fit in with the company's industrial buildings. Enclosed by huge glass panels at either end, the 734-square-foot structure backs onto a hilly forest. In front, the water practi-



## Snapshot



cally laps at its feet. Tinted black, the glass panels do not reveal the interior, but on the long elevations, a large triangular cutout of the building's base begins to reveal the main space's topography.

From the building's entry at the rear, stairs lead directly up to the main room's upper level. Here, the entire waxed-pine floor begins a stepped descent that pauses midway at a landing big enough to accommodate a dining area for six, and culminates in an open food-preparation area with plenty of room for guests to mill about. Each spot has a different vantage point to the sea. As the floor drops, the visible sky-to-water ratio changes, and the water draws closer until, says Shiotsuka, "it feels as if you're riding and shaking on a ship."

Like a camera lens, the window's 13-by-16-foot sheet of heat-absorbing glass focuses attention on the water but filters out more than unwanted rays. "If the exposure to the ocean is too direct, the smell and wind can be too strong," says Shiotsuka. Editing out these sensory elements intensifies the water's visual impact: All day long the waves' changing shadows and colors wash up on the building's glossy interior walls. After watching the water, it is possible to plunge in—albeit into the sanitized setting of the Japanese bath downstairs, where glass doors fuse the spa area with a private terrace facing the wooded hillside.

This building is not a guesthouse in the truest sense of the term. "It is not possible to sleep here unless you bring your own sleeping bag," chuckles Shiotsuka. Even so, it's still quite the haven for sybaritic pursuits. ■

Taking advantage of the shifting floor plane, a continuous white laminate counter can accommodate cooks standing at one end as well as eaters seated on oversize zabuton floor cushions at the other.







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Demonstration houses proliferate: Marcel Breuer's design at MoMA, 1949 (below); the Stahl (Case Study) House by Pierre Koenig, 1960, in L.A. (right).



# The Promise of the Prototype

by Thomas Mellins

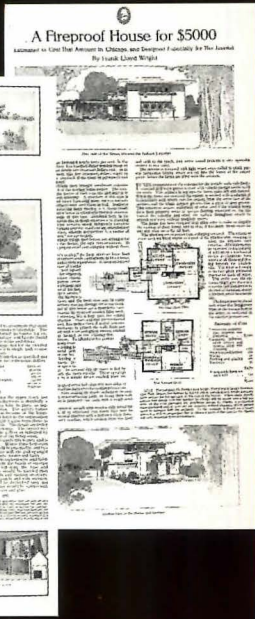
**D**espite the enduring power of the single-family, freestanding American house, neatly equipped with gables and shutters and redolent with reassuring associations of peaceful family life, the desire to push the envelopes of style and technology also has a rich history. Throughout much of the 20th century, museums, magazines, and expositions sponsored the design and construction of stylistically inventive case-study houses. Intended as teaching tools for introducing Americans to Modernism, they were also meant to create reproducible prototypes. The hope was to make real (and affordable) a more daring dream of domesticity.

*Thomas Mellins is a RECORD contributing editor and Web curator for the National Building Museum's Building America site.*

PHOTOGRAPHY: © EZRA STOLLER/ESTO (LEFT SPREAD); JULIUS SHULMAN (TOP)

FEATURES

Frank Lloyd Wright's houses in *Ladies' Home Journal*, 1901 and 1906 (above). Kocher and Frey's Aluminaire House, 1931 (right), is being reconstructed. George Fred Keck's "House of Tomorrow" (below), at Century of Progress Exposition, Chicago, 1933. Buckminster Fuller (bottom) with a Dymaxion house in 1932.



The goal of bringing innovative, affordable houses to the mass market has never been fully achieved in the U.S. Indeed, demonstration houses have varied widely in their ability to influence mainstream taste or building patterns. Nevertheless, the houses collectively constitute a veritable textbook of Modern architecture's evolution in America. Underlying all of them has been a common conviction that abandoning the familiar can have real rewards. This is pretty heady stuff at a time when so many seem bent on disguising contemporary technologies—and lifestyles—in faux Georgian or -Mediterranean McMansions.

Though some of the last century's experimental houses may strike us as impractical, or even downright wacky, it is hard to deny how contemporary and cutting edge some of these historic houses look today.

A mass-circulation magazine, *Ladies' Home Journal*, took the pioneering step in 1900 of sponsoring a series of designs for moderately priced suburban houses. Frank Lloyd Wright designed three of them. The stylistically progressive

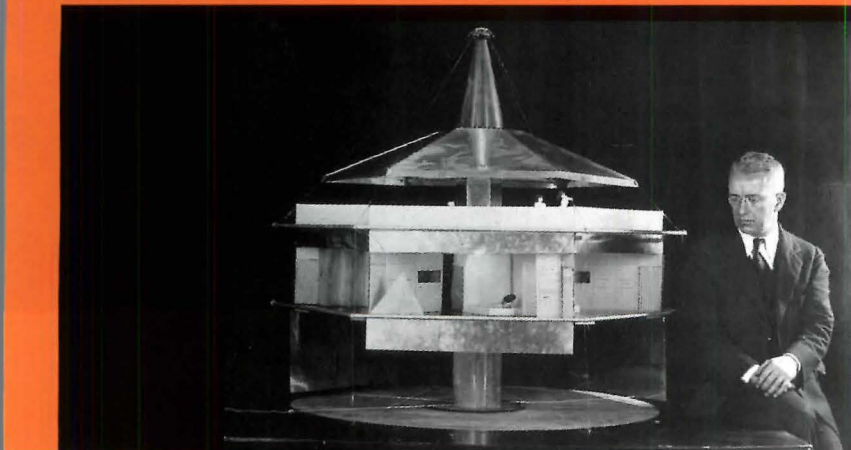
## THE HOUSES IMPLIED FREEDOM FROM COLONIAL INFERIORITY.

and ingeniously constructed houses clearly suggested that popular historical styles derived from European precedent would soon be rejected for an architecture shaped by the American landscape and national character. Here, Wright seemed to suggest, were truly American houses, finally free from a lingering sense of colonial inferiority.

The "future American country house" received new impetus from ARCHITECTURAL RECORD when the magazine published a prototype design by Swiss-born Modernist architect William Lescaze in 1928. The International Style scheme, complete with concrete walls, exposed heating pipes (no fireplaces), and rooftop meteorological equipment, eschewed familiar settings for hearthside family life. It vividly embodied the idea of the house as "a machine for living."

House construction came to a near standstill during the Great Depression, but experimentation flourished. The Aluminaire House, designed by Alfred Frey and A. Lawrence Kocher (then RECORD's managing editor) and touted as the world's first all aluminum and steel house, was constructed as part of the Architectural League of New York's annual exhibition in 1931. Lambasted by some critics as looking too commercial, the boxy composition seemed to push the limits of a recognizable domesticity too far to be influential.

But the concept of metal houses grabbed the imagination of other architects. When the Century of Progress Exposition in Chicago displayed 13 model houses sponsored by private companies and business associations in 1933, the standout was a three-story, 12-sided, glass-and-steel house designed by George Fred Keck. His "House of Tomorrow" featured a passive solar heating system, central air-conditioning (and inoperable windows), as well as a ground-level hangar for the owner's biplane. In a two-year period, more than 1,250,000 people visited the building. Keck went on to establish a successful architectural firm with his brother William, and though its output incorporated some of the advanced technological features of the House of Tomorrow, it lacked the



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In 1958, Buff, Straub and Hensman designed the Bass House (top), a Case Study House in Altadena, Calif. Frank Lloyd Wright's Usonian exhibition house (middle) was on display in New York City in 1953. Pierre Koenig completed a Case Study House in West Hollywood, 1958 (right).



demonstration house's frankly futuristic look.

Between 1928 and 1946, the visionary architect Buckminster Fuller experimented with a variety of industrially produced shelters, all called Dymaxion houses. He designed the structures to be low cost, lightweight, easily transportable, and mass-producible. In 1941, the Museum of Modern Art (MoMA) in New York City erected one of Fuller's Dymaxion Deployment Units in its sculpture garden. Five years later, another Dymaxion structure, known as the Wichita House, attracted strong consumer demand, but the project ran aground after Fuller suspected his business associates of shady dealings.

By the time John Entenza, the visionary editor of *Art & Architecture*, initiated the magazine's Case Study House program in 1945, a young generation of practitioners, deeply committed to architecture as a manifestation of reformist public policy, was eager to show that innovative design could be enjoyed by Everyman. The widely publicized program made stars of Pierre Koenig, FAIA, Craig Ellwood, Charles and Ray Eames, and the photographer Julius Shulman. It also helped to make sliding glass doors and flat roofs widely accepted. Indeed, as Koenig, who still practices in California, recently pointed out, the program catalyzed changes in local building codes, as well as in banking practices. Gone were stipulations that houses be outfitted with shutters and pitched roofs.

Perhaps most important, the program convincingly advocated a casual new lifestyle appropriate to California based on "indoor-outdoor" living. Paradoxically, it encouraged a return to nature, coupled with an optimistic stance toward

## HOUSES—MORE COOL THAN COZY—EMBRACED A NEW LIFESTYLE.

future increasingly defined by technology. And the houses, though more "cool" than cozy, looked as if they would be enjoyable places to live in, with terraces and barbecue grills. A new lifestyle was at hand.

Current interest in the *Arts & Architecture* program still runs high, as reflected in the recent publication of *Case Study Houses* (Taschen, 2002), a sumptuously produced book by Elizabeth A.T. Smith. Some argue that the program constituted more of a final flowering than a new beginning, resulting in "collectibles" for the cognoscenti rather than affordable habitation for the middle class. Yet it exerted a strong effect on such California merchant-builders as Joseph Eichler, who during the 1950s and '60s built more than 12,000 affordable, Modernist-inspired homes.

In 1949, only four years after Entenza launched the Case Study House program on the West Coast, the Museum of Modern Art in New York hired Marcel Breuer to design a model house in its sculpture garden. The most eye-catching feature of the one-story, cypress-clad house was its butterfly roof. Inside, clearly defined rooms had given way to more fluid spaces. Large expanses of glass enhanced the sense of openness and blurred distinctions between inside and out. Around 75,000 people flocked to see the house during its summer-long run, inspiring the *Woman's Home Companion* to cosponsor, with MoMA, a second house in the same location the following summer. Designed by Californian Gregory Ain,

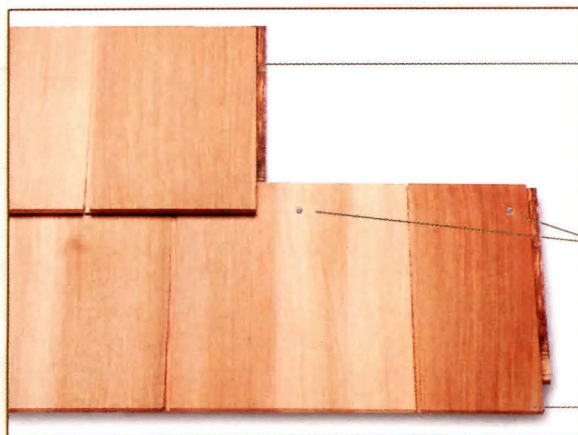


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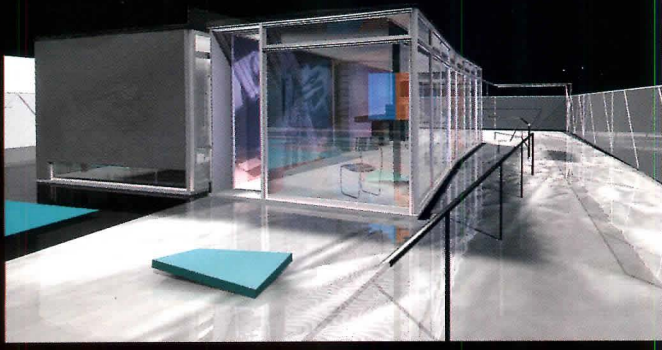


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Top to bottom: Michael Bell's Glass House @2° for Houston's Fifth Ward, 1998; Bentham Crowwel's prefab house, for an Amsterdam competition, 1984; Genesis Homes for NAHB's exposition in Las Vegas, 2003.

the flat-roofed house was more severe and less expensive than the Breuer house. But it was still less affordable than the stylistically conservative houses being built at the same time by William Levitt on former Long Island potato fields.

In 1953, the Guggenheim Museum mounted a retrospective exhibition of Frank Lloyd Wright's work. The exhibition was housed in a temporary pavilion designed by the architect on the site of the future museum, which began construction three years later. The pitched-roof pavilion abutted a Usonian House that Wright built as a feature of the exhibition. The two-story, two-bedroom house demonstrated concepts he had been developing since the 1930s. Ironically this example of Wright's vision, so rooted in a Jeffersonian model of agrarian democracy, sparkled all the more by virtue of its swanky, densely urban New York setting.

For the past three decades, interest in bringing innovative house design to the mass market has waned. Traditional houses have proliferated, but often as watered-down versions of earlier styles and lacking the ambition of the best Postmodern models. Even when competently designed, these houses break no new aesthetic ground. Developers and housing experts often suggest that cutting-edge design is unlikely to enter the mass market anytime soon. Economic factors conspire against developers taking significant risks with untested products.

Nevertheless, experimentation continues, albeit without the public attention it once drew. In 1998, Michael Bell, an architect then teaching at Rice University's School of Architecture, organized an exhibition, *16 Houses: Owning a House In the City*. Bell commissioned architects to design houses for Houston's Fifth Ward, within the confines of a federally funded voucher program focused on helping low-income families enter the housing market. Among the participating architects were Lindy Roy, Seth Howe, Stanley Saitowitz, and Carlos Jimenez, along with Bell. The entries were stylistically diverse, but included such boldly Modernist

## EXPERIMENTATION CONTINUES WITHOUT THE ATTENTION IT HAD.

schemes as Bell's Glass House @2°, built of glass, steel, and concrete. Under the Fifth Ward Community Redevelopment Corporation, a design by Morris Gutierrez Architects has been built and another, by Jimenez, is in the works.

Despite the great potential of efforts in Ward Five viewed exclusively as blueprints for extensive development, demonstration houses may be limited in their influence. Still, if new methods of building, such as computer-assisted milling and other prefabrication methods, make experimental house designs more realizable, as some architects predict, then demonstration houses could help introduce home buyers to a wide range of soon-to-be-available options.

And even if the new technologies do not exert a profound effect on the marketplace, a prototype house that successfully connected with the rich tradition of such effort in 20th-century America might help refocus attention on the idea that exploring the unknown is worthwhile, and indeed, a necessity for a culture that does not wish to stagnate. And that, in and of itself, might be a very good thing. ■

# Record Houses

# 2003

Dynamicism and collage emerged as leading motifs in 20th-century art—and continue to play vital and evolving roles in architecture today. As this year's selection of Record Houses reveals, architects are actively exploring issues of movement—be it kinetic building parts, in forms and compositions that imply motion or potential energy, or in structures that prompt journeys through and around them. And while collage appears in architecture influenced by Postmodernism and Deconstructivism and, one could argue, in the work of Frank Gehry, this motif currently finds expression most often through the visible layering of materials and textures. Sometimes the layering itself—with its potential for interstitial spaces and translucent boundaries—stimulates movement.

Such is the case with Sean Godsell's Peninsula House, in Australia: a glazed rectangular volume wrapped in a veil of thin wood battens. To enter the building, you must travel an elongated, semi-outdoor route, passing between the two skins. Like a wicker picnic hamper, this beach house can be unpacked, revealing its contents, when its outer hinged panels open. This layering is partly about privacy and partly about camouflage and attunement to the landscape.

Kinetic and visually light in other

ways, Shigeru Ban's Picture Window House, in Japan, also defers to its setting. Its moving parts are large glazed panels that slide aside, literally opening up two parallel elevations—turning the house into a huge picture window to the sea. The openings extend the interior onto decks, ushering the inhabitants (with lightweight furniture) farther outside.

At Thomas Phifer's Taghkanic House, in New York State, a sheer, movable layer forms a sail-like brise-soleil over glass. And at Valerio Dewalt Train's Doblin Residence, in Chicago, a facade of seemingly impenetrable corrugated steel becomes transformed, offering sculptural variations on a theme, as its mechanical bifold doors peel back to disclose a hidden garden.

To discover the size and character of the Doblin and Taghkanic houses, you must move through and around them. The same holds true for the other projects in this collection—including Jim Jennings's Visiting Artists House, Alvaro Siza's Quinta Santo Ovidio, Jarmund/Visgnaes's Red House, and Mack Scogin Merrill Elam's Mountain Guesthouse—remarkably dissimilar as they are in form, materials, and site. In our pages, we invite you to follow the trajectory of Jennings's enigmatic concrete walls as they carve into a California hillside, to penetrate Jarmund/Visgnaes's deceptively modest entry in the outskirts of Oslo, and to ascend the ramp into Scogin and Elam's Georgia treetop aerie. Please feel free to move about—to peer between layers and behind the moving parts. *Sarah Amelar*

Shigeru Ban  
Sean Godsell  
Thomas Phifer  
Jim Jennings  
Jarmund/Visgnaes  
Alvaro Siza Vieira  
Valerio Dewalt Train  
Mack Scogin Merrill Elam

BUILDING TYPES STUDY 820



Glass panels slide  
aside, opening up to  
sides of the main liv-  
ing area. A rail-less deck  
continuous with the  
interior floor plane,  
extends toward the



# Shigeru Ban revisits the idea of a framed view, with walls that literally slide away, opening his **PICTURE WINDOW HOUSE** to the sea

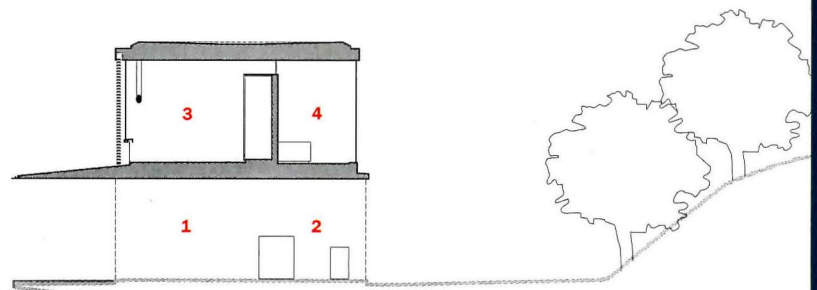
Naomi Pollock, AIA

Most houses have windows. But Picture Window House, Shigeru Ban's latest residential design, is a window. A remarkably simple but powerful scheme, the 2,950-square-foot structure consists of two glass membranes supported by metal wall panels at either end. While the uninterrupted views of wooded greenery to the north and Pacific Ocean to the south are spectacular, the complete opening of the ground floor's main room is sublime. When the room's sliding doors are pushed back, 66-foot-wide openings are unveiled on the house's long elevations, transforming the interior into a conduit for light, and sound, all flowing freely from forest to beachfront.

The main room—combining kitchen, living, and dining—opens directly onto a porch overlooking the water. A seamless extension of the interior floor, the porch is a rail-less platform, inspired by traditional *engawa* verandas (typical in Japanese houses and other indigenous buildings), which straddle the line between inside and out. Bookends, a double-height entry foyer with a bathroom and a two-story pottery studio with a study flank the main space. (The owner, a widower with grown children, who visit frequently, is an amateur musician.) Doubling as structural supports, the two end pieces carry the house's vertical load to the ground. They tie into the second floor's steel-and-concrete floor slab and trusslike web of columns, beams, and diagonal braces—designed like a bridge to span the lower level's unobstructed openings.

Upstairs, a corridor that doubles as a bathroom gives access to a large area and four bedrooms. Even in Japan, where the need for absolute privacy is not as great as in the West, this pairing is unusual. "I have two places that are only used occasionally and combined them into one," explains Ban. Designed to beat the morning rush, this space is outfitted with five sinks, two toilets, and a tub. Whereas only tempered glass curtains separate the functions here, a more conventional lavatory

Naomi Pollock, AIA, *RECORD's* special international correspondent, is based in Tokyo.



1. Living
2. Kitchen
3. Bedroom
4. Bath

downstairs offers substantial enclosure and privacy, except where its window opens the room to views of the sea.

At the outset of the project, the client provided a laundry list of programmatic pieces, including the number of bedrooms and other functional requirements, but left the rest up to Ban. What really got the architect's creative juices flowing was the land itself. "It is easier to know what to take advantage of when clients buy new land, instead of rebuilding on land they already own," observes Ban. Purchased expressly for this project, the property has an unimpeded ocean view—a rarity on the Izu Peninsula. Just 60 miles from Tokyo and known for its relatively gentle climate, Izu is dotted with first and second homes. But Picture Window House, its owner's full-time residence, sits atop a steep hill covered with natural foliage—placing it well beyond direct sight lines of even the closest neighbors.

Because of the site's relative isolation, privacy from outsiders was not an issue. Yet the building's permeability required various measures to keep it comfortable year-round. Screens to keep out insects were a must, though this filter compromises pure and total openness to light and air. Supplementing passive measures, heated floors and an electric heat pump provide climate control when outdoor temperatures soar or plummet. "Heat pumps are the most economical system in Japan," says Ban. "We don't like to heat or cool an entire house, only rooms where there are people—and even those not 24 hours a day."

The glass skin required a symphony of blinds, curtains, and a roof overhang to reduce summer heat gain while still letting in warming winter rays. Though interior-mounted devices sufficed on the north side, exterior Venetian blinds were necessary to modulate the sunlight entering the second-floor bedrooms. Elegant as well as practical, the adjustable aluminum slats mesh with the wall's overall composition and emphasize the facade's strong horizontal lines.

But the house's skin derives most of its uniqueness from a system of sliding doors: a horizontal strip of eight 8-foot-square transparent

**Project:** *Picture Window House*, Izu Peninsula, Japan  
**Architect:** Shigeru Ban Architects—Shigeru Ban, principal in charge;

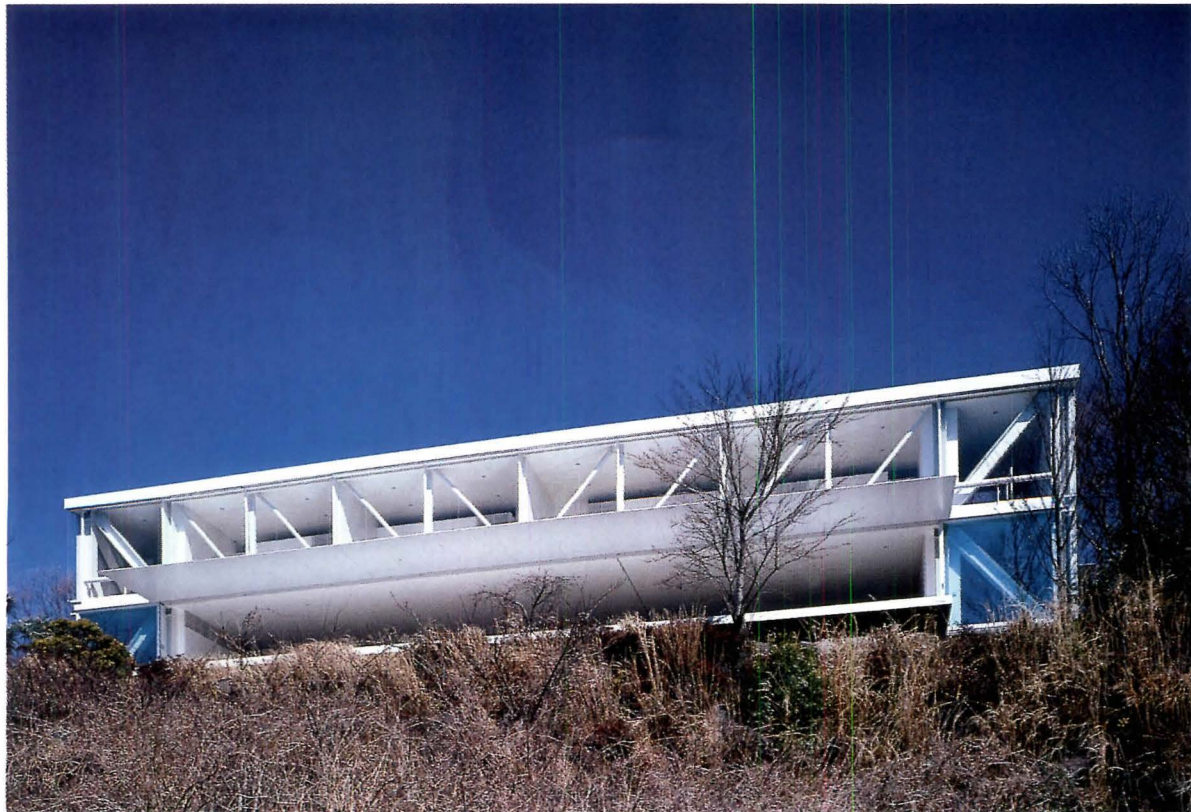
Nobutaka Hiraga, Jun Yashiki, project team  
**Engineer:** Hoshino Architect & Engineer (structural)  
**General contractor:** Daido Kogyo

The structure allows for a 66-foot clear span on the lower level. Upstairs, a string of

bathrooms, doubling as a corridor, runs along the periphery. A long mirror over the sinks reads almost as a window to the leafy views.

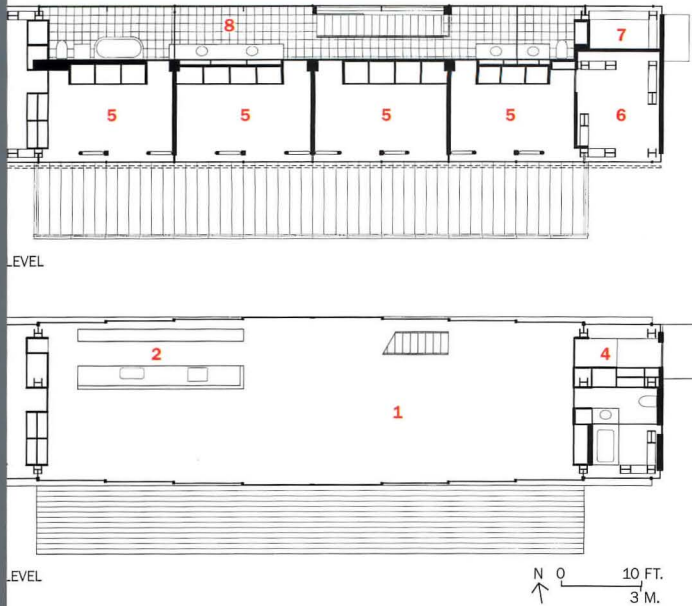






Like a bridge, the upper level's trusslike web of columns, beams, and diagonal braces and its steel-and-concrete floor slab all tie into the building's load-bearing ends. Exterior aluminum blinds may be deployed (above) or retracted (left). Inside, on the second floor, only glass partitions separate bathroom functions (opposite, bottom).





- Living/dining
- Kitchen
- Studio
- Bedroom
- Storage
- Open to below
- Bathrooms/corridor

Most of the furnishings, including paper-tube chairs (right), are Ban's designs.



es on each of the long elevations. Though many architects in Japan use sliding doors—*shoji*, translucent paper screens, and *fusuma*, their opaque screens, are deeply rooted in traditional Japanese architecture—Ban exalts them. “To me they are the most important device for realizing the main functions of a house: the indoor-outdoor connection and flexible space.”

Ban's first experiment with sliding doors emerged as a second-level event in his 1995 Paper House, an initial foray into his now well-established realm of paper-tube construction. Here, a thin layer of translucent panels, which can be stowed away, enclose the house, fusing interior and exterior and spotlighting the undulating paper-tube wall curving around the center of the building. In his Wall-less House and Square Grids House, both completed two years later, sliding doors take the main stage. Both houses consist of a platform, or “universal” floor, and movable panels that can divide or open the interior. While the inside of Wall-less House can be split into two parts, 9 Square Grids House, lined with channels, offers a broader range of possible divisions. And sliding doors are not the only means to Ban's desired ends. He wrapped Paper House with Curtain Walls in two-story-high fabric sheets that can be completely retracted. And he is now finishing a house enclosed in metal sliding doors that roll up, merging inside and out.

Ban's practice of incorporating unusual elements in unexpected places has both shock value and whimsy. Many of his devices and their effects on living spaces may seem extreme. But architectural thrill-seekers are not what motivates him. It is the desire to realize his ideas in their most pristine form. As in Ban's other work, Picture Window House, he values both the clarity of his thought and the purity of its expression. ■



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At the house's north end (this page and opposite), the glazed facade opens up, merging the main living space with a veranda.

# Sean Godsell transforms a seemingly simple box, wrapping his **PENINSULA HOUSE** in a veil of slender wood battens

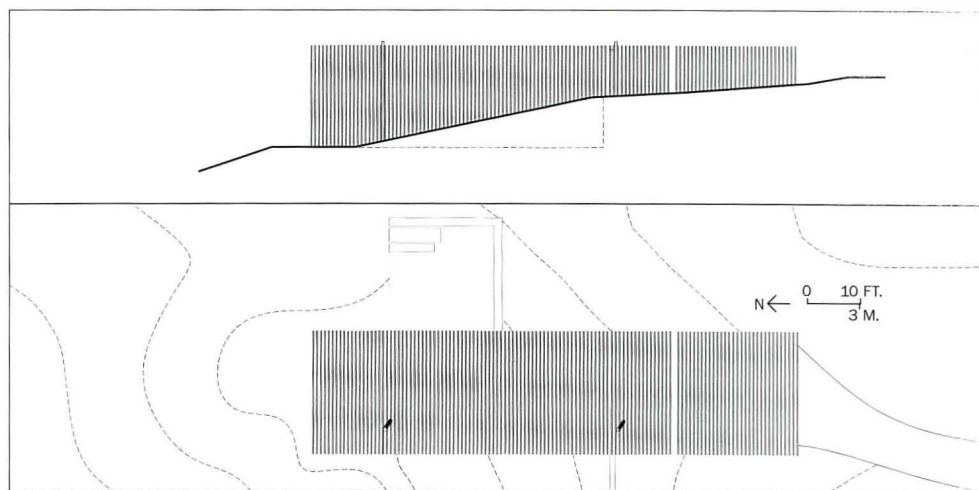
Sand Helsel

Cynics may say that Sean Godsell has created yet another immaculate box—and they would be right. In what might be termed the architect's own "study" program, he has generated a series of award-winning houses [see *RECORD*, October 10, page 208] that use apparently simple geometries to interrogate the landscape and offer alternatives to standard suburban dwellings (and styles). His latest version, the Peninsula House, on the Mornington Peninsula, 60 miles south of Melbourne, Australia, may appear the most extreme—with 5 miles of slender recycled jarrah wood battens relentlessly wrapping both long elevations and the roof—but it is also the most refined and rich with nuance.

