Record Houses 2003

INSIDE

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A new case

Editorial

By Robert Ivy, FAIA

ARCHITECTURAL 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 familiar with readers than this, serving up a platterful of innovative solutions, the modestly scaled freestanding building. Demonstration projects, these cases 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 Pines observes on page 112, who wouldn't wish to build another Eames house? Yet, as excellent as that groundbreaking program proved to be, the A case-study houses addressed a specific milieu: California in the years following 1945, where Modernist steel-framed structures were created for a growing 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 case, the group declared, seemed to be well served, continuing to attract useful 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 fulous 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.

Robert Ivy

04.03 Architectural Record 23
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Letters

y-town contemporary
We just returned from America's
architectural Mecca, Fort Worth. I
in complete agreement with the
words of David Dillon and his article
Tadao Ando's new Modern Art
Museum of Fort Worth [March,
page 96]. It is a gem, hard for me
but words to, to describe this
art, meditative, handsome, and
very appropriate setting for an
museum. The non-id-driven
sg has to be compared with
many of the new museums that
state about the architects
s than museums for art. And
perfect that it is "partnered"
Kahn's Kimbell museum.
other, they stand as possibly the
first buildings created in the
United States in the past 100 years.
Viewing these buildings
finds me of the highest aspira-
ties I had as a young architect but
never achieved.
A visit to these buildings
would be a must, a pilgrimage,
practicing architects and stu-
te. Incidentally, the Fort Worth
museum has published a small
book by Michael Auping, titled
Interviews with Tadao Ando,
which is a thoughtful, insightful, and
lighting window into the man and
thoughts about architecture and
museum.

ob Goldseder
Diego

y-town copycat?
Ando blew it. RECORD couldn't
be more wrong than to say
the outside is never as impor-
the inside for Ando. This
thing reminds me of the Kennedy
center by Edward Durell Stone, right
to the the water feature.
Joseph La Rocca
Norte

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 Vold,"
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
Vosges, 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 symbol-
ized 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 archi-
sects 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/Uttenberg project pre-
sented a plan in their proposal.
One of the critical means of visually render-
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 proj-
sects in a site where the grid of
Broadway and that generated from
the Hudson River provide so much
potential as context as well as
genometry. 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 fortu-
nate 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 advances
in design, particularly their
pioneering use of 3D technology,
there are a few 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 congregate down-
river at the National Film Institute.

Arups' air-conditioning/ventila-
tion engineering may be ingenious
and energy-efficient, but it appar-
tently 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 raked 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 Glanini, 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 regressive 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 saying the building as being “so contextual,” which is clearly absurd from the photograph. The proposal has been rightly derided 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 this design, but this isn’t it.

—Larry Cole
Silver Spring, Md.

Corrections
In the March issue, on page 190, top image (for the Brazil Rendering System) of the Viking Research Center in Mississippi should have been credited to hypercube and Richard Meier & Partners. Also in March, in the Building Types Study beginning on page 140, the school featured is PS. 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 Site Design, for the Pentagon Memorial should have stated that the victim names are engraved collectively on the table surface, and the table 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.
REBUILDING LOWER MANHATTAN

ibeskind 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 Libeskind, with Gary Hargreaves Associates, and Zupan, but the rebuilding process and Libeskind's ongoing role remain unclear.

His face and his scheme were the front pages of newspapers worldwide, but will the entire building be built according to Libeskind's design? Will the office buildings, transportation hub, or museum be signed 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 March, which increases the chance that Libeskind has earned thus far to $548,817. The contract extension allows Libeskind to do further design work on the open area needed for a memorial. But what is his role be with the design of the transportation component, for example. The New York Times reported on March 12 that Michael Halpin, a spokesman for the Port Authority, said, "We haven't made any decisions yet. We would expect 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 (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 commission 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 walls are 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.

J.M. Pel, 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.

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 Vifoloy, 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 lattice work 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 an assignment in March to develop plans for residential, commercial, and waterfront precincts near the WTC.
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

**Record News**

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**Skinny News**

**Design by young New York architects selected for Pentagon’s 9/11 memorial**

Design by New York architects Julie Beckman Keith Kaseman—their first major commission—and their first competition—has been selected as the memorial to victims of the September 11 terrorist attack on the Pentagon. Beckman and Kaseman were selected by the U.S. Department of Defense from six competition finalists (ADB, February 2003, page 52) among 1,126 petition submissions.

Beckman and Kaseman’s design for the memorial, called Light Benches, includes a set of benches, or “memorial unit,” for each of the 184 victims from the Pentagon and American Airlines.

**Beckman and Kaseman “overwhelmingly honored” to be chosen**

appointed a sense of responsibility, Julie Beckman, 30, and Keith Kaseman, 31 (pictured), said they were “overwhelmingly honored” to win the competition and design a memorial to the 184 victims at the Pentagon. A couple, who live 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 projects as Kaseman Beckman Amsterdam while working for other firms.

**HIT EXPERIENCE RECORD: What inspired you to enter this competition?**

**H KASEMAN:** First and foremost, it was the opportunity 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
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 Via Trade Fair Campus, located on the southwestern limits of the city and the neighboring municipality of L’Hospitalet.

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 Argets 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 and a promenade of fountains along the south 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 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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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-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 unobstructed 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 master's degrees 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's 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
Form doesn’t always follow function. Sometimes they walk side by side holding hands.

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Swedes to make modern statement with embassy on Potoma

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 an 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
FOR A ROOM TO MAKE A STATEMENT, IT NEEDS A VOICE.


