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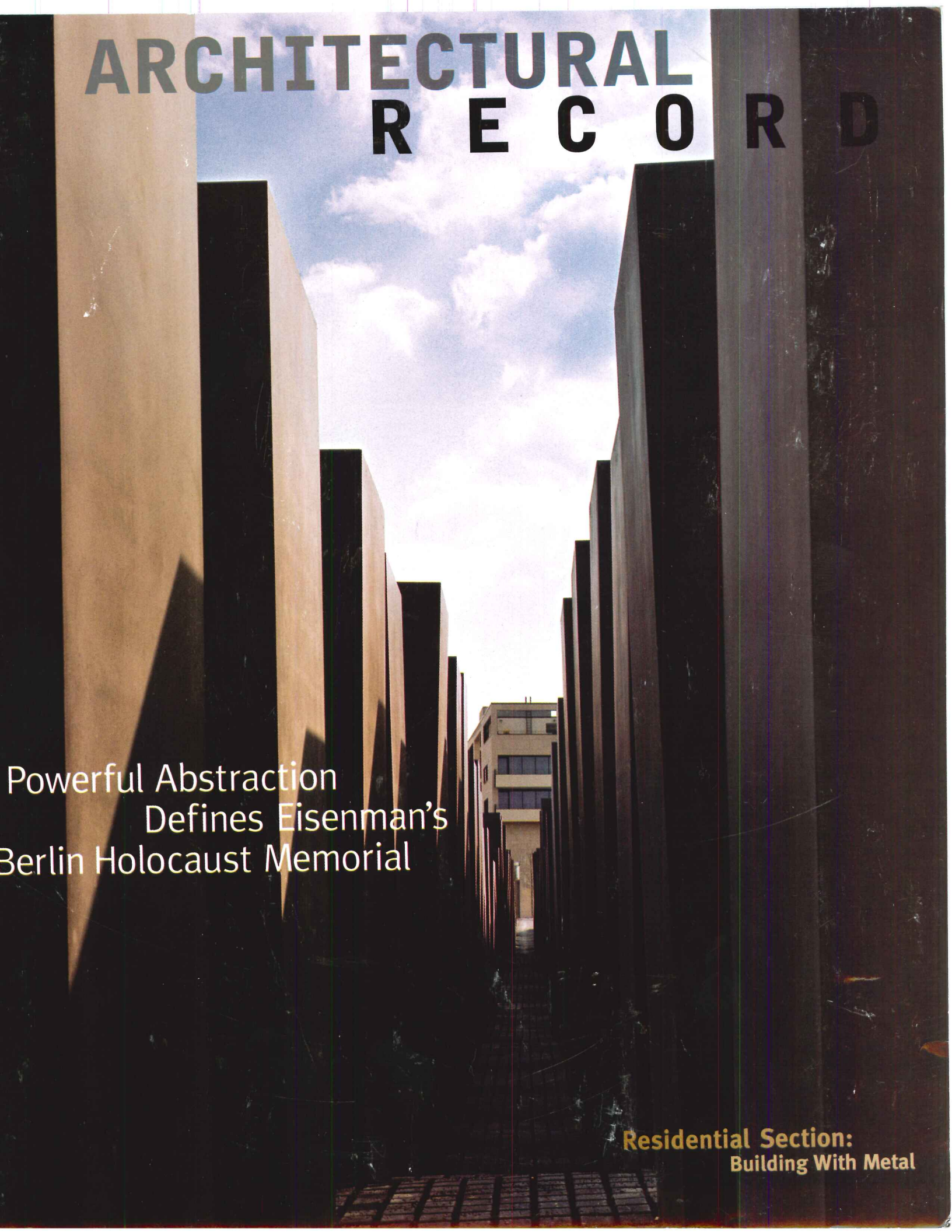

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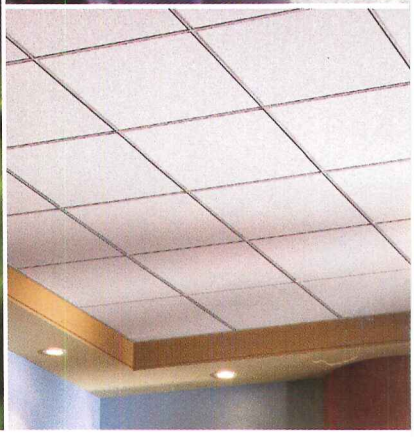

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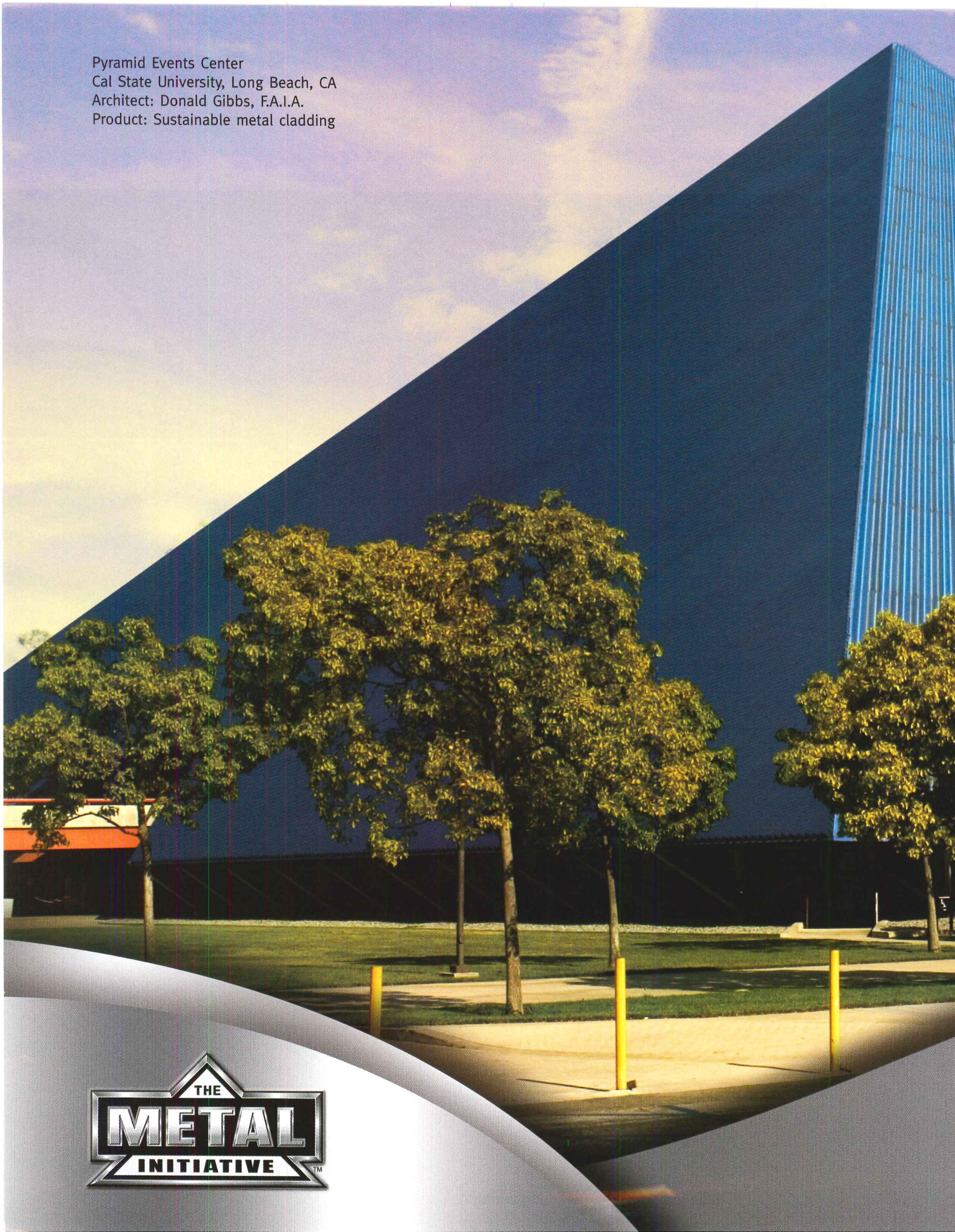
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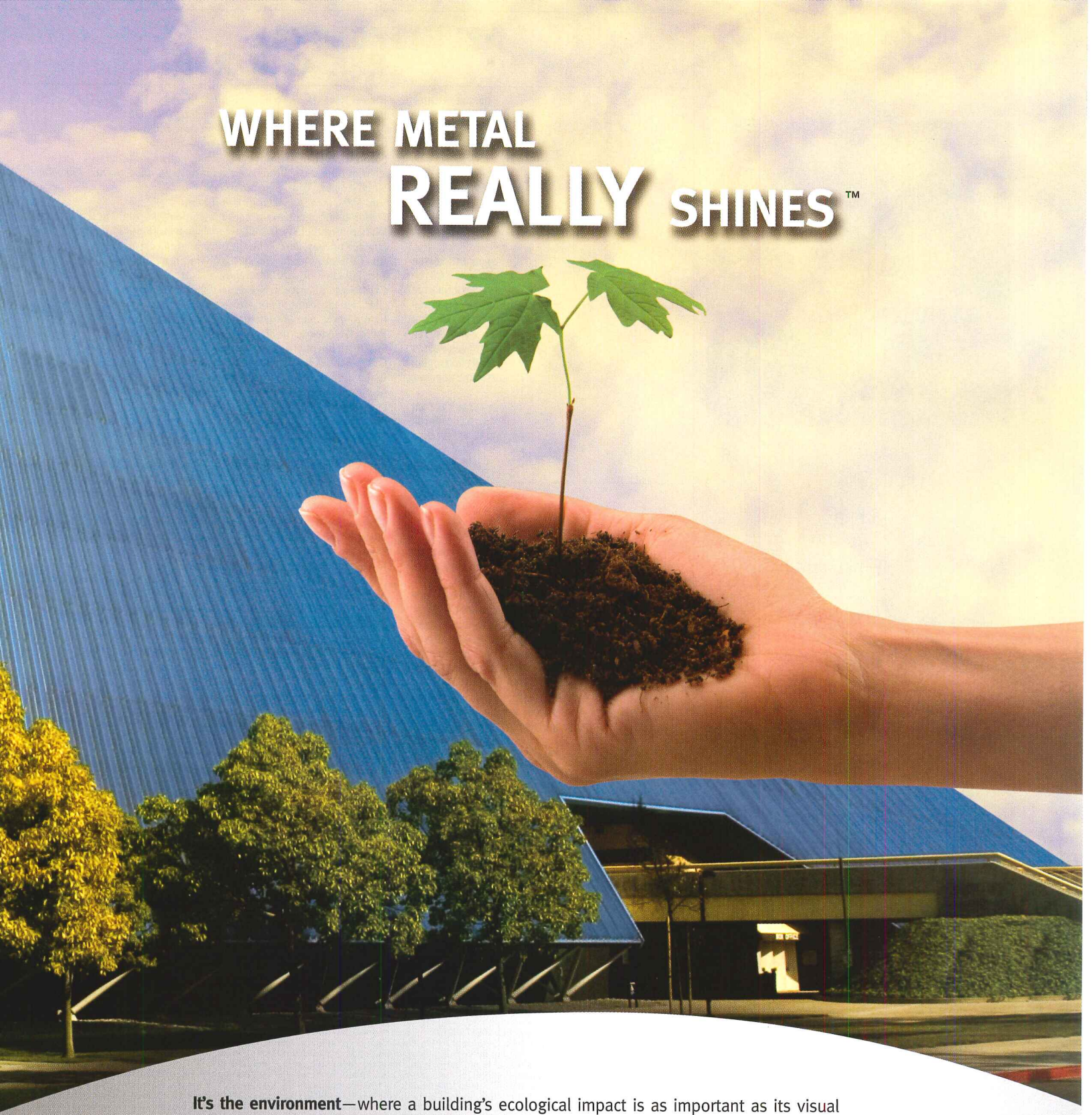

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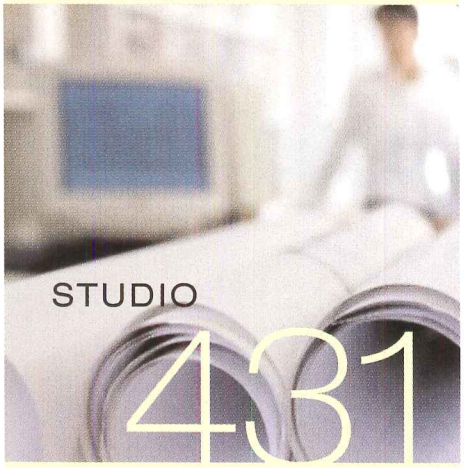

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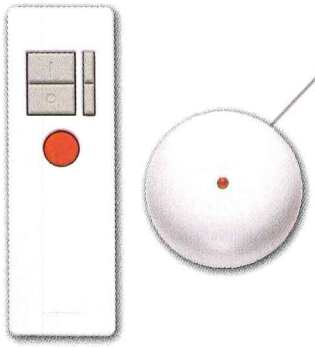

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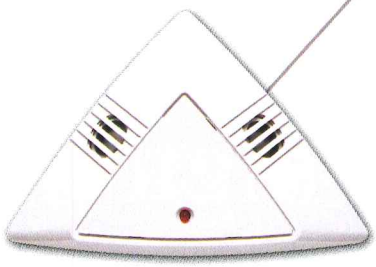

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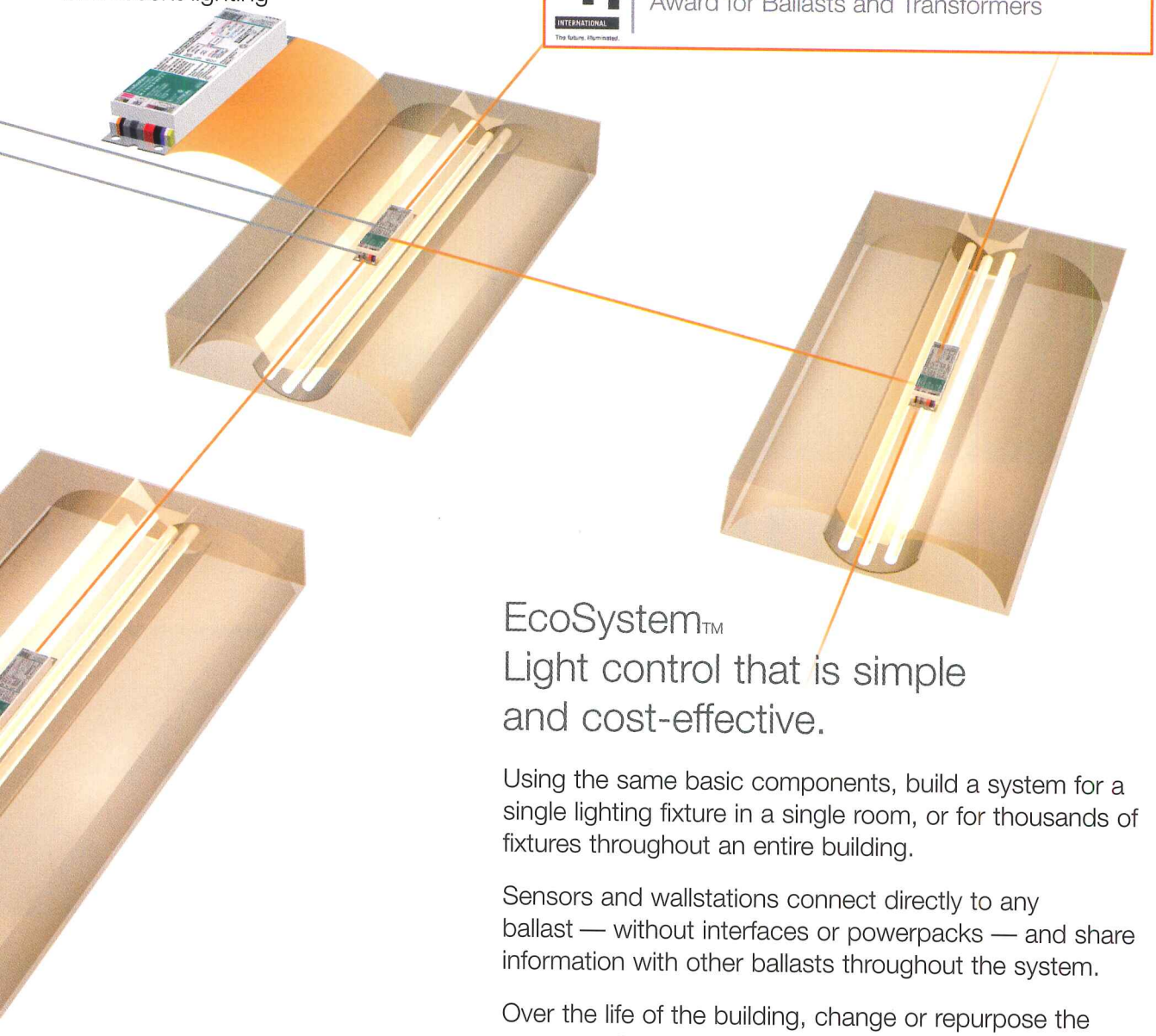

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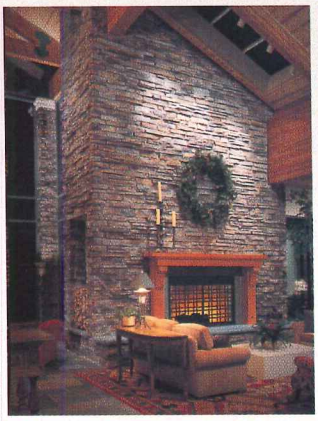

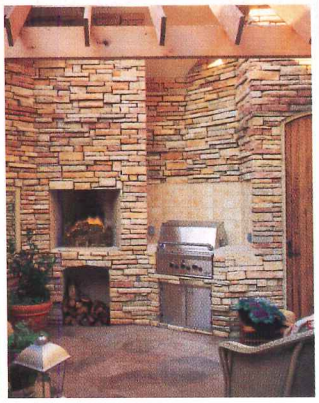

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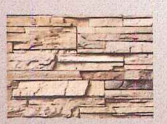

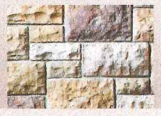

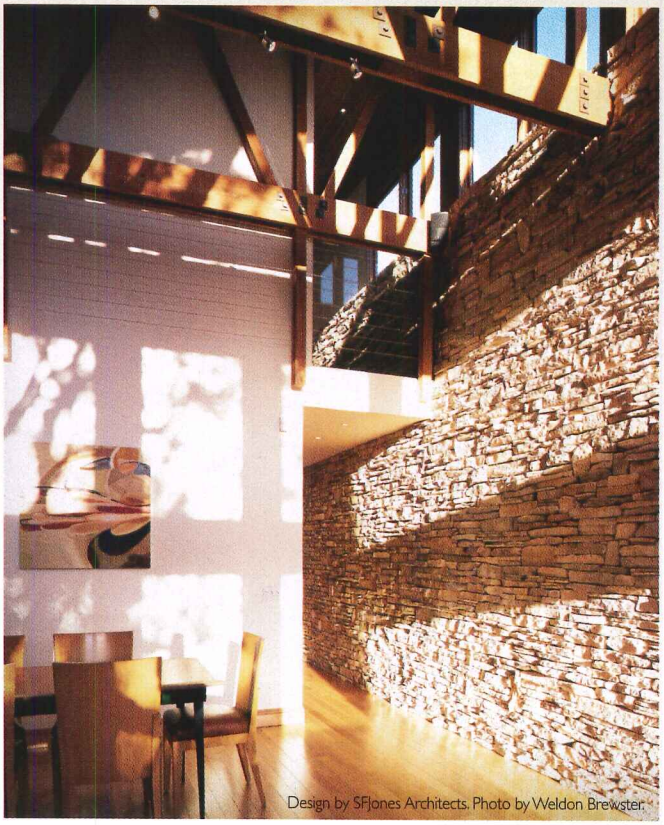

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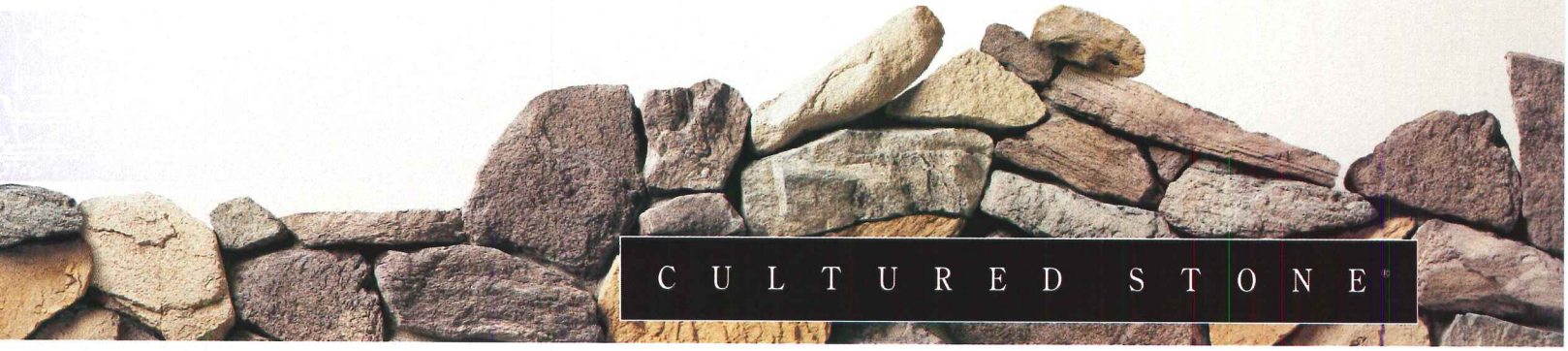

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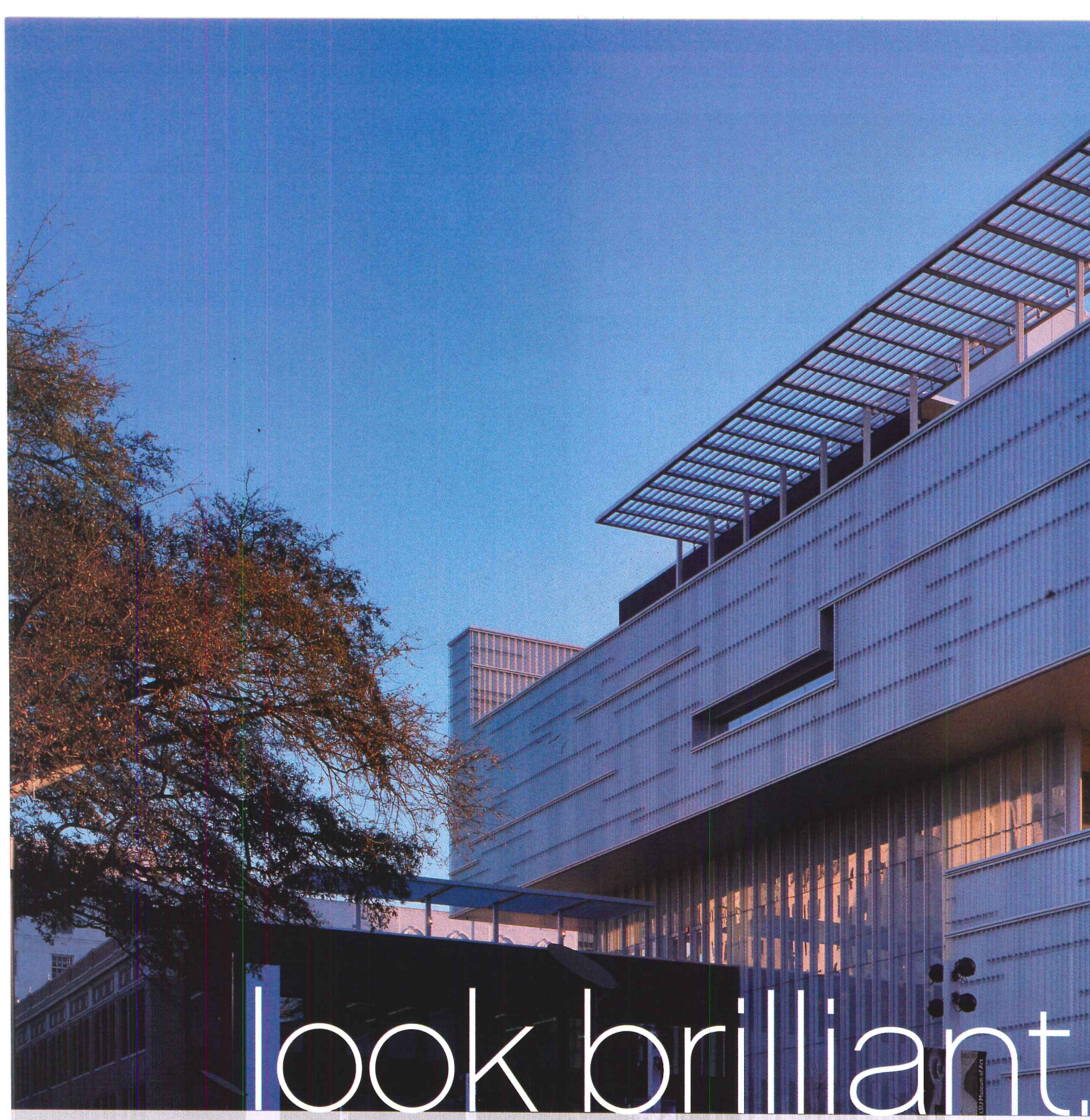

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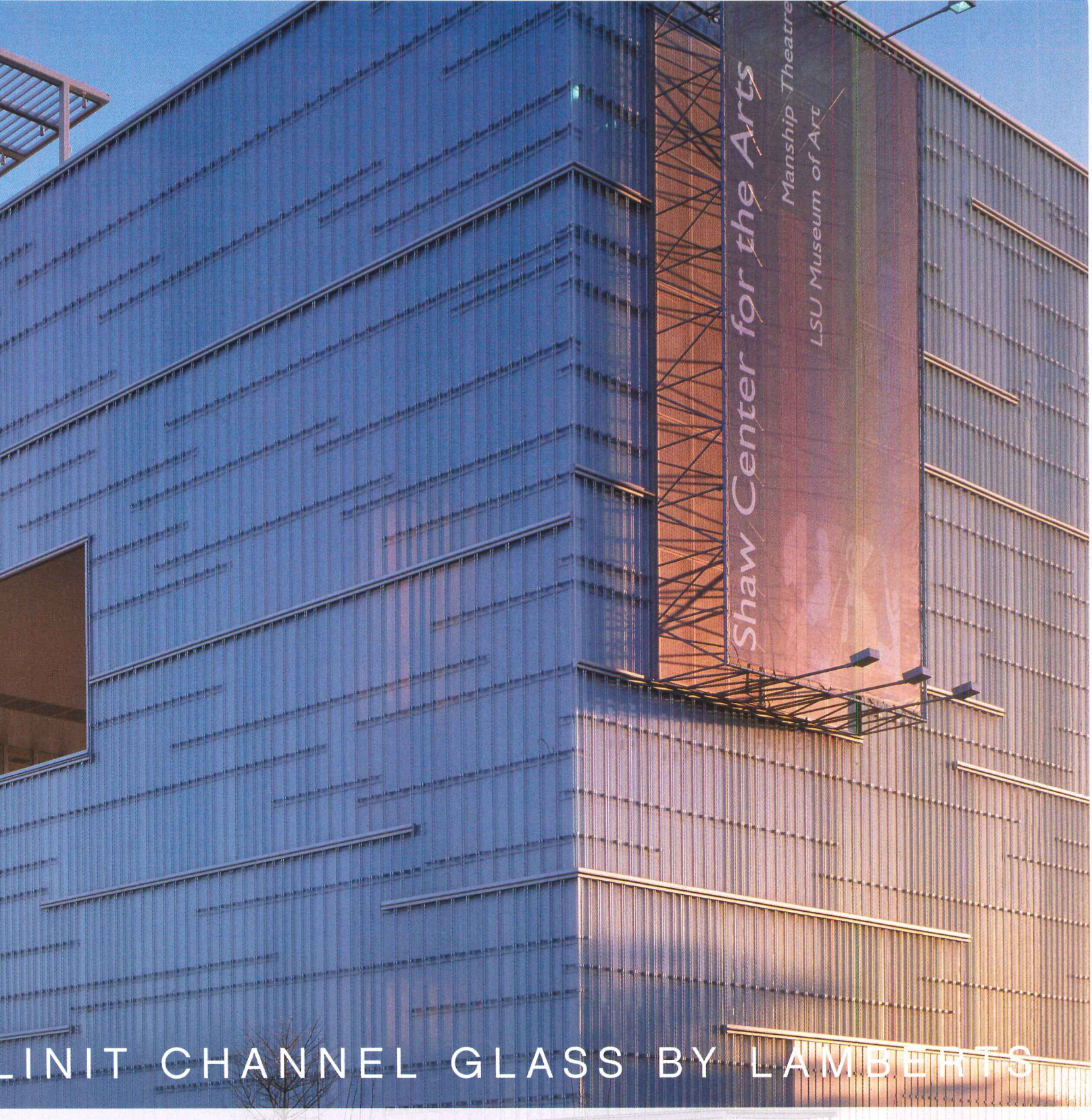

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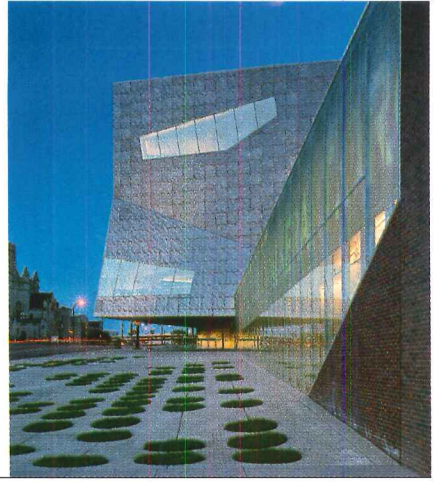

On the Cover: *Peter Eisenman's Memorial to the Murdered Jews of Europe . Photograph by Roland Halbe*
Right: *Herzog & de Meuron's Walker Art Center. Photograph by Paul Warchol*

News

25 Report from Las Vegas: AIA Convention 2005
28 Norten designing Guggenheim in Mexico

Departments

17 Editorial: Plus Ça Change
21 Letters*
47 Archrecord2: For the emerging architect *by Randi Greenberg**
51 Critique: Architecture, memory, and place *by Robert Campbell, FAIA*
57 Books: Summer Reading
63 Exhibitions: 2005 World Exposition *by Fred A. Bernstein*
67 Correspondent's File: Miami *by Sara Hart*
71 Snapshot: Deer Moat Pedestrian Tunnel *by Beth Broome*
257 Dates & Events*
279 Record House of the Month *by Suzanne Stephens**

Features

76 Big Firms Growing Bigger *by James S. Russell, AIA*
What's to learn from the country's largest architect-led firms.

Projects

87 Introduction *by Robert Ivy**
88 Walker Art Center, *Minneapolis* *by Sarah Amelar**
Herzog & de Meuron
A lively expansion animates a museum's reserved existing structure.
100 Casa da Musica, *Portugal* *by David Cohn**
Office for Metropolitan Architecture
Dramatically sculptural, a concert hall makes its grand entrance.
112 Yad Vashem Holocaust Museum, *Jerusalem* *by Andrea O. Dean**
Moshe Safdie and Associates Architects
Tunneled through a hilltop, a history museum crowns a memorial.
120 Memorial to the Murdered Jews of Europe, *Germany*
*by Suzanne Stephens**
Eisenman Architects
Journeying across a monumental landscape of light and shadow.

Building Types Study 847

131 Introduction: Multifamily Housing *by Jane F. Kolleeny*
132 Loloma 5, *Arizona* *by Clifford A. Pearson**
Will Bruder Architects
136 Palm Springs Modern Homes, *California* *by Joseph Giovannini**
DesignARC
142 Orange Grove, *California* *by Allison Milionis**
Pugh + Scarpa
146 The Titan, *California* *by Ann Jarmusch**
Jonathan Segal Architect

For 9 additional Multifamily projects, go to Building Types Study at **architecturalrecord.com**.

Architectural Technology

153 The Pick of the Sustainable Crop
*by Nancy B. Solomon, AIA**
AIA's top picks reveal the many forms of green architecture.
163 Tech Briefs*

Residential

199 Introduction *by Jane F. Kolleeny*
200 Burton House *by Ann Jarmusch*
LUCE et Studio Architects
206 Ecoms House *by Naomi Pollock*
Riken Yamamoto & Field Shop
210 James-Robertson House *by Christopher Moore*
Dawson Brown Architecture
214 Villa Lucy *by John Pastier*
WPa
221 Kitchen & Bath Portfolio *by Rita Catinella Orrell*
231 Kitchen & Bath Show Review *by Linda C. Lentz*
236 AIA PIA Awards

Products

241 Sustainable Choices
245 Milan Furniture Fair Review
254 Product Literature
264 Reader Service*
264 AIA/CES Self-Report Form*

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This month in Continuing Education

In This Issue:

Pages 169 – 173 **Silence is Golden: Controlling Sound in Non-Residential Structures**
Sponsored by Marvin Windows and Doors

LEARNING OBJECTIVES:
- Recognize situations that require sound control in non-residential structures
- Understand sound transmission as it relates to occupied buildings
- Identify the appropriate sound rating systems for glass and framing materials used in windows and doors
- List and compare the primary advantages and disadvantages of window and door options

Pages 175 – 179 **From Quarry to Residential Countertop**
Sponsored by Marble Institute of America

LEARNING OBJECTIVES:
- Know basic sequencing of processes for natural stone to go from quarry to countertop
- Learn elements that influence selection for interior applications and factors that affect cost
- Understand factors to consider regarding sealing natural stone

Pages 181 – 185 **Green Product Evaluation Necessitates Making Trade-Offs**
Sponsored by USG

LEARNING OBJECTIVES:
- Better judge the sustainability of materials
- Specify "green"
- Understand and apply the concept of "embodied energy"

Pages 187 – 197 **Specifying Ceilings**
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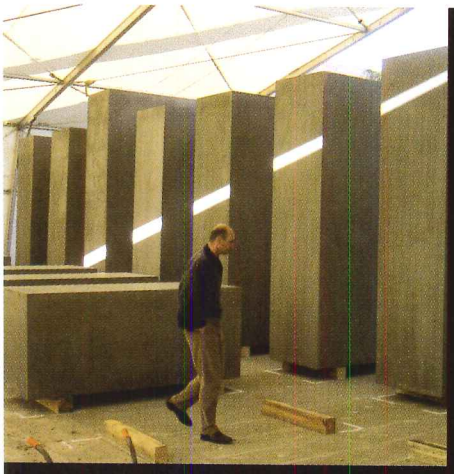
LEARNING OBJECTIVES:
- Recognize the trends in ceiling design
- Know the primary materials being used to satisfy these trends
- Understand the impact of ceilings on building performance

This month at archrecord.construction.com



Memorial to the Murdered Jews of Europe, Berlin
Courtesy Sebastian Mittendorfer

Projects

This month our project portfolio includes rich architectural works by Rem Koolhaas, Peter Eisenman, Moshe Safdie, and Herzog and de Meuron. Our Web site features a timeline that tells the story of Eisenman's Holocaust Memorial in words and photos.

Daily Headlines

Get the latest scoop from the world of architecture.

Ecoms House, Saga, Japan
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Residential

This quarter's residential section explores homes that use metal as a predominant material. As always, we also feature our Web-exclusive House of the Month.

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Building Types Study

Consumers are demanding new, modern homes close to the workplace. That's driving the market away from single-family sprawl toward high-density living. Discover nine multifamily housing projects not seen in the pages of our magazine.

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Plus Ça Change

Editorial

By Robert Ivy, FAIA

For more than three years they have come. Day by day, the faithful gather at the wall, drawn to the place where the unthinkable happened. After the obligatory photograph, they stare down, past the PATH station discharging its human cargo, into the gaping void, wondering what will become of Ground Zero. Little wonder. Even vigilant city dwellers and professionals have lost focus on the development spiral.

For a few short months, particularly in the days surrounding the selection of a master planner, we had hoped for more. Daniel Libeskind mounted the stage with élan, flourishing authoritative rhetoric in words and images, pointing a way out of the 75-foot-deep mire. He had a vision (we could see it; it was near-tactile in the imagery) that rested on bedrock at one extreme and spiraled toward new heights for Lower Manhattan. That plan was founded on architecture.

Libeskind, however, lacked the one ingredient New York thrives on. Power flows like water in this great city between the poles of money and politics and, particularly here, real estate, while architects stand at its margins. You've read the books before. Today, the anointed architect's ideas have dissipated as the powers-that-be squeezed the 16 acres into submission, resulting in a desultory mix that contains less bouquet and more blend. Witness business as usual for New York, New York.

All is not lost. Although the outcome remains unresolved, we should see interesting individual buildings, some by world-class designers at the height of their abilities. No one quibbles that Santiago Calatrava seems on the way toward a poetic major work in the transit hub. Nor that Snøhetta has unveiled a provocative structure—even though already criticized in The New York Times for being politically compromised—for a cultural center that defies gravity. The whole world loves Frank Gehry, and even the prospect of his as-yet-undefined performance center.

Yet trouble lurks at the cornerstone. SOM is scheduled to show, as this issue goes to press, its revisions to the Freedom Tower, suggesting adjustments to its original torqued skyscraper. We expect the redesigned plan to address security concerns expressed by the New York Police Department, including further setbacks from the street, less eccentricity in its form, and the absence of an open fretwork of superstructure and cabling at its crown, as well as a hardened base. This tower, freighted with the emotional baggage surrounding the whole site, has loomed tall and troubled, particularly since the forced relationship between the principals attracted widespread attention. We can hope for a simplified, integrated scheme today.

The memorial, though backed by a blue-ribbon panel, nevertheless appears to have struggled to find private funding. Modified to include a parklike setting by landscape architect Peter Walker, Michael Arad's winning scheme seems compromised, its size diminished and its circulation reduced to two descending ramps. Long ago, Libeskind's exposed slurry wall, the entire site's one flash of brilliance, had been relegated to subterranean status.

Examining the larger current site plan offers no comfort. Instead, the former World Trade Center has been populated with individual components, flung across the shadow of Libeskind's original master plan, with no hint of complexity or urban dialogue at the street level. By contrast, Peterson/Littenberg's densely planned, carefully modulated urban dreamscape à la Rockefeller Center (minus the architecture) seems like an urban idyll, compared to today's prospects.

Before we resort to hand-wringing, an admission is in order: The public expected architecture to solve the unsolvable on the World

Editorial

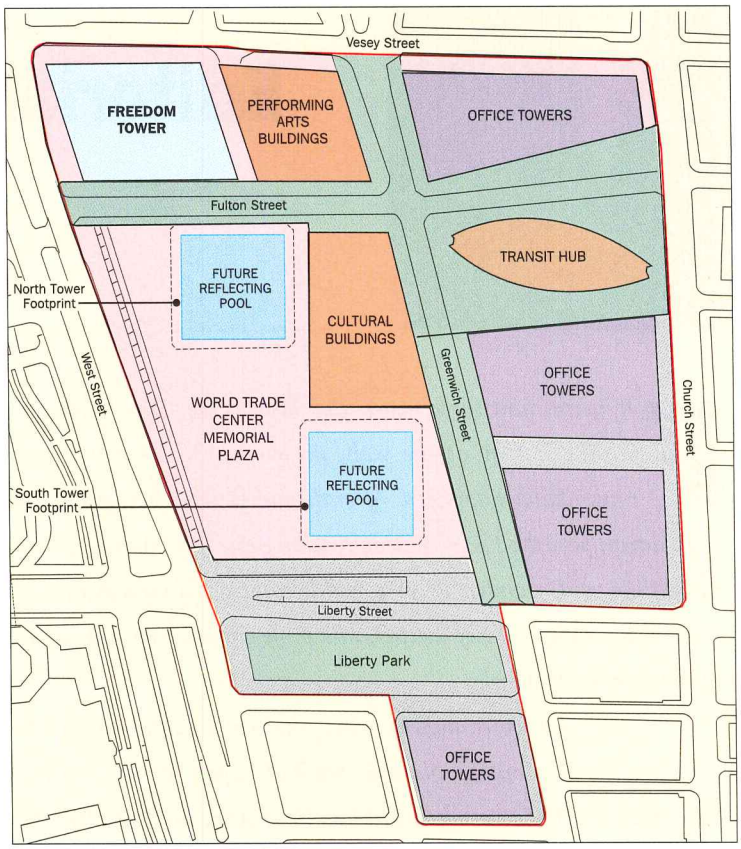
Trade Center site. Design offered an answer to the wrenching pain we all felt in the aftermath of destruction and loss on September 11, 2001. Building back meant reclaiming our sense of self, and ordinary men and women looked to architecture for the blueprint. Design and architecture assumed importance in popular discourse; coverage in the media broadened to include changes and advancements in all kinds of design, a movement that continues today.

Furthermore, the site remains largely unbuilt. While the governor has appointed a trusted aide and ally to push construction forward, total funds have not yet been raised for the institutions involved. Most tellingly, the first major office building completed at Ground Zero remains largely unleased. 7 World Trade Center, developer Larry Silverstein's first significant office tower, which faces the World Trade Center site, has no major tenants other than the developer. With nearby office space lying unleased, the Freedom Tower probably faces a similar fate.

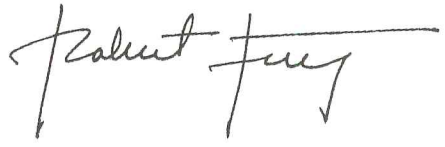
In all the hype, one truism contains real truth: A complex project demands a great client. Instead, we have faced compromise at every turn and find ourselves stuck in the subjunctive: Had the governor seized the moment, spoken with authority, claimed the ground, acted with Machiavellian virtu, he might have cut through the competing noise of the claimants and led us beyond mediocrity. If the developer, Larry Silverstein, possessed a more enlightened civic sensibility. If the city could have swapped property with the Port Authority of New York and New Jersey, and if the Port Authority could have bought out Silverstein … If only we had a czar.

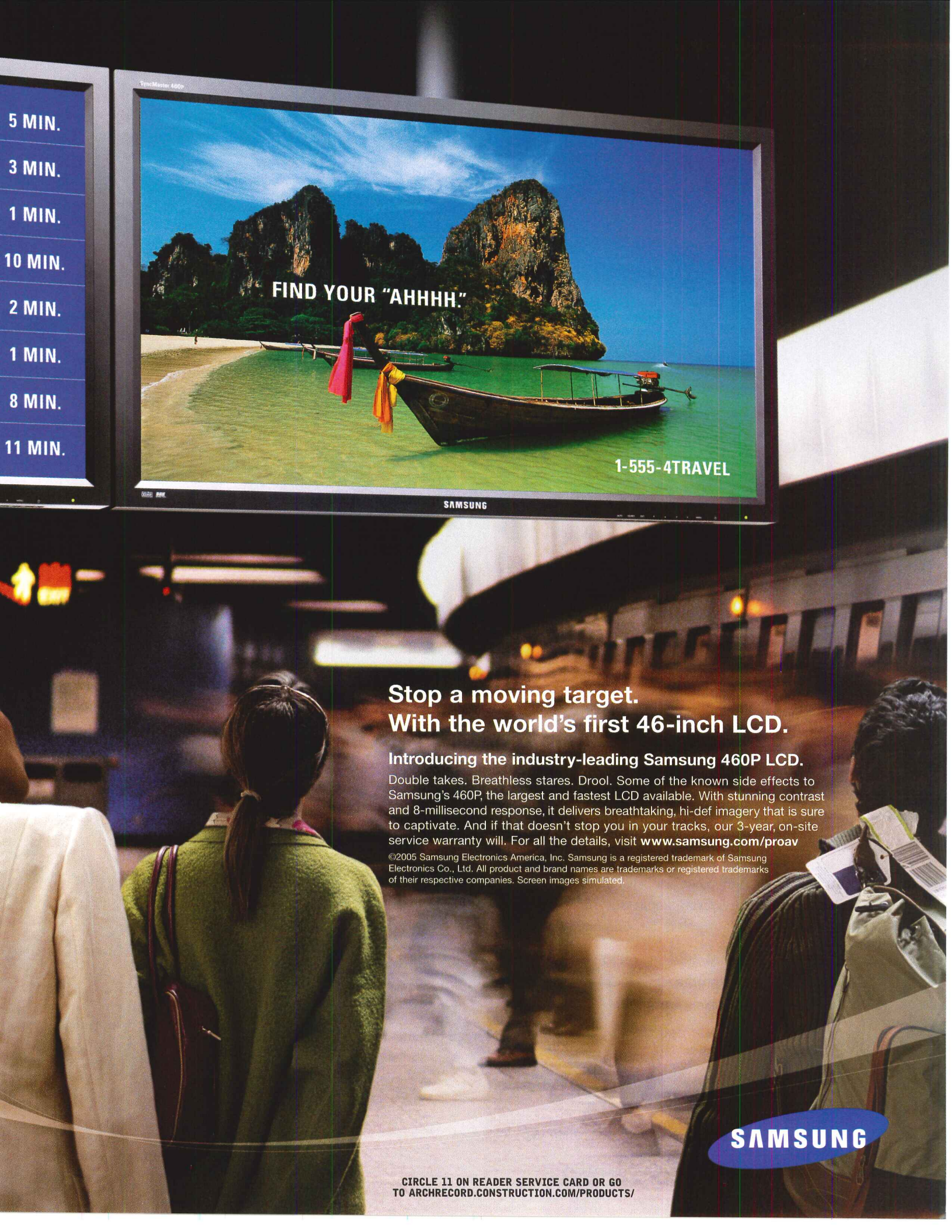
But who really wants another Robert Moses? The truth is that we may not need the contemporary version of Rockefeller Center or other mono-visions; we may benefit from the accretions of commerce or residential development that may spring up uninvited. Our wide-open times, replete with invention and competing ideas, suggest other analogies for urban development more akin to atomistic, even metabolic ones (the city or the site as organism?). In such an urban scheme, the plan would serve as a framework for organic civic growth rather than as a definitive, controlling document.

At Ground Zero, the former World Trade Center site, the controlling metaphor today may be vision, but if so, the vision has blurred. Our task as architects and planners is to refocus our attention on the site, individually and collectively. Tomorrow, New Yorkers awake to another day. Plus c'est la même chose? More of the same? Certainly not. In architecture, as in all construction, until the concrete has been poured, it is never too late to change the documents.



Libeskind's master plan includes office towers, cultural buildings, the memorial, and the Freedom Tower. Today, the site remains largely unbuilt.





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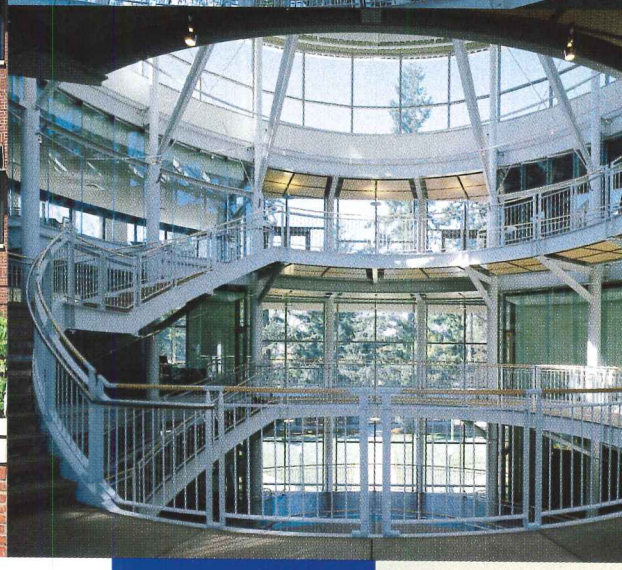

Lillis Business Complex at the University of Oregon, Eugene, SRG Partnership

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Letters

Raise the bar

To make a drawing in public takes a great act of confidence. To draw (and paint) in front of 5,000 architects takes a great act of brilliance. As one of those architects who witnessed the lecture by Gold Medalist Santiago Calatrava [May 2005, page 162] at the AIA convention in Las Vegas, I was brought to tears by his brilliance. Perhaps it is time for the AIA to raise the bar—gold may not be good enough.

Joseph Lengeling, AIA
Magnusson Architecture and Planning
New York City

Las Vegas lessons

Thank you for your insightful coverage of Las Vegas in your May issue [pages 186 and 194]. At least the magazine tried to address something substantive in relation to this year's convention venue. It's too bad the convention itself failed to do the same.

Other than "A Conversation with Steve Wynn and Tony Marnell," only two of the many seminars offered made any mention of the host city. Nor did the theme sessions speak to any of the pressing social, architectural, and urban issues that your articles so astutely identified.

Think about it: The convention assembled 24,000 participants from the world's largest community of design professionals for three days in one of the most surrealistic environments imaginable—and asked them, in effect, to completely ignore their surroundings. Apparently, the "Power of architecture" to "Imagine, Create, and Transform" is to be applied only to places and situations that are less messy and disturbing than the ones staring us in the face on the Strip.

Patrick Winters, AIA
Via e-mail

Boycotting the big house

I am writing in response to the Record News item, "Prison design boycott aims to slow growth of correctional facilities" [June 2005, page 30]. I find the Architects/Designers/Planners for Social Responsibility's position intriguing—that by boycotting prisons, we'll solve and/or eliminate the problem. I think we should apply this logic to other institutions of society that display "inherent racial and social inequalities."

For example, I find hospitals particularly distasteful—they routinely reject patients with inadequate insurance, charge astronomical sums for treatment and medications, locate in the wealthiest areas, and periodically kill people by negligence. I think we should boycott hospitals. And don't get me started on accounting firms and police departments.

Prison units are necessary receptacles for people who break the law. Congress makes the law, police enforce the law, the courts dispense penalties, and the prisons incarcerate the offenders. If you believe the system is faulty, perhaps you should start with Congress and work your way down. Or, we could empty out San Quentin, and you could tell me how that works out for you.

Roger A. Moore, AIA, NCARB
Architect, Facilities Division, Texas Department of Criminal Justice
Huntsville, Tex.

Johnson's parting gift

Your three articles on Philip Johnson in the May issue were right on target [page 176]. Of the three, Michael Sorkin's was the most entertaining and provocative. His subtle anger is a good antidote to undeserved and uncritical praise of Johnson's work. At the same time, in defense of Johnson, I do not think we architects can be held responsible for society's ills, nor do I think we can do much about the trajectory of civilization—currently, in my opinion, on a downward path. All of us are in the service of clients, some of whom are enlightened, but most not. And although I am sure we all strive to give the client more than they are able to articulate, we are increasingly defeated by the budget and time restraints imposed by a profit-oriented, bottom-line, business-dominated culture.

Sorkin is certainly right in suggesting that Johnson was not a visionary architect, indeed that his designs were derivative at best, Disneyesque at worst. Sorkin is also right in linking Johnson's Ayn Rand brand of fascism to his work. Although not as in-your-face fascistic as Albert Speer's architecture, it is a celebration of capitalism and its unhumanistic insensitivity to both site and human context. To paraphrase Vitruvius, theory is the foundation of design. It is inconceivable that theory can exist independent of personal, political, and even religious beliefs. I leave it to scholars to uncover the connections between Johnson's fascistic and racist proclivities and his architecture, but I am convinced they exist.

We cannot predict how the future will judge Johnson and his work, but if his death serves as a stimulus for a lively and productive discussion of the ideas presented in your three articles, his life has already made a valuable contribution to our profession.

J.D. Coleman, Arch. Ph.D.
University of Cincinnati
Cincinnati

Getting away from it all

Fifty years ago, ARCHITECTURAL RECORD published Ulrich Franzen's home in suburban New York. At that time, in the charming small town of Rye you could still find a reasonably priced 2-acre lot with good nearby schools. You can even imagine a young 35-year-old Franzen catching the train to the city, joining his newly formed office, and then returning home to his family and his newly constructed house, "a house of serene beauty, lyrical, playful, and self-assured," as described by Stanley Abercrombie.

Times have indeed changed, and your magazine's response to the original challenge of documenting how "real-life people" live seems to, as well. Record Houses 2005 offers us 10 interesting examples of houses embracing, as a celebration, a new Modernism. All enjoy living with nature as planned, and the majority allow their owners to get away from it all—as programmed. Unfortunately, these programs have little in common with what the majority of our residential designers are designing, and possibly to what the majority of your readers are looking to read about. Yes, powerful images can free the mind, but isn't it a little bit like a "concept car": an assemblage of good, responsible ideas, but in a package not necessarily reflecting the majority of customers' needs or interests?

Walter M. Daly
Baltimore

Corrections

The photograph of Philip Johnson's Penzoil Place in the May issue [page 180] should have been credited to Wayne Andrews/Esto. The credits for the coverage of the Shaw Center for the Arts [June 2005, page 86] were incomplete. The channel-glass curtain wall should have been credited to Lamberts LINIT channel glass; the supplier was Bendheim Wall Systems.

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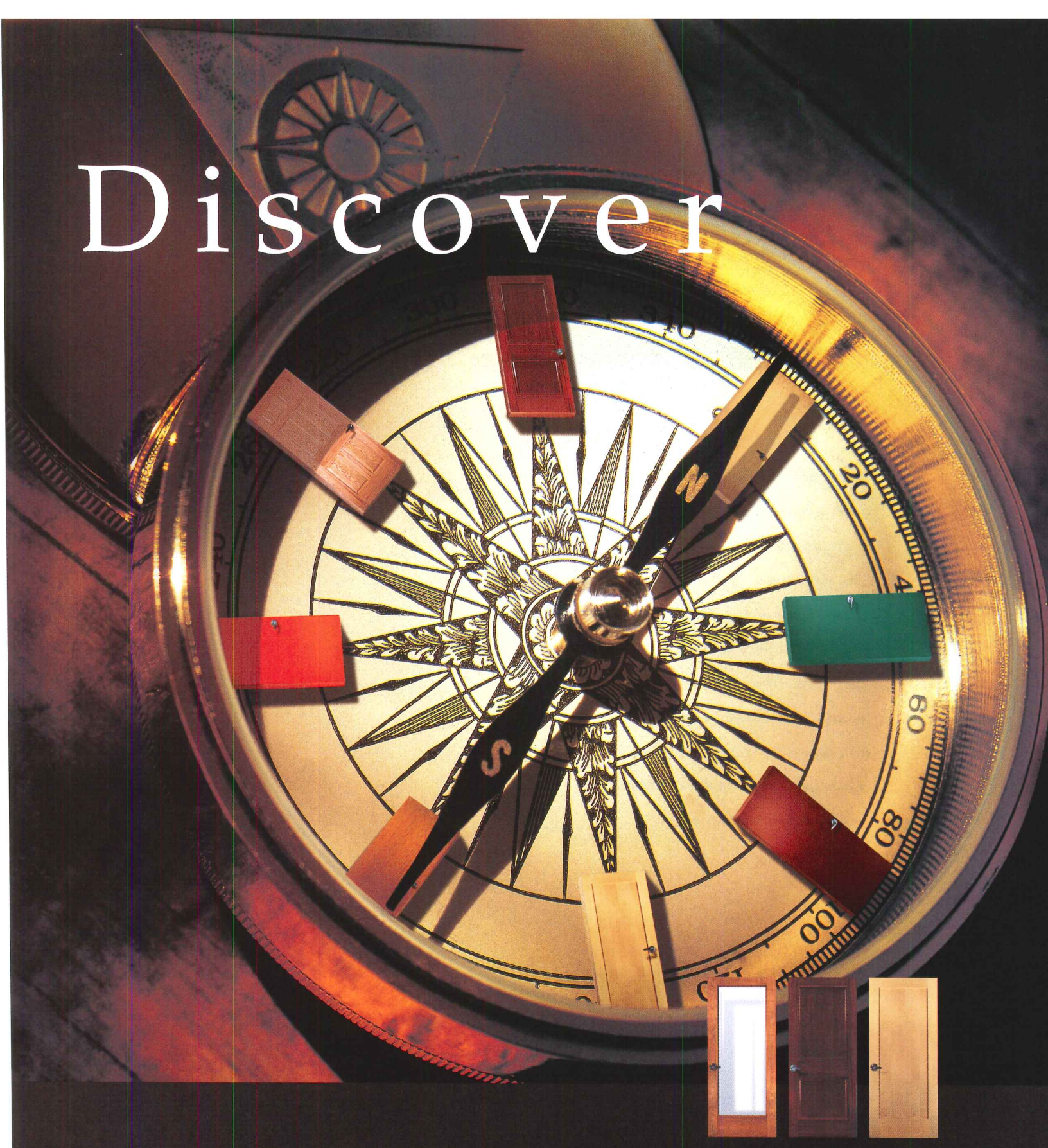

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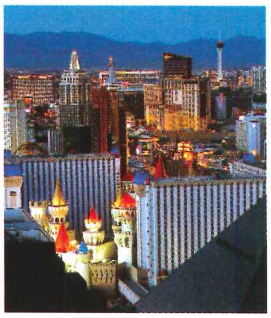
Record News

Highlights

p.26 **New York stadium dies, another is born**
p.28 **Norten designing Guggenheim in Mexico**
p.30 **Wal-Mart heirs sponsoring new museum**
p.37 **D.C. shelves two major projects**

Learning from Las Vegas: AIA convention heads to the Strip

The hot sun and bright lights were at times bewildering, but about 24,500 architects made their way to the Mandalay Bay Hotel in Las Vegas in late May for a successful American Institute of Architects convention.