The approach to the house follows a dirt road through densely vegetated dunes bordering a coastal reserve and cliffs rising from the sea. Largely screened from neighbors by mature trees, the 2,300-square-foot weekend house reveals itself gradually—at first, coming into view from its southern end, as a modest, one-story, seemingly freestanding carport, and only later exposing its full form and complexity. By partly burying this rectangular volume in a sloping hillside, Godsell charges an otherwise neutral box. He creates an immediate tension between the pure rectilinear form and the rugged topography in which he embeds it.

At close range, the apparently straightforward box takes on other qualities of subtlety. Beneath the screen of wood battens—which is open at the north and south ends—the architect encloses the interior in a glass-and-wood skin extending across most of the ceiling. In earlier houses, Godsell used a double skin as the primary shield against the elements, but here he explores the relationship between the layers. The jarrah wood screen and glass enclosure allow for interstitial spaces that belie the simplicity of an apparently three-room brief: kitchen/dining/living, library, and bedroom.

Sand Helsel is an associate professor of architecture at RMIT University, in Melbourne, and the Ruth Carter Stevenson Visiting Fellow at The University of Texas at Austin.



On the east elevation, Godsell pulls the two skins apart, parallel to one another, and inserts between them an entrance corridor that is screened overhead but open to the elements, as it steps down from the slope's high point to the building's north end. This procession, following the contours of the land, plays against the roofline's constant horizontality, or datum.

This route simultaneously reveals and conceals parts of the interior and the landscape. Only at the glazed entry to the double-height living area does the full volume of the building appear. To reach the interior, the length of the house must be traversed. Such highly orchestrated circulation is a Godsell trademark—originally employed in Godsell House I to make a tiny building appear grander—producing an attenuated sense of arrival (and delight). The experience of the journey and the unfurling narrative of occupancy counter any rigidity implied in the geometry.

By partially submerging the house in the land along its north-south axis, Godsell immediately differentiates two types of space. At the structure's southern end, excavation into the hill provides for a sheltered retreat, while at the opposite end, a double-height area celebrates brilliant northern light (the equivalent of southern light in the northern hemisphere) and views toward sea and sky. In this main space, roof slats over glass mark the sun's passage, recording the ephemeral against the rectilinear.

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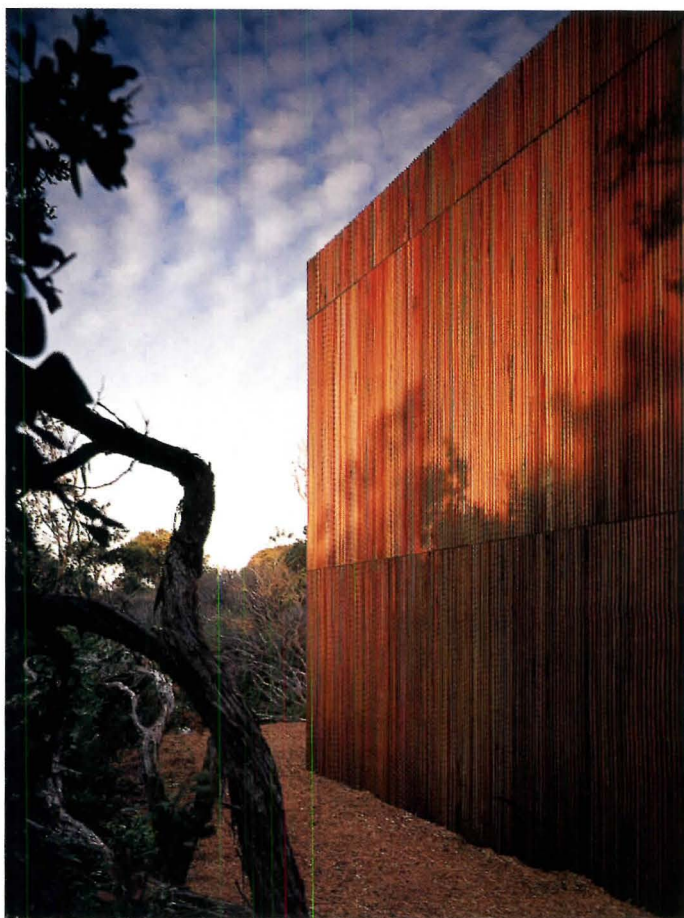
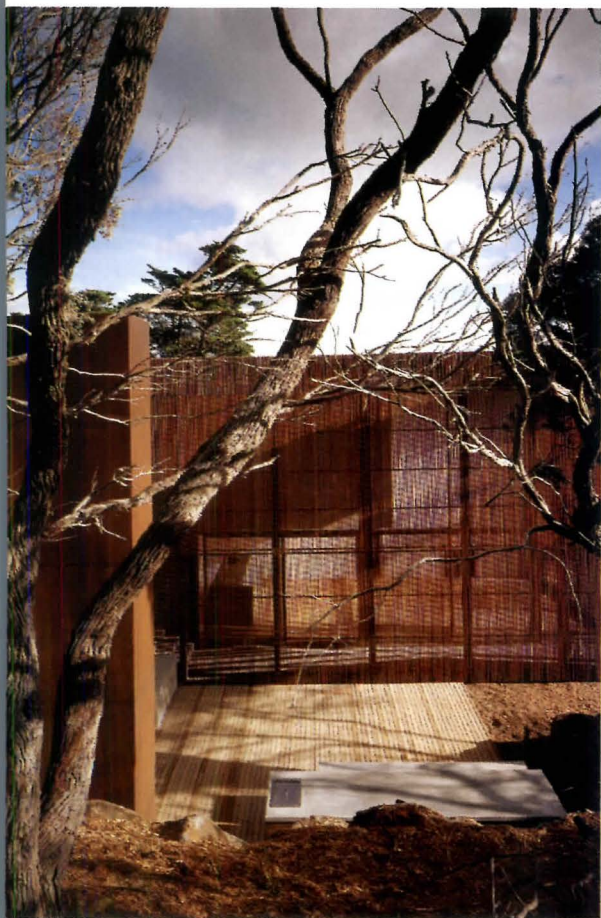
**Project:** Peninsula House, Victoria, Australia

**Architects:** Sean Godsell Architects—Sean Godsell, principal;

Hayley Franklin

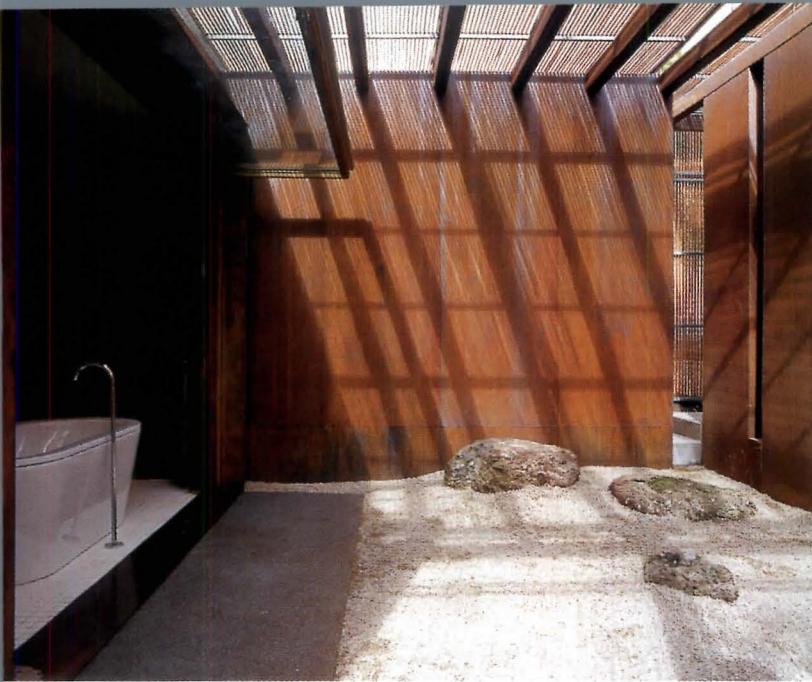
**Engineer:** Felicetti

**General contractor:** Kane Construction



The wood screen metamorphoses, changing visually with light and vantage point (this spread), sometimes appearing as a single opaque material (this page, bottom right) and other times as a sheer veil (bottom left and opposite). A slot separates the carport from the main house (top left). Hydraulically operated panels open the outer skin (top right).

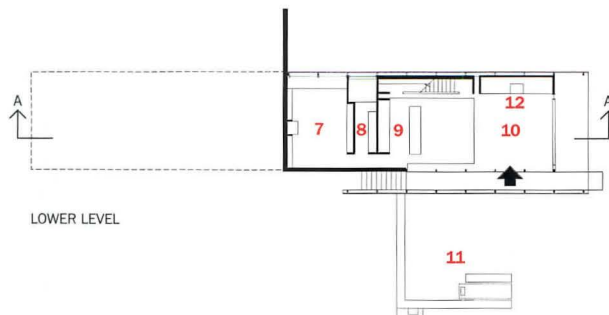
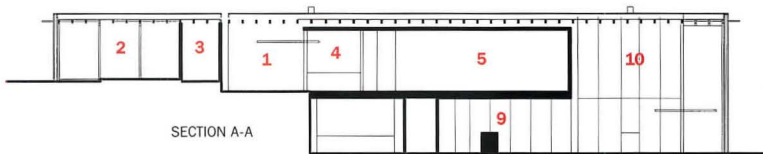




1. Courtyard
2. Carport
3. Storage
4. Bath
5. Bedroom
6. Open to below

7. Library
8. Laundry/bath
9. Kitchen
10. Living
11. Barbecue patio
12. Fireplace

**Operable jarrah wood panels open a bathroom onto a shaded courtyard (above), or the entry corridor (opposite) onto the kitchen (right).**



Interior moves further modulate the seemingly simple volume. Within the double-height living area, the architect cantilevers a cocoon-like upper-level bedroom, creating a retreat free of attachment to exterior walls or roof. The insertion of a kitchen and dining area beneath the cantilever produces a relatively compressed space, in bold contrast to the expansiveness and intense illumination of the living area beside the solid block of kitchen cabinets and appliances and a laundry room that sequester a study, located to the south, into the hollow of the la-

By opening or closing panels within the continuous jarrah screen, the owners, a couple, can unpack the house upon arrival and pack it when they depart—an apt metaphor for a beach house, as well as protection against winter storms and harsh summer sun. Top hinged, these panels are controlled hydraulically. Throughout the house, Godsell subtly and masterfully transforms the roles of his wood and glass skins. Outside the living room, for example, the jarrah sheath extends beyond the glass box, shading a veranda to the north. Meanwhile, the omission of roof glazing between the carport and bathroom creates an internal, open-air court, a rock garden bathed in filtered light. Here, a counterweighted glass wall can open to extend the bathroom into this tranquil space. And between the kitchen entrance corridor, and exterior, wood panels can lift, making seamless transitions and providing a canopy over a barbecue deck or outdoor room.

Animating the interior and exterior with filtered light, the ten screens tend to metamorphose with changing light and vantage point. From an oblique angle, they may appear as a single-textured, opaque plane; but, when viewed more directly, they become veil-like. The slender recycled wood members, hand-threaded onto steel rods and separate spacers, will warp and weather with exposure to sun and rain.

The increasingly irregular surface of this conceptually pure form is a paradigm of Godsell's practice to date. As a Modernist scholar and experienced builder with a deep concern for regional and global issues, he does not fall back on the vernacular, but creates work with both local and international resonance. He often threatens that this will be his "last house," but the Peninsula is not just another house. It is a significant investigation within the larger body of his research. ■

**Sources**  
**Glazing:** Pilkington  
**Hardware:** Lockwood  
**Paints and stains:** Delux

**www** For more information on the people and products involved in this project, go to Projects at [www.architecturalrecord.com](http://www.architecturalrecord.com)



The walkway, or corridor, from the carport to the main living space follows the contours of the land—and remains open, from above, to the elements.

Thomas **Phifer** creates a dematerialized pavilion  
on a plinth for his **TAGHKANIC HOUSE**  
in the serenity of New York's Hudson Valley





By Suzanne Stephens

**F**rom the main road, there is no hint that a house rises beyond the vista of trees, fields, and hills. As one approaches by the long, winding drive, the pavilion's astringently delineated glass-and-steel-frame structure appears so evanescent that it looks like the abstracted lineaments of a Modern villa hovering like a ghost over the terrain. From this perspective, the weekend house seems to have only one room—albeit a sizable, 30-by-60-foot one with a 15-foot-high ceiling. But there's much more to it. Gradually, a lower level comes into view, where glass-walled rooms jut out of the ramparts of the hill on which the pavilion sits.

This underground substructure, about four times the size of the pavilion, contains six bedrooms, a study, media room, kitchen and breakfast room, not to mention a wine cellar and a refrigerated cheese room. The owner, a very private person, wanted a place where he and his family could spend weekends and entertain friends amid the rolling hills and woods of the Hudson Valley, without ever having to lay eyes on another house. He also did not want his house to obtrude on the landscape. Not even the glass, wood, and steel guesthouse, a delicately diminutive complement to the main building, is easily visible.

In taking on the commission, Thomas Phifer, a New York architect, envisioned a dematerialized pavilion on a plinth. The rectilinear,



tautly planar structure seems to perch lightly on the landscape in the manner of the early Modernist villas of Le Corbusier and Mies van der Rohe, or the late Modernist houses of Richard Meier. At the same time, Phifer's embedding of the lower level of the house in a grassy knoll recalls Renaissance country villas atop strongly demarcated hillside terraces.

Phifer's exploration of these particular themes makes a strong case for architecture reflecting biography. The architect, who started his own office in 1997, was a design partner in the firm of Richard Meier and Partners from 1986 to 1996. And in 1996, when Phifer went off to Rome as a fellow of the American Academy, the young Modernist was soon fascinated by the Renaissance approach to placing villas in the landscape.

Working here with landscape designer Dan Kiley, Phifer carved out a bank of bedrooms along the western side of the slope, with the kitchen, indoor pool, and service areas gouged out of the opposite side. Kiley knowingly reinforced the architectonic qualities of the house through the manicured lawn, rectilinear pavers, and clipped Linden trees

**Project:** *Taghkanic House, Hudson Valley, New York*  
**Architect:** *Thomas Phifer and Partners—Thomas Phifer, AIA, principal; Greg Reaves, project architect*

**Interior designer:** *Muriel Brandolini*  
**Engineers:** *Gilsanz, Murray, Steficek (structural); Altieri Sebor Weiber (m/e/p)*  
**Landscape architect:** *Dan Kiley*

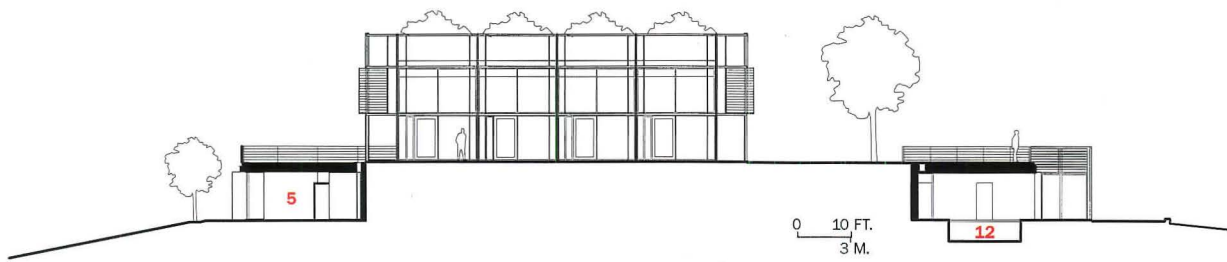
A glass-and-steel pavilion containing the living and dining spaces sits serenely atop a grassy plinth, while the bedrooms and kitchen are underneath.

PHOTOGRAPHY: © SCOTT FRANCES

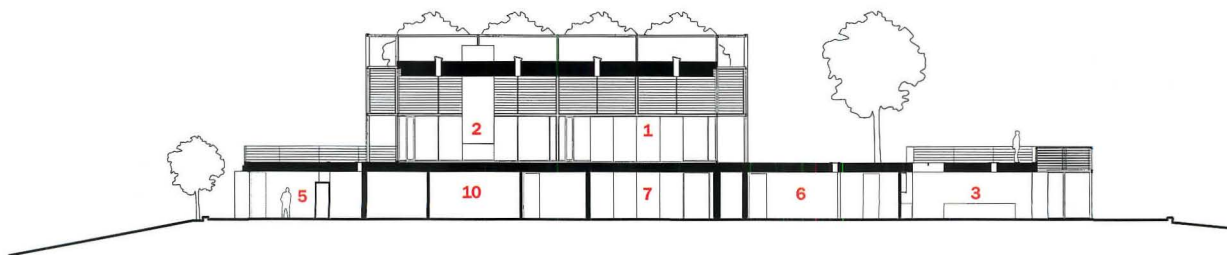


The breakfast room on the lower level of the house faces east (this page). Bedrooms on the west side open onto steel-edged, lawn-covered terraces (opposite, top), while the south side looks out to a grassy slope (opposite, bottom).



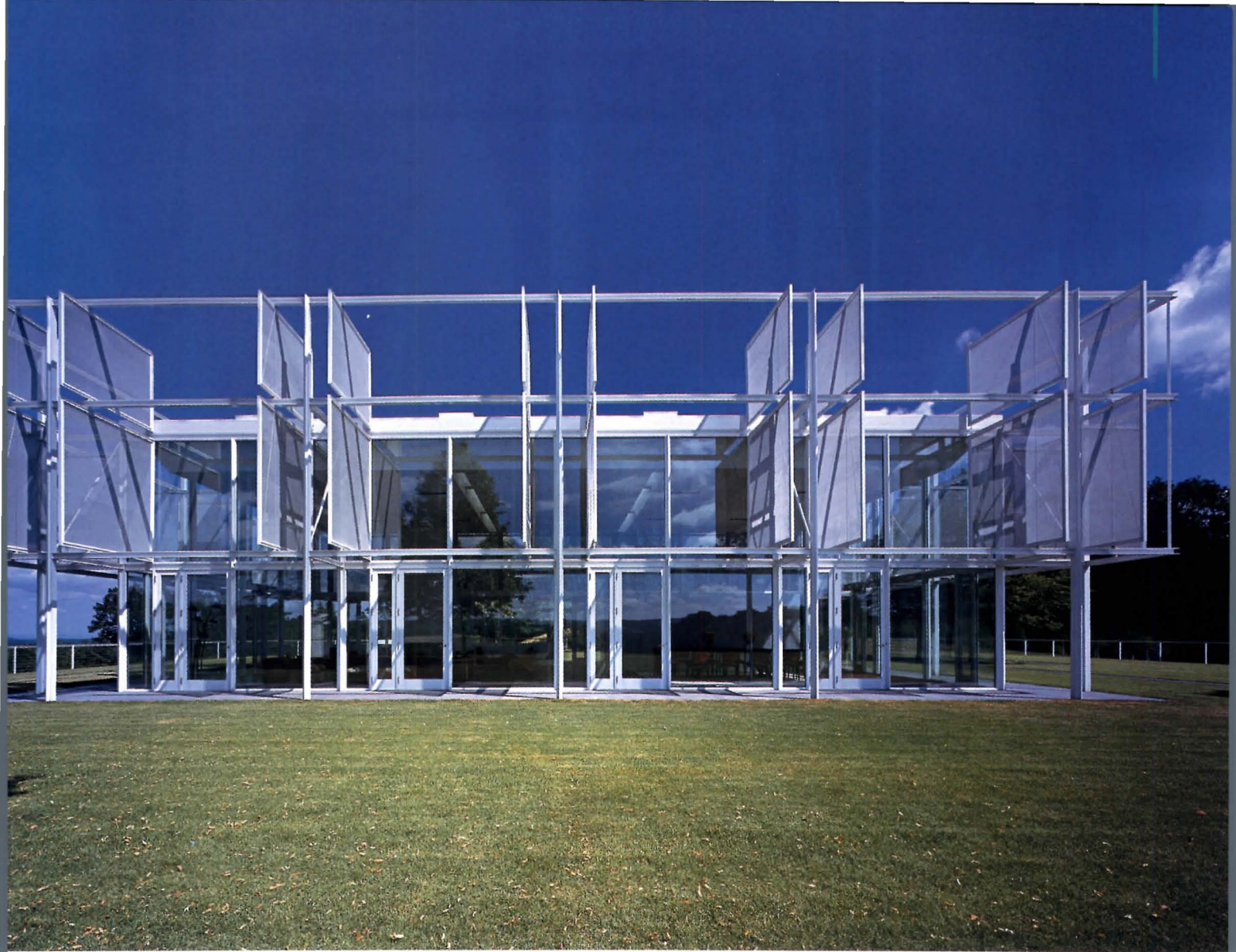


SECTION A-A



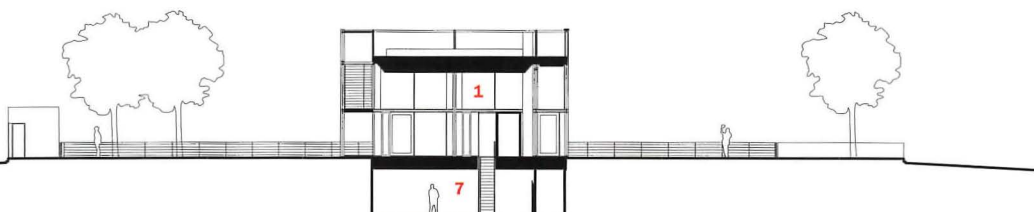
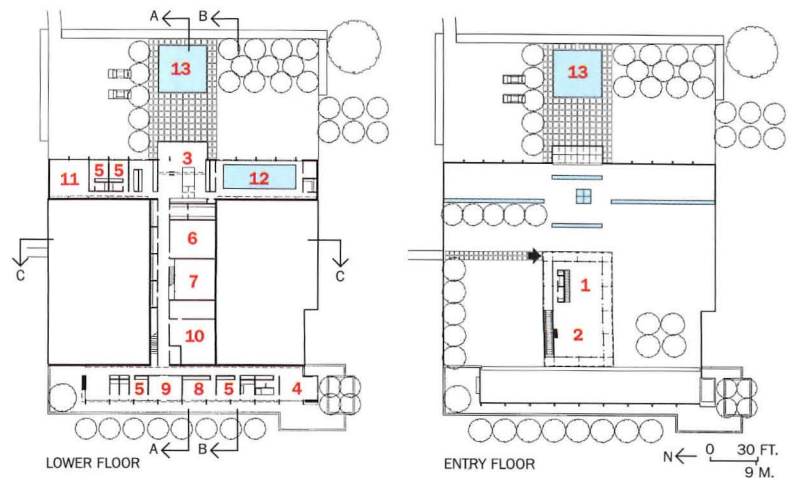
SECTION B-B

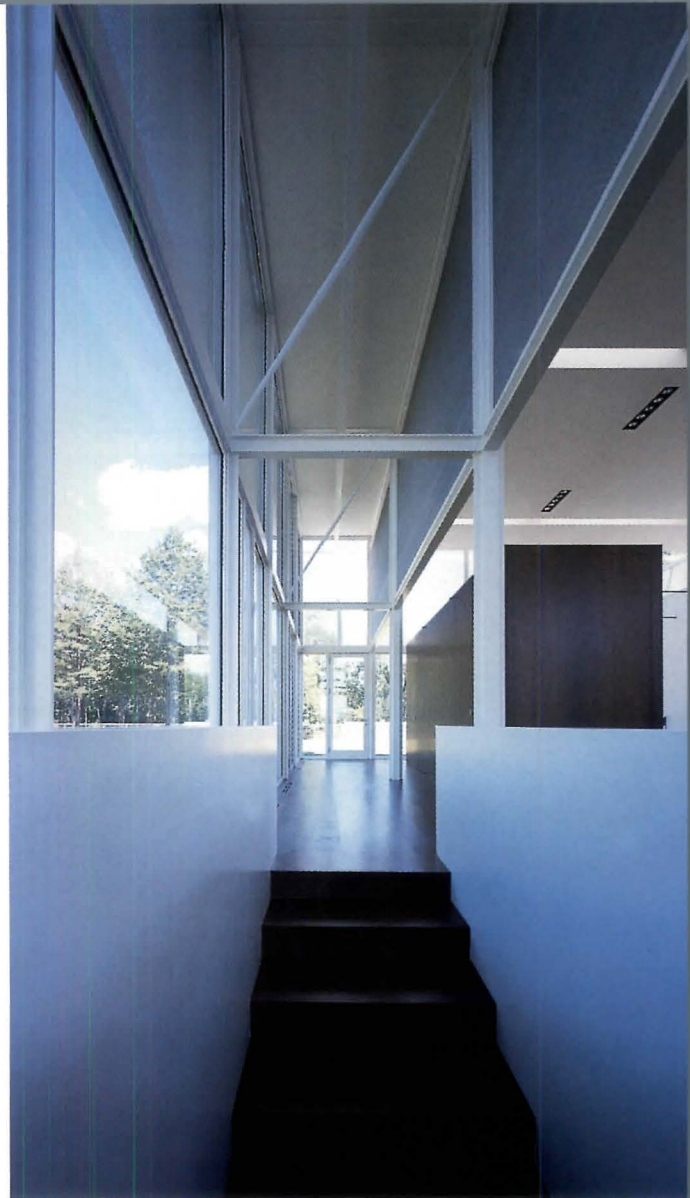
The white painted-steel framing supports aluminum-coil-mesh exterior shades, while the glass in the window wall is set within custom wood frames. The grass on the plinth looks like an outdoor carpet. To keep it green, a corrugated liner beneath the lawn contains cups to catch and store rainwater for delayed irrigation.



Dining area  
 Living area  
 Kitchen/breakfast  
 room  
 Master bedroom  
 Bedroom  
 Exercise

- 7. Media room
- 8. Playroom
- 9. Study
- 10. Mechanical
- 11. Garage
- 12. Swimming pool
- 13. Reflecting pool





on the podium, as well as the bosque of Sargent crab apple trees beside the geometrically defined terrace off the lower level's breakfast room.

The most startling thing about the spacious subterranean domain is that one doesn't have a sense of being below ground. Each leg of the H-shaped plan is edged with floor-to-ceiling glass window walls, opening up the interior to views and light. Long slots of skylights penetrate the grassy roof, bringing additional illumination indoors. The slots also demarcate the location of the east and west retaining walls of the concrete structure, "where architecture meets earth," says Phifer.

Connecting one side of the house to another (the two legs of the H) is an underground transverse hall 75 feet long, a masterly volumetric exercise of planar surfaces, where the poured-in-place-concrete structure has been plastered and, in some places, sheathed in sand-colored anigré wood. Although this hall lacks skylights, it receives ample illumination from the window walls at either end and is pierced at midpoint by a stair with glass treads and risers leading to the light-filled pavilion above.

In the pavilion, the view dramatically expands in all directions. "You can detect the change of seasons just by the atmosphere of the light coming into the house," Phifer points out. To reduce glare, he designed a series of aluminum-mesh screens that are manually operated on the pavilion's east, south, and west faces, and fixed on the north elevation. As further protection from the sun, Phifer mounted an upper register of screens directly above the first level along the south. When the shades are closed, the

pavilion reads as a serenely articulated box, with a concatenation recalling the linear rhythms of an Italian palazzo. When the screens are rotated, they establish a peculiar dynamism—like square sails on a landlocked ship. "Natural light is cut 70 percent when the shades are shut," Phifer claims. "And since the windows and skylights in the ceiling of the pavilion are operable, the room gets a lot of natural ventilation during hot days."

In order not to obstruct the views, the interior designer, Michael Brandolini, arranged low-slung geometric seating around the living room fireplace. Browns, reds, and oranges dominate in both living and dining areas, with a few pieces, such as sculptural rocking chairs designed by Eero Saarinen, added for pizzazz. "The space was beautiful, but felt cold," says Brandolini. "I wanted to make it warm and livable—not austere."

With its earth tones inside and carefully tilled landscape outside, the house represents a thoughtful effort to integrate the themes of nature and culture, while keeping the two distinct. At the same time, the house authoritatively melds two architectural vocabularies, where Classical principles of proportion, scale, and rhythm carefully control Modernist materials such as concrete, lightweight steel, and glass. ■

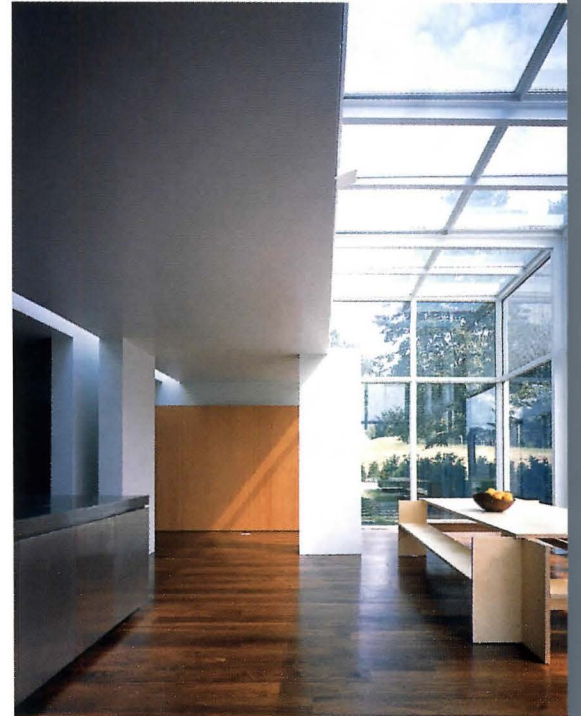
#### Sources

**Garden roof system:** *American Hydrotech*  
**Shades:** *Cascade Coil Drapery*

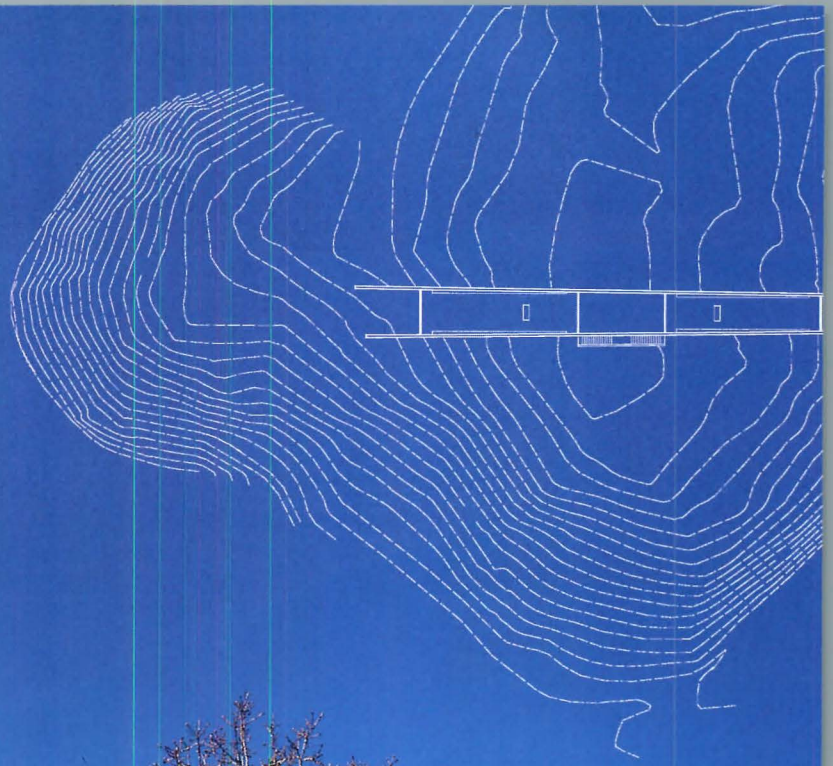
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ors enter the living  
 dining pavilion  
 a small entrance  
 ed in the north-  
 corner (opposite,  
 and right). One of  
 narrow stairs leads  
 e level below. From  
 ving room (above)  
 sees the tower of  
 ower-level master  
 oom (near right).  
 e opposite side  
 e lower level, a  
 -ceilinged break-  
 room adjoins the  
 en and overlooks  
 ecting pool and  
 ce (far right).