WWW.BRETFORD.COM
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 1992 design featured a five-pointed star suspended above the ground, the corners of which were extruded to form pilota 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 N-F 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.
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**Record News**

**Safe rooms: Steel cubicles as safe havens for terrorist attack**

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's steel cubicles, which 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's 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 locate a manufacturer. Only eight rooms have been produced so far at Dunn Industries, 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 enter ing rams. "These rooms will last forever," says Quante, who expects to equip his own semiretirement 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'Oberatoire; 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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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) 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 Berks, 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 aerodynamically sculptural towers that funnel winds through the open space. Partners David Brininstool and Brad Lynch redevelop a GM plant into an elegantly arched structure that ties directly to adjacent buildings. The three schemes portray exciting alternatives to the larger "official" plans.

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Eisenman’s Arizona Cardinals’ stadium to include movable field

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 construction 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 we intend to ask the government for U.S. $166 million, and that will fund international open competitions 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.
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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 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 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.

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 in New York City, with Cooper Eckstut Architects. Hanna established a separate firm in 1995, Robert Hanna Landscape Architects, and completed the master plan for the University of Washington in Tacoma. Hanna taught for more than three decades at the University of Pennsylvania. J.E.C.

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. News briefs by David Sokol unless otherwise noted.
www.Upcoming Exhibitions

OUT: Six Months in Rome

York City

9–May 2, 2003

80 works by American Academy in Rome

exhibitions will be on view in New York City. Among the works will be Tupperware designs by
late Morison S. Cousins, FAAR’85; Stow/Davis
sets by Robert DeFuccio, FAAR’76; V8 splash
by Paul Shaw, FAAR’02, and lamps designed
in collaboration by Kevin Walz, FAAR’94. The exhibit's
name is inspired by the acronym FAAR,
which stands for Fellows of the American Academy in
Rome. At the ADC Gallery. Call 212/643-1440 or
visit www.aarome.org.

/design series 1

San Francisco

19–August 24, 2003

Exhibition of groundbreaking design solutions
by African-born architect Lindy Roy will
be the first of an ongoing series devoted to
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

Architecture and Design
Permanent Collection

San Francisco

19, 2003–ongoing

Exhibition will inaugurate a newly installed,
cumulative presentation of the museum’s architec-
ture and design collection. Featuring some 100
works of architecture, graphic design, and indus-
trial design from a permanent collection of more
than 4,000 objects, the survey will include well-
known classics and works by up-and-coming
architects and will highlight special strengths of
the collection, including experimental architec-
ture and digital design. At the San Francisco
Museum of Modern Art. Call 415/357-4000 or
visit www.sfmoma.org.

Signing the Rose

Boston

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 recreation of London’s 1587 Rose
Playhouse. Curated by architect George Marsh and
the Boston architectural firm Payette Associates,
the show, through photographs, illustrations, archi-
tectural 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.

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

Seattle

May 2003

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ects that juxtapose modern architecture with

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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 Himmelblau; 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.

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 Baldeegh, Shigeru Ban, Gary Chang, David Chipperfield, Denton/Corker/Marshall, Deszo Eckler, 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.

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.

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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
This exhibition traces the history of Harlem from pre-Revolutionary times to World War I. Work by consulting curator Michael Henry Adams, author of the book Harlem Lost and Found: Architectural and Social History, 1765–1917, 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.

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.
The lighting industry is about to change in a BIG way. Find out what dreams are really made of in our booth, #1929, at Lightfair 2003.
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 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.

Big & Green: Toward Sustainable

Architecture in the 21st Century
Washington, D.C.
January 17–June 22, 2003
Through in-depth profiles of approximately five 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.

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 for information.

Fantastic
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.

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.

Roy McMakin:
A Door Meant as Adornment
Los Angeles
March 23–June 29, 2003
Designing the highest level of security can be easier when it comes from one source.

network of consultants and distribution partners offers the most extensive security and safety solutions in the industry. With 22 consulting and spec writing offices throughout the U.S. and Canada, we can provide the services you need—from access and egress control to time and attendance, as well as asset tracking and personnel scheduling. IR Security & Safety, which for more than 75 years for its leading brands, is now providing biometric, electronic and mechanical security solutions, as well as software network integration. Learn more, visit irsecurityandsafety.com or call 1-877-840-3621 to contact one of our 22 Security & Safety Consultant offices.
Dates & Events

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.

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.

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.

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.

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 in Europe. At the Dansk Architecture Center. Call 32/57 19 30 or visit 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 in the department’s extensive holdings. At the Los Angeles County Museum of Art. Call 323/857-6000 or visit 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 Ceramics Museum, as part of the Year of Design 2003. Visit www.designyear2003.org for further information.

Of Our Time: 2002 GSA Design Awards Show
Washington, D.C.
Let it pour.

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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.

**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.

**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.siu.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 is 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.

**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 body to the grid; and current theories on how “get around” the grid. In the Great Hall, Cooper Union. Call 212/219-1222 for reservations or 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, engine design, and end-user professionals from around the world. At the Javits Convention Center. Call 404/220-2215 or visit www.lightfair.com.

**Public Architects Training Workshop**  
**San Diego**  
**May 7, 2003**

A preconference workshop presented by the AIA 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.

**National Design Triennial Conference**  
**New York City**  
**May 16, 2003**

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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.

37th International Making Cities Live 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.

The 2nd Beijing International Green Building Materials Exhibition
Beijing
September 17–20, 2003
With the 2008 Olympic Games construction and the 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. The China International Exhibition Center. Call 86/10-8808-2303 or visit 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 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 813/827-0830 or visit www.icri.org.
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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.aiany.org.

Designing the High Line
New York City
Registration Deadline: April 26, 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.

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.

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 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 crnalmgren@ifai.com, or visit www.ifai.com.

E-mail event information two months prior to the event or competition to ingrid_whitehead@mcgraw-hill.com.
Cairo, once the Paris of the Nile, tries to regain design stature

Correspondent’s File

By Paul Bennett

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).