A view of the Vegas Strip.

The number of attendees was 10 percent more than the last convention in Chicago, and a new record for the event, now in its 137th year. The AIA Expo, meanwhile, featured 860 exhibiting companies, also a record, although only slightly above last year's number, due to an effort to ensure that the event wasn't too overwhelming. In an atmosphere like Las Vegas, where neon signs blaze, life-size re-creations of world monuments loom, and slot-machine sirens blare, this was a tall order. Especially with unseasonable temperatures reaching up to 105 degrees. Nonetheless, the rapidly growing city confidently took the spotlight, as architects explored the Strip, including the sleek new $2.7 billion Wynn Casino, and points beyond, with tours extending as far as the Grand Canyon and Hoover Dam.

The convention, from May 18 to May 21, featured speakers such as 2005 AIA Gold Medalist Santiago Calatrava, FAIA, recent Pritzker Prize winner Thom Mayne, FAIA, Las Vegas's Mayor Oscar Goodman, and the Wynn's developer Steve Wynn, who hailed the importance of taking design risks. Over 50 educational seminars included a conversation with World Trade Center Memorial designer Michael Arad, and touched on topics like interoperability, design-build, and risk management.

Delegates elected Gensler principal RK Stewart, FAIA, as 2007 AIA president, and passed resolutions targeting increased awareness of sustainability and the declining number of newly registered architects. The convention will meet next year in Los Angeles. *Sam Lubell*

World Trade Center cultural building designed to float and disappear

New York State leaders and the Lower Manhattan Development Corporation (LMDC) unveiled a schematic design for the first of two cultural buildings at the World Trade Center site on May 19. The building, designed by Norwegian firm Snøhetta, will house New York's Drawing Center and a new museum called the International Freedom Center. Frank Gehry is designing a performing arts center that would be located across the street to the north.

The Snøhetta building, which will sit on the northeast corner of the Trade Center Memorial's plaza, has been designed to minimize interference with the memorial. In contrast to the planned 1,776-foot Freedom Tower, the cultural center (whose square footage is not yet determined) would be a low, horizontal building, with clear sight lines from Greenwich Street, to its east, to the memorial on the west. Its ethereal surface, whose primary materials were not disclosed, will be covered with glass prisms.

Snøhetta principal Kjetil Thorsen explained the "tabletop design" for the structure, developed with Buro Happold engineers' New York office, whereby the bulk of the building would be hung from a supporting structure at its roof. That structure, in turn, would be supported at its corners. A processional ramp would lead visitors up from ground level to the exhibition and auditorium spaces above. Thorsen's Snøhetta partner, Craig Dykers, said that the architects worked with the Freedom Center and Drawing Center in biweekly workshops over a 90-day period.

The Drawing Center is the only nonprofit organization in the country that focuses on the medium of drawing. The International Freedom Center will tell "freedom's story," according to its mission statement, including "a multimedia collage of some of freedom's most inspiring moments, as well as galleries and temporary exhibits."

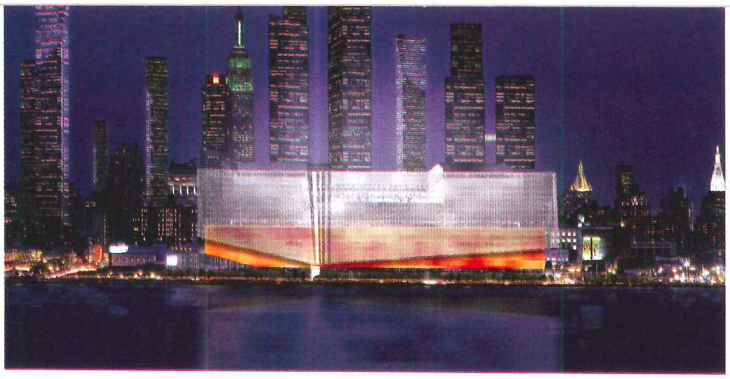
New York's Mayor Michael Bloomberg attempted to preempt criticism from the families of September 11 victims by complimenting "a design that integrates the memorial, and is respectful of the buildings around it." But some 9/11 family members didn't accept such reassurances.

Anthony Gardner, chairman of the World Trade Center United Family Group, thinks the Freedom Center's program is too close to that of the memorial's 9/11 museum, and will upstage the memorial. "The rhetoric says that the memorial is the centerpiece, but the reality is it's an afterthought. We're opposed to any plans to locate a non-memorial-related building within the 4-acre memorial quadrant." Gardner feels that if Snøhetta's building were a September 11 museum, "that's a different story, but our center is relegated to being underground. I feel it's an attempt to sanitize the site, to make it more attractive for the office buildings."

New York's Governor George Pataki, who has been under fire for delays at the World Trade Center site, announced a timeline for the cultural center and for other buildings at the site. He says that new plans for the Freedom Tower, which is being redesigned to address safety concerns, would be presented at the end of June. This summer, construction will begin on the Santiago Calatrava–designed PATH terminal. Crews will break ground to build the memorial plaza itself in 2006, and the cultural center will break ground in 2007. No budget has been announced for the cultural center. *Kevin Lerner*

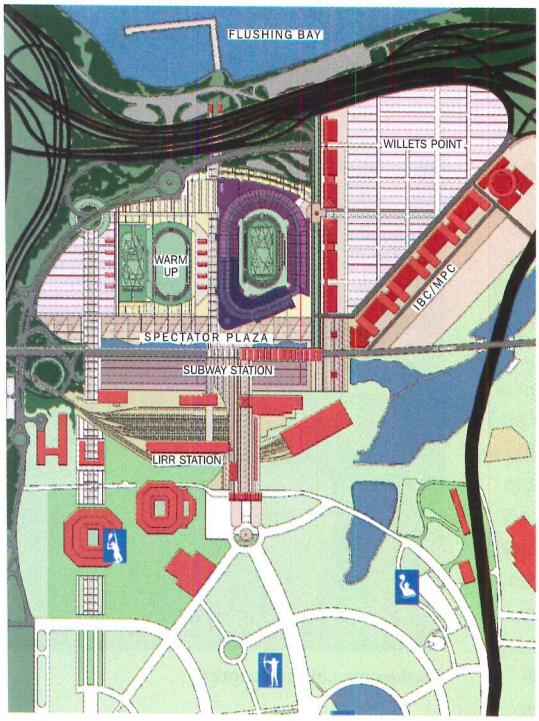
Snøhetta's cultural center.

Olympic switch: New York rejects Manhattan stadium, proposes another in Queens



The stadium's size and design had been radically changed a few months ago.

The highly contentious New York Sports and Convention Center, proposed for the Far West Side neighborhood of Manhattan, was defeated on June 7 as New York State Assembly Speaker Sheldon Silver and Senate Majority Leader Joseph L. Bruno refused to approve the plan. The vote ended New York Mayor Michael Bloomberg's multi-year quest to secure a new stadium, not only for the New York Jets, but possibly for the 2012 Olympic Games. The city's Olympic bid, however, was given new hope a few days later when Bloomberg announced a new stadium plan in Queens.



The Mets' new stadium will be reconfigured (above top) if New York takes the 2012 games.

The $2.2 billion, 75,000-seat West Side stadium, which was being designed for the Jets by New York–based Kohn Pedersen Fox (KPF), had recently been replanned to better fit the scale and character of the low-rise industrial neighborhood, including an almost 40 percent reduction in height, and the addition of a semitransparent glass facade. But such efforts came to no avail.

At a press conference on June 7, Silver, who held the deciding vote on the state's Public Authorities Control Board, pointed to several pressing city issues as reasons for not supporting the plan. The most important, perhaps, was his position that Far West Side development would have siphoned financial support from Lower Manhattan, which is within Silver's legislative district.

About $1.6 billion of the tab would have been paid for by the Jets, including a $250 million payment to the Metropolitan Transportation Authority (MTA) for the West Side railyard site over which the stadium was to have been built. The remaining $600 million would have been split by the city and state as a public subsidy. "Considering the challenges already facing the city and the state of New York, this plan, at best, is premature," said Silver.

Predictably, stadium supporters such as the Jets, Bloomberg, and Governor George Pataki were outraged. The Jets pinned much of the blame on the Cablevision Corporation, which owns nearby Madison Square Garden, which would have competed with the stadium, and had bid against the Jets for the MTA property. Bloomberg also warned that the stadium's defeat might not only cost the city the Olympics, thousands of jobs, and significant tax revenue, but might discourage builders from pursuing other projects in the city. "One of the great dangers is that developers are going to get disheartened and say, 'I can't build anything in New York City because the politics always get in the way,' " he told reporters on June 8. Bloomberg is not alone in bemoaning the wariness of the local government to fund large-scale projects, although many support its ability to veto developers' plans.

The stadium had been one of the most controversial building projects in recent city history, as many felt it would siphon money from needed projects, ruin the character and scale of the neighborhood, break up connections with the Hudson River, and bring unmanageable traffic and crowds into the area on game days. Supporters felt the project would not only be a boon to sports fans, but would help catalyze the Far West Side, or Hudson Yards District, which is a 40-square-block area enclosed by 42nd and 30th Streets and 8th and 11th Avenues in Manhattan. The area, which has long lain dormant, was recently rezoned to allow significant amounts of commercial and residential development.

For KPF, which would not comment, the project's failure means the loss of several years of work. Meanwhile, as the Jets decide whether to pursue the stadium with private funds (MTA chairman Peter Kalikow said on June 9 that if the team remains interested, the agency would follow through on the deal), other area developers are turning their eyes on the railyards site, and on the rest of the area.

A second chance in Queens

While the city's chances to lure the Olympic games looked bleak after the West Side stadium defeat, they improved on June 13 as the city and the New York Mets announced a plan to build a new stadium for the Mets in Flushing, Queens, which could be converted into an Olympic-size arena should New York win the games.

The stadium, to open in 2009, would replace Shea Stadium and hold 45,000 fans for baseball. It could be converted into an 80,000-seat stadium for the Olympics after the 2011 baseball season. "It wasn't our first choice, but it's an awful good alternative," the mayor said. "New Yorkers aren't quitters. We don't just walk away from our future."

Mets principal owner Fred Wilpon told mlb.com, the official Web site of Major League Baseball, that the Mets' new stadium would likely look similar to Ebbets Field, the long-time home of the Brooklyn Dodgers. A plan for such a stadium, by HOK Sport+Venue+Event, with a brick-and-limestone facade and exposed steel girders, was first proposed by the Mets in 1998. The cost of the stadium, Wilpon said, would likely be around $600 million, paid for by the Mets. Construction will begin next year, regardless of whether the city wins its Olympic bid. The city and state plan to provide $180 million to upgrade supporting infrastructure, and about $100 million to make the stadium Olympic-ready, if necessary. NYC2012, the committee organized to bring the Olympics to New York, will contribute $142 million toward this cost. The 35,000-seat addition required for the games would be removed after their conclusion.

Unlike the Manhattan stadium, there appears to be little political opposition to the Queens stadium plan, which would also include press and broadcast centers, to be built near the stadium in Willets Point. New York is competing with London, Paris, Madrid, and Moscow for the 2012 games. The host city will be chosen on July 6 in Singapore. *S.L.*

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Enrique Norten wins competition to design Guggenheim Museum in Mexico

A jury formed by the Guggenheim Foundation has chosen Mexican firm Enrique Norten/TEN Arquitectos to develop a conceptual design for its proposed Guggenheim Museum in Guadalajara, Mexico. The other competitors in a limited competition were Ateliers Jean Nouvel, and New York–based Asymptote.

Norten's scheme includes a rectilinear, glass-enclosed tower that would rise high over the Barranca, a 2,000-foot gorge at the northern edge of the city. The white tower's verticality, said competition jurors, represents a striking contrast to the sprawling city's "overwhelming horizontality," according to comments made by the jury, which included Frank Gehry, FAIA, Guggenheim director Thomas Krens, and Guadalajara's Mayor Emilio Gonzalez Marquez. They also noted it helps provide the iconic presence that has become a characteristic of the Guggenheim's museums.

The tower, if built, will be composed of a series of stacked, white steel boxes of different sizes and configurations. These will serve as galleries, which will display art from the Guggenheim's collection and also feature contemporary Latin American work. "It's almost like a 3D Tetris," explains Norten, who designed the recent *Aztec Empire* show for the Guggenheim, and is working with engineers Arup and Guy Nordensen. Interstitial spaces between the boxes will accommodate public congregation, and the structure will be wrapped in a double skin of glass. The innermost of these skins will be sealed. A large open space at the top will either serve as a gallery or a roof garden, while elevators will be suspended off the side of the building, forming an attraction in themselves.

The building will have its own plaza, designed by landscape architect James Corner of New York–based Field Operations. Its texture will gradually change from hardscape to trees and greenery, Norten notes.

The glass tower would draw attention.

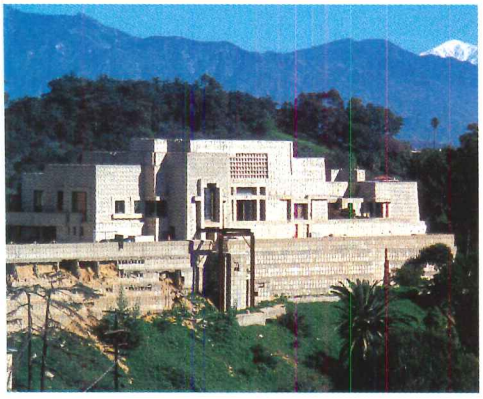
Guadalajara seems to have discovered architecture as a means toward establishing itself as a cultural capital. The city's planned JVC project [RECORD, June 1999, page 119], in which Norten has had an active role, will also include architecture by Wolf Prix, Jean Nouvel, Thom Mayne, FAIA, Zaha Hadid, Daniel Libeskind, Carmen Pinault, Tod Williams Billie Tsien, and Philip Johnson/Alan Ritchie Architects.

Guggenheim spokesman Anthony Calnek stresses that a Guadalajara branch is not a sure thing. The museum, with consulting firm McKinsey & Company, is now undertaking a feasibility study, to be completed in August. Nevertheless, the plan represents another significant step by Krens to expand the Guggenheim's international reach. Since taking over as director in 1988, he has developed new branches in Bilbao, Berlin, and New York City's SoHo area (this branch has closed). He recently developed plans for museums in Taichung, Taiwan (but it appears that the local government will not have enough funds to support it), and Rio de Janeiro—which was delayed by court injunction, and has now been abandoned. A branch in Las Vegas closed in 2001, although part of that museum, the Guggenheim Hermitage, is still open.

The Guadalajara project will likely be paid for by a combination of local and federal Mexican funds, notes Calnek. "The board has decided in a broad way that it's appropriate to proceed globally with expansion," he adds. "However, it's still considering in detail what the limits on that expansion will be." *S.L.*

National Trust releases "11 Most Endangered" list

The National Trust for Historic Preservation in early June released its annual list of the nation's 11 most endangered historic places. The list, first issued in 1988, serves as a preservationists' call to arms on behalf of sites deemed threatened by "neglect, insufficient funds, inappropriate development, or insensitive public policy," according to the trust.



Frank Lloyd Wright's Ennis-Brown House.

Ernest Hemingway's Finca Vigía, or "Lookout Farm," located near Havana, Cuba, is the trust's first-ever extraterritorial listing. The now-dilapidated house was built in 1886, and the author lived there from 1939 to 1960. A survey team will visit this summer, says Peter Brink, the trust's senior vice president of programs.

This year's list also includes historic buildings in downtown Detroit, some of which stand in the way of the city's plans for hosting the 2006 Super Bowl. Such a wide-reaching designation is rare for the trust, which previously flagged the historic buildings of Lower Manhattan and Vermont. Detroit's endangered buildings, mostly dating from 1910 to 1940, include Art Deco, Art Moderne, neo-Gothic, Neoclassical, and Beaux-Arts structures, according to local architect and preservationist Douglas McIntosh. They include the work of George Post; McKim, Mead and White; and Albert Kahn. Major recent losses in the city include the Statler Hilton Hotel and the Madison-Lenox.

Ernest Hemingway's home, Finca Vigía.

Also highlighted are properties of the Roman Catholic Archdiocese of Boston, which is selling churches and other buildings in more than 80 of its 357 parishes. Development plans threaten many of these structures. In Los Angeles, Frank Lloyd Wright's 1924 Ennis-Brown House, the last of his "textile block" designs, is crumbling, its steel reinforcing bars rusting and concrete blocks falling apart due to water damage. Recent mudslides and the 1994 Northridge earthquake have also caused extensive damage.

For the complete list, go to www.nationaltrust.org/11Most/2005 *Ted Smalley Bowen*

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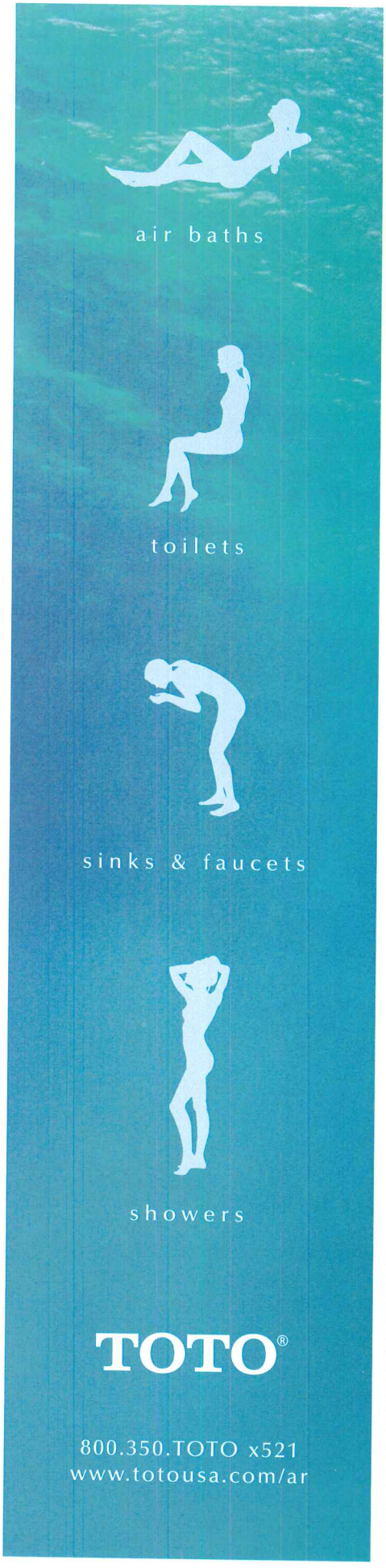

Record News

High Culture from Wal-Mart? Company's heirs sponsoring Crystal Bridges art museum in Arkansas

Wal-Mart is known for many things, but high culture is not chief among them. It may come as a surprise, then, that the heirs of the Walton family, led by Sam Walton's daughter Alice, are building a sophisticated museum complex in their headquarters at Bentonville, Arkansas.

Called Crystal Bridges, after nearby Crystal Spring (which feeds the ravine on which the property will sit) and a pair of glazed galleries that will traverse a man-made lake, the museum will be devoted to American art. The project is being designed by Moshe Safdie and Associates of Boston and its landscape designed by Peter Walker & Partners Associates of Berkeley, California.

Linked by a series of trails in a 100-acre wooded park, the 100,000-square-foot museum will be accessible via a 15-minute walk from downtown Bentonville. The complex will consist of a series of buildings with distinctive ribbed and glazed roofs offering views of treetops and sky. "I want to create an experience of viewing art in nature," says Safdie. "Breaking up the spaces creates a network of indoor and outdoor areas, so the visitor never loses sight of the landscape." *Alan G. Brake*

Cultural buildings, which contain ribbed and glazed roofs (above), will act as bridges and dams, forming two ponds from a man-made lake.

Team chosen to help revive Los Angeles River

On May 23, the Los Angeles City Council's Ad Hoc River Committee announced its choice of Pasadena-based Tetra Tech, a management consulting and technical services provider, to devise a master plan for the Los Angeles River. The firm will receive $5.2 million to help return the river from a concrete flood-control canal to a vital natural resource for the city.

Since the 1930s, when the U.S. Army Corps of Engineers channeled 80 percent of the river to provide flood protection, the Los Angeles River has been underutilized. As the "world's largest storm drain," its potential as an environmental, cultural, and economic resource largely disappeared from public consciousness. In the 1980s, the Friends of the Los Angeles River (FOLAR), a nonprofit organization with a vision for restoring the river, was formed. Other nonprofit organizations, as well as local, state, and federal government agencies also joined FOLAR, and when the city council established the Ad Hoc River Committee in 2002, focus was brought to the restoration effort.

The plan will cover 30 of the 51 miles of the river that wind through the center of the Los Angeles metropolitan area, passing commercial and residential development, industrial zones, and railroad yards. Tetra Tech's plan will address issues like improving the river's water quality and managing storm-water runoff, rezoning to encourage riverside commercial and residential development, and developing landscaping and habitat designs for parks and recreation areas. Los Angeles will follow a number of other U.S. cities that have transformed mistreated waterways into valued resources. Among notable models is Denver's South Platte River district. Once a dumping ground for industrial waste, the redeveloped waterway combines restored wetlands and natural flood control with light-commercial development, while also providing recreation. ***Allison Milionis***

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Record News

World Trade Center Memorial mock-up helps designers plan for the future

The World Trade Center Memorial, called "Reflecting Absence," which will consist of waterfalls flowing into representations of the voids left by the Twin Towers, won't be finished for years. But a mock-up corner section of one of its voids has been built in the backyard of Toronto resident Dan Euser, a consultant to the project.

The $175,000 model, 27 feet high, is made of 300 plywood sheets and powered by three 10-horse-power pumps that send water over a serrated ledge. Since January, Euser has used the model to examine issues like splashing, noise levels, self-cleaning, the effects of wind, and freezing. (Toronto's cold winters makes it the perfect location to test this last issue.)

Memorial designer Michael Arad, who has visited the mock-up several times, notes that thanks to testing, his team has opted for individual streams of water instead of a continuous wall of water, its original plan, which he says would be overwhelming visually and aurally. The team is still determining how much wind the waterfalls will be able to withstand, noting that when levels reach a certain point, the water will be turned off. Meanwhile, the best way to prevent freezing, he says, is simply "to keep running it." *S.L.*

A view from beneath the mock-up.

$800 million slated for Lower Manhattan improvements

Amid increased scrutiny over the pace of development in Lower Manhattan, New York's Governor Pataki and Mayor Bloomberg on May 25 announced plans for more than $800 million in new investment in the area. Much of the money appears to be geared toward cultural and residential improvements, likely aimed at attracting more residents to the increasingly popular area. The plans include a $300 million pledge by the governor toward the World Trade Center Memorial.

The funds, which constitute the remainder of federal money given to the Lower Manhattan Development Corporation (LMDC), include $100 million in neighborhood amenities like schools, cultural facilities, parks, and playgrounds. An additional $300 is earmarked to fund the revitalization of Fulton Street, the East and West Side waterfronts, and the Greenwich Street south area. A promise of $32 million has been made for improved Chinatown access, and about $50 million has been dedicated to revitalizing more than 3,000 units of affordable housing.

Answering concerns that the plans would fail to draw businesses, LMDC president Stefan Pryor notes that improvements like pedestrian plazas are meant primarily for workers, while planned streetscape and storefront improvements will also lure companies.

More than $300 million has been slated for the World Trade Center Memorial, which it has been estimated will cost over $500 million, and has thus far struggled to find substantial funding. While the LMDC has now received all of its federal funding, spokesperson Joanna Rose notes that the organization will remain very busy allocating funds and ensuring the timely delivery of Lower Manhattan projects. *S.L.*

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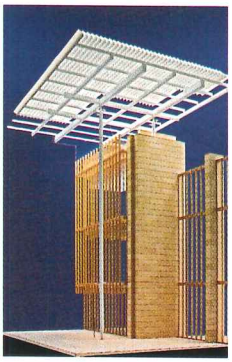
Record News

Piano's updated plans for Chicago Art Institute include new "flying carpet"

The Art Institute of Chicago revealed Renzo Piano's revised plans for a new addition in a daylong series of events on May 31. The 264,000-square-foot addition, which will face the city's acclaimed Millennium Park, has been subtly modified in size, configuration, and materials. The building's signature element, a "flying carpet" canopy, was initially conceived in glass, but is now proposed as a 216-foot-by-216-foot light-shading device made of sleek aluminum fins that will "float" above the building's gallery spaces.



Piano's canopy will now be made of aluminum, not glass.

The current proposal also adds a 900-foot-long bridge that starts near the lawn of Frank Gehry's Millennium Park bandshell and rises to a third-floor outdoor sculpture terrace and dining facilities for the museum. Piano describes his straight and thin-edged design as a "knife" that will contrast with the "lazy river" of Gehry's nearby BP Bridge.

Piano's original design was unveiled in May of 2001 and was to have been completed in 2006, but $110 million remains to be raised for the $258 million structure and its endowment prior to the start of construction.

Piano's design for the museum will remain on view in an exhibition entitled *Zero Gravity: The Art Institute of Chicago, Renzo Piano, and Building for a New Century* through October 2. The museum expects to open the new structure in the spring of 2009. *Edward Keegan*

Whitney expansion wins preservation okay

The New York City Landmarks Preservation Commission on May 24 voted unanimously to approve a scaled-back expansion plan by the Whitney Museum of American Art.

Preservationists had objected to Renzo Piano's initial plan, unveiled in late 2004, because it would have meant demolishing several brownstones adjoining the museum—including one considered a "contributing building" to the surrounding historic district. To spare this brownstone, Piano halved the width of his entrance plaza to 16 feet.

"The vote was tremendously important," says Adam Weinberg, the museum's director. "After 23 years of wanting to expand, the Whitney is expanding." Two previous expansion attempts, with designs by Michael Graves and Rem Koolhaas, both failed.

Some observers believe that the memory of these failed attempts prompted the Whitney to scale back Piano's entrance plaza. "It was a major concession," says Roger Lang, director of community programs at the New York Landmarks Conservancy. "My hat's off to the Whitney and to [Piano] for being flexible." Weinberg says that the Whitney won "90 percent" of what it wanted; he also noted that the overall square footage of Piano's new building remains unchanged. The museum will now seek zoning permits from the city and, following a capital campaign, could begin construction by 2007. *James Murdock*

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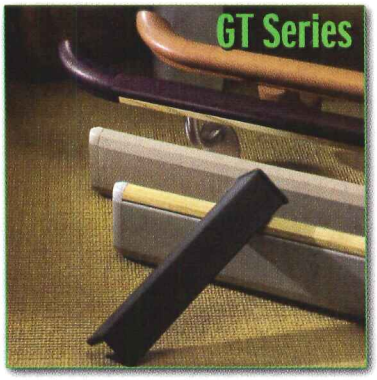

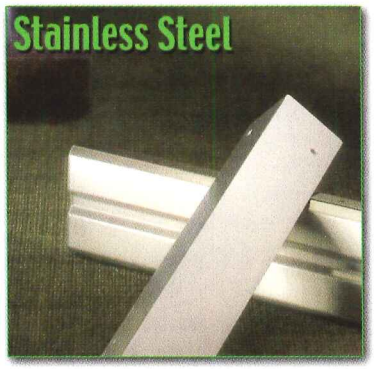

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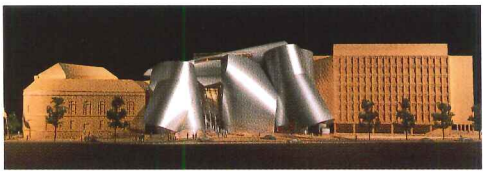
Letdown: D.C. shelves two ambitious projects

Upsetting many in its design community, Washington, D.C., recently shelved two daring projects that some hoped would inject vitality into its mostly Classical landscape. In late May, the Corcoran Gallery of Art dropped plans for a curving, $170 million Frank Gehry–designed wing, due to stalled funds and internal changes.



Gehry's proposed addition to the Corcoran.

Museum director David C. Levy resigned on May 23 under pressure from board members, who said that faltering fund-raising efforts for the 140,000-square-foot addition diverted resources from other priorities. The museum is now shifting its focus toward repairing its existing 108-year-old Beaux-Arts building. The wing could be revived if donors came up with $100 million, say officials.

"Washington's public architecture remains conformist, with few exceptions," says Peter Waldman, an architecture professor at the University of Virginia. "Gehry's project was amazingly adventurous, and would have opened new visions."

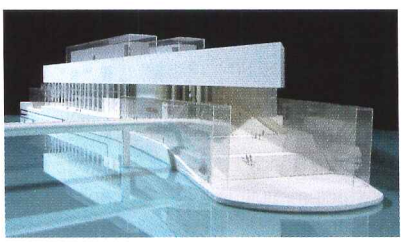
Meanwhile, after approving preliminary designs last year, the National Capital Planning Commission rejected Norman Foster's undulating glass canopy for the courtyard of the Old Patent Office Building on June 2. Key historic-preservation groups had complained that the canopy was too high and spoiled the character of the 1830s Robert Mills building. Work continues on the two Smithsonian Institution museums housed inside the Greek Revival building, the Smithsonian American Art Museum and the National Portrait Gallery. *Tony Illia*

Ando's Pinault project canceled in Paris

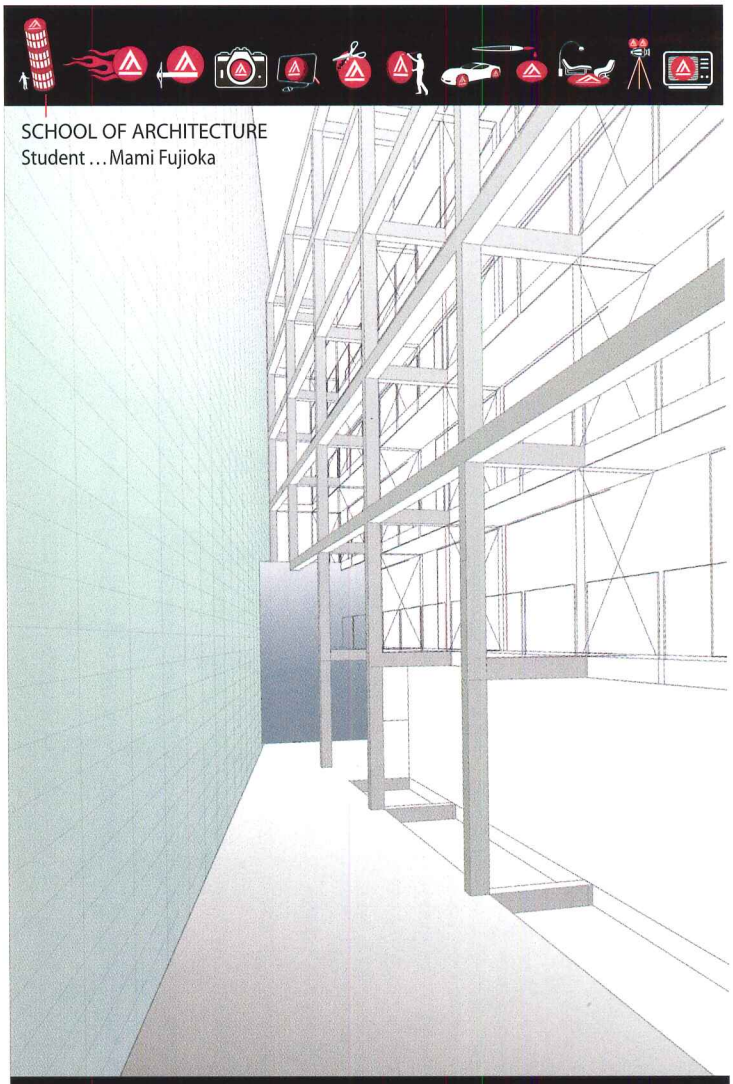
François Pinault, owner of Gucci and Christie's, announced on May 9 in an article published by French newspaper *Le Monde* that he was canceling the Pinault Foundation, a museum of contemporary art in Paris. "The power of France is the power of culture," said Japanese architect Tadao Ando when he was selected to design the project in 2001 [RECORD, December 2001, page 29]. But Pinault might have a different view. He says that local authorities' bureaucratic slowness and lack of interest killed the project, noting, "All of my requests were met with imprecise responses and vague promises."

The ambitious scheme, shaped like the prow of a ship cutting into the Seine River, was to have been built on the Seguin Island, site of the former Renault automobile factories, at the western entry to Paris. The 325,000-square-foot building was designed with a broad staircase at the front and glass walls on the sides.

Pinault has since purchased about 80 percent of the Palazzo Grassi in Venice for about $36.5 million. Substantially smaller than the Paris project, the Palazzo is located on the Grand Canal and until recently hosted major art shows financed by Fiat. *Philip Jodidio*



Ando's nautical design on the Seine.



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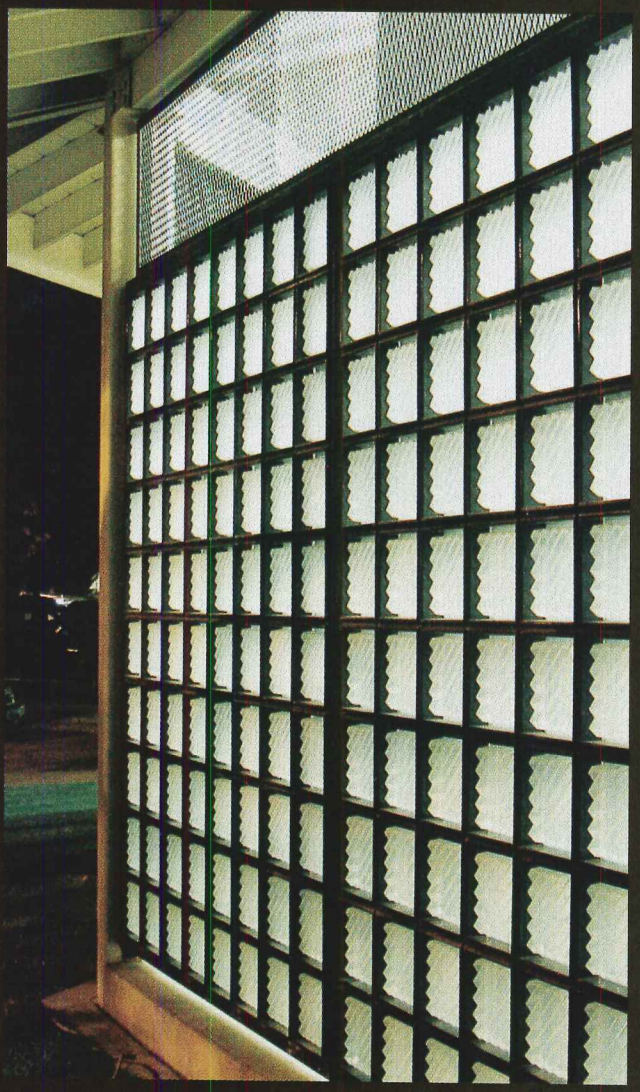

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New Yankees stadium will look to the past and the future

The Mets aren't the only New York baseball team planning a new stadium (page 26). After more than 80 years at Yankee Stadium, otherwise known as "The House That Ruth Built," the New York Yankees announced on June 15 that they will be moving to a new home. It will be built just to the north of the existing stadium, which will be demolished.

Designed by HOK Sport+Venue+Event, the new Yankee Stadium will be loosely modeled on the original. The exterior will feature an approximation of the stadium's original frieze, with limestone walls and arched fenestration. Much of the original facade was removed when the team renovated the stadium in 1973. A large open-air concourse will sit between the facade and the stadium bowl. Inside, the field will maintain the same dimensions, including its shallow right field and "monument park," which contains tributes to the team's most famous players.

The stadium will be wrapped in a historic-looking facade.

Team officials point out that the new stadium will feature more modern amenities, including 57 luxury boxes, a 400-foot-wide television screen, wider concourses, and far more concessions. Seats will also be about 20 feet closer to the field, notes HOK Sport principal Earl Santee, AIA. In the past 10 years, his firm has built all but a handful of the country's new baseball stadiums, including Baltimore's Oriole Park at Camden Yards, which helped spark the "retro" stadium craze.

"This building is becoming nonfunctional," pointed out Yankees president Randy Levine, of the original stadium, built in 1923. "It can't go on for another 40 years." Santee added that the Yankees, who have talked about leaving their home for at least 10 years, explored the option of renovating the existing stadium, but found the proposal cost-prohibitive and inconvenient, since the team would have to relocate during the rehab.

The new 50,000- to 54,000-seat stadium is set to open in 2009, and the Yankees will pay its estimated $800 million cost. The team will also pay for its upkeep. The state plans to chip in $70 million for two new parking garages, while the city expects to pay $135 million for new park and sports facilities in the area, including a track and a baseball field where Yankee Stadium now stands. The plan, observed Mayor Bloomberg, is part of an almost $400 million transformation of the South Bronx, which includes a proposed hotel and convention center, new and rehabilitated parks, and a new fish market at Hunt's Point, which will replace the Fulton Fish Market in Lower Manhattan.

Unlike the proposed Jets Stadium on the Far West Side, the Yankees' new stadium, like the Mets' new park, appears to face few political obstacles. Its biggest opponents, it appears, are design critics, who have called the new plan "watered down" and "formulaic," and fans, who don't want the team to leave its beloved home, which has hosted 33 World Series. *S.L.*

Ian Schrager sets his sites on residential

Ian Schrager reinvented New York nightlife with Studio 54 and later focused on his hotels, which featured employee uniforms by Giorgio Armani and architecture by Philippe Starck. Now Schrager is homing in on the luxury apartment with his concept of a "hotel-serviced residential lifestyle."

Schrager has hired British architect John Pawson to design 23 condominiums at 50 Gramercy Park, an 18-story, 1924 structure. The building is an annex to the Gramercy Park Hotel, which Schrager's team, led by Anda Andrei, is renovating. Condo owners will receive special services like personal massage, shopping, pet care, child care, and access to hotel facilities.

Complementing this pampered lifestyle is Pawson's Minimalist design (left), with cherry wood kitchens, white oak floors, cream-colored travertine surfaces, and even custom-designed doorknobs and bathroom fixtures. Each apartment will have its own distinctive layout, and range in size from 1,778 to 4,289 square feet, with lofty ceiling heights up to 12 feet 4 inches. Prices range from $6 million to $16 million.

The exterior, with floor-to-ceiling windows and exterior metal girders, will form a striking contrast to much of the historic neighborhood. Local residents were first anxious, but many now appear assuaged. "We see that it's very elegant," says Arlene Harrison, president of the Gramercy Park Block Association. "It's like bringing a modern painting into a very traditional home." Completion is slated for January 2006. *Alex Ulam*

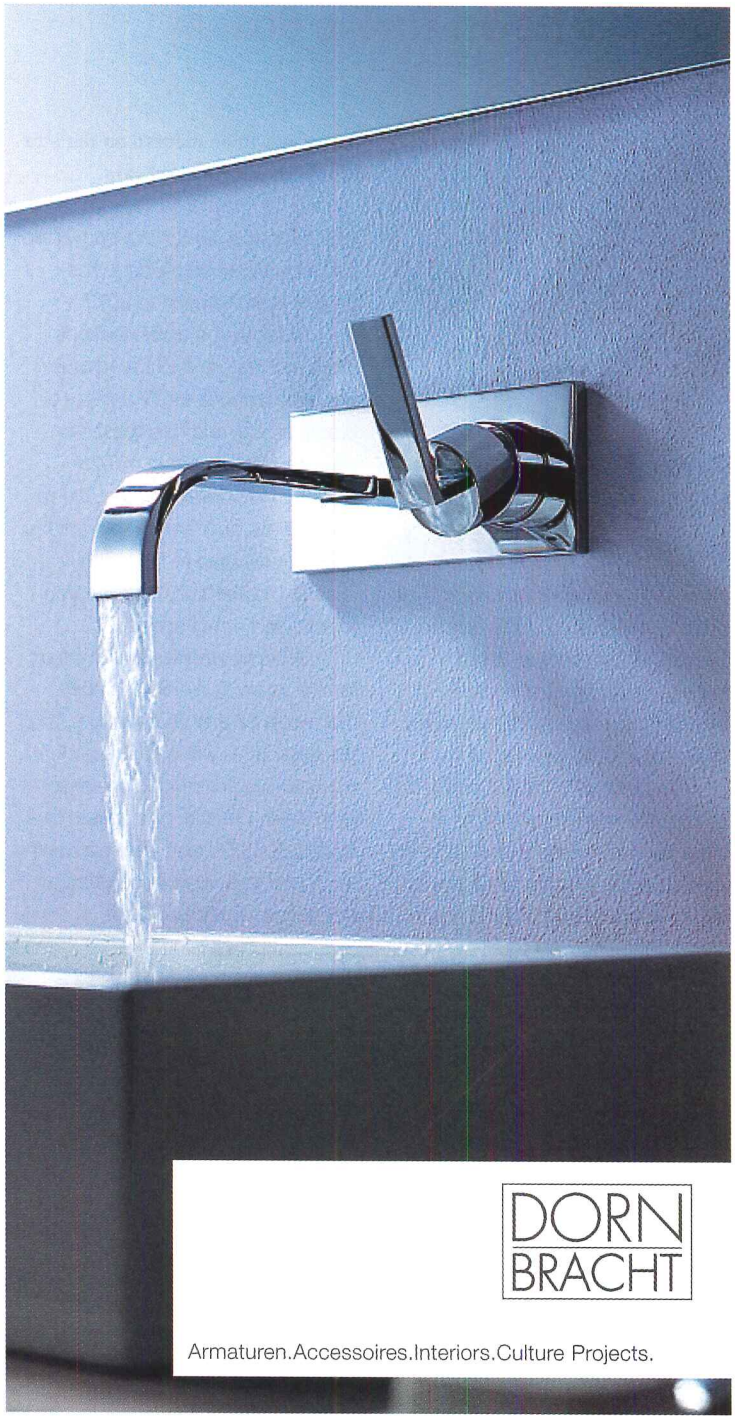
Halifax project ruffles traditional feathers

Halifax, Nova Scotia, is to Canada what Boston is to the northeast U.S.: a historic port city committed to preservation and to its popular waterfront. The difference is that Haligonians, as they are called, tend to be more conservative about waterfront development.

The towers' twists are meant to improve views.

Hence a recent proposal to build a $121 million, mixed-use project a few blocks from that waterfront has stirred mixed reactions. The two 27-story glass towers—one a hotel, the other a condo—set on a transparent, four-story retail/restaurant/office podium, are being designed by Toronto-based Hariri Pontarini Architects and developed by United Gulf Developments. The buildings, 700,000 square feet in all, twist away from each other, creating open views of the nearby harbor and the city's 19th-century downtown.

Several residents at a recent public information session favored a traditional look and are seeking to kill the project. But others, like Lucy Trull, a planner with Halifax's Dalhousie University, think the city shouldn't cling so tenaciously to the past that it "can't envision a future waterfront without replicas of heritage buildings." The Halifax Waterfront Development Corporation and the Halifax Regional Municipality will vote on the project late this summer. *Albert Warson*



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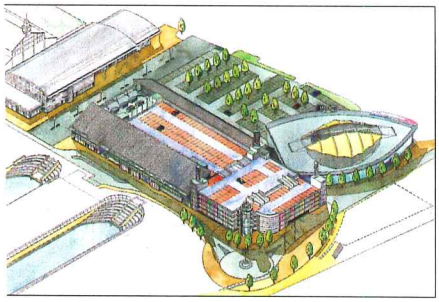

The park will be located on the site of a former naval dockyard.

Great Expectations: Dickens World will make rides out of books

A new $113 million theme park, dubbed "Dickens World," a celebration of the 19th-century British literary giant, is due to be built on the 340-acre site of a former naval dockyard in Chatham, England.

The project is being designed by London-based Kemp Muir Wealleans, also responsible for the area's master plan (including housing, restaurants, and shops) and a new shopping center in a converted cast-iron Victorian building. The project is set to open in 2007.

Occupying 4 acres, Dickens World will feature a Victorian music hall, with facilities for TV and radio broadcasting, and rides based on classics such as *A Tale of Two Cities*, *The Pickwick Papers*, *David Copperfield*, and *Great Expectations*. The park will also re-create the novels' 19th-century London architecture and street scenes.

Dickens, who lived in Chatham for five years as a child, included many scenes and characters from the town in his writings. The park, the brainchild of London businessman Kevin Christie, is expected to attract 300,000 visitors a year and introduce a younger generation to the author. *Lucy Bullivant*

Another Venetian, this time in China

As if Las Vegas developers weren't expanding their city's offerings quickly enough, now one is preparing to build a copy of the Vegas Strip's Venetian Resort on Macau, a Chinese island off of Hong Kong.

Developed by Las Vegas Sands, the 10.6 million-square-foot, 3,000-room hotel-casino, designed by HKS with Wilson and Associates (both based in Dallas) will once again feature simulations of Venice landmarks like the Doges Palace, the Rialto Bridge, and several famed palazzos. But the Macao resort will be roughly three times the size of the Vegas version, or as HKS principal Jeff Jensen notes, "like a Venetian on steroids."

The resort will include more than 1,500 feet of retail-lined canal, three-times the length of the Vegas one, and 500,000 square feet of gaming, five times that of the original. The complex will also contain a 15,000-seat arena. Jensen says that his clients chose a tested theme strategy over one of the Modern designs that many Vegas developers are using: "We said, why recreate the wheel?"

Macau, once a Portuguese colony, has long been the center of Chinese gambling. But it has been afflicted with crime and poverty. Developers, mostly from Las Vegas, are hoping to change that in developing the "Cotai Strip," a line of high-end casinos being master planned by SOM and EDAW [RECORD, October 2003, page 38]. The market looks strong. Jensen says that when the client's Sands casino opened on Macau, visitors literally tore the doors off. *S.L.*

IMAGES: COURTESY LAS VEGAS SANDS (RIGHT)

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News Briefs

Russia's Melnikov house to become museum Viktor Melnikov, son of Constructivist architect Konstantin Melnikov, has announced that he will turn over his father's famed Melnikov House, along with its collection of artworks, to the Russian government on the condition that it establish a museum and renovate the house.

Melnikov house's rhomboid windows.

The house has been a Modernist landmark in Moscow for nearly 80 years. Built by Melnikov for his family between 1927 and 1929, the building became one of the most celebrated Constructivist designs. It was the only private house built in Moscow during the Soviet period. Gradually, Melnikov fell out of favor with the regime and was expelled from architecture in 1937. He lived in seclusion at his house until his death in 1974. It has been occupied by his son ever since.

The building is composed of two interlocking cylinders with rhomboid windows. It has been deteriorating steadily in recent years, especially after an unsuccessful restoration attempt in the late 1990s. Despite Viktor Melnikov's decision, a family dispute over succession rights is likely to cloud the future of the masterwork. *Paul Abelsky*

Alaska Capitol project on hold The new Alaska Capitol project in Juneau [RECORD, May 2005, page 34] has been put on ice. Just two months after selecting Santa Monica–based Morphosis to design the project, Mayor Bruce Botelho said that plans were on hold due to lack of funds. When it became clear that the legislature would not appropriate money for the building during this session, which ended on May 10 and doesn't resume until January 2006, the Juneau Assembly decided to reassess its options.

"There never was a guarantee of funds," says Maria Gladziszewski, special projects coordinator for the city. Mayor Botelho remains committed to making the project happen. Yet, without the interest of Alaska's Governor Frank Murkowski this may prove to be a formidable challenge. "The governor's support evaporated," says Gladziszewski, "I don't know what will happen." *A.M.*

Architecture stamps released On May 20, the U.S. Postal Service released its "Masterworks of Modern American Architecture" stamps series. The images of 12 iconic American buildings, built between 1930 and 2003, will be sold for the next year. After a recommendation from the Citizens' Stamp Advisory Committee—a group of volunteers who review public suggestions for stamp design—the postal service selected the black-and-white photographs, taken by the likes of Ezra Stoller and Margaret Bourke-White. Featured buildings include Frank Lloyd Wright's Guggenheim Museum and William Van Alen's Chrysler Building in New York, the Vanna Venturi House in Philadelphia by Robert Venturi, Chicago's Hancock Center by SOM, and Richard Meier & Partners' High Museum in Atlanta. *Larissa Babij*

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News Briefs New York

High Line gains federal approval New York's $65 million High Line project to transform an unused railway in the city's Meatpacking District into a visionary promenade has cleared its last major hurdle. On June 13, the Surface Transportation Board, the federal authority overseeing railways, issued a certificate of interim trail use. The order allows New York to negotiate a transfer of the High Line's ownership from CSX Transportation to the city for reuse as a public space. Such reuse, converting railways to trails, was made possible by a program called "Railbanking," adopted by Congress in 1983. "This is the most important victory yet for the High Line," says Robert Hammond of Friends of the High Line, the nonprofit organization behind the plan. The group now hopes to break ground in late 2005. The project will be designed by New York–based Field Operations and Diller Scofidio + Renfro. *Ilan Kayatsky*

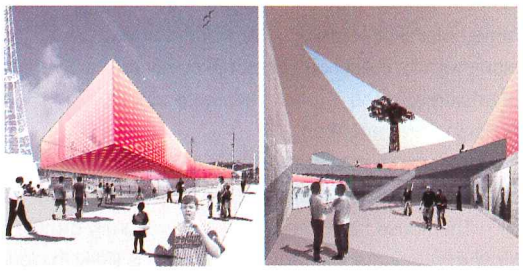
Designation for Lapidus hotel in New York The New York City Landmarks Preservation Commission recently considered two Morris Lapidus buildings, which had both undergone alterations, for landmark designation. One, midtown's Summit Hotel, now known as the Doubletree Metropolitan, received designation, while the Paterson Silks building, at Union Square, did not. Lapidus is best known for the Fontainebleau Hotel in Miami and other flamboyant Modern buildings.

The Metropolitan, which opened in 1961, has a distinctive undulating facade more reminiscent of a Modernist Miami hotel than one in New York. It had undergone minor alterations to its Lexington Avenue facade, though window replacement and other changes were planned. The much smaller building at Union Square, erected in 1949, featured a glass and steel entrance tower, which was demolished just before announcement of the designation hearing. The commission considered the demolition to have destroyed the integrity of the building. *A.B.*

Lapidus's Metropolitan.

Parachute Pavilion for Coney Island London-based architects Kevin Carmody, Andrew Groarke, Chris Hardie, and Lewis Kinneir have won a competition to create a "Parachute Pavilion" adjacent to the Coney Island Boardwalk's famous Parachute Jump. The competition, launched in 2004 by the Van Alen Institute, a local organization dedicated to improving the public realm, and by the Coney Island Development Corporation, attracted over 850 entrees. It is part of the effort to revitalize the once-flagging neighborhood, including a renovated subway station and a new baseball park.

The pavilion will include a 7,800-square-foot glass-enclosed structure lit up by a dense pattern of light bulbs, a high-ceilinged exhibition space, a restaurant, a bar, and a souvenir shop. The structure will be cantilevered above a public space, providing shade, and the surface will be multicolored and bright, evoking Coney Island's historic amusement park.



Renderings of Coney Island's Parachute Pavilion.