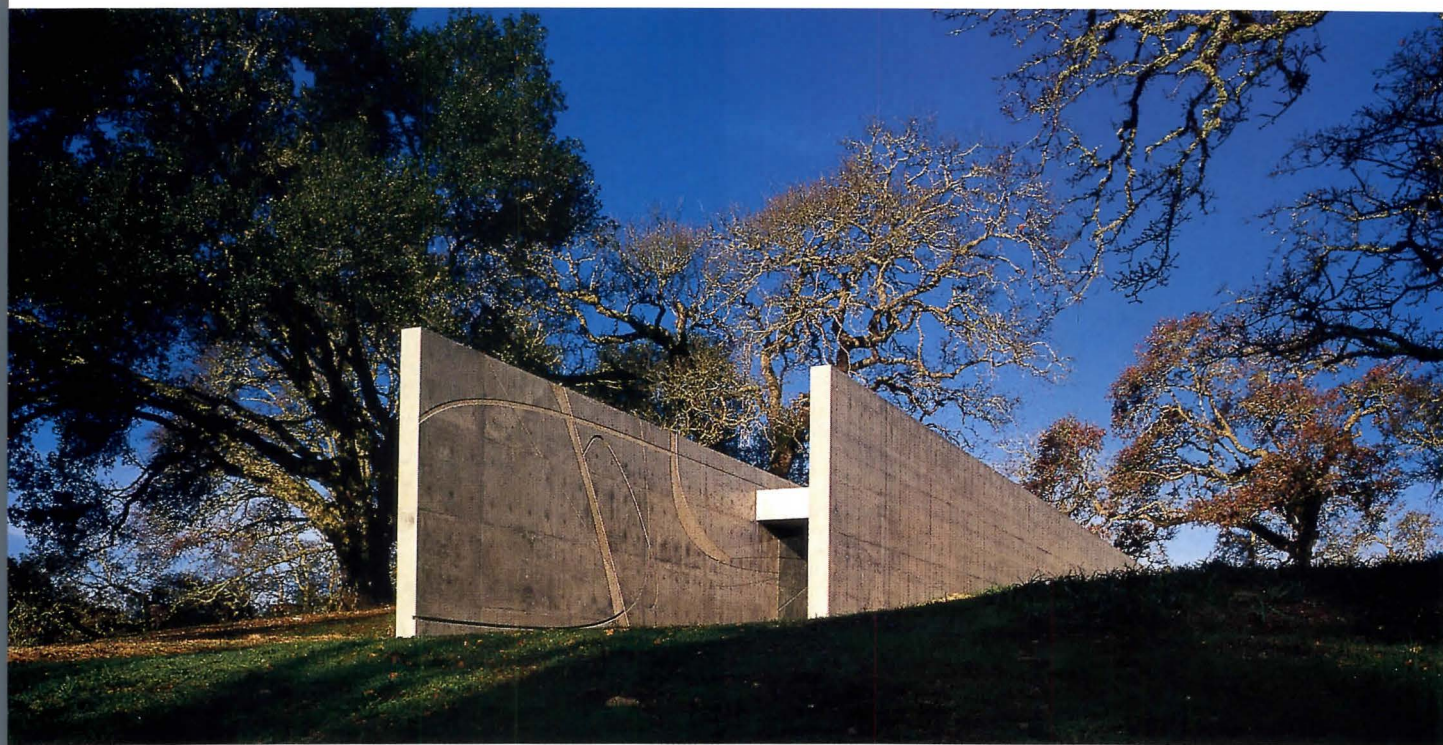


The house slices through a hill (this page and opposite, top). To approach the entry doors, the structure presents guests with access to paired concrete stairs (opposite, bottom) leading down to a central courtyard.





# Jim Jennings carves into a California hillside, setting his **VISITING ARTISTS HOUSE** in a landscape rich with sculpture



## Clifford A. Pearson

Steve Oliver calls it a ranch, but it's art he's raising—not cattle. A building contractor who sits on the board of trustees of the San Francisco Museum of Modern Art, Oliver has animated the grounds of his Sonoma County weekend estate with sculptures by Richard Serra, Robert Stackhouse, Bruce Nauman, Ellen Driscoll, and others. Instead of merely collecting pieces, he commissions them specifically for the ranch, and they tend to be big and architectonic. The Serra, for example, consists of six pairs of forged steel “dice” that tumble down the hillside and through a meadow, while the Nauman is a ½-mile-long concrete stair that climbs another hill. So it would be easy to view the hillside guesthouse designed by Jim Jennings for the property as another sculpture, a piece of art where people can stay for short periods.

At first glance, the house confirms that notion. Like the Serra and Nauman, it engages the land in a visually intriguing way: Two poured-in-place concrete walls slice through a gentle hill and carve out strictly defined spaces for indoor and outdoor living. Instead of running parallel,



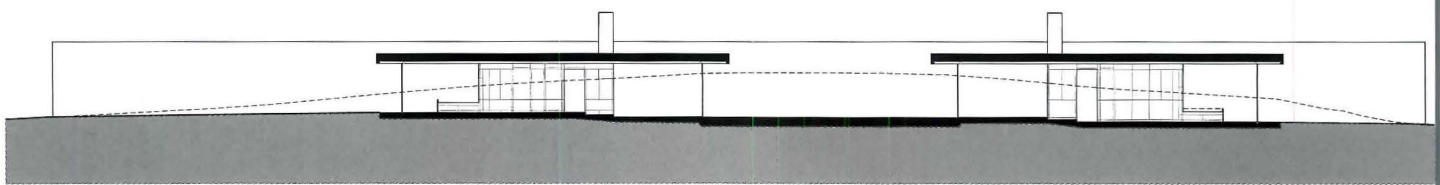
the walls creep slowly together, creating a slightly forced perspective that directs one's view to Stackhouse's 99-foot-long surfboardlike sculpture. How could an architect do anything here but make a statement that says *ART*?

Jennings, though, created a residence, not a live-in sculpture. Designed for visiting artists to occupy while they work on commissions for the ranch, the 1,700-square-foot house provides two small suites, each with its own living room, kitchenette, bath, bedroom, and private terrace. A shared courtyard between the two units separates and connects them.

The simple plan generates a rich set of spatial experiences, beginning with a modest yet mysterious entry sequence that takes visitors down a pair of narrow outdoor stairs to a gap in one of the concrete walls. From here, you enter the central courtyard and see, for the first time, that the inside surfaces of the 14-inch-thick concrete retaining walls are incised with great curving lines extending from one end of the house to the other. The

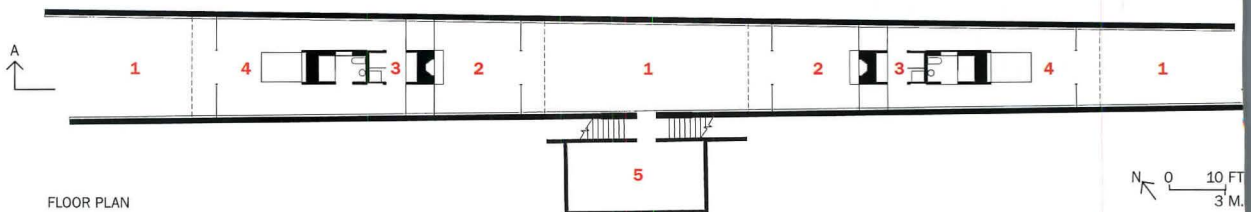
**Project:** *Visiting Artists House, Sonoma County, California*  
**Architect:** *Jim Jennings Architecture—Jim Jennings, principal; Michael Lin, Cheri Fraser, Troy Burdette, Paul Burgin, Les Taylor,*

*May Fung, project team*  
**Consulting architect:** *Tim Perks*  
**Consultants:** *Gary Hutton Design (furniture); Andrea Cochran (landscape); Dan Dodt (lighting)*  
**General contractor:** *Oliver & Co.*



SECTION A-A

- 1. Courtyard
- 2. Living
- 3. Kitchenette
- 4. Bedroom
- 5. Mechanical

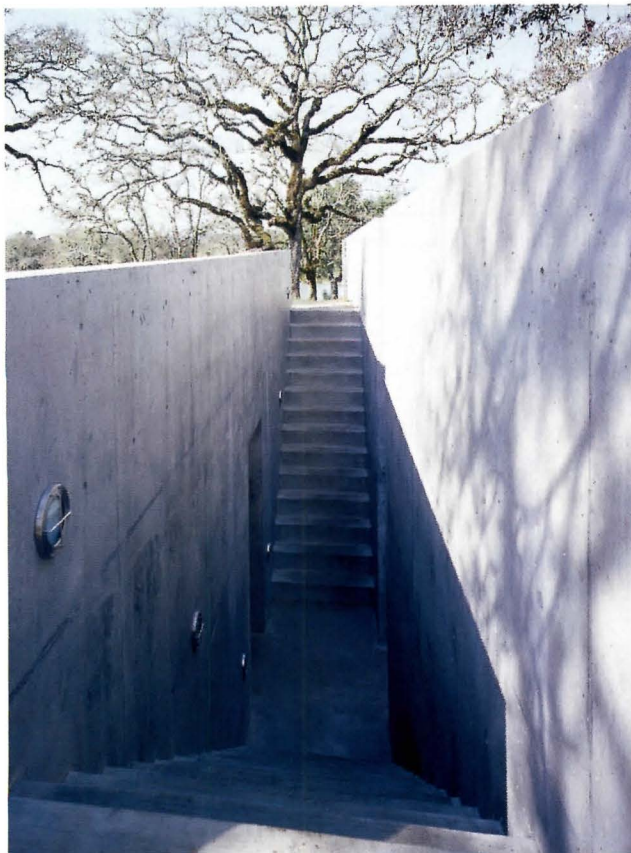


FLOOR PLAN

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3 M



The living pavilion (top left) is a simple structure of glass main walls, steel beams, and a flat roof decking, set between poured-in-place concrete walls. To accommodate David Rowland's artwork, the designers used a fine aggregate in the concrete and added a textured surface without reinforcing bars. The concrete stairs (near top right) lead to a central courtyard (opposite). The pavilion also features private terraces (top left and far right).



The bedroom (below), kitchenette (bottom), and living room (right) stand free of the concrete walls. Mechanical shades on the glass

end walls and aluminum screens (not shown) that can fold out from the service core, provide privacy when desired.



cuts—3,000 in all—are the work of David Rabinowitch, a New York City artist who used the 207- and 209-foot-long walls as his canvas.

Between the concrete walls, a pair of remarkably light glass-and-steel pavilions seem to float in their own world yet remain connected to the rest of the ranch by views of a pond to the west and the Stackhouse sculpture to the east. Narrow skylights, just inside the retaining walls, wash Rabinowitch's looping, geometric art in daylight and separate the house's key elements—concrete walls, wood-slat ceilings, and maple floors—from each other. Aluminum-clad enclosures for the kitchenette and bath define a 6-foot-wide swath down the center of each pavilion—reinforcing the impression of elements slipping past, but not quite touching, one another.

"The house has a pristine clarity to it," says Oliver, who enjoys the back and forth of the creative process and has worked with Jennings on a number of projects, including a house in San Francisco [RECORD, April 1998, page 102]. The architect designed the guesthouse more than a decade ago, before Oliver thought of bringing a sculptor into the project. Then the plans sat on the back burner for several years. When the job got going again, Oliver realized that the clarity he so admired in Jennings's design could support the energetic slicing and carving of Rabinowitch's work. So architect and artist met and found areas of common interest.

"The house is all about positioning—in the land and toward the views of the ranch," explains Jennings. "David responded to that immediately and to the perception of space and perspective that it engenders," he

adds. Indeed, Rabinowitch's expansive lines, which run indoors and challenge the visitor's sense of scale and place but always connect the home to the natural setting. Rabinowitch, whose work often involves cuts in plaster, appreciated the challenge of carving in concrete and felt drawn to Jennings's muscular plan. "It was never my intent to ornament his space but to contribute to "a totality," says the artist. While Jennings's design remained essentially intact throughout its 10-year gestation, the architect made a few changes in response to the art—adding the skylights 4 inches of depth to the concrete walls for the carvings.

The house requires a certain discipline from guests—it isn't the sort of place where you can just leave your clothes lying about—but it's a residential version of a Donald Judd box either. Its outdoor rooms are seductive areas to enjoy a meal. And at night, when illumination from floor optic lights at the base of the retaining walls spills into the landscape, you can imagine yourself staying here awhile. To be so lucky, though, you'd need to get Steve Oliver to commission a sculpture from you. ■

#### Sources

**Steel-and-glass doors:** Hope's

**Wood ceilings:** Rulon

**Ceramic mosaic tile:** Dal-Tile

**Pendant light:** Steng Licht

**Refrigerator:** Sub-Zero

**Stove:** Gaggenau

**Motorized shades:** Mechoshade

**WWW** For more information on the people and products involved in this project, go to Projects at [www.architecturalrecord.com](http://www.architecturalrecord.com)



Rabinowitch's mathematically driven artwork took four stone carvers eight months to cut. The walls were then honed and sealed.

# Jarmund/Vignæs

transcends the world of suburbia, perching its **RED HOUSE** on a wooded slope

By Peter MacKeith

PROJECTS

**M**onolithic in form and color, the Red House rises dramatically above a steeply sloped forest hollow in Norway's Lysaker River Valley. Yet, as wild as this topography may appear, the house is barely 6 kilometers west of the city center of Oslo (metropolitan population nearly one million), just within the periphery of the city's Røa suburb. The setting is actually a post-World War II development of closely spaced single-family houses with pitched roofs and colorfully stained wood siding.

Like many residential designs by Oslo-based architects Jarmund/Vignæs, the 1,830-square-foot Red House emerged productively from the difficulties of its site: a narrow quarter-acre parcel that extends over the edge where residential allotments meet the river's sloping east bank. Though existing homes stand nearby, pine and fir trees shield the structure's northern and western exposures, dominating its views—and giving the illusion of a place secluded in the forest.

One of the nearest houses, a gabled, cream-colored suburban dwelling, was the childhood home of the Red House's owner, who inherited part of his parents' rear garden with the sale and subdivision of the property. The decision to build on a parcel so potentially infused with memory was utterly pragmatic, but the owner sought out an architect who could address both neighborhood and landscape. Jarmund/Vignæs clearly respected the existing order, but looked to nature for many of its cues.

"The relationship [between architecture and nature] is a main theme of our practice," explains partner Einar Jarmund. The firm has been fortunate to have rather extraordinary sites for most of its commissions [see RECORD, July 2002, page 178]. And they try, he says, "to explore each setting for each different house through the plastic sculpting of volumes."

Although such "plastic sculpting" is not fully apparent on the narrow approach from the street to the Red House's diminutive front porch and door, it is immediately clear that the building's thin rectangular volume stands perpendicular to the river below it, accentuating the fall of the slope. This siting—along with a massing that initially reveals only one

*Peter MacKeith, associate dean of the School of Architecture at Washington University in St. Louis, writes frequently on Nordic architecture.*

**Project:** *The Red House, Røa, Norway*

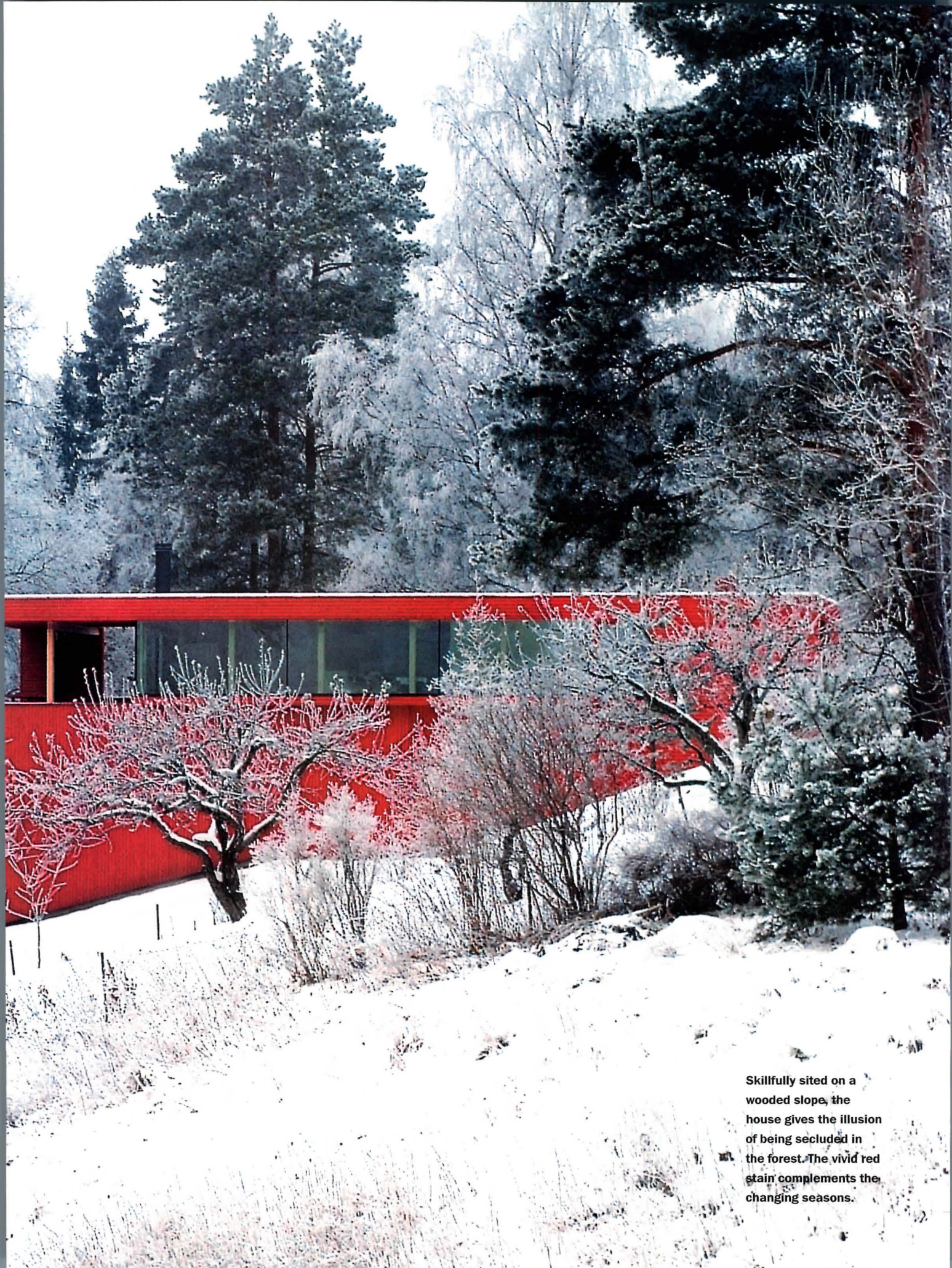
**Architect:** *Jarmund/Vignæs—Einar Jarmund, Håkon Vignæs, partners in*

*charge; Roar Lund-Johnsen, project architect*

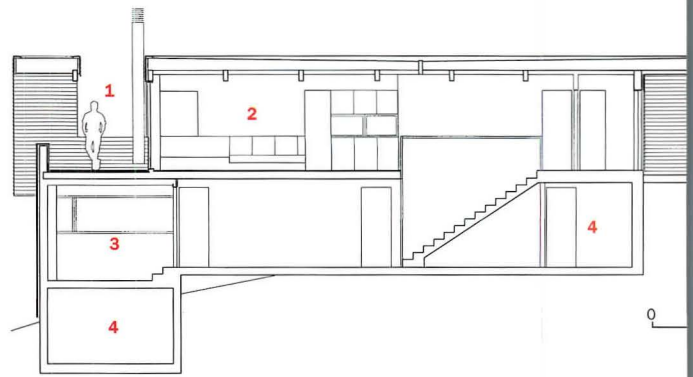
**Engineer:** *Walter Jacobsen*

**General contractor:** *Gunnar Johansson*





Skillfully sited on a wooded slope, the house gives the illusion of being secluded in the forest. The vivid red stain complements the changing seasons.



SECTION A-A

1. Terrace
2. Kitchen
3. Playroom
4. Storage

of the structure's two stories—helps make the house a good neighbor by minimizing its street presence among existing homes. These conditions also intensify the unfolding drama of inhabiting such terrain.

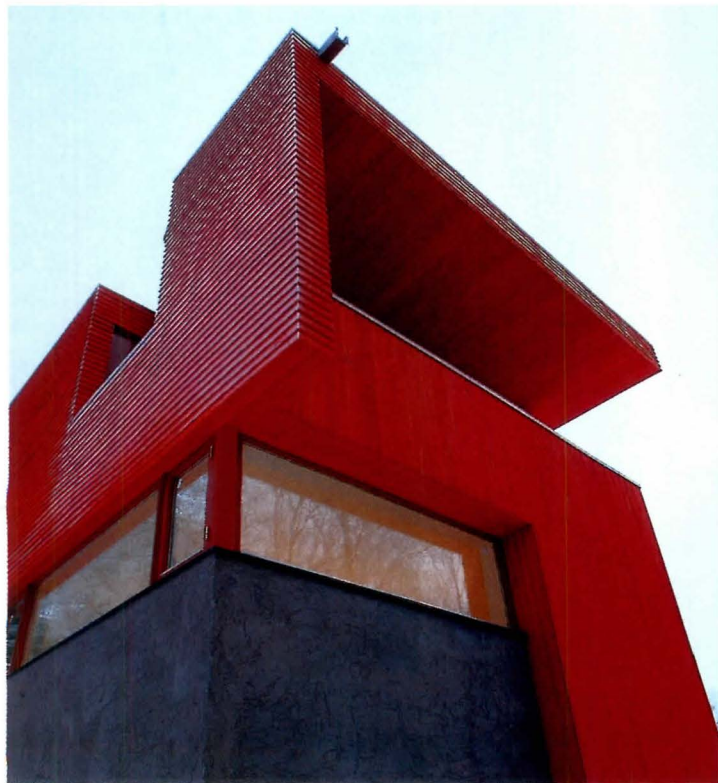
Indoors and out, sculptural qualities emerge through the juxtaposition and nesting of L-shaped elements in plan, section, and elevation—in a range of scales, materials, and textures. The resulting effect is a continuous sequence of surprises. Against a tight interplay of interior forms, the external workings of the house—a strong, singularly vibrant volume—conveys its designers' confident energy.

Planned with simplicity and economy for a family of five, the Red House is essentially organized "upside down"—with the parents' bedrooms and the kitchen, dining, and living areas on the entry floor, and the three bedrooms, plus a family room, on the lower level. "We conceived the house," says Håkon Vignæs, "as a covered balcony, or terrace, filled with light—connected to the ground and to the views out through the terrace."

While orientation and natural illumination are primary considerations in any good architecture, they characterize this project through the variety and precision of its fenestration, reinforcing relationships between inside and out. Beyond the entry vestibule, views open to the south and west through butt-joined glass panels and wall-size sliding glass doors—comprising a veritable light box—leading out to a covered terrace. Downstairs, north-facing strip windows at desktop height border the children's bedroom study areas, while windows facing north and west wrap the family room's exposed outer corner.

In the main living area, seven laminated wood beams extend along the light box and onto the terrace, setting the rhythm. Although the construction quality is high, interior finishes and details remain minimal: simple built-in cabinetry, white paint, and ash floors. The calm restraint and ample daylight impart a much-appreciated sense of quietude (in counterpoint to the three young boys downstairs), of openness, and intimacy.

Of course, any discussion of the Red House leads inevitably to its vivid color. Make no mistake: This house is red, its stained wood vibrantly so. Anything beyond white or a material's natural hues is rare in Jarmund/Vignæs's residential work. But here, the architects cite the temperaments of the clients as inspiration. Of course, this claim may be a herring of the same hue: Red is actually part of the owner's name and of the location (in the Røa, or red, suburb), but to say more would be





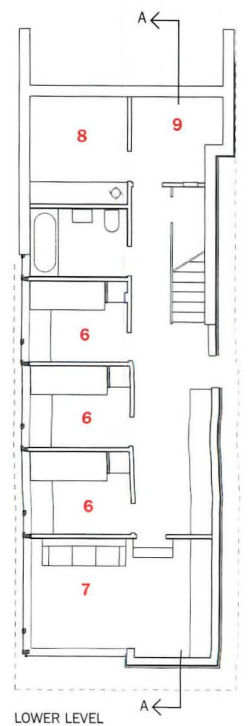
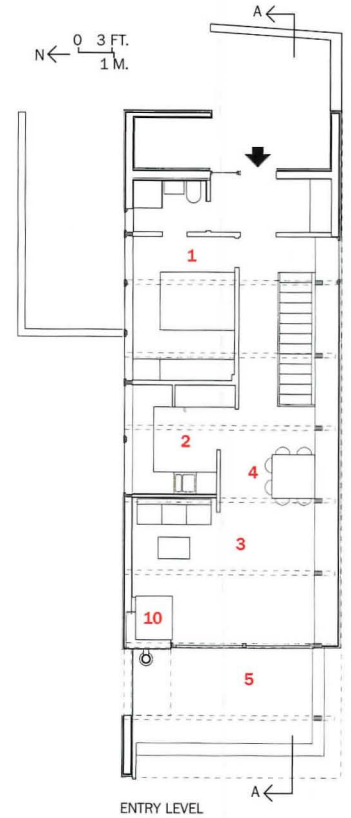


At its entry (left), the house is understated, despite its bold color, revealing only one of its two stories. But sculptural qualities soon become apparent as “wall” folds into “roof” (above and opposite, bottom), as horizontal boarding merges into vertical, and as concrete gives rise to glass. The precision and variation of the fenestration, and the integration of decks, reinforces the connection between the interior and the landscape.



Laminated wood bents set a rhythm for the main living space (left). L-shaped forms, interlocking and nesting in plan and section and in a variety of materials, textures, and scales, shape the interior (left and below).

1. Master bedroom
2. Kitchen
3. Living
4. Dining
5. Terrace
6. Bedroom
7. Playroom
8. Laundry
9. Storage
10. Fireplace





owner's desired anonymity. If the choice of so vivid a color surprised clients initially, they now understand it as highly appropriate to the text—suited literally and figuratively to its venue and its occupants.

Since the 14-person firm of Jarmund Vignæs formed in 1995, work has increased in scale and complexity. Even while working curiously on major buildings for the Norwegian ministry of defense—a headquarters within Oslo's Akershus fortress—and a research institute in northern Norway, the practice continues to explore issues of aestheticity. Emergent Nordic architects, Jarmund and Vignæs, both are quick to acknowledge intellectual and spiritual allegiance to Peter Zumthor, Frei Otto, and Per Olaf Fjeld, but they are also committed to developing their own language of form—striving, they emphasize, for specificity to each local situation.”

The Red House confidently condenses such particularity into a living home that appears both intimate and monumental, standing in contrast to the changing seasons on its quarter acre of spectacular hillside slope. ■

**Materials**

**Exterior cladding:** *Maxbo* (Norwegian fir)

**Roofing:** *Norsk Stål* (corrugated galvanized metal)

**Windows:** *Icopal*

**Interior walls:** *H-Vinduet* (painted wood)

**Masonry tile:** *AS Steinhuset* (St. Hubert limestone)

**www** For more information on the people and products involved in this project, go to Projects at [architecturalrecord.com](http://architecturalrecord.com).

**At verandas and deep-set windowsills (this page), parts of the exterior turn inward, juxtaposing flashes of red with calm interior finishes—ash floors and white paint—bathed in daylight.**





## In the lush collage of Portugal's northern landscape, Alvaro Siza deftly unites the Baroque and the contemporary at **QUINTA SANTO OVIDIO**

By David Cohn

PROJECTS

Architecture, if it is not a pleasure, is the worst thing that exists," Alvaro Siza once confessed, battle weary after his struggle to complete the Serralves Museum in his native Porto in 1999. To put aside the cares of such large-scale projects, he took refuge for many years in the restoration of a friend's dilapidated country house, the Quinta (or Estate) of Santo Ovidio, in the Douro region of northern Portugal, some 40 miles east of Porto. During weekend site visits, the architect relished working one-on-one with local stone masons, carpen-

ters, and other craftsmen, and what he describes simply as "the pleasure of making something well."