The largest urban area in Africa, Cairo, Egypt, has evolved over the past 10 years into a sprawling metropolis. Its 17 million inhabitants cram-packed into the labyrinthine 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.

Aesthetically, Cairo features stunning Islamic monuments (more than 1,000, according to a recent survey) amid all the swaths of so-called "informal" housing—unzoned, unregulated development that often extends to the horizon. The housing is so bad that squatters have become a normal part of the Islamic center, the so-called Cities of the Dead.

Contemporary design in Cairo is a similar state of disarray. The most visible projects are the luxury 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 licensing, and inadequate education reached a breaking point in 1992 when a number of poorly built structures collapsed during a major earthquake. The situation has 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 Coorea, Ricardo Legorreta, and Ismail Serageldin, the director of the new Alexandria Biblioteca. A small firm called Boston Design 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), Eierhe 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...
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 cantilevered 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 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 revitalism, 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 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 further proposals.

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-Dahan.

In addition to building the park, the Aga Khan 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 architect Ahmad Hamed, the guesthouse by Ahmad Hamed abstracts traditional Islamic design.

On what has been a garbage hill (left), the Aga Khan Trust for Culture is planning a park (above).
For and about the new generation of architects

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 the 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 sense of opportunity, given its time, its context, its client. It inspires a kind of event-based architecture, rather than one based on the idea that 'that was a really nice detail on the last project, let's do that again.'"

Hemingway earned his undergraduate degree at California Institute of Technology in San Luis Obispo before an expatriate stint in London working for Zaha Hadid. He then returned to the 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 design 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 workflow 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, 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 miles. 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.
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 to see more projects from Hemingway+A/studio.

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**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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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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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 instruments 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.”  

Amy Everard plays the chimes with her group, The Mechanics (top), and Will Yokel poses with his elaborate wind instrument.
Will Libeskind’s plan for the World Trade Center site become a massive design swap?

Commentary

By Joseph Giovannini

Jacob Libeskind, beaming, may have sunk his pitch for the World Trade Center site. But the real winner is developer Silverstein and his architects, more, Shigeru Ban and Shigeru Ban Architects—both proposed strong yet sensitive memorial designs 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. Within 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 pods could be designed by other architects, the developer and officials were highly interested. Prior to Libeskind’s selection, Silverstein laid claim publicly 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 checked a public playing blind. The
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 eloquent 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 strategy 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 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 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 showstoppers 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, 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 decy. 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 non-Libeskind view from the other side, however, has never been presented to the public.

Ironically, Libeskind’s proposal has shrunk so much that there is too little 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 and 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 to initiate other plans to rebuild the entire site.

Governor Pataki stood in front of Libeskind’s deceptively outdated model with the original high-rise structures and pronounced the use of condoms, 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 resistant 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

It could be in New York City, the Whitney Museum of American Art? Wherever. Somebody would mount an exhibition on Taliesin East.

I've stolen this idea from Neil Levine, the noted architectural historian and Frank Lloyd Wright scholar at Harvard. Such an exhibition would present Taliesin as a finished work of art, because it never was such a thing. That would be the ideal point: to understand Taliesin (by extension, all architecture) as a process. Taliesin East is not so much a built object as an architectural garden that Wright seeded and tended for almost half a century.

A work of architecture is a narrative, unfolding over time. It is a story that never ends, future chapters still to be written. Even if the building remains the same physically—which rarely happens—it changes anyway, due to alterations in the climate, or the passage of time by which it is known, by T.S. Eliot who wrote that never we make something new, alter the past. Taliesin is the

Wright from the ashes

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.

The architect who is consulting on plans to solve these problems. "First, we have to stabilize the hill on which the building sits," Eiffer says, "and then we have to stabilize the way the building sits on the hill. Both of those are pretty tall orders. They require a lot of underpinning 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 finger 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
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.)

Vermont’s 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 Effer. “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 or $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. Goulika, grew up across the street from the Oak Park home and studio near Chicago. He’s a businessman with an art history degree from Yale. At Yale, Goulika attended a lecture at the Yale School of Architecture where, he says, “the lights went off and he started talking and my world changed.” Goulika 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 at the old school, windmill, farm, and all—all you should, because everything is part of the holistic vision of life that Wright created—you’re talking about 100,000 square feet of buildings plus a lot of historic landscapes.

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 tell the story of the communal life.
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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 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 standards." 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 Olga (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 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.

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

Buffalo is my hometown and also Bob Burley's (he once worked on the top floor of Sullivan's Guar 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 teams or Wright houses, of which Buffalo now 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.
Home on the shelf: A roundup of titles on residential design

**Books**

**Rick Joy: Desert Works, by**
Rick Joy; introduction by
Ann Paalasmaa. New York: 

"This book is about this version of the
American dream: a house by Rick
Joy in Arizona’s gorgeous Sonoran
Desert as simple yet emotionally
powerful as the desert itself?"

Rick Joy, who spent 12 years as a
professional architect before going
to architecture school, says, "As a
student I was always more inter-
ested in the ways to make the music
of architecture in a certain way than in attempts
at the flashy. As with the music of
John Coltrane and Bill Davis—silence is often
more profound than the sound." Ann Paalasmaa
writes in a heartfelt introduction that Joy’s work seems
formed by a wisdom derived from visual and historical
designs, and he is an expert in the entire heritage of
architecture. Joy has a passion for simplicity and
patience in his work. His design philosophy is to
build primarily with teams of talented architecture graduates.