Carmody and Groarke have designed Dolce & Gabbana stores around the world. Along with Hardie, they also won Chicago's 2004 Burnham Prize for their design of a trio of water-taxi stations. Lewis Kinneir recently joined the team. *I.K.*

Radical changes for Brooklyn Waterfront With an okay by the New York City Council in May, industrial North Brooklyn will soon become the hub of a major redevelopment effort, and possibly set a striking precedent for affordable housing. A rezoning plan by the city will allow residential and commercial development within 175 blocks of Greenpoint and Williamsburg, gritty neighborhoods whose manufacturing sectors have declined in recent decades. The area boasts dramatic views of Manhattan across the East River. The proposal includes over 10,000 new units of housing, with a third of those affordable. If they provide enough affordable units, developers would be permitted to build up to 35 stories (or, if not, 23 stories). The plan also calls for 54 acres of parkland, including a waterfront esplanade. Though some locals are concerned with the prospect of apartment towers looming over the much lower-density waterfront, most public officials have been enthusiastic about the plan. *I.K.*

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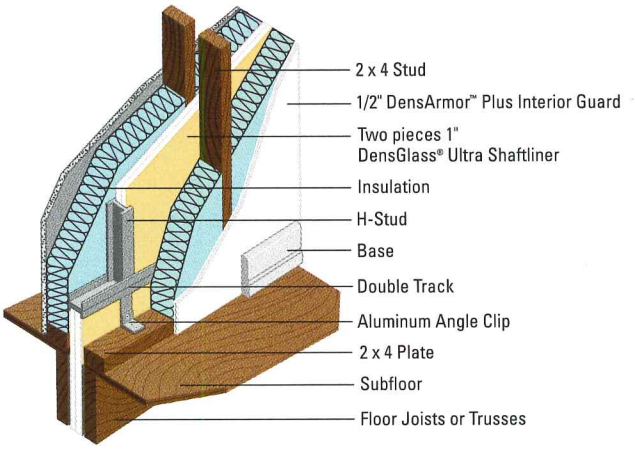

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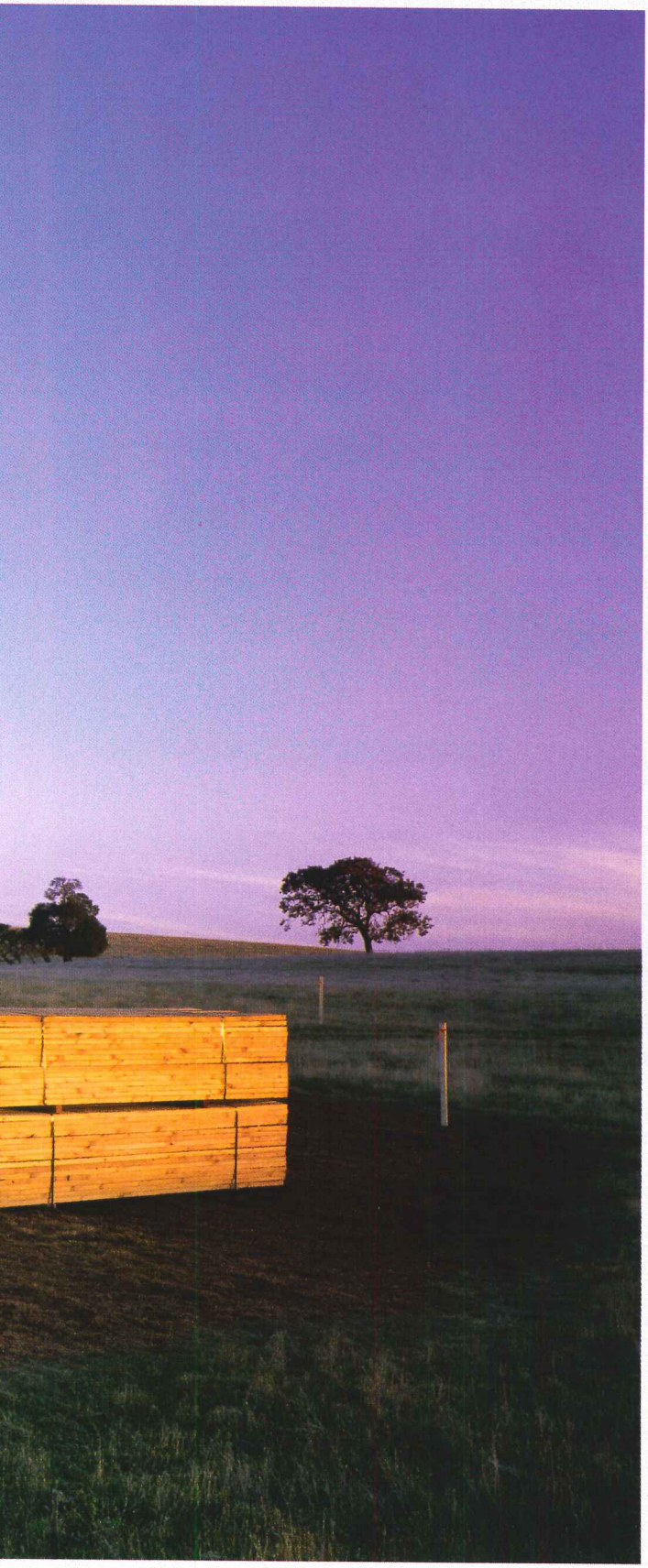

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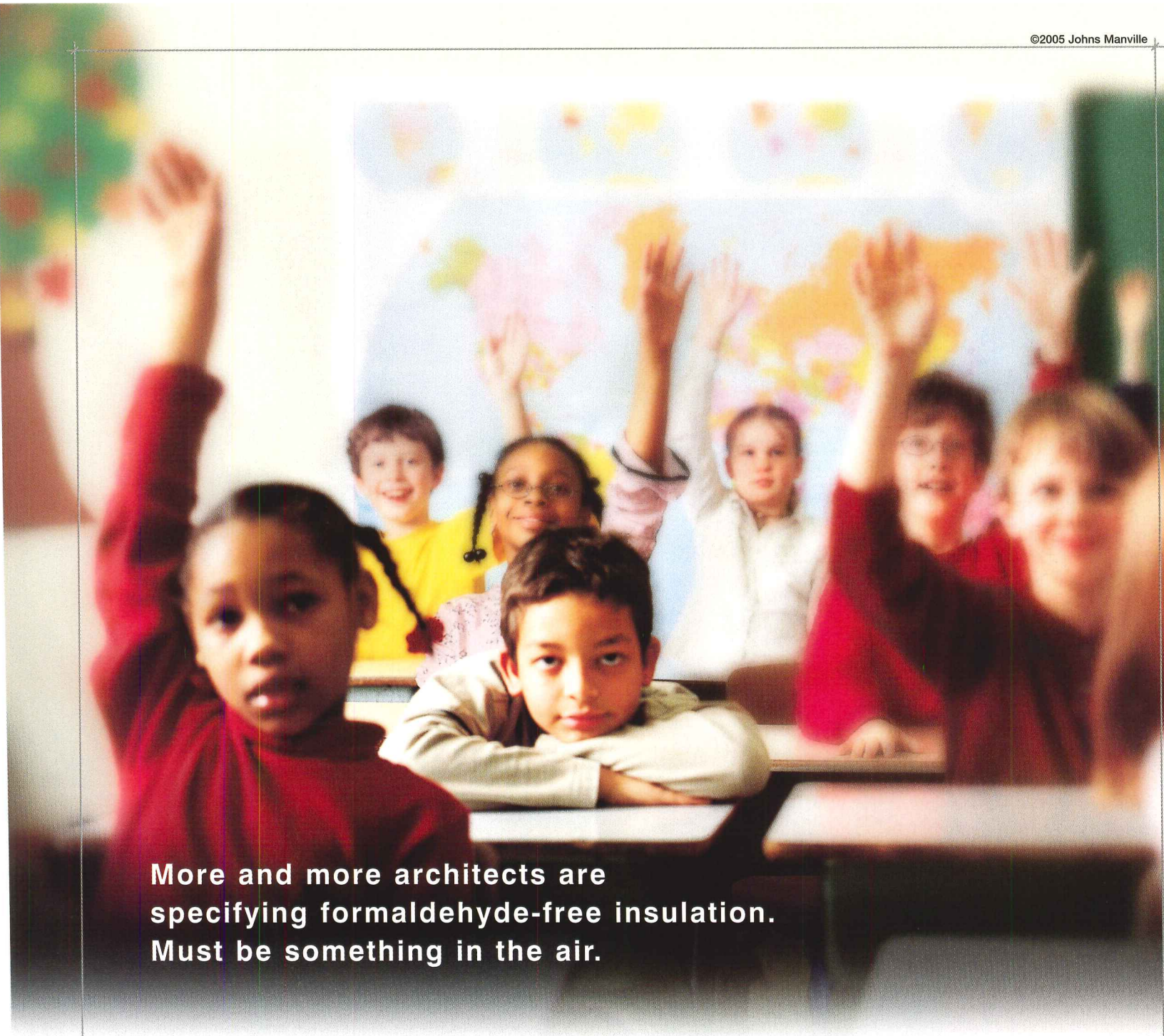

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For and about the emerging architect

archrecord2

This month, archrecord2 seeks out what's current in architecture on both coasts. In Design, we travel to the West Coast to talk to Jeff Kovel of Skylab Design Group. The sleek projects produced by this firm blur the lines between architecture and design. In Work, we drop by a warehouse district in Queens, New York, to find out more on a collaboration between architects and writers during a month-long living installation.

Design

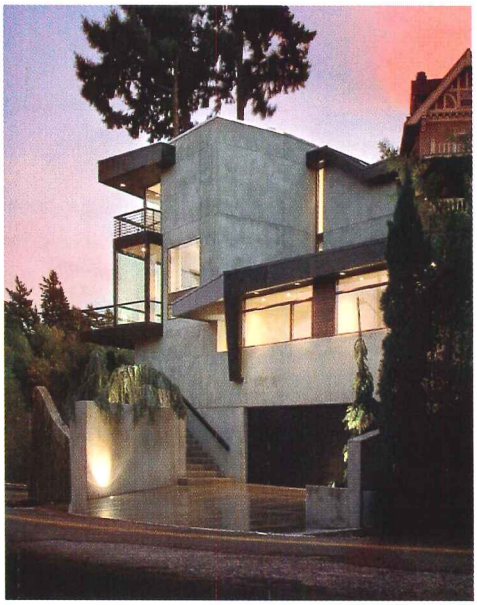
The creation of engaging spaces

The impetus behind the launch of the Portland, Oregon–based Skylab Design Group is simple: "I truly felt I could go out on my own and have the opportunity of seeing my own projects built," explains founding architect Jeff Kovel. "I didn't want to wait around for 30 years to get my start." Originally from Rye, New York, just outside of New York City, Kovel received his architecture degree from Cornell University and headed west to fulfill a passion for architecture as well as nature. After a stint at a firm in Colorado, followed by a role at Portland's Architropolis, the then-26-year-old architect set out on his own.

At the time, Kovel did not have any prospective clients. But he most certainly had a plan. He established a real estate development company to create revenue that would, in turn, fund his own architecture firm.

The first parcel of land the architect purchased had been considered unbuildable due to its steep slope. However, Kovel designed and built a spec house on the property in less than 14 months. "I had a lot of experience with hands-on construction," explains Kovel. "Many of my summer jobs were spent working for a contractor." Since the completion of the residence in 2001, it has changed hands several times, and each new owner has sought out Kovel to design yet another addition.

Kovel's next purchase was a 110-year-old building on Alder Street, not far from the Pearl District, a revitalized warehouse area in Portland that attracts crowds with restaurants, art galleries, and loft apartments. The Alder Street project includes two live/work spaces—one for Kovel and his wife, in which he dramatically removed the roof and created a lofted living space; the other for a jewelry designer. Also, at ground-level there is a storefront for a distributor of Vitra designs. While it has taken two years to complete the overhaul of the building, the end result exemplifies Kovel's design sensibility and entrepreneurial spirit. He notes, "Surrounding buildings are now also being renovated. It's an excit-



1680 House, Portland, Oregon, 2001
For Skylab's first project, a concrete house on a steep slope, the firm took on the roles of designer, contractor, and landscape architect. Its success led to more work designing spec houses in the area.

Alder Street Project, Portland, Oregon, 2005
The large area of glazing added to the side of the building now permits a dramatic view of the 160-foot spire of the church located across the street. As owner of the building, Kovel collects rent from two additional tenants.

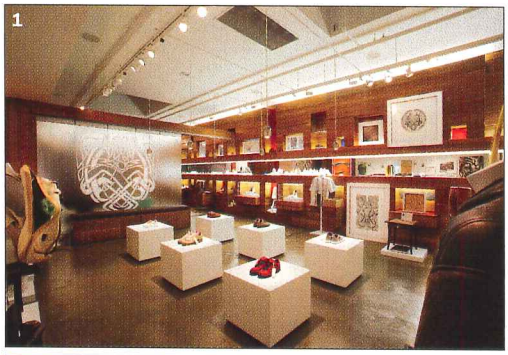
RENDERING: COURTESY SKYLAB DESIGN GROUP (BOTTOM)

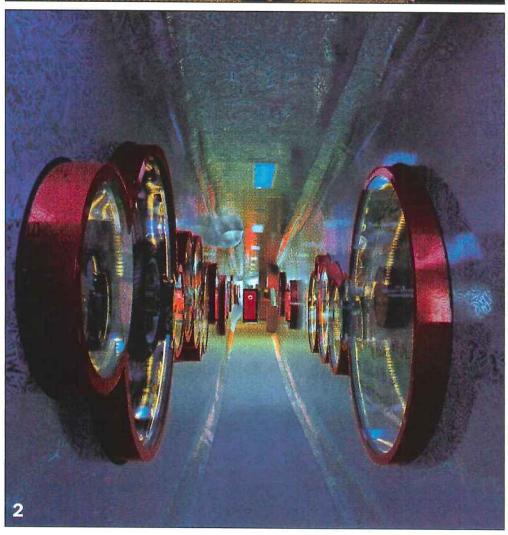
ing time to be in this area."

Currently, Skylab's team of seven full-time employees and four interns is involved in a number of residential and commercial projects. On the boards are four custom residences, including the Stilt House—a four-story home overlooking Portland that features prime views of the city and a waterfall running through an atrium in the interior. Commercial projects across the country run the gamut from stylish restaurants and lounges, like Doug Fir, in Portland, to innovative retail and exhibition spaces for corporations including Nike, Mattel, Converse, and ESPN.

Kovel credits his firm's success to the strong identity each of his projects displays. "Our focus is not on what kind of projects we take on, but how we take them on," the architect explains. "With each project, we find a meaningful narrative and we develop a vocabulary of images." Though the projects differ in size and scope, Kovel's quest for a design that can create a unique place speaks a stylistic language that's easy to recognize in all his work. *Randi Greenberg*

For more photos on these and other projects by Skylab, go to architecturalrecord.com/archrecord2





Nike Retail Store, New York City, 2004 (1); Jordan XXperience, Denver, 2005 (2); tradeshow booth design for Mattel "Dream House," 2003 (3)
Kovel enjoys the opportunities to work with his corporate clients. These corporate-concept projects allow the young firm to flex its design muscles with its out-of-the-box solutions.

Doug Fir, Portland, Oregon, 2004
Kovel describes the whimsical design of this popular nightspot as an outsider's improvisation on Northwest-influenced architecture. The venue hosts a restaurant, bar, outdoor patio, and a lounge with live music on the lower level.

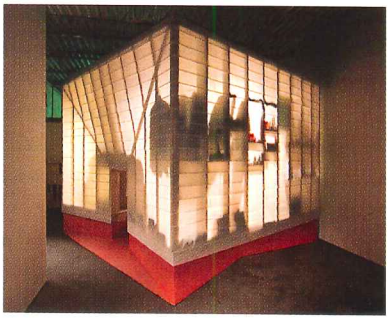
Work

If you build it, they will write

This past May, the Flux Factory, an art collective based in Long Island City, Queens, New York, was transformed into a writing laboratory. In the 2,500-square-foot gallery space, three novelists settled into small live/work units custom designed and built by artists and architects chosen through a competition. The installation, aptly titled "Novel," paired the designers with the writers to develop and refine their concepts for the space they would inhabit for the duration of the month. Like the writers, individually occupied with their respective narratives, each structure was self-contained; although they provided visual screens, they were still permeable to noise.

In this installation, writing became performance. Initially greeted by three apparently closed structures, visitors to the installation had varied types of visual access to observe the writers at work. The habitat of archaeologist-turned-novelist Ranbir Sidhu was constructed of stacks of wooden shipping crates; small gaps between them permitted views into his workspace. Its designers, Mitch McEwan and Kwi-Hae Kim—together called Tricky ink.—were inspired by the theme of espionage, composing one undulating wall of many storage cubicles, reminiscent of the dead-letter boxes once used by spies to transmit information.

For the writer Laurie Stone, New York–based Salazar Davis Architects built a shelter that demonstrated efficient use of space. A white cube with semitranslucent walls, offset diagonally from the corner of the gallery, glowed from within; interior light elegantly revealed both the cube's structure and the shadows of its contents. A long orange ramp pierced the cube on the diagonal, directing the desk and bed to be placed along adjacent sides of the box so that the workspace was barely visible from the sleeping space and vice versa.



The luminous living quarters designed by Salazar Davis Architects.

Meanwhile, Grant Bailie, a writer and artist, inhabited an organic, earthy structure with sod roof panels planted with different grasses. Designed by artist Ian Montgomery, the walls of painted stretched canvas allowed visual access only through the slivers between points of contact with the wooden structure.

The Flux Factory experiment incubated and shielded the authors from distractions, while translucent walls or intentional gaps encouraged voyeurism into the writer's solitary process of composition. But ultimately, the habitats acted as subtle cocoons, meeting the writers' functional needs while allowing them to devote their full attention to their craft. *Larissa Babij*

For further description and images of the writers' structures, go to archrecord.construction.com/archrecord2/

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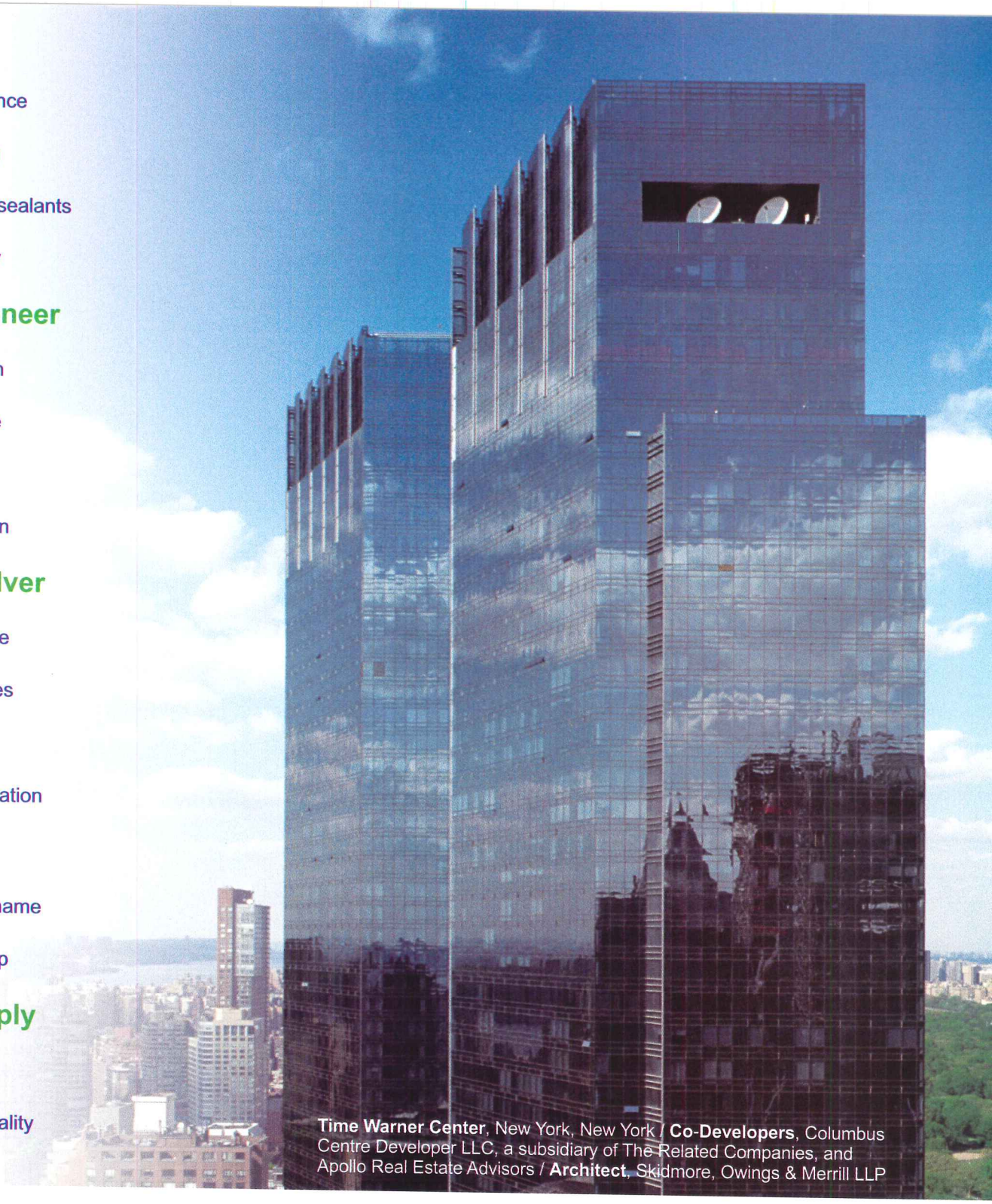

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Far from the madding crowd: architecture, memory, and place

Critique

By Robert Campbell, FAIA

Sometimes you have to travel to feel the fresh power of architecture. Travel does for architecture what it does for everything: It reopens the eyes and other senses to a world that, back home, has gone flat and dead from being experienced too many times. "All human pleasure," proclaimed Samuel Johnson, in his usual pontifical manner, "consists in variety."

For architecture to come fully alive, though, you need more than just being in some new place. You need to experience the architecture as if you were the inhabitant, not the tourist.

When that isn't happening, you know it. You're walking through a building—it doesn't matter how great—in a line of visitors. In the presence of such a group of viewers, the building becomes a stage set. It becomes a mere representation of itself, almost like a play or a movie. You seem to enter each room through a proscenium. The architecture becomes media. You can't interact with it, only watch it. You can't feel that you are inhabiting it. Two things exist, the show and the spectator. Those roles are clear.

Worst of all is the guide, who directs the crowd—the audience—from overfilled room to overfilled room, spouting scripted anecdotes, or maybe trivia about the furniture. You get second-hand lore in place of imaginative experience.

All this came clear to me once again on a recent trip to Mexico. I had the chance to visit the house and studio that the great architect Luis Barragan designed for himself in Mexico City. The place was closed that morning, because there was going to be some special event later in the day. My escort was Mario Schjetnan, a distinguished Mexican landscape architect and urbanist whom I'd met when he was teaching at Harvard. Luckily, Schjetnan had a special dispensation to be there that morning.

Barragan kept remodeling his house on Calle Ramirez in Mexico City, using it as a laboratory for ideas in both architecture and lifestyle.

Evoking Barragan's life

As the only people in the house, we were able to inhabit it as if we were the owners. Best of all, Schjetnan had been a close friend of Barragan's. He was able to evoke very precisely the life Barragan led there. As he did so, the house began to change.

We were, for example, in the mysteriously beautiful rear garden patio, where a high green wall of vegetation seems to look back at the house. "Barragan would phone and invite me for a tequila," Schjetnan said. "He would place two stools here"—he pointed—"and a small table. He would spread a white linen cloth over the table. We would drink our tequila. Timing was always precise. Maybe he planned to be at lunch at two; we were there for an hour of tequila, no more, no less."

What Schjetnan was doing was conjuring not only the ghost of Barragan, but the ghost of the house itself. It seemed to come alive as he described how it had interacted with the life of its owner, adjusting itself almost like a lover to his needs and desires. Schjetnan knew everything. He knew the many different colors the famous outdoor, deep-colored walls had been painted at different times. He knew where Barragan liked to eat—a tiny, spare breakfast room, not the more formal dining room. He pointed out the way concealed light

Contributing editor Robert Campbell, FAIA, is the Pulitzer Prize–winning architecture critic of The Boston Globe *and the author with Peter Vanderwarker of* Cityscapes of Boston, *published by Mariner Books.*

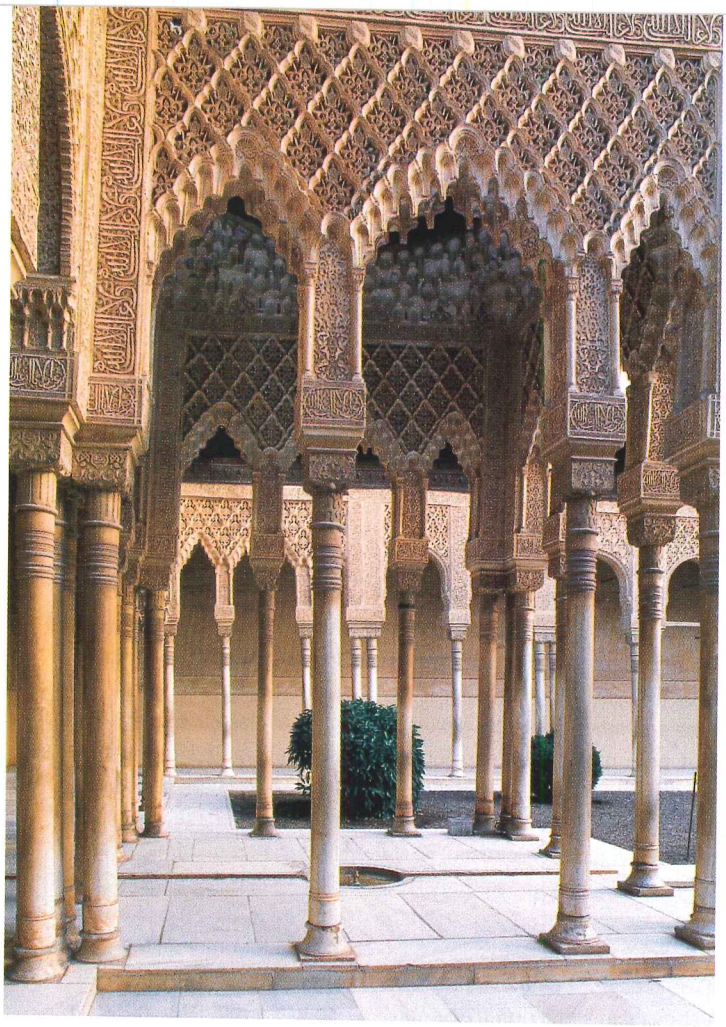
teases you forward. He described the carefully calibrated levels of privacy, from the front door through several decreasingly public areas to the library. "If you got this far," he said in the library, "you were an intimate friend." He pointed to Barragan's bed, a monastic cot you couldn't imagine two people fitting into. "That sends a message, doesn't it," he said. We talked about how the spaces, which look so static in photographs, now seemed to move and flow, with partitions that continuously played the game of obscuring, then revealing, an unexpected vista or a framed view of the garden.

Thanks to being the only people there, and to Mario's personal knowledge, we were able to identify with Barragan. We were able to imaginatively inhabit the spaces as if they were our own. It makes you wonder whether architecture, at least domestic architecture, can really be said to fully exist if we know it only in its physical form. Isn't architecture a collaboration between the physical shapes and spaces on the one hand, and the memory or anticipation of their inhabitations on the other?

CAN ARCHITECTURE, OR AT LEAST DOMESTIC ARCHITECTURE, FULLY EXIST IF WE KNOW IT ONLY IN ITS PHYSICAL FORM?

An unmistakable claim

On another day in Mexico City, I visited the home of the artist Frida



The Alhambra in Granada combines warrens of corridors and small rooms with great outdoor spaces.

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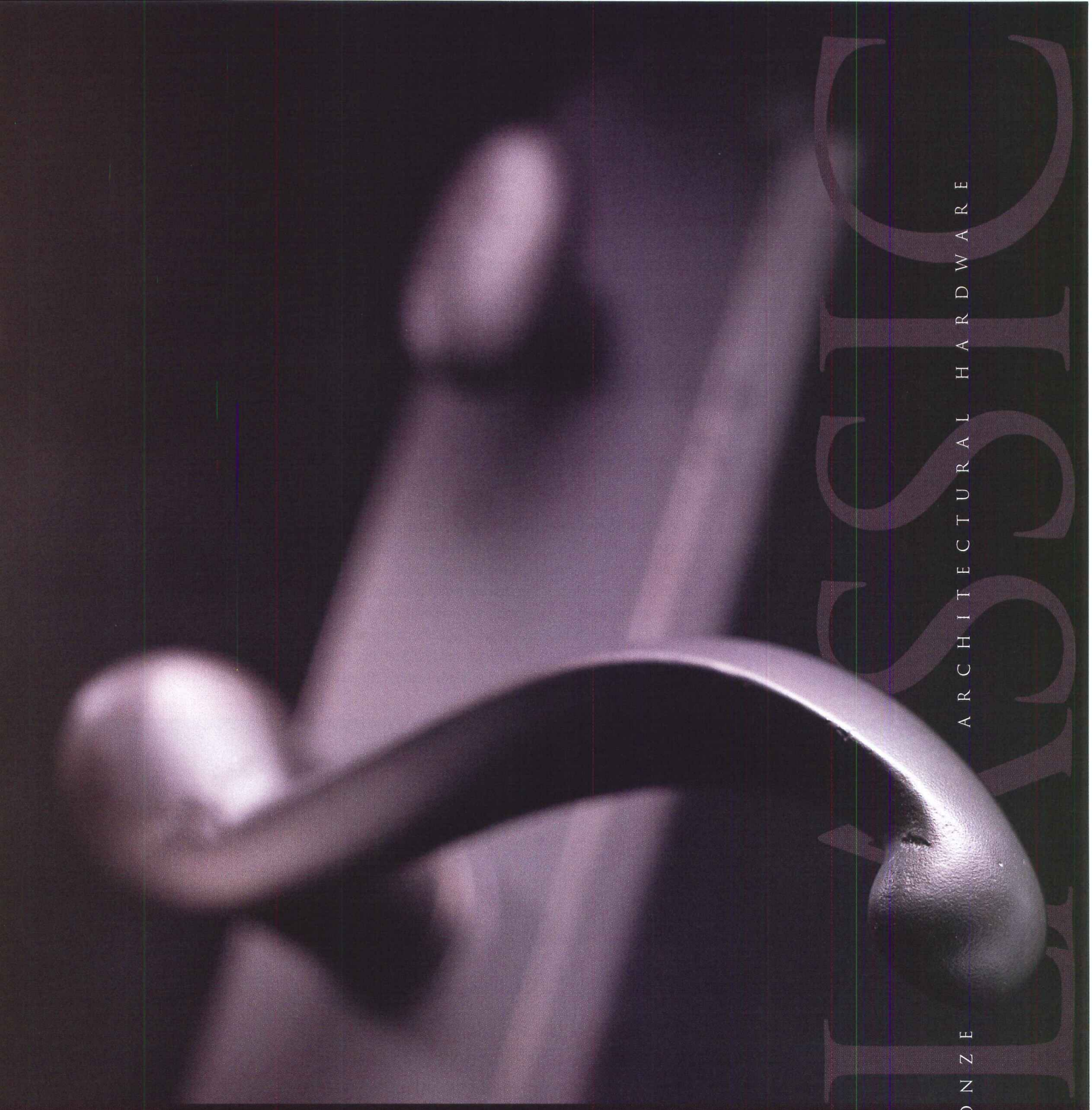

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Kahlo, where she lived with her husband, the painter Diego Rivera (and for a time the exiled revolutionary Leon Trotsky and his wife). I didn't have a cicerone this time. But you don't really need one, because Kahlo's personality so thoroughly infuses the house that it becomes her garment. The walls are filled with portraits of her, by herself and others. There are Brownie-type snapshots of her and acquaintances, who appear all the more evocative for being grainy and strangely dressed. The objects she collected are everywhere. The unforgettable intense blue wall of her garden makes an unmistakable claim that an artist lived here. I'm not persuaded that Kahlo is a great painter, although next year's show of her work at the Walker Art Center in Minneapolis may change that. But in the house as a whole, with everything in it, including the memories of the life lived here, she created at least one significant work of art. Her presence continues to inhabit the house so powerfully that you slip easily into the role of guest, not spectator.

FRIDA KAHLO'S PERSONALITY SO THOROUGHLY INFUSES HER HOUSE THAT IT BECOMES HER GARMENT.

Staying away from Granada

As the world fills with tourists, it gets harder and harder to have this kind of experience. When people ask what's my favorite building, I usually answer the Alhambra Palace in Granada, Spain. But I wouldn't return to the Alhambra today, any more than I'd revisit the little Italian hill town of San Gimignano, which now feels as crammed with strangers as a Tokyo subway. I would be afraid of diluting my precious memory of the Alhambra.

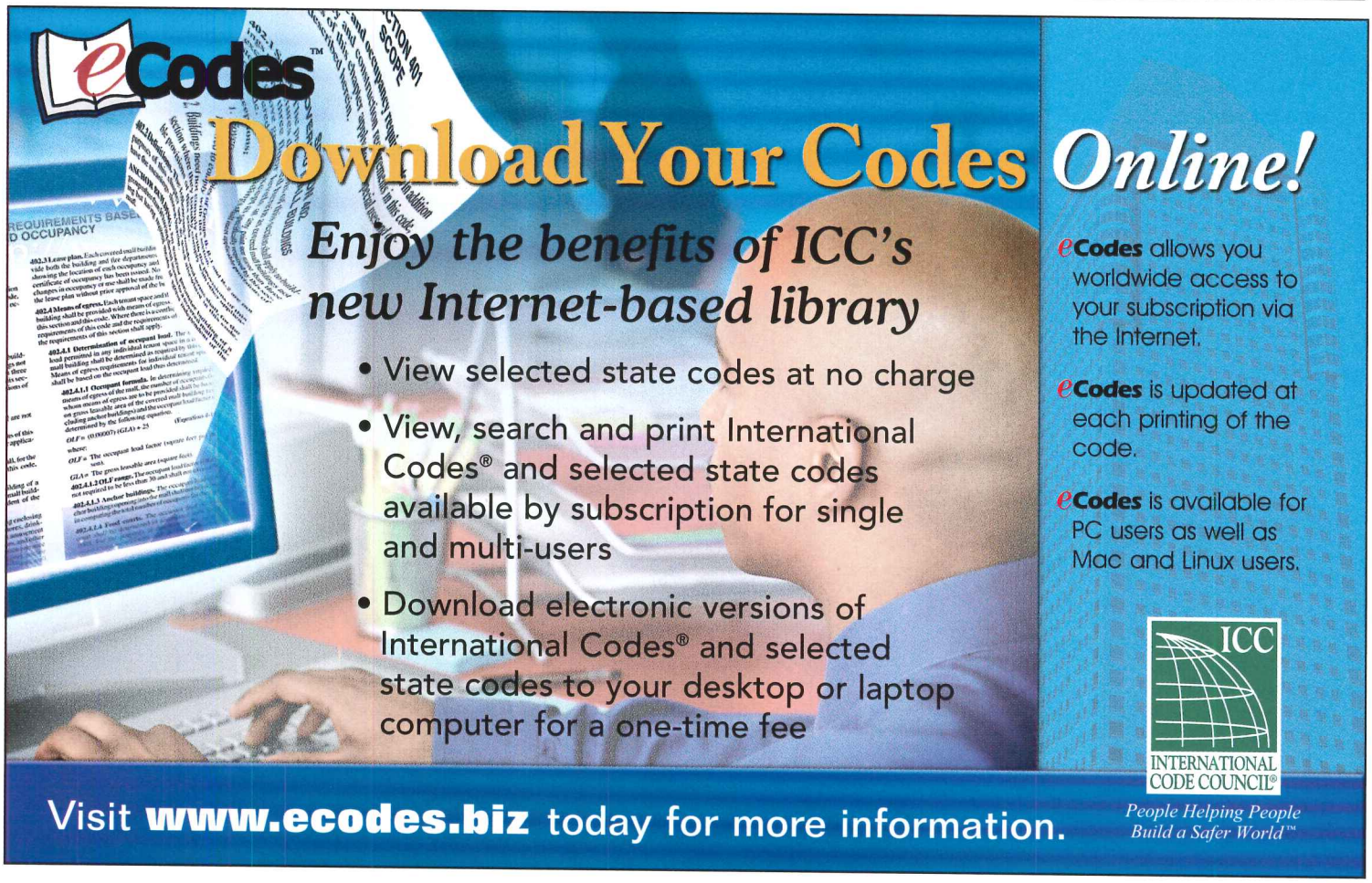
I got there at the end of a February day. My companion said she felt sick and would stay in the nearby hotel, which was a handsome converted monastery, until morning. So I walked over to the Alhambra alone.

For an hour, I had the whole place to myself. Not a face, not a Kodak, not a guidebook in sight. The Alhambra is famous for its intricate detail, but what thrilled me was the drama of its spaces. You're always exploding, from some shadowy and fascinating warren of corridors and little rooms, out into one of the great symmetrical courtyards. It's a miniature illustration of the kind of city planning advocated by Colin Rowe and Fred Koetter in their great book *Collage City*, first published in 1978. Anyway, while I did all this, the sun was gradually setting. The walls and paving were gradually reddening. Then a very light rain, almost a mist, began to fall. Surfaces took on a soft glow. I imagined myself a sultan, wandering sleepless among the rooms, maybe worrying about the Spanish kicking me out (as they soon did kick out the Alhambra's Moorish creators—the Alhambra, like so much great architecture, was a desperate effort to anchor a dying civilization). I was inhabiting. It was unforgettable.

Memory and place

Would I think the Alhambra was so great if I'd seen it in a more typical moment? The point of this essay is that it's impossible to know the answer. You can't separate your memory of a specific inhabitation from the objective place you inhabited. Memory and place are one. Neither really exists without the other. As the poet Yeats put it, "How can we know the dancer from the dance?"

All I know is I won't be going back. ■



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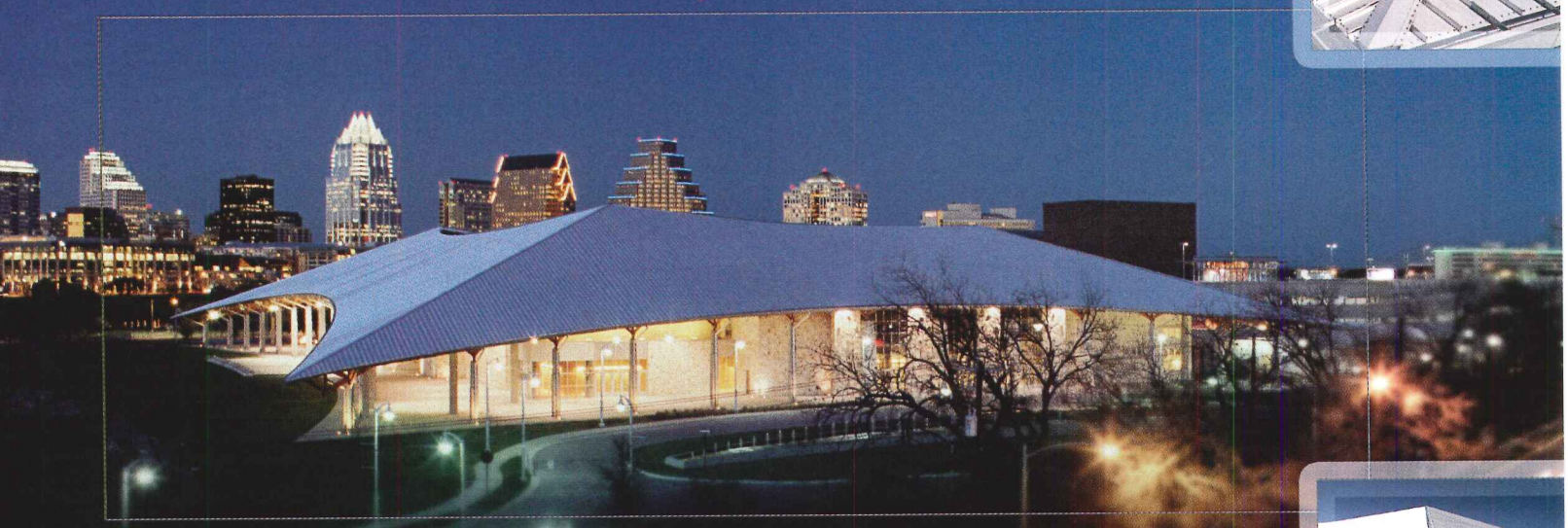

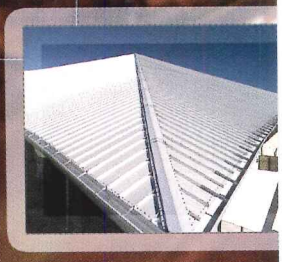

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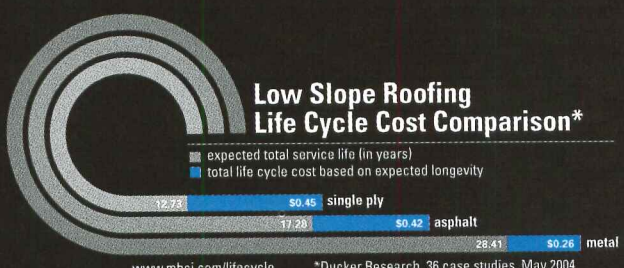

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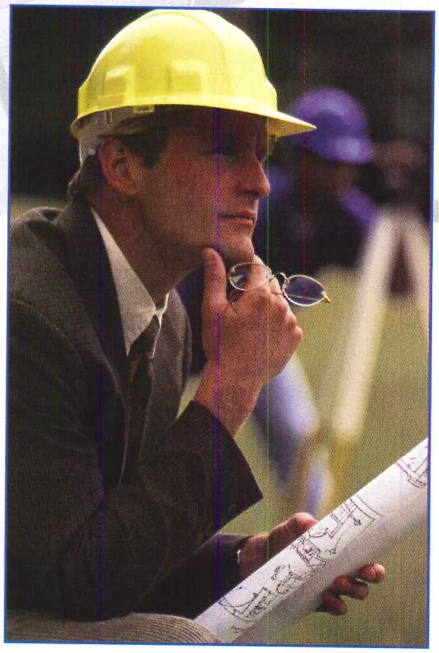

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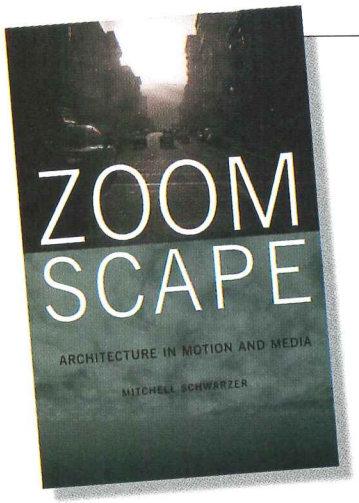
Summer reading: A sampling of architecture books

Books

Zoomscape: Architecture in Motion and Media, *by Mitchell Schwarzer. New York: Princeton Architectural Press, 2004, 320 pages, $29.95.*



For most of human history, buildings were static things to be touched or glimpsed the same way day after day. Today, they're something much different: atmosphere, metaphor, and landscape, shaped by whether you see them in a car or from the air, via photographs or in a film's flickering glow. How these changes infuse our perception of architecture is the subject of this insightful book by Mitchell Schwarzer, chair of visual studies at California College of the Arts, in San Francisco and Oakland, and a former planner for the city of San Francisco.

Schwarzer defines his topic as how "innovations in transportation and image reproduction have recast the perception and understanding of the building environment." This allows Schwarzer to explore everything from the way Le Corbusier used aerial photographs to advance his argument that "cities, with their misery, must be torn down," to the quickstep cityscapes that litter so many televised opening credits, and even the "film blanche" of *The Sound of Music*, where, Schwarzer writes, "architecture and landscape are used to deepen a drama of social disintegration."

While architecture's role in movies and other media has been surveyed before, Schwarzer goes much deeper in exploring the connections between how we see and what we see. In his world, the textural quality of a building, which was the true test for centuries on end, becomes less relevant than how it plays on the silver screen or in glossy magazines: "Architecture must merge into the flow of information, into the spectacle of media … energized in velocity or dazzling light and sound effects," he writes.

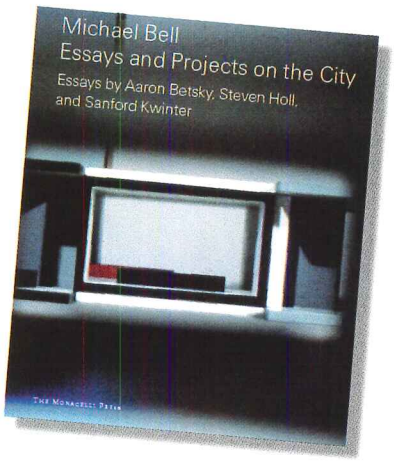
At times, Schwarzer burrows too deeply into his subject matter, quoting theorist after theorist and offering example after example rather than ranging out to explore, say, how the notion of architecture as imagery allows people to feel content with the wallpaperlike building facades that now bedeck our suburbs. That said, Schwarzer brings a needed jolt to the task of architectural criticism. He reminds us not only that buildings cannot be viewed in isolation—they're no longer inanimate objects, either. *John King.*

Space Replaces Us: Essays and Projects on the City, *by Michael Bell. New York: Monacelli Press, 2004, 192 pages, $55.*

Architect Michael Bell is preoccupied with issues concerning space and urbanism in the contemporary American metropolis. His book (its title taken from his competition entry in 1992 for a "house turned inside out," sponsored by the magazine *Japan Architect*) presents a series of projects ranging from exhibition installations to individual houses to larger architectural interventions in Houston and New York City. Also included are Bell's essays on Modernist and Postmodernist theories of space and their implications for his practice, along with brief appreciations of his work from Sanford Kwinter and Steven Holl.

The book is visually sumptuous, presenting numerous refined digital renderings of Bell's projects, most of which are apparently unbuilt. The architect's design talent is abundantly evident here, as is his knowledge of 20th-century theories of urbanism and representation. In essays such as "Eyes in the Heat," Bell seeks to relate Colin Rowe, Robert Slutzky, and Peter Eisenman's readings of Modernist art and architecture to the dispersion of metropolitan regions such as Houston and Los Angeles. Arguing that such generic conditions produce an "idealized subject discrete from local or actual context," Bell links the work of these theorists to European writings on the city by Rafael Moneo and Aldo Rossi, and suggests that, taken together, these five architect-critics can provide a new basis for the deployment of Modernist visual language in the contemporary city.

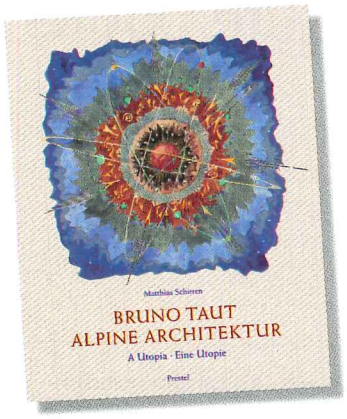
The implications of Bell's approach for urban design are demonstrated in projects such as "Stateless Housing," his proposal for the Arverne Urban Renewal area in Rockaway, Queens, New York, a once-thriving community that's now a desolate beachfront of public housing and vacant lots. Describing the project as "Not CIAM, Not New Urbanism," he envisions a series of triplex housing units that are raised off the ground to allow vegetation to flourish beneath them. The ideas he presents here invoke the spirit of the postwar Case Study House program in Southern California,



but despite their undeniable architectural sophistication, it's doubtful such projects will ever be built in this part of New York. Nevertheless, Bell's book shows a sustained and earnest effort to grapple with the thorny questions that emerge when talented architects attempt to make the leap from theory into practice in American urbanism. *Eric Mumford*

Books

Bruno Taut: Alpine Architektur/Alpine Architecture, *by Matthias Schirren. Munich: Prestel, 2004, 128 pages, $39.95.*



Alpine Architektur, Bruno Taut's utopian blueprint for a post–World War I world, was first published less than a decade after Wright's *Wasmuth Portfolio* and only three years before Le Corbusier's *Vers Une Architecture*. Yet its 30 plates have never been printed in large format until now. The bilingual Prestel edition makes this important Expressionist document readily available.

Besides his theoretical works, Taut is best remembered for the Britz Horseshoe Settlement in Berlin and for the Glass House at the 1914 Werkbund Exhibition in Cologne. We have only monochrome images of that kaleidoscopic crystalline gem, yet the Glass House turned out to be only a minor footnote compared to fellow Werkbund exhibitor Walter Gropius's iconic and hugely influential Model Factory.

Many European artists and intellectuals, horrified by the Great War, dreamed of employing architecture to rebuild society. But few approached the reordering of the universe with such moral and religious fervor, and with such a denial of ego (Taut planned to publish his drawings anonymously). In contrast to Modernist polemics espoused in, say, *De Stijl* or *L'Esprit Nouveau*, Taut leads us on a journey from Switzerland's Alps to the sky, the solar system, and into the Great Nothingness. The reader climbs steep valleys, past glass tempiettos and crystalline reworkings of the Hagia Sophia, and up into the clouds. Atmospheric and romantic are the operative terms here.

Taut's paradigm is composed like a Bruckner symphony, a heady potpourri with bits of William Blake, John Ruskin, Jules Verne, Richard Wagner, and Jesus. His drawings and watercolors depict mountains that are both Cubist and geological (having the "same geometric principles as the architectural orders," Taut writes). Delightful as the images are, Taut's artistic abilities fall far short of his beloved Ruskin, while his stage sets lack the power of Schinkel's operatic canvases.

The message of *Alpine Architektur* is that there exists an argument for a moral dimension in both the universe and art. This welcome reappearance of *Alpine Architektur* makes one wonder how Modernism might have turned out differently had Walter Gropius emigrated to Turkey and Taut gone to America to teach at Harvard.
William Morgan

Nothing Less Than Literal: Architecture After Minimalism, *by Mark Linder. Cambridge: The MIT Press, 2005, 282 pages, $27.20.*

We like to think of architecture as the mother of the arts, but seldom give much thought to how she gets along with her brood. As Mark Linder says in this appealingly original book, art critics such as Clement Greenberg and Michael Fried have dismissed any relationship between art and architecture. Linder, an associate professor in the school of architecture at Syracuse University, disagrees, and in his book he explores the role of archi-

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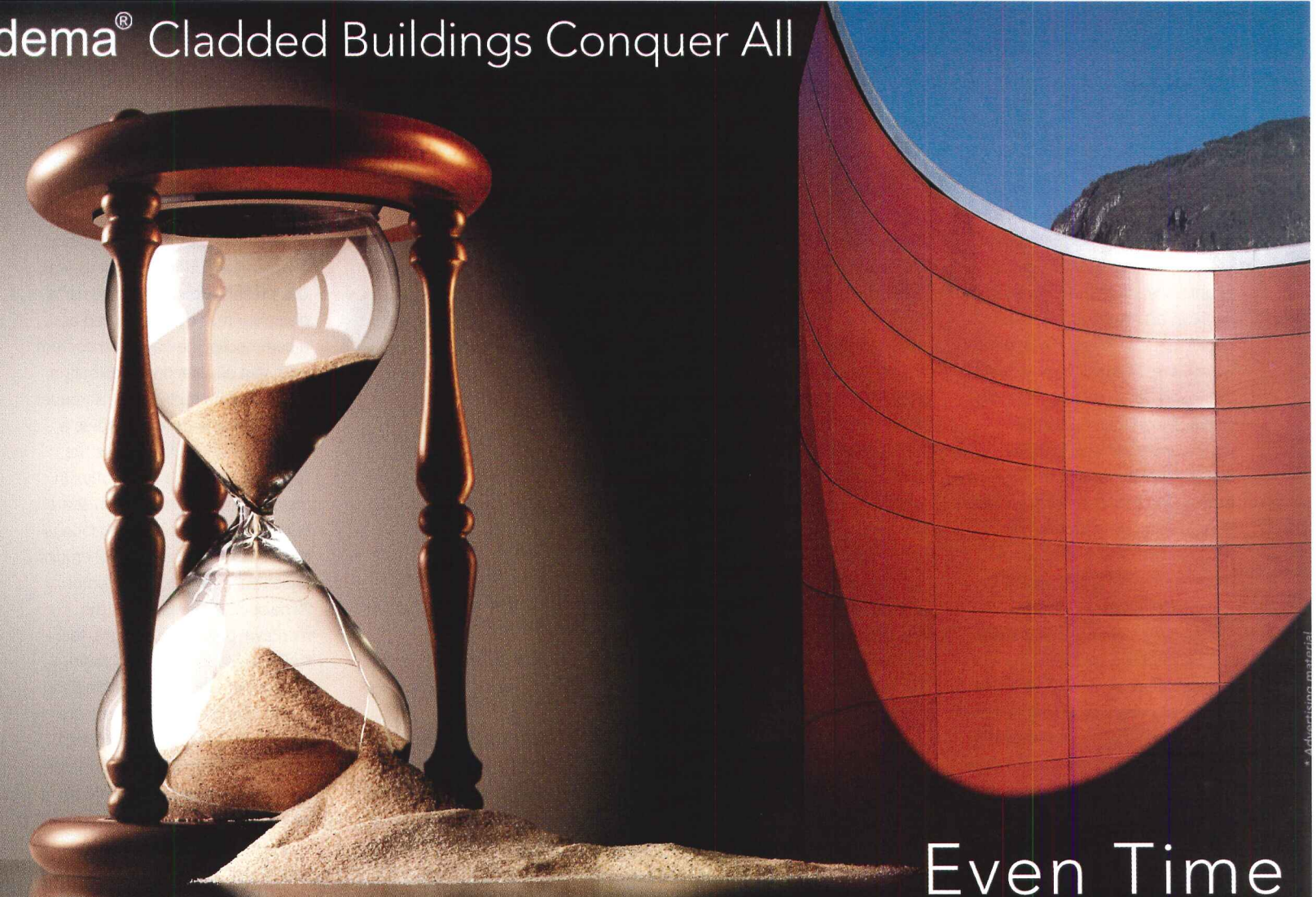

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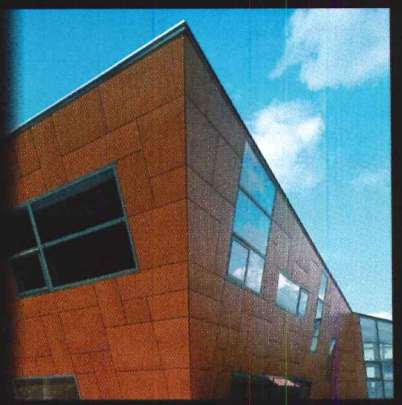

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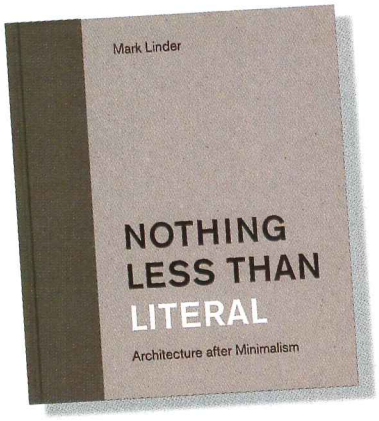
tecture in the criticism that emerged to both attack and defend the art movement known as Minimalism.

The book is divided into six chapters, each featuring a star figure in art, architecture, and/or criticism: Colin Rowe, Clement Greenberg, Michael Fried, Robert Smithson, John Hejduk, and Frank Gehry. Those making cameo appearances include Sigmund Freud, art historian/critics Rosalind Krauss and Leo Steinberg, the artist Donald Judd, philosopher Ludwig Wittgenstein, and architectural historian Henry-Russell Hitchcock.

Linder takes us back to Modernism's revitalization of architecture after the field's decline in "the age of romanticism," which he defines as occurring roughly between 1750 and 1850. Then he examines Modernism itself, quoting Greenberg's equation of Modernist painting with self-criticism, or "the tendency of Modernist art 'to turn around and question its own foundation,' " and also recalls Hitchcock's assertion, in his book *Modern Architecture*, published in 1929, that architecture had reascended to its position as the most primary of visual arts. Linder then traces how Modernist paintings relate to architecture's three dimensions, reminding us of Rowe's transformation of the physical truth of buildings experienced through time into a series of static pictures imagined by the observer. He also points out that Greenberg, at least at one point, considered functional architecture as a model for formalist art, saying that, like a machine, how art "looks" is what art "does."

The last two chapters examine the work of Hejduk and Gehry. The former provides a close analysis of many of the architect's projects, particularly the Wall House of 1968–70; and the latter focuses on Gehry's fascination with fish shapes, and on his studio for the painter Ronald Davis, completed in 1972.

There is no succinct conclusion; we have to consider Linder's ideas and think a bit for ourselves. But his ruminations do compel us to consider the connections between



Minimalism and architecture in a new light. *Stanley Abercrombie*

Architecture in the Age of Divided Representation: The Question of Creativity in the Shadow of Production, *by Dalibor Vesely. Cambridge: The MIT Press, 2004, 506 pages, $49.95.*

Dalibor Vesely, the director emeritus of graduate studies in the department of architecture at the University of Cambridge, England, thinks architecture has lost its way. Our present view of the field as "a discipline that can be treated as … a commodity," he says, comes from judging it as a technical pursuit, a mind-set with roots in the Baroque era, when science emerged as a distinct rival to culture (thus the "divided" reference in the title). In his new book, he sets out in search of architecture's humanistic foundations by exploring a range of erudite topics such as the formation of Renaissance perspective, the medieval philosophy of light, the NASA sky laboratory, and rapid changes of opinion about the Eiffel Tower. Though his arguments are sometimes unclear, Vesely elicits our sympathy for his goal of restoring architecture's communicative and creative roles. *S.A.*

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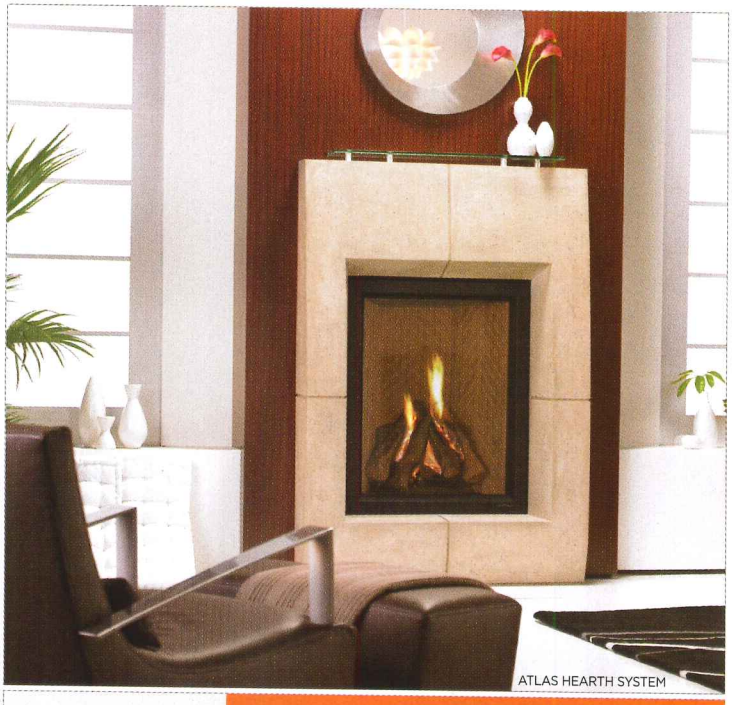

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This nine-story hotel is topped with a striking mansard roof utilizing 20,000 sq. ft. of PAC-CLAD® Redi-Roof Batten panels finished in Hemlock Green. The Mandarin Oriental is part of The Portals, a mixed-use development that is the largest project in the history of Washington, DC. Brennan Beer Gorman Monk Architects designed the luxury hotel in the French style while reflecting the city's iconic neo-classic architecture. The nearly vertical roof installation was done by Progressive Services, Inc., of Dover, PA.