Set in verdant countryside amid a patchwork of small plots crisscrossed into the hills, the Quinta is the 7.5-acre core of a large farm estate that was probably built in the early 1800s, although precise dates are unclear. Siza, now nearing 70, rarely has time for such small projects, but he was drawn into this one in 1989 by an old friend, a clothing designer, who dreamed of mounting fashion shows in its gardens. The architect took on the reconstruction of the severe, granite-walled main house, the conversion of the former caretaker's cottage into a guesthouse, and

*David Cohn is RECORD's correspondent based in Spain.*



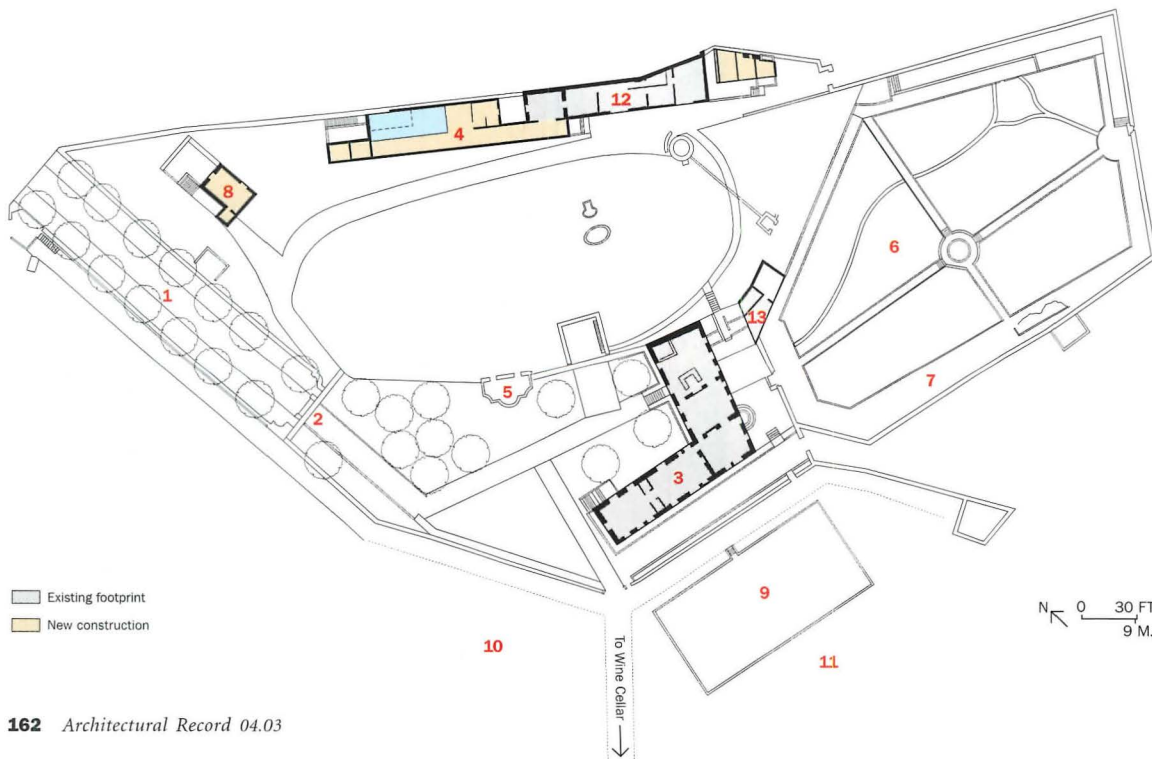
ration of the grounds. But the work dragged on as the client struggled to finance it, and she was finally forced to sell the Quinta in 1996.

Still in love with the project, she persuaded the architect and new partners, a local manufacturer and his wife, to finish it together. Despite initial skepticism, both sides warmed to the task. The couple added a pool and, for their daughter's wedding, a chapel—structures allowing Siza to mix his playful formal virtuosity with the place's seductive genius.

Siza's work on the house and grounds far exceeds a simple renovation, though his hand is seldom obvious. The estate had been abandoned for 20 years and the main house open to the elements. One level, where a ground floor built as a stable was a warren of corridors and small living quarters. To give the interiors a generous scale, Siza stripped away the masonry bearing walls. On the upper level, partly embedded in a hill, he created an enfilade of rooms opening successively across a zig-zag configuration: from the entry foyer beside the exterior stair to the formal kitchen at the opposite end. On the ground floor, he carved out two bedrooms and a family room. Now an interior stair connects the two levels for the first time.

The architect recreated windows and details using deteriorating originals as models. The rustic simplicity of wide-plank pine floors and simple moldings is echoed in sparse furnishings, some

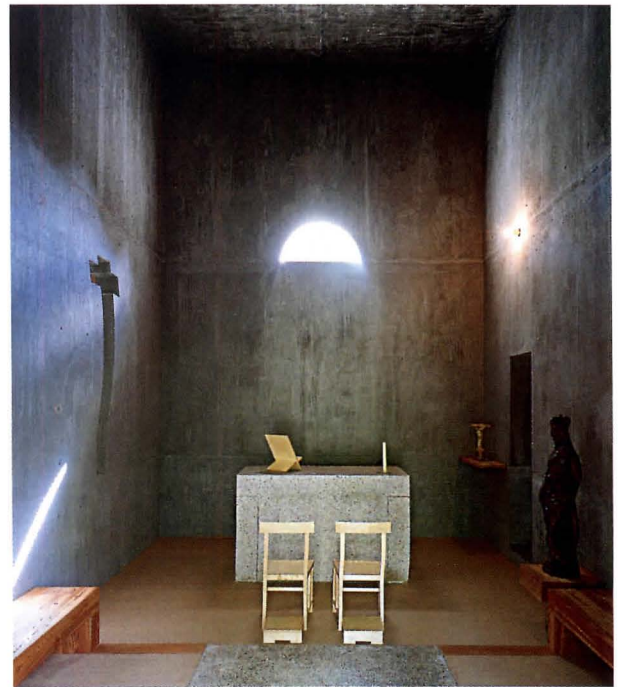




1. Lane
2. Armorial gate
3. Main house
4. Pool house
5. Baroque fountain
6. Pleasure garden
7. Belvedere
8. Chapel
9. Tennis court
10. Vineyard
11. Orchard
12. Guesthouse
13. Laundry



deftly inserted  
 , modern buildings  
 eclectic structures  
 picturesque setting  
 ing spread, top).  
 pool house is adja-  
 to an existing  
 ng, now the guest-  
 e (opening spread,  
 m). Exploiting the  
 asting functions of  
 house and chapel  
 e), the architect  
 ed a dialogue of  
 l opposites: His  
 ing pool house is  
 n zinc, and his ver-  
 chapel in granite  
 ). Apertures in the  
 el walls symbolize  
 anonical features  
 church (far right).





The architect restored granite channels (above) through which water flows across the land. Stream-fed laundry basins (right) stand outside the kitchen. In the kitchen (top), Siza restored an original room-size fireplace and granite floors—and added a U-shaped service island topped with flowerlike blue glass uprights on slender stalks.



designed by Siza, including the kitchen table and chairs and the living room's delicate silver chest. In the kitchen, with its original room-size fireplace and granite floors, the architect built a U-shaped service island.

Siza's work on the grounds, in part with landscape architect Luís António Gomes da Silva, concentrated on restoring rather than restructuring original elements, maintaining their exotic mix of the grand and the mundane—from stream-fed laundry basins beside the kitchen to the entry court's monumental Baroque fountain. This project also restored the entry allée of lime trees leading to a ceremonial gate and the fountain, added an underground garage, tucked behind the fountain's sculptural backpiece. For the formal gardens in back of the house, such elements like granite channels, carrying gurgling water across the lawns, were revived.

The architect sited his new pool house and chapel on a rocky lawn north of the main house, a relatively casual setting above the entrance and the rear garden's formal terraces. He felt free to use a contemporary vocabulary for these pavilions, though with a certain discretion. The pool house, adjacent to, but independent of, the guesthouse, is clad in zinc. The chapel, rising beyond it to the west, includes many traditional references. Siza exploited the two buildings' contrasting functions to create a dialogue of formal opposites. For the indoor pool, dedicated to the curative of the body, the floor level is submerged in the ground, while the chapel, dedicated to the spirit, rises above the lawns on a platform.

The Quinta's original chapel, a typical feature of such estates, was demolished by an irate 19th-century owner to keep out local devotees of Saint Ovidio, a popular Portuguese holy figure reputed to cure the lame. (That owner was excommunicated for his pains.) The new chapel stands near the site of the old. Its entry faces away from the house, toward the west, allowing the architect to create an elaborate approach passing under the sacristy's cantilevered (virtually levitated) volume. In each of the chapel's four walls, Siza cut an aperture, playfully symbolizing a canonical feature of the traditional church: The tympanum appears as a simple pointed arch over the entry; the apse is represented by a semicircle above the altar; the sacristy's metaphorically open door is suggested by a square paver in the threshold of its cantilevered floor; and a cross is shown entering rays through a translucent pane of alabaster.

In the pool house, the descent to the water brings bathers eye-level with the ground outside, through low strip windows. While multiple patches of daylight give the chapel unexpected warmth, the atmosphere here is cool and otherworldly. Sun-dappled walls of sky-blue and sand-yellow ceramic tile, inspired by a trip to Mexico and bearing Siza's sensuous sketches of human figures, are tempered by the white marble of the pool and its ceiling.

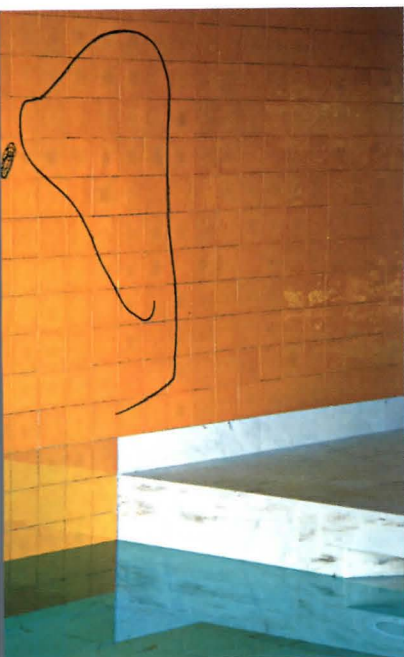
As in the Serralves Museum [RECORD, November 1999, pp. 100–102], these sculptural pavilions attest to the formal sonorities that emerge in the encounter between the architect's work and his native landscape. The gestural, accidental qualities of his forms seem most at home in the jumbled, quiltlike collage of Portugal's terraced fields with their crumbling stone walls and houses, gushing streams, and gentle limestone. Though Siza has worked across Europe, his inspiration clearly originated here, where the act of building remains intimately connected with the character of the land. ■

**Project:** Quinta Santo Ovidio, Douro Litoral, Portugal  
**Architect:** Alvaro Siza Vieira—Alvaro Siza Vieira, principal; José Luís Carvalho Gomes, principal in charge; Ashton Richards, Rafaelle Leone, Francesca Montalto, Misumori Nakamura, project team

**Engineer:** Matos Campos (mechanical)  
**Landscape architects:** João Gomes da Silva, Alvaro Siza Vieira

**WWW** For more information on the people and products involved in this project, go to Projects at [www.architecturalrecord.com](http://www.architecturalrecord.com)





The pool area (this page) has a sublimely cool quality. Its blue and yellow ceramic tiles were inspired by a trip Siza took to Mexico. He plays these colors against the white marble of the pool deck, steps, and basin (above and near left). Over the tiles, he made abstractly sensuous sketches of the human figure (above and far left).

The front garden leads from a bifold door to the glazed main living space (top). The street front appears impenetrable at first (bottom), but a 3-foot-wide door (opposite) can open between the two bifold doors.



# In Chicago, Valerio Dewalt Train turns a mechanical door into a gateway to a hidden garden and the **DOBLIN RESIDENCE**

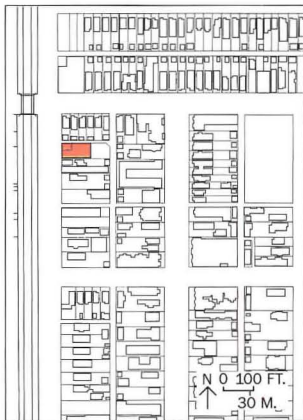
John E. Czarnecki, Assoc. AIA

Appearances can be deceiving. At the Doblin residence, in Chicago, a seemingly impenetrable and industrial stainless-steel facade transforms itself, becoming a kinetic element that peels back to reveal a hidden realm of garden, house, and garage—combining home and machine within a simple modern solution.

Carefully choreographed as this sequence may appear, far from the original intent of the building's architect, Joe Valerio, FAIA, of Valerio Dewalt Train Associates, and his client, Bruce Doblin. At first, Doblin, a young, single physician, wanted to buy an urban building with potential for an open loft space, but developers were snapping up those properties in the late 1990s. "So I had to get a dog," he says, describing the one-story brick building he bought on Chicago's North Side, not far from the frame house he then occupied. Erected in 1918 as a warehouse and garage, the "dog" most recently housed a T-shirt silk-screening operation.

Doblin hired Valerio for an interior renovation, but structural analysis soon revealed an unstable front facade. Threatening to collapse, elevation required demolition. Also, the engineers found that interior wood-frame partitions were supporting the bowstring roof trusses. These discoveries led Doblin and Valerio to the sobering decision to remove the front wall and roof structure, gut the interior, and keep only the rear, side, and two interior brick walls. That move changed the entire design process.

Although the 48-by-100-foot lot was tightly bound by an alley to the north and a house to the south, the varied nature of the urban streetscape—with single-family homes, apartment buildings, and small



brick-and-steel manufacturing buildings across from an El embankment—gave Valerio freedom in designing a new facade. The industrial purpose of the existing structure, which consumed its entire parcel, actually aided him. Had the building originally been residential, Chicago city code would have stipulated a footprint set back 15 to 20 feet from the sidewalk and at least 5 feet from its other lot lines—and would have prohibited a garage fronting directly on the street. But the earlier designation granted Valerio flexibility in using the whole site.

Starting with the remaining brick walls, the architect designed a home that is hard-edged and masculine, yet offers a serene refuge from the

city. As a gradually unfolding narrative, the project initially presents a facade formed by 16-foot-high sheets of galvanized corrugated steel, incised by two 10-foot-high bifold scissor garage doors flanking a 3-foot-wide door. One bifold opens onto a two-car garage, the other onto a front garden, and the smaller, hand-operated door in the middle allows for pedestrian access without lifting the mechanical bifolds. With all three doors closed, the wall appears solid and industrial, but as soon as the bifold

**Project:** Doblin Residence, Chicago

**Architect:** Valerio Dewalt Train

Associates—Joseph M. Valerio, FAIA,  
principal in charge; James Wild,

Assoc. AIA, Amy Ciolek, project  
architects

**Structural engineer:** Robert Darvas  
Associates



doors begin to retract, the elevation becomes sculptural. With the garden bifold open, tranquil views of vegetation soften the hard streetscape.

A bluestone path, complementing the galvanized steel's silvery gray, leads through the garden to the house's front door. As the trees and shrubbery grow, they will mask views from the street to the building's floor-to-ceiling glass facade and from the interior to the garden's bifold.

Inside the house, the 32-by-48-foot living/dining/sleeping space offers a domestic tabula rasa. Here, Valerio created a horizontal plane—a new, radiant-heated concrete floor, surrounded by a channel of bluestone river pebbles along the walls—on which to position such objects as sculptures or furniture. Doblin has already tried different arrangements in the few months since he's moved in, relying on a concrete fireplace and mobile birch cabinets, designed by Valerio, to help define separate areas.

The architect structured the building on a rational 16-by-16-foot grid with an overhead frame of wide-flange steel sections tying into the masonry walls and supported on wide-flange columns with stabilizing cross bracing along the glazed front and back walls.

The cool color and smooth texture of the concrete floor and exposed steel contrast with the warm, rough preexisting walls of Chicago common brick. Two of these interior brick walls define the garage enclosure. The rest of the interior is open, with a kitchen in one 16-by-16-foot bay, directly behind the garage, and two bathrooms in a rear bay. Three skylights hover above the main room. With glazing facing the front garden, the kitchen receives ample southern daylight. A finely detailed island in the kitchen includes birch cabinets, a sink, a counter, and a breakfast booth. Birch cabinets also hang from the kitchen's northern brick wall.

Valerio admits that the interior's surprising warmth, flexibility, and openness—made possible because it's so hidden from the street—evolved as much from happenstance as from design intent. It's a crisp, modern, mysterious insertion in the neighborhood, and seems like a perfect fit for Dr. Doblin. This winter, he had most of his old furniture—his previous life, really—stashed in the garage, just waiting to be hauled away. ■

**Sources**

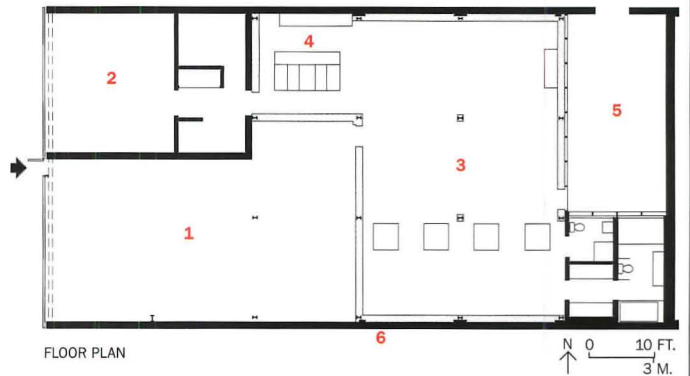
**Steel wall cladding:** *Epic Decking*

**Aluminum curtain wall:** *Kawneer*

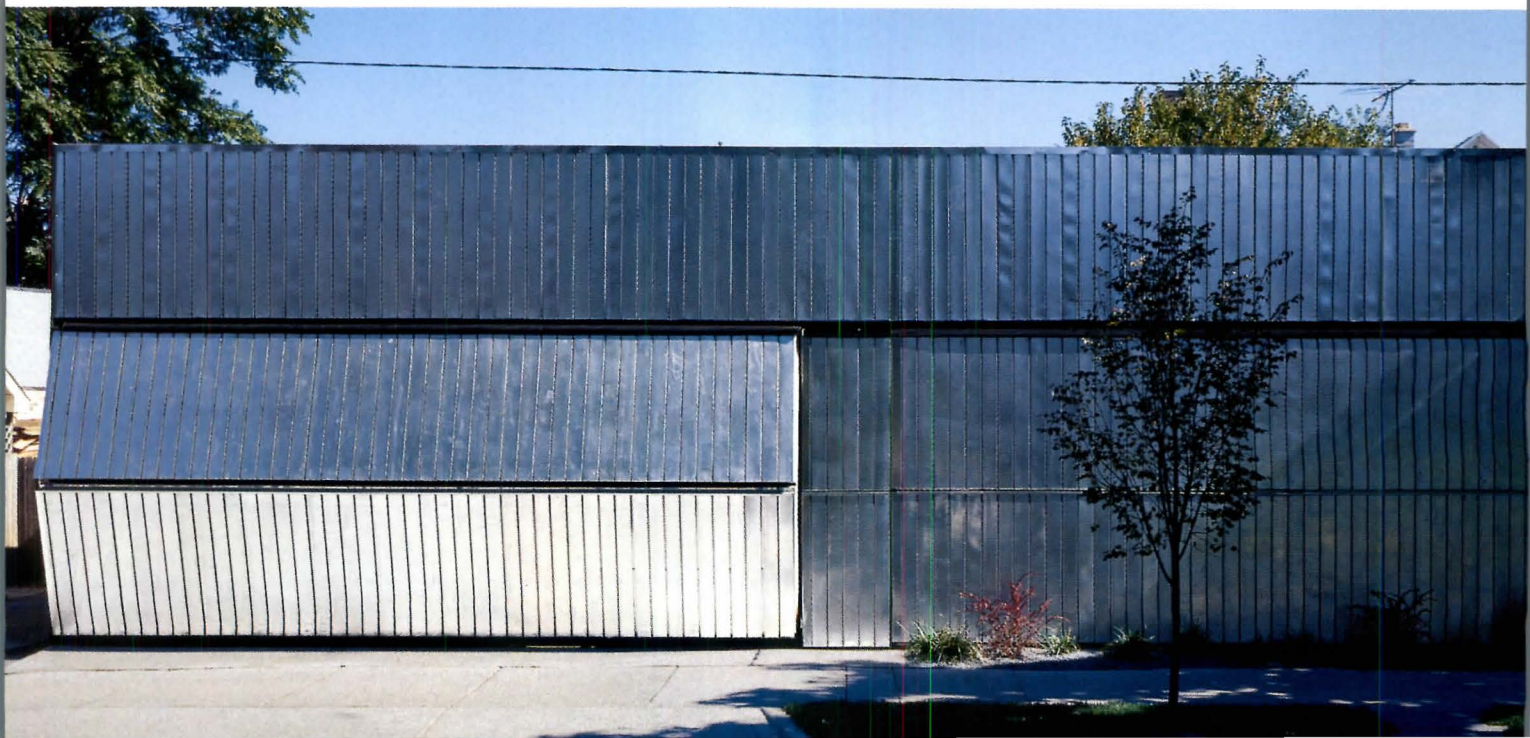
**Steel hangar doors:** *Schwiess*

*Bi-Fold Doors; H&H Steel*

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- 1. Entry court
- 2. Garage
- 3. Living
- 4. Kitchen
- 5. Rear court






For the main living space, Valerio designed tall, movable birch units (this page, top) to store items and define areas within the larger room. His

concrete fireplace (opposite, top) stands near the rear glass wall. He also fitted the kitchen with his custom birch cabinets (opposite, middle).



A photograph of a modern house at night, nestled in a dense forest. The house features a prominent cantilevered bedroom that appears as a glass cube floating in the trees. A long, narrow deck with a Cor-ten steel edge is visible, and bamboo plants are growing through a floor grate. The scene is illuminated by warm interior lights and cool blue exterior lighting, creating a serene and architectural atmosphere.

The cantilevered bedroom appears as a glass cube afloat in the forest. Sheltered, but outdoors, a ramp leads up to the main living area. The long, narrow deck, edged in Cor-ten steel, is penetrated by bamboo sprouting through a floor grate.

Jack **Scogin** Merrill **Elam** creates a woodland  
aerie, perching the **MOUNTAIN GUESTHOUSE**  
amid a grove of slender poplars in north Georgia

PROJECTS



UPPER LEVEL



TO MAIN HOUSE →



By Sarah Amelar

**G**iving the fleeting illusion of one long, high span traversing the forest, the narrow deck of the Mountain Guesthouse extends into the north Georgia woodland with the attenuated grace of a rope bridge across a jungle chasm. Though the deck actually rests on thin steel columns over gently sloping ground, these posts almost disappear into the landscape as they echo the rhythm and proportions of the slender poplars around them. With a thicket of bamboo sprouting (by design) through its deck, a cantilevered bedroom virtually floating among the trees, and an entrance requiring a slightly daring ascent (via ramp), this 1,000-square-foot cottage has earned its nickname, “the tree house.”

But its materials—glass, Cor-ten steel, slate, and concrete—aren’t hardly typical of a tree house. And neither its architects, Mack Scogin and Merrill Elam, nor the clients initially envisioned such a long, lofty structure—nor even a guesthouse. Instead, the design evolved organically as the owners’ lives changed.

It all began with the main house, just 80 feet away, which Scogin Elam and Bray [RECORD, April 1997, page 90] built on a woodland drive that winds through a 24-acre site in the Appalachian foothills. The Atlanta-based owners—a journalist and his wife, an avid landscaper—wanted a weekend retreat that could become their permanent home. Along a creek, the architects created an inside-outside house with a next-door guest suite (the original one on the site), playing planar forms against the surrounding hills. Soon the clients’ children married, recalls Scogin, “started birthing babies—

and, before you knew it, the grandbabies had taken over the guesthouse. He and Elam returned to convert the garage into a playroom.

But the client, who’d done much of the landscaping herself, tinkered after a shed for her tractors and seedlings—and then, well, the idea of adding a swimming pool emerged. To keep out animals, Elam proposed raising it on a high deck—reminiscent of the architects’ own pool in their Atlanta home [RECORD, April 1998, page 130]. So, the design morphed from a garage/potting shed into a lap pool on an elevated deck with a cabana. But, in the end, it seemed impractical to maintain a pool in a part-time home, and the project was trimmed back to a garage. “Suddenly,” Elam recalls, “we all missed that long, high, horizontal element in the landscape. Besides, the owners really did need more room (and privacy) for visitors.”

With the program finally settled, the architects created a one-room aerie that is remarkable in its sculptural qualities and response to the setting. From the serpentine drive, this guest hideaway comes into view before the main house. Its diagram is fairly simple: a rectangular volume (bedroom and bath) partially cantilevered atop a larger rectangular form (garage), with a long, upper-level deck off one side and a ramp descending in the opposite direction. But Scogin and Elam transformed the diagram through an exquisitely subtle balance of solids and voids, volumes and planes, and opaque or matte surfaces and transparent or reflective ones.

As a result, parts of the building practically vanish or appear smaller than their true dimensions, while other elements—the long





From both front  
(below) and back  
(above) elevations,  
the steel columns  
supporting the deck

blend with the forest,  
mimicking the rhythm  
of poplar trees—as do  
the vertical slits in the  
Cor-ten parapet.





The entry ramp (above and above right) passes between vertical planes of concrete, translucent glass, and Cor-ten steel. Slate paving continues from the deck into the bathroom (right) and throughout the interior. The bedroom overlooks the main house (below).



and ramp—expand the house’s perceived size. In less skillful hands front of the cast-concrete garage, for example, might have appeared heavy and bulky, but instead, its top half virtually dematerializes. Here, a band of mullion-free glazing, reflecting nearby foliage, reads as an opening—setting the Cor-ten parapet above it visually afloat. On the same elevation, two cantilevered forms appear equally unfettered by gravity: a cubelike bedroom, with floor-to-ceiling glazing, and the planar roof over the garage.

Ambiguity—between permanent and ephemeral, natural and built, heavy and light, indoors and out—plays an essential role in this structure. While its materials may be hard and man-made, they meld with the site, as the steel’s rusty patina mimics moss and lichen on the poplars’ slats in the parapet, along with the columns, echo the rhythms of the forest.

Merging indoors and out, the entry ramp, leading to living spaces over the garage and basic kitchen, rises between a well-grounded wall of Cor-ten and a shoji-like screen of translucent glass. As the route passes narrowly between building skins, it accentuates the play of light and shadow. The arrival point is a 1,000-square-foot deck—an outdoor living room with sunset views—that doubles the house’s occupiable space. Slate pavers continue inside from the deck, covering the entire floor. In the bedroom interior seems to open completely, with floor-to-ceiling glazing—but the glass is fixed, while operable panels in the room’s solid walls offer air circulation.

For all its apparent ambiguity and paradox, the design is neither jarring nor contradictory. Strong verticals and horizontals play harmoniously against the hills and the ramp’s dynamic diagonal. And though the well-grounded house may seem suspended in the treetops, it merely occupies that position visually—hovering in an exceptionally fine balance. ■

**Project:** Mountain Guesthouse, Dillard, Georgia

**Architect:** Mack Scogin Merrill Elam Architects—Mack Scogin, AIA, Merrill Elam, AIA, principals; David Yocum,

Penn Ruderman, Denise Dumais

**www** For more information on the people and products involved in this project, go to [Projects architecturalrecord.com](http://Projects.architecturalrecord.com).

# Building Regulations May Finally Shed Their Impenetrable Language

NATIONWIDE EFFORT IS UNDER WAY TO MAKE BUILDING CODES MORE RATIONAL AND USABLE

Barbara Knecht

Building codes are the history of how we react to situations," explains Carl Galoto, partner in charge of Skidmore, Owings & Merrill (SOM)'s technical group and a member of the New York Mayor's Commission on Adoption of a National Model Code. "Changes have occurred because of tragedies such as the Triangle Shirtwaist Factory fire [New York City, 1911] and the collapse of the walkway at the Kansas City Hyatt hotel [1981]. September 11 has been another catalyst to examine our assumptions, to look at redundancy and interrelationship of systems."

The reactive approach to building failure is an old, though valuable, way to understand and improve building performance. Failures become opportunities to examine assumptions, to perform studies, and to invite democratic debate on best practices. The collapse of the World Trade Center towers is a spectacular example of how possible it is to write codes that anticipate the infinite combination of factors that contribute to building failure and loss of life. New York structural engineer Guy Townsend—a volunteer on the Structural Engineering Association of New York's post-9/11 damage-assessment team—observes, "No one had written a code for how to handle the situation that faced us, that is, how to safely demolish the structurally chaotic piles of debris there. We were constantly debating and arguing and persuading in a classic example of deliberative Athenian democracy. And it worked, because no one was hurt as part of that effort."

Barbara Knecht is an architect and principal of a New York City-based consulting firm. She writes about architectural technology, design, and housing policy.

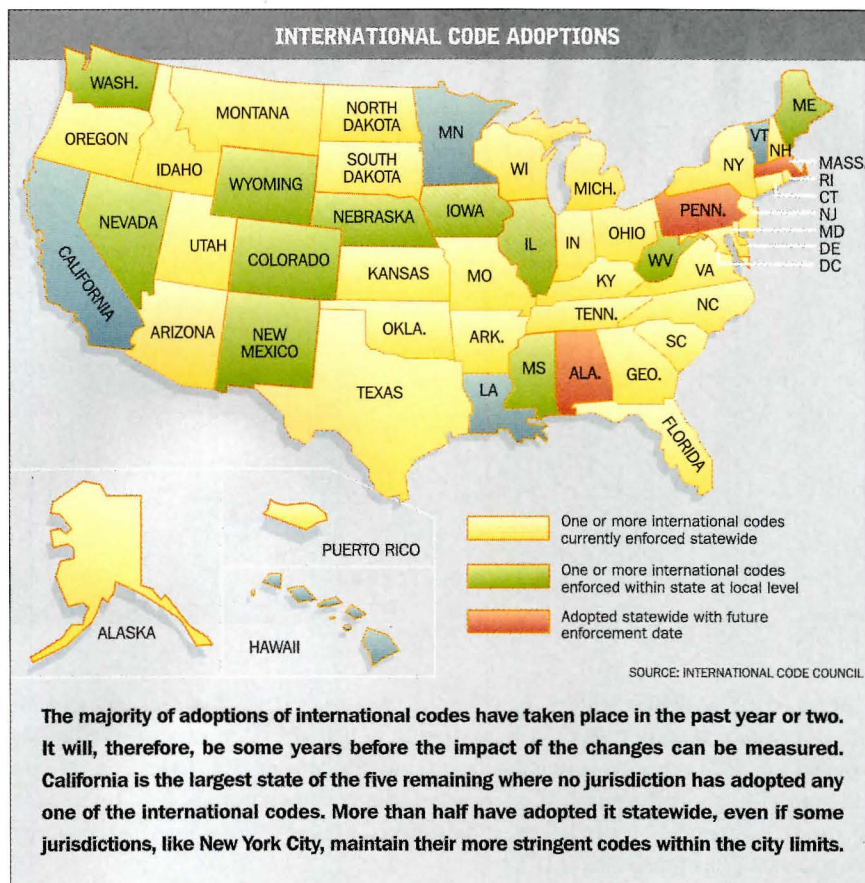
## CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/AIA Continuing Education article. To receive credit, turn to page 188 and follow the instructions.

## LEARNING OBJECTIVES

- After reading this article, you should be able to:
1. Describe the recent changes in building codes.
  2. Identify benefits of the national code.
  3. Explain the difference between prescriptive- and performance-based codes.

For this story and more continuing education, as well as links to codes, white papers, and products, go to [architecturalrecord.com](http://architecturalrecord.com).



## Tangled web

Although the first national code was published at the beginning of the 20th century, codes have remained stubbornly local and regional until the past few years. Now the building industry and the code makers themselves are surrendering to the drive for uniform structure across the country, and performance codes are nearly as common as prescriptive codes. The most significant change in the past decade is the creation of a single body of codes the initiators hope will be used nationwide and internationally.