The book’s nine houses are
comprised by quietly beautiful
photographs, most of them by Bill
Herman, and by short descript-
ions written by Joy. Often the author
describes his projects more feeling than formal
description. About Tucson’s Catalina
Mountains (1998), for instance, he writes: "With his architecture, Joy’s writing is eloquent in the absence of pretense.
Andrea Oppenheimer Dean

**Glenn Murcutt: A Singular Architectural Practice, by**

In their lively journal, UME, Glenn Murcutt, 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 poetry of utilitarian architecture, reflects on his frustration with the loss of a fundamental connection between buildings and their site in architectural education, and—in a discussion of detail and product choices—demonstrates his enthusiasm 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-
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* 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 breakthroughs 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 visionary 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. Sidebars pull the reader out of the flow of the text—suggesting that reading as well might become more open. Pale pages 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. Fuß 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*

Looking for a picture tour, filled by many words or ideas, contemporary houses from around the world, this book's for you—whether it’s for practicality, the images, captions, or the story. It is that social and cultural influences are changing house design. Today, residential must accommodate a variety of household types, including mixed generational families, singles, and co-living arrangements. New designs are expected to reflect a more diverse working at home green awareness. And, the new house must provide a response to new architectural and materials developments, some houses have become the worlds.

She acknowledges, however, that the basic house program hasn’t changed much, and the very simplicity of the dwelling “makes it perhaps only building type for which an architect can exercise complete control and establish a genuine intimate client relationship,” from 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


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 Kundig 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


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-blowing, a point reinforced by the authors’ conclusion that the “most significant revolution in domestic space in the late 20th century” is the residential loft. AOD
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Diller + Scofidio challenge assumptions in first major American exhibition

Exhibitions

By John E. Czarnecki, Assoc. AIA

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 Dieter Roth—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 Intercon 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. Intercon Hotel (above) is an ad campaign for an invented hotel chain in cities with emerging economies.

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A sloping Japanese guesthouse is all about the bay

work and no play is no fun. But visitors to the Niigaki Chemical company on the island of Kyushu, Japan, haven’t had to worry that since the business completed its guesthouse. Instead, can look forward to being wined and dined while gazing out at idyllic Saeki Bay. To accommodate the steady stream of colleagues 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-
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.

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.
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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

Despite 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.
The goal of bringing innovative, affordable house 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 style of progressive 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 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 although its output incorporated some of the advanced technological features of the House of Tomorrow, it lacked the...
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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 Arts & 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 convinced architects advocating 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 the 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.

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 1963. Pierre Koenig completed a Case Study House in West Hollywood, 1958 (right).
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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, sparked 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 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 schemes as Bell’s Glass House @2N, built of glass, steel, and concrete. Under the Fifth Ward Community Redevelopment Corporation, a design by Morris Gutierrez Architects had 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 is successfully connected with the rich tradition of such efforts in 20th-century America might help refocus attention on the idea that exploring the unknown is worthwhile, and indeed, necessary for a culture that does not wish to stagnate. And that, in and of itself, might be a very good thing.
ynamism 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 tests, architects are actively exploring issues of movement—be it kinetic building parts, in forms and compositions that imply movement 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 spaces. Sometimes the layering itself—with its potential for internal spaces and translucent boundaries—stimulates movement.

Such is the case with Sean Godsell’s Peninsula House, in Victoria: 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/Vigsnæs’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/Vigsnæs’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
Glass panels slide aside, opening up to the sides of the main living area. A rail-less deck is continuous with the interior floor plane, extending toward the horizon.
Shigeru Ban revisits the idea of a framed view, with walls that literally slide away, opening this 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 bordered by metal wall panels at either end. While the uninterrupted views of shaded greenery to the north and Pacific Ocean to the south are spectacular, the complete openness 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 spaces—opens directly onto a porch overlooking the water. A seamless transition of the interior floor, the porch is a sail-less platform, inspired by traditional engawa verandas (typical in Japanese houses and other genous 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 ceramicist.) 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-concrete floor slab and trusslike web of columns, beams, and metal 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 light privacy is not as great as in the West, this pairing is unusual. “I told 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 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 façade’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 Hirota, Jun Yashiki, project team
Engineer: Hoshino Architect & Engineer (structural)
General contractor: Daido Kogyo

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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).
5. Bedroom
6. Storage
7. Open to below
8. Bathrooms/corridor

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

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

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

Ban's practice of incorporating unusual elements in unexpected ways has both shock value and whimsy. Many of his devices and their effect on living spaces may seem extreme. But architectural thrill-seekers is 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 tells both the clarity of his thought and the purity of its expression.

For more information on the people and products involved in this project, go to Projects at www.architecturalrecord.com.

Tsuchikawa Blind Kogyo
At the house's north end (this page and opposite), the glazed facade opens up retaining the main living space with a verandah.
Sean Godsell transforms a seemingly simple box, wrapping his Peninsula House in a veil of slender wood batters.

Sand Helsel

...continues 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 “le study” program, he has generated a series of award-winning houses [see Record, October 1990, page 208] that use apparently simple geometries to interrogate the landscape and offer odes to standard suburban dwellings (and styles). His latest version, the Peninsula House, on the Mornington Peninsula, 60 miles south of Melbourne, Australia, may appear at first extreme—with 5 miles of slender recycled cedar batters relentlessly wrapping both long elevations and the roof—but it is also the most admired and rich with nuance.

The approach to the house follows a road through densely vegetated dunes bordering a coastal reserve and cliffs rising from the Bass Strait. Largely screened from neighbors by cypress 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 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 aspects 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-timber skin extending across most of the ceiling. In earlier houses, Godsell uses double skin as the primary shield against the elements, but here he explores the relationship between the layers. The jarrah wood screen glass enclosure allows for interstitial spaces that belie the simplicity of an initially three-room brief: kitchen/dining/living, library, and bedroom.

On the east elevation, Godsell pulls the skin farther apart, parallel to one another, and inserts between them an entrance corridor that is also an element of the elements, as it steps down from the slope’s high point to the building’s northern entrance. This progression, 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 1 to make a tiny building appear grander—producing an attenuated sense of arrival (and delight). The experience of the journey and the unrolling 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.