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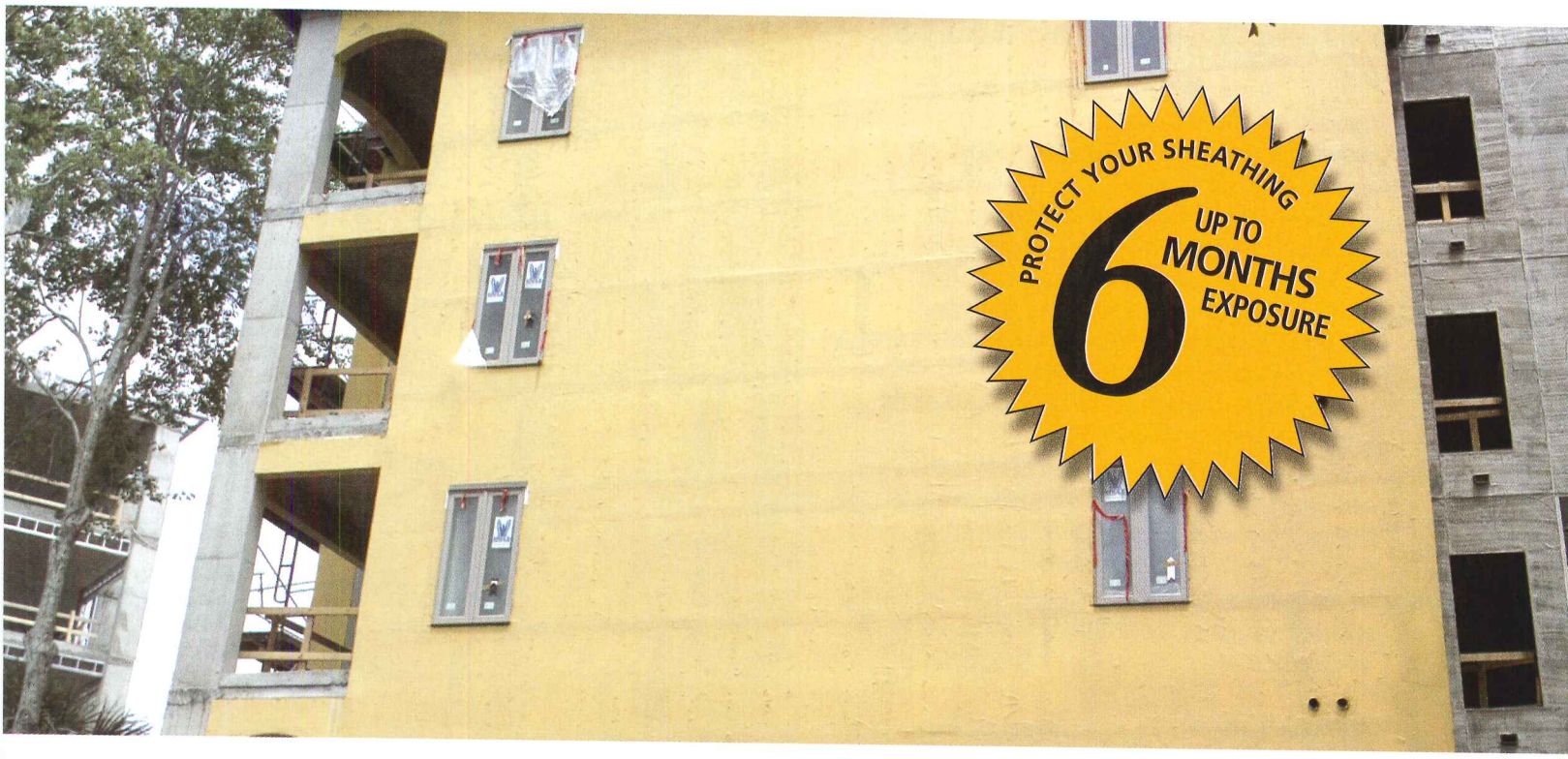

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Aichi Expo tries to merge green architecture with good architecture

Exhibitions

By Fred A. Bernstein

Expo 2005. *Aichi, Japan, through September 25, 2005.*

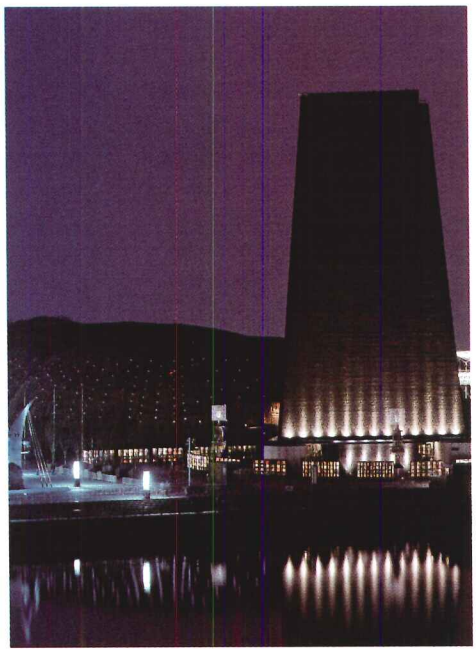
Robots—including an android jazz band sponsored by Toyota—dominated the media coverage of the 2005 World Exposition in Aichi, Japan. But the most surprising machines were the ones dispensing soda into paper cups. The back-to-the-future contraptions were part of an effort to emphasize the fair's environmental theme, "Nature's Wisdom." So were daunting clusters of trash pails—visitors were asked to sort their garbage into a dozen categories.

The fair—one of the twice-a-decade world exhibitions sanctioned by the Paris-based Bureau of International Expositions—runs through September 25 on a parklike site east of Nagoya, the industrial city between Tokyo and Osaka. The environmental theme pervades the fair's site-planning. The main transportation loop—a 2-mile-long boardwalk—was raised on stilts, ostensibly to leave the ground unaltered. Transportation options at the fair include fuel-cell-powered buses. As for architecture, each participating country was given a prefabricated, warehouse-style building, which will be recycled when the Expo closes. Some countries managed to turn prefab into pretty fabulous. Spain chose Foreign Office Architects (FOA) to hang a screen of ceramic hexagons around its building. Others, including Switzerland and Mexico, created compelling interiors that made the buildings' concrete walls recede. But overall, the chance to create bold architectural forms, a highlight of so many past world's fairs, was sacrificed to the (admirable) experiment in sustainability.

Fred A. Bernstein is a New York–based architecture and design journalist.

The Expo has attracted huge crowds: more than seven million visitors in its first twelve weeks. That's in part because superb public transportation makes it possible for many Japanese to day-trip to Aichi. (For those coming from far away, a new airport opened in March.) The last leg of the trip, from either the airport or downtown Nagoya, which is about 200 miles from Tokyo, is on a maglev train decorated by an American, Urso S.A. Chappell, the winner of a design competition.

Inside the fairgrounds, it's impossible to avoid being educated about alternative energy sources, green-building methods, and extreme recycling. All of which is surprising, given that the fair is meant to promote Aichi Prefecture, an industrial section of Japan that includes Toyota City, Japan's auto-industry-centered version of Detroit. Toyota's former chairman spearheaded the effort. The U.S. pavilion was organized by another former Toyota executive, who convinced companies like General Motors, DuPont, and ExxonMobil to provide support. (Federal law prevents public funds from being spent on international expositions.) Japan's industrial



Lithuanian pavilion (above), by Buciene Bucas & Ozarinskas. Japanese corporate pavilions (right). The park's elevated boardwalk entrance, with maglev trains (below).

heartland has been overlooked by tourists taking bullet trains between Tokyo and Kyoto, and the fair is meant to change that, while burnishing the image of Japan's large manufacturers.

The giant "global loop" is roughly an oval that feeds culs-de-sac called "global commons," each devoted to a region of the world. The U.S. pavilion, which was certain to attract attention, was placed, like the milk in the back of the supermarket, at the far end of the Americas section, past Canada, Mexico, and Cuba. The building itself is covered in red, white, and blue fabric, suggesting a large flag, with a LED screen displaying postcard views of the U.S. (Visitors seemed more interested in the Segways ridden by the greeters.) Inside, a multimedia show, in which Benjamin Franklin "pays a visit to" 2005, is entertaining. When Franklin goes out in a lightning storm, with his famous kite, the audience experiences high winds, heavy rain, and, even an electrical "shock." (The shock is created by sending "flat sound waves" through the seats, according to Chris Ellis of BRC Entertainment Arts of Burbank, California, which designed the attraction.) The show is also informative, except that the script avoids mentioning pollution, suggesting (conveniently) that nature will find its own solutions to environmental problems. The post-show gallery contains some stunning artifacts, including a replica of the Wright brothers' plane and the Mars Rover. Neither groundbreaking nor gutsy, the corporate-sponsored pavilion is nonetheless a satisfying visit.

But the facade and interiors, by architect Bud Holloman of Jackson, Mississippi, are fairly rudimentary. Not so the second-floor VIP suite, designed by *Queer Eye for the Straight Guy* decorator Thom Filicia. The suite, where corporate sponsors can entertain clients, is a lush homage to American design, with the kind of pieces you might see in a Cooper-Hewitt National Design Triennial (tables by Connecticut's Poesis and objets by New York's Michele Oka Doner are among the standouts). Still, having a gorgeous VIP suite in an otherwise bland pavilion seems more than a bit undemocratic. Not only that, but the U.S. pavilion is, sadly, the only building at the fair where visitors must pass through a metal detector.

Among the other national pavilions, Romania scored with a series of mirrors that move in the wind (designed by Bucharest architect Dorin Stefan). At Spain's outpost, FOA went to town with the hexagonal tiles, their shape designed to "resonate with the Gothic and Islamic lattices and traceries of Spain," says partner Farshid Moussavi. FOA's corner detail, which requires the brightly colored hexagons to turn 90 degrees, is stunning. Inside, the firm created a series of rooms that merge the hexagonal theme with the suggestion of vaulting. Picture catacombs designed by Buckminster Fuller. The Swiss pavilion contains a walk-through evocation of the Alps, made entirely of photos printed on flat surfaces. It's an amazing optical illusion, created by the group Panorama 2000. The Nordic pavilion, designed by Denmark's Peter Bysted, has a terrific interior, in which pathways are defined by paper walls suggesting both high-tech ships' sails and icy coastlines. Austria managed to create a wall of ice in a heated room—visitors couldn't resist running their hands along it.

Corporations got to build somewhat flashier pavilions. Hitachi's sleek building, for instance, resembles a giant electronic device eroded by a waterfall—the man-made versus natural, with the natural (at least ostensibly) the winner. Predictably, the corporate pavilions have thus far drawn the largest crowds.

The emphasis on the environment seems a pointed critique of U.S. consumer culture. Still, critics have said that a world's fair, no matter how green it tries to be, requires vast resources to build and operate, and that people could have learned the same lessons from books and Web sites. In fact, the fair seems a noble effort to educate, a throwback to an era when crowds gathered to be enlightened, not just entertained. It will be interesting to see whether the next World Expo, planned for Shanghai in 2010, follows its lead. ■

The flag-clad U.S. pavilion exterior (above), and its contemporary-style VIP suite (right). The exterior of the Spain pavilion (below), by Foreign Office Architects, is clad in a plethora of hexagonal, multicolored tiles.

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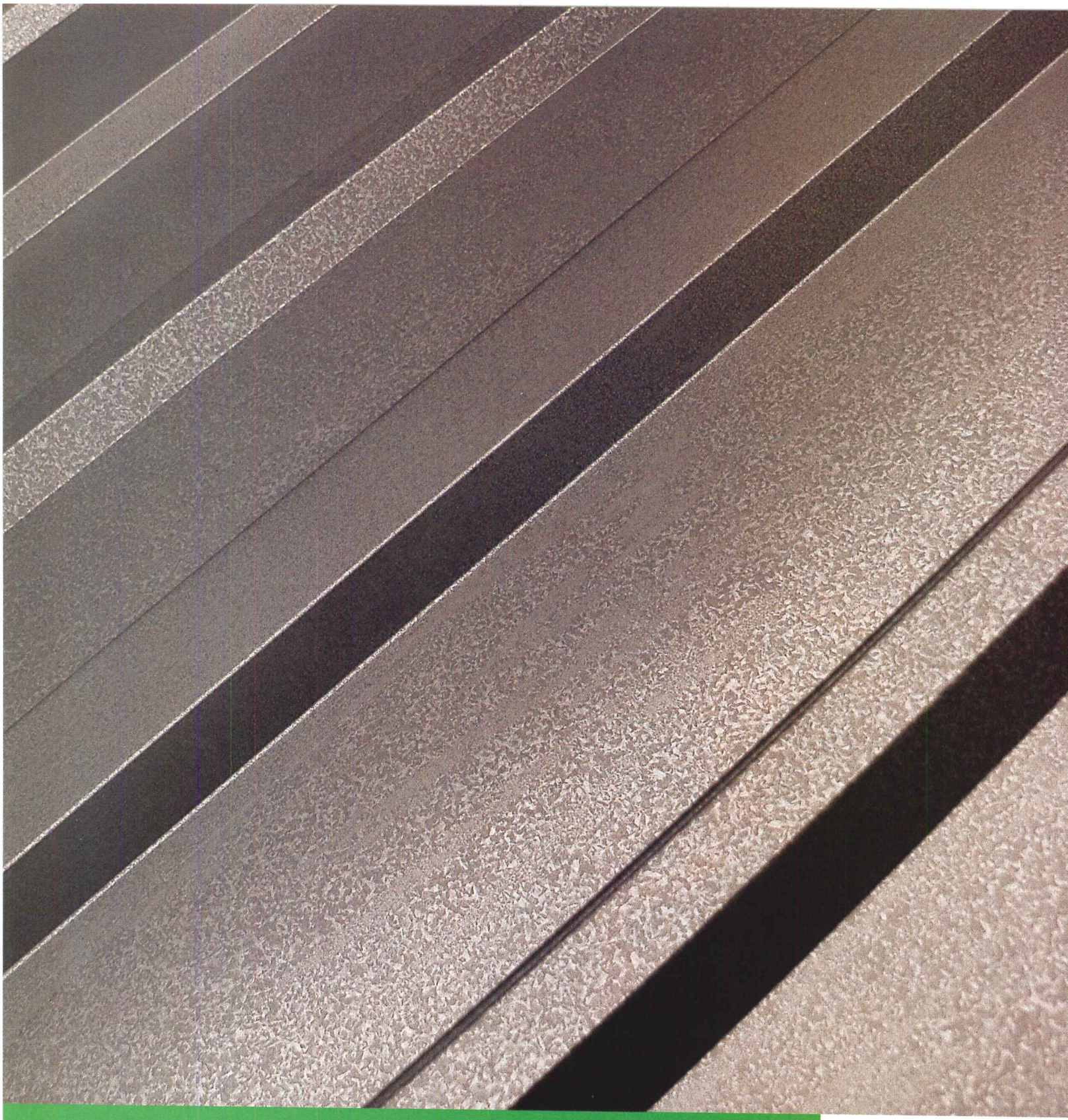

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Modernism and hype fuel the condo boom in Miami

Correspondent's File

By Sara Hart

It's hot much of the time in South Florida. Now, however, the heat is constant and radiating from a real estate market that is on fire. Although the media report on it daily, their commentary seems to stress quantity over quality. Every story is larded with numbers: statistics, percentages, interest rates, dollars per square foot, heights, total units, and, of course, the number of months until the bubble bursts. With most of the drama generated by this numbers game, there's been very little talk of architectural design, unless a celebrity architect is attached to the project.

One could easily assume that much of the building is just frantic, uncontrolled, what-the-market-will-bear capitalism, fueled by low interest rates, lenient zoning, liberal financing, and a weak dollar that has attracted foreign investors to the flame in record numbers.

The heat has prompted some developers to make no small plans. French expatriate Leon Cohen, president of Maclee Development, has proposed a condominium tower and apartment-hotel tower complex in which each would rise 1,200 feet (110 stories) on a slim, 2-acre parcel along Biscayne Boulevard. If built, Empire World Towers (apparently named without intentional irony) will be the tallest residential building in the world, eclipsing the 21st Century Tower in Dubai by nearly 300 feet, and will cost around $1.1 billion. Engineering and code challenges notwithstanding, authorities are unlikely to permit such loftiness in the flight path of Miami International Airport.

Such audacity is not the norm there, however. Certainly, every project has a hook to distinguish it from the others—spa living, proximity to arts and culture, or an overabundance of services. Scratch beneath the hype, a few projects with broader objectives emerge from the smoke.

Standing tall

High-rises are so ubiquitous in Miami that it takes Cohen's twin towers to grab the public's attention. According to industry sources, there are more than 60,000 high-rise condo units in some stage of planning or construction in Miami alone. This number has the so-called vulture capitalists circling the construction sites, waiting for the fever to break.

Developer Craig Robins fused New Urbanism and Modernism at Aqua, enlisting the talents of 10 architects—Walter Chatham, Alison Spear, Alexander Gorlin, Brown and Demandt, Hariri and Hariri, Allan Shulman, Albaisa and Musumano, Suzanne Martinson, Emanuela Magnusson, and Duany Plater-Zyberk.

Correspondent's File

Local architect Chad Oppenheim believes predictions of doom are overblown. "It looks worse than it is. Not every project will be realized. Everybody wants to be a developer, but not everybody can assemble the right financing. The market will level out."

Oppenheim, who specializes in high-rise buildings, learned early on that sales, especially in Miami, can be driven by another factor besides location and price—innovative design. "We were a young firm which was hired by up-and-coming developers. Many of them did not own the prime, oceanfront properties. They had infill parcels or residual pieces of land, which were blocks from the beaches. Our goal was to create product that would draw buyers away from the waterfront," he explains. He did this by designing the kind of place where he would want to live. "When these apartments started selling at higher prices than the waterfront condos, other developers started to pay attention to what we were doing. We create lifestyle architecture to maximize the pleasure of living in Miami."

Oppenheim may have reached the pinnacle of lifestyle architecture at the lavish and hyperbolic Ten Museum Park, a 50-story tower in downtown Miami, which he designed in association with developer Gregg Covin. Scheduled to open next year, its goal is to reinvent the high-rise condominium as a tropical paradise—a challenge fueled by the presence of the Swiss spa Clinique La Prairie throughout the complex, creating a desire for private rooftop vitality pools and pavilions dedicated to every imaginable natural therapy.

OPPENHEIM LEARNED EARLY THAT SALES ARE DRIVEN BY ANOTHER FACTOR BESIDES LOCATION AND PRICE—INNOVATIVE DESIGN.

Oppenheim's brand of Modernism resists the invariability that often defines skyscrapers. After all, he's giving form to lifestyle, not maximizing square footage. Within the exoskeleton, his interlocking volumes create soaring spaces and frame dramatic views—a strategy that celebrates living up high.

Down to earth

Up isn't the only direction in Miami's exuberant building environment. A few developers have opted to explore alternatives to the isolated tower.

Chad Oppenheim designed spa-themed "lifestyle residences" at Ten Museum Park.

Craig Robins, founder and C.E.O. of Miami-based Dacra Development, affirms Oppenheim's claim that there is no bubble, yet. "Of course, the saturation of condos will cause a correction, but there is an enormous market for people who want to live here," says Robins. Then he adds an important distinction: "The good news about the boom is that it's forcing the urbanization of Miami."

Robins, the developer credited with rescuing South Beach's historic Art Deco district from death by neglect, has now captured another niche market and found a cause. He hopes to serve both at Aqua—a development that might be described as a neighborhood for buyers who want to live in Miami, not just visit it.

Located on Allison Island, Aqua is a stone's throw from the high-rise condominiums of Collins Avenue that loom over Miami Beach to the east; to the west are the single-family houses of the city of Miami.

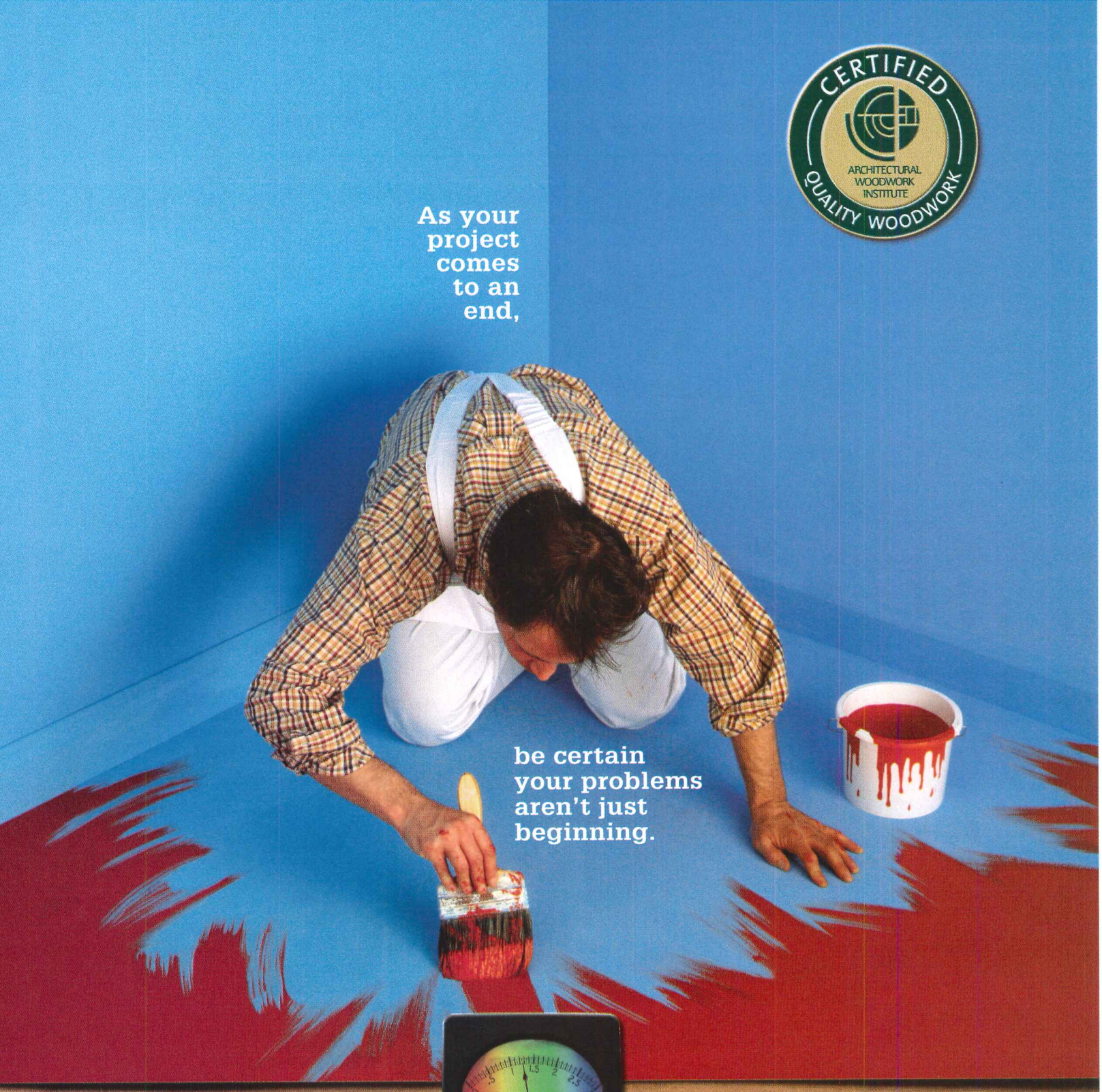
Two things distinguish Aqua from most new construction. First of all, its buildings repose horizontally across 8.5 acres—three midrise condominiums and 50 zero-lot-line houses no higher than three stories.

Robins believed that he could challenge the dominance of the tower with an innovative approach to urban density. He hired Miami-based architects and urban planners Duany Plater-Zyberk (DPZ), cofounders of the Congress for the New Urbanism, to create a master plan that would fuse the principles of traditional urbanism with modern architecture. Then he assembled 10 cutting-edge architecture firms to design the town houses and apartment buildings. It was an experiment that took finesse and has been, by all accounts, a commercial success. More importantly, Robins has proved that the familiarity of a neighborhood, public spaces, and varieties of scale are compatible with market-driven development.

Across the water from Aqua in Miami Beach, near many of the area's arts and cultural organizations, the architecture firm Arquitectonica and the Wave Group are developing ArtéCity, a $100 million project for 180 residences on a city block in Miami Beach. This project bears some similarities to Aqua, mostly in terms of its horizontality and public amenities. Here, though, a single architect is pursuing a neutral vocabulary to highlight one of the project's most important contributions to the urban fabric—the restoration of the Art Deco Governor Hotel.

Architects and developers may be self-serving when they proclaim that nothing threatens to burst the bubble or that there is even a bubble, but that doesn't mean they're wrong. They'll only be wrong if they squander the opportunity to create and sustain a viable urban fabric. ■

Designed by Arquitectonica, ArtéCity will include condos, town villas, and shops.



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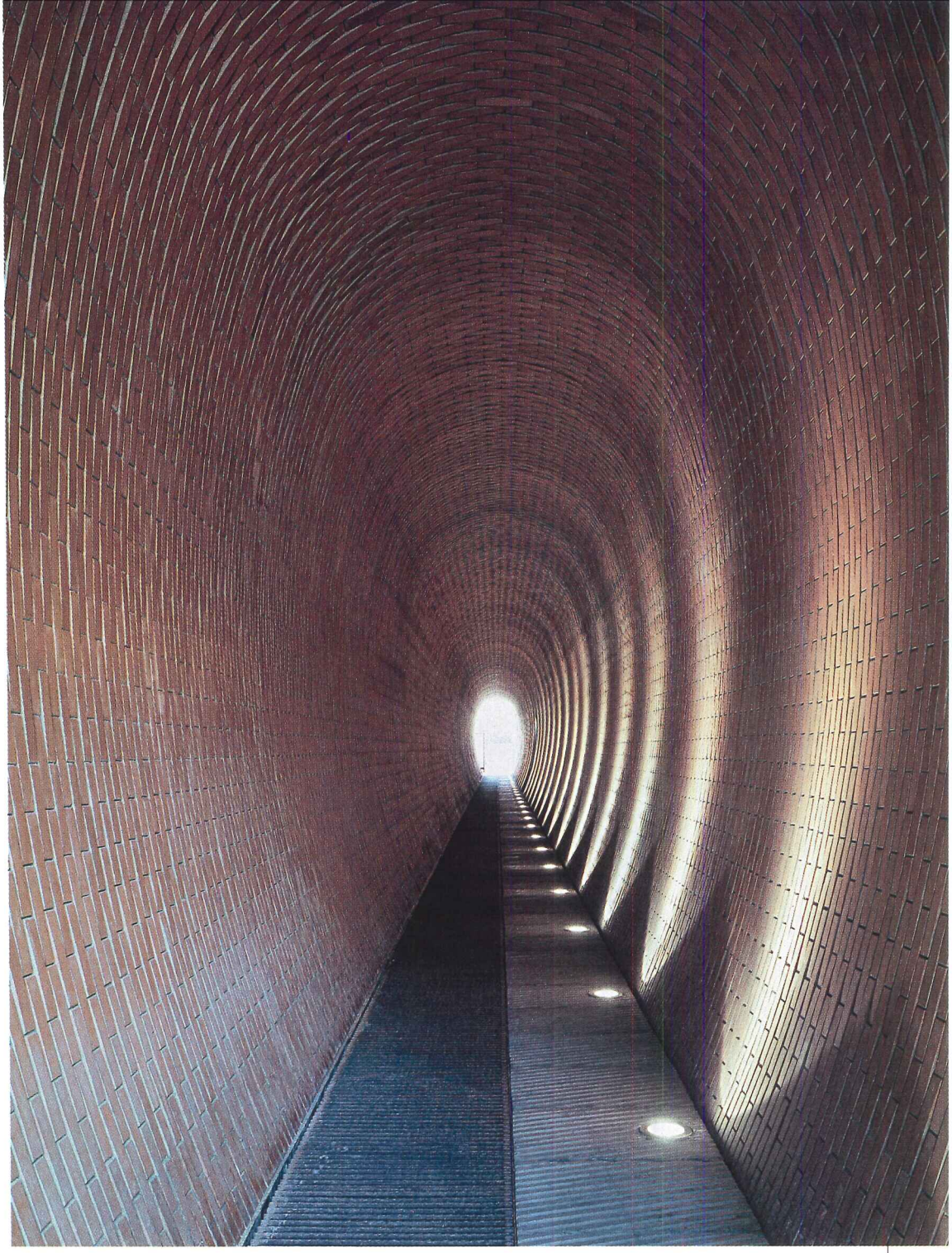

By Beth Broome

A novel new approach to the ancient Prague Castle

High on a hillside, the site of Prague Castle, which dates from around 880, is home to Saint Vitus Cathedral and a number of palaces, towers, monasteries, and galleries. Over the centuries, the castle has served as the seat for the head of state and the Prague bishop and has come to be known as the Czech Republic's historic and political center. Thanks to an initiative by former president Vaclav Havel, visitors who come to explore the castle and its extensive grounds can now approach the complex via a series of pedestrian pathways conceived by architect Josef Pleskot of the Czech firm AP Atelier.

Originating at the bank of the River Vltava, the route continues over stone paths, steel footbridges, and timber walkways. Perhaps the most intriguing element of the journey is the Deer Moat Pedestrian Tunnel, which connects the upper and lower portions of this natural environment, passing through a

PHOTOGRAPHY: © JAN MALY

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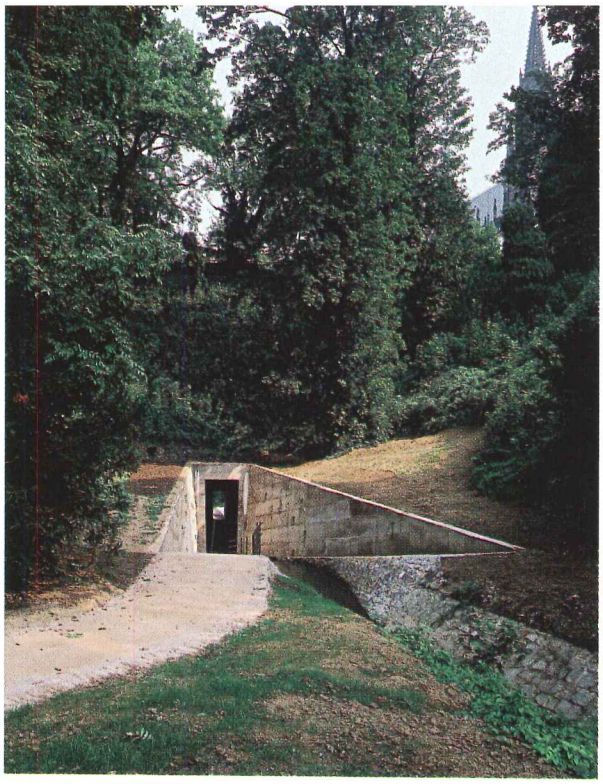

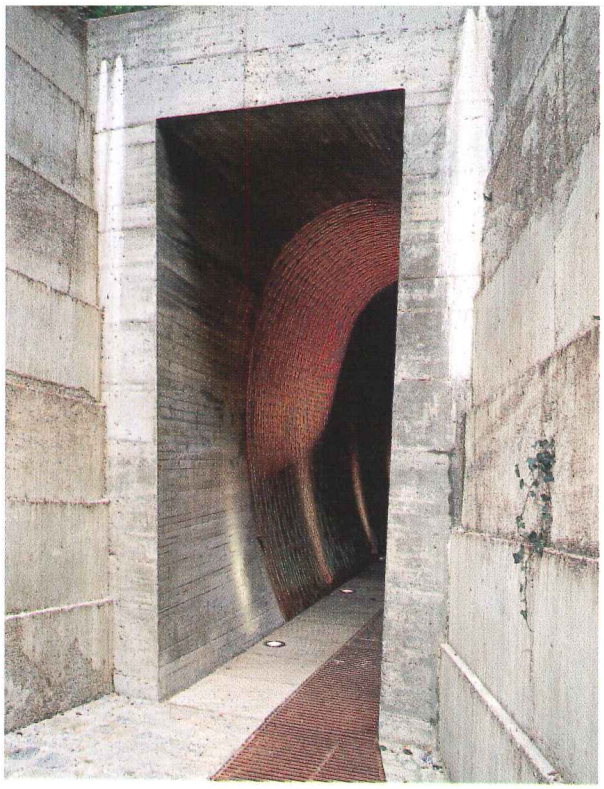

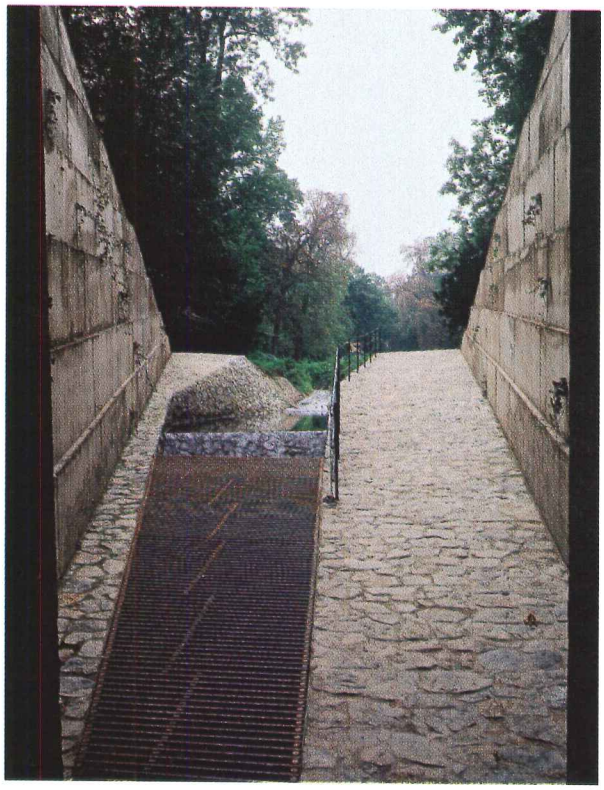

portion that was filled with earth after the moat became obsolete in the 18th century. In order to eliminate the claustrophobic feelings often associated with tunnels, Pleskot used a vertically oriented oval shape and incorporated ample illumination recessed into the floor that paints the walls with bands of light.

The vaulted passage, 230 feet in length, is constructed of self-supporting, hard-burned, fair-faced brick. Half of the floor length is made of precast fluted concrete, the other half of a steel grid that covers the Brusnice stream, which flows beneath. Sections of board-formed concrete walls serve as a transition between the rectangular entrances and the elliptical profile of the tunnel itself. Just beyond the entrances are cast-concrete retaining walls tinted with iron filings, which have been drilled to allow for drainage and to encourage the growth of vegetation. The same quarry stone that forms the stream bed paves the access points.

Pleskot's rugged pedestrian approach to the castle offers visitors a close encounter with this rare natural environment existing in the middle of a big city, and affords an off-the-beaten-path view of a major tourist attraction. The tunnel further enriches this overall experience, successfully incorporating a contemporary addition into a historic landscape. ■

The footpath leading up to the Prague Castle incorporates a variety of elements. Similarly, the pedestrian tunnel, which connects the upper and lower portions of the Deer Moat, is composed of a variety of materials such as brick, cast concrete, and quarry stone.

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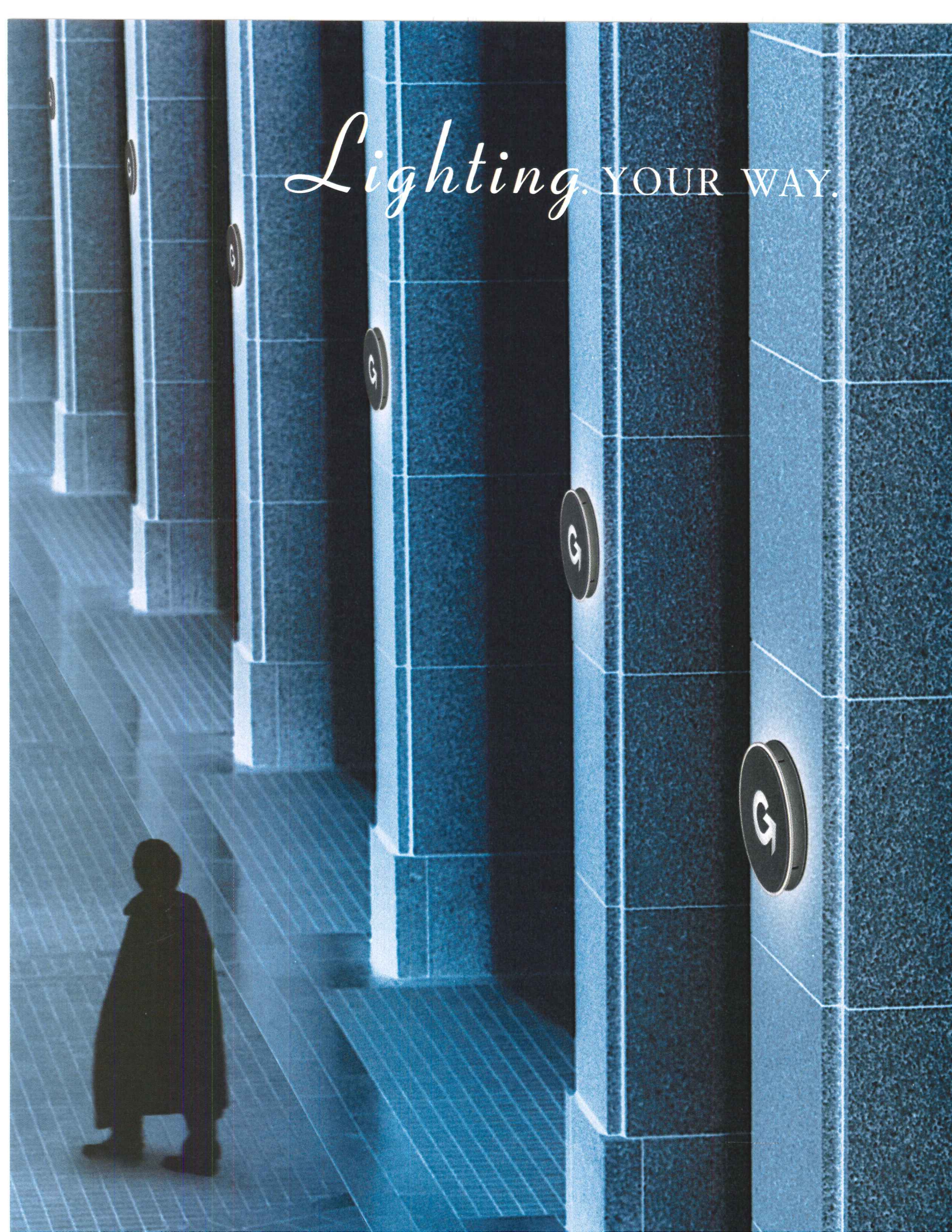
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Big Firms Growing Bigger

By James S. Russell, AIA

Among the business peculiarities of architecture is its failure to obsess about size. Large projects don't generate as much interest as unique design solutions. But architecture can't ignore the growing scale and complexity of building-design practice. Even large firms aren't growth-obsessed like the rest of the business world, yet many firms double revenues and staff every few years. When staffing grows into the hundreds and you have to make a half-million-dollar payroll every week or two, you're not running a ruminative, cardboard-model-festooned atelier anymore.

To consider the implications of firms' growing size, RECORD has filtered the largest architecture and architecture-prime firms from the annual Top-500 design-firm list compiled by sister publication *Engineering News-Record*. (Find *ENR*'s complete listings at www.enr.com.) Then, we have selectively and utterly unscientifically sampled the views of big-firm principals and outside observers. In many ways, the challenges and opportunities facing large practices say a great deal about the future of all firms.

Staff of 250 is the new big

At the top of RECORD's list is HOK, a long-time large firm. Its 1,700 employees and 22 offices worldwide billed a whopping $331 million in 2004. Number two, Gensler, has 30 offices worldwide. Down the list, Zimmer Gunsul Frasca (number 20) employs 400. Not long ago, 100 persons was a big-firm threshold. In 2002, when AIA last surveyed large firms, it found 315 of them—employing just under 58,000 people, or just under 34 percent of all employees at U.S. architecture firms, according to Kermit Baker, AIA's chief economist. Bigness looks bigger today: The next survey will break out firms larger than 250.

Designers can see themselves as too iconoclastic to embrace the expediencies and compromises innate to large organizations. Why be big? Because a great number of clients want the advantages a large organization can offer. Speed is one. A company simply needs to get its new stores (or dozen new stores) open in a growing metro region faster than competitors. "In this town, every project needs to be finished yesterday," observed Kouhaila G. Hammer, the president and C.E.O. of Ghafari Associates (number 21), of Dearborn, Michigan. Her firm recently turned out a steel bid package in three weeks for an automaker's 600,000-square-foot facility.

The best smaller firms are fast and agile, too, but lose out to larger firms when speed and agility must be combined with deep capability. Capacity to serve a growing range and sheer quantity of client needs is what creates the true economic necessity for ever-growing firms. Large practices dominate complex building types requiring depth in specialized expertise: health care, laboratories, airports, sports facilities. Even large architectural firms must team up to execute big jobs of high complexity. HKS (number 5), HNTB (a 3,000-person, 60-office engineer-architect), and Corgan Associates (number 32) collaborated to build the 2.1-million-square-foot International Terminal D at the Dallas-Fort Worth Airport that opens this month. Actually, 54 architectural firms worked on the $1.7 billion project, which will be able to handle 37,000 daily passengers and includes a 298-room Hilton hotel.

Specialized and diverse

Bigness helps when clients need a depth of expertise in multiple specialties. Giant HOK can bring experienced teams to each type of a mixed-use project. That is one reason it can design an entire 7,000-student university for women in Dubai, United Arab Emirates; a town center in Maharashtra, India; and the new ballpark in Washington, D.C.

Technology and adroit firm collaborations can give smaller firms many big-firm advantages. Certain extraordinary capabilities remain largely outside the reach of smaller practices, however. HKS did a conceptual study for a 500,000-square-foot hospital in Washington, D.C., that could be transformed in the event of emergency into a 400-bed trauma center. EDAW (number 9) is best known for landscape architecture and urban design but also advises USDA on whaling traditions of the Inupiat tribe. Gensler extended its work in corporate interiors and graphics to strategic business planning and branding strategies, even creating an advertising campaign for a client. "We're able to stretch our skill sets," explains Gensler chairman

HOW LARGE FIRMS FACE CHALLENGES—RUNNING BILLION-DOLLAR PROJECTS • MANAGING FAR-FLUNG OFFICES • KEEPING DESIGN CULTURE ALIVE • COPING WITH GROWTH—IS REDEFINING THE PRACTICE OF ARCHITECTURE

M. Arthur Gensler, FAIA. "Design is a vehicle to solve problems, whatever they are, within the purview of the visual environment."

Specialized expertise helped many of today's big firms make their mark, but diversity—of markets, of office location, of expertise—is "a matter of survival," says Ghafari's Hammer. Her firm does three quarters of its work for the auto industry, but the firm is rapidly branching into airports and university work. Wimberly Allison Tong & Goo (number 23) remains a hospitality specialist, but it has broadened the spectrum of services it offers to its hotel and resort clients. Most large firms, however, are very broadly diversified.

Technology can extend a firm's reach globally, but having many offices can become a necessity. According to Scott Simpson, C.E.O. and president of The Stubbins Associates, headquartered in Cambridge, Massachusetts, "We have some of the top biomedical services in the world, but the clients want you on the west coast if they are doing projects there. You have to be geographically diverse."

Big deals: Terminal D, Dallas-Fort Worth Airport: $1.7 billion, 2.1 million square feet; university in Dubai: 7,000 students; 600,000-square-foot bid package, 3 weeks

Achieving a depth of expertise and a diversity of markets and locations morphs medium-size firms into large ones—if they can manage the transition. "With big investments in technology, marketing, and public-relations, and staff development prerequisites for success, a certain amount of critical mass is essential to maintain viability," explains Simpson. "At the same time, it takes years and lots of capital to grow a firm internally." To shortcut the process, Stubbins and Philadelphia-based Kling created an affiliation (not a merger per se). Kling is a leader in the highly specialized, technically demanding, and very busy niche of biotech and pharmaceutical-industry R&D facilities. The plan gave both firms two kinds of diversity: "Kling gained access to our offices in Cambridge and Las Vegas, our design portfolio and markets in hotel/hospitality, health care, and higher education," says Simpson. Stubbins gained access to Kling's specialized exerpertise and its offices in Philadelphia, Washington, D.C., and Raleigh/Durham. Though many functions remain separate, Kling-Stubbins can market itself as a diversified, 450-person firm.

Firms say they expand geographically not to achieve growth per se, but usually to serve existing clients. Nowadays, that growth is increasingly international. Many of the largest firms derive a third or more of revenues from international work, but most garner well under 10 percent. Leo A Daley is in nine or 10 foreign markets today, according to Charles Dalluge, president of Leo A Daly International (number 4). "We're proactive in 22." The biggest firms do a lot of work in the Middle East: Dubai, Abu Dhabi, the United Arab Emirates, for example. "The opportunities in China are unlimited," claims Arthur Gensler. India may be on the horizon, too: "A number of our developer and technology clients are building facilities in India and asked us to open an office there," adds Gensler. "But finding the right leadership and design talent and learning to do business in a new country is time-consuming and expensive." New international offices often don't pay off for firms, but as Gensler says, reflecting the views of other large firms, "If our clients say you've got to be in India, we'll go."

Clients, not projects

"Repeat business is number one," says Ralph Hawkins, the president and C.E.O. of Dallas-based HKS. "If the client wants a doghouse, we'll do it to retain a strong relationship." For large firms, repeat clients can represent 70 percent or more of billings, and several have had the same clients for two or three decades. There's a reason: It's a very expensive, long-term process to land a big project, so going from client to client in search of the next home run has become a form of business suicide. While many architects are project-focused, a key large-firm difference is the stress they place on client service. Building and maintaining relationships, and learning how to efficiently work with clients is cost-effective, keeping that steady stream of

HOW TO USE THE TABLE

Companies are ranked according to revenue for design services performed in 2004 in $ millions. Firms that responded to *Engineering News-Record*'s annual Top Design Firms survey submitted these revenue figures. For information on subsidiaries and where each firm worked outside the U.S., see the *ENR* Web site at www.enr.com.

Some markets may not add up to 100 percent due to the omission of "other" miscellaneous market categories, and rounding. The McGraw-Hill Companies publishes both ARCHITECTURAL RECORD and *ENR*.

Key to how firms classify themselves:
A = Architect **AE** = Architect-Engineer
P = Planner **AEC** = Architect-Engineer-Contractor

General building: Commercial buildings, offices, stores, educational facilities, government buildings, medical facilities, hotels, apartments, housing, etc.
Manufacturing: Auto, electronic assembly, textile plants, etc.
Transportation: Airports, bridges, marine facilities, railroads, etc.
Other includes: Industrial process facilities, power plants, telecommunications, hazardous-waste cleanup, sewage-treatment plants, etc.

2005 LARGEST ARCHITECT-LED FIRMS

	FIRMS LISTED BY 2004 REVENUES AS REPORTED BY *ENR* IN ITS TOP 500 DESIGN FIRMS SURVEY	FIRM TYPE	TOTAL REVENUE	INT'L REVENUE	GENERAL BUILDING	MANUF.	TRANSP.	OTHER
1	**HOK**, St. Louis, Mo.	AE	$331.9	$142.2	91	0	9	0
2	**GENSLER**, San Francisco, Calif.	A	$304.5	$35.8	93	0	7	0
3	**SKIDMORE, OWINGS & MERRILL LLP**, New York, N.Y.	AE	$190.0	$69.0	91	0	9	0
4	**LEO A DALY**, Omaha, Neb.	AE	$180.0	$1.8	100	0	0	0
5	**HKS INC.**, Dallas, Tex.	AE	$180.0	$10.6	100	0	0	0
6	**PERKINS+WILL**, Chicago, Ill.	A	$146.3	$13.9	99	0	1	0
7	**HEERY INTERNATIONAL**, Atlanta, Ga.	AE	$140.5	$25.2	95	1	4	0
8	**NBBJ**, Seattle, Wash.	A	$139.5	$32.1	100	0	0	0
9	**EDAW**, San Francisco, Calif.	AP	$137.5	$51.0	21	0	1	4
10	**RTKL ASSOCIATES INC.**, Baltimore, Md.	AE	$126.7	$40.3	96	0	0	4
11	**SMITHGROUP INC.**, Detroit, Mich.	AE	$115.6	$0.8	99	0	1	0
12	**A. EPSTEIN AND SONS INTERNATIONAL INC.**, Chicago, Ill.	AE	$107.0	$11.0	64	5	7	23
13	**THE BENHAM COS. LLC**, Oklahoma City, Okla.	AEC	$97.6	$1.6	48	13	9	29
14	**GRESHAM, SMITH AND PARTNERS**, Nashville, Tenn.	AE	$89.3	$0.3	53	1	28	11
15	**CANNON DESIGN**, Buffalo, N.Y.	AE	$84.7	$-	100	0	0	0
16	**KOHN PEDERSEN FOX ASSOCIATES PC**, New York, N.Y.	A	$81.0	$43.0	89	0	11	0
17	**CALLISON ARCHITECTURE INC.**, Seattle, Wash.	A	$77.2	$13.9	100	0	0	0
18	**HILLIER ARCHITECTURE**, Princeton, N.J.	A	$75.6	$3.0	100	0	0	0
19	**KLING**, Philadelphia, Pa.	AE	$74.0	$3.0	91	4	0	5
20	**ZIMMER GUNSUL FRASCA PARTNERSHIP**, Portland, Ore.	AP	$72.9	$1.7	96	0	4	0
21	**GHAFARI ASSOCIATES LLC**, Dearborn, Mich.	AE	$72.5	$0.5	5	94	1	0
22	**PERKINS EASTMAN**, New York, N.Y.	A	$70.1	$8.9	100	0	0	0
23	**WIMBERLY ALLISON TONG & GOO**, Honolulu, Hawaii	A	$69.9	$38.3	100	0	0	0
24	**ANSHEN+ALLEN ARCHITECTS**, San Francisco, Calif.	A	$68.8	$25.8	100	0	0	0
25	**DLR GROUP**, Omaha, Neb.	AE	$67.0	$-	100	0	0	0
26	**HAYES, SEAY, MATTERN & MATTERN INC.**, Roanoke, Va.	AE	$65.1	$0.6	48	4	8	39
27	**HAMMEL GREEN AND ABRAHAMSON INC.**, Minneapolis, Minn.	AE	$64.0	$-	100	0	0	0
28	**HARLEYELLIS**, Southfield, Mich.	AE	$58.7	$-	97	1	2	0
29	**HMC ARCHITECTS**, Ontario, Calif.	A	$57.5	$-	100	0	0	0
30	**SSOE INC.**, Toledo, Ohio	AE	$56.1	$0.1	34	26	3	37
31	**CUH2A**, Princeton, N.J.	AE	$54.0	$3.0	100	0	0	0
32	**CORGAN ASSOCIATES**, Dallas, Tex.	A	$53.2	$0.3	45	0	54	0
33	**FLAD & ASSOCIATES**, Madison, Wis.	AE	$52.1	$1.4	100	0	0	0
34	**HLW INTERNATIONAL**, New York, N.Y.	AE	$51.9	$4.2	100	0	0	0
35	**ELLERBE BECKET**, Minneapolis, Minn.	AEC	$51.0	$4.0	96	0	0	0
36	**KAPLAN/MCLAUGHLIN/DIAZ**, San Francisco, Calif.	A	$50.4	$4.5	100	0	0	0
37	**VERSAR INC.**, Springfield, Va.	AE	$50.0	$-	24	2	2	62
38	**EINHORN YAFFEE PRESCOTT ARCH. & ENG'G PC**, Albany, N.Y.	AE	$49.6	$5.7	100	0	0	0
39	**EWING COLE**, Philadelphia, Pa.	AE	$48.5	$-	86	0	0	14
40	**SASAKI ASSOCIATES INC.**, Watertown, Mass.	A	$48.0	$8.0	100	0	0	0
41	**L. ROBERT KIMBALL & ASSOCIATES INC.**, Ebensburg, Pa.	AE	$47.5	$-	34	0	22	32

work flowing in, glamorous or not. "Even if a client doesn't give us a contract to do a million things up front," explains Gensler's Diane J. Hoskins, AIA, "we can use that relationship to prove to them that we can handle whatever they need." Gensler has national contracts with 100 global accounts. "Those accounts don't have to spend six weeks negotiating contracts and fees each time," she adds.

That focus on keeping the client comfortable can create dilemmas for big firms invested in design excellence. For every award-winning law-firm interior, there may be a hundred discount drugstores where the main design question is what color to make the resilient-tile accents. The age-old notion of architecture as a public art does not seem to surface much in firms dedicated to keeping clients comfortable, and innovative designs or facilities that make a civic statement in a community are on few corporate radar screens. The portfolios of big firms are chock full of office parks that look like every other office park, and shopping malls or hospitals with tacked-on design flourishes cribbed from 10-year-old design magazines.

Zimmer Gunsul Frasca "seeks big projects where design is at the core of client expectations," as managing partner Robert Packard puts it. As head of AIA's Large-Firm Roundtable, he's heard a lot about the "service firm," and he's uncomfortable with it. "Service is what clients should expect from us, nothing less. It should go without saying. Then what they are getting from us is a focus on design, program, and place." From its base in Portland, Oregon, ZGF emphasizes its skill at fitting projects and communities, which, Packard added, allowed his firm to win four of five competitions it entered recently in China. A lot of big-firm clients don't readily speak the architects' language of design, innovation, or civic spirit, however. Leo A Daly's Larry Oltmanns, AIA, says, "What a [corporate-governing] board wants to hear is how the design works better and doesn't cost any more."