In the U.S., modern building and fire codes have been developed in the private sector, most familiarly by three regional not-for-profit organizations: Building Officials and Code Administrators International (BOCA), International Conference of Building Officials (ICBO), and the Southern Building Code Congress International (SBCCI). They produced, respectively, three model building codes in the 20th century: the BOCA National Codes commonly used in the eastern and Great Lakes regions; the Uniform Building Code (UBC) adopted by the western and midwestern states; and the Standard Building Code, which has been the prevalent code in the southern states.

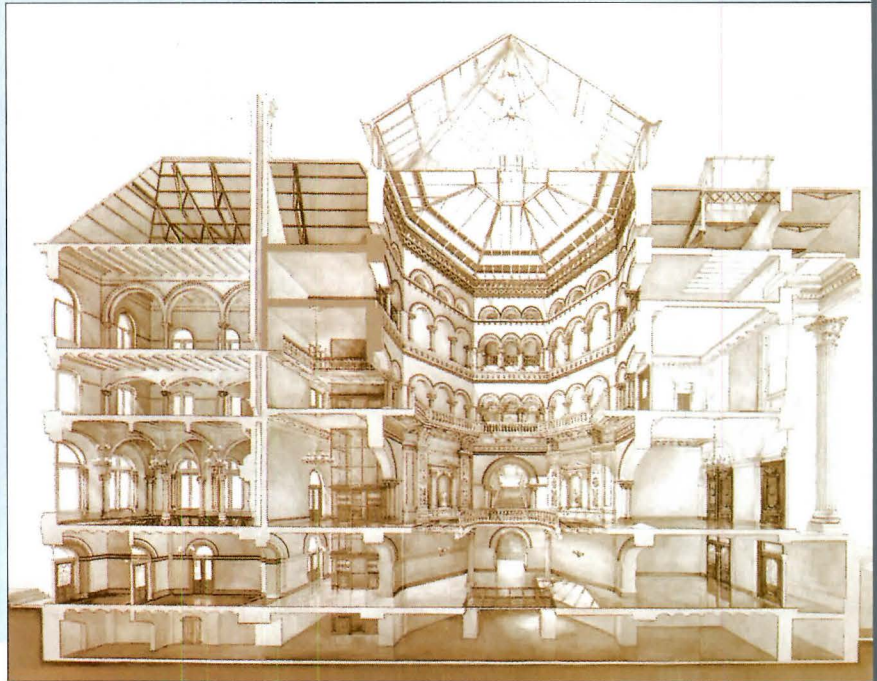
These so-called model codes form a collection of standards and regulations that become law only when adopted by governmental juris-



The Tweed Courthouse in Lower Manhattan, completed in 1872, is a worthy New York City landmark that now houses the offices of the N.Y.C. Board of Education.

Arup was able to maintain the grand and historic interiors while providing sufficient fire-safety systems by modeling the behavior of a fire, the building, and its

occupants with fire-engineering studies. With the studies, Arup was able to show that the intent, if not the letter, of the code had been met.



dictions. Each of them includes, by reference, standards developed by other industry organizations, such as the National Fire Protection Association (NFPA) or the various associations of mechanical, electrical, and plumbing trades. And each of them, when adopted by a governmental jurisdiction, may be subjected to modification for specific conditions in a particular location.

Although the model codes are widely adopted within their regions, there has been no shortage of jurisdictions—notorious among them Chicago and New York—that have created their own (often Byzantine) codes. Adjacent municipalities may have different processes and standards for the same building. This quirk exists in the extreme in New York City, where the state builds buildings within the city limits according to its own code adjacent to buildings built to city code. Other sorts of jurisdictional overlap and conflict abound. “In Pennsylvania,” explained Christine Ussler, an architect in Bethlehem, “we have a state code administered by the Department of Labor and Industry, which is responsible for plan checking, inspection, and final review. This code is primarily concerned with safety, not with construction methods. Local jurisdictions, including fire departments, then adopt local codes. The result is that any project larger than two residential units in a jurisdiction with local authority must be reviewed independently (not coordinated through one agency) by three entities.

Pressure for national uniformity grew during the 1970s, as more architects, builders, and manufacturers produced work across the country. “The ultimate goal of a national code is to make it easier on the end users, but the underlying logic is that if an existing standard is safe in New York, then it is safe in California,” says Paul E. Myers, assistant director of

the Cincinnati Department of Buildings and Inspections and president of the Board of the International Code Council (ICC). “In 1994,” he continues, “the three regional organizations came together and created the International Code Council, under which they agreed to cooperate in the development of a single set of coordinated model construction codes.”

By 2000, the family of integrated codes (I-codes), including International Building, Fire, Residential, Private Sewage Disposal, Mechanical, Fuel Gas, Property Maintenance, Energy Conservation, Zoning, and Electrical codes, were complete and ready for adoption. More codes, including the 2001 ICC Performance Code for Buildings and Facilities, are being added, and the existing ones will be updated every three years. On February 1, 2003, the three separate organizations ceased to exist in favor of the consolidated single entity, the International Code Council. The pace of adoptions has been quite high, according to the ICC, and, indeed, only five states remain where no jurisdiction at all has adopted some part of the ICC codes. This unity, however, hasn’t stifled competition. The NFPA chose not to join the ICC coalition [RECORDING August 2002] and has, in the intervening years, developed its own building code (NFPA 5000) to add to its family of codes, which is also available for adoption.

New York State has adopted the International Building Code (IBC), and New York City has a task force that is studying the feasibility of adopting IBC 2003 or the NFPA 5000. Recommendations of the task force are expected this month (April 4). Patricia Lancaster, the commissioner of the N.Y.C. Department of Buildings, is optimistic about the value of shifting to one of the national codes. “They are written in clear and understandable language so that even the general public can understand



nd Lerner Hall  
9) is the student  
er at Columbia  
ersity, in upper  
hattan. Between  
ony wings is a  
s-enclosed circu-  
n hub that faces

the central open space  
of the McKim, Mead &  
White-planned cam-  
pus. Arup preserved  
the transparency of  
the glass wall and the  
clean, sharp lines of  
the exposed steel

structure through  
fire-engineering  
studies that showed  
that the steel did not  
require fire protection,  
saving the client  
between \$500,000  
and \$750,000.



BUILDING SCIENCE

## Designing Codes for Developing Countries

Stephen Forneris, an architect in New York and Ecuador, opens his articles and presentations with a depressing statistic. “For the past 100 years, the developing world has shouldered the unpleasant burden of suffering 70 percent of all natural disasters and 91 percent of all disaster-related fatalities, with earthquakes in Latin America alone responsible for 53.4 percent of these fatalities.”

The lack of building codes and enforcement of what codes there are is blamed for the high number of fatalities caused by collapsing buildings when earthquakes occur in developing countries. Latin America is highly vulnerable to earthquakes, and a lack of up-to-date building codes is pervasive. Stephen Forneris took these facts to Senator Christopher Dodd who, along with Senators Joseph Lieberman and Jeff Sessions, introduced and passed “The Code and Safety for the Americas (CASA) Act” in 2002. This modest pilot program, funded with \$3 million over two years, will provide for translation (or funds to translate) the International Code Council building codes into Spanish, and provide training to architects and contractors in El Salvador and Ecuador in appropriate use of the code.

The argument for encouraging safer building is a potent one: We can’t prevent natural disasters, but, at least in the case of earthquakes, we have the tools to build structures that can dramatically reduce the number of deaths they cause. The World Bank and the United States Geological Survey estimated that \$280 billion in disaster relief aid could have been saved by a \$40 billion investment in

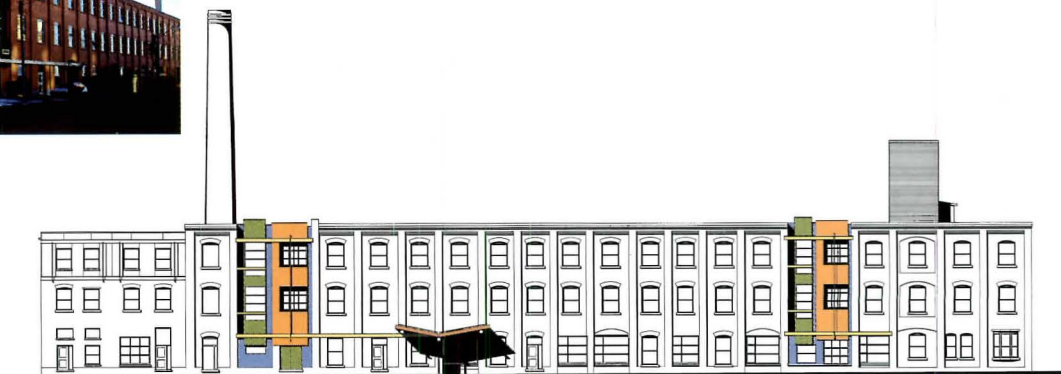
disaster prevention.

The ICC model codes serve as a base for each governmental entity to adopt to its own particular set of circumstances. David Eisenberg’s statistics are powerful support for integrating sustainable building practices into building codes, and they take on even more urgency in places that are starting with a clean slate. “Of the 6.3 billion people living on earth today, less than one third are living in the kinds of buildings described by our model building codes. Another third are living in earthen structures, and the final third are living in houses made of other nonindustrial or scavenged materials. And a few million are living in no structures at all.” Sustainable building is an imperative as society attempts to solve global housing problems. Balancing the need to increase building safety without building to inappropriate standards that place burdensome costs on the environment and individuals will require skillful crafting of new codes appropriate to the places, conditions, and cultures where they are being used.

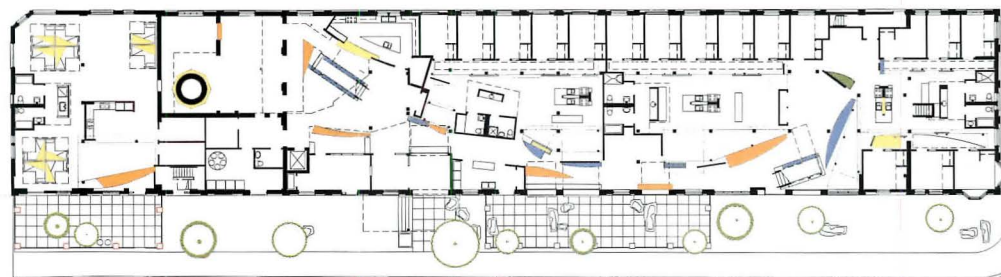
Forneris agrees with the need for that balance. “We see the need to edit and focus on what is really important to life safety in the codes. Just by codifying and enforcing regulations for door swings, we will improve safety at no cost. General egress and occupancy classifications will cut down on deaths. Our task is to cipher through the manuals and work with the governments to distill and implement what is economical, safe, and appropriate.” *Barbara Knecht*



**Strachan House (1996),** in Toronto, Canada, is home to formerly homeless adults. Private rooms open onto a three-story “public street.” Shared living rooms and kitchens are divided by partial-height walls or railings. Each floor is divided into two fire compartments by a full-height wall with a door that closes automatically in case of a fire. The second- and third-floor living rooms are expressed on the facade (right) with colored cement board.



WELLINGTON STREET ELEVATION



GROUND FLOOR

them,” she says. “They are organized in a logical structure but are flexible in the specifics, so that a jurisdiction, such as New York, can make them as strong as our code currently is. Buildings will be safer because users will be able to understand what the code is trying to accomplish.”

Carl Galioto of SOM, who is on the task force, adds, “Compared to the current New York City code, for example, the IBC model code is written so the references are kept up-to-date. This takes the burden off the local jurisdiction to develop and update standards.” Changes can be made at the local level, but those that have national relevance can be made at the national level, further reducing the cost and burden to localities. Commissioner Lancaster observes, “No other jurisdiction has dealt with issues of safety and density the way New York has, and we foresee some of those lessons being adopted by the national codes.”

### Breaking the codes

The model codes reflect another positive trend in code writing: the shift from prescriptive-based codes to performance-based codes. Historically, our codes have been prescriptive and formulaic. For example, the width of an exit stairway is calculated based on the number of people it is expected to carry during an evacuation. There are specific distances to exits and other similarly prescribed fire and life safety requirements, which, in theory, all work together to provide a safe environment.

Formulaic buildings, such as chain stores, benefit from, or per-

haps are the result of, prescriptive codes. Prescriptive codes form the backbone of the model codes, but the model-code organizations have also published separate performance-based codes, such as the 2001 International Performance Code for Buildings and Facilities (mentioned above) and the NFPA Life Safety Code. The performance codes include specific objectives and quantifiable measures, such as a maximum time for exiting, but don’t specify the means. This is a relatively new development, but it has roots in prescriptive codes.

With sufficient expertise and time, and a modicum of cooperation on the part of building and fire officials, it has typically been possible to build buildings or use materials that are not specifically permitted. Most prescriptive codes include a general statement that they do not intend to limit the use of any materials or methods not specifically described by the code if an alternative can be shown to be suitable on the basis of past performance, tests, or evaluations. This is certainly a common route when renovating historic structures. “BOCA has had a cumbersome point system for establishing equivalent safety in historic structures, where meeting the codes literally means destroying their historic character,” explains Ussler, whose Pennsylvania practice includes substantial adaptive reuse. “We have had pretty good success with it after years of experience, but ultimately, it is the decision of the inspector.”

In New York City, Arup was the original mechanical, electrical, plumbing, fire, and civil-engineering consultant under John G. Wai-

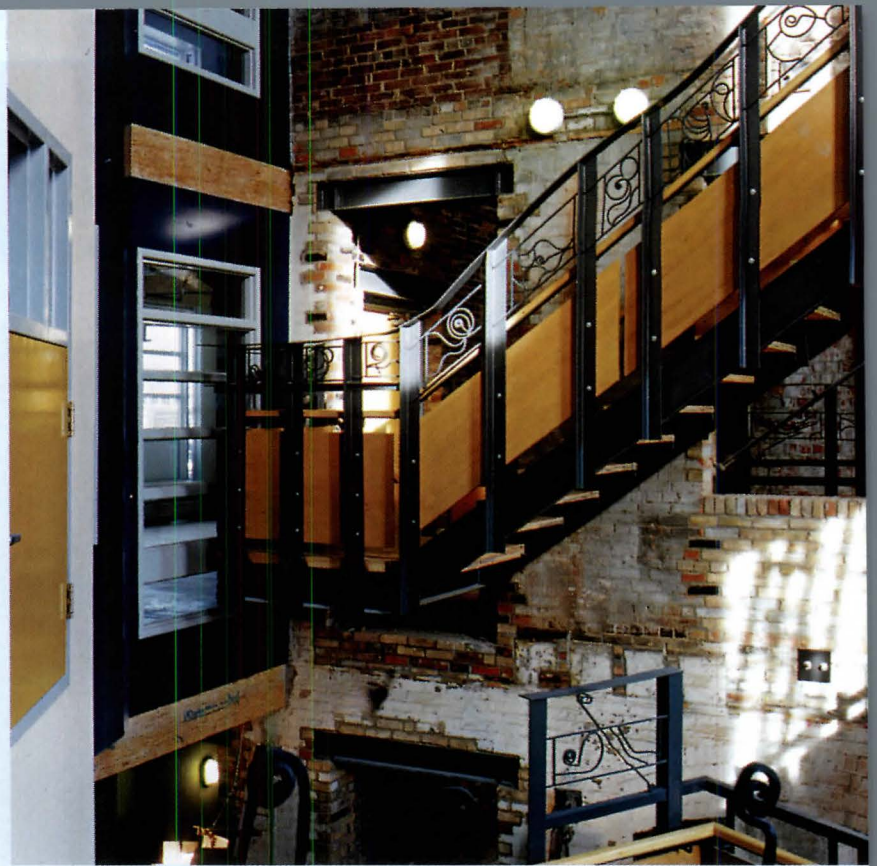
**REGARDLESS OF HOW MANY  
EXITS YOUR BUILDING HAS SEEN,  
YOU ONLY NEED ONE ENTRANCE.**



*Businesses change. Businesses change with them. But the welcoming appeal of a Kawneer entrance endures. Engineered with details such as welded Dual Moment corner construction and dependable operating hardware, these are entrances with the durability to stand sentinel for years and the craftsmanship to offer a firm, confident greeting every time. It's a level of quality that allows Kawneer to include a limited lifetime warranty.*

*The Kawneer entrance. It never wears out its welcome.*

**Kawneer**  
An Alcoa Company



Stairways rise fully exposed in the three-story height “street,” creating a sense of openness. The ground floor (left) is completely open to the central

volume, while on the upper floors (above), the stairs lead onto walkways, which have windows and openings to the space that will be closed off automati-

cally in case of fire. By code, Strachan House is classified as a hospital, which allowed configurations not normally allowed in housing.

Associates, architects for the original adaptive reuse of the historic 1870 Tweed Courthouse, which is adjacent to City Hall in Lower Manhattan. It was impossible to meet contemporary building and fire codes and maintain historic elements, including the ornate ceilings, the grand rotunda, the exposed structural elements, and the wood doors with etched glass, of the original building. “It was an existing landmark building with a change of occupancy,” explains Leo Argiris, principal at Arup and a structural engineer. “We couldn’t install sprinklers in some areas, enclose the stairs, or take other measures prescribed in the codes. So the approach we took was to better understand the anticipated hazards and determine what measures we could take, and then to model the actual performance of the fire, the building, and the occupants in fire-engineering studies.”

Arup pioneered the implementation of this process in Columbia University’s recently constructed Alfred Lerner Hall (1999)—for architects Gruzen Samton and Bernard Tschumi Associates [RECORD, November 1999, page 94]—distinguished by a glazed atrium circulation hub in which a glass wall is supported by steel ramps, which are, in turn, hung from long-span trusses. Within this open space, the structural steel is exposed and the glass wall is fixed with a system that does not require mullions. Preserving the transparency and the clean lines of these elements was key to the architectural character of the space, but the high first cost of fireproofing the steel with nonflammable, intumescent paint and the subsequent burden and cost of maintenance prompted Arup to suggest another approach. Using fire-

engineering studies in which they modeled the space and simulated likely fires, they were able to predict the behavior of fire and demonstrate that the steel would meet the intent of the code without the intumescent fireproofing.

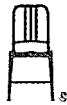
### Creative responses

The purpose of building codes is to protect public health, safety, and general welfare, but what exactly is the scope of that responsibility? “We grapple with the safety of individuals and the safety of the public,” says Commissioner Lancaster, “but we also try not to enact rules or codes that are overly prohibitive to the quality of life.” Or that are prohibitively expensive, the building industry would add, a notion a commissioner would unconditionally agree with. “It is already extremely expensive to build in cities like New York. If we make it too expensive, people won’t come here to build,” says Lancaster.

The findings and recommendations of the World Trade Center Building Code Task Force, released this February, appear to target weaknesses in egress and other building systems, while not placing an undue financial burden on developers. “If we don’t achieve the right balance, our code changes, the city won’t continue to grow.”

David Eisenberg, director of the Development Center for Appropriate Technology, in Tucson, has another approach to consider: the protection of life and general welfare under building regulations. He





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been working to shift what is in the "hearts and minds of those writing and using the codes to consider their responsibility for the unintended environmental consequences of our building practices," says Eisenberg. "We made a societal decision that we need to protect people from risks attributed to the built environment, but in the process, we are inadvertently destroying the natural systems on which we all depend for our survival. With the current codes, it is much easier to build resource-intensive, wasteful, toxic buildings than to build in more sustainable ways."

Eisenberg is not suggesting that we eliminate codes or their safety standards; he is an advocate, along with many others, for sustainable building and for codes that encourage better, safer, and more environmentally responsible ways of building. "Our codes are written to keep bad things from happening; we're promoting the idea that they should also make sure the right things happen."

While Eisenberg is tackling the issue of safety on the macro level, Levitt Goodman Architects, based in Ontario, Canada, have a perspective on its definition from the micro level of a single building in Toronto. Strachan House, a housing development for chronically homeless adults, was created out of a 19th-century brick and timber warehouse. For its 70 residents, many of whom had been living secluded and isolated lives on the street, it was imperative that the building design provide individual privacy, but also that it encourage socializing. For these residents, reducing the opportunity for isolation increases their personal safety and their prospects for maintaining independence. Typical housing configurations with self-contained apartments, fire-rated corridors, and closed exit stairs were not going to support the level of visual and social

communication the sponsor, Homes First, considered necessary.

With the cooperation of the mayor's office and the Toronto Building Department, their code consultant Peter Colquhoun, of Arend Inc., worked out a way to achieve the desired openness designating the building a hospital. It was possible to use this designation because the building is staffed 24 hours a day, with an array of fire detectors and sprinkler systems, as well. Doors to individual units are allowed remain open to the wide public passageways that serve as exit corridors also contain shared living rooms and kitchens, and to the three-story atriums that anchor the ends of the building. Each floor has two fire compartments, which allows horizontal evacuation in case of fire. Even with cooperation of the regulatory agencies, it took three years to get approval for such an unusual configuration. And even with an exemplary track record for safety, the team did not find it possible to replicate the model. This has met with outright hostility from some jurisdictions.

Although neither Levitt nor Colquhoun anticipate imminent change in the Ontario code, the Canadian National Building Code (CNBC) is working toward an objective-based code. "Such a code," explains Colquhoun, "identifies objectives, like the protection of property, structural sufficiency, and life safety. It then says that the objective is to get everyone out of a building safely. It doesn't set an amount of time in which to do that, as in a performance code, nor does it tell you the width of doors or corridors, as in a prescriptive code. You are charged with getting everyone out safely, by whatever means, before the structure becomes untenable. This gives more freedom to the designers, but officials, then, need to be more knowledgeable. ■



## AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

### INSTRUCTIONS

- ◆ Read the article "Building Regulations May Finally Shed Their Impenetrable Language" using the learning objectives provided.
- ◆ Complete the questions below, then fill in your answers (page 230).
- ◆ Fill out and submit the AIA/CES education reporting form (page 230) or download the form at [www.architecturalrecord.com](http://www.architecturalrecord.com) to receive one AIA learning unit.

### QUESTIONS

1. Which is not one of the organizations that until recently developed building codes?
  - a. BOCA
  - b. ICBO
  - c. ASPCA
  - d. SBCCI
2. The model codes were a collection of standards and regulations that became law when?
  - a. when they were written
  - b. when they were published
  - c. when they were passed by a vote
  - d. when they were adopted by a governmental jurisdiction
3. Which was not a major drawback of the three model-code systems?
  - a. the code may be subjected to modification for specific conditions
  - b. jurisdictional overlap caused conflict in code review
  - c. every local jurisdiction had a slightly different interpretation of the code
  - d. architects had to design buildings to meet different codes
4. When did the three separate code-creating organizations cease to exist?
  - a. 2000
  - b. 2001
  - c. 2002
  - d. 2003
5. Benefits of the new national code are all except which?
  - a. it is written in clear and understandable language
  - b. it includes all of the building, zoning, electrical, and fire standards
  - c. it is organized in a logical structure
  - d. it is flexible in specific issues
6. Benefits of the national code to local jurisdictions include all except which?
  - a. changes can be made at a local level
  - b. local jurisdictions do not have the burden to update the standards
  - c. code enforcement is handled at the national level
  - d. code development is handled at the national level
7. The new national code is allowing for which shift in code writing?
  - a. more performance-based codes
  - b. more prescriptive-based codes
  - c. more formulaic codes
  - d. more limited codes
8. Prescriptive-based codes are best described as which?
  - a. not limiting the use of materials
  - b. not limiting the use of methods
  - c. requiring the use of quantifiable measures
  - d. requiring the use of specific means
9. Performance-based codes are best described as which?
  - a. limiting the use of materials
  - b. limiting the use of methods
  - c. requiring the use of quantifiable measures
  - d. requiring the use of specific means.
10. The purpose of building codes is which?
  - a. to protect public health, safety, and welfare
  - b. to prohibit architects from using new materials
  - c. to keep the cost of buildings increasing
  - d. to destroy the natural systems of the environment

## Licensing: Software by the numbers

Alan Joch

...k of a pirate. It's not an image  
...might associate with architects,  
...ss perhaps you're Bob Kruger,  
...president for enforcement for  
...Business Software Alliance  
... in Washington, D.C.

The BSA, an industry group  
...posed of software heavyweights  
...as Microsoft, Adobe, Apple,  
...desk, and Bentley Systems,  
...iders anyone who makes illegal  
...es of commercial applications a  
...e. Kruger says a "fair number"  
...em are CAD users within the  
...ecture industry. "Most of the  
...panies we investigate are not  
...y-night operations," he says.

Joch is a technology and business  
...r based in New England. Contact  
... at [ajoch@monad.net](mailto:ajoch@monad.net).

For more information on  
...nology for architects, including  
...ws, vendor lists, and links,  
... Digital Architect at  
...[architecturalrecord.com](http://architecturalrecord.com).

"They're good, well-managed com-  
...panies that pay taxes and obey  
...Occupational Safety & Health  
...Administration requirements. But  
...when it comes to software manage-  
...ment, they have a blind spot."

Architects are not alone. Across  
...all industries, about a quarter of the  
...commercial software in the U.S. is  
...being used illegally, representing  
...approximately \$2.6 billion in lost  
...revenues for software companies,  
...according to the BSA. In response,  
...the group is becoming more aggres-  
...sive—some say excessively so—in  
...enforcing licensing agreements.  
...Currently, 500 companies are nego-  
...tiating with BSA lawyers to resolve  
...compliance issues. Over the past 12  
...years, the organization has received  
...more than \$83 million in penalties.

Claims can include fines of up  
...to \$150,000 for each copyright  
...infringement, in addition to charges  
...of two to three times the standard  
...price for any software a violator  
...must purchase so that the number

of licenses they own is equal to the  
...number of people using the soft-  
...ware. In extreme cases, software  
...vendors may attempt to recover  
...profits attributable to their software  
...in court, a potentially deadly blow to  
...an architectural office that routinely  
...uses CAD applications. License viola-  
...tors may also face prosecution  
...under federal copyright laws, which  
...carry maximum fines of \$250,000  
...and jail time.

### Getting religion

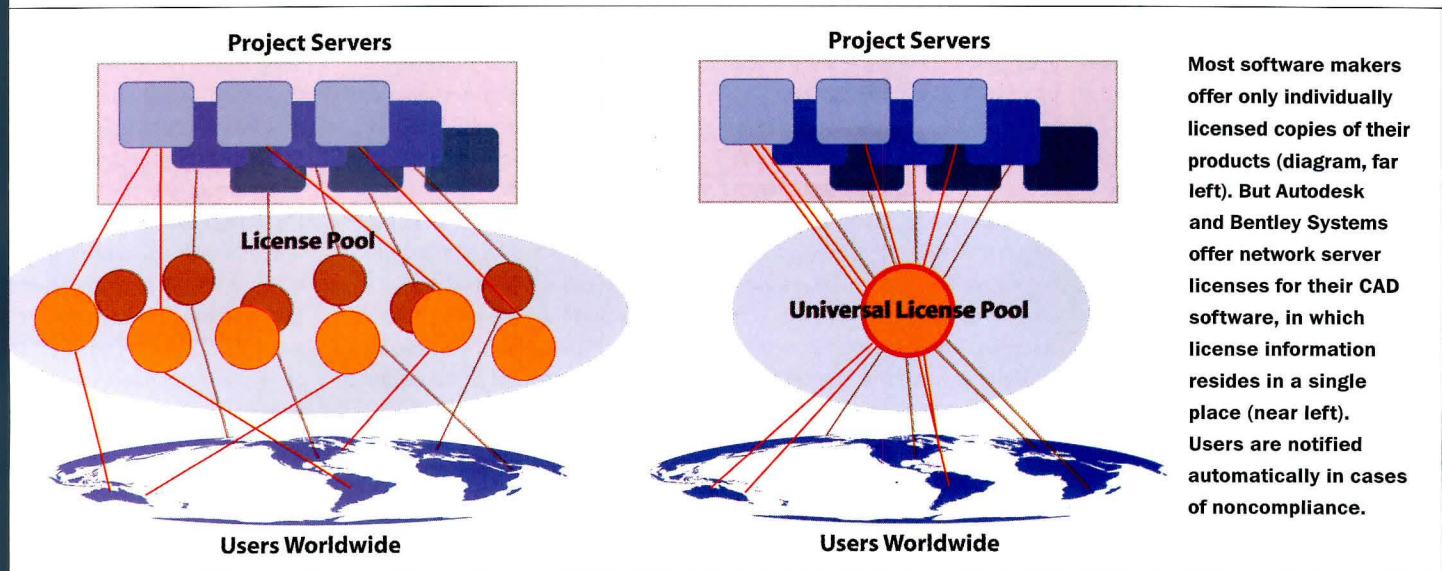
Almost all of the BSA's enforcement  
...cases begin with a lead submitted  
...to its "hotline" by a disgruntled  
...employee who reports an employer  
...that is out of compliance. If BSA  
...investigators find merit in the claim,  
...they usually send the alleged viola-  
...tor a warning letter designed to  
...instill fear. Some letters even advise  
...the software user to close down its  
...business until any licensing discrep-  
...ancies are resolved, says Robert  
...Zielinski, chair of the intellectual

property and information technology  
...practice at Wolf, Block, Schorr and  
...Solis-Cohen, a Philadelphia law firm.

Zielinski says these letters are  
...becoming more commonplace, with  
...more of them going to smaller com-  
...panies that may once have felt they  
...could fly under the radar screens of  
...big software vendors. "Before they  
...receive a letter, these companies  
...don't understand the importance of  
...software licenses," Zielinski says.  
..."But once the letter comes, they get  
...religion very quickly."

Besides the emotional jolt, a  
...letter can also be a budget buster,  
...even for companies in compliance.  
...One IT director for an architecture  
...firm says his former employer spent  
...almost \$10,000 in staff time to  
...document all its Microsoft software  
...licenses after it received a compli-  
...ance letter, even though they had  
...the required number of licenses.

The BSA contends that  
...accounting for licenses is straight-  
...forward. "You're just adding up the



# Digital Architect

## DIGITAL TECHNOLOGY

number of software programs you're using and checking it against how many software licenses you own," Kruger says. But users believe that even conscientious companies can easily run afoul of overly complex agreements. One "gotcha" comes when companies recycle old computers. For example, a designer who receives a new workstation may pass down her old computer to somebody within the administrative staff, without deleting the CAD software that was on the machine. The software may never be used again, but because it still resides on the hard drive, it may turn up as a violation in a software audit.

Other people become confused by the myriad license types offered by software companies. Some allow registered users to legally install software on both a desktop and notebook computer, while other agreements limit usage to a single computer. Also, IT managers may find themselves constantly working to keep staff members from loading software brought in from the outside. "When you have zillions of computers in a company, it's hard to make sure nothing sneaks in," says Peter Theis, IT director at Roger Ferris + Partners in Westport, Connecticut.