Project: Peninsula House, Victoria, Australia
Architects: Sean Godsell
Architects—Sean Godsell, principal; Hayley Franklin
Engineer: Felicetti
General contractor: Kane
Construction

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.
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 (both left and opposite). A slot separates the carport from the main house (top left). Hydraulically operated panels open the outer skin (top right).
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 a solid block of kitchen cabinets and appliances and a laundry room that sequesters a study, located to the south, into the hollow of the living area.

By opening or closing panels within the continuous jarrah screens, the owners, a couple, can unpack the house upon arrival and pack it again when they depart—an apt metaphor for a beach house, as well as protecting 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 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 veils-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

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The walkway, or corridor, from the servants 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.
From 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 stastically 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, Stiefel (structural); Altieri Sebor Weiner (m/c/p)  
**Landscape architect:** Dan Kiley
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).
The white painted steel framing supports aluminum-coil-mercuric exterior shades, which fold against the glass in the win-ow 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 store rainwater for delayed irrigation.
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 anigre 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 recapitulating the linear rhythms of an Italian palazzo. When the screens are rotated, establish a peculiar dynamism—like square sails on a landlocked ship," light is cut 70 percent when the shades are shut," Phifer claims. "And the windows and skylights in the ceiling of the pavilion are operable room gets a lot of natural ventilation during hot days."

In order not to obstruct the views, the interior designer, M 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 Arad, added for pizzazz. "The space was beautiful, but felt cold," Brandolini. "I wanted to make it warm and livable—not austere."

With its earth tones inside and carefully tilled landscape out, 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 Classic principles of proportion, scale, and rhythm carefully control modern materials such as concrete, lightweight steel, and glass.

**Sources**

Garden roof system: American Hydrotech
Shades: Cascade Coil Drapery

For more information on the people and products involved in this project, go to Projects at www.architecturalrecord.com
ors enter the living
dining pavilion
and right). One of
narrow stairs leads
to level below. From
living room (above)
sees the tower of
lower-level master
room (near right).
the opposite side
the lower level, a
high-ceilinged break-
room adjoins the
kitchen and overlooks
extending pool and
space (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.
Jennings carves into a California hillside, setting his VISITING ARTISTS HOUSE in a landscape rich with sculpture.

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 a 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 hill 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 prescribed 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 surfboard-like 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 living pavilion (above) is a simple structure of glass, steel, and concrete walls, steel beams, and poured-in-place roof decking, between poured-in-place concrete walls. The irregularly shaped, stone, and poured-in-place concrete walls are used to accommodate David Hockney's artwork, which was cast in concrete and added a textured surface without reinforcing bars. The stairs (near left) lead to a central courtyard (opposite). The stairs can also access pavilions and private terraces (above 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 house to the natural setting. Rabinowitch, whose work often involves cuts in glass, 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 for 4 inches of depth to the concrete walls for the carvings.

The house requires a certain discipline from guests—it isn’t a 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 floodlights at the base of the retaining walls spills into the landscape, one can imagine yourself staying here awhile. To be so lucky, though, you’d have 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 about the people and products involved in this project, go to Projects at www.architecturalrecord.com
Rabinowitch’s mathematically driven artwork took four stone carvers eight months to cut. The walls were then honed and sealed.
Jarmund/Vigsnaes
transcends the world of
suburbia, perching
its RED HOUSE on
a wooded slope

By Peter MacKeith

Monolithic 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 Rea suburb. The setting is actually a post–World War II develop-
ment of closely spaced single-family houses with pitched roofs and
colorfully stained wood siding.

Like many residential designs by Oslo-based architects
Jarmund/Vigsnaes, 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/Vigsnaes 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

Project: The Red House,
Rea, Norway
Architect: Jarmund/Vigsnaes—Einar
Jarmund, Hakon Vigsnaes, partners in
charge; Roar Lund-Johansen,
project architect
Engineer: Walter Jacobsen
General contractor: Gunnar Johansson

Peter MacKeith, associate dean of the School of Architecture at Washington
University in St. Louis, writes frequently on Nordic architecture.
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.
of the structure's two stories—helps make the house a good neigh-
minimizing its street presence among existing homes. These condi-
also intensify the unfolding drama of inhabiting such terrain.

Indoors and out, sculptural qualities emerge through the judg-
position and nesting of L-shaped elements in plan, section, 
elevation—in a range of scales, materials, and textures. The result 
effect is a continuous sequence of surprises. Against a tight inter-
interior forms, the external workings of the house—a strong, sing-
vibrantly colored volume—conveys its designers' confident energy.

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

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

In the the main living area, seven laminated wood be-
extending along the light box and onto the terrace, set the rhy-
Although the construction quality is high, interior finishes and detail 
remain minimal: simple built-in cabinetry, white paint, and ash floor.
The calm restraint and ample daylight impart a much-appreciated s
of quietude (in counterpoint to the three young boys downstairs), op-
ness, and intimacy.

Of course, any discussion of the Red House leads inevita-
to its vivid color. Make no mistake: This house is red, its stained 
vibrantly so. Anything beyond white or a material's natural hues is rar-
Jarmund/Vigsnaes's residential work. But here, the architects cite the 
peraments of the clients as inspiration. Of course, this claim may 
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 b
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 Vigsnæs formed in 1995, its 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 esthetic prestige. Emergent Nordic architects, Jarmund and Vigsnæs, both are quick to acknowledge intellectual and spiritual allegiance to Per Fehn 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 woodland slope.

sources

Materials: Maxbo (Scandinavian fir)

Tiling: Norsk Stål (corrugated steel)

Gleds: Icopal

Floors: H-Vindset (painted wood)

Masonry tile: AS Steinhuset

(St. Hubert limestone)

For more information on the people and products involved in this project, go to Projects at architecturalrecord.com.
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

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

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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 owners, 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 fix his playful formal virtuosity with the place's seductive genius.