Design's troubling fit

Large firms can be defensive about the singular artist who defines architectural culture in the eyes of those outside the field. Architects are too preoccupied by style, several firm leaders argued; the profession doesn't give enough attention to projects that are thoughtful, appropriate, and responsive. The service-driven nature of large

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2005 LARGEST ARCHITECT-LED FIRMS *(continued)*

	FIRMS LISTED BY 2004 REVENUES AS REPORTED BY *ENR* IN ITS TOP 500 DESIGN FIRMS SURVEY	FIRM TYPE	TOTAL REVENUE	INT'L REVENUE	GENERAL BUILDING	MANUF.	TRANSP.	OTHER
42	**BURT HILL KOSAR RITTELMANN ASSOCIATES,** Butler, Pa.	AE	$45.0	$-	100	0	0	0
43	**MAGUIRE GROUP INC.,** Foxborough, Mass.	AEP	$44.9	$1.1	17	0	52	31
44	**MULVANNYG2 ARCHITECTURE,** Bellevue, Wash.	A	$44.3	$7.3	100	0	0	0
45	**POLSHEK PARTNERSHIP ARCHITECTS LLP,** New York, N.Y.	A	$42.1	$-	100	0	0	0
46	**FANNING/HOWEY ASSOCIATES INC.,** Celina, Ohio	AE	$41.6	$-	96	0	1	3
47	**SHW GROUP LLP,** Dallas, Tex.	AE	$41.4	$-	100	0	0	0
48	**LPA INC.,** Irvine, Calif.	A	$41.0	$-	100	0	0	0
49	**NTDSTICHLER ARCHITECTURE,** San Diego, Calif.	AE	$40.0	$-	100	0	0	0
50	**PAGESOUTHERLANDPAGE,** Houston, Tex.	AE	$40.0	$1.4	100	0	0	0
51	**SHEPLEY BULFINCH RICHARDSON AND ABBOTT,** Boston, Mass.	A	$39.7	$1.7	100	0	0	0
52	**CHONG PARTNERS ARCHITECTURE,** San Francisco, Calif.	A	$39.5	$0.5	100	0	0	0
53	**THOMPSON VENTULETT STAINBACK & ASSOCS.,** Atlanta, Ga.	A	$39.5	$1.7	100	0	0	0
54	**GOULD EVANS,** Kansas City, Mo.	A	$39.1	$0.6	100	0	0	0
55	**BSA LIFESTRUCTURES,** Indianapolis, Ind.	AE	$37.8	$-	100	0	0	0
56	**RSP ARCHITECTS,** Minneapolis, Minn.	A	$37.3	$0.4	100	0	0	0
57	**OWP/P,** Chicago, Ill.	AE	$37.2	$0.2	100	0	0	0
58	**PGAL,** Houston, Tex.	AE	$37.0	$-	56	0	44	0
59	**DURRANT,** Dubuque, Iowa	AE	$37.0	$3.0	100	0	0	0
60	**GREENBERG FARROW,** Atlanta, Ga.	AE	$36.0	$-	100	0	0	0
61	**SMALLWOOD REYNOLDS STEWART STEWART,** Atlanta, Ga.	A	$35.9	$6.8	100	0	0	0
62	**PERKOWITZ+RUTH ARCHITECTS,** Long Beach, Calif.	A	$35.0	$0.3	100	0	0	0
63	**JETER COOK & JEPSON ARCHITECTS INC.,** Hartford, Conn.	A	$33.8	$-	100	0	0	0
64	**SWANKE HAYDEN CONNELL ARCHITECTS,** New York, N.Y.	A	$33.1	$15.0	100	0	0	0
65	**FENTRESS BRADBURN ARCHITECTS,** Denver, Colo.	A	$32.8	$0.7	48	0	52	0
66	**RAFAEL VIÑOLY ARCHITECTS PC,** New York, N.Y.	A	$32.5	$2.5	98	0	0	2
67	**VOA ASSOCIATES INC.,** Chicago, Ill.	A	$32.2	$-	100	0	0	0
68	**PBK ARCHITECTS INC.,** Houston, Tex.	AE	$32.1	$-	100	0	0	0
69	**TAIT & ASSOCIATES INC.,** Santa Ana, Calif.	AE	$32.0	$-	47	12	6	34
70	**NILES BOLTON ASSOCIATES INC.,** Atlanta, Ga.	A	$31.7	$0.7	100	0	0	0
71	**URBITRAN GROUP,** New York, N.Y.	AE	$31.0	$-	32	0	68	0
72	**NADEL ARCHITECTS INC.,** Los Angeles, Calif.	A	$31.0	$0.1	100	0	0	0
73	**EDSA,** Fort Lauderdale, Fla.	O	$31.0	$17.0	100	0	0	0
74	**SCHENKELSHULTZ,** Fort Wayne, Ind.	A	$30.9	$0.7	91	0	9	0
75	**BELT COLLINS,** Honolulu, Hawaii	AE	$30.8	$20.6	85	0	5	10
76	**COOPER CARRY,** Atlanta, Ga.	A	$30.3	$-	100	0	0	0
77	**ELKUS MANFREDI ARCHITECTS,** Boston, Mass.	A	$29.5	$-	88	0	0	0
78	**TRO/THE RITCHIE ORGANIZATION,** Newton, Mass.	AE	$29.2	$1.9	100	0	0	0
79	**ARQUITECTONICA,** Miami, Fla.	A	$29.1	$11.0	99	0	1	0
80	**KARLSBERGER COS.,** Columbus, Ohio	A	$29.1	$-	100	0	0	0
81	**EI ASSOCIATES,** Cedar Knolls, N.J.	AE	$28.7	$-	63	16	0	21
82	**PRO2SERVE PROFESSIONAL PROJECT SVCS.,** Oak Ridge, Tenn.	AE	$28.6	$-	0	55	0	32
83	**MBH ARCHITECTS,** Alameda, Calif.	A	$28.6	$-	100	0	0	0
84	**CLARK-NEXSEN PC,** Norfolk, Va.	AE	$28.5	$1.0	73	0	18	9
85	**CUNINGHAM GROUP ARCHITECTURE PA,** Minneapolis, Minn.	A	$28.0	$2.8	100	0	0	0
86	**MARNELL CORRAO ASSOCIATES INC.,** Las Vegas, Nev.	A	$28.0	$-	100	0	0	0
87	**SOLOMON CORDWELL BUENZ & ASSOCIATES INC.,** Chicago, Ill.	A	$27.9	$-	100	0	0	0
88	**BEYER BLINDER BELLE ARCHITECTS & PLNRS.,** New York, N.Y.	A	$27.8	$-	85	0	5	0
89	**WALLACE ROBERTS & TODD LLC,** Philadelphia, Pa.	AP	$27.7	$0.2	45	0	0	0
90	**ALBERT KAHN ASSOCIATES INC.,** Detroit, Mich.	AE	$27.6	$0.3	56	43	0	1
91	**ODELL ASSOCIATES INC.,** Charlotte, N.C.	AE	$27.3	$0.2	94	0	6	0
92	**MORRIS ARCHITECTS,** Houston, Tex.	A	$27.3	$0.1	100	0	0	0
93	**LS3P ASSOCIATES LTD.,** Charleston, S.C.	A	$26.6	$-	100	0	0	0
94	**POGGEMEYER DESIGN GROUP INC.,** Bowling Green, Ohio	AE	$26.1	$-	15	6	27	34

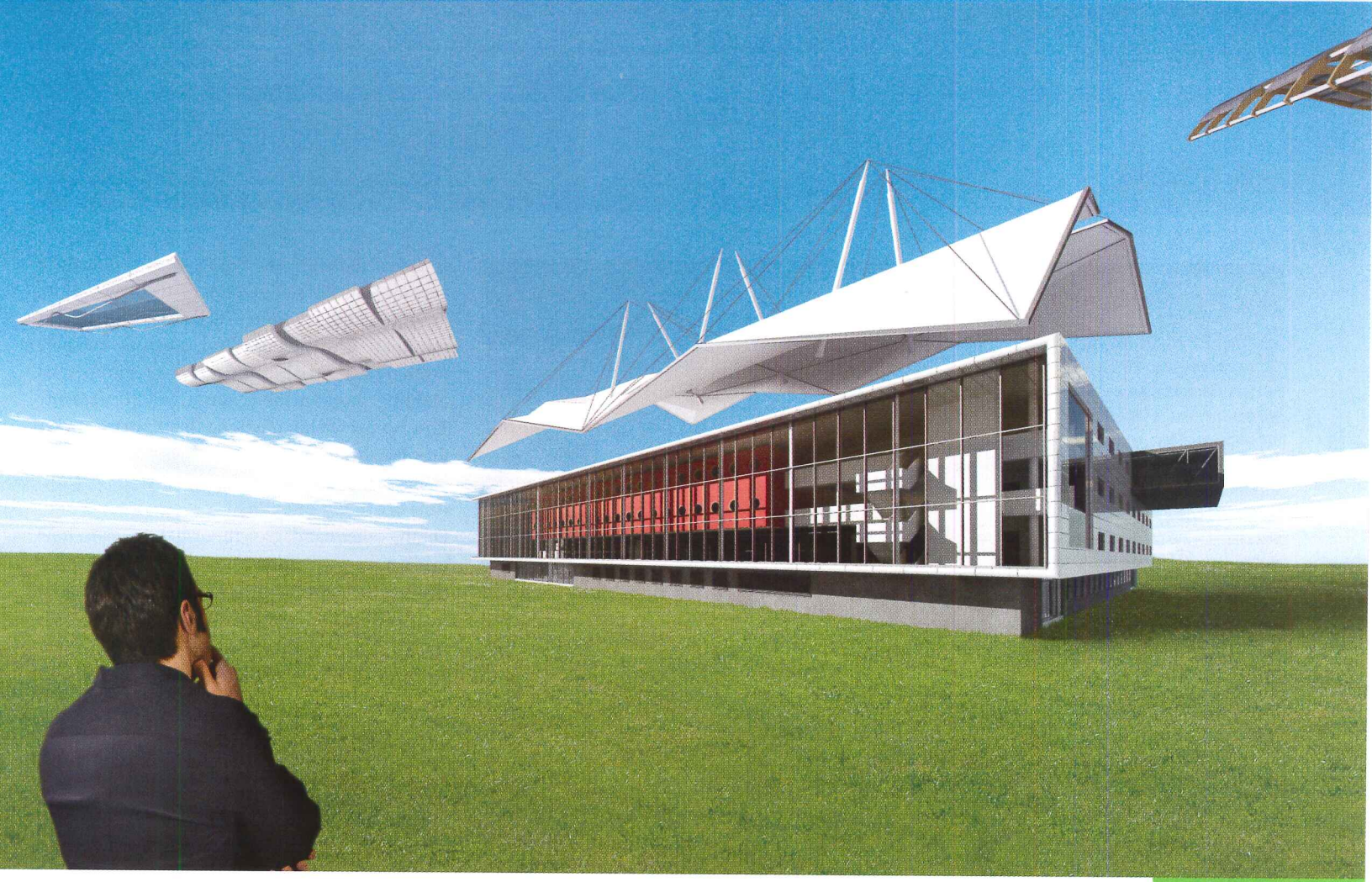
firms and the necessity for collaboration among very large teams leads to what Hammer, of Ghafari, describes as her firm's "low-ego" culture. "It's about the client, not about us," adds Dalluge of Leo A Daley. The large-firm client pool is mostly leery of large firms built around a single designer, like Murphy/Jahn's Helmut Jahn. Most of Jahn's work is overseas.

Design, however, glues big-firm culture together even as the imperatives of bigness—the greater number of people and voices involved—make the commitment to design more difficult to maintain. "There's always a tension between the management side and the design side," explained Bill Helmuth, HOK's director of design. Big firms know that striving for design excellence motivates staff, keeping valued team members interested. Design differentiates firms, especially at a time when the diversity of a firm's work risks diluting its identity. Firms without a design profile find themselves competing on price—where margins are falling, some noted. "Design is the value-added side of the business," says Stubbins' Simpson. "If what you are doing is commodified, and you get two or three cents on the dollar, you have to drive profitability through volume." And then it's all downhill, adds Helmuth, noting that there is always someone ready to do the same work for less, a spiral that also tends to reduce quality.

Large firms nurture design culture in a variety of ways. Skidmore, Owings & Merrill (number 3) publishes a journal on its most intriguing work. Gensler brings in outside experts to judge its internal design competition. ZGF's Packard says his firm is exploring new ways to keep the advantages of a small firm alive in the big-firm/big-project environment. "It's important that every person, from the model shop to the partner, feel a level of attachment comparable to that of a project three or four people might work on."

Truly spectacular or exploratory design remains a rarity among the biggest firms, with the notable exception of Skidmore, Owings & Merrill. For many large firms, design is largely a question of attaching the style to the client, a faux-Gothic wrapping for one, a neo-Modern skin for the next, none of it executed with much conviction. Technical innovation is more common, but too rarely becomes an element of design expression.

Does the service culture of big firms mean that architecture's essential contribution to the culture is being lost? In serving clients largely



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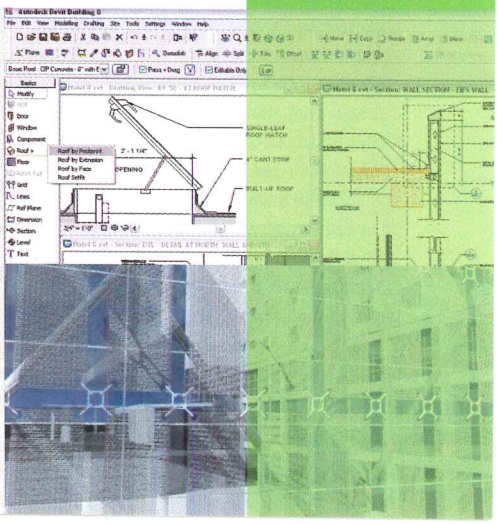

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2005 LARGEST ARCHITECT-LED FIRMS *(continued)*

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95	**BALLINGER,** Philadelphia, Pa.	AE	$26.0	$-	100	0	0	0
96	**H+L ARCHITECTURE,** Denver, Colo.	A	$25.5	$-	100	0	0	0
97	**CTA ARCHITECTS ENGINEERS,** Billings, Mont.	AE	$24.9	$0.1	92	0	0	8
98	**WARE MALCOMB,** Irvine, Calif.	A	$24.8	$-	92	8	0	0
99	**DEKKER/PERICH/SABATINI LTD.,** Albuquerque, N.M.	A	$24.8	$-	100	0	0	0
100	**BERMELLO AJAMIL AND PARTNERS INC.,** Miami, Fla.	AE	$24.3	$2.5	40	0	60	0
101	**MCG ARCHITECTURE,** Pasadena, Calif.	A	$24.0	$-	100	0	0	0
102	**STEFFIAN BRADLEY ARCHITECTS,** Boston, Mass.	A	$23.8	$7.5	100	0	0	0
103	**PAYETTE ASSOCIATES INC.,** Boston, Mass.	A	$23.7	$1.5	100	0	0	0
104	**WATKINS HAMILTON ROSS ARCHITECTS,** Houston, Tex.	A	$23.5	$-	22	0	0	78
105	**MCMAHON GROUP,** Neenah, Wis.	AE	$23.4	$-	24	0	9	67
106	**WIGHT & CO.,** Darien, Ill.	AE	$23.3	$-	79	0	9	13
107	**LIONAKIS BEAUMONT DESIGN GROUP INC.,** Sacramento, Calif.	AE	$23.0	$-	95	0	0	5
108	**JMA ARCHITECTURE STUDIOS,** Las Vegas, Nev.	A	$22.7	$-	100	0	0	0
109	**THE S/L/A/M COLLABORATIVE INC.,** Glastonbury, Conn.	AE	$22.4	$0.9	89	1	1	8
110	**ASTORINO,** Pittsburgh, Pa.	AE	$22.0	$-	100	0	0	0
111	**RNL DESIGN,** Denver, Colo.	AE	$22.0	$1.1	90	0	0	0
112	**HIGHLAND ASSOCIATES LTD.,** Clarks Summit, Pa.	AE	$21.9	$-	93	7	0	0
113	**EPPSTEIN UHEN ARCHITECTS INC.,** Milwaukee, Wis.	A	$21.9	$-	99	1	0	0
114	**TSOI/KOBUS & ASSOCIATES INC.,** Cambridge, Mass.	A	$21.8	$-	100	0	0	0
115	**FIELDS DEVERAUX ARCHS. & ENGINEERS,** Los Angeles, Calif.	AE	$21.7	$0.2	100	0	0	0
116	**USKH INC.,** Anchorage, Alaska	AE	$21.5	$-	49	0	37	14
117	**STEVENS & WILKINSON,** Atlanta, Ga.	AE	$21.3	$-	84	0	13	3
118	**RBB ARCHITECTS INC.,** Los Angeles, Calif.	A	$21.3	$-	100	0	0	0
119	**RDG PLANNING & DESIGN,** Des Moines, Iowa	AP	$21.2	$-	86	1	1	0
120	**BRPH COS. INC.,** Melbourne, Fla.	AE	$21.1	$-	100	0	0	0
121	**BSW INTERNATIONAL INC.,** Tulsa, Okla.	AE	$20.8	$-	100	0	0	0
122	**FLETCHER-THOMPSON INC.,** Shelton, Conn.	AE	$20.8	$-	98	0	0	0
123	**WDG ARCHITECTURE PLLC,** Washington, D.C.	A	$20.7	$-	100	0	0	0
124	**OPUS GROUP,** Minnetonka, Minn.	AE	$20.7	$-	100	0	0	0
125	**SMMA/SYMMES MAINI & MCKEE ASSOCS.,** Cambridge, Mass.	AE	$20.6	$-	98	2	0	0
126	**KKE ARCHITECTS INC.,** Minneapolis, Minn.	A	$20.5	$-	100	0	0	0
127	**GRUZEN SAMTON ARCH., PLNRS. & INT. DESRS.,** New York, N.Y.	A	$20.4	$0.2	90	0	10	0
128	**FKP ARCHITECTS INC.,** Houston, Tex.	A	$20.1	$-	100	0	0	0
129	**JOHNSON FAIN, A CALIFORNIA CORP.,** Los Angeles, Calif.	A	$20.1	$0.2	100	0	0	0
130	**LOONEY RICKS KISS ARCHITECTS INC.,** Memphis, Tenn.	A	$20.1	$-	100	0	0	0
131	**TMP ASSOCIATES INC.,** Bloomfield Hills, Mich.	AE	$20.1	$-	100	0	0	0
132	**DAVIS BRODY BOND LLP,** New York, N.Y.	A	$20.0	$2.4	100	0	0	0
133	**STUDIOS ARCHITECTURE,** San Francisco, Calif.	A	$19.9	$0.2	100	0	0	0
134	**PEI COBB FREED & PARTNERS ARCHITECTS,** New York, N.Y.	A	$19.8	$4.6	100	0	0	0
135	**GPD GROUP,** Akron, Ohio	AE	$19.7	$-	40	0	22	35
136	**URBAHN ARCHITECTS,** New York, N.Y.	A	$19.6	$1.2	69	0	26	0
137	**PAUL STEELMAN DESIGN GROUP,** Las Vegas, Nev.	A	$19.4	$4.0	100	0	0	0
138	**WESTLAKE REED LESKOSKY,** Cleveland, Ohio	AE	$19.3	$-	100	0	0	0
139	**KIRKSEY,** Houston, Tex.	A	$19.1	$-	69	0	0	11
140	**COCHRAN STEPHENSON & DONKERVOET INC.,** Baltimore, Md.	A	$18.9	$-	100	0	0	0
141	**FRCH DESIGN WORLDWIDE,** Cincinnati, Ohio	AP	$18.9	$2.5	100	0	0	0
142	**LANGDON WILSON ARCH. PLNG. INT'RS,** Los Angeles, Calif.	A	$18.7	$4.9	100	0	0	0
143	**LEE, BURKHART, LIU INC.,** Marina del Rey, Calif.	A	$18.3	$-	100	0	0	0
144	**GLATTING JACKSON KERCHER ANGLIN LOPEZ RINEHART,** Orlando, Fla.	AP	$18.0	$1.4	80	0	20	0
145	**TSP,** Sioux Falls, S.D.	AEC	$17.9	$-	96	0	4	0

in terms those clients define, does architecture become only the skillful organizing of a building program and its timely delivery? Can it add meaning? Can architectural amenity enhance ordinary activities? Can a standard commercial building program be made a civic ornament? This is a leadership dilemma that few large practices face head-on.

How big is big enough?

On the other hand, growth—what it means, how to do it—is a question that vexes big firms. Size may matter more than ever as architects try to carve out a viable position within an evolving project-delivery marketplace, dominated by massive engineering-led or contractor-led organizations that have bitten off services architects could offer, like master planning, strategic planning, and program management. Design-build is of special concern because of the way it can sever the architect's direct relationship with the client.

Right now HOK is only 28th on *ENR*'s Top 500 Design Firms list. Its revenues are about one-eighth those of engineering/architect/contractor giant URS, which had revenues of almost $2.85 billion on 2004. "Fundamentally, the large architectural firms are never going to play in the same field as the large engineering firms," says Ed Friedrichs, who once headed Gensler and now is a consultant. Gary J. Tulacz, who compiled and reported on *ENR*'s data, describes large engineering-firm cultures as much more growth-driven, which has to do with the size and complexity of certain projects (water, highways, massive refineries). "A lot of clients simply look to large firms for a sense of security. You don't want to be left high and dry on a big power plant because one firm goes under." Does that mean acquisition of the largest AEs by even larger engineer-led firms? "We hear it day in and day out," says HOK's Hellmuth. "We've been approached by a lot of people," says Friedrichs of Gensler. They're saying no—for now. ■

To participate in *ENR*'s next design-firm survey, contact Virgilio Mendoza at 212/904-6371 (virgilio_mendoza@mcgraw-hill.com).

ENR also publishes sourcebooks that further detail and breakdown its survey information. For more information, go to **www.enr.com/people/sourcebooks/top500Design/default.asp**.

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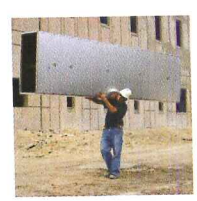

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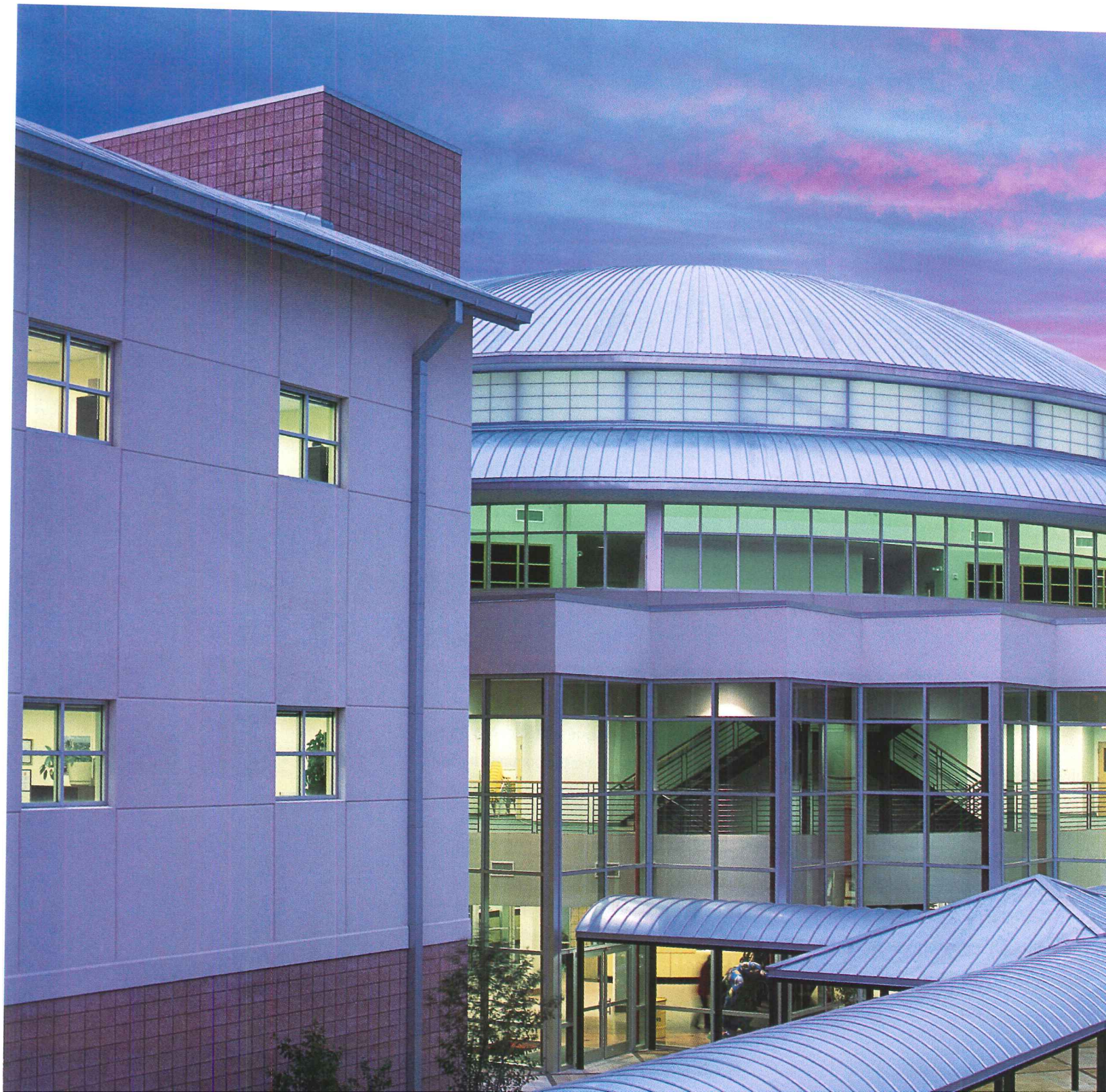
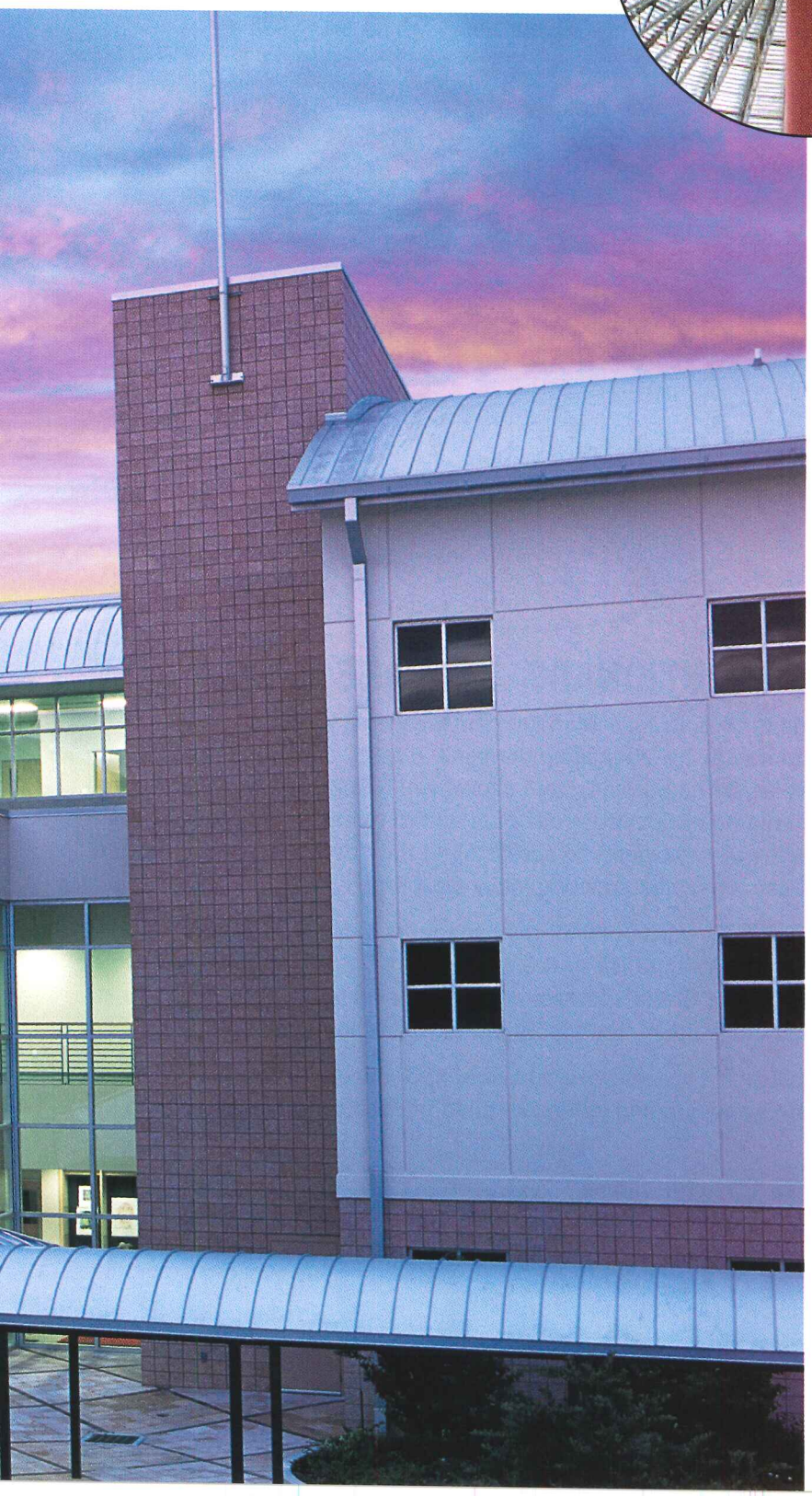
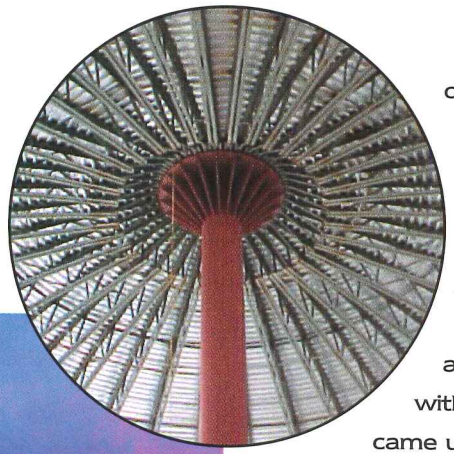
Tampa Prep students can learn a lot about problem solving by studying the school's new dome







Tampa Preparatory School's dream of a geodesic dome for one of its new buildings ran into a problem. The project was cost prohibitive. But problems can lead to opportunities in the hands of talented, dedicated people. So rather than giving up on the idea of a dome, the architect and structural engineer partnered with design engineers from Vulcraft and came up with a solution that's beautiful, highly functional and within budget.

The spectacular dome they created is constructed of arched steel joists and deck that fan out from a center support column. And because of the ultra-precise design, manufacturing and installation of the joists, ceiling panels were able to be cut in advance and simply set in place on top of the bottom chord angles. Attention to detail like that is a sure way to hold down costs. It improves functionality too, because the air space between the panels and the roof decking provides plenty of room for ductwork, wiring and easy accessibility.

The Tampa Prep dome is one of many examples of Vulcraft's desire and ability to do more than manufacture steel joists and deck. We're ready at a moment's notice to partner with architects and engineers in creating successful solutions in design and construction.

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Two by Two

By Robert Ivy, FAIA

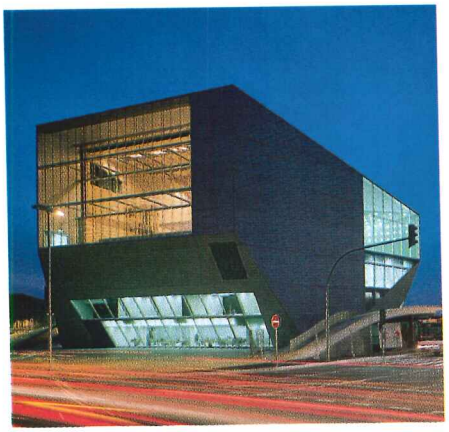
Rarely do we have the opportunity to visit twin architectural projects side by side: Real life seldom affords the luxury. This month, ARCHITECTURAL RECORD provides a unique medium to compare apparent twins—two sets of projects, paired for this issue only. Four similar works, two related by appearance, two by scope, line up herein for scrutiny, allowing speculation and analysis of form, materials, and even their individual raisons d'être.

The first relationship, a visual one, jumps from the page. Herzog & de Meuron's addition to the Walker Art Center in Minneapolis, and Rem Koolhaas/OMA's Casa da Musica in Porto, Portugal, seem cut from the same geometric cloth. With blurred vision, the two projects meld into a seamless presentation, prompting questions of definition. Where does one end and its neighbor begin?

On closer analysis, we see that both architects placed major cultural institutions in urban settings, poising a museum addition (the Walker) and a symphonic performance space (Casa da Musica) within their respective geographies and cultures with architectonic clarity. Each employs a starkly angular, trapezoidal geometry to define and enfold spatial experience. Their apparent similarities mask more subtle distinctions.

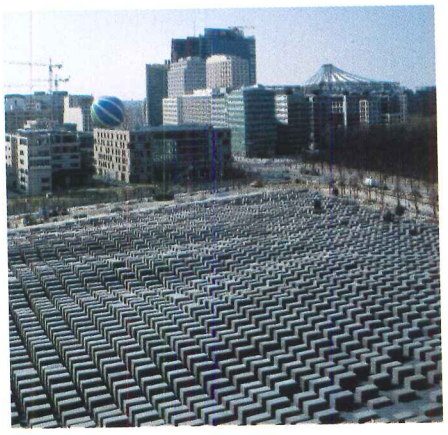
Each architect resolves the very different solutions through plan, section, material, and notably, ornament. Whereas Herzog & de Meuron explore transparency and applied, exaggerated flourishes as a kind of semiotic language, literally wrapping the container with an ironic and literal flourish, Koolhaas and company provide a fresh essay on the presence and mutability of space, signaled through another era's vivid color and materials.

p. 88 *Walker Art Center*



p. 100 *Casa da Musica*

p. 112 *Yad Vashem*



p. 120 *Memorial to the Murdered Jews of Europe*

No such immediate similarities link this issue's second architectural pairing, but the reasons for inclusion are just as strong. Contrast, not analogy, offers the most helpful analytical tool for their examination. While Yad Vashem in Jerusalem, designed by Moshe Safdie, and the Memorial to the Murdered Jews of Europe in Berlin, by Peter Eisenman, both memorialize the Holocaust, each approaches the problem in different ways.

Both engage topography, leading visitors through a variety of kinesthetic and sensory experiences. In Berlin's case, the abstracted, sculptural field gains power through repetition and number, its subliminal language expressed through hundreds of steles, flung at the heart of Berlin like an unspoken indictment. In Jerusalem, the architect directly incised a sculptural form like a gash into a hillside, providing a partially buried setting for reflection and remembrance. Neither looks like the other.

In all four cases, form and materials constitute the means to enriching larger cultural settings, each speaking silently to visitors as clearly as if in a known, civilized language.

PHOTOGRAPHY: © TIMOTHY HURSLEY (TOP RIGHT); ROLAND HALBE (BOTTOM RIGHT)

The architects extended the existing building uphill alongside Hennepin Avenue, a major traffic artery (this page and opposite, top). The expansion consists of four boxlike volumes that play against the city's downtown skyline (opposite, bottom).

Herzog & de Meuron expand Minneapolis's WALKER ART CENTER with quirky new volumes spun from the original building's tight spiral

By Sarah Amelar

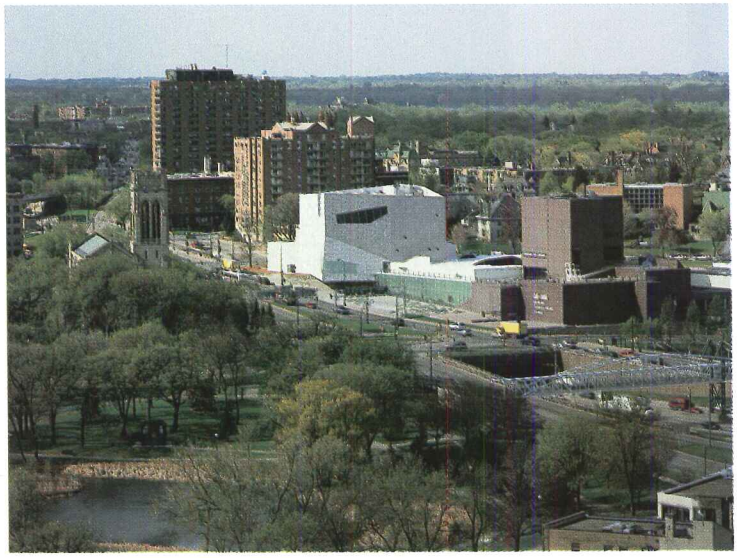
With chunky massing and silvery, lightly crumpled aluminum cladding, Herzog & de Meuron's Walker Art Center expansion hovers over the sidewalk: a striking counterpoint to its adjoining neighbor, the center's original, decisively grounded, brick-clad structure, by Edward Larrabee Barnes. On its own, the 1971 Barnes building offered little space for public mingling outside its tranquil succession of pure, white, rectilinear galleries stepping up in a spiral. With few windows and a solidly opaque exterior, it remained architecturally quiet and self-contained. Yet as an institution, the Walker evolved into an exceptionally animated place, known for its risk-taking and discoveries of new talent. In 1988, the museum first pushed outward, creating a sculpture garden on its own grounds. But now, with Herzog & de Meuron's recent $70 million expansion—doubling the total interior space from 130,000 to 260,000 square feet—the container has begun to uncoil its tight spiral.

As if tossed out by centripetal force, a series of four skewed, box-like structures, embedded in a broad glassy passageway, now extend up the hill from the Barnes building. The series culminates in the tallest volume—the bulky block of ice—rising five stories and housing the art center's new theater, restaurant, and event space.

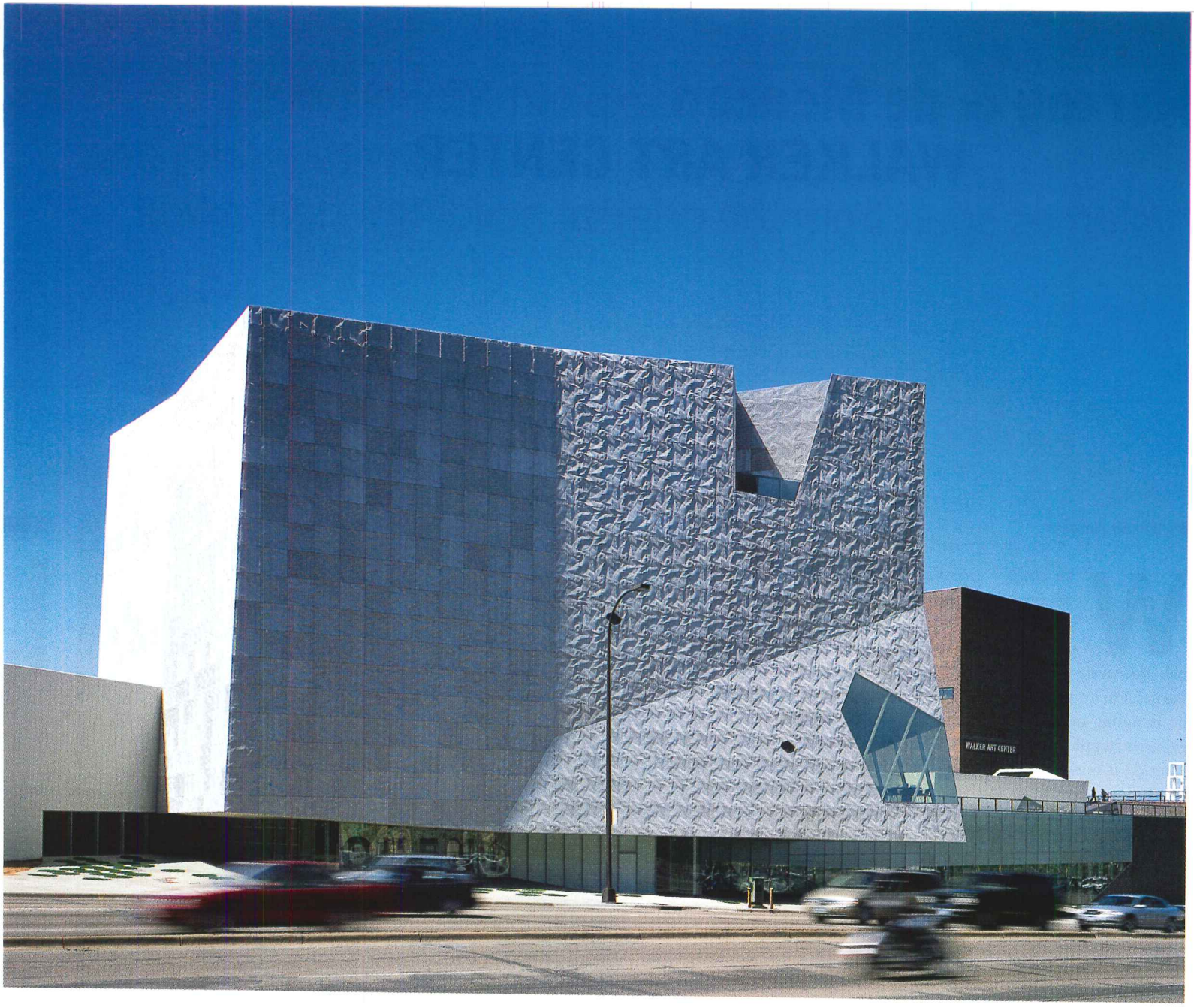
"We knew we wanted to end up with one building—not two parts," recalls Walker director Kathy Halbreich. "But it was essential for us to engage a practice that would respect the Barnes without being cowed by it." Instead of mirroring, engulfing, or grafting onto the original building, the Herzog & de Meuron scheme offers the new and the old as an almost casually strewn collection of eclectic yet related objects (all connected by the glass passageway). In spinning off from the Barnes building, the new volumes take the original notions of geometry and surface into a whole other realm.

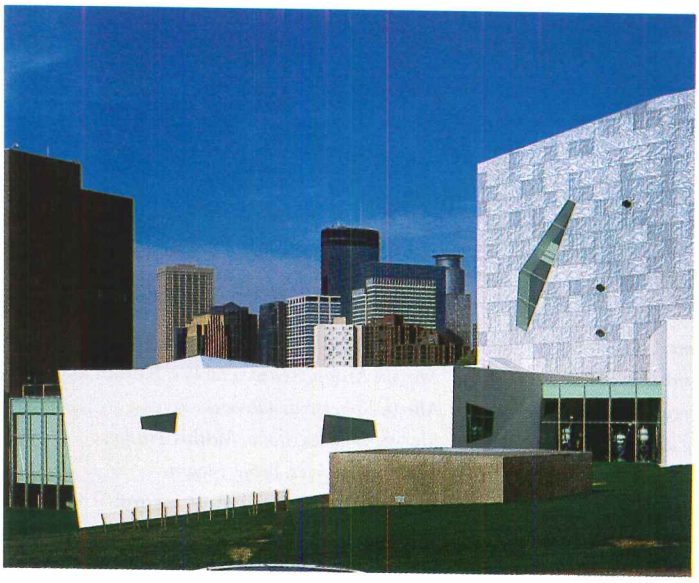
Now allusions to crystal and lace (as well as other fabric) run through the extension, starting with the five-story component—faceted and trapezoidal like a huge ice cube—and the crumpled aluminum mesh that wraps it. Though akin to the existing structure in scale and proportion, the theater box literally bulges from the orthogonal, playfully distorting its cubic form. Two quirky, extra-large polygonal windows—with tilted shapes implicitly resulting from the volumetric distortion—punctuate this bulky yet gravity-defying volume, aloft on a 50-foot-long cantilever.

Galleries occupy two of the other new boxes, and the loading dock a third one. Lounges, lobbies, and circulation areas with views to a traffic artery and the downtown skyline fill the surrounding glass-enclosed spaces.

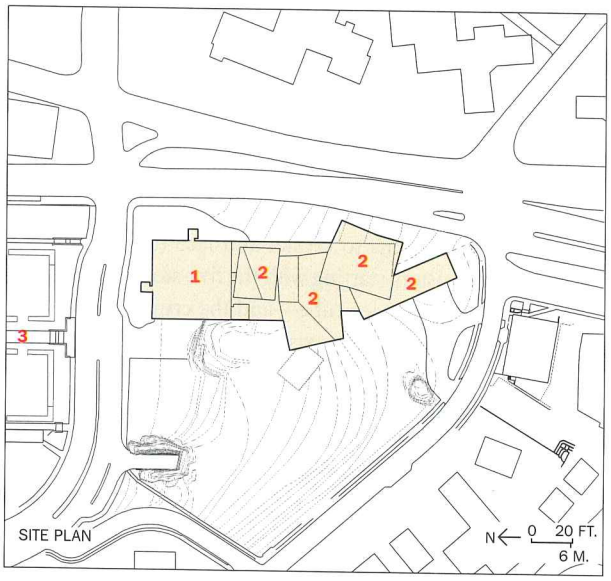


Project: *Walker Art Center Expansion, Minneapolis*
Architect: *Herzog & de Meuron—Jacques Herzog and Pierre de Meuron, principals; Christine Binswanger, partner in charge; Thomas Gluck, project manager; Nandini Bagchee, Carlos Bautista, Andrzej Egli, Raphael Forny, Nahyun Hwang, Adrian Kast, Martin Krapp, Rebecca Lowry, Florian Marti, Roberto de Oliveira, Peter Sigrist, Charles Stone, Mathis Tinner, Thomas de Vries, project team*
Architect and engineer of record: *Hammel, Green and Abrahamson—Dan Avchen, partner*





An expanded aluminum mesh that changes appearance with the light (this spread) clads the largest new volume, which houses a restaurant, theater, and event space.

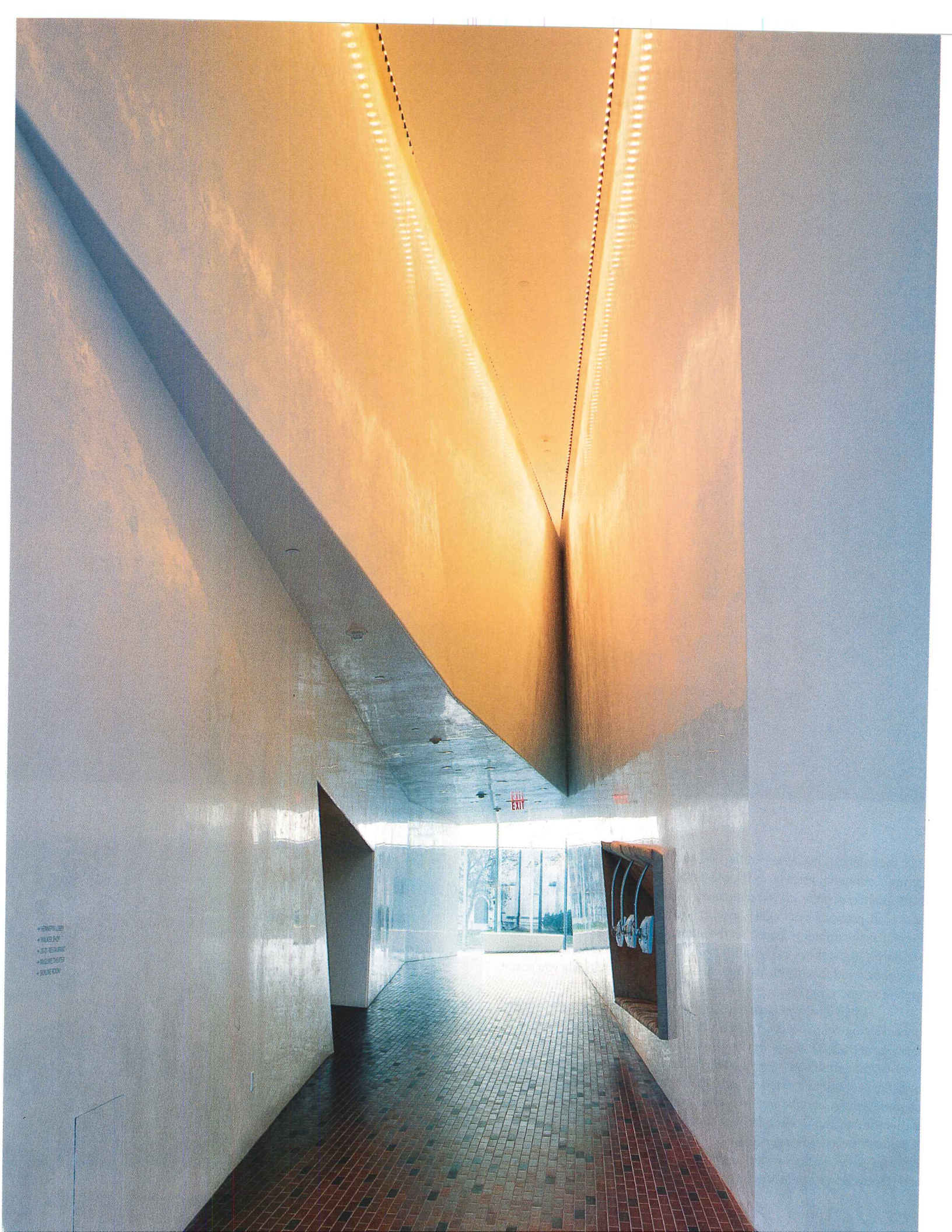


1. *Existing Barnes building*
2. *Herzog & de Meuron addition*
3. *Sculpture garden*

Grass circles, surfacing amid pavers like stepping stones in a stream, lead to the entrance along Hennepin Avenue. The theater/restaurant volume, with the museum shop at its base, cantilevers 50 feet over the sidewalk (this page).

As if the architects had extended the Barnes cladding and rolled it out as carpeting, a runner of brick leads the way through the broad public corridors. Here, mobiles evoking crystal chandeliers drip with chunks of broken glass, and small, prismatic vestibules—with lace-patterned air-intake grilles—lead into the new exhibition spaces. Yet the interiors of these galleries deliver the real surprise: the shock of the old. All-white walls, terrazzo floors, and ceilings ribbed with beams invoke déjà vu all over again. Suddenly you're not quite sure where you are: in the existing building or not?

By giving the new galleries an uncanny resemblance to the original ones, Herzog & de Meuron further mix the additions into the eclectic melange of parts. Distinctions between the museum's recent and earlier sections become simultaneously blurred and accentuated. Parallel steel beams over the new exhibition spaces echo the rhythms of the original galleries' concrete ceilings, and the architects even amplified the Barnes spiral by turning its administrative offices into yet another gallery, taller than the originals but otherwise a dead ringer for them. "The thinking was: Why reinvent the typology when Barnes's white-cube galleries already functioned so well for art?" recalls Herzog & de Meuron project manager Thomas Gluck.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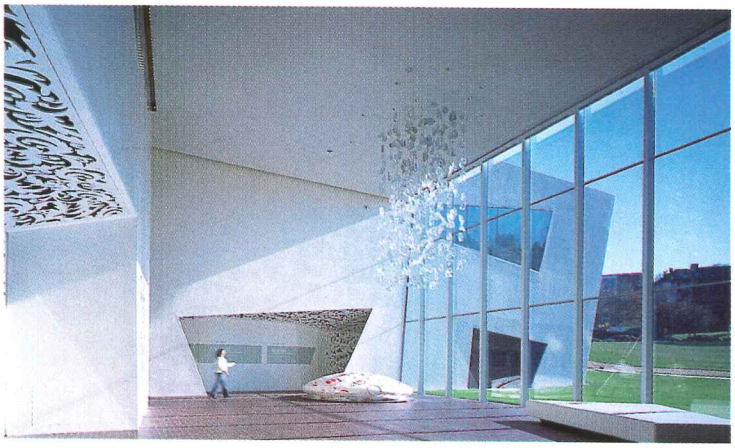
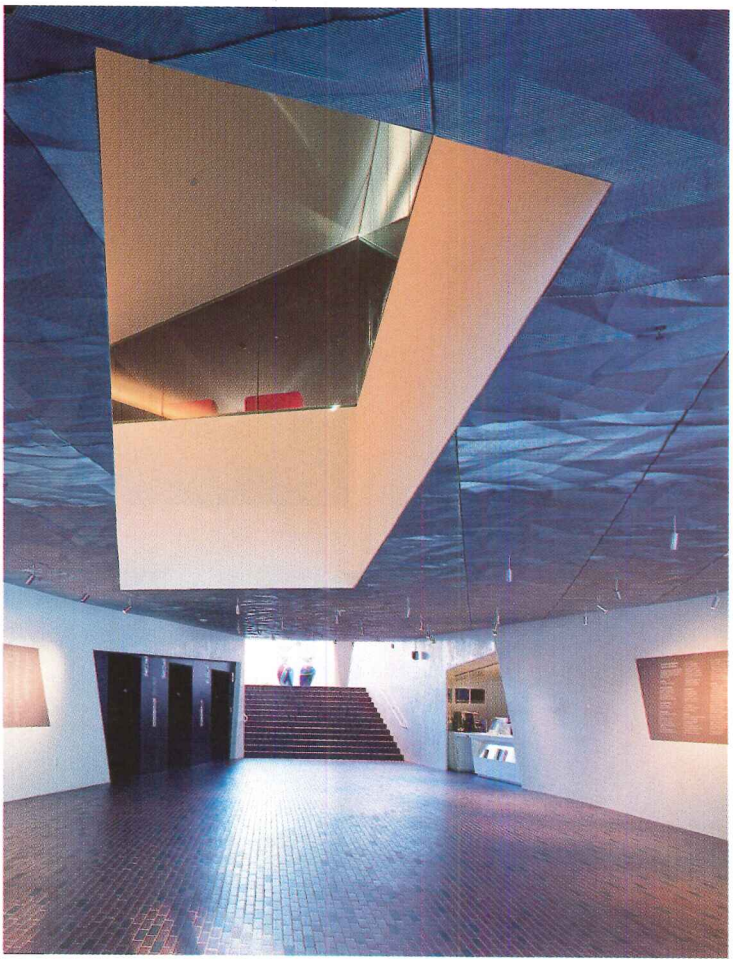




A runner of brick, like the original exterior cladding, leads through the public circulation zone, defining an interior streetscape around gallery "boxes," finished in polished plaster (this page and opposite). Lacy air-intake grilles line prismatic vestibules outside the galleries (left two).

But ironically, the Barnes version of exhibition spaces was more open than the new one. Though the tight spiral is undeniably introverted, it actually opens up within itself, animating its galleries with expansively oblique views into one another vertically and horizontally. The spin-offs, by contrast, comprise much more enclosed and discrete boxes (although those very characteristics may make them easier places to mount shows).

The small prismatic vestibules leading from the public spaces, bedecked with crystals and lace, seem necessary as recompression (or decompression) chambers to mediate between the dual realms of public circulation and the more formal galleries that provide a neutral backdrop for the art. "In some museums—as in MoMA [RECORD, January 2005, page 94] or Barnes's building here—white neutrality continues all the way through, whether it's a space for exhibiting art or for something more social," says Herzog & de Meuron partner Christine Binswanger. "But we were interested in a specificity that would relate to different functions: extra-white for the art galleries, extra-theatrical for the theater, and a non-museum ambience—something more human, eccentric, and comfortable, like a town square—for circulation and gathering."

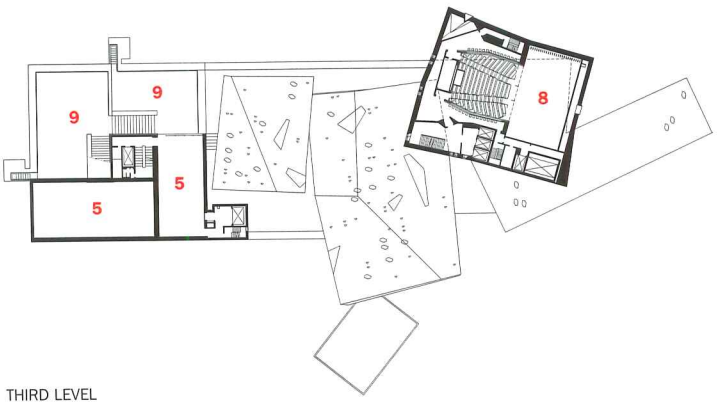
Breaking with the museum canon, the new nongallery spaces reveal a curious attitude toward the ornate. The swirling paisley that weaves through these areas recalls a lacy edge of lingerie coquettishly emerging along a plunging neckline and the sensual folds of a skirt. As the textile pattern appears, disappears, and then reappears in the building, it transforms itself, becoming not only the tracery that vents and hides ducts in the gallery vestibules, but also the embossed, blackened aluminum mesh that lines the theater like wild, 3D upholstery.