Of course, some noncompliance cases involve the outright disregard of agreements by companies trying to cut costs for expensive software, particularly CAD programs, which cost upwards of \$2,000 to \$3,000 per seat. Other scofflaws flaunt what they consider to be unfair and restrictive license agreements. For example, some agreements give software vendors the right to enter a business to perform an audit whenever it suspects a violation. "Some of this stuff is sickening," says one architect in the Northeast.

"When you use the term 'piracy,' you're making an analogy that's way over the top," says Bradley Kuhn, executive director of

the Free Software Foundation, a Boston-based group that advocates the development of freely distributed "open source" software, such as the popular Linux operating system. He believes current licensing policies and "tip lines" foster distrust among coworkers, and that a new business model built on freely distributed source code is the answer to copyright infringement problems.

Kuhn concedes the handful of free CAD programs now under development are not yet ready for prime time, but he believes that situation could change if more professionals supported the free software movement. "If consumers took half the money they're paying for CAD licenses every year and gave it to some free software project, [open source versions] could be developed and people wouldn't have to pay for licenses anymore," Kuhn says.

### Compliance strategies

Since market-ready, open-source CAD applications won't be available anytime soon, how can architects make sure their company avoids a

## LICENSE VIOLATIONS CAN SNEAK UP ON WELL-MANAGED FIRMS. CREATING A POLICY FOR COMPLIANCE AVOIDS SURPRISES.

threatening letter from the BSA enforcement division? The first step is for upper management to articulate a formal policy regarding licensing, says Ken Sanders, FAIA, chief technology officer for Gensler in San Francisco. "Architects have a reasonable expectation that clients will comply with the terms of the contracts they sign—so it's reasonable for us to comply with the software licenses we sign, even if we don't always think they're the best terms," he says.

In addition to communicating that philosophy to employees, Sanders says senior managers must be committed to such compliance in their own minds. "If you express

Alltest Systems, Inc.						
Licenses Entered Variance Report						
Project: [Blank]						
Month: [Blank]						
Platform	License	Installation	Usage	Variance	Notes	Cost
Name, Vendor, Category and System	Quantity	Quantity	Quantity	Quantity		
<b>Total Implementation Comp. 1</b>						
	1	2		1		
<b>Total Implementation 2</b>						
	2	1		1		
<b>Total Implementation 3</b>						
	1	1		0		
<b>Total Implementation 4</b>						
	1	1		0		
<b>Total Implementation 5</b>						
	1	1		0		
<b>Total Implementation 6</b>						
	1	1		0		
<b>Total Implementation 7</b>						
	1	1		0		
<b>Total Implementation 8</b>						
	1	1		0		
<b>Total Implementation 9</b>						
	1	1		0		
<b>Total Implementation 10</b>						
	1	1		0		
<b>Total Implementation 11</b>						
	1	1		0		
<b>Total Implementation 12</b>						
	1	1		0		
<b>Total Implementation 13</b>						
	1	1		0		
<b>Total Implementation 14</b>						
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<b>Total Implementation 15</b>						
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<b>Total Implementation 16</b>						
	1	1		0		
<b>Total Implementation 17</b>						
	1	1		0		
<b>Total Implementation 18</b>						
	1	1		0		
<b>Total Implementation 19</b>						
	1	1		0		
<b>Total Implementation 20</b>						
	1	1		0		

ambiguity, people take cues from that," he says. "You need to sit down and talk from the standpoint of how acting this way is part of being a good citizen. You may not agree with all the copyright laws and think it's not reasonable to restrict the use of software, but at the end of day, when comes down to an agreement you have signed with another party, you must honor it."

To ease the logistics of compliance, IT directors suggest purchasing network server licenses of software applications whenever possible. In this model, a predetermined number of "seats"—say 10 licenses of a CAD application for a department of 15 designers—reside on a single server. Any 10 people may use the application at a given time, but the system locks out

additional users until somebody logs off. This relieves architects from constantly monitoring usage to make sure no one is using a program illegally. Currently, Autodesk and Bentley Systems offer this licensing arrangement for their respective products. However, other vendors important to architecture firms, including Microsoft and Adobe, don't provide these types of licenses. "This means we have to manually keep track of, for instance, who has Photoshop installed in each machine, which is difficult," says James Brogan, AIA, IT director for Kohn Pedersen Fox. "I'm disappointed there isn't a server license for these other software packages."

GASP, by Attest Systems, is one of several tools that help firms manage software licenses electronically. The software can generate reports that help IT managers determine if they have enough copies of products available for the number of users needed.

Third-party auditing programs are also available to help IT departments keep accurate records of licenses and software installations. These products include Express Software Manager from Express Software, Inventory from Altiris, TS.Census from Tally Systems, and GASP from Attest Systems. Prices are based on the number of computer users in an organization. A 100-seat version of GASP costs \$22 per seat. (The BSA Web site lets companies download a free trial version of GASP, which will monitor 100 computers for 60 days.)

Theis, of Roger Ferris + Partners, says architecture firms, especially larger ones, that don't make use of auditing software "are a nightmare" trying to comply with licenses. "You could spend hundreds of hours" matching what's on each computer to a master list of licenses, he says.

Keeping this information in an electronic record helps a company not only stay in compliance, but also know where it stands if an auditor arrives. If that happens, Ziegel tells his clients to respond quickly and honestly, even if they're not in compliance. "We counsel clients never to swap out hard drives or reformat disks [to hide illegal software copies]. That only makes things worse and really makes you look guilty." Instead, he says, companies should conduct internal audits to understand how they got out of compliance and what they need to do to resolve the problem. The subsequent fines may be substantial but this avoids walking the plan into a federal courthouse. ■

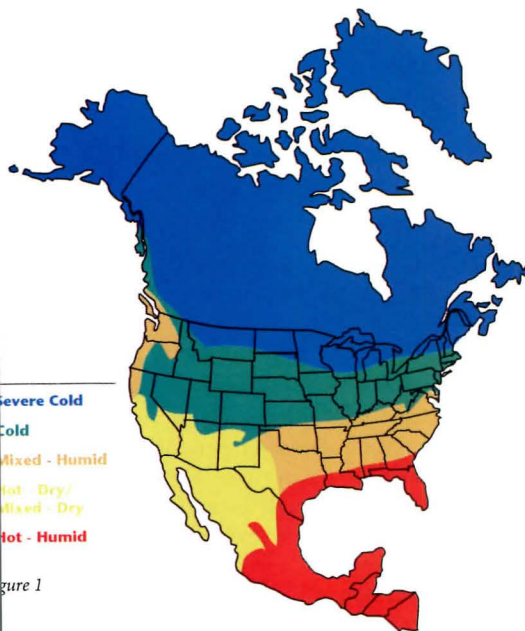
DOW BUILDING MATERIALS PRESENTS

# Moisture Management in Steel Stud Assemblies

Steel stud assemblies are gaining increased popularity in commercial construction as part of an economical and versatile wall system. Steel studs offer many advantages such as low cost and non-combustibility. They enable a small footprint and are lightweight. However, when specifying steel stud wall systems, climate must be considered in order to control moisture and energy flow.

Designers have accepted that commercial buildings must be responsive to varying seismic risks, wind loads and snow loads, yet typically overlook variances in temperature, rainfall, exterior and interior humidity and their interaction.<sup>1</sup>

The hygro-thermal regions shown in *Figure 1* are determined by heating degree-days experienced throughout a normal calendar year.



**Severe Cold Climates** equal 8000 heating degree-days and higher.<sup>1</sup>

**Cold Climate** equals 4500 - 8000 heating degree-days.<sup>1</sup>

**Mixed Climate** equals 4500 heating degree-days and less.<sup>1</sup>

Severe Cold, Cold and Mixed climates experience between 20 and 60" of precipitation per year.<sup>1</sup>

**Hot Humid Climate** is the region of North America that averages a temperature of 45°F or higher throughout the year and experiences more than 40" of rain.<sup>1</sup>

**Hot Dry Climate** is the region of North America that averages a temperature of 45°F or higher throughout the year and experiences less than 20" of rain.<sup>1</sup>

The definition of a degree-day is as follows: *A degree day is the difference in temperature between the outdoor mean temperature over a 24-hour period and a given base temperature.* For the purposes of determining building envelope requirements, the classifications are defined as follows:<sup>2</sup>

- (a) **Cooling degree-day base 50°F, CDD50:** for any one day, when the mean temperature is more than 50°F, there are as many degree-days as degree Fahrenheit temperature difference between the mean temperature for the day and 50°F. Annual cooling degree-days (CDDs) are the sum of the degree-days over a calendar year.<sup>2</sup>
- (b) **Heating degree-day base 65°F, HDD65:** for any one day, when the mean temperature is less than 65°F, there are as many degree-days as degree Fahrenheit temperature difference between the mean temperature for the day and 65°F. Annual heating degree-days (HDDs) are the sum of the degree-days over a calendar year.<sup>2</sup>

Building envelopes and mechanical systems (HVAC) should be designed to work together based on each specific hygro-thermal climate.

## How Moisture Accumulates in Steel Stud Assemblies

Moisture works its way into a wall system in a variety of ways. It can diffuse through the components of the wall system in the form of vapor. Vapor can also be carried into the wall cavity by air infiltration or air exfiltration. Water that leaks in through the roof or through wall flashings will also enter the wall system. Let's look at each of these issues in more detail.

**Vapor Diffusion** is the process by which water vapor migrates through a wall system and its components such as gypsum, building wrap, insulation and paint. Each component of the

## CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Moisture Management in Steel Stud Assemblies**. To earn one AIA/CES Learning Unit, including one hour of health, safety and environmental credit, answer the questions on page 234 or go to the Continuing Education section on [www.aiaa.com](http://www.aiaa.com) and follow the reporting instructions.

### LEARNING OBJECTIVES

- After reading this article, you should be able to:
  - Determine how moisture accumulates in steel stud/frame wall cavities.
  - Discuss about some of the design challenges associated with steel stud walls systems.
  - Explain how participants will be able to evaluate and specify methods to reduce moisture build-up in steel stud walls assemblies based on specific geographical location.

wall system has a perm rating. The International Building Code (IBC) says that a material with a perm rating of 1.0 or less is a vapor retarder.

In Severe Cold and Cold climates diffusion from the interior side of the wall is common. In winter conditions, the vapor drive is typically from inside to outside. Moisture in the form of vapor can diffuse into the wall cavity, especially if the perm rating(s) of the material(s) on the interior side of the steel studs are greater than 1.0.

In Hot Humid and Hot Dry climates diffusion from the exterior side of the wall is common. In summer conditions, the vapor drive is typically from outside to inside. Moisture will diffuse into the wall cavity, especially if the perm rating(s) of the material(s) on the exterior side of the steel studs are greater than 1.0.

In Mixed climate, walls get the benefit of both internal and external vapor drive based on the time of year and season.

**Real life example: 400 occupants in a typical commercial building can emit up to 200 lb. of water vapor into the air per day. This water vapor can diffuse into the wall cavity and may contribute to a breeding ground for mold and decay.**

Diffusion from the exterior side of brick veneer walls is also common in all climates. In spring, summer and fall, wind-driven rain can be absorbed by brick veneer. This moisture is then stored inside the masonry layer. After the storm, as the sun heats up the brick, the moisture turns to vapor in the brick cavity and is driven into the wall system.

**Exfiltration** refers to the physical movement of air from the interior towards the exterior as a result of an air pressure difference. The pressure difference can be caused by wind effects on the building envelope. While moisture diffusion occurs on a molecular level, moisture movement by exfiltration occurs when the indoor air physically moves through commonly occurring penetrations like unsealed openings, joints in the interior vapor/air barrier, electrical outlets, etc.

**Infiltration** refers to the physical movement of air from the exterior towards the interior as a result of an air pressure difference. While moisture diffusion occurs on a molecular level, moisture movement by infiltration occurs when the outdoor air physically moves through commonly occurring penetrations like unsealed sheathing joints, joints in the exterior vapor/air barrier, window openings and flashings. Most building codes require a maximum of air infiltration rate of 0.06 ft<sup>3</sup>/min•ft<sup>2</sup> for commercial buildings.

The potential for vapor movement by exfiltration and infiltration is many times higher than diffusion due to the slowness of the diffusion process.

The air pressure difference between the inside and the outside of a building can effect how much moisture gets driven into the wall cavity. If the air pressure is greater on the warm side of the wall, vapor will be driven into the wall cavity. It is best from a **moisture perspective** to keep the warm side of the wall at a slightly lower pressure than the cold side since cold air generally holds less moisture than warm air.

### Condensation

When the actual temperature drops below the dewpoint temperature inside the wall cavity, condensation can occur if water vapor is present. The temperature of the interior side of the exterior wall sheathing and the steel studs are the most important surfaces to consider. The inside of the exterior sheathing and the steel studs are not insulated in today's commonly specified systems. This makes them more likely to be colder than other components in the wall system. Today's most commonly specified systems have 6" steel studs 16" on center with 1/2" interior gypsum board, R-19 fiberglass insulation, 5/8" exterior grade gypsum sheathing on the exterior with some kind of building wrap. This wall is referred to as the **baseline wall system** as we move through examples in this course. The R-19 fiberglass does a good job of keeping the interior of the building warm where there are no studs. However because the exterior sheathing board is on the outside of the glass fiber batt insulation, it is essentially at the same temperature as the exterior air. This theory applies to Cold climates. In Hot

### Cavity/Exterior Sheathing Interface Temperature

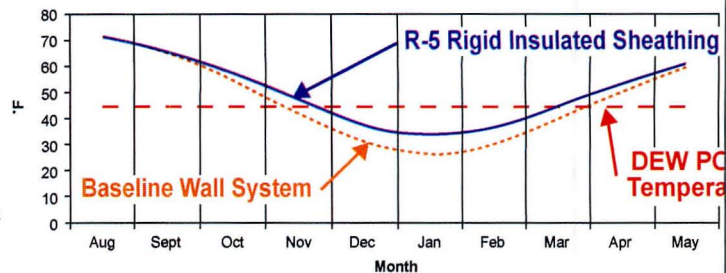


Figure 2

Chicago, IL

### Cavity/Exterior Sheathing Interface Temperature

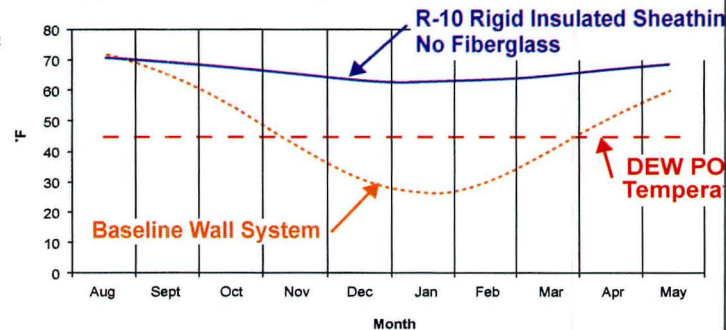


Figure 3

Chicago, IL

climates the reverse is true. It is the exterior side of the interior sheathing and the steel studs that are the most important surfaces. This is because cool side of the wall is toward the interior of the building.

Let's look at an example of the baseline wall system and how it performs over an average year in a Cold climate—like Chicago. To evaluate how each of the wall systems in the course will perform over time, an Excel spreadsheet was set up using a typical temperature difference and thermal resistance calculation. We then compare the temperatures of each surface of the wall system against the dewpoint temperature. Note that the dewpoint temperature also changes as you go through the wall system, depending on the temperature and humidity level at each surface interface. If the outside temperature is 14 degrees F and the indoor temperature is 70 degrees F, the interior side of the exterior sheathing will be about 24 degrees. With an interior relative humidity of 40% we can expect moisture to condense on the inside of the exterior sheathing and the steel studs. This is because the surface temperatures of these components are below our dewpoint temperature range of 37 to 45°. We get these dewpoint figures from a standard dewpoint chart. If this happens day after day, a semi-wet environment can be created. This example is a point in time snapshot of what can happen, so let's take it to the next level. If we take ASHRAE weather data for the city of Chicago and look at how the baseline wall system will perform over the course of a typical year, we can show the possibility of moisture build-up from early November to late March (Figure 2). This can result in five months of moisture build-up potential. So what is the solution?

To manage moisture we can try to warm up the wall cavity and its components so that they all stay above the dewpoint temperature. If we get this to happen, the water vapor will never condense. Let's look at the baseline wall system example again. Except this time we install a 1" R 5.0 layer of rigid insulation over the exterior gypsum sheathing. The results show that we can shorten the time frame during the year when moisture condenses and accumulate by about 1 month (Figure 2). This solution isn't great because we still have four months out of the year where moisture build-up can occur. However, if we take the fiberglass out of the wall cavity and increase the amount of rigid insulation (R 10.0) we apply to the exterior side of the wall, we almost eliminate the potential for

condensation to occur in the wall cavity (Figure 3). The reasons this happens are twofold. First, there is more even insulating power over the entire wall system, not just between the studs. It keeps the effective R-value of the wall system higher than that of the baseline wall system. Second, by removing the fiberglass insulation, it allows the steel studs and exterior gypsum sheathing materials to warm up to nearly the temperature of the interior of the building.

### Sealing & Drying

Wall systems will experience moisture during their useful life. Condensation, infiltration, exfiltration, leaks from window flashings and roofs, and defects in labor are all ways moisture gets into a wall cavity. Prolonged periods of severe weather conditions, hot or cold, can also produce large amounts of moisture build-up.

The key in designing an effective wall system is allowing it to dry out when it gets wet. Drying can take a long time to occur. One recommendation is to seal the exterior side of the wall as tight as possible while leaving the inside permeable enough to dry. This recommendation works in all climates. How can you accomplish this?

The first thing you can do is take the fiberglass insulation out of the wall cavity. The fiberglass thermal insulation decreases the flow of energy through the wall, decreasing the rate of drying. Without fiberglass insulation, the wall cavity and all of its components remain at relatively the same temperature as the inside of the building. The wall cavity becomes conditioned space, which leads to less moisture build-up and better drying capabilities.

The second thing you can do is specify an air barrier membrane on the interior side of the exterior gypsum sheathing. An air barrier membrane can prevent most of the exterior moisture from entering the wall cavity. If some moisture does get in, the wall cavity is empty conditioned space, which leads to better drying capabilities.

Mold is not necessarily harmful. However, concerns have been raised regarding the health effects of certain strains of mold on susceptible individuals. Individuals with existing medical problems or suppressed immune systems may risk infection.<sup>3,4,5,6</sup> In general, molds demand a favorable combination of the following conditions to germinate, proliferate, and grow:

- Fungal spores settling on the surface

- Oxygen availability

- Optimal temperatures (40 – 100°F)

- Nutrient availability

- Moisture (liquid or relative humidity above 70%)

The first four conditions are met in almost every building. The key limiting factor is moisture, which may be managed by adhering to the good construction practices discussed in this AIA course.

Since mold can grow in wall cavities where the relative humidity level is 70% or higher, it is imperative in Hot Humid climates to keep the humidity to the outside of the building. Conditioning the air in the wall cavity is one of the best ways to manage the humidity level in that space.

### Thermal Performance

The current IBC, ICBO, SBCCI and BOCA building codes all refer to the American Society of Heating and Air Conditioning Engineers (referred to in this course as ASHRAE) 90.1 code for energy compliance. The International Building Code requires that designers reference ASHRAE 90.1-1999 version. The 1999 version requires that walls in most Cold, Moderate, Hot Humid and Hot Dry climates areas of the United States meet a minimum R-Value requirement of 8.10. The 1999 version requires that walls in most Severe Cold climates areas of the United States meet a minimum R-Value requirement of 15.6.

## Moisture Management in Steel Stud Assemblies

Because of the high conductivity of steel, ASHRAE requires that architects use a factor in calculating the effective thermal performance of fiberglass insulation in steel stud walls. For example, in the baseline wall system with 6" steel studs 16" on center, the R-19.0 fiberglass is factored by 40%. This results in an effective R-value of 7.6 ( $19.0 \times .40 = 7.6$ ). When using rigid insulation on the exterior side of the wall, ASHRAE gives full credit for the manufacturer's published R-value because there are less thermal shorts when insulating by this method.

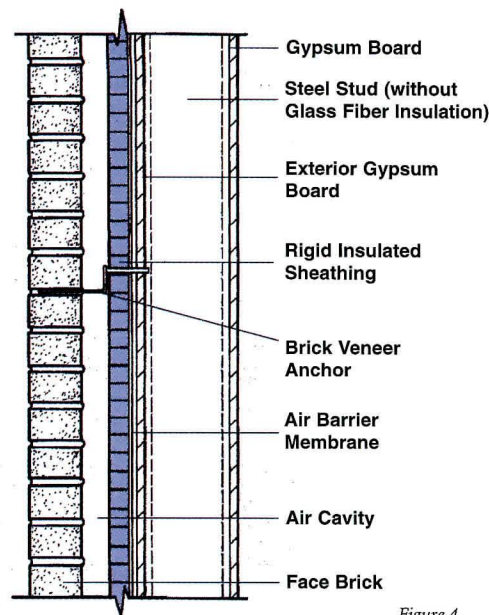


Figure 4

Steel Stud Cavity Wall with Interior and Exterior Gypsum and Uninsulated Stud Cavity

In most cities in the United States, the baseline wall system will meet the minimum ASHRAE code requirements because of the additional insulating value that you get from the other wall components. However, in Severe Cold climates, you need to pay more attention because the minimum requirement jumps substantially to 17.54. In these locations the only way to meet code is to use insulated sheathing on the interior or exterior side of the wall.

### Fire Performance

The International Building Code requires UL-rated wall assemblies only when buildings are 30 ft. or closer to each other. Most commercial buildings are not with 30 ft. of each other. Therefore there is not a need for a fire-rated wall assembly in most cases. When there is a need for a rated wall assembly, please refer to the UL design manual for recommendations.

### Sound Transmission

When changing the component make-up of a wall system, you must consider what effect the changes will have on the interior environment as it relates to sound. The baseline wall system with a 4" brick veneer will perform relatively well in keeping the outside sound out of the interior space. This system has a Sound Transmission Coefficient (STC) of 63. By taking the fiberglass out of the cavity space and insulating with thick rigid foam on the outside of the cavity (Figure 4), the STC is lowered to approximately 60. The amount of insulation put on the exterior will affect the final result, but not dramatically, once you get over 1 1/2" thick material.

### Recommendation

There are several ways to design steel stud walls and control moisture build-up. The recommendation in this course only looks at one way. This system can be used in all climates and only differs in the thickness of insulation needed. Refer to Figure 4 for a cross section detail of this recommended system.

Working from the inside out, the recommendation is to leave the wall cavity empty so that it becomes conditioned space. The exterior grade gypsum sheathing stays in the system to help wrap up the building quickly and give time for the interior work to start. An air barrier membrane is specified to attempt to eliminate moisture from entering the cavity from the exterior side, and a minimum R-7.5 rigid insulation is required on the

exterior side to meet the energy code requirements in most climates. The insulation will keep all of the wall components, except for the brick veneer, close to the inside temperature and humidity levels. This leads to better moisture control and drying capabilities. The R-value recommendations per climate are as follows:

**Severe Cold Climate: R-15.0**

**Cold Climate: R-12.5**

**Mixed Climate: R-7.5**

**Hot Humid Climate: R-7.5**

**Hot Dry Climate: R-7.5**

Different variations can be made where it makes sense to do so based on climate. For example, in Hot Dry climates, it may not be necessary to use an air barrier membrane because in general, the level of relative humidity is so low. This would apply to the southwestern United States. In this case, a good building wrap would stop bulk water from entering the cavity. Any water vapor that does enter the wall system will enter into conditioned space and most likely dissipate before it has a chance to condense.

Let's take this recommendation and look at some modeling examples for cities in three different climates. For the Severe Cold climate we look at Minneapolis, Minnesota. For the Cold climate, Philadelphia, Pennsylvania is our choice, and for our Mixed climate example, St. Louis, Missouri. In each model we are comparing the baseline system against our recommended system.

The modeling will use ASHRAE weather data to predict when the potential for moisture build-up is likely to occur during a typical year. Figures 5, 6 & 7 depict how each system is predicted to perform.

In Minneapolis the results are similar to our Chicago example. The baseline wall system has a potential for condensation from early November to early April, or a 5-month period. In Philadelphia and St. Louis the potential for condensation is from early December to early March, or a 3-month period using the baseline wall system. The recommended system keeps the potential for condensation very low in all three climates. The key point to remember is that these predictions are based on average ASHRAE weather data. If we run into severe winter conditions like winter 2002-2003, the potential for moisture development only increases.

### Summary

Controlling moisture in wall cavities is extremely important to the long term health and durability of the wall system. No matter what climate your building is in, water will find its way into the wall through diffusion, exfiltration, infiltration, or leaks. In Severe Cold, Cold and Mixed climates, this water can condense time after time, creating a semi-wet environment. In Hot Humid and Hot Dry climates condensation can also occur.

Mold can grow when a favorable combination of the 5 conditions exists:

- Fungal spores settling on the surface
- Oxygen availability
- Optimal temperatures (40 – 100°F)
- Nutrient availability
- Moisture (liquid or relative humidity above 70%)

Even if water in a liquid state does not exist, mold can advance. A relative humidity level of approximately 70% or higher can create an environment for mold to germinate, sporulate, and grow.

The key to controlling moisture build-up is to limit the amount of water that enters the wall cavity from the exterior side of the building and manage the environment in the cavity space to ensure proper drying of the wall system. By following the recommendations in this course, your wall systems will have a better chance of longevity and performance.

### Design A Severe Cold Climate Cavity/Exterior Sheathing Interface Temperature

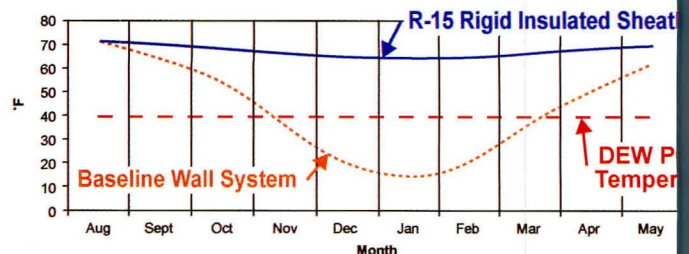


Figure 5 Minneapolis, MN

### Design A Cold Climate Cavity/Exterior Sheathing Interface Temperature

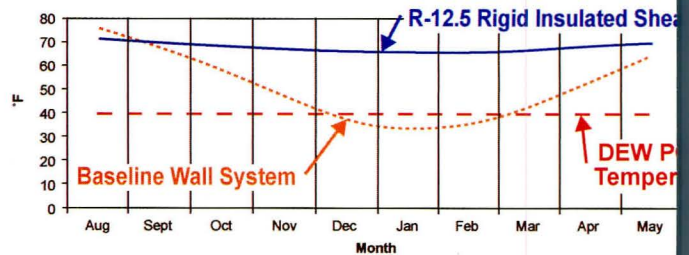


Figure 6 Philadelphia, PA

### Design A Mixed Climate Cavity/Exterior Sheathing Interface Temperature

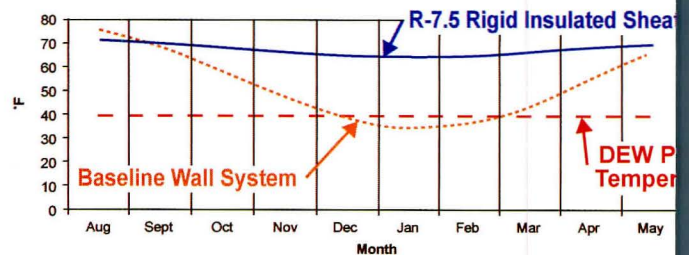


Figure 7 St. Louis, MO

### Footnotes

1. Building Science Corporation, [www.buildingscience.com](http://www.buildingscience.com), Site date March 4, 2003.
2. ANSI/ASHRAE/IESNA Standard 90.1-2001, Energy Standard for Buildings Except Low-Rise Residential Buildings, copyright 2001 American Society of Heating, Refrigeration and Air-Conditioning Engineers, Inc.
3. "Mold Resources," U.S. Environmental Protection Agency, [www.epa.gov/iaq.pubs/moldresource.html](http://www.epa.gov/iaq.pubs/moldresource.html), Site dated April 4, 2001.
4. "Indoor Air Quality Info Sheet," California Department of Health Services, [www.cal-iaq.org/mold9803.html](http://www.cal-iaq.org/mold9803.html).
5. "Mold Control in the House," Johns Hopkins University Asthma and Allergy, [www.hopkins-allergy.org/rhinitis/therapeutics-house.html](http://www.hopkins-allergy.org/rhinitis/therapeutics-house.html).
6. "Questions and Answers on Stachybotrys chartarum and Other Mold," Center for Disease Control and Prevention (CDC), [www.cdc.gov/nceh/asthma/factsheets/molds/default.html](http://www.cdc.gov/nceh/asthma/factsheets/molds/default.html), dated July 6, 2001.



### Click for Additional Required Reading

As part of the CES Learning Activity, you are required to read additional material online. To access the material on effective R-value, structural considerations, and alternative wall systems, visit

[archrecord.construction.com/resources/conteduc](http://archrecord.construction.com/resources/conteduc). To obtain a faxed copy of the supplemental material, please contact Joe Barrow at [jbarrow@dow.com](mailto:jbarrow@dow.com). The test below includes questions derived from the online material.

## AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION Series

### LEARNING OBJECTIVES

- learn how moisture accumulates in steel stud/frame wall cavities.
- learn about some of the design challenges associated with steel stud walls systems.
- participants will be able to evaluate and specify methods that reduce moisture build-up in steel stud walls assemblies based on specific geographical location.

### INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 234. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—[archrecord.construction.com](http://archrecord.construction.com)—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

### QUESTIONS

**Q: 1.** Diffusion from the interior side of the wall is common in which:

- A: a.** Severe Cold and Cold climates  
**b.** Hot Humid climates  
**c.** Hot Dry climates

**Q: 2.** 400 occupants in a typical commercial building can emit up to how many lb. of water vapor into the air per day?

- A: a.** 100  
**b.** 150  
**c.** 200

**Q: 3.** From a moisture perspective, it is best to keep the warm side of a wall at which pressure in comparison to the cold side?

- A: a.** Slightly lower pressure  
**b.** Slightly higher pressure

**Q: 4.** Which generally holds less moisture?

- A: a.** Warm air  
**b.** Cold air

**Q: 5.** Exfiltration refers to:

- A: a.** Physical movement of air from the interior towards the exterior  
**b.** Water vapor migrating through a wall system  
**c.** Physical movement of air from the exterior towards the interior

**Q: 6.** The inside of the exterior sheathing and the steel studs are not insulated in today's commonly specified systems.