Siza's work on the house and grounds far exceeds a simple restoration, though his hand is seldom obvious. The estate had been done for 20 years and the main house open to the elements. A ground floor built as a stable was a warren of corridors and cellars and living quarters. To give the interiors a generous scale, Siza stripped it to the masonry bearing walls. On the upper level, partly embedded in a hill, he created an enfilade of rooms opening successively across a T configuration: from the entry foyer beside the exterior stair to the main kitchen at the opposite end. On the ground floor, he carved out the bedrooms and a family room. Now an interior stair connects the levels for the first time.

The architect recreated windows and details using deteriorating plans as models. The rustic simplicity of wide-plank pine floors and rough-hewn and simple moldings is echoed in sparse furnishings, some
Leftly inserted, modern buildings eclectic structures picturesque setting (opening spread, top). Module house is adjacent to an existing building, now the guesthouse (opening spread, top). Exploiting the ancient functions of house and chapel (opposite), the architect created a dialogue of visual opposites: His steel-faming pool house is clad in zinc, and his veranda chapel in granite (bottom). Apertures in the steel walls symbolize canonical features (far right).
designed by Siza, including the kitchen table and chairs and the living
dining room’s delicate silver chest. In the kitchen, with its original
8-foot-tall fireplace and granite floors, the architect built a U-shaped service isl
ded on the left side.
Siza’s work on the grounds, in part with landscape architect
Gomes da Silva, concentrated on restoring rather than restructuring orig
inal elements, maintaining their exotic mix of the grand and
glamorous—from stream-fed laundry basins beside the kitchen to
entry court’s monumental Baroque fountain. This project also restore
entry alley of lime trees leading to a ceremonial gate and the fountain,
add an underground garage, tucked behind the fountain’s sculpted
backpiece. For the formal gardens in back of the house, such elements
as granite channels, carrying gurgling water across the lawns, were revi
ved.
The architect sited his new pool house and chapel on a rolling
lawn north of the main house, a relatively casual setting above the en
tree and the rear garden’s formal terraces. He felt free to use a contempo
rary vocabulary for these pavilions, though with a certain discretion. The
pool house, adjacent to, but independent of, the guesthouse, is clad in zinc.
Chapel, rising beyond it to the west, includes many traditional refer
Siza exploited the two buildings’ contrasting functions to create a
logue of formal opposites. For the indoor pool, dedicated to the care 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 est
cases, was demolished by an irate 19th-century owner to keep out local devi
lovers of Saint Ovidio, a popular Portuguese holy figure reputed to cure the
(That owner was excommunicated for his pains.) The new chapel sits
ought to the site of the old. Its entry faces away from the house, toward
west, a simple design that allows the architect to create an elaborate approach passing in
the sacristy’s cantilevered (virtually levitated) volume. Each of
the chapel’s four walls, Siza cut an aperture, playfully symbolizing a canop
featuring the traditional church: The tympanum appears as a s
pointed arch over the entry; the apse is represented by a semicircle at
the altar; the sacristy’s metaphorically open door is suggested by a
paper in the threshold of its cantilevered floor; and a cross is shone
tering rays through a translucent pane of alabaster.

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

As in the Serralves Museum [record, November 1999, 102], these sculptural pavilions attest to the formal sonorities that
in the encounter between the architect’s work and his native lands.
The gestural, accidental qualities of his forms seem most at home
in the jumbled, quiltlike collage of Portugal’s terraced fields with
scrubbing stone walls and houses, gushing streams, and gentle

Though Siza has worked across Europe, his inspiration clearly ob
nated here, where the act of building remains intimately connected
with the character of the land.

Project: Quinta Santo Ovidio, Douro Litoral, Portugal
Architect: Álvaro Siza Vieira—
Alvaro Siza Vieira, principal; José
Luís Carvalho Gomes, principal in
charge; Ashton Richards, Rafaelle
Leone, Francesca Montalto,
Mizumori Nakamura, project team
Engineer: Matos Campos (mecha)
Landscape architects: João Go
da Silva, Alvaro Siza Vieira

For more information about the people and products involved in this project, go to Projects at
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 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, had to buy an urban building with potential for an open loft, but developers were snapping up those properties in the late ‘60s. “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 a 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 facade. Threatening to collapse, elevation required demolition. Also, the engineers found that interior stud-frame partitions were supporting the bowstring roof trusses. These discoveries led Doblin and Valerio to the sobering decision to remove the wet 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 one north and a house to the south, the varied nature of the urban landscape—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

**Projects**

**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: Schwiss
Bi-Fold Doors; Hé-H Steel

WWW For more information on the people and products involved in this project, go to Projects at www.architecturerecord.com.
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).
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.
By Sarah Amelar

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—are 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, kered after a shed for her tractors and seedlings—and then, well, the id adding a swimming pool emerged. To keep out animals, Elam prop raising it on a high deck—reminiscent of the architects’ own pool in Atlanta home [record, April 1998, page 130]. So, the design mor from a garage/potting shed into a lap pool on an elevated deck w cabana. But, in the end, it seemed impractical to maintain a pool in a time home, and the project was trimmed back to a garage. “Suddenly,” I recalls, “we all missed that long, high, horizontal element in the land Beside, the owners really did need more room (and privacy) for vis Wth the program finally settled, the architects created a one room aerie that is remarkable in its sculptural qualities and response t setting. From the serpentine drive, this guest hideaway comes into 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 descends the opposite direction. But Scogin and Elam transformed the dia through an exquisitely subtle balance of solids and voids, volumes planes, and opaque or matte surfaces and transparent or reflective one A as result, parts of the building practically vanish or 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, the 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 roof elevation, two cantilevered forms appear equally unfettered by gravity: a cubelike bedroom, with floor-to-ceiling glazing, and the planar roof over it.