The concept of textiles as a wrapper was so integral to this project that the architects seriously considered sheathing the five-story mass in a stretchy, white Teflon membrane. But perhaps too literal in its interpretation of cloth (and therefore too architecturally imprecise in its detailing), that variation of the scheme was ultimately cast off in favor of the expanded-aluminum-mesh panels—evoking crushed silk or lightly crumpled origami paper—that cover the steel-frame structure. The same raw material, the metal mesh, that the architects used here reappears in a very different incarnation in the theater. But why allude to fabric at all (or even more explicitly, swathe a building in it)? And why introduce

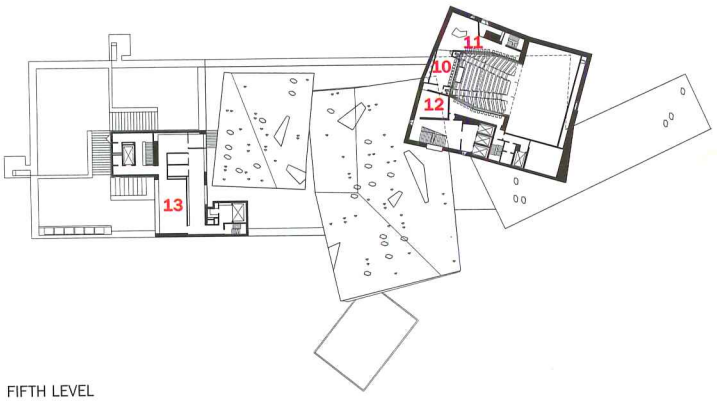
The museum shop (right), with a ceiling of lightly crumpled aluminum mesh echoing the exterior, stands at street level, below the restaurant. At the opposite end of the extension's brick-paved thoroughfare (below), steps lead up into the original Barnes building, which Herzog & de Meuron renovated.

PHOTOGRAPHY: © FLOTO + WARNER (THIS PAGE, OPPOSITE, AND THE FOLLOWING SPREAD)

The new galleries (right), like the original ones, are all white with terrazzo floors and parallel ceiling beams. Whereas Barnes chose concrete beams, Herzog & de Meuron used steel members, alternating with conduits. The airflow system for the new galleries also involves the intake vents, hidden behind tracery in the vestibules.

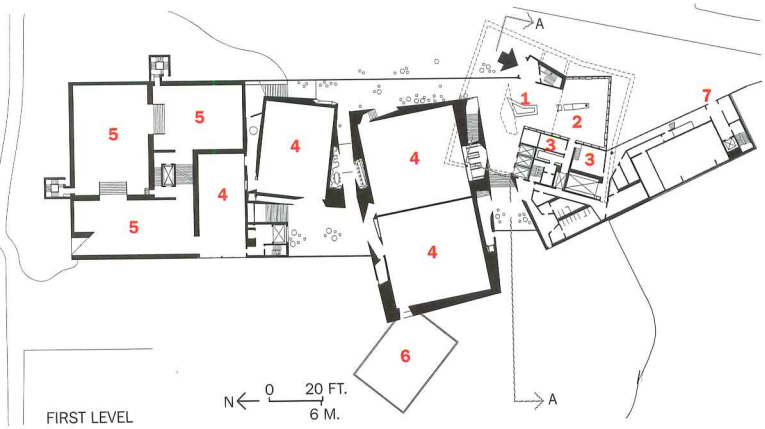


THIRD LEVEL

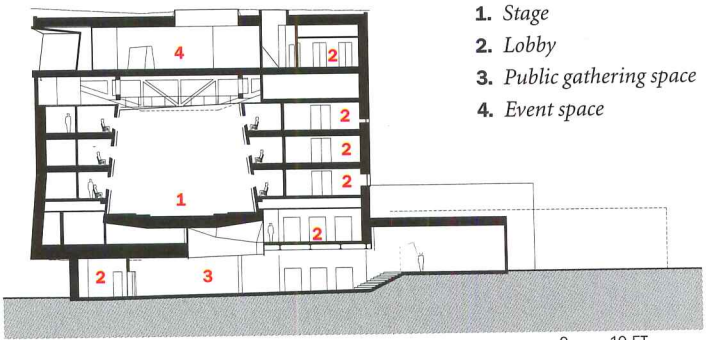


FIFTH LEVEL

1. *Ticketing*
2. *Museum shop*
3. *Shop support*
4. *New gallery*
5. *Existing gallery*
6. *Garden pavilion/ outdoor gallery*
7. *Entry from parking*
8. *Theater*
9. *Terrace*
10. *Mediateque*
11. *Mediateque lounge*
12. *Mediateque gallery*
13. *Conference*



FIRST LEVEL



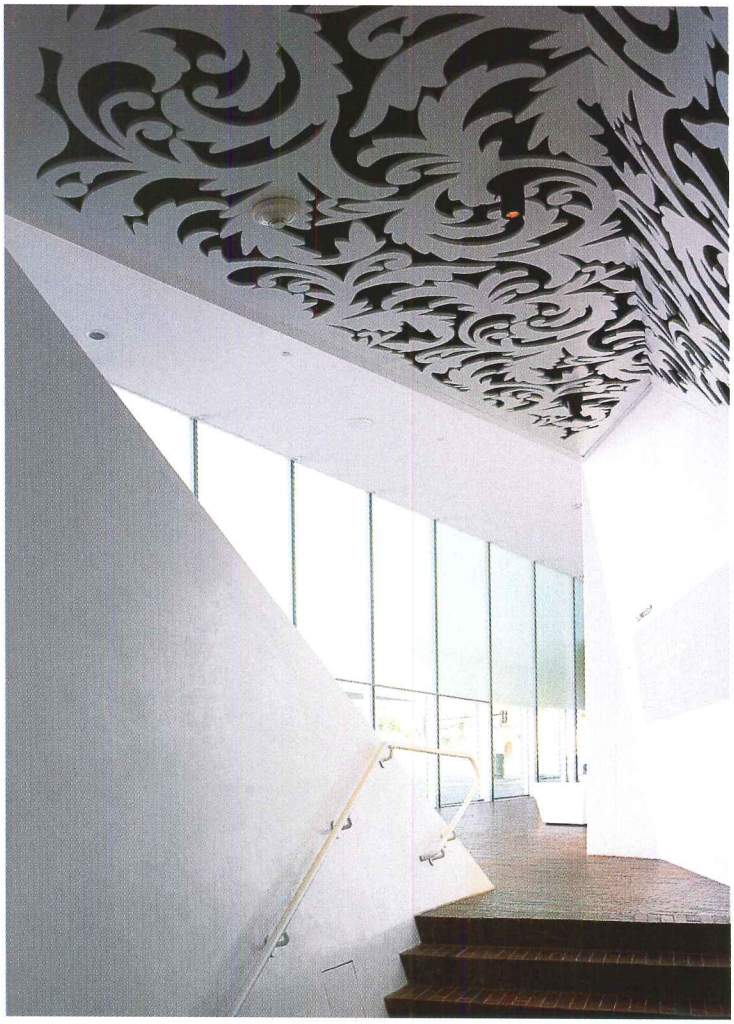
SECTION A-A

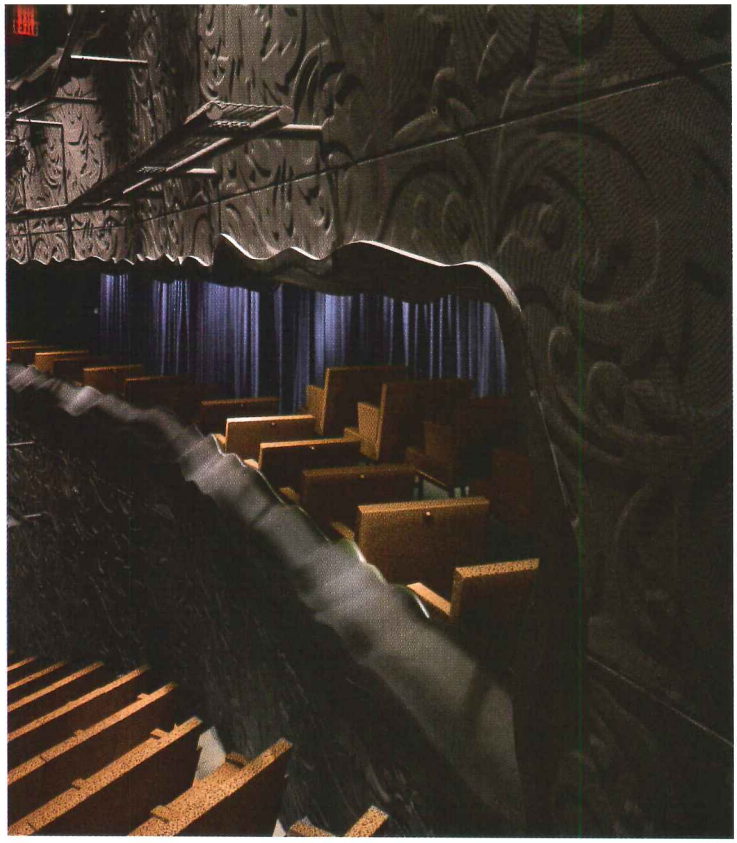
1. *Stage*
2. *Lobby*
3. *Public gathering space*
4. *Event space*

EXIT

In this high-ceilinged new gallery, filling the boxlike volume closest to the Barnes building, the architects inserted an oversize swatch of lacy grille-work as a wall panel. This element brings in daylight—reflected on the polished terrazzo floor—while appearing almost like a piece of artwork on the wall.

Prismatic passageways offer transitions between wide open spaces and more compressed areas, allowing visitors to adjust their eyes as they leave the sun-washed public zone (below). The restaurant overlooks the city (right bottom).





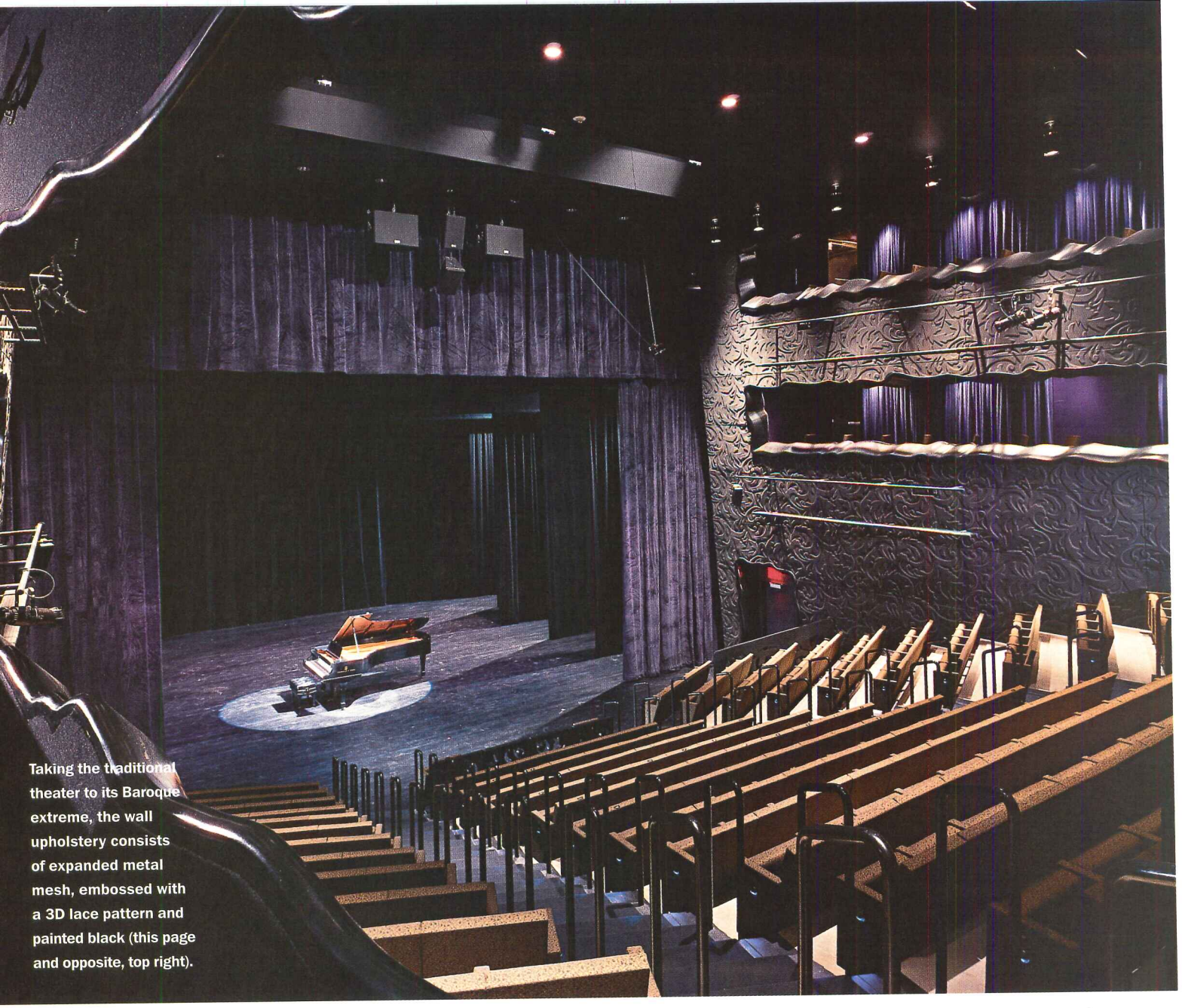
swatches of such voluptuous, almost Baroque patterning?

As Halbreich tells it, the architects were after more of a traditional La Scala–type theater than a black box. And, she says, "the original idea was to wrap its interior in organza, like a curtain, but that wasn't working. Then one day, [Herzog & de Meuron partner] Harry Guger said to Jacques [Herzog], 'Think lace underwear'—and so, they blew up an actual piece of lace until it became an abstract, funny diagram of itself." She likens the process to "the way art, including recent work at the Walker, is often made these days—somewhere between the natural and the man-made. Early on, someone was inspired by nature, then there was a mechanically produced iteration, and later it was manipulated virtually."

The notion of a fabric wrapper is also intimately tied in with the evolution of Herzog & de Meuron's work—and consequently a strong reason why the firm won this commission. "We were looking for an architect with an imaginative engagement with transparency," Halbreich says. "The Barnes building is such a hermetic, Minimalist sculpture that it was time for the institution to become more porous—more open physically and visually to the city." Though Herzog & de Meuron has not always focused on transparency or openness per se, the practice had a long history of dematerializing exterior walls—often in unexpected ways.

Even when partners Jacques Herzog and Pierre de Meuron have given earlier buildings an outer shell of glass, it has been a far cry from any conventional glass curtain wall. In the past, the team has silk-screened its glazing with such patterns as dot grids or the repetition of a single photographed leaf and—contrary to standard usage—layered the glass over opaque materials. As a result, the work has simultaneously offered and denied the specter of complete transparency, or near disappearance of the wall, as in the Rossetti Hospital Pharmacy [RECORD, August 1999, page 88]. Such composite walls, creating a moiré effect with patterning while leaving a visible and fairly deep air space between the layers, paradoxically evoke both substantial thickness and an ethereal quality.

Exploring a range of materials, the architects gave REHAB [RECORD, June 2005, page 116] an exterior veil formed by a fine brise-soleil of wood poles. And at the Dominus Winery, they built an exterior wall by simply piling rocks in steel gabions, or cages, with air instead of mortar between the stones, suggesting both the presence and absence of solidity—



Taking the traditional theater to its Baroque extreme, the wall upholstery consists of expanded metal mesh, embossed with a 3D lace pattern and painted black (this page and opposite, top right).

a weightiness coupled with a surprising lack of material substance.

At the Walker, as at Dominus and REHAB, the porous outer sheath is not the actual rain shield, but a layer analogous to clothing draped over our skin. (It seems tempting to ascribe this approach in some way to the fact that Jacques Herzog is the son of a seamstress—or to the ideas of 19th-century theorist and architect Gottfried Semper. Often cited by scholars of Herzog & de Meuron's work, he defined textile wall coverings or screens as a fundamental element of architecture, essential to defining space.)

The Walker's expanded metal mesh, fabricated by cutting slits in sheet metal without any loss of material (unlike the perforation process), provides a stretchy, deformable, netlike, and utilitarian grate (used for steps and wastebaskets) that Herzog & de Meuron, in its signature approach, has applied in a novel way. Each panel forms an 8-inch-deep, six-sided mesh block that under optimal light conditions creates shimmery moiré effects.

But much as the mesh changes appearance with the light and the cube remains both hefty and floating, the skin does not seem to dematerialize quite enough. It stops short of lending the bulky volume that exquisitely ghostly fluctuation between material presence and near vanishing that characterizes much of Herzog & de Meuron's work. Though the building may suggest an exaggerated ice cube in form, its surface lacks ice's elusive depth.

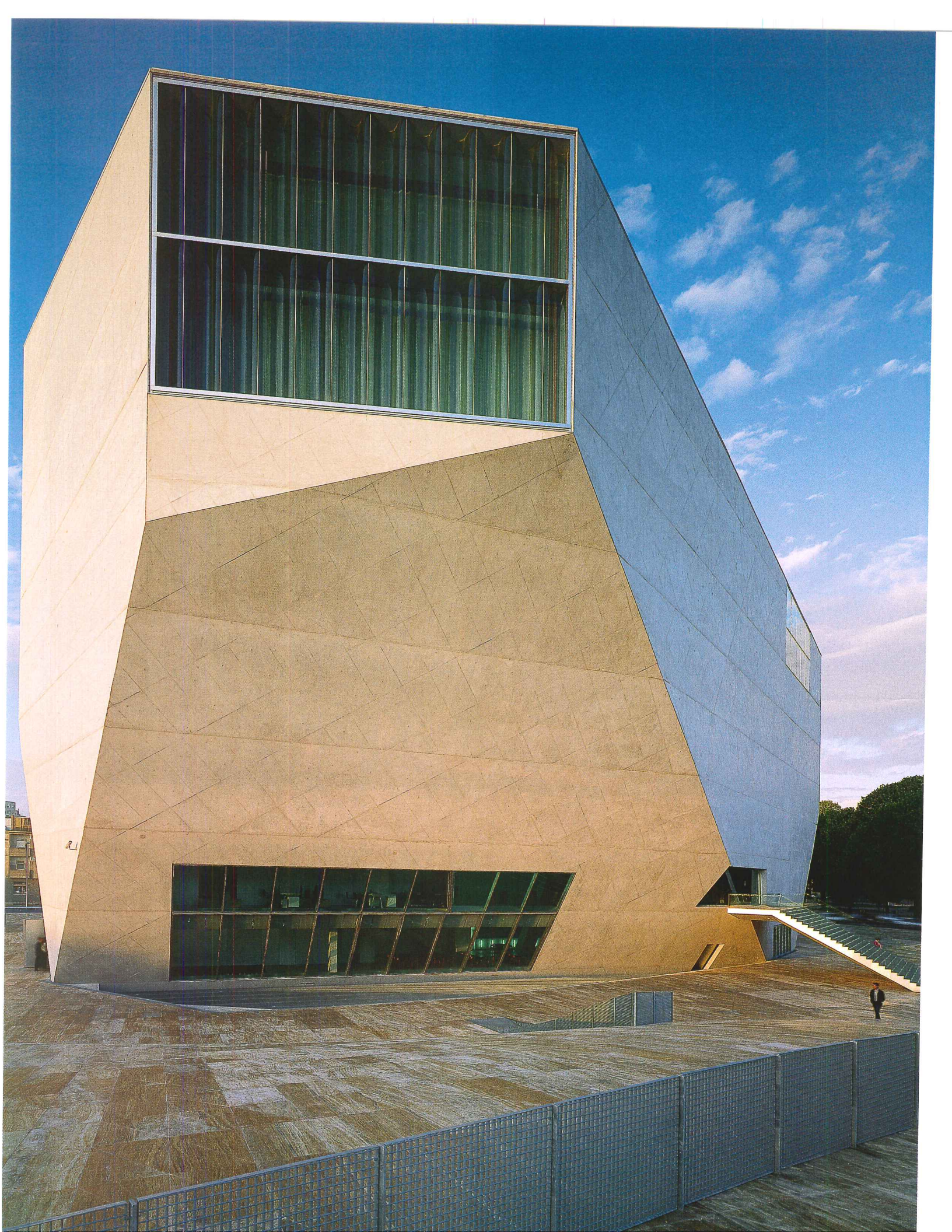
But the building succeeds in many other ways. In a remarkable feat of circulation, it splices together the old and new masterfully. With a spirit of playfulness unprecedented in the Barnes structure, the extension engages the city. The seemingly quirky window shapes actually frame specific views of downtown, while the glass corridor on street level connects the museum visually with the traffic artery of Hennepin Avenue.

While the new exhibition spaces provide the comfort of familiarity, they also embody a certain perversity, even a letdown. When you approach the prismatic silvery form from the street, you expect the galleries to provide a culmination of the architectonic qualities of the spaces surrounding them. But instead of arriving at a Caligariesque experience—or at least the nondistracting essence of it—you're suddenly back home again. ■

Sources

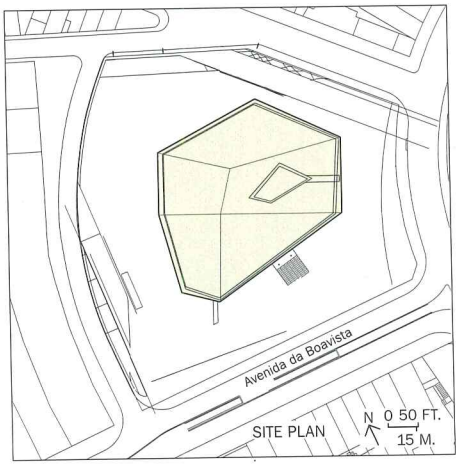
Expanded aluminum mesh: *Lilja (custom stamped panels)*

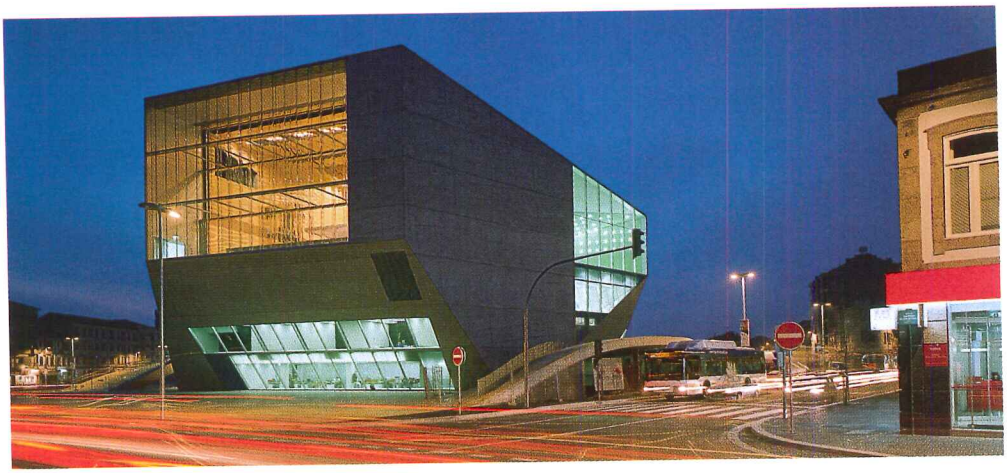
For more information on this project, go to Projects at **www.architecturalrecord.com**.



Rem **Koolhaas/OMA** challenges old notions of what a concert hall should be in the sculptural **CASA DA MUSICA** in Porto, Portugal

The building faces Boavista Park on one side (right) and the urban fabric of the city on the other sides (bottom right and site plan, below). It sits on a stone plaza (opposite).





By David Cohn

Like an ungainly barge or lopsided spaceship, the abstract sculptural form of Rem Koolhaas's Casa da Musica has made a splashy landing in Porto, Portugal's second-largest city, overturning conventional ideas of concert-hall decorum with the Dutch architects' characteristically edgy sense of style. Designed to attract audiences of many different musical persuasions—from acid jazz and samba to classical symphonies—the project aims to be an international landmark that gives Porto a boost amid Portugal's current economic malaise.

Posed in its own plaza beside a circular park that interrupts a grand avenue connecting the old city to the nearby Atlantic, the Casa da Musica starts upsetting conventions at the front door, offering a new take on the art of making a dramatic entrance. Located midway up the building's hull-like volume, at the top of a theatrically backlit stair with balustrades of frameless glass, the entry is a glass slot tilted at a rakish 45 degrees that slides open to let concertgoers inside. In the warped space of the hull, twisting runs of stairs and decks climb the outward-leaning walls past soaring angled structural elements to the concert hall, the building's calm center. Inside the hall, large windows at either end bring in views of the sky before the music begins. Glazed openings let the audience see into brashly colored secondary spaces that are hung around the concert hall like

David Cohn is RECORD*'s international correspondent based in Madrid and the author of* Young Spanish Architects *(Birkhauser, 2000).*

Project: *Casa da Musica, Porto, Portugal*
Owner: *Casa da Musica*
Architect: *Office for Metropolitan Architecture—Rem Koolhaas, Ellen van Loon, partners in charge*
Associate architect: *ANC Architects—Jorge Carvalho, partner*
Engineers: *Arup; AFA*
Consultants: *Ducks Scéno (lighting); TNO and Dorsser Blesgraaf (acoustical); ABT and Arup (facade); Inside-Outside (curtains); OHM/Gerisco (codes)*
General contractor: *Somaque/Mesquita*

PHOTOGRAPHY: © CHRISTIAN RICHTERS

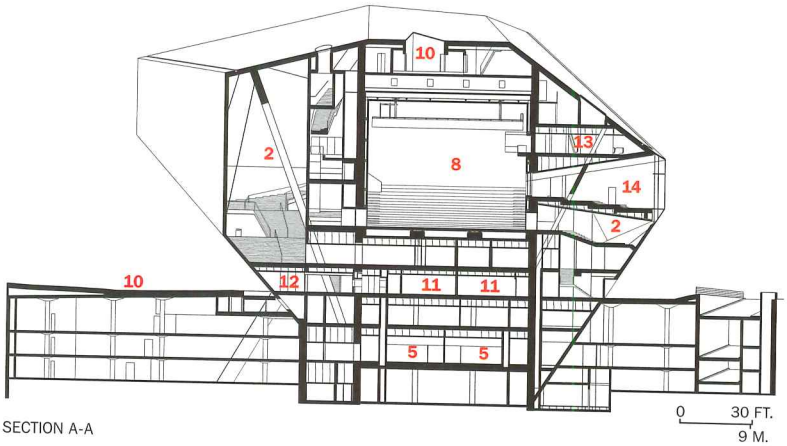
saddlebags and poke out of the exterior skin in unexpected places.

The Casa da Musica was meant to be the star attraction of Porto's year as European Cultural Capital in 2001, but planning began too late to meet this deadline. Koolhaas won a hurried competition in 1999, in which Dominique Perrault and Rafael Viñoly were the only other firms who met the rush to submit proposals. Construction then lagged through three city governments and five Casa da Musica directors, and the center opened in April. It serves as home for the National Orchestra of Porto and includes special features—a cyber-music workshop, an educational theater for schoolchildren, and a highly flexible chamber music hall—designed to reach diverse audiences.

The building stands on the site of a former trolley yard, facing Boavista Park in a transitional neighborhood of 19th-century houses and large new buildings. Breaking the street wall to create a sculptural object in a plaza was a quick way, according to Koolhaas, to "resolve issues of symbolism, visibility, and access in a single gesture." The plaza, paved in a rusty Jordanian travertine, rises up at two corners for the entries to the underground parking and provides space for a future café and kiosk meant to encourage street life; its roiling curves are a rollerblader's delight.

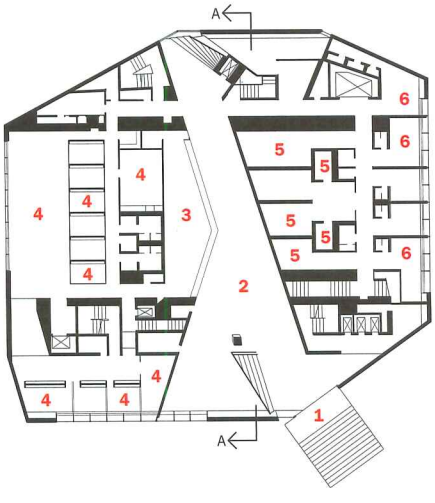
Isabel da Silva, head of OMA's Porto office, confirms the story

1. *Foyer*
2. *Ticket office*
3. *Office*
4. *Rehearsal*
5. *Soloist room*
6. *Bar*
7. *Auditorium*
8. *Restaurant*
9. *Terrace*
10. *Dressing room*
11. *Musicians' canteen*
12. *Education*
13. *Cyber music*



SECTION A-A

Visitors enter the building by climbing a grand stair (opposite) that is backlit at night. Though at first it looks like an alien presence, the concert hall refers to the work of Siza in its concrete shell and angled forms (above).



FIRST FLOOR

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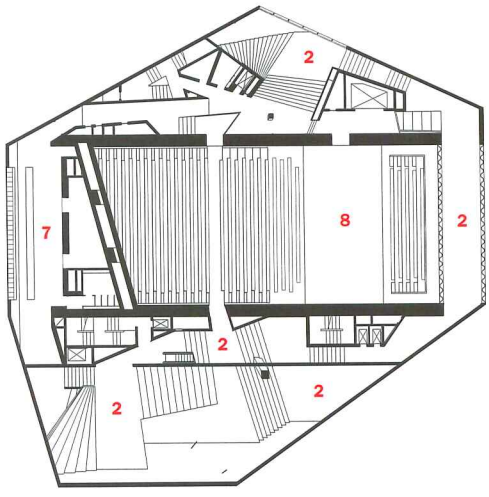
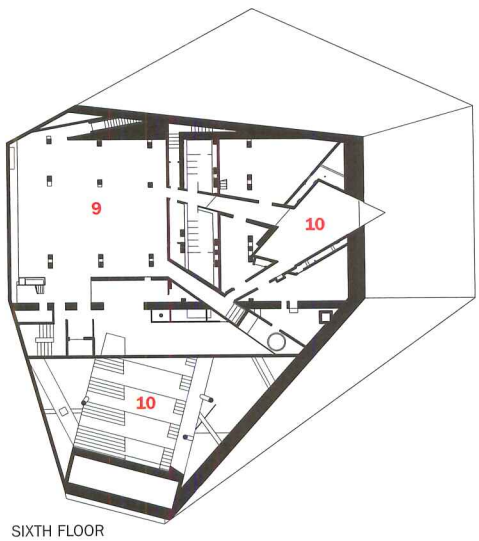
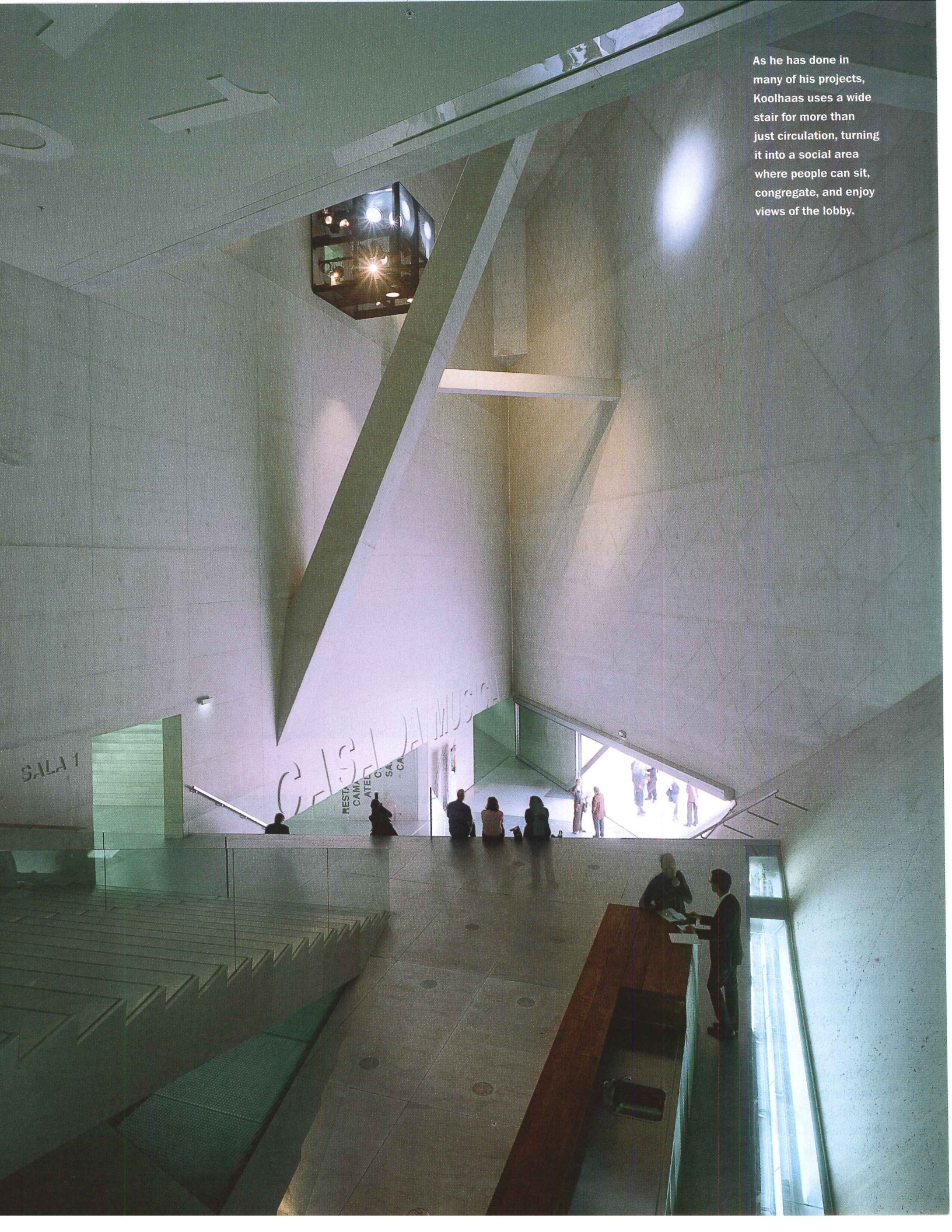


THIRD FLOOR



SIXTH FLOOR

Some of the most dramatic elements are the circulation spaces woven between the auditorium and the canted structural envelope. Lighting gives these spaces a cinematic feel.



As he has done in many of his projects, Koolhaas uses a wide stair for more than just circulation, turning it into a social area where people can sit, congregate, and enjoy views of the lobby.

that the competition scheme was a blown-up version of an unrealized design for a private house in Rotterdam where "the client wanted to separate male and female zones around a common central room." This concept worked for the Porto program as a way of creating separate areas for the public and the musicians and bringing them together in the concert hall. It also served Koolhaas's goal of breaking open the traditionally closed concert-hall box to the activity around it and the city outside.

The main auditorium is at the heart of the scheme, its windows aligned to the east and west, parallel to the axis of the main avenue outside. Other key elements—such as a red-stained chamber music hall at the top of the building, a VIP room lined in a Pop collage of hand-painted Portuguese tiles, a children's workshop decked out with purple walls, and a green cyber-music room—occupy spaces that sit on either side of the auditorium.

These secondary elements echo the schematic idea of the concert hall itself—working as spatial slots, glazed at each end and tunneling through the mass of the building at different angles. Conceptually, they are spaces that have been eroded from the mass of the building, like the key programmatic elements in Koolhaas's competition entry for the National Library of France. But in Porto, the architect wrapped this spatial collage in

As visitors move through the building, the architecture offers them changing views of the city and surrounding neighborhoods (above) and slices of the building's interior (right).

Sandwiched between planes of corrugated glass, a foyer off of the main auditorium provides visual connections between the building and its surroundings.

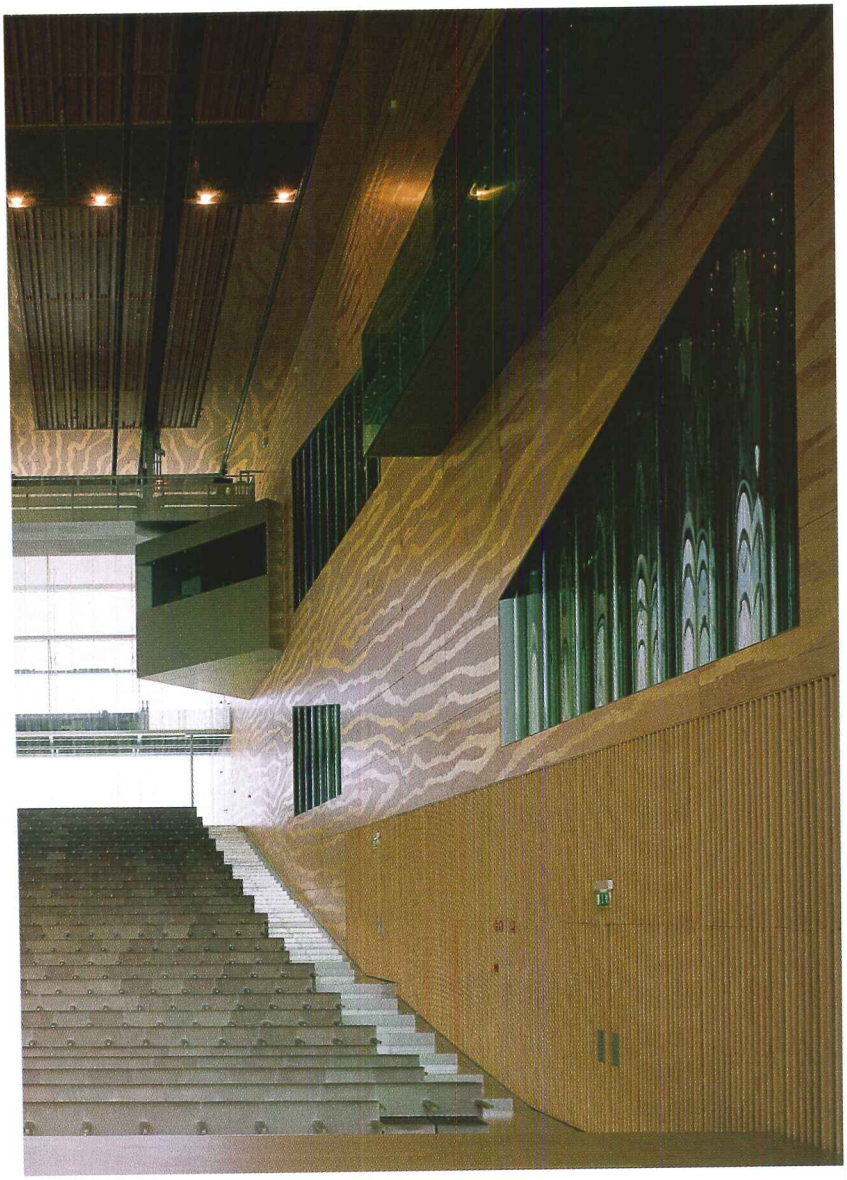
The architects boldly mixed modern materials with antique furniture and traditional tiles in a VIP lounge (above). In another space, rubber flooring and mirrored wall tiles play with reflection and perception (right). Corrugated glass allows light inside the concert hall without ruining the acoustics (opposite, top). A cyber-music room enjoys views of the city (opposite, bottom).

faceted concrete, creating a more suggestive and sculptural volume than he did with the boxy French library. Public circulation weaves through the interstitial spaces between the canted building envelope and the various performance and secondary elements, turning the task of getting from one place to another into an adventure. Designed with structural engineer Cecil Balmond at Arup, the Casa da Musica's exterior is a self-supporting, continuous folded plane. "You move one part and everything else moves," OMA's da Silva explains.

The main public spaces completely encircle the concert hall: the entry lobby underneath it, a skylit restaurant and terrace above it, and large glazed foyers on each side of it—one with a transparent bar suspended amid the building's stainless-steel structural elements. An informal amphitheater on the roof of the chamber music hall features a retractable skylight with ocean views. The architects envision that these spaces can host a multitude of activities simultaneously or one enormous party. Support spaces are located on lower floors, and in the same spirit of collision/collage, many are disconcertingly exposed to pedestrians on the plaza, who can look through large planes of glass to see inside offices, several soloists dressing rooms, and the musicians' canteen.

Innovative details provide much of the building's visual delight.

The main auditorium assumes the shoebox form favored by many musicians (above and opposite two). Koolhaas played with scale and notions of value by using plywood on the walls, then embossing it with gold enlargements of its grain. An acoustical pillow floats above the stage, and fake organs project from the walls. The architects wrapped a small music hall in red-stained, perforated plywood (right).



In the 1,300-seat main hall, which is surprisingly intimate both spatially and acoustically, OMA developed a sensuously curving "corrugated" glass to meet acoustical requirements that straight glass couldn't offer, and replaced the traditional proscenium with a PVC canopy over the stage that inflates and deflates to change the acoustical resonance. The architects clad the interior of the hall in plywood veneer finished with a gold-colored graphic that is an enlargement of the material's grain, a Pop allusion to Porto's gold-encrusted Baroque churches and an ironic play on expensive versus cheap materials. The hall's organs are fakes, required by acoustical engineer Renz van Luxemburg when the client had to cut the real ones from the budget. Handsome bank seating by Belgian designer Maarten von Severen, who died just before the hall opened, features illuminated seat numbers in the transparent latex armrests that double as program reading lights. Amsterdam designer Petra Blaisse of Inside/Outside, who has often worked with Koolhaas, designed knotted-nylon curtains that can be drawn in front of the hall's glass sides.

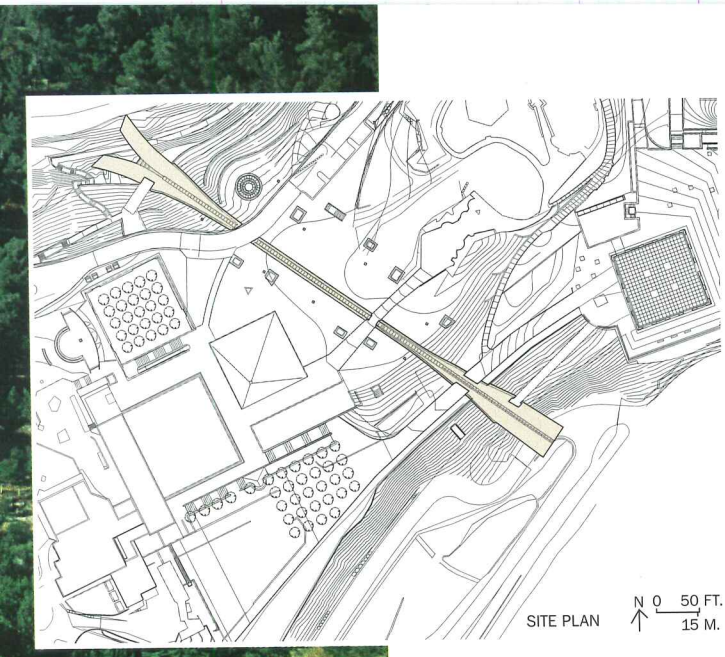
In the foyers, OMA finished floors and stairs with brushed aluminum, and used perforated aluminum panels with recessed fluorescent lighting for ceilings and walls. In the lounges, the architects specified classic 1960s chairs by Portuguese designer Daciano da Costa that share the off-kilter proportions found in Álvaro Siza's more recent furniture.

Like other recent OMA projects—such as the Seattle Public Library and the CCTV tower in Beijing—the Casa da Musica uses off-balance forms to create a kinetic experience for visitors as they move around and through the building. The project's crisscrossing chutes of space and vividly plumaged interiors engage us in an almost visceral relationship, even as they unfold in eye-popping, cinematic fashion. Leave it to Rem to call attention to architecture's direct, physical appeal, while at the same time reminding us of its choreographed artifice. ■

Sources

Concrete: *Unibetão*
Precast concrete: *Prégaia*
Skylights: *Facal*
Glass: *Cricursa; Saint-Gobain*
Cabinets and custom woodwork: *Interescritório*
Wall/ceiling tiles: *Viuva Lamego*
Foam-pyramid surfacing: *Merford*
Rubber surfacing: *Rephouse*
Antique furniture: *Pedro Aguiar Branco*
Auditorium seating: *Maarten van Severen*
Reception furniture: *Vitra*
Rubber surfacing: *Rephouse*

For more information on this project, go to Projects at **www.architecturalrecord.com**.



Moshe Safdie offers a memorial journey through the depths of a Jerusalem hillside with his YAD VASHEM history museum

By Andrea Oppenheimer Dean

PHOTOGRAPHY: © TIMOTHY HURSLEY

Crowning the Mount of Remembrance, in Jerusalem, Yad Vashem's 45-acre campus forms Israel's National Memorial to the Martyrs and Heroes of the Holocaust. There, Safdie's history museum, a 575-foot-long, skylit building, tunnels through the hillside, emerging at one end with expressively curving planes of concrete (left).

Only in Jerusalem. Place plays a central role in the new Holocaust History Museum at Yad Vashem, Israel's National Memorial to the Martyrs and Heroes of the Holocaust. The building, by Moshe Safdie, FAIA, expresses in eloquent architectural shorthand the nation's raison d'être. As Chaim Weizman, Israel's first president, described it, the Nazi years divided the world into two kinds of countries: those where Jews could not stay and those to which they could not escape. Had it not been for Palestine, later Israel, six and a half million, instead of six million, Jews would have perished in the Holocaust.

On the Mount of Remembrance, a verdant hillside dotted with evergreens and wild flowers overlooking Jerusalem's western outskirts, Safdie's new history museum crowns Yad Vashem's recently revitalized 45-acre campus. The recent master plan includes a bridge to the history museum, linking it to the existing complex, which includes a 1986 children's memorial by Safdie, as well as a Holocaust art museum, synagogue, and visitors' center. The history building's program called for more than 40,000 square feet of exhibition space. Because the architect did not want to build on "this fragile lovely landscape," he explains, he tunneled a 575-foot-long, triangular concrete volume into it. On opposing sides of the hill, the museum's entrance and exit emerge from the earth in dramatic cantilevered platforms.

Safdie won the Yad Vashem commission in 1993, the year the United States Holocaust Memorial Museum, by Pei Cobb Freed & Partners [RECORD, July 1993, page 58], opened in Washington, D.C.—the first Holocaust museum outside of Israel. Meanwhile, Yad Vashem had already outgrown its dated 1973 building of mediocre design, a structure currently undergoing demolition. (Yad Vashem's new museum took so many years to reach completion because of bureaucratic issues, as well as the need to gather the required funds.) Safdie and his client, the Holocaust Martyrs and Heroes Remembrance Authority, envisioned a

Andrea Oppenheimer Dean is a contributing editor to RECORD. *Her most recent book is* Proceed and Be Bold: The Rural Studio After Samuel Mockbee.

Project: *Yad Vashem Holocaust Museum Complex, Jerusalem*
Architect: *Moshe Safdie and Associates Architects—Moshe Safdie, FAIA, design principal; Irit Kohavi, principal, project architect, and manager; Gene Dyer, project architect; Paul Gross, Hugh Phillips, Leon Weizman, Dudi Tolkovsky, Aliya Avery, project team*

memorial very different from its 1973 predecessor and from the Washington scheme, which in many ways served as a foil. The austere exteriors of that milestone building, by James Ingo Freed, FAIA, reference the death camps as factories. The interiors appear dark, with extensive photographic exhibits, chronicling the six million dead as a collective entity—mainly from the viewpoint of the Nazis, who meticulously documented their own actions in films and still photography.

With the number of survivors dwindling, a 21st-century museum would ultimately "have to talk about the Holocaust without [their voices]," says Aver Shalev, chairman of Yad Vashem and chief curator of the museum since 1993. He hoped to breathe life into the horrific events by presenting them through the individual experiences of some 90 survivors—their diaries, letters, artworks, photographs, and other personal possessions. Yad Vashem means "a memorial and a name" (Isaiah 56:5)—and Safdie's work gives names to the once-anonymous dead. If the Washington museum serves as the Holocaust's Thucydides, its historian, then the new Yad Vashem is its Homer, its poet and storyteller, enlivening the defining moments of a culture through the trials of individuals.

Regarding the building's design, Safdie says, "I wanted something so primeval and archaeological that you don't think about the architecture." He took inspiration from the ruins of Qumran, in Jordan, a series of interconnected, partially underground spaces, where the Dead

At the end of the long, tunneling form, visitors emerge into open air (this page and opposite, top). Here, the canted concrete walls curve outward, as a low glass barrier keeps people from falling over the edge. The square entry pavilion glows at dusk (opposite, bottom).

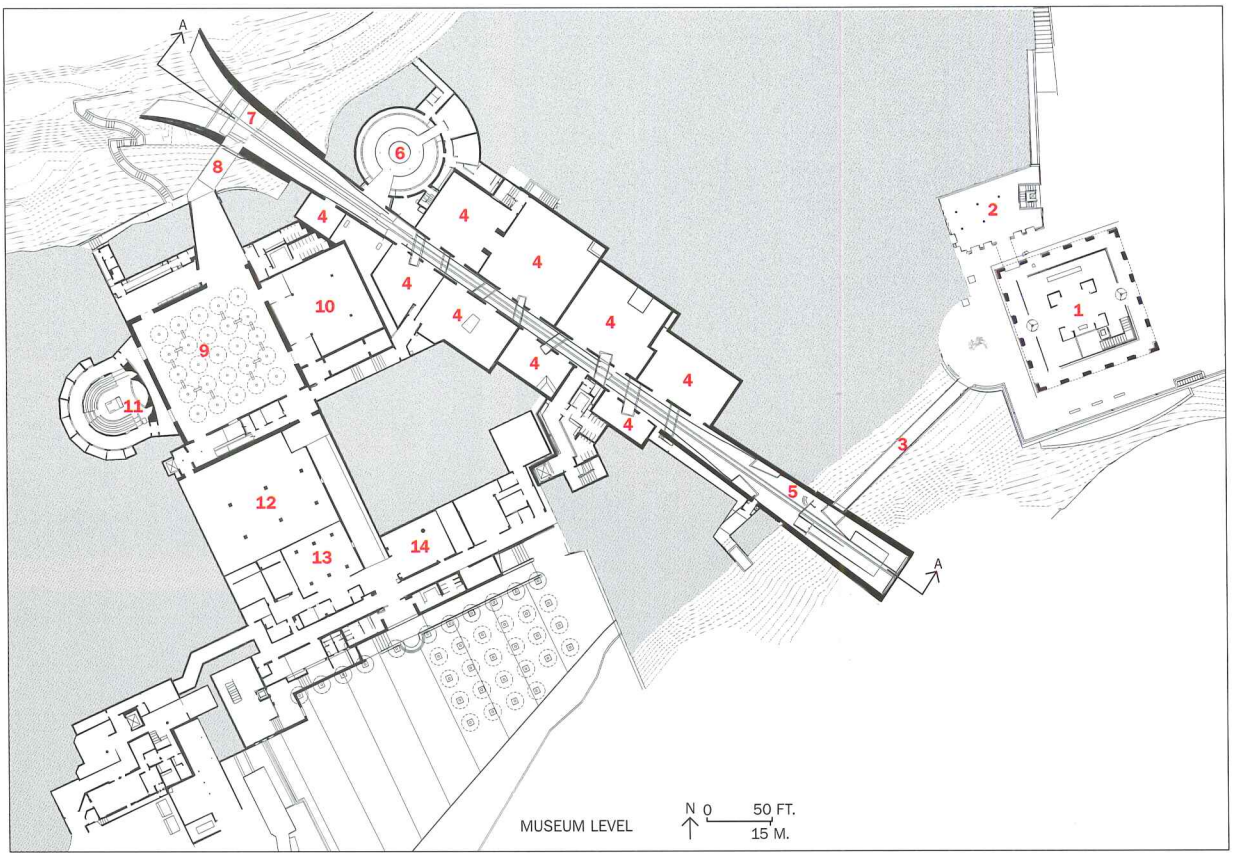
Sea Scrolls were found, along the Sea's northwest shore.

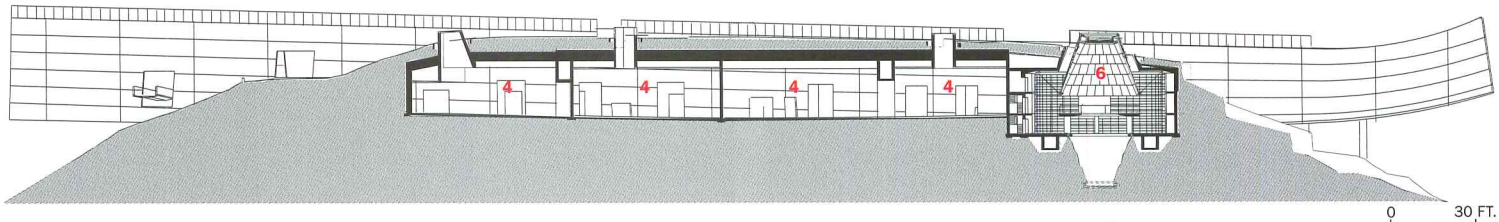
His scheme—a post-tensioned, cast-in-place-concrete structure without insulation, interior or exterior cladding, and visible joints—is utterly minimal. The architect gave the building a triangular section to support the earth above it and rise toward a skylight running its entire length. Rather than create a dark museum, the architect and his collaborators let the content of the exhibits communicate the terror of the Holocaust.

Along with museum designer Dorit Harel, Safdie configured the 42,500-square-foot interior—three times the size of its 1973 predecessor—as a long walkway with side galleries, each providing a chapter in the story. As the main path moves from south to north, it narrows and descends 5 degrees toward an exhibition about Auschwitz. Then it widens again and ascends. You "go from the darkness of the earth to light and hope," the architect says. Daylight at the end of the walkway is always visible.

Harel designed angular trenches in the floor that dictate the route, forcing visitors to go around them by entering each gallery along a prescribed path, much as Holocaust victims were marched from collection point to train station to camp to gas chamber. For the side galleries, however, the designers refrained from making such direct analogies with the Holocaust experience. Here, they tucked fire sprinklers—as well as mechanical, electrical, and plumbing systems—out of sight, to prevent associations with gas chambers. A 6-foot-deep plenum in each gallery

1. *Entry pavilion*
2. *Museum shop*
3. *Entry bridge*
4. *Exhibition gallery*
5. *Museum entrance*
6. *Hall of Names*
7. *Viewing terrace*
8. *Exit bridge*
9. *Sunken courtyard*
10. *Holocaust art gallery*
11. *Synagogue*
12. *Changing exhibits*
13. *Media center*
14. *Learning center*





SECTION A-A

Transverse routes, including the exit bridge (opposite, top), cross the building's long triangular spine. Light enters through a linear skylight at its apex. The architect created a luminous prism effect with the glazing of the transverse crossings (opposite, bottom). In the entry pavilion, a shading trellis of aluminum sections casts shadows beneath a large skylight (right). The flooring is of hand-chiseled Jerusalem stone.

hides these ducts, beneath skylights fitted with adjustable aluminum shading panels.

The exhibits begin with a video presentation by artist Michal Rovner, evoking the landscape of a lost world. She restored and collaged together old home movies from various sources, revealing Jewish life in Europe before World War II. At times, her creation brings to mind Marc Chagall paintings. The museum bookends this video art at its entrance with a display near its exit of quotes from survivors' diaries and plays, projected by artist Uri Tzaid on the walls of a contemplative space.