- A: a.** True  
**b.** False

**Q: 7.** The exterior side of the interior sheathing is the most important surface in which climate?

- A: a.** Hot Humid  
**b.** Cold  
**c.** Severe Cold  
**d.** Mixed

**Q: 8.** The key to designing an effective wall system is to:

- A: a.** Keep all moisture out of the building  
**b.** Maintain a consistent temperature within the wall year round  
**c.** Allow it to dry out when it gets wet

**Q: 9.** Fiberglass thermal insulation does which:

- A: a.** Decreases the flow of energy through the wall and can decrease the rate of drying  
**b.** Increases the flow of energy through the wall, increasing the rate of drying

**Q: 10.** Most conditions for mold growth exist in almost every building. Which condition is the easiest to control with sound construction practices?

- A: a.** Fungal spores settling on the surface  
**b.** Oxygen availability  
**c.** Nutrient availability  
**d.** Moisture (liquid or relative humidity above 70%)



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Monastery of Angels, Hanceville, Alabama.

THE MARBLE INSTITUTE OF AMERICA PRESENTS

## The Beauty of Natural Stone

*Elegant, enchanting, enduring  
and more affordable than ever before*

The use of natural stone has skyrocketed. Its popularity, especially for interiors, is at a record level, driven in part by technological advances in its fabrication.

“For our office, stone is a critical element in almost every design we do,” says Joshua Zinder, project manager at Princeton, N.J.-based architectural firm Michael Graves & Associates. “It’s one of the places we like to start a project.”

“The most exciting thing about the stone industry today is the increased acceptance of marble and granite by many users, for new and different as well as traditional applications,” says Vincent Migliore.

Migliore’s family interest in stone dates to 1843, and Migliore has worked all ends of the trade. Today he is a fee-based consultant and president of Empress Migliore SPA, Phillipsburg, N.J., and technical director for the Marble Institute of America. “The market has gone crazy,” he says. Stone is being used as never before.

“The cost of stone has come down substantially as a percentage of building costs,” Migliore says. “Its cost today is lower than it was 10 years ago.”

“Technological advances in all areas of stone production – quarrying, fabricating, and especially installing – have dramatically reduced the cost of using stone,” says Rich Booms, president of the Marble Institute of America and owner of Redford, Mich.-based Booms Stone Co.

“New, automated machinery allows us to cut stone thinner, at less cost, and more consistently,” Booms says. “The development of new anchorage systems makes installation easier, quicker, and more secure, and that, too, has driven prices downward. If we can install 30 pieces per day, instead of 15, the cost to the owner goes down by that amount.”

Contemporary cladding systems make it possible to use panels as little as  $\frac{3}{4}$ -in. (2 cm) thick, with a notable reduction in the cost of stone.

Polished slabs of 2 cm-thick granite now sell for between \$22 and \$42 per sq. ft., depending on the color; rough 2 cm-thick slabs of marble, between \$8 and \$36 per sq. ft. Patterned edge material can cost from \$12 (for a square edge) to \$62 (for something as complex as a “reverse glacier” edge) per lineal foot.

Modular thin stone tile, a product of modern technology that is cut to a thickness of only  $\frac{3}{8}$ -in. (1 cm), is suitable for many applications in which panels might previously have been specified, but is generally used on interior floors and walls.

### CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **The Beauty of Natural Stone**. To earn one AIA/CES Continuing Education Unit, including one hour of health safety credit, answer the questions on page 205, follow the reporting instructions on page 236 to the Continuing Education section on [record.construction.com](http://www.aiaa.com/record.construction.com) and follow the reporting instructions.

### LEARNING OBJECTIVES

After reading this article, you should be able to:

• demonstrate a greater understanding of how to select natural stone.  
• identify some of the characteristics of various natural stone building materials.

• describe a sense of how to avoid some common problems when using natural stone.



Nauvoo Temple in Illinois features hand-tooled and intricately carved limestone in six different finishes.

"For interior use, granite is now routinely less expensive than any of the dozen or so manufactured granite look-alikes," says Booms. There is considerable disparity between regions, but U.S. sq. ft. prices for installed granite countertops are between \$40 (in the South) and \$60 (in the North).

"Stone," says Zinder, "has a permanence about it, a certain majesty. It is almost always our first choice for exteriors and for interior floors. Regrettably, far too often, that element of the design gets engineered out. But I think that will change because there are a lot of stone products on the market that you can use where you couldn't before. New aluminum honeycomb backing systems, for instance, now allow the use of thinner stone, with no aesthetic drop-off.

"Our clients," says Zinder, "want stone in a particular room, or a particular setting, and they are often willing to cut costs in other places to keep stone in the project."

Cladding contractor Masonry Arts, Inc., Bessemer, Alabama, one of the firms that reconstructed the Pentagon following the 9/11 attack, was the Marble Institute of America's 2002 Pinnacle Award winner for commercial interiors for its role in the construction of Our Lady of Angels Monastery in Hanceville, Alabama. The monastery is an eloquent expression of the luxuriousness of stone (See picture on page 165).

Judges said of the project, which replicated 13th century detail and was five years in construction, "this job exemplifies true marble craftsmanship. The scale of the project and elaborate detailing make it a real work of art."

"There hasn't been a church built like this since the beginning of the last century," says Masonry Arts owner Roy V. Swindal.

In the online section of this continuing education section, Swindal offers advice on selecting and working with stone.

## The Market

Despite a nationwide decline in commercial construction, the residential sector, fueled by a continuous dose of low interest rates, is enjoying a near-record run.

The number of U.S. households with an annual income of more than \$100,000 has increased from three to seven percent over the five years.

The Washington, D.C.-based National Association of Home Builders (NAHB) reported in February that work on new homes and apartments reached a seasonally adjusted annual rate of 1.85 million units in January (based on U.S. Commerce Department figures), the fastest pace in 16 years, and the highest best single-family housing production in 24 years.

New single-family homes were constructed at a seasonally adjusted annual rate of 1.51 million units in January. "This was up 2.1 percent from December's strong number and the fastest production pace since November of 1978. It also is just shy of the fastest construction production on record - 53 million single-family units started in December of 1977," said NAHB President Kent Conine, a home and apartment builder from Dallas, Texas.

From 1994 through 2001, U.S. homeowners spent an average of \$20 billion per year on kitchen and bath remodels.

Those factors have led to a robust market in natural stone. According to the U.S. Geological Survey, 1.22 million metric tons of domestic stone, valued at \$263 million, were produced in the U.S. in 2001. In October 2002, the last month for which figures were available, imports of granite and marble to the U.S. reached \$93 million. Italy, by virtue of the fact that it is the oldest and most respected processor of marble and granite, was the source of the greatest dollar volume of imports. Brazilian granite exports to the U.S. of more than 36,300 tons, however, nearly doubled Italian exports to the U.S.; China was third.

Turkey, in October 2002, exported 28,286 tons of marble to the U.S., nearly twice the volume of Italy. Mexico was the third-leading exporter of marble to the U.S.

Stone selection once was limited to what was locally available. Today's stone marketplace, however, is virtually worldwide, and new sources of stone are emerging outside traditional markets.

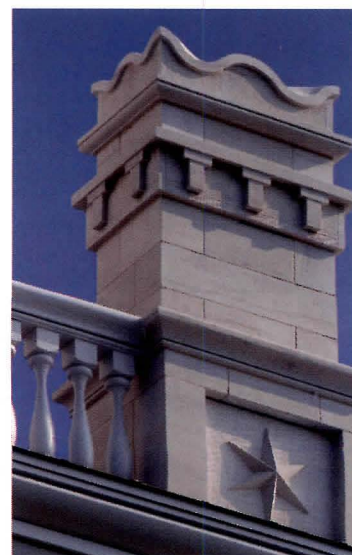
"Italy and Spain are still the hubs of the international stone market," says Booms. "The products from the Far East are not the most glamorous on the market, but they are very competitively priced."

## Natural Stone

The universally used genetic classification of stone recognizes three kinds of stone: igneous, metamorphic, and sedimentary, and all are used in construction.

Igneous rocks are solidified from molten material. If the molten material solidifies deep in the crust, it will cool slowly and produce the crystalline, intrusive igneous rocks valuable as natural stone. Granite, gabbro, and basalt are examples of igneous rocks.

Sedimentary rock includes limestones, travertines, and sandstones formed by the accumulation of materials settling in basins and sea beds and becoming compacted over millions of years.



Each Nauvoo Temple sunstone was hand-carved from a 6,000 lb. block of limestone.

Limestone, used throughout the world as a building material, is found in colors ranging from dead white to black and many colors in between. Some limestones are hard and dense; others are soft and relatively porous. Harder limestones may take a polish; softer ones will not.

Travertines are a crystalline form of calcium carbonate, developed in layers deposited near cold and warm mineral springs. Characteristic holes were formed by the percolation of mineral water through the deposit over millions of years. Travertines, too, vary widely in color, hardness, density, and porosity. They are typically light to dark beige and many can be polished to a high gloss. Sandstones are composed primarily of quartz grains bonded together with silicon, calcium carbonate, or iron oxide. The color is determined by the percentage of iron oxide.

The third classification of stone, metamorphic rocks, are rocks transformed from other rock types into marbles, slates, quartzites, soapstones, schist, and gneiss. Marbles are formed primarily of dolomite and calcite with a wide variety of other minerals contributing to their color and texture. Marble began as limestone, and the colors, textures, and veining are produced through metamorphic activity. Commercially, any stone (except granite) capable of taking a polish is called marble.

Among the natural stones, two are highly popular as monumental building stones:

**Granites:** Are igneous rocks derived from molten masses or magmas, the chief minerals of which are feldspars and quartz and smaller amounts of mica and hornblende. They are classified as fine-grained, medium-grained, and coarse-grained.

Medium-grained granites contain feldspar crystals that average about  $3/4$ -in. in diameter. If relatively coarse-grained granite appears in a fine-grained matrix, the rock is designated as a porphyritic granite.

The color of granite is governed largely by the color of the feldspar, usually the most abundant mineral. Near-white, dark gray, green, light gray, pink, and purple granites are common, but granites of other colors are becoming common. A uniform color distribution has traditionally been a desirable feature. However, many of today's granites exhibit veining movement and artistic background patterns or variations.

The term "texture" as applied to granite means size, degree of uniformity, and arrangement of constituent minerals.

The texture of granite signifies the size and arrangement of mineral grains. Uniform grain size usually is demanded in commercial granites. Uniform distribution of the minerals is as important as uniform grain size.

Granite surfaces may be finished in a number of ways. In general, smooth finishes tend to emphasize color and veining; rough finishes tend to disguise veining or markings.

**Marble:** Is a metamorphic rock resulting from the recrystallization of limestone caused by heat and pressure, making marble a more dense stone capable of taking a polish.

The color, veining, clouds, mottlings, and shading of marble are caused by substances included in minor amounts during formation. Iron oxides make blacks, yellows, browns, and reds. Most blacks, grays, and blue-grays are of siliceous origin. Micaceous chlorites, and silicates cause greens.

Grains of calcite, the chief constituent of most marbles, are crystalline and have definite cleavage that shows bright reflecting faces on a broken surface. In most marbles, the grains are elongated in one direction, giving marble a definite grain.

In general, marbles are classified into four groupings that should be taken into account when specifying marble: The groups—*A*, *B*, *C* & *D*—are classified exclusively on the basis of their solidity and on the stone's working characteristics, and in no way refer to the quality of the stone in a particular group.



Ten granite fingers adorn the front entrance of the Phillips Plastics Custom Facility in Wisconsin.

**Group A** marbles are sound, with favorable working qualities. They contain no geologic flaws or voids that would require filling or patching and may be used for interior or exterior applications.

**Group B** marbles may be expected to contain small holes or voids which may be filled with epoxy, shellac, or polyester resin through processes known as "waxing" or "sticking." Waxing refers to the practice of filling minor surface voids with melted shellac, cabinetmaker's wax, or certain polyester compounds. (It does not refer to the application of paste wax to the surface to make it shinier.) Sticking describes the butt-end repair of a broken piece of stone, now generally done with dowels, cement, or epoxy. Filling of imperfections within this group most likely will not be noticeable.

**Group C** marbles commonly have blemishes, the result of impurities that have not changed into other minerals during formation. This is the largest and most colorful group of marbles. With this group, it is standard practice to repair the variations in structure through reinforcing, liners, sticking together, filling with resin or cement, and other procedures that render the stone suitable for architectural purposes.

**Group D** marbles contain a larger number of natural faults than the previous category and require more finishing.

Marble may be finished in a number of ways. In general, as with granite, smooth finishes tend to emphasize color and veining; rough finishes tend to subdue those markings.

The translucency of marble is one of its most intriguing attributes. Not all marbles, however, possess this quality. Translucence is dependent upon the crystal structure of the stone, its color (white and lighter-colored marbles are generally more translucent), the thickness of the material, and its surface finish (smooth finishes emphasize marble's translucence). Translucent marbles can be used to diffuse light, may act as a translucent countertop surface, and have other applications when properly backlit.

### Stone Selection

"Uniformity of material," when applied to natural stone, whether marble, granite, limestone, or slate, is a term of relative value that needs to be understood when making a selection. And designers must first be aware that because building stone is a natural material, quarried and cut from blocks, then finished, material even from the same quarry may vary greatly in color, texture, and porosity. Materials quarried over even a six-month period from the same site may differ. It is crucial, therefore, that before making a final

selection, designers be certain they have access to enough stone to finish a project.

For ease and economy, modular stone tiles offer a good option to stone panels for interior walls and floors. Thin stone tiles, varying in thickness from 1 cm to 1.5 cm, are available in modular sizes of 12 in. X 12 in. to a maximum of 24 in. X 24 in. The final look with such tiles, however, may fall short of expectations with regard to appearance, especially if the stone is variegated and veined, and tiles from different boxes should be mixed by the installer to ensure a pleasing result.

A most important concern when selecting stone for exterior applications is strength. This is especially true when selecting stone for exterior cladding over two stories. In selecting stone for exterior cladding, the engineering characteristics should be the determining factor in the final selection. Exterior stones must be able to withstand these stresses:

- weight load to be borne by anchorage systems;
- wind shear;
- humidity, which must be released to prevent problems with condensation and “efflorescence,” the crystallization of naturally occurring salts through evaporation;
- freeze/thaw cycles, which can cause stone to crack and joints to fail;
- structural contraction that occurs during the curing stage of concrete;
- permanent structural distortion, which takes place progressively until the structure has settled;
- elastic distortion, which can be caused by movement produced by load changes on the structure;
- thermal expansion and contraction, which affects stone and other structural elements at different coefficient points and which can cause problems of stability.

Where structural capability is critical, test data for compressive strength, flexural strength, modulus of elasticity, and shear strength should be studied. Where weather is a factor, absorption, porosity, and permeability studies should be made, along with freeze/thaw compressive strength tests. For high-traffic floor areas, abrasive hardness testing should be performed before making a final selection.

Granites, historically, have been favored for exterior use. Their composition makes them both resistant and stable and their surfaces will hold a high polish indefinitely. As a rule, weaker stones require greater, and more costly, reinforcement and, therefore, are not as economical.



Granite and limestone plant vessels are part of the streetscape design at the Minneapolis City Center.

Nearly any stone may be used for interior applications, typically in a  $3/4$  thickness. However, in areas like fountains or showers, the effects of water must be taken into account. The installation is more critical than the stone engineering qualities for water-based applications. The installation method is the key to success. Stones must be able to resist frequent or continuous water flow, and in the case of showers, hot steam. Steam is a catalyst that can permanently change the color of some stones. Many stones with iron oxide react to steam and can “bleed,” causing red streaks. Steam can permanently change the elements in the stone and make it do various things. The best results are obtained with a dense, resistant stone, like granite or compact marble, with a low absorption coefficient. The action of water on polished marble may cause surface dulling over time.

### Stone Testing

“Most architects don’t have much exposure to the technical side of the stone industry,” says Booms. “A great reference tool is the ‘Dimension Stone

Design Manual,’ published by the Marble Institute of America.”

The 226-page manual includes an excellent introduction to stone testing, including detailed descriptions of test categories, procedures, and specifications of ASTM International (formerly the American Society for Testing and Materials). It also offers detailed instruction for a broad range of installations, both horizontal and vertical, including curtain walls, countertops, and lavatory partitions; a guide to care and maintenance; and sample contract documents. A copy may be ordered from the association at [www.marble-institute.com](http://www.marble-institute.com).

Historically, ASTM standards for stone testing have been limited, but the organization is in the process of expanding testing, particularly with regard to travertine and serpentines. “Further testing,” says Migliore, “will further ensure the suitability of stone for a broader range of installations. A more careful review of standards for various stone products will enable architects to use stone with increasing confidence. You can, in short, now specify stone and know that it will work.”



Portions of the limestone exterior of the Pentagon had to be reinstalled following the terrorist attack of September 11, 2001.

ASTM conducts both wet and dry testing (compressive, flexural strength, and the modulus of rupture vary when wet). ASTM C 97 standards are based on tests of a stone's density, specific gravity, and water absorption.

Compressive, flexural, and bending tests are conducted under other ASTM categories along with tests for abrasion resistance and slip resistance.

Testing evaluates the suitability of a specific stone for a particular application. Strength tests are needed to determine its resistance to crushing and bending. The density, or specific gravity, is needed to design a support system capable of carrying the weight of the stone. The amount of water the material will absorb will help determine the resistance of the stone to staining and freezing, and its slip resistance is important in flooring applications.

It should be noted that European test methods might vary from ASTM and give different results for the same stone. This is particularly true of tests for wear or abrasion.

"A lot of people think of stone as delicate or fragile," says Zinder. "Before joining Michael Graves, I designed a number of corrections facilities, and ended up using laminated layers of 1/2-in. marble for shower partitions because, ultimately, it was the only material that inmates couldn't break apart. Plastic laminates were broken apart and used as weapons; stainless steel also proved vulnerable. Stone proved more durable and resistant to tampering than anything else out there." ■

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**CLICK FOR ADDITIONAL REQUIRED READING**

As part of the required material for this CES section, you are required to read additional online material. To access the material online, go to [archrecord.construction.com/resources/conteduc](http://archrecord.construction.com/resources/conteduc). To request a faxed copy, contact The Marble Institute of America at [info@marble-institute.com](mailto:info@marble-institute.com).

**LEARNING OBJECTIVES**

- Gain a greater understanding of how to select natural stone.
- Learn some of the characteristics of various natural stone building materials.
- Have a sense of how to avoid some common problems when using natural stone.

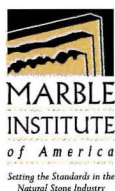
**INSTRUCTIONS**

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 236. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—[archrecord.construction.com](http://archrecord.construction.com)—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

**QUESTIONS**

- Q: 1.** From 1994 through 2001, U.S. homeowners spent an average of how much per per year on kitchen and bath remodels?
- A:** a. \$10 billion  
b. \$20 billion  
c. \$30 billion  
d. \$40 billion
- Q: 2.** At 36,300 tons in October, 2002, which country was the leading monthly exporter of granite to the U.S.?
- A:** a. Italy  
b. Spain  
c. Brazil  
d. Mexico
- Q: 3.** Which classification of natural stone includes granite, gabbros and basalt?
- A:** a. Igneous  
b. Metamorphic  
c. Sedimentary

- Q: 4.** Which classification of natural stone includes marble, slate, quartzites and schist?
- A:** a. Igneous  
b. Metamorphic  
c. Sedimentary
- Q: 5.** Which is a metamorphic rock resulting from the recrystallization of limestone caused by heat and pressure?
- A:** a. Marble  
b. Granite  
c. Sandstone  
d. Onyx
- Q: 6.** Green coloring in marble is caused by:
- A:** a. Iron oxides  
b. Bituminous materials  
c. Chlorite
- Q: 7.** Which classification of marble contains no geologic blemishes or voids that require filling or patching?
- A:** a. Group A  
b. Group B  
c. Group C  
d. Group D
- Q: 8.** Which classification of marble commonly has geologic blemishes but is the largest and most colorful group of marbles?
- A:** a. Group A  
b. Group B  
c. Group C  
d. Group D
- Q: 9.** Which stone has historically been favored for exterior use since its composition makes it both stable and able to hold a high polish?
- A:** a. Granite  
b. Marble  
c. Slate
- Q: 10.** Which stone finish is generally preferred for floors, stair treads, and thresholds?
- A:** a. Polished finish  
b. Honed finish  
c. Flamed (thermal) finish



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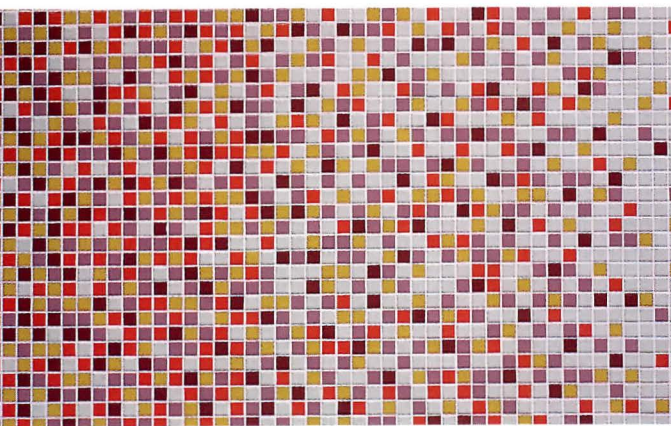
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# New Products

The application of state-of-the-art screening, glazing, molding, coloring, and other advanced techniques may help the **tile, stone, and concrete** products featured on these pages become the focus of many future projects. Whether inspired by comic books, cave drawings, classic decorative patterns, or just **the natural landscape** around us, there is no end to the possibilities of these versatile finishes. *Rita F. Catinella*



New Spanish tiles include Vidrepur's glass mosaics (left) and Deltaker's Metal series (below).



## Spanish tile trends include toned-down metallics and contemporary mosaics

coverings 2003, the major U.S. tile and stone exhibition held last month in Orlando, the Pavilion of Spain showcased the latest technologies in the Spanish ceramic-tile industry designed for the U.S. market. Many of the collections offered featured textural effects created by state-of-the-art glazing and coloring techniques. Favorite inspi-

rations were natural materials, fabrics, faux painting effects, and exotic wood finishes. Metallics, which have toned down considerably, are now used for subtle effects in decoratives—especially in silver and bronze. Deltaker's Metal is a 10" x 10" metallic-glazed porcelain-tile series. It is offered in matte, with a textured or smooth surface and a geometric,

high-relief pattern. Another trend evident at the show was for mosaics with glasslike finishes to feature contemporary, spicy colors. Vidrepur's glass mosaics have soft, rounded edges and are produced from 100 percent recycled glass. The tiny mosaics are meshed in 12" x 12" sheets for easy installation. 305/446-4387. Tile of Spain Center, Trade Commission of Spain, Coral Gables, Fla. **CIRCLE 200**

## Lightweight stone installs like brick

Boral Bricks has expanded its product offering beyond brick with the introduction of Liberty Classic Stone, a manufactured stone product that is lightweight (18 pounds per square foot, compared to approximately 45 pounds for quarried stone), installs like brick, and offers the look of natural stone with less expense. Unlike thin stone veneers, Boral's new molded stone is sized to a 3" thickness, the same as traditional brick, allowing it to be laid by masons in the same manner. A patented molding method replicates the shape and texture of stone, making the material ideal for both exterior and interior applications in residential or commercial projects. Boral's stone color is permanent, lasting even after years of weathering, and extends through the body of the stone. 800/5-BORAL-5. Boral Bricks, Atlanta. **CIRCLE 201**

## Chiseled-edge and fern-leaf impressions personalize kitchen's concrete

Concrete Canvas crafts architectural concrete pieces for home and business applications. The custom capabilities extend to products such as countertops, vanities, sinks, furniture, mantles, and hearths. The company explores natural properties of concrete in a variety of ways: It can take a cast-bronze appearance, have a distressed finish, or be used in unusual applications such as a backsplash and window surround. In a recent kitchen project, Susan Boone Jones of Fowler Interiors in Greenville, South Carolina, the homeowners wanted a material to mimic the look of chiseled limestone, which would

have been expensive. Concrete Canvas was able to form an edge to give the look of chiseled limestone, which fits into the home's upscale rustic post-and-beam style.



Concrete countertop mimics limestone.

The thick edges give a massive feel to the counters, although the counter body remains small to reduce weight. The concrete features warm, earthy colors, including green, dark gray, and chocolate, which also accent the decor of the home. The backsplash, which extends up to the cabinets, is personalized with impressions of real leaves and ferns. 864/235-8007. Concrete Canvas, Greenville, S.C. **CIRCLE 202**



## New Products

Last year marked the 20th installment of **Cersaie**, the international exhibition of ceramic tiles and bathroom furnishings held annually in Bologna, Italy. The tiles below show the range of products on display at the **million-square-foot fair**. *R.F.C.*

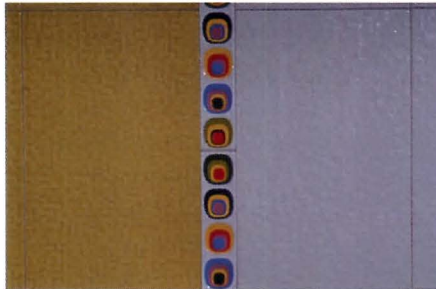


### ◀ Holy mosaics, Batman!

The Fumetto Mosaic Collections from SICIS offer an innovation for interiors with a contemporary art feeling. The mosaics bring the comic-book style of drawing to life with larger-than-life comic-strip panels that can be used individually or as part of a story to be read through the space. Featuring the Murano and Iridium collection of mosaics from SICIS, the sheets of tile are easy to apply on-site. New, complete comic-strip stories will be coming in the future from the company. 800/351-0038. Hastings Tile, Freeport, N.Y. **CIRCLE 203**

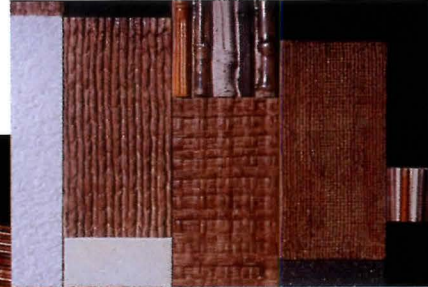
### ▶ Various tile styles

The Optical Series from Cerdomus Ceramiche was designed by Florentine architect and designer Simone Micheli. Suitable as a wall covering, the pop-arty tile comes in a range of bright colors in a single 25 cm x 40 cm (approximately 10" x 16") size. At the show, the company also introduced Pietra d'Assisi and Pietra di Angkor, porcelain tiles inspired by natural stone, and Mediterranea, a new line of tiles characterized by the colors of the sea, sun, and nature. 39/0546 652111. Cerdomus Ceramiche, Ravenna, Italy. **CIRCLE 205**



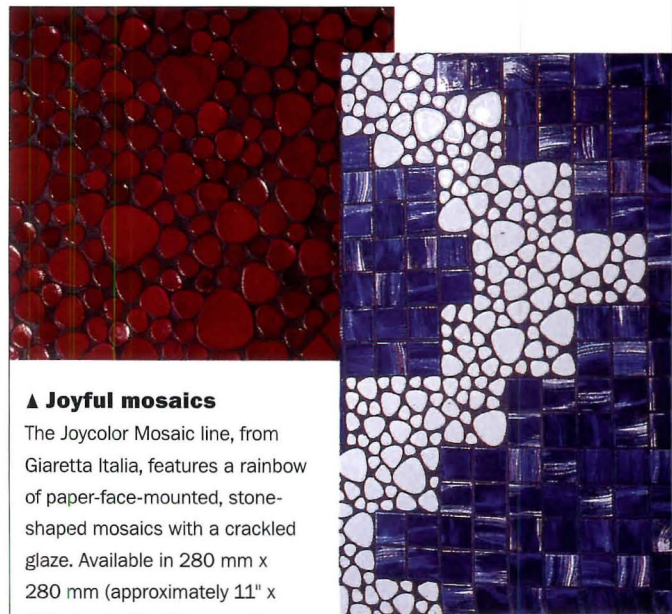
### ▼ Ceramic cave drawings

The Swahili Collection represents a return to motifs from traditional decoration. The products feature archaic symbolism of the four elements (Terra, Acqua, Aria, and Fuoco), patterns that allude to fossilized animals, symbols of tribal civilizations, and even patterns that depict an ancient interpretation of the creation of the world. 39/089 342800. Fornace Della Cava, Cava De' Tirreni, Italy. **CIRCLE 206**



### ▲ Reeds of tile

Cotto Veneto displayed an array of new offerings at its booth this year, in materials ranging from natural stone, glass, and terra cotta to stainless steel. Rilievi Canne (left) is a hand-painted bas relief in terra-cotta or enameled fired clay, inspired by the natural landscape of oases and bulrushes. The terra-cotta reeds of Stuoie (above) were also inspired by natural textures and vegetation. 518/344-7000. Cotto Veneto Tile, Schenectady, N.Y. **CIRCLE 207**



### ▲ Joyful mosaics

The Joycolor Mosaic line, from Giaretta Italia, features a rainbow of paper-face-mounted, stone-shaped mosaics with a crackled glaze. Available in 280 mm x 280 mm (approximately 11" x 11") sheets, the tiles come in creatively titled colors, including Icy Sand, Frozen Jade, Jungle Alga, Himalayan Sky, Blue Atoll, and Neptunian Heaven. The mosaics can be used in both residential and commercial projects. 39/0424 808341. Giaretta Italia, Pove del Grappa, Italy. **CIRCLE 207**

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## New Products



### ▲ Colorful accomplishment

The recently completed Cathedral of Our Lady of the Angels, in Los Angeles (RECORD, November 2002), is thought to be the largest colored-concrete building ever constructed (approximately 26,000 cubic yards of integrally colored concrete were used). Davis Colors supplied more



than 100 tons of pigment used to tint the material for the project. Working closely with architect Rafael Moneo, Davis Colors developed a custom-colored pigment blend to create the "mission adobe" hue desired. Davis Colors celebrated the firm's 50th anniversary in 2002; today the firm claims to offer the widest spectrum of concrete shades available. 800/356-4848. Davis Colors, Los Angeles. **CIRCLE 208**

### ► Metallic-inspired tile

Patine (right), Walker Zanger's new collection of handmade, tarnished copper tiles, feature warm, aged hues and embossed decorative patterns reminiscent of French or English country houses. Elixir is a new collection of contemporary



ceramic tile with metallic glazes (below). Elixir's six shades come in both gloss and matte finishes and are available in 4" x 4" field tiles, as well as trim. Elixir is recommended for interior vertical surfaces, including light commercial applications. 877/611-0199. Walker Zanger, Sylmar, Calif. **CIRCLE 209**



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*Miró's tile mural, Mur du Soleil (1957), at the UNESCO Building in Paris, France.*



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## New Products

### ▼ Made by nature, found again by man

Authenticated Antique Belgian Java Limestone (right) joins the Ann Sacks antiques program. The stone is a rare find because of the complexity and care required to reclaim large-scale stone from wealthy merchants' homes along the northeast coast of Java. Originally quarried in the mid 1800s in Belgium, the stone was used for many years as a ballast in old merchant sailing ships from Europe. Peppered with ancient fossils and burnished to a rich patina, the stone is offered in 20" and 24" squares. Also new from Ann Sacks are Dana's Sketchbook (left), a line

of hand-painted ceramic tiles with a vibrant palette for highly artistic installations, and Pila Vetro glass tiles (center). 800/278-TILE. Ann Sacks, Portland, Ore. **CIRCLE 210**



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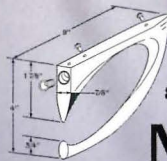
SH13—perforated pattern in 2 sizes; 7 7/8" or 11 3/4"



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## Product Briefs

### Non-disruptive step

KONE ECOMOD Complete Escalator Modernization solution is a systematic way to replace existing components of existing escalators with new technology while avoiding significant disruption and construction costs that are associated with conventional escalator replacement. The system comprises new modular components that fit inside existing escalator truss and has lower life-cycle costs, quiet operation, and lower energy consumption. 800/956-KONE. KONE, Inc., Ill. **CIRCLE 211**



### Swinging stool

The Zanzibar family of adjustable-height office stools welcomes a new member—the Zanzi Swing swinging stool. The stool's ability to tilt in any direction allows the user to reach formerly out-of-reach objects while remaining comfortably seated, making it suitable for a modern office or residential setting. Available in nine colors, Zanzi Swing features an engineered polymer seat and a leg and base in chromed steel. 39/029 039 0013. Zanzi, Cusago, Italy. **CIRCLE 213**

### Barrier construction

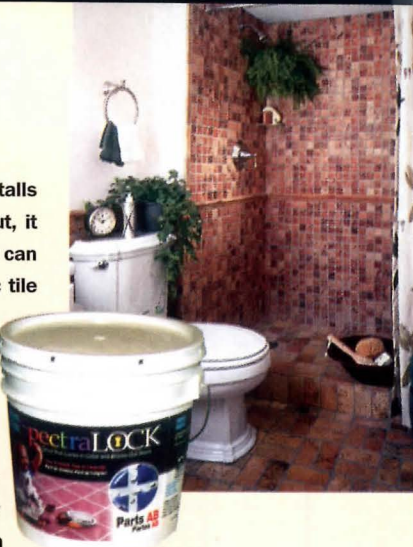
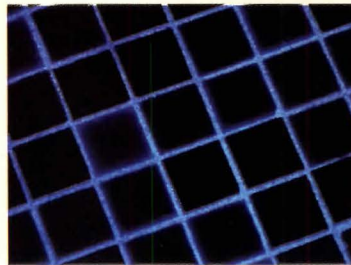
To protect the sheathing during construction of Waccamaw Memorial Hospital in Murrells Inlet, South Carolina, the architects of Charleston-based The Curtis Group chose to use Sto Guard, combining Sto Gold Fill flexible joint compound with Sto Gold Coat. Sto Guard fluid applied over the sheathing provided a seamless, bonded coating that was impervious to repeated exposure to water. 800/221-2397. Sto Corporation, Atlanta. **CIRCLE 214**



## Product of the Month SpectraLock Grout

While Laticrete SpectraLock Grout installs the same way as Portland cement grout, it performs like an epoxy grout. The grout can be used on smooth or textured ceramic tile or stone floors, walls, and counters in either wet or dry areas in commercial or residential projects. As its name implies, it is highly stain-resistant, and the manufacturer claims it won't fade, crack, or powder out. The epoxy requires no special tools to install, mixes easily by hand, spreads like cement, and can be cleaned up with cold water and a sponge.