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 poplar slats in the parapet, along with the columns, echo the rhythms of the forest.

Merging indoors and out, the entry ramp, leading to living 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 rowly between building skins, it accentuates the play of light and shade. 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 glass is fixed, while operable panels in the room’s solid walls offer air.

For all its apparent ambiguity and paradox, the design is not 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 takes that position visually—hovering in an exceptionally fine balance.
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 Galioto, 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 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 Sheraton 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 inefficient, though valuable, way to understand and improve building performance. Failures become opportunities to examine assumptions, to perform studies, and to invite parochial 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 Benson—a volunteer on the Structural Engineering Association of New York’s post-9/11 damage assessment—observes, “No one had written a code for how to handle the situation that faced us, that is, how to safely dispose of the structurally chaotic piles of debris there. We’re 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 more information, you can visit the AIA Continuing Education website at architecturalrecord.com.

The majority of adoptions of International codes have taken place in the past year or two. It will, therefore, be some years before the impact of the changes can be measured. California is the largest state of the five remaining where no jurisdiction has adopted any one of the International codes. More than half have adopted it statewide, even if some jurisdictions, like New York City, maintain their more stringent codes within the city limits.

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.

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.

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 the International Building Code (IBC), Fire, Residential, Private Sewage Disposal, Mechanical, Fuel Gas, Property Maintenance, Energy Conservation, and Electrical codes, were complete and ready for adoption. The codes, including the 2001 ICC Performance Code for Buildings 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 stilled competition. The NFPA chose not to join the ICC coalition (unlike 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, understandable language so that even the general public can understand..."
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 50 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
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 perhaps are the result of, prescriptive codes. Prescriptive codes form the bulk of the model codes, but the model-code organizations have also published separate performance-based codes, such as the 2001 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 a 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 in recent 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
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The Kawneer entrance. It never wears out its welcome.
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 automatically 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," Commissioner Lancaster, "but we also try not to enact rules or changes that are overly prohibitive to the quality of life." Or that are prohibitively expensive, the building industry would add, a notion Lancaster 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 unfair 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
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 Arenco 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 to remain open to the wide public passageways that serve as exit corridors, which also contain shared living rooms and kitchens, and to the three atria 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 record for safety, the team did not find it possible to replicate the model 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 (NC) is working toward an objective-based code. “Such a code,” explains Colquhoun, “identifies objectives, like the protection of property, structure, sufficiency, and life safety. It then says that the objective is to get every bit 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 every bit 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.”

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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).
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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

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

c. 2002
d. 2003
Licensing: Software by the numbers

Alan Joch

It’s not an image you might associate with architects, as perhaps you’re Bob Kruger, president for enforcement for Business Software Alliance in Washington, D.C. The BSA, an industry group of software heavyweights such as Microsoft, Adobe, Apple, and Bentley Systems, has made illegal copies of commercial applications a focus. Kruger says a “fair number” of companies are using software without paying, according to the BSA. “Most of the cases we investigate are not ‘night operations,’” he says.

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They’re good, well-managed companies that pay taxes and obey Occupational Safety & Health Administration requirements. But when it comes to software management, 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 aggressive—some say excessively so—in enforcing licensing agreements. Currently, 500 companies are negotiating 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 software. 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 violators 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 violator a warning letter designed to instill fear. Some letters even advise the software user to close down its business until any licensing discrepancies 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 companies 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 compliance letter, even though they had the required number of licenses.

The BSA contends that accounting for licenses is straightforward. “You’re just adding up the

Most software makers offer only individually licensed copies of their products (diagram, far left). But Autodesk and Bentley Systems offer network server licenses for their CAD software, in which license information resides in a single place (near left). Users are notified automatically in cases of noncompliance.
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 flout 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 slovenly,” 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 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 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 the 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 looks out

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

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 Metrix, KeyServer from Sassafras Software, Inventory from Altiris, and TS.Census from Tally Systems, and GASP from Attest Systems. Prices are based on the number of computer users in an organization. A 1,000-seat version of GASP costs $22 per seat. (The BSA Web site lets companies download a freeware version of GASP, which will support 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 like trying to comply with the BSA.” “You could spend hundreds of hours matching what’s on each computer to a masterlist of licenses, he says.

Keeping this information in electronic record helps a company not only stay in compliance, but know where it stands if an auditor arrives. If that happens, Ziehl 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 a look guilty.” Instead, he says, companies should conduct internal audits to understand how they are out of compliance and what steps need to be taken to resolve the problem. The subsequent fines may be high but this avoids the hassle of going to court.

GASP, by Attest Systems, is one of several tools that help firms manage software licenses electronically. The software can report how many CDs are available for the number of users needing access.

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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. 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.1
- **Cold Climate** equals 4500 - 8000 heating degree-days.1
- **Mixed Climate** equals 4500 heating degree-days and less.1

Severe Cold, Cold and Mixed climates experience between 20 and 60° of precipitation per year.1

- **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.1
- **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.1

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:2

(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.2

(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.2

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...
The 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 climates, 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 sealed 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 flashing. Most building codes require a maximum of air infiltration rate of 0.06 ft³/min·ft² 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 affect 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, 9/8" exterior grade gypsum sheathing on the exterior with some kind of building wrap. This wall is referred to as the **basewall 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 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 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 early in May through 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 **basewall system example again.** Except this time we install a 1" R-5.4 layer of rigid insulation over the exterior gypsum sheathing. The results show that we can shorten the time frame during the year when moisture has the likelihood to condense and accumulate by about 1 month (Figure 2). This solution isn't great because we still have four months of the year where moisture build-up can occur. However, if we take the fiberglass or 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.
Because of the 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 x .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.