In the Hall of Names (above left), the viewing platform hovers between two cones: one, overhead, bears identified photos of faces of the dead; the one below holds a pool of water reflecting those images.

Along the journey through the tunnel, visitors encounter a replica of a typical 1930s living room of a German-Jewish family; photographs of a mass shooting, with contorted bodies in anonymous heaps; personal snapshots and other objects found on the victims; a wooden structure from one of the camps; a railway car; victims' shoes and clothing; and remnants of a prewar Polish synagogue.

The final gallery on the prescribed path is the Hall of Names, centered between two cones. One, rising about 30 feet, is lined with 600 photos of individuals alongside their names. The faces stare down at you like the people in photos from the annihilated Polish shtetl of Ejszyszki, displayed in a chimney-shaped tower in Washington's Holocaust museum. At Yad Vashem, the images are reflected in a pool inside a second, inverted cone. Excavated to the water table, the lower cone commemorates Holocaust victims whose names are not yet known. Along the periphery of the Hall of Names, rings of shelves hold testimony—letters, transcribed oral histories, diary excerpts—from relatives and friends of two million known dead. Yad Vashem has amassed this documentation since its founding in 1953, and has reserved space on the shelves for data pertaining to the remaining four million. After leaving the Hall of Names, you reach the end of the long tunnel and step into a blaze of Jerusalem sunshine, where on either side of you, a sculptural concrete armlike extension of the building's shell sweeps upward.

"The museum's fundamental statement," Safdie says, "is that we emerge into light, that we've prevailed, and that Jerusalem and Israel are out there." ■

Sources

Glass: *Viracon (fritted insulated laminated)*

Skylights: *Minray (museum); Shuko/Weber (entry pavilion)*

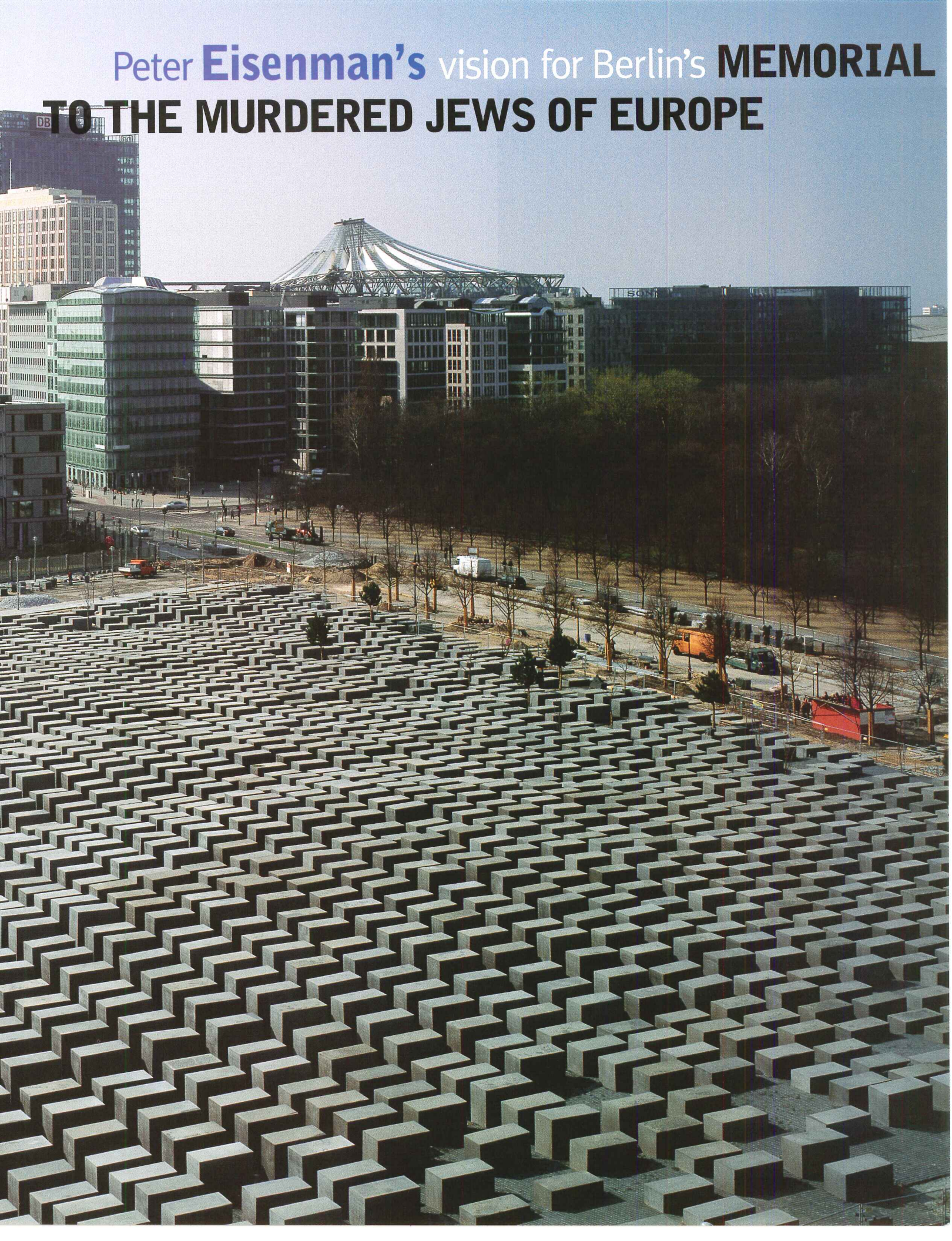
Cabinetry: *Beit Alfa; Pitaro*

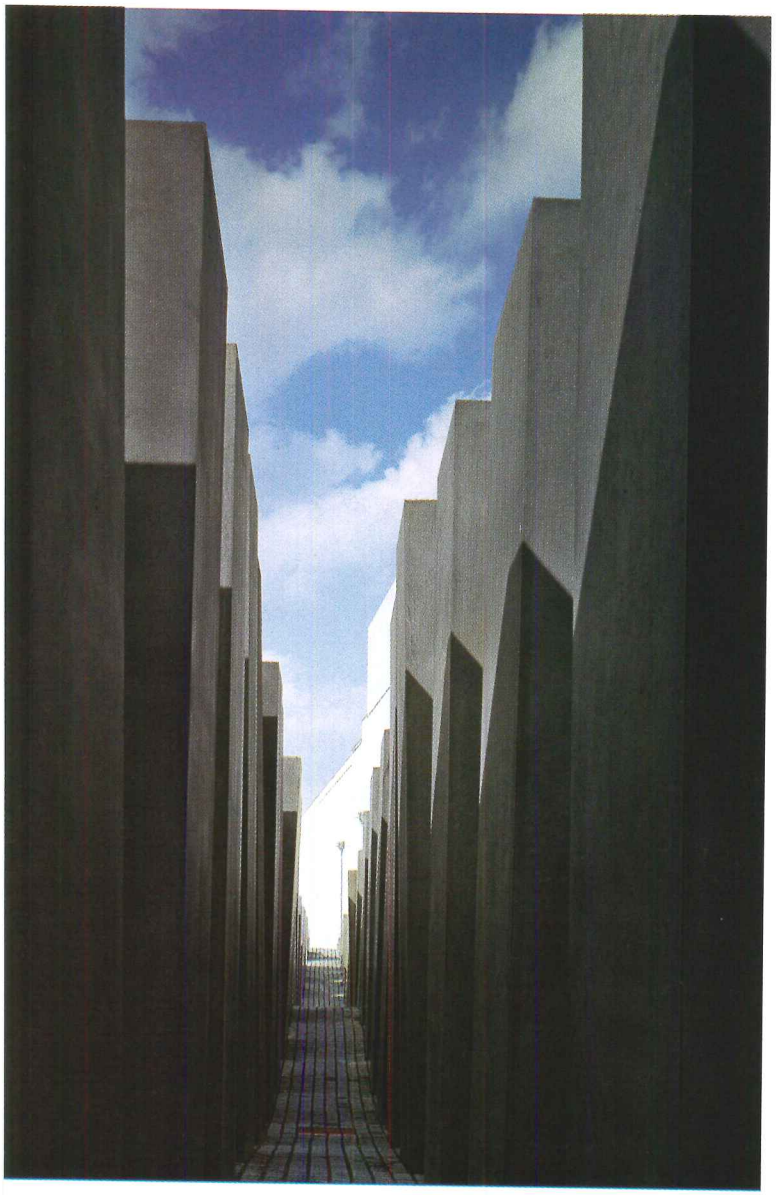
For more information on this project, go to Projects at **www.architecturalrecord.com**.

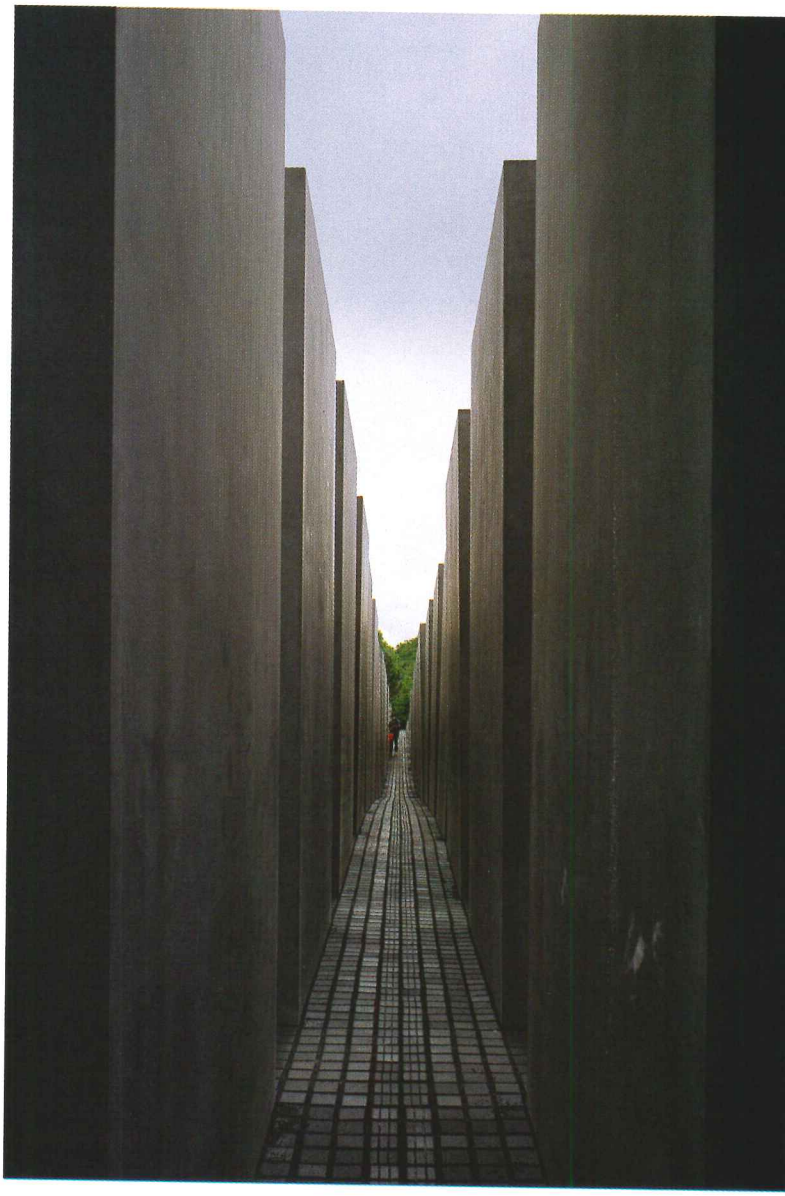
The long hall's floor troughs (this page) are intentionally cordoned off with cables, forcing visitors to bypass them by entering the side galleries (opposite, right two).

The centrally located, 5-acre memorial site, accessible on all sides, edges Berlin's Tiergarten, not far from Potsdamer Platz. Eisenman designed the 2,711 dark gray concrete pillars to appear from afar as a gridded field of blank markers embedded in rolling topography.

Peter **Eisenman's** vision for Berlin's **MEMORIAL TO THE MURDERED JEWS OF EUROPE**

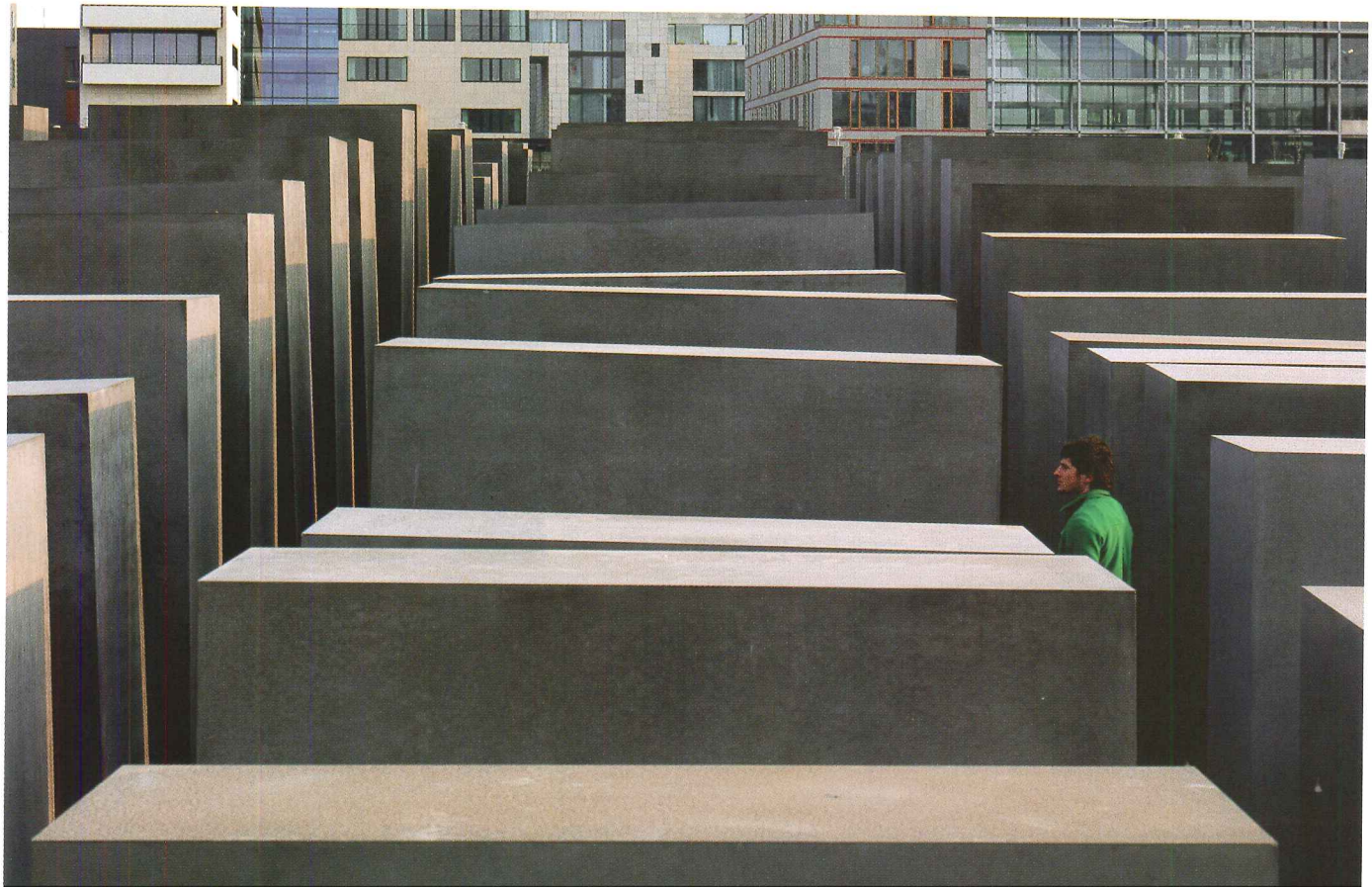


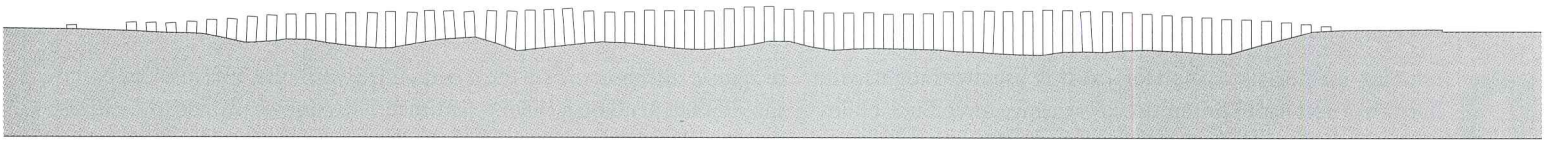




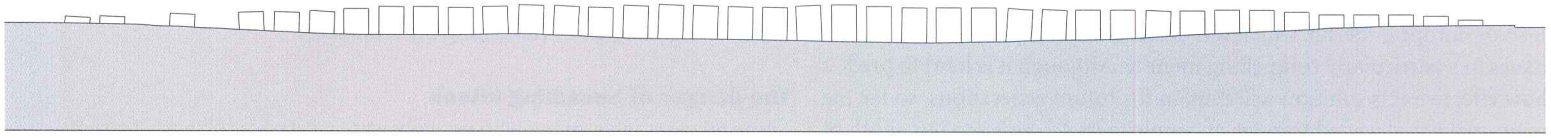
As the visitor traverses the field of 3-by-8-foot pillars, their heights, ranging from a few feet to more than 15 (this spread), shift according to the contoured topography imposed on the flat site. They loom highest at the center of the site, where the terrain dips to about 8 feet below grade. Paths, also about 3 feet wide, are paved in concrete tiles (actually small cubic blocks) embedded in gravel. Certain paths, designated for wheelchair access, slope less, with tracks carved in the pavers to guide the wheels (right).

PHOTOGRAPHY: © ROLAND HALBE



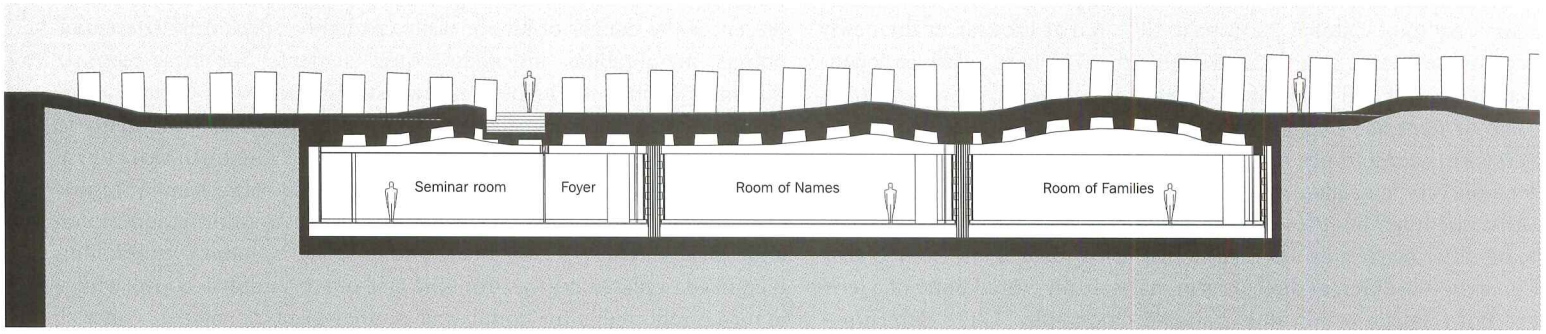


NORTH-SOUTH ELEVATION



WEST ELEVATION

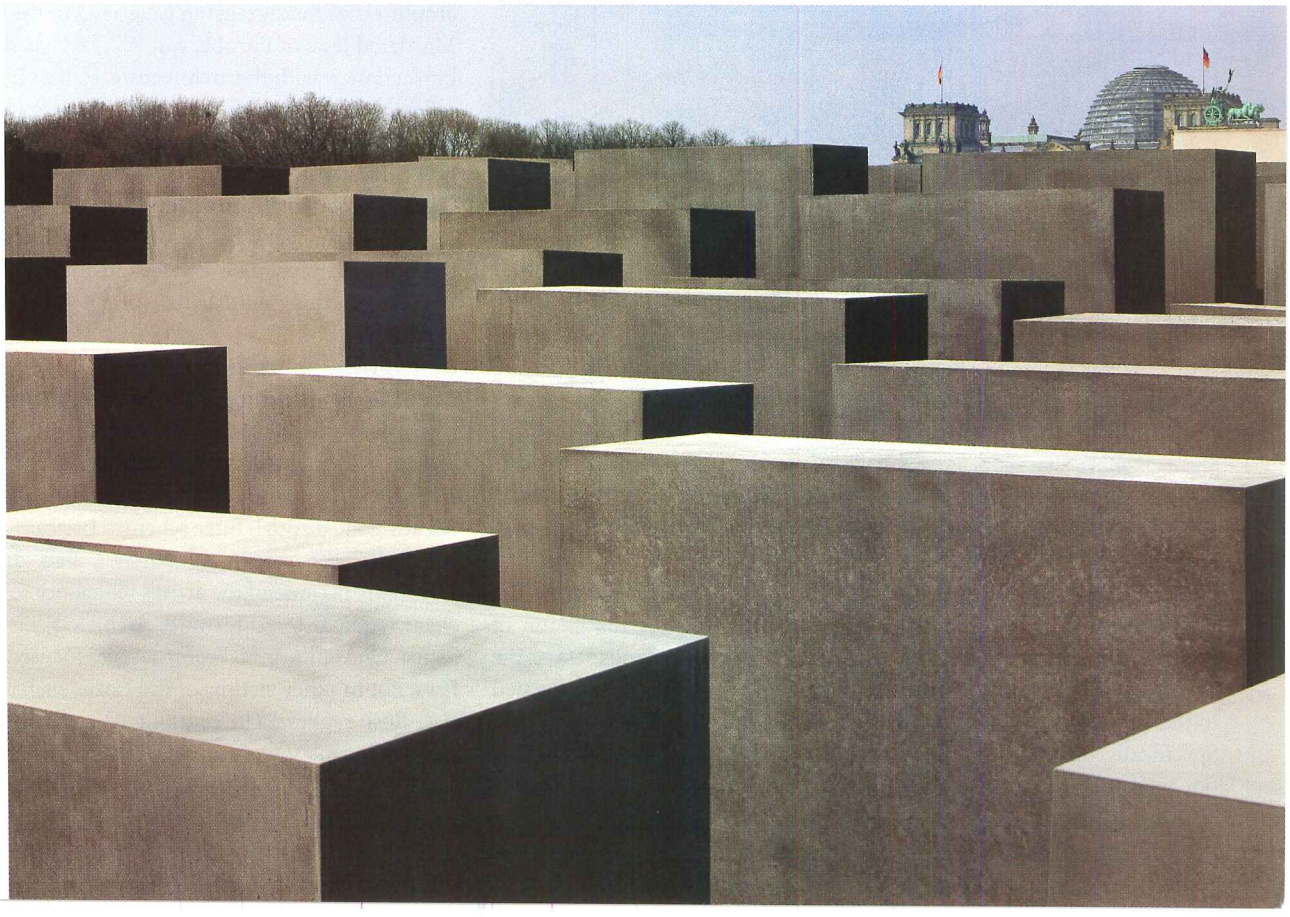
0 30 FT.
10 M.



SECTION

0 10 FT.
3 M.

A 22,776-square-foot underground Information Center, containing exhibition galleries, seminar rooms, a bookshop, and offices, features a poured-in-place-concrete ceiling (sections, above) that repeats the contours of the site, with coffers and ribs the length and width of the pillars (opposite). From the memorial one can see the Reichstag (below).



By Suzanne Stephens

Designing memorials to the Holocaust is usually fraught with dilemmas peculiar to this unusually sensitive topic. Such philosophical questions as aesthetics, memory and memorialization, the nature of mourning, and the passage of time persistently confront the designer, and if left unresolved can subvert his or her original intention. Nevertheless, Peter Eisenman's Memorial to the Murdered Jews of Europe in Berlin, which was dedicated on May 10, addresses these issues in a particularly compelling manner. Although it is hard to predict how effective this solution will remain for future generations, so far the memorial has attracted throngs of people to its 4.7-acre site just south of the Brandenberg Gate. Eisenman's scheme, which has gone through several iterations since he, with sculptor Richard Serra, participated in an invited competition in 1997, fills that site behind the DG Bank by Frank Gehry [RECORD, October 2001, page 120] and at the rear of the newly reconstituted haute-luxe Adlon Hotel with 2,711 blank, dark gray concrete pillars—or as they are often called, steles. (*Stele* is the Greek term for a slab or upright stone, frequently inscribed, used as commemorative markers in ancient times.) These abstract forms, 3 feet wide and almost 8 feet long, vary in height up to 15 feet and occupy a grid with 3-foot-wide paths. Eisenman sculpted the flat site into rolling contours so that the steles' differing heights are exaggerated, then tilted them from .5 to 2 degrees in two different directions to maintain an overall unity of a level top (not slanted) within this changing topography. These elements—abstract forms, gridded plan, rolling terrain—adhere to the overriding theme of repetition with displacement, to create an immensely powerful kinesthetic, tactile, and visual experience. As visitors wander through the field, along very narrow paths, the steles loom taller in certain areas, and the ground sinks toward the middle to about 8 feet below grade. Soon the visitor may feel lost, or at least removed and isolated from the rest of the world. In this peripatetic journey, these various sensations merge into an aesthetic experience, where light and shadow and the smooth surfaces of the deeply rich dark gray concrete slabs create a singularly suggestive

The memorial's site, south of the Brandenburg Gate, was formerly the Reich's Ministry Gardens. Goebbel's underground bunker still edges it on the north. After the war, the land became a border area between East and West Berlin.

landscape. Aesthetics, owing to its association with beauty and pleasure, not surprisingly strikes an uncomfortable chord in any discussion of Holocaust memorials. Can an architect represent the hideousness of the event, but not make it so off-putting that people avoid it? Inextricably tied to this question of aesthetics and representation is the issue of memory: Specifically, how do you deal with such a terrible occurrence so that it is not forgotten? Concomitantly, how can the memorial allow visitors to recognize the horror, so they empathize with the victims? Empathy shouldn't depend on a cloying sentimentality, nor a cathartic dramatization that diminishes upon leaving the theater. Instead, it should foster the compassion needed to prevent such events from happening again. However idealistic this goal may be (obviously, barbarities, atrocities, and ethnic cleansing go on, and neo-Nazis keep springing up), it is necessary for working through or mourning the Holocaust.

The danger of becoming kitsch

Some 60 years later, many who actually were witnesses (or perpetrators) of the Holocaust are dead, so the "memory"—that which cannot be forgotten—has to be inculcated through other forms of representation, ranging from the literally and figuratively symbolic to the abstract. Ever present is the danger of kitsch, easily created by specifically referential objects, memorabilia, and architectural elements. For these reasons, Eisenman deliberately eschewed direct symbolism. As he explains, "We wanted a silent field—a deafening silence in the age of noise." (Silence is not quite a given here, but more about that later.) Eisenman also at first resisted an exhibition with a didactic component. After some pressure from the German Bundestag, he agreed to place an information center underground. There, a four-square grid of rooms containing exhibitions is cranked in plan 5 degrees from the grid of the landform above, which in turn is reflected in the undulating, poured-in-place-concrete coffered ceiling. Each room, slightly unsettling because of the ceiling, the slightly rotated plan, and the lack of windows, is dedicated to particular aspects of the Nazi extermination proceedings, with spaces around the rooms devoted to seminars, services, and a bookshop.

The exhibition, designed by Dagmar von Wilcken, appears straightforward and simple, thereby avoiding the overt sentimentality seen in the newly added exhibits at Daniel Libeskind's Jewish Museum in Berlin. (Libeskind didn't design the exhibits, but since they were installed after his museum had opened, too many people had got used to the severe emptiness of his zigzagging galleries.) In the case of the Memorial to the Murdered Jews of Europe, von Wilcken has skillfully integrated her exhibition design with the architecture, so that Eisenman's steles are not only reflected in the size of the coffers, but also in the sizes and shapes of the display partitions and benches. Together, the upper portion and the underground exhibition hall postulate a two-pronged approach to the representation and memorialization where one (the Information Center) is literal, explicit, and deadly earnest in its tone; the other (the field of steles) more abstract, open-ended, and ambiguous in the overall impression. Both are needed. "Actually, it was a good collaboration," Eisenman says.

Controversies from the start

The $30 million memorial is predictably controversial—as it has been since it was conceived in 1988 by Lea Rosh, a television journalist (who is not Jewish), and adopted by the Bundestag of unified Germany in 1999, which also set up the Memorial Foundation to build it. By 1999, Eisenman had already gone through three schemes, basically using the same concept, and Richard Serra, his initial partner, had dropped out—according to Eisenman, because of the artist's reluctance to make compromises that the client required to go forward. Architects, Eisenman acknowledges, must adjust. One of the initial controversies focused on its being devoted only to Jews, not to other victims of the Nazis, such as gypsies and homosexuals. (Lea Rosh replies, "The central goal of National Socialist genocide policy was the destruction of Jewry.... The consummation of 2,000 years of anti-Semitism on this continent and the figure of six million Jewish victims

demanded a memorial dedicated to Jews.") Another controversy surrounded the choice of the site: It is so visible, and it occupies prime commercial and touristic real estate near the Brandenburg Gate. This gate or archway, like Paris's Etoile, faces the broad café-lined boulevard, Unter den Linden, and the aptly titled Pariser Platz (Paris Square). After recent construction, including the rebuilt Academy of Arts and the Adlon Hotel, this area looks more and more like the Champs Elysées in its prime. Interestingly, many of the Adlon's posh rooms afford panoramic views of the memorial.

The memorial's Information Center has clocked in an average of 2,100 visitors a day since the May opening and estimates that many, many more just stay above ground. So, ironically, Eisenman's stated intention of creating a place of isolation and contemplation has been somewhat subverted by numerous visitors roaming through the field of steles. Young people play hide-and-seek, laughing and calling out—not just six-year-olds, but teenagers. You see lovers trysting among the pillars, or tourists picnicking on their smooth tops. Others (specifically American visitors) wonder about being mugged there in the dark. No fence bounds the perimeter of the memorial; visitors to the underground Information Center must go through a security check by way of a temporary pavilion. (Eisenman designed a small, permanent concrete-and-glass pavilion for elevator access.) Günter Schlusche, the Berlin architect who coordinated the planning and construction of the project for the memorial foundation, explains that security guards patrol the field day and night to prevent unseemly or violent behavior. The well-crafted, compacted concrete steles were given a special finish to enable graffiti to be washed off. So far, only one small Nazi swastika has been removed, says Schlusche.

So far, Schlusche, the memorial foundation, and Eisenman seem not to be upset by the visitors treating it as a park. The playful behavior was unexpected, but it is not unwelcome. Perhaps this is okay (it depends on how long this popularity continues), although there is a limit. Nevertheless, it does make the descent into the Information Center, where the exhibitions are located, that much more powerful. There, hushed, softly luminous interior spaces with graphic and written texts gain immense impact for those coming from the above-ground area. The upper field becomes a transitional space—a place where both the lightness and vitality of the everyday world and the haunting reminders of the past converge. Downstairs, the seriousness of the past takes over. Eisenman's architecture achieves that experiential disconnect with the world in an eerily beautiful manner. Ironically, however, another thought-provoking perspective comes at a distance, from the rooms on the back of the Adlon. There, overlooking the field of steles, you watch visitors enter from the edges and then gradually disappear, seemingly for no reason. And that image is something you can't forget. ■

Project: *Memorial to the Murdered Jews of Europe, Berlin*
Design architect: *Eisenman Architects—Peter Eisenman, principal; Richard Rosson, associate; Sebastian Mittendorfer, Ingeborg Rocker, project designers*
Construction manager: *Architekt Manfred Schasler*
Client: *Stiftung Denkmal fur die Ermordeten Juden Europas*
Structural engineer: *Happold*

Sources
Self-compacting concrete: *Geithner*
Glass facade: *Bemo; Shüco*
Raised floor system: *Lindner*
Field lighting: *Zumtobel*

For details on the construction process, see Tech Briefs on page 165.
For additional details on the construction process and a fuller history of the project, visit **www.architecturalrecord.com**.

THE INFORMATION CENTER

A staircase and foyer below ground (below) separate seminar rooms from exhibition spaces. The galleries occupy a four-square grid turned 5 degrees against the grid of the poured-in-place-concrete ceiling and the field of steles, or pillars, overhead. The exhibition installation by Dagmar von Wilcken stays within a simple, straightforward aesthetic, as seen in the Room of Dimensions (bottom), where illuminated glass panels, the same size as the steles, display quotations from diary entries. The other galleries deal with specific themes, in addition to a database of names from the Israeli memorial site Yad Vashem.

1. *Foyer*
2. *Room of Dimensions*
3. *Room of Families*
4. *Room of Names*
5. *Room of Places*
6. *Testimony from Yad Vashem*
7. *Holocaust database*
8. *Bookshop*
9. *Information*
10. *Seminar rooms*

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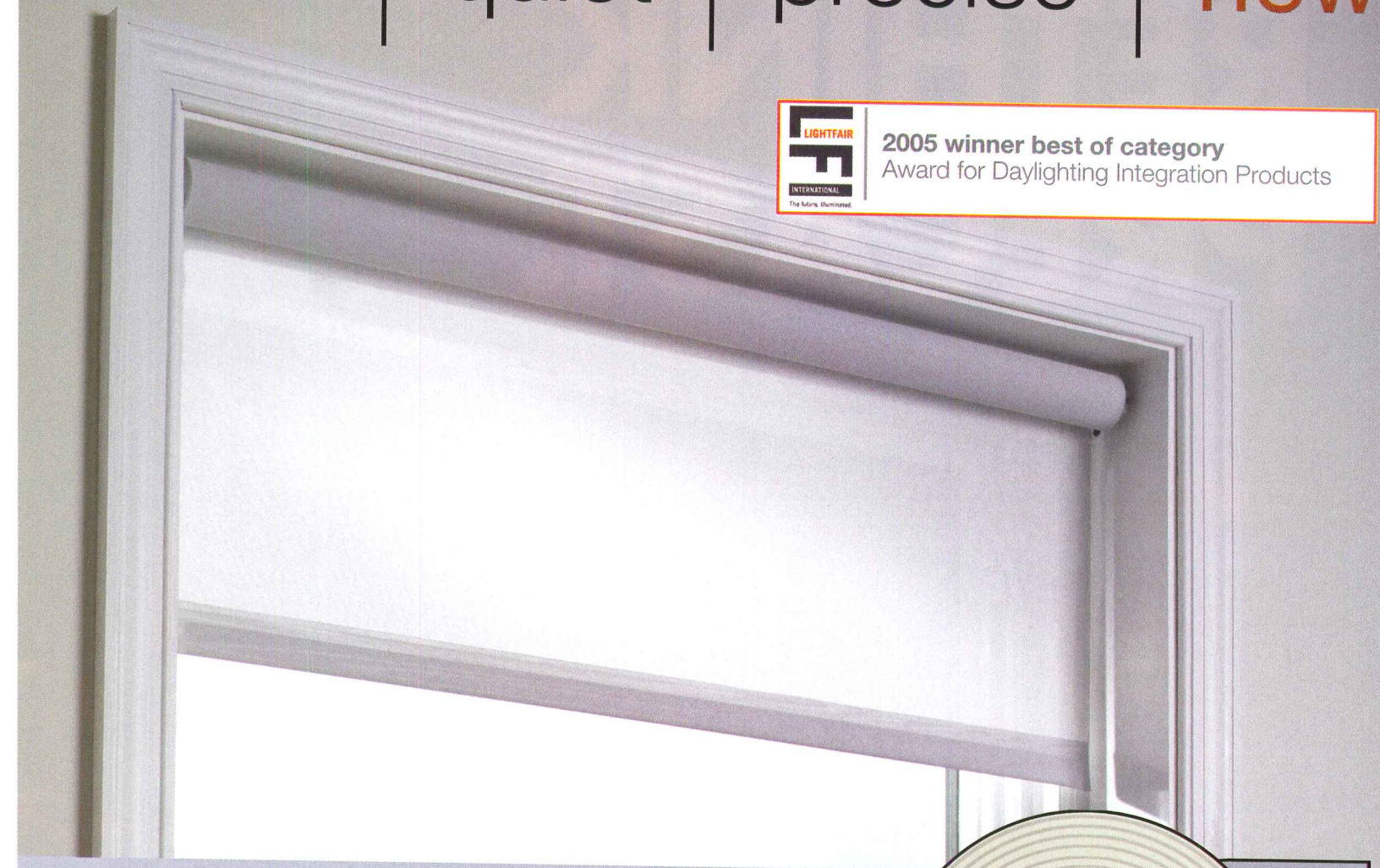

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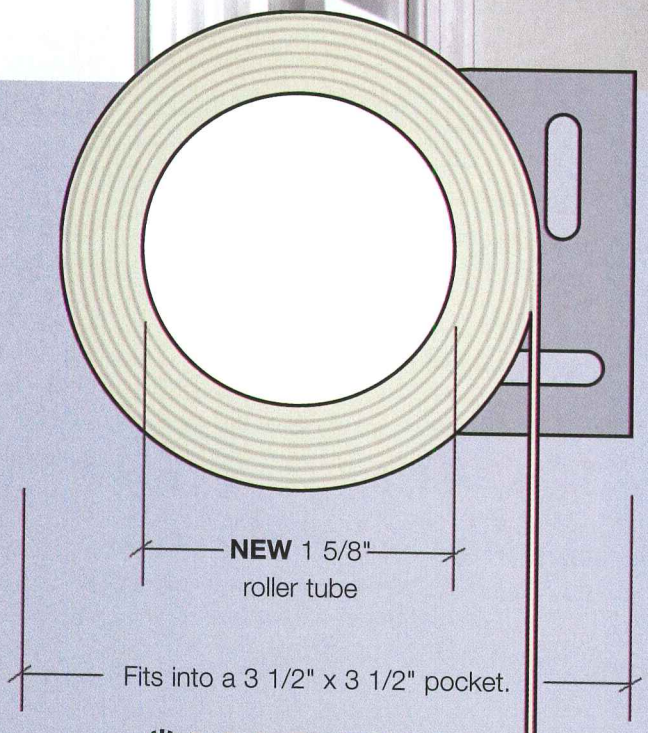

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Multifamily Housing

Fighting Sprawl

ARCHITECTS ARE DESIGNING HIGH-DENSITY PROJECTS THAT RESPOND TO THE MARKET'S DEMAND FOR MODERN HOMES AND SHORTER COMMUTES.

By Jane F. Kolleeny

First the bad news: By 2030, the U.S. population will have increased by 33 percent from current levels, says the U.S. Census Bureau. Planners, residents, and governments ponder where these people will live and what infrastructure will be needed to support them. The good news is homeowners are fed up with the long commutes inherent in sprawling suburbs. They want housing where jobs, retail, and entertainment are accessible. As a result, a growing number of them are moving to multifamily housing projects sprouting in urban and suburban infill locations.

Demographics are shifting, too. The prototypical family with children, which for decades has driven suburban sprawl, now accounts for less than one-fourth of households in the U.S., according to the *National Real Estate Investor* newsletter. Instead, young professionals, downsizing empty nesters, single parents, and couples without children bring a strong influence to the housing marketplace. These people prefer to live in high-density locations, where vibrant community activities take place.

According to the Urban Land Institute, this back-to-the-city movement will continue well into the 21st century. Cities have great advantages for housing. Existing properties can be reused and urban fabric strengthened. Property taxes can bring much-needed revenue to local governments and revitalization to inner-cities. Usually, the required infrastructure for housing is already in place, so residents can use public transportation and consume less energy. In fact, studies show that urban housing is the heartbeat of regional economic development.

Shown here are projects that in their own way contribute to the move toward urban infill and high-density living. They also demonstrate a refined modern design aesthetic. Will Bruder Architects' Loloma 5 straddles the sprawl of suburbia and a downtown edge on a tight property while preserving the local Modernist building traditions. In the resort community of Palm Springs, DesignARC's Palm Springs Modern Homes continues a tradition of Modernism that began with Eichler Homes in the early postwar years. At Orange Grove, Pugh + Scarpa added life to a densely populated West Hollywood neighborhood, working within constrained budgets on a tiny site. On an infill lot in downtown San Diego, The Titan, designed by Jonathan Segal Architect, features handsome live-work units that accommodate the growing number of people who work from home. By providing attractive alternatives to single-family sprawl, these projects set an example of how a more sustainable future can be reached. ■

1.

Scottsdale, Arizona

Five units of three stories each fit comfortably into a very narrow site, angled to capture views of Camelback Mountain.

2.

Palm Springs, California

Desert pastels form a varied palette on the facades of this modern resort development that adds multifamily units to existing single-family dwellings.

3.

West Hollywood, California

A tight budget and site did not deter this architect from creating five units with flexible open spaces inside and cubelike, Modernist forms outside.

4.

San Diego, California

Tucked between two contrasting buildings and opposite the freeway, the two units of The Titan tie a disparate neighborhood together.

For more information on these projects, go to Building Types Study at **www.architecturalrecord.com**.

Loloma 5
Scottsdale, Arizona

1 **WILL BRUDER DESIGNS A FIVE-UNIT CONDOMINIUM THAT COMBINES VIEWS AND OUTDOOR SPACES WITH A DOWNTOWN LOCATION.**

By Clifford A. Pearson

Architect: *Will Bruder Architects—Will Bruder, AIA, principal; Jeff Densic, project architect; Dominique Price, Joe Herzog, Rob Gaspard, Ben Nesbeitt, design team*
Client: *Context Development*
Engineers: *Rudow + Berry (structural); Otterbein Engineering (mechanical/plumbing); Associated Engineers (electrical); HTPO (civil)*
Landscape architect: *Burnette + Winters Landscape Architecture*
General contractor: *Preferred Building Systems*

Size: *7,700 gross square feet; five units of 1,540 square feet*
Construction cost: *$940,000*

Sources
Concrete block: *Western Block*
Zinc cladding: *VM Zinc*
Translucent plastic patio partitions: *Sequentia*
Ceramic tile: *Creative Design Flooring*
Paints and stains: *Benjamin Moore*
Resilient flooring: *Armstrong*
Granite parking paving: *Stabilizer Solutions*

For more information on this project, go to Building Types Study at **www.architecturalrecord.com**.

Poised between the undifferentiated sprawl of suburbia and a nascent urbanism where people live and party downtown, Scottsdale is wrestling with its future. While much of the fast-growing, post–World War II Southwest sprouted from arid soil like magic, Scottsdale has deeper architectural roots—including Frank Lloyd Wright's Taliesin West, Paul Schweiker's regionalist Upton House, and Paolo Soleri's Cosanti studios. Now, Will Bruder is working with an innovative developer on a series of multifamily housing projects that aim to build on the town's modern and frontier pasts, while pushing the design envelope forward.

The first of three housing complexes for Context Development, a Canadian company that recently entered the Phoenix market, Loloma 5 serves as a small-scale test for Bruder's ideas on juicing up suburbia with rich doses of urbanity. The second project, called the Vale, will be completed in August and offer 46 apartments (including nine live-work units), 7,000 square feet of retail, and a highly articulated street facade that engages the public realm. About the time that the Vale opens, Bruder and Context Development will start construction on a third project, the Upton, with 10 units for sale.

Program

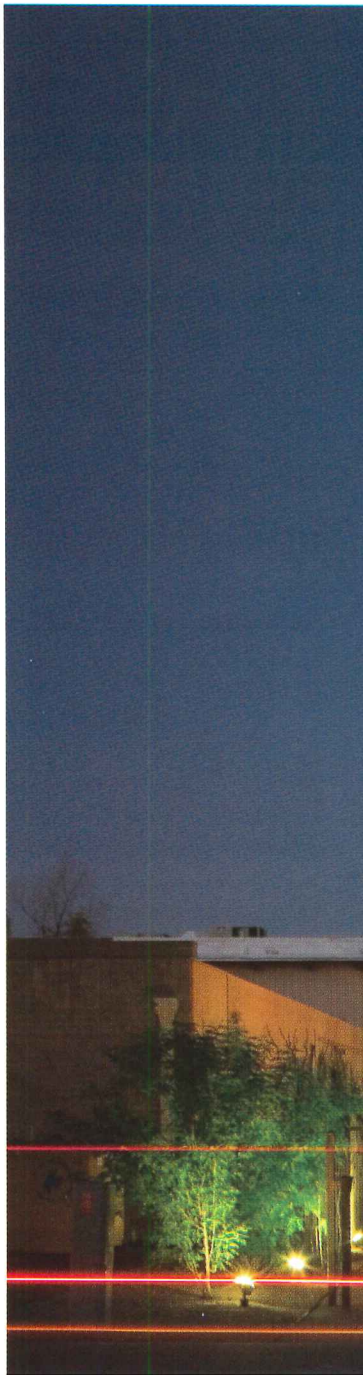
Given a narrow site (120 by 75 feet) in Old Town Scottsdale, Bruder needed to squeeze in five spacious town houses that would attract buyers who could easily purchase single-family houses elsewhere. He also needed to keep construction costs down to about $125 per square foot and follow green principles to reduce energy consumption.

The Old Town area retains a smattering of Spanish-style buildings set on wide, suburban streets. A live theater, an art school, a bus station designed by Vito Acconci, and the hip James Hotel by Deborah Berke [RECORD, August 2004, page 144] provide the nucleus of an emerging downtown scene. Bruder and Nicole Roberts of Context Development wanted Loloma 5 to tap into this mixed bag of old and new.

Solution

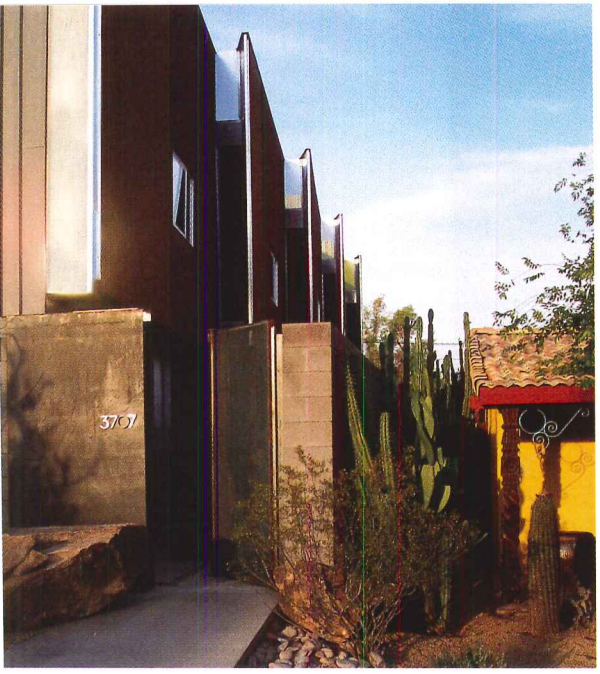
While most town-house developments line up living units along the street, Loloma 5's narrow site made such a scheme impossible. So Bruder treated the side of the building as a zinc-clad street facade and angled each three-story dwelling to capture views of Camelback Mountain to the northwest. A wide driveway on the north lets cars pull into covered parking on the ground floor of each unit, while a narrow walkway on the south offers an intimate, "canyonlike" space where neighbors can meet.

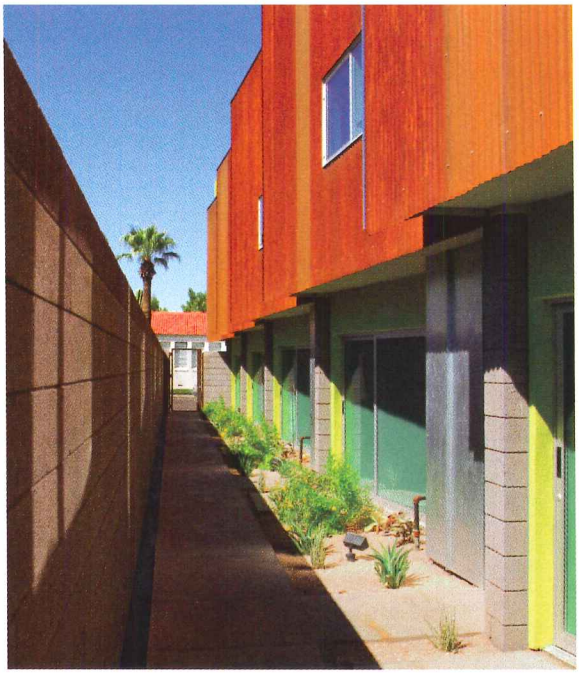
The mostly opaque street elevation recalls the false fronts of buildings in the old West. "It's a cow-



PHOTOGRAPHY: © BILL TIMMERMAN

Bruder used his most expensive material—zinc—on the building's street front and accented it with vertical slots of glass (below). Balconies turn to capture views of the mountains and are shaded by perforated-metal veils (left).





Controlling light and shade is critical in the desert, so Bruder designed a walkway as a "canyonlike" space (above two).

Naturally rusting steel, perforated-metal screens, and concrete block stand up well to the climate (above two and below).

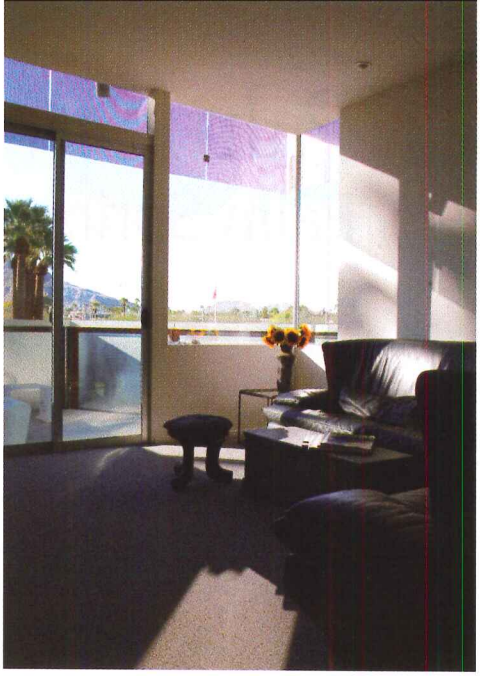
boy facade," says the architect. "You put your most expensive material forward to make a good show." Some desert landscaping by Burnette + Winters, including a large flat stone ideal for sitting, offers an attractive outdoor space in front of the building open to the public.

The five town houses are identical, with 1,540 square feet on three floors and pairings of decks and balconies turned to views of the mountains and the city. On the ground floor, each unit has a live-work space entered from the walkway. The main living spaces plus a balcony and a bedroom occupy the second floor, while the master bedroom and a large deck sit on the third floor.

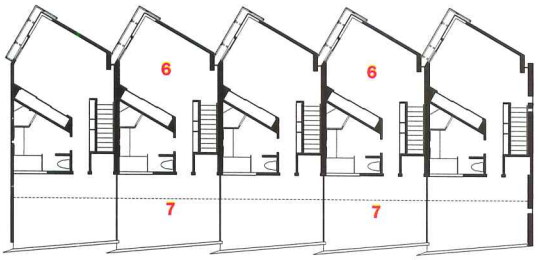
The building combines concrete block on the first floor with wood framing above. Bruder wrapped the building in rugged materials, such as naturally rusting corrugated steel and perforated metal veils that protect the west-facing balconies. Viewed from an alleyway on the east end of the site on a late-spring morning, the saw-tooth north elevation dances in shadow and light. Attuned to the demands of a desert climate, the building envelope blocks the sun from much of the living room and kitchen, while letting it slide inside through tall narrow slots to animate the spaces. Similarly, stucco walls and translucent plastic partitions on the deck help shade the outdoor space while directing views to the sky and the distance.

Commentary

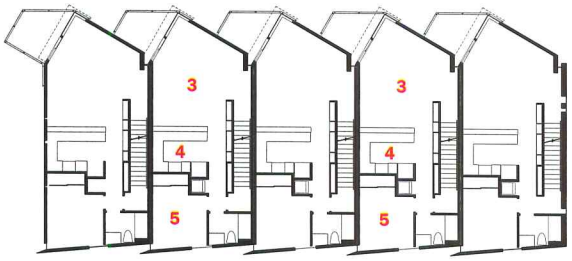
Loloma 5 offers a persuasive alternative to the single-family home by packaging downtown living with attractive outdoor spaces and high design. Rusting steel and stucco surfaces painted what Bruder calls "pungently optimistic green" give the building a colorful buzz that works well with its muscular form. Although it accommodates the automobile with private parking for each dwelling unit, the complex also creates a public realm where residents can meet and develop a sense of community. ■



Mostly shaded from the sun, the kitchen is enlivened with light from vertical bands of glass (below). A balcony extends the living room outdoors (left), while a generous deck (far left) works with the master bedroom on the top floor.

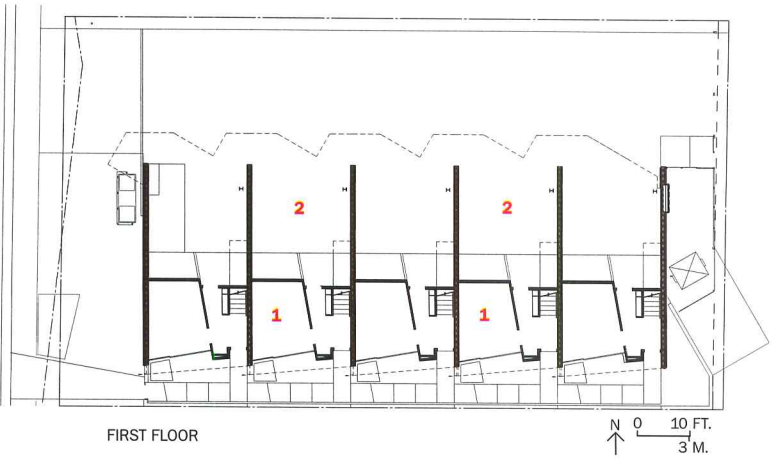


THIRD FLOOR



SECOND FLOOR

1. *Live/work*
2. *Parking*
3. *Living*
4. *Kitchen*
5. *Bedroom*
6. *Master bedroom*
7. *Deck*



FIRST FLOOR

Palm Springs Modern Homes
Palm Springs, California

2 **DESIGNARC JOINS FORCES WITH AN IMAGINATIVE DEVELOPER TO CONTINUE A VERITABLE TRADITION OF DESERT MODERN DESIGN.**

By Joseph Giovannini

Architect: *DesignARC—Dion McCarthy, AIA, Mark Kirkhart, AIA, partners in charge; Douglas Peters, project manager; Emily Adamske, Ben Hidalgo, Raymond Urruty, team*
Interior designer: *LDC Design Studio (48@Arenas); Ligne Roset (48@Baristo)*
Owner: *Palm Springs Modern Homes*
Engineers: *Concorde Consulting Group (48@Arenas); Taylor and Syfan (48@Baristo)*
Consultants: *R.J.C.L.A. (landscape); Mainiero, Smith and Associates (civil engineer)*
General contractors: *J-Den Builders (48@Arenas); Ironwood Homes Corporation (48@Baristo)*

Size: *80,460 square feet (48@Arenas); 82,723 square feet (48@Baristo)*
Cost: *$10 million (48@Arenas); $15 million (48@Baristo)*

Sources
Exterior cladding: *Orco Block (block walls); Pacific Concrete (concrete floors, exterior flatwork)*
Metal awnings/fascias/entry gates: *Desert Postal Scapes*
Glazing: *Skyview Skylights*
Doors: *Atrium Door and Window Company; West Coast Custom Finish; General Aluminum*
Pools/spas: *EG and H Pool and Spa*

For more information on this project, go to Building Types Study at **www.architecturalrecord.com**.