Ready for foot traffic in 12 hours, SpectraLock is offered with a new color palette containing 40 colors, and five Dazzle combinations. The Dazzle line includes metallics, mother-of-pearl, and glow-in-the-dark (below) components that can be blended with Laticrete SpectraLock Grout to produce



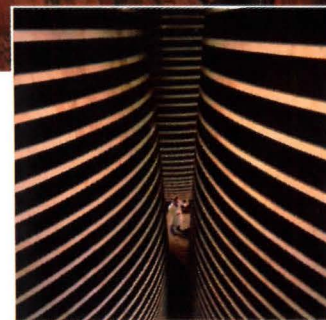
various effects. The glow-in-the-dark grout, for example, can help define wall and floor areas in complete darkness—and is particularly useful for those late-night trips to the bathroom or kitchen. 800/243-4788. Laticrete International, Bethany, Conn.

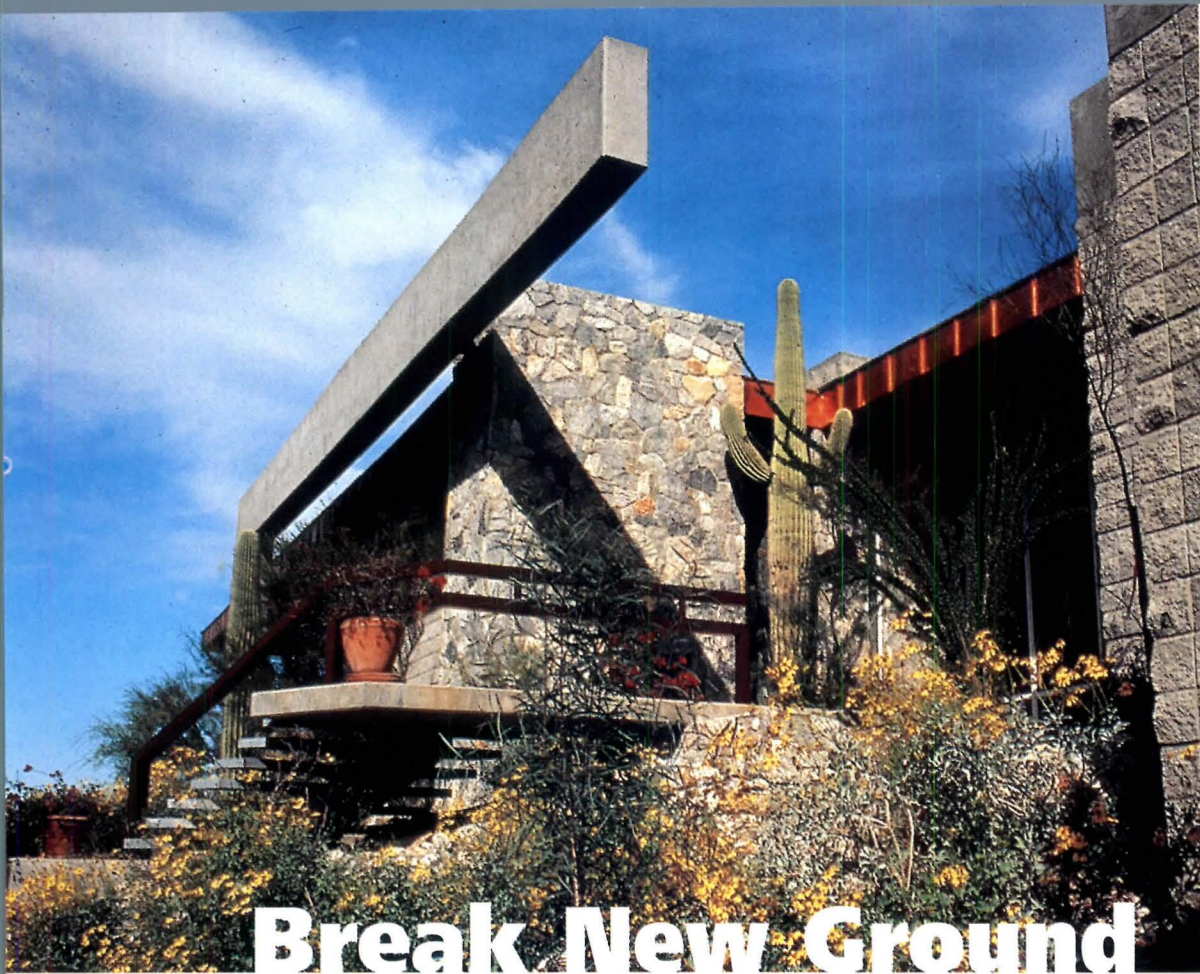
**CIRCLE 212**



### ▲ Stout flooring

When the Guinness Brewery in Dublin replaced its 27-foot-tall wood vats with easier-to-maintain metal vats, some of the wood vats were dismantled and stored while others were demolished. Mountain Lumber arranged to import more than 100,000 board feet of 100-year-old oak staves from the dismantled vats to mill into European Cooper's Oak flooring. The warm-colored oak flooring ranges in hues from golden brown to dark brown and is enhanced by accents from iron bands that tightly wrapped around the massive vats for decades. 800/555-2671. Mountain Lumber, Ruckerville, Va. **CIRCLE 215**





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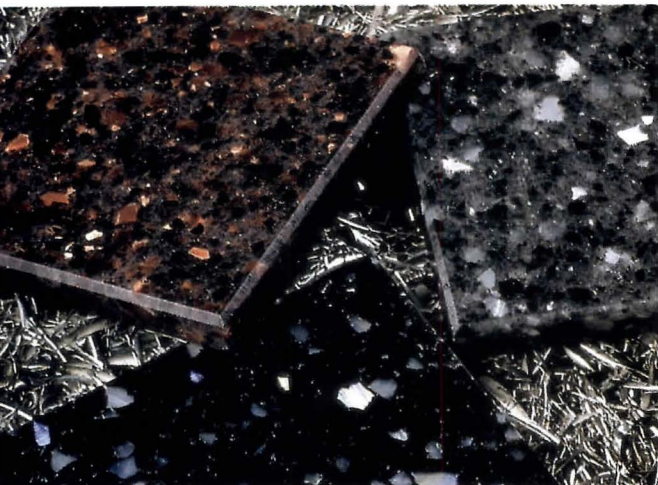
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## Product Briefs



### Counter fit™ metals

end in interior finishes, ranging from contract fabrics to bathroom tiles, to metallic and pearlescent effects has no sign of abating—and Avonite now has new solid surfacing products to match: Copper Canyon, Argent, and Night. Copper Canyon and Argent use a new metallic particulate material of varying sizes to produce a shimmering effect that changes when viewed from different angles, while the Night Pearl offering features man-made particulates that mimic iridescent reflections of abalone and mother-of-pearl. 800/428-6648. Avonite, Inc., N.Mex. **CIRCLE 231**

### ► Natural metallic finish

The Durallure Finish System, from Centria, offers the natural look of unpainted metal with a uniform, spangle-free finish. Durallure is a patented aluminum-zinc metallic-coating process with the long-term corrosion resistance of an aluminum-zinc alloy. A temporary clear coat provides protection against damage during installation. 800/759-7474. Centria Architectural Systems, Moon Township, Pa. **CIRCLE 232**



### ▼ Solar-powered air circulation

Providing up to 1,200 square feet of circulation coverage, the Solar Star solar-powered attic ventilator exchanges air at a rate of up to 800 cubic feet per minute to prevent attic



heat from building up in the summer and eventually causing a buildup of moisture. The compact design, which includes three roof-mounting options, allows the unit to be installed anywhere air circulation is needed, including attics, sheds, and garages. 800/966-SOLA. Solatube, Vista, Calif. **CIRCLE 233**

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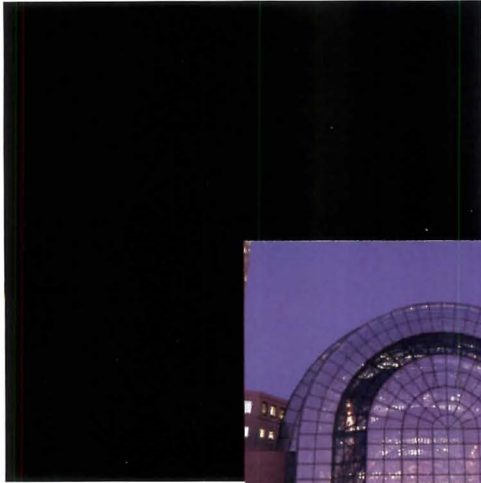
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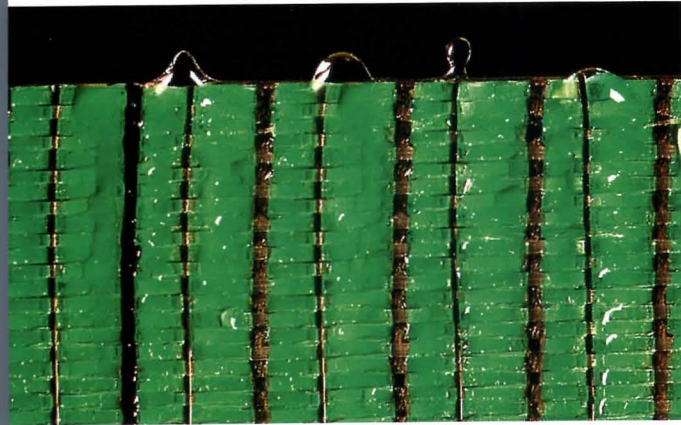
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## Product Briefs

### International Builder's Show Review

#### Water-draining housewrap

GreenGuard Corporation introduces GreenGuard RainDrop housewrap featuring water-drainage channels that divert bulk water down the face of the wrap to the base of exterior wall. Once the water has drained away and its source has abated, the drainage planes air dry. The housewrap may be used with most common exterior siding and comes in 9' x 100' and 9' x 150' rolls. The drainage channels will not even when a hard-backed siding is fastened to the wall over the housewrap. 847-241-4402. Pactiv, Lake Forest, Ill. **CIRCLE 216**



#### ▲ Semiprecious stones

The Concetto line from Caesarstone features semiprecious stones in quartz surfaces that can be used for countertops, vanities, tabletops, and furniture

designs. Intended for the luxury homeowner, Concetto is highly heat-, scratch-, and chip-resistant and is available in 1" thick, full-size slabs. The line uses flint, turquoise, carnelian, jasper, sodalite, and quartz to create an alternative sur-

face to marble or granite. Founded in Israel in 1987, Caesarstone is distributed in the U.S. by U.S. Quartz Products. 800/666-8201. U.S. Quartz Products, Sun Valley, Calif. **CIRCLE 217**

#### ► Stay within the lines

The Grid Panel System, available in both OSB and plywood, features a surface-printed system of cutting and nailing lines that assist in the efficient installation of roof sheathing, side walls, subflooring, and siding. Available in a variety of thicknesses and grades, The Grid is produced in agency-certified-rated sheathing, sanded, and industrial-grade panels. 318/448-0405. Martco Limited Partnership, Alexandria, La. **CIRCLE 218**



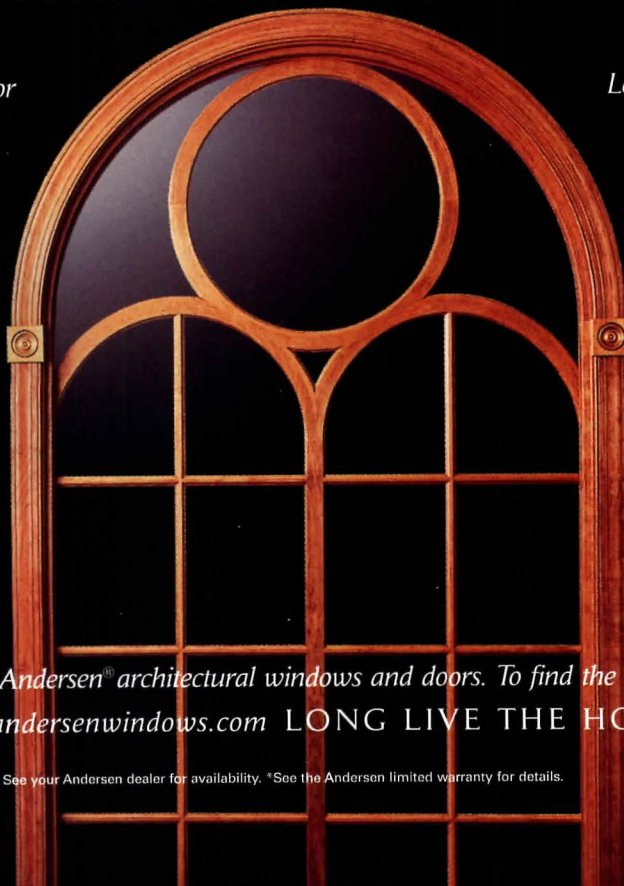
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## Product Briefs

### International Builder's Show Review

#### Behind the door Closet

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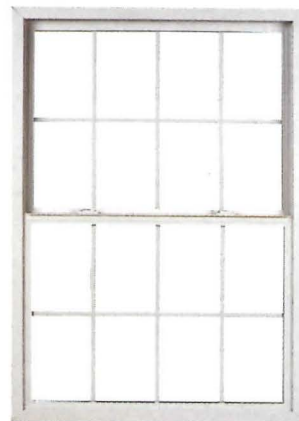


#### Double hung with options

Weather Shield's redesigned double-hung tilt window features a sleek sash profile that keeps fasteners, nail heads, and hardware to a minimum. It offers a choice of seven anodized aluminum finishes and 55 standard and designer exterior colors. The window sashes tilt in for easy cleaning or removal, and Quadra Mitered, air-tight corners in nailing fin, frame, sash, and glazing enhance the window's efficiency. 800/477-6806. Weather Shield, Medford, Wis. **CIRCLE 220**

#### Tough character

Pella's Impervia product line is manufactured from a five-layer Duracast fiberglass composite material that is claimed to be nine times stronger than vinyl and twice as strong as aluminum in tensile-strength tests. The windows and doors can withstand intense heat, moisture, and cold conditions. The line will be available in select southern and western markets in 2003, and in all other U.S. markets by late 2004. 888/84-PELLA. Pella, Iowa. **CIRCLE 221**



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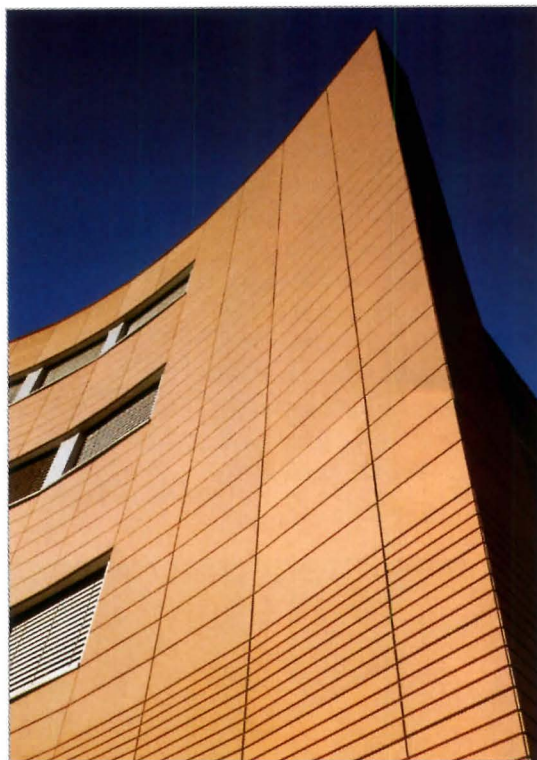
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## Product Literature

### Flexible linear lighting

Starfire offers a new brochure detailing the company's Xenflex flexible linear lighting system. The eight-page color brochure shows how Xenflex Xenon lamp technology, a low-voltage, flexible-mounting-strip design, creates a lighting system that matches the specifications of halogen lighting systems without any of the handling or usage restrictions. 800/443-8823. Starfire Lighting, Wood-Ridge, N.J.

**CIRCLE 222**

### Government lighting

American Electric Lighting (AEL) has released the company's first catalog since becoming an Acuity Brands company. The 192-page catalog includes new additions to AEL's decorative Heritage Collection for municipal street lighting and the AVL vertical area lighter. 770/922-9000. Acuity Lighting Group, Conyers, Ga. **CIRCLE 223**

### Oral privacy requirements

A new brochure produced by USG Interiors and Lencore Acoustics details how architects can meet the new Health Insurance Portability and Accountability Act of 1996 requirements to protect the privacy of health information conveyed orally. The brochure includes information about the

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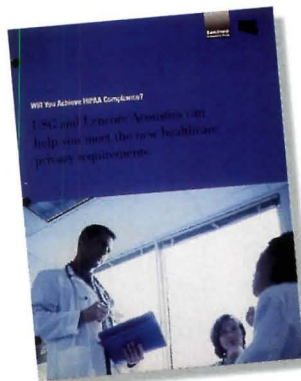
Site for flooring, erosion-control, and storm-water-management products [www.sind.com](http://www.sind.com)

New interior and exterior lighting site [www.georgialighting.com](http://www.georgialighting.com)

requirements, explains how sound can be measured and controlled, and describes a two-part solution to meet the new standards. 800/USG-4YOU. USG Interiors Chicago. **CIRCLE 224**

### Ceiling portfolio

The new 2003 *Armstrong Ceiling System* catalog showcases the entire ceiling and suspension system portfolio in a comprehensive specification reference tool. 877/ARMSTRONG. Armstrong World Industries, Lancaster, Pa. **CIRCLE 225**



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## Product Literature

### New door expressions

Marshfield DoorSystems offers a free brochure on the Expressions del Sol factory-installed glazing collection for its interior wood doors. The doors feature glass openings factory glazed from a wide assortment of available glass from Firelite, Pilkington, Vanceva, and Visual Impact Technologies. 800/869-3667, ext. 2200. Marshfield DoorSystems, Marshfield, Wis. **CIRCLE 226**

### Impact-protection catalog

Musson has released a new catalog featuring the latest products in impact wall protection. They include flat wall guards in three heights for high-traffic areas; ADA-compliant handrails in three different profiles (sculpted, flat, and cylindrical); and surface-mounted corner guards in three styles. 800/321-2381. Musson Rubber Company, Akron, Ohio. **CIRCLE 227**

### Protection collections

A new 28-page catalog introduces Pawling Corporation's 2003 PRO•TEK line of handrails, corner guards, and wall and door-frame protection products. In addition, Pawling publishes a full range of other catalogs for its architectural prod-

ucts, including rigid vinyl wall coverings, entrance matting and gratings, athletic flooring, and parking and safety accessories. 800/431-3456. Pawling Corporation, Wassaic, N.Y. **CIRCLE 228**

### Wood door options

Simpson Door Company introduces new *Doors of Lifetime* catalog, a comprehensive guide to the company's collection of exterior and interior wood doors. The 96-page catalog shows Simpson's complete product line in a range of wood and glass options and illustrates the company's custom capabilities. 800/952-4057. Simpson Door Company, McCleary, Wash. **CIRCLE 229**

### Certified lumber report

A special report examining the growing demand for architectural wood doors manufactured from certified lumber is now available from VT Industries. The eight-page report, titled *Going Green*, provides an authoritative look at the technology and procedures required to deliver architectural wood doors that meet Forest Stewardship Council guidelines for certified lumber. 800/827-1111. VT Industries, Holstein, Iowa. **CIRCLE 230**



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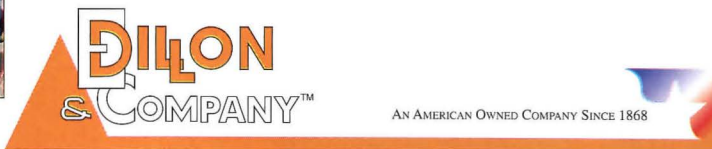
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Program title: **Moisture Management in Steel Stud Assemblies, *Architectural Record* (04/03, page 195)**

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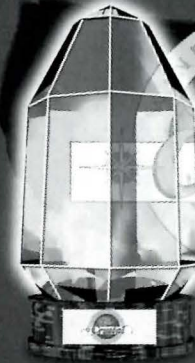


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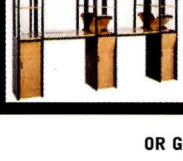
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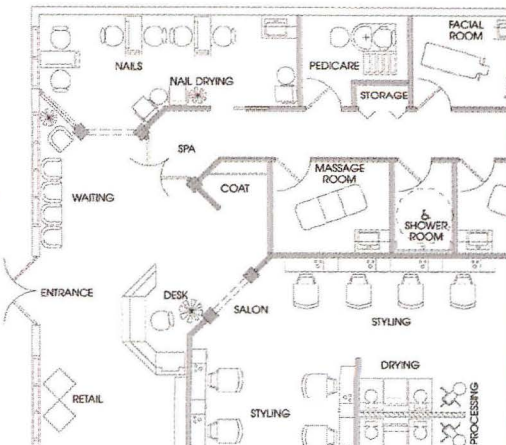


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## For architect Daniel R. Oakley, toys aren't just child's play

Interviewed by Deborah Snoonian, P.E.

Daniel R. Oakley was, in his words, “wonderful and stressed out” in February as he embarked on a European tour for his company, Oliblock. Three years ago, Oakley made the first set of Oliblocks (photo, above right) in his kitchen. Now you can buy them in several countries, and they’ve attracted such a following that product maker Umbra signed him up to design puzzles. Oakley studied architecture at the Rhode Island School of Design, then worked for Zaha Hadid for four years, introducing her to CAD and visualization technologies. He returned to his native California in 1994 to start his own firm.

**Q:** How did you dream up the idea for Oliblocks? I wanted to make something special for my best friend Tim Morgan’s daughter, Emma. She’s my godchild. I have friends who make sets and props for people like George Lucas in the film industry, and I’d seen how they make things like R2D2’s feet out of plastic. I’d always wanted to try something like that myself.

Oliblocks actually began as prototype miniatures of a sand castle kit of modern shapes, things Emma could take to the beach. I made the miniatures in these abstract, organic shapes, and I designed them to interlock with themselves. I enjoyed experimenting with the miniatures so much that I just made more of them in different shapes. They evolved eventually into Oliblocks, with an interlocking connection at one end and a magnet at the other end.

Where does the name Oliblock come from? The O is taken from my last name and the li comes from Emma’s younger sister, Lilley. O-Emma just didn’t sound right, even though I’d made the toys for her originally. One of my new products, the inflatable Lilley pads, are named after Lilley, too.

In the 1990s you won a number of awards for your computer designs. Are the shapes of Oliblocks influenced by that experience? Definitely. I wanted them to be fun and colorful and futuristic, sort of like the modern version of Legos. Although these days, it’s funny, but I rarely use my computer. Only for e-mail.

What was your favorite toy as a kid? There was one toy that was basically a hot plate covered by a domelike device that held molds. You’d place the plastic squares onto the hot plate, and the squares would melt into the shape of the molds. I was always burning myself on the hot plate; I’m sure that’s why it’s off the market. It was a great little toy, though. I wish I still had it.

Do you miss being an architect? I don’t consider myself to be out of architecture altogether. There’s a lot of overlap between architecture and product design. People still ask me to do projects; I might design a small hotel and residence in Northern California, for instance. But I don’t miss building permits, code compliance, budget constraints—those are no fun. When I design products, I feel much more free to be creative. I’m really happy with what I’m doing.

Portrait by Carter Dow; product photograph by David Janssen



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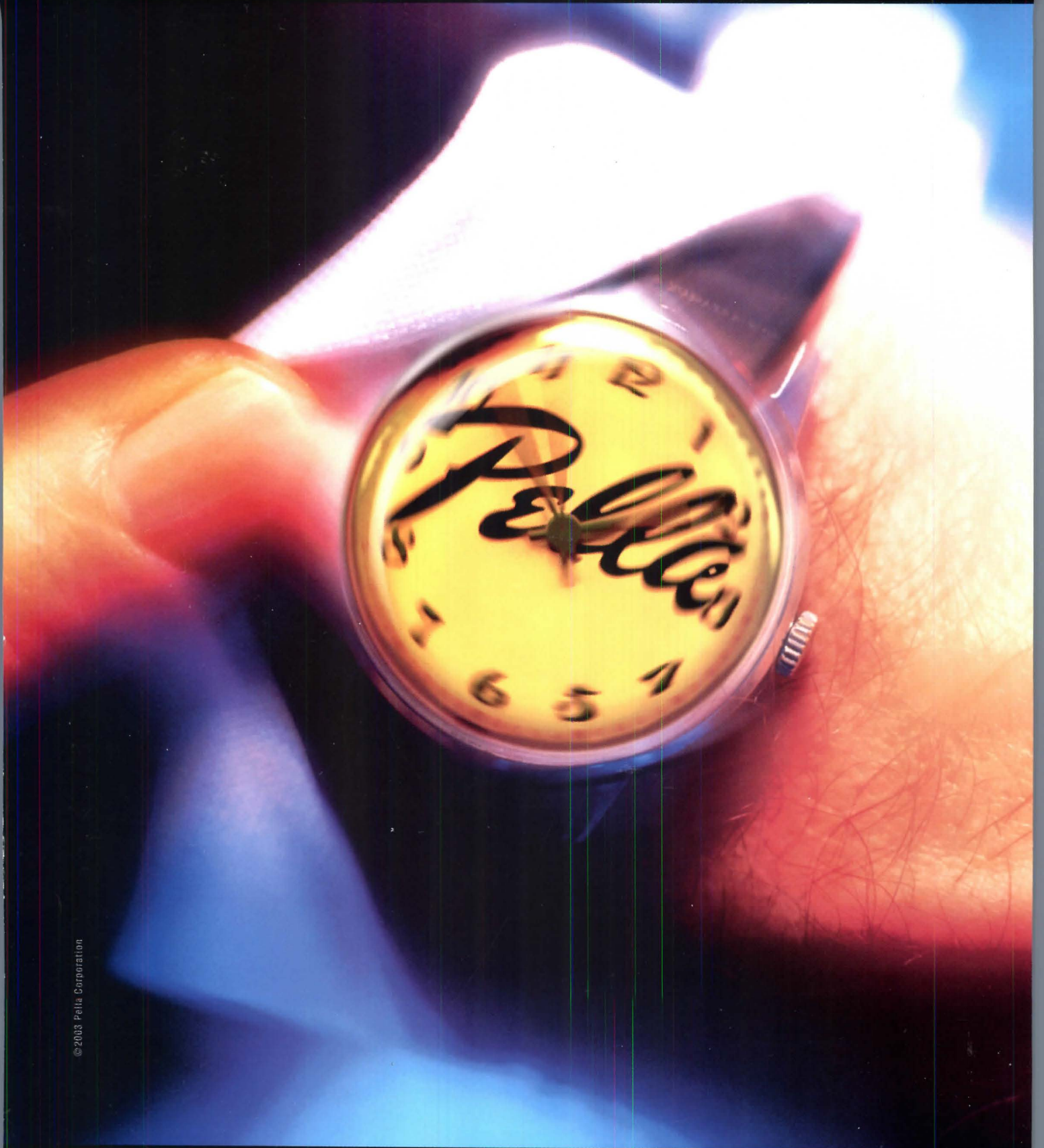
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