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 installing 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
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.

**Footnotes**

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. To obtain a faxed copy of the supplemental material, please contact Joe Barrow at jbarrow@dow.com. The test below includes questions derived from the online material.

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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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 5/4-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 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.

Advertising supplement provided by Marble Institute of America
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 last 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), 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 pace 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-largest 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.

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 anywhere 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.
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 for millions of years. Travertines, too, vary widely in density, hardness, and porosity. They are typically light beige and many can be polished to a high gloss.

Sandstones are composed primarily of quartz crystals bonded together with silica, calcium carbonate, or iron oxide. The color is determined by the percentage of iron oxide.

The third classification of stone, metamorphic rocks, rocks transformed from other rock types into slates, schists, and gneisses, is formed primarily of dolomite and calcite with a wide variety of other minerals contributing to color and texture. Marble began as limestone, and the slates, schists, and gneisses are produced through metamorphic activity. Commercially, any stone (except stone) 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 magma, with mineral content of which are feldspar and quartz and smaller amounts mica and hornblende. They are classified as fine-grained, medium-grained, or coarse-grained.

Medium-grained granites contain feldspar crystals that average about 3/4-in. diameter. Relatively coarse-grained granite appears in a fine-grained sandstone, the rock is designated as a porphyritic granite.

The color of granite is governed largely by the color of the feldspar, usually most abundant mineral. Near-white, dark gray, green, light gray, pink, and blue granites are common, but granites of other colors are becoming common. The color distribution has traditionally been a desirable feature. However, many of today's granites exhibit veining movement and artistic background 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 in a rock. 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 than that of taking a polish.

The color, veining, clouds, mottlings, and shading of marble are caused by changes that occur in minor amounts during formation. Iron oxides make the marble yellow, brown, and reds. Most blacks, grays, and blue-grays are of iron impurities. Micas, chlorites, and silicates cause greens.

Grains of calcite, the chief constituent of most marbles, are crystalline and in the unaltered state show bright reflecting faces on a broken surface. In most marbles, the grains are elongated in one direction, giving marble a finite grain.

In general, marbles are classified into four groupings that should be taken into account when specifying marble. The groupings—A, B, C, and D—are classified primarily on the basis of their solidity and on the stone's working characteristics, in no way refer to the quality of the stone in a particular group.

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 "washing" or "sticking." Washing 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, lining, 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 surface 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.
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 Hall.](Image)

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 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 extensive introduction to stone testing, including data descriptions of test categories, procedures, and specifications of ASTM International (formerly the American Society for Testing and Materials). It also offers detailed instructions for a broad range of installations, both horizontal and vertical, including curtain walls, countertop and lavatory partitions; a guide to care and maintenance; and sample contract documents. A copy may be ordered from the association through www.marble-institute.com.

Historically, ASTM standards for stone have been limited, but the organization is in the process of expanding testing, particularly with regard to travertine and serpentine. "Further testing," 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..."
It should be noted that European test methods might vary from ASTM and give different results for the same stone. This is particularly true for 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 correction 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."

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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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

Spanish tile trends include toned-down metallics and contemporary mosaics

Overings 2003, the major U.S. tile stone exhibition held last month in Orlando, the Pavillion of Spain showcased the latest technologies in Spanish ceramic-tile industry for the U.S. market. A variety of the collections offered included textural effects created by state-of-the-art glazing and finishing techniques. Favorite inspirations were natural materials, fabrics, faux painting effects, and exotic wood finishes. Metallics, which have become the main trend, are now used for subtle effects in decora-tives—especially in silver and bronze. Deltafer'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 mosaic base is soft, rounded 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 at 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 architecturally engaging concrete pieces for home and business applications. The custom capabilities extend to products such as countertops, vanities, backsplashes, sinks, furniture, mantles, and hearths. The company explores the natural properties of concrete in a variety of ways: It can take on 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 Designers 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. 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 cabin-ets, is personalized with impressions of real leaves and ferns. 864/235-8007. Concrete Canvas, Greenville, S.C. CIRCLE 202

Concrete countertop mimics limestone.
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 283

▼ 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-art 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 Angior, 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

▲ Reeds of tile
Cotto Veneto displayed an array of new offerings at its booth year, in materials ranging from natural stone, glass, and terracotta to stainless steel. Rilievo Canne (left) is a hand-painted bas relief in terracotta or enameled fired clay, inspired by the natural landscape of cases and bulrushes. The terra-cotta reeds of Stucio (above) were also inspired by natural textures of vegetation. 518/344-7000. Cotto Veneto Tile, Schenectady, N.Y. CIRCLE 207

▼ 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 Dei Tirreni, Italy. CIRCLE 206

▲ 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 Aiga, 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
Patina (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 glossy 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. 877/811-0199. Walker Zanger, Sylmar, Calif. CIRCLE 209

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Miró's tile mural, Mau de Soleil (1957), at the UNESCO Building in Paris, France.
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 310

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Product Briefs

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**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

**Interior construction**
Protect the sheathing during construction of Waccamaw Memorial Hospital in Murrells Inlet, South Carolina, the architects of, in-house-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

**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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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 surface 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

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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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NEW DOOR EXPRESSIONS

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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 products, including rigid vinyl wall coverings, entrance matting and gratings, athlos 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, McLeary, Wash. CIRCLE 229

CERTIFIED LUMBER REPORT
A special report examining the growing demand for architectural wood doors manufactured from certified lumber now available from VT Industries. The eight-page report, titled Going Green, provides an authoritative look at the new technology and procedures required to deliver architectural wood doors that meet Forest Stewardship Council guidelines for certified lumber. 800/827- VT Industries, Holstein, Iowa. CIRCLE 230

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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 l 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 evidence 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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