There may be no second acts in American public lives, as F. Scott Fitzgerald once pronounced, but in Palm Springs, California, Midcentury Modernism has returned for a high-profile encore. In a series of very successful housing projects, DesignARC—with offices in Los Angeles, Santa Barbara, and Orange County—has taken up the ethos and architectural vocabulary of the resort's many Modernist buildings within the parameters of the speculative marketplace. Turns out, design sells.

From the time Lloyd Wright and Albert Frei erected their structures in this desert community outside Los Angeles, Modernists have enjoyed a strong presence in an environment especially suited to light, porous, indoor/outdoor structures. In the 1960s, A. Quincy Jones, fresh from his successes with Eichler Homes, built a spec development for Alexander Model Homes—one of only a handful of housing tracts in the U. S. designed as Modernist developments.

Program

About eight years ago, Dennis Cunningham of Palm Springs Modern Homes began building houses in a Modernist spirit on a variety of lot sizes, designed by DesignARC. The architects developed simple wood-frame structures that usually featured a double-height living room and double master bedrooms. In one five-unit project, which happens to be located next to the Alexander development (and across the street from a middle school designed by Albert Frei), the houses form an L around a pool protected from prevailing winds by high walls. The architects composed the houses with slipped planes, à la de Stijl, each painted a color selected from the desert's pale palette of gray, silver, copper, and tan. Collectively, the parts form a varied composition along the street, becoming a handsome suburban ensemble updating the precedents of their distinguished neighbors. The houses sold easily and profitably to a largely gay clientele: The developer had discovered a niche market for Modernist enthusiasts seeking a second home. Since then, Cunningham has engaged the architects to develop several mostly multifamily projects, each of which uniquely fits its site at a density that would make a New Urbanist's heart flutter. All share common roots in Modernist precedent.

Solution

The architects followed their single-family house successes with condominiums at 48@Arenas, begun in 2000 and finished in 2002, built in clusters of eight, three deep on each of two adjacent lots, constructed in two phases.

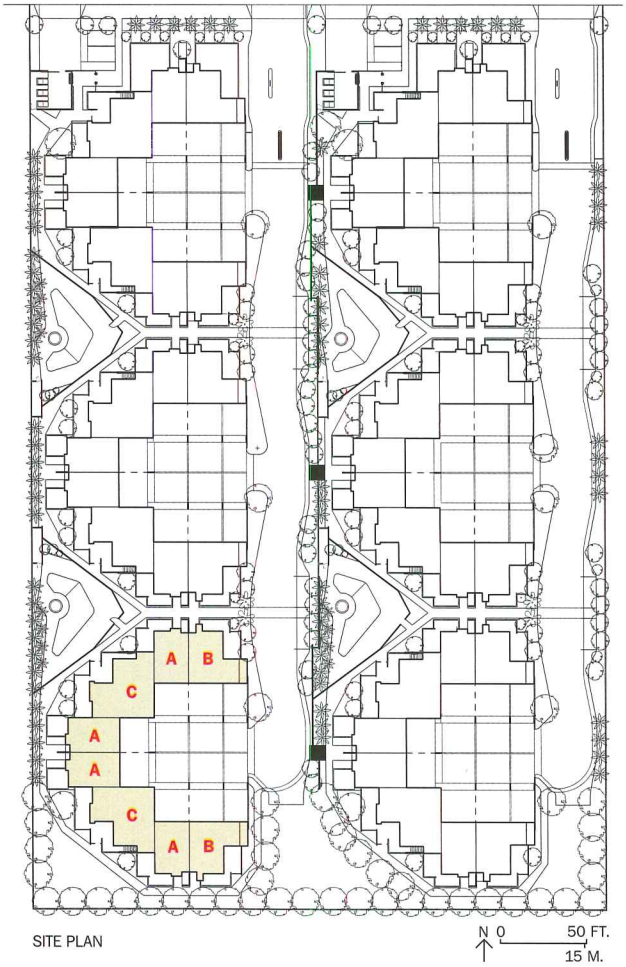
Joseph Giovannini is a New York–based critic and architect.

PHOTOGRAPHY: © BENNY CHAN/FOTOWORKS

A color palette of gray, silver, copper, and tan contributes to the Modernist aesthetics of these two-story units, built in clusters of eight, at 48@Arenas.

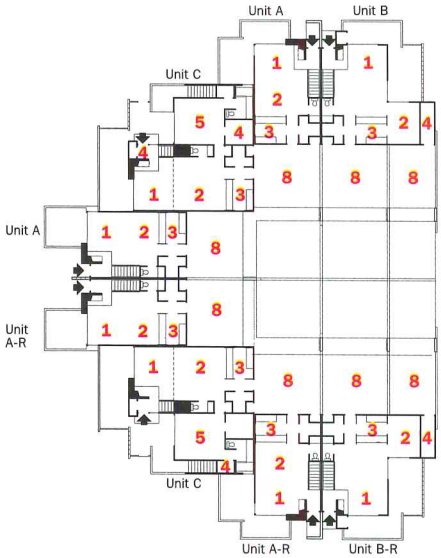
48@ARENAS

First-floor, double-height public areas receive considerable sunlight from a wall of windows. A glass guardrail and open risers on the stairway enhance transparency (bottom right). Each unit includes a terrace or a yard; metal trellises above the terraces are among the outdoor amenities (right).

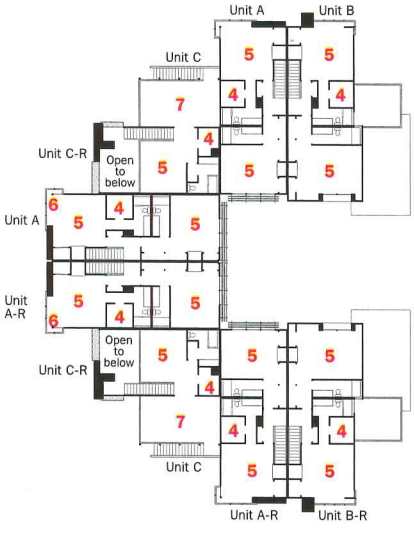


SITE PLAN

1. *Living room*
2. *Dining room*
3. *Kitchen*
4. *Closet*
5. *Bedroom*
6. *Balcony*
7. *Deck*
8. *Garage*



UNITS A, B & C, FIRST FLOOR



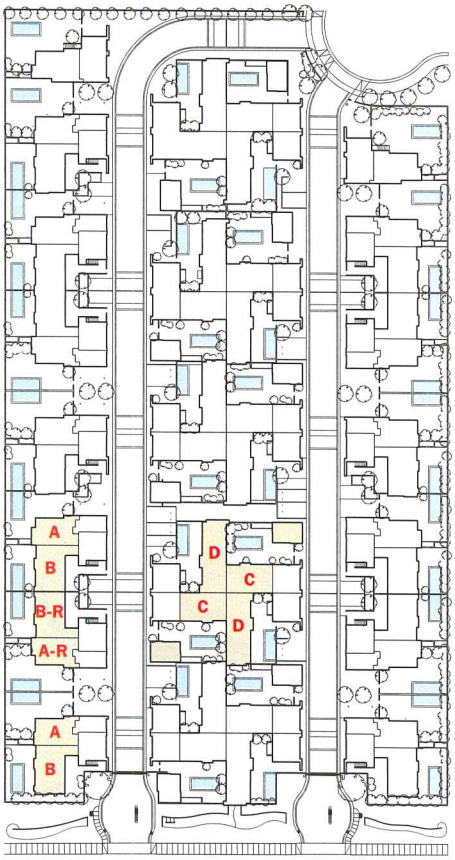
UNITS A, B & C, SECOND FLOOR

0 10 FT.
3 M.

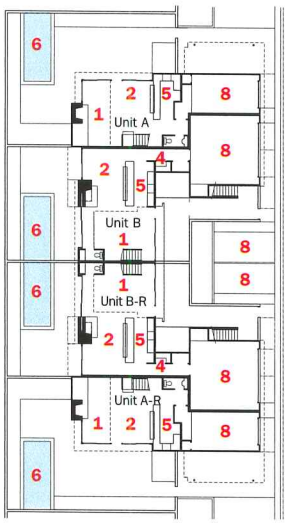
Modern furnishings within the rooms complement the aesthetic of the architecture. All units feature fireplaces and an open-plan living, dining, and kitchen area (this page).

48@BARISTO

The relationship of the two-story living room to the two bedrooms on the second floor determines the A and B schemes of the project (top right). An outdoor space with a small pool is featured in each unit (bottom right). Throughout the development, the color scheme reflects the surrounding desert and complements the drought-tolerant vegetation (below and bottom left).

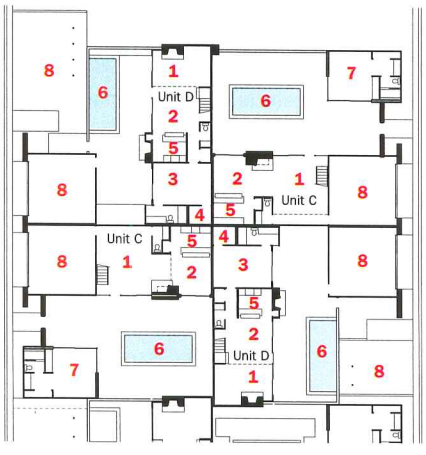


SITE PLAN



UNITS A & B, FIRST FLOOR

1. *Living room*
2. *Dining room*
3. *Bedroom*
4. *Closet*
5. *Kitchen*
6. *Pool*
7. *Guesthouse*
8. *Garage*



UNIT C & D, FIRST FLOOR WITH GUEST HOUSE

The two-story clusters feature double-height living areas within a tightly knotted group of volumes pushed and pulled so that nearly every unit has outdoor space, either in the form of a terrace or yard. The architects affixed metal sunshades over the window and door openings, metal trellises above the terraces, and corrugated metal siding around yards.

The result is a masterly composition of forms rendered in a mixture of colors and materials that gives the impression of complexity. The design recalls Rudolph Schindler's early masterpiece, El Pueblo Ribera courts in San Diego, a tightly packed, highly articulated group of units whose indoor/outdoor relationship survives the density. As at the Ribera courts, the Arenas units blend into a complex spatial puzzle whose power lies in the complexity of an unexpectedly large whole: The cumulative reiteration of forms, spaces, colors, and plans exceeds easy reading. This is a cube for Rubik.

In another project, called 48@Baristo, which began in 2002 and is now being completed, each dwelling resides on its own parcel, yet the development is high density. Every two-story unit embraces an outdoor space with a small pool. Two basic organizational schemes underlie the design of these units—an A and a B defined by the relationship of the double-height living room to the two second-story bedrooms. The architects deftly vary and elaborate the typology throughout the site, cleverly masking the repetition through variation. A "casita" used as a guesthouse is built next to units when leftover space allows.

Commentary

The architects do not use the dense underlying typologies to justify historicized village styles. In fact, they purposefully avoid the tradition of Spanish Colonial buildings, which persistently remains the default local style in Palm Springs and Southern California. "Spanish Revival is the architecture of the colonizers, something that actually happened to the local Indians here," says McCarthy. His partner, Mark Kirkhart, adds, "The Modernist vision was socially inclusionary. It was optimistic, expressing faith in a democratic future instead of an inappropriate display of power and wealth."

What has changed since the earlier Alexander days is that the housing developments are built at a high rather than low density to an urban rather than suburban paradigm. The concept of the house as an object planted in a yard has shifted to the concept of a house virtually built to the lot lines, liberating interior space. The lot has been eliminated in favor of a building wrapped around central outdoor space. The architects adapt the abstract forms into highly negotiable cubic masses that allow great formal, environmental, and programmatic flexibility.

For about 20 years after World War II, Palm Springs became an exclusive playground for Angelenos seeking R & R in secluded privacy. When the Rat Pack and other Hollywood types decamped to other venues, standards lapsed, and a sorry collection of opportunistic development invaded the city, blighting the cityscape with a checkerboard of blandness and schlock.

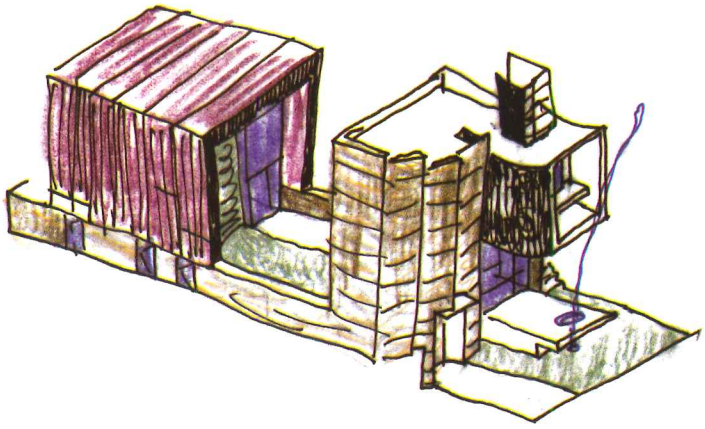
The invasion proved almost terminal for Palm Springs, whose cornerstone as a city was its glamour. But the new developments by DesignARC promise to help reverse the trend. Not only do they satisfy a national market, but they establish cumulatively an armature of architectural quality that gives the city new standards for existing precedents. As a body of work, these designs raise the bar, promising to renew and refresh the city, especially in the more commercial precincts outside the exclusive single-family enclaves. Ironically, the projects are, in a sense, historic restorations. They are helping to re-create a collective urban spirit, one that had recently threatened to become extinct. ■

Orange Grove
West Hollywood, California

3

PUGH + SCARPA CREATES A MODERN LANDMARK IN THE ECLECTIC AND OFTEN UNCONVENTIONAL NEIGHBORHOOD OF WEST HOLLYWOOD.

By Allison Milionis



Architect: *Pugh + Scarpa—Lawrence Scarpa, AIA, principal in charge; Ching Luk, project architect; Angela Brooks, AIA, Silke Clemens, Vanessa Hardy, Gwynne Pugh, AIA, Katrin Terstegen, project team.*
Owner: *Urban Environments*
Engineers: *Oxford Engineering (structural); DonLite Associates (m/e/p)*
Consultants: *Pugh + Scarpa (landscape)*
General contractor: *Becker General Contractors*

Size: *6,700 square feet, housing; 3,800 square feet, parking*
Cost: *$1.25 million*

Sources
Exterior cladding: *JDM Masonry (masonry); Blaney Sheet Metal (curtain wall); Mitchell Construction (concrete)*
Windows: *Milgard Windows*
Glazing: *Triepke Glass (glass); Acralight (skylights); Sunsational Skylights (solatubes)*
Doors: *US Aluminum; Timely; TM Cobb; Fleetwood*
Interior finishes: *Ikea (cabinetry); Shaw Industries (carpet); Dal Tile (tile); Palgard (paint)*
Plumbing: *Toto; Modern Arc*

For more information on this project, go to Building Types Study at **www.architecturalrecord.com**.

"There aren't a lot of bells and whistles," says Los Angeles developer Chris DeBolt of Orange Grove, a 6,700-square-foot complex tucked into a densely populated West Hollywood neighborhood in the heart of the Los Angeles metropolis. "We wanted to allow people to come in and create their own thing." A former developer of commercial properties, DeBolt had a change of heart when he made a rare find in West Hollywood, a vacant lot in a residential neighborhood teeming with eclectic low-rise apartments. Concerned that Los Angeles lacked enough "decent loft space," DeBolt hired Pugh + Scarpa to design a complex to appeal to a growing niche of buyers who seek flexible, open spaces. "I like the work of Richard Neutra and Rudolph Schindler, but I'm not trying to recreate that model," says DeBolt. "I'm interested in applying the minimal elements of Modernism to create urban environments with an edge."

Program

Rising above 1960s- and 1970s-era apartment buildings that face away from the street to shield residents from public gaze, Orange Grove's demonstrative street facade speaks volumes of the evolving notion of urban living in Los Angeles. Two balconies in the front—one completely open, the other shielded by rusted-steel louvers—create a physical and psychological relationship to the street. A steel window box offers an unobstructed view of the private life within.

An extremely tight budget dictated the materials palette, including the structural system—a conventional wood frame that is ideal for a tall, narrow building. The exterior materials include stucco, which speaks to the neighborhood's character, and steel and corrugated metal, which enclose the second-story balconies on the east and north facades. Principal Lawrence Scarpa says the tight budget was not an obstacle. "Good design and a small budget are not mutually exclusive," he explains. "It's a different way of thinking about budget. You have to address it right up front."

Solution

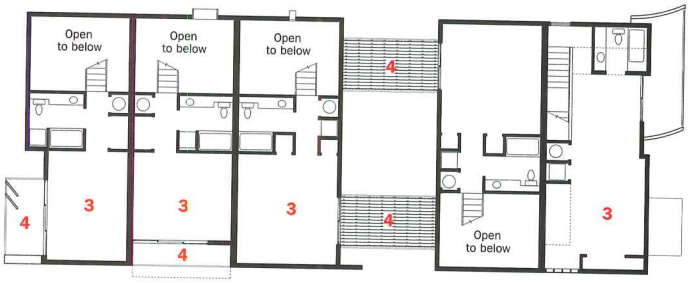
A walkway on the north perimeter of the building accesses the units on the ground floor. All five are on a north/south axis, and each shares

Allison Milionis is a Los Angeles–based writer and a regular contributor to ARCHITECTURAL RECORD.

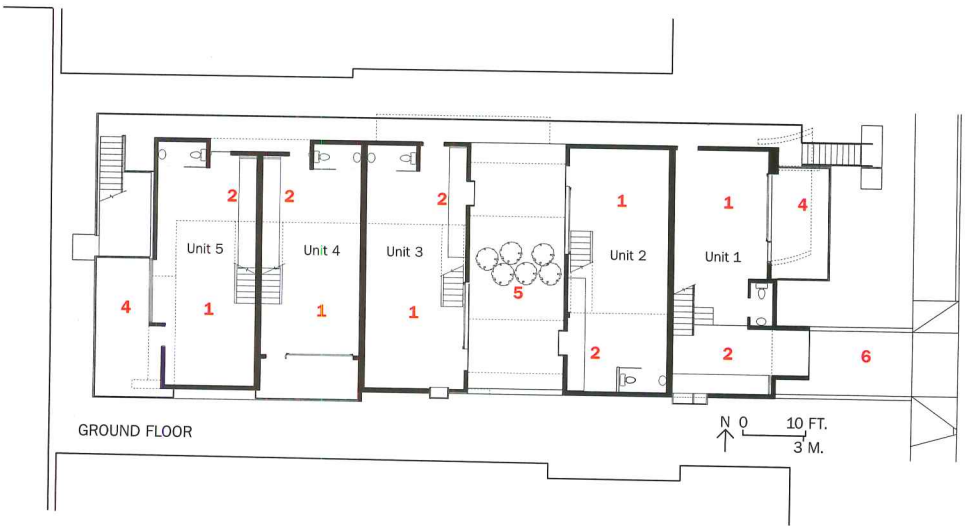
PHOTOGRAPHY: © MARVIN RAND

Located in a neighborhood of traditional bungalow-style single-family residences, Orange Grove displays a distinctive Modernist aesthetic, without overbearing its neighbors.

A floor-to-ceiling garage door and double-height ceilings open up the narrow footprint of the first-floor living-room area of each unit (left).



SECOND FLOOR



GROUND FLOOR

1. *Living room*
2. *Kitchen*
3. *Bedroom*
4. *Balcony*
5. *Courtyard*
6. *Driveway*

common traits with the others, such as a narrow, open floor plan with double-height ceilings, a semi-industrial material palette, simple finishes, and a floor-to-ceiling aluminum-and-glass garage door that opens onto one of two private balconies. In spite of the similarities, the units are distinct, if only in the position of the interior stairway and the location of windows and balconies, which are oriented for maximum solar exposure and privacy.

Kitchen cabinetry and appliances are rather modest, but the adjacent wet room (open shower and bathroom in one) is a sexy little number cordoned off from the main living area by a translucent glass wall and slider. When lit from inside, the room glows like a lantern, while occupants appear as shadowy forms. A single stairway constructed of steel, cable railing, and lacquered 2-by-12-inch wood risers is interrupted by a chipboard landing and mezzanine that serves as a transition area between the ground and second floors. The space is surprisingly functional as a home office, study, or small bedroom; it is illuminated by a skylight located directly above. The second flight of stairs reaches a spacious room that most residents use as a bedroom, with a full bath and balcony.

Scarpa explains that the site's narrow footprint called for height, but it serves another purpose. "Having taller spaces where there is no one living below or above is advantageous to the resident," says Scarpa. "It clearly establishes each person's domain, and I think is easier for people to live in."

Commentary

What's considered "bells and whistles" at Orange Grove is subjective, as several of the new owners can attest. Minimal only in terms of material palette and details, residents have found that openness and natural light are valuable amenities. Believe it or not, these attributes aren't easy to find in L.A. "I looked at hundreds of properties before I found this," says Daryl Buford, a sports attorney and new owner of one of the units. "I know the housing market really well, and there is nothing out there like this." ■

A stairway with open wood risers traverses the living-room space, pauses at a mezzanine level, then continues to the second floor.

The Titan
San Diego, California

4 **JONATHAN SEGAL ARCHITECT USES AN ARTFUL MIX OF MATERIALS, SOLIDS, AND VOIDS TO ANIMATE THIS MULTIFAMILY HOUSING PROJECT.**

By Ann Jarmusch

Architect: *Jonathan Segal Architect—Jonathan Segal, FAIA, Wendy Segal, Guillermo Tomaszewski, Sebastian Mariscal, Nancy Bokoveen*
Owner: *Jonathan Segal*
Engineer: *Omar Mobayed*

Size: *28,000 square feet*
Cost: *$2.4 million*

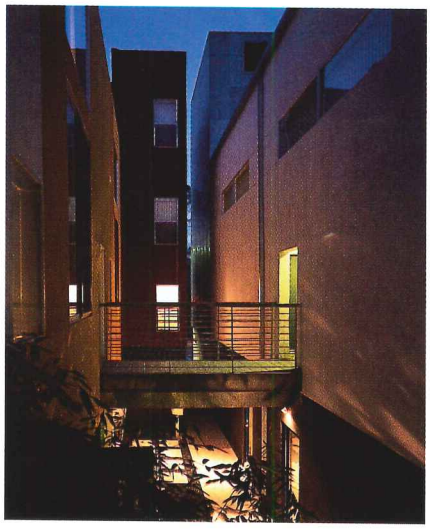
Sources
Exterior cladding: *US Aluminum*
Roofing: *Mansville*
Windows: *US Aluminum*
Glazing: *Bristolite (skylights)*
Metal doors: *Timely Frames*
Locksets: *Kwikset*
Exterior: *Expo (stucco)*

For more information on this project, go to Building Types Study at **www.architecturalrecord.com**.

For more than a dozen years, Jonathan Segal has bought parcels in downtown San Diego's redevelopment areas that others dismissed as either poorly located or oddly shaped. An architect, developer, and builder, Segal accurately predicted San Diegans' ripening attraction to dense urban living. He and his wife and business partner, Wendy, correctly assumed a revitalized downtown would attract people looking for distinctively designed row houses and lofts that engage the street. Segal designed and built a series of flexible live-work dwellings on what were then downtown's fringes [RECORD, January 2003, page 180, and March 1999, page 91].

Program

Segal's latest project, The Titan, stands opposite the roaring San Diego Freeway (Interstate 5) and between two contrasting buildings. One is a demure old residential structure with a stepped parapet, cornice, and double-hung windows. An assertive assemblage of rental lofts surmounted by private towers designed and built by Smith and Others, a small but influential San Diego firm, flanks The Titan's other side. Segal chose his building's name partly to match the power of its neighbor, The Essex, which Ted Smith named for, and modeled after, an aircraft carrier.



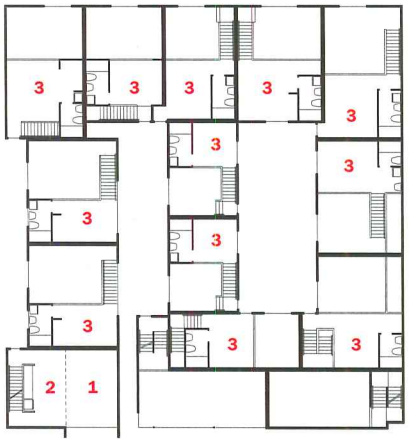
Segal saw a need for rental housing on the edge of Little Italy, a small, walkable downtown neighborhood between the freeway and San Diego Bay that because of its character and location attracted redevelopment at lightning speed. New condominium towers and full-block housing complexes now crowd around its low-rise main street, which is lined with Italian restaurants, small businesses, and trendy new shops.

Two forces unfamiliar to Segal helped shape The Titan and sent him in a new design direction. First, land prices in the popular neighborhood were rising rapidly. Developers who had expected rents would rise sharply due to San Diego's affordable-housing crunch instead gained only small increases. With interest rates low, renters who could afford to buy a home jumped at condos in such numbers that downtown developers nearly stopped building new apartments.

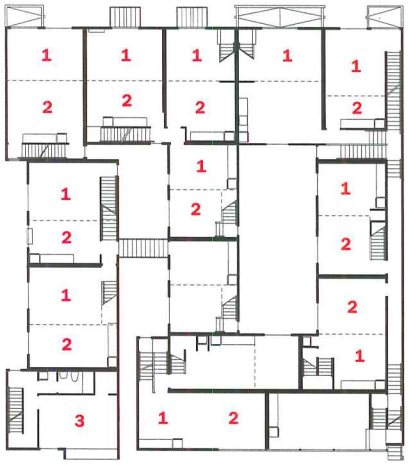
Ann Jarmusch is the architecture critic at The San Diego Union-Tribune.

PHOTOGRAPHY: © JIMMY FLUKER

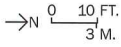
The buildings' syncopated facades—one a soaring, slim vertical composition; the other, horizontal and heavy with rusted steel and a black base—contain different housing options with contrasting apertures that frame city views (this page and opposite, top). A narrow alley between these two volumes leads to a small communal courtyard (opposite, bottom).



THIRD FLOOR



SECOND FLOOR



Natural light floods the units that face east and the roaring San Diego Freeway. They overlook the urban scene from behind laminated glass (above right). The units around the back face west (above left), where they are poised to capture ocean breezes.

1. *Living room*
2. *Dining/kitchen*
3. *Bedroom*

Segal's financing of The Titan as rental housing depended on his keeping construction costs in check. "We had the absolute tightest budget we've ever worked with: $86 per square foot," Segal said.

Second, he had become enamored of the late-20th-century sculpture of Donald Judd and painting of Richard Diebenkorn. Both artists explored geometry, whether in Judd's precise steel boxes or Diebenkorn's veiled views of Ocean Park, in Santa Monica, as a means of ordering space, form, and perception. Segal aimed to translate aspects of their art into a public facade with "scale and rhythm to dance down the street."

Solution

To reinforce the human scale of The Titan's city block and invigorate the streetscape, Segal designed it to appear as two discrete buildings of contrasting geometries, scale, materials, and color. In a bold move, he clad the front of the larger facade in rusted, mild steel, which he calls "natural art." Stucco walls, which dominate the exterior, offset the steel's high cost. In contrast to this "heavy metal" horizontal box, the narrower, largely transparent glass-and-stucco companion facade shoots skyward and ends up taller.

A slender walkway leads from the street to an interior courtyard that unites the companion facades. This courtyard, which is hidden from the street, forms a social crossroads, where residents collect their mail and head home or out into the city.

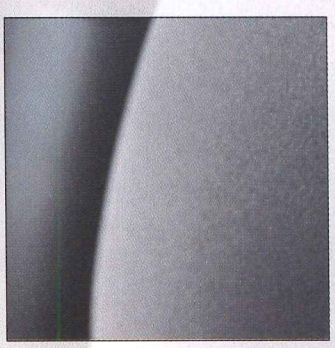
To slice costs and maximize the space in The Titan's 22 units, Segal eliminated elevators and traditional fire-stair towers, underground parking, and double-loaded corridors. Reached by private entrances on the street or via short, open-air stairways shared by no more than two other units, the apartments are stacked and interlocked, like a Rubik's Cube.

Ranging from 450 square feet to 950 square feet, each unit is designed to feel bigger than it is, thanks to a double-height living area, sleeping loft, and generous amounts of natural light. Windows come in two sizes—large and enormous—some fashioned from ordinary sliding-glass doors, others made with laminated glass to muffle freeway noise. Most units connect with the outdoors via a private patio or balcony, and one boasts a bridge as its sole entry point.

The steel-clad section wraps around a street-level parking court with only 13 spaces. It doubles as a light well for some units and, Segal maintains, offers residents more safety than a garage because the court is highly visible and easily monitored.

Commentary

The Titan is a strikingly sophisticated addition to a fast-changing neighborhood, and a distinctive place to call home. Its street facade is as artfully composed as a painting, as sensuous as a mixed-media sculpture. Surprises lie within its colorful courts, quirky stairways, and airy, irregular units. As refined as The Titan may be in itself, its facade also complements its two neighbors, playing off of their horizontal and vertical elements, graduated rooflines, and personalities. ■



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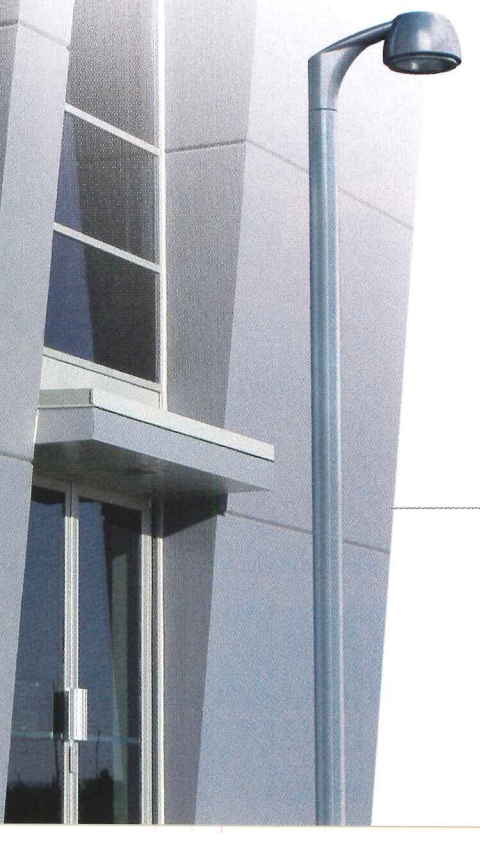

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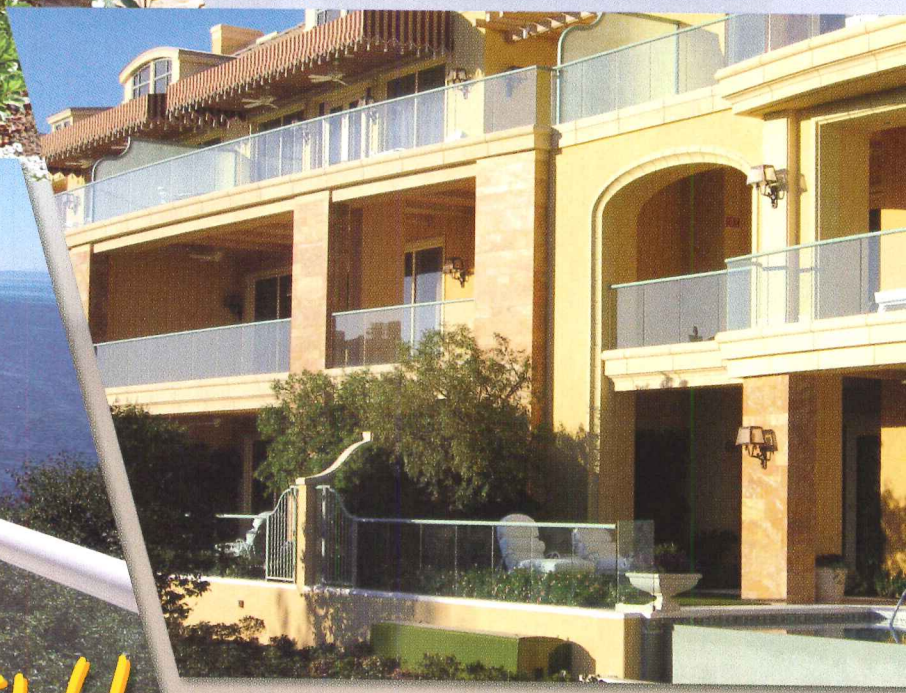

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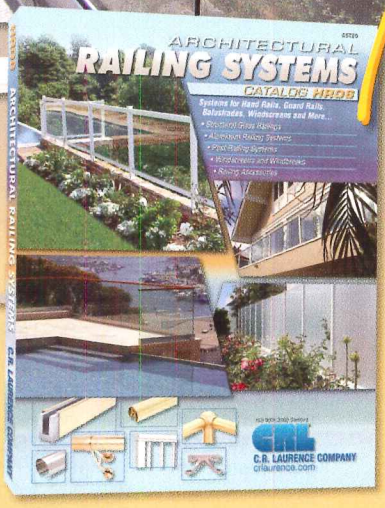

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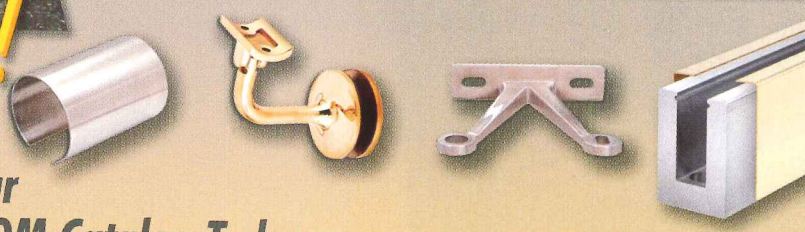

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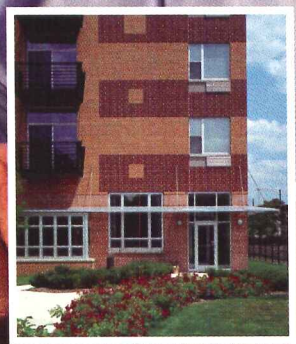

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The Pick of the Sustainable Crop

THROUGH ITS ANNUAL AWARDS PROGRAM, AIA'S COMMITTEE ON THE ENVIRONMENT APPLAUDS WELL-DESIGNED, HIGH-PERFORMANCE BUILDINGS THAT REFLECT DIVERSE PLACES AND PURPOSES

By Nancy B. Solomon, AIA

For the ninth year in a row, the AIA's Committee on the Environment (COTE) celebrated Earth Day by announcing the winners of its 2005 Top Ten Green Projects awards program. This year's recipients, which hail from disparate regions of the country, clearly illustrate that sustainable design can take many forms.

Two of the winners, for example, were adaptive-reuse projects: an interpretive center on a nature preserve in rural Pennsylvania (The Barn at Fallingwater by Bohlin Cywinski Jackson) and a glass foundry in a once-decaying urban neighborhood (Pittsburgh Glass Center by Davis Gardner Gannon Pope Architecture and Bruce Lindsey, AIA). Another was an unusual building type—a homeless shelter—within a central business district (Austin Resource Center for the Homeless, Austin, Texas, by LZT Architects).

According to juror Henry Siegel, FAIA, of Siegel & Strain Architects in Emeryville, California, "We went out of our way to look for buildings that are more urban or address atypical programs. We want to see diversity in this award, not just campus buildings and nature centers." While a plus, an unusual building type is not enough to earn top recognition in this program. COTE Top Ten buildings must demonstrate both good design and good performance. In fact, explains Mark Rylander, AIA, associate partner at William McDonough + Partners in Charlottesville, Virginia, and past chair of COTE, "You can have stellar metrics but not win an award if the jurors don't find the design compelling."

Regular RECORD contributor Nancy B. Solomon, AIA, writes about building technology, sustainability, and construction innovation.

CONTINUING EDUCATION

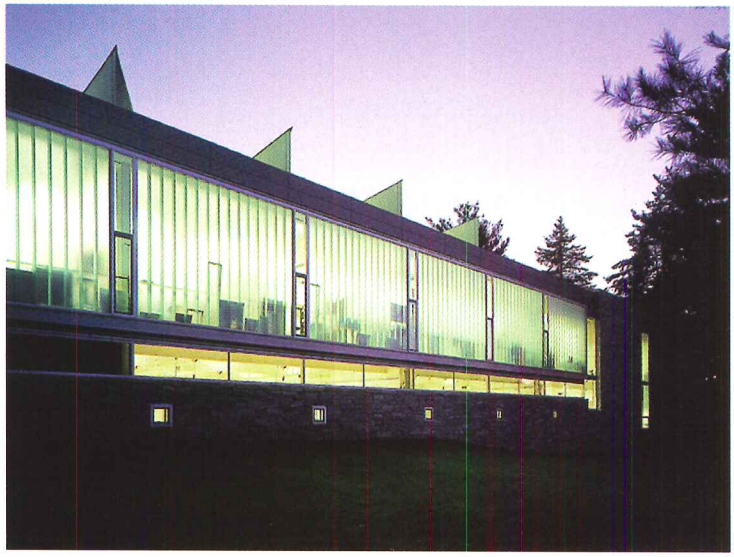
Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/AIA Continuing Education article. To receive credit, *turn to page 160 and follow the instructions.* *Other opportunities to receive Continuing Education credits in this issue can be found on page 167.*

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. *Describe unique sustainability characteristics in the case studies.*
2. *Explain what the COTE jurors are looking for in submissions.*
3. *Discuss why innovative approaches were used to address specific requirements in these projects.*

For this story and more continuing education, as well as links to sources, white papers, and products, go to **www.architecturalrecord.com**.



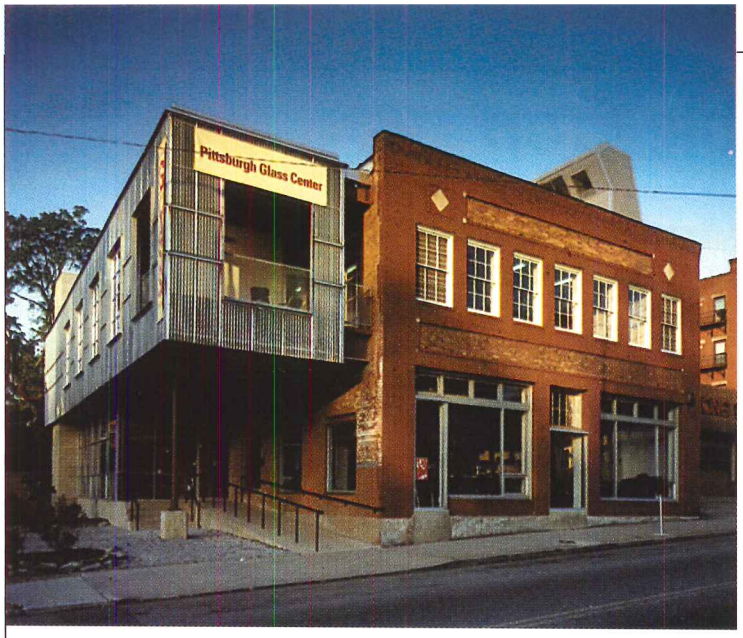
COTE-award-winner Polshek Partnership lessened the impact of the visual arts center at Sarah Lawrence College by placing one third of it underground.

PHOTOGRAPHY: © RICHARD BARNES/POLSHEK PARTNERSHIP

But once aesthetics are satisfied, the really hard work begins. In addition to the typical package of drawings and photography submitted to more conventional design awards, the project teams must provide documentation that describes and supports the project's performance characteristics within the 10 measures, or categories, that underlie COTE's definition of sustainable design: land use, site ecology, community design and connection, water use, energy performance, energy security, materials and construction, light and air, bioclimatic design, and long life,loose fit.

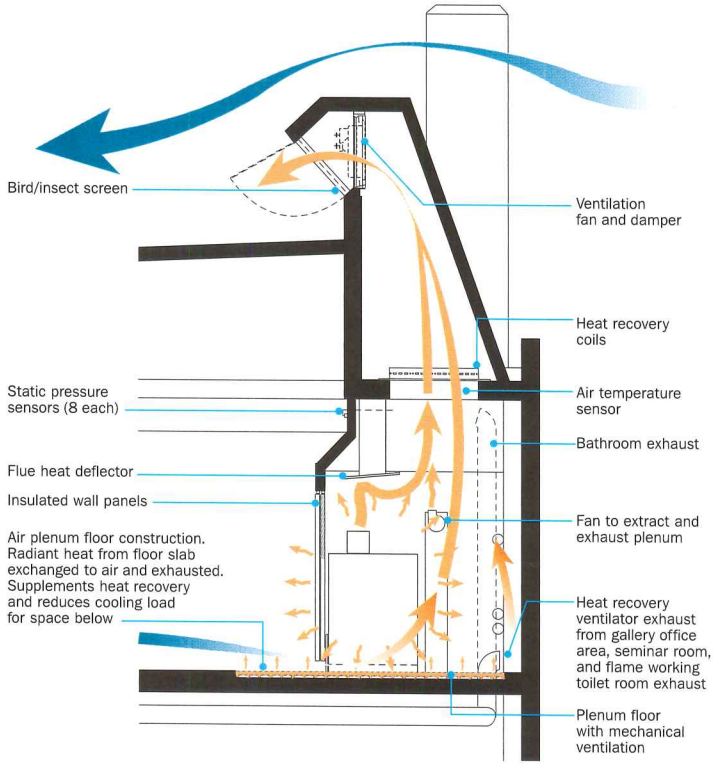
Although all the winners seem to address the 10 measures to some degree, different aspects of sustainability are pursued more rigorously from one to the other, depending on localized opportunities and constraints. Of the three winners highlighted below, for example, University of Florida's Rinker Hall, in Gainesville, basks in daylighting; the Austin shelter flouts innovative materials and a visually striking storm-water runoff system; and the Pittsburgh glass studio keeps its cool—in the face of blistering heat—with convection-induced airflows. Rylander underscores the fact that sustainable design does not lend itself to universal solutions, but rather to the key environmental issues of a unique place. "COTE is really interested in understanding how these projects begin to express what it means to build in a particular region," he adds.

There were some surprises in this year's contest. First, there were only eight announced award recipients rather then the typical 10, due not to a dearth of good projects but to a technical glitch relating to the application of new eligibility requirements that was uncovered only after the jury had made its final selections. Also unexpected, the jurors decided to offer a special commendation to Lloyd Crossing Sustainable Urban Design Plan by Mithun of Seattle. Its guidelines suggest ways to increase the density, within an environmentally sustainable framework, of a 35-block inner-city commercial neighborhood in Portland, Oregon. Lloyd



Pittsburgh Glass Center, Pittsburgh, Pennsylvania

This 17,600-square-foot adaptive-reuse project (left) by DGGP and Bruce Lindsey, AIA, relies to a great extent on a natural ventilation system triggered by the glass furnaces in the hot shop (opposite). Garage doors function as operable windows on the addition's second-floor to provide fresh air (bottom left). First-floor offices and gallery are fully conditioned (opposite, bottom). Heat from the glass-making equipment is recovered (below).



SECTION SHOWING HEAT RECOVERY SYSTEM

Crossing was not eligible for a Top Ten award because, as a plan rather than a built work, it could not be reviewed for the 10 performance metrics. Nonetheless, says juror Siegel, "We wanted to applaud the effort." The commendation reflects an increased desire on the part of COTE "to bring sustainability to the community level," he adds.

Pittsburgh Glass Center

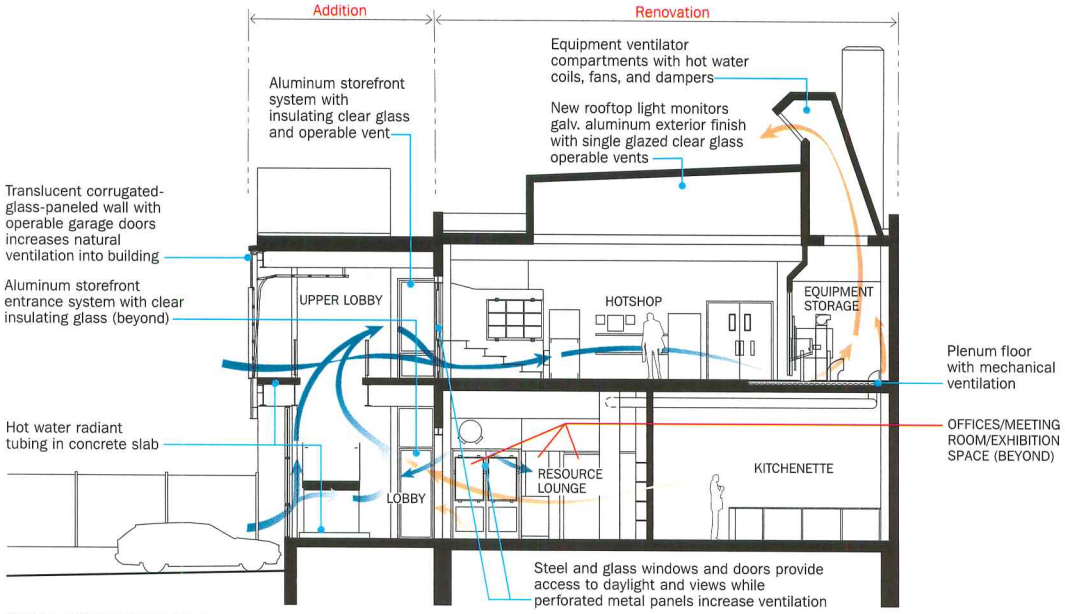
Before steel was king, Pittsburgh was a hub for glass making. The city was perfect for the industry, explains Kevin Gannon, AIA, a principal of the local firm Davis Gardner Gannon Pope Architecture (DGGP): "Coal tumbling down the mountains served as fuel to melt the sand dredged from the rivers below." But once steel soared, most of the art-glass foundries foundered. Now that the steel mills too have gone by the wayside, it seems only fitting that, in an effort to revitalize one of the city's historic neighborhoods, the Urban Redevelopment Authority of Pittsburgh supported the building of a facility to promote the art of glass making. The 17,600-square-foot adaptive reuse project was completed in January 2002.

With funding from sustainable-minded organizations such as the Heinz Endowments and the Richard King Mellon Foundation, the nonprofit Pittsburgh Glass Center insisted on a green building from the start. The decision to adapt a vacant two-story structure and adjacent lot on an urban site with good access to public transportation was one of the project's earliest eco-friendly moves, even before the architectural team was brought on board. DGGP designed the center in collaboration with Bruce Lindsey, AIA, currently head of the School of Architecture at Auburn University in Alabama.

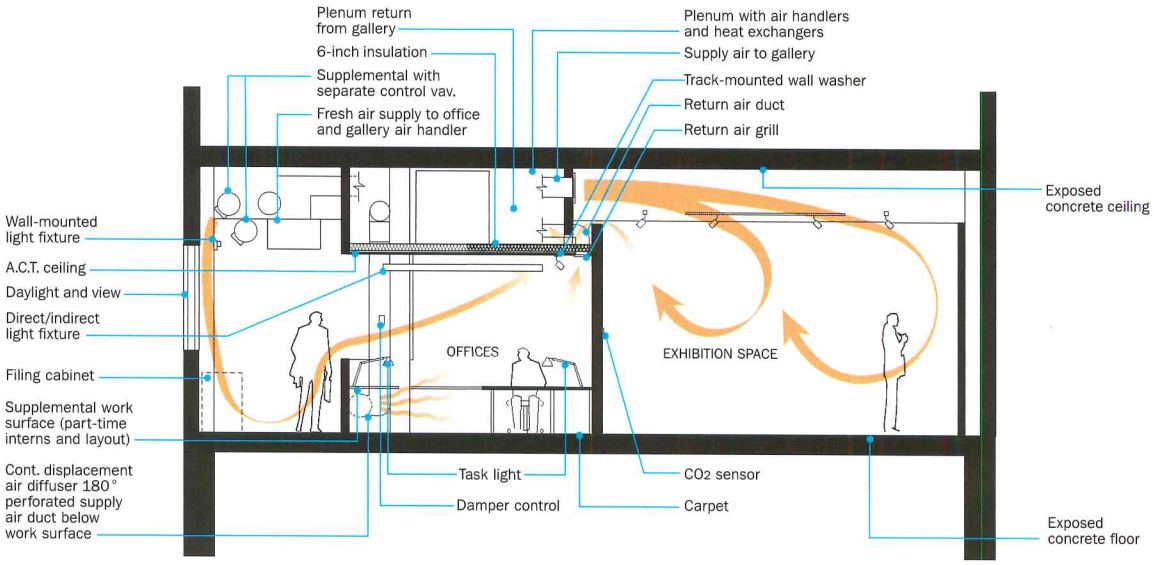
The design team added a two-story, steel-framed entry along the original east wall. Its first floor is sheathed with aluminum-framed clear glass and its second with salvaged translucent-corrugated-glass panels and aluminum battens. This public zone looks out onto a landscaped pervious courtyard paved with crushed limestone that doubles as a parking lot. From this entry, one can access the new program spaces located within the shell of the old brick building: flameworking studio, seminar room, exhibition space, and offices on the first floor; hot, technical, casting, and coldworking shops on the second floor.

The glass-making process centers on the hot shop, where two 1,000-pound glass furnaces, eight glory holes, and several electric annealers line up along the west wall. Turning a problem into an opportunity,

PHOTOGRAPHY: © ED MASSERAY/DGGP ARCHITECTURE



SECTION SHOWING VENTILATION



SECTION THROUGH OFFICES AND GALLERY

the architects took advantage of this heat-intensive equipment to create a mechanical system for the building that is as energy efficient as possible.

Relying largely on convection, the architects use the heat of the glass furnaces to activate a natural ventilation system throughout most of the building. Extending beyond the roofline above the zone of equipment is a 100-foot-long hood assembly. It is segmented so that each compartment functions as a distinct vertical flue through which heat rises. Openings at the top are oriented so that the exhaust from the building will flow out in sync with the region's prevailing wind currents. Ventilation fans at the top of the hoods are activated as needed by sensors to supplement the convective exhaust system.

The stale air exiting the hot-shop chimneys draws replacement air from unconditioned spaces on the first and second floors. These areas, in turn, pull fresh air from the outdoors via a variety of operable windows and vents. To permit this uninhibited flow of air through multiple spaces in a mixed-use building, the architects needed a building variance that would allow them to treat much of the building as an atriumlike space. The design team had to provide a sufficient number of sprinkler heads, specify fire-alarm sensors, and develop equipment-shut-off protocols, for example, in order to forego fire dampers, ducted return systems, and 2-hour-rated doors and partitions at critical transition points.

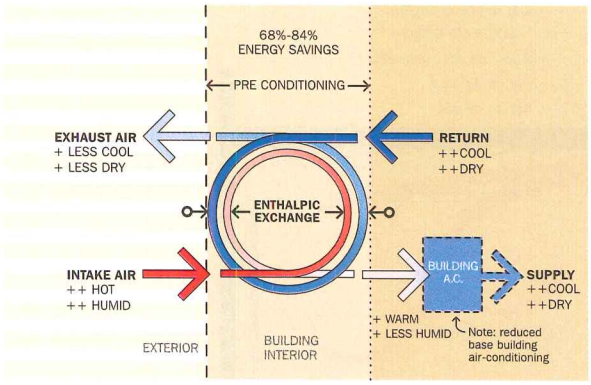
There were some exceptions to this unimpeded flow of air. Certain areas were mechanically isolated either because the activities they supported, such as welding, plaster-mold making, and sandblasting, generated unhealthy particulates or because they needed to be more fully conditioned to meet standard expectations, such as the offices, classrooms, and gallery. For additional energy savings, heat-recovery coils were installed within the hood assembly to transfer all waste heat to a liquid medium that is then circulated to radiant floors and air-handlers in other parts of the center.

Rinker Hall

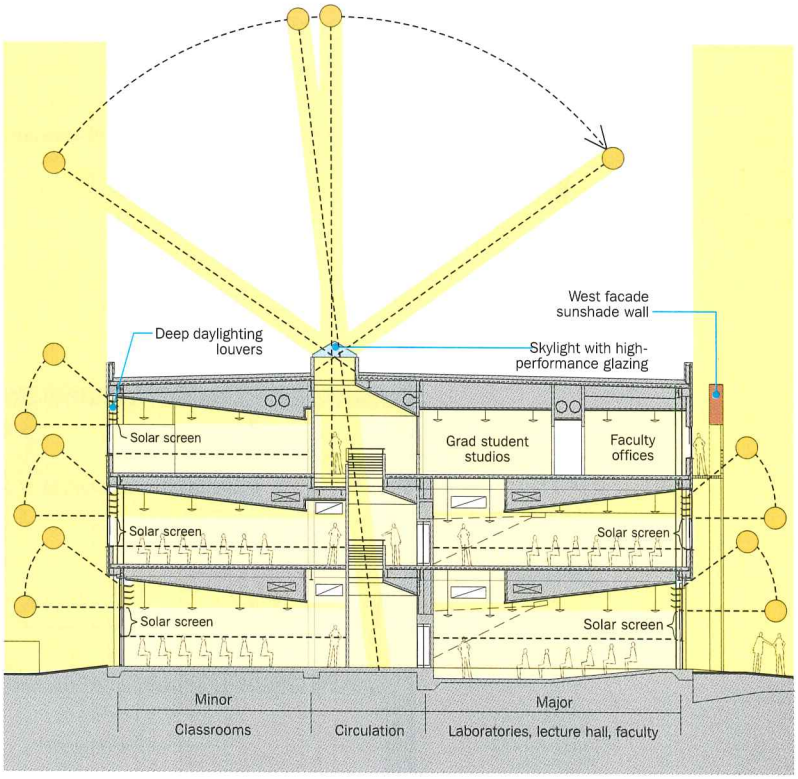
As architectural commissions go, Rinker Hall in Gainesville, Florida, represents both the extraordinary and the ordinary: extraordinary because the building is the new home of the M.E. Rinker, Sr., School of Building Construction, a department of the University of Florida's College of Design and Construction, so the client and stakeholders were themselves well-versed in the art and science of place making; ordinary because, as is

Rinker Hall, Gainesville, Florida

Croxton Collaborative Architects + Gould Evans Associates oriented the University of Florida's School of Building Construction on a north-south axis to capture low-angle light (below right). A brick-walled outdoor area (right) serves as a construction yard. An enthalpy wheel filled with dessicant crystals rotates between intake and exhaust-air flows to transfer heat and moisture from the incoming stream to the outgoing one, reducing the building's operational costs (below).



ENTHALPY WHEEL EFFECT SHOWN AT DOMINANT TROPICAL CLIMATE CONDITION



EAST-WEST SECTION

0 10 FT.
3 M.

typical of a project for a public university, its funding was limited. The client and architectural team demonstrated that, by working closely and thoughtfully together from the start, an attractive, high-performance design could be delivered within a standard schedule and a no-frills budget. Completed in March 2003 for a mere $137.50 per square foot, Rinker Hall received a LEED rating of gold in 2004.

"It was an exercise in resourceful design," says Randolph R. Croxton, FAIA, of Croxton Collaborative Architects in New York, which undertook the project through a joint venture with Gould Evans Associates, a firm with offices in seven locations, including Kansas City, Missouri. "It's almost a bare-bones, reductionist building," suggests Croxton, "yet it has an inherent richness that won't diminish over time, because its panache comes from nature rather than from very expensive, capital-intensive gestures."

Reflecting the belief that sustainable design embodies not only environmental concerns, but social and economic ones as well, the design team chose to orient the building along a north-south axis out of respect for existing landmarks, and to use patterns identified during a three-day site-planning charrette with students, faculty, and staff. It was determined, for example, that the main entrance to Rinker Hall should front Newell Drive, which runs along the west boundary of the site, because the road leads north to the heart of the campus. In addition, participants wanted to preserve an open commons area to the northeast, a footpath along the southern edge, views north to the university's memorial tower from two dormitories south of the site, and several hundred-year-old specimen oaks.

A north-south axis in this part of the hemisphere flies in the face of conventional, passive-solar design, which teaches that a rectangular building should run along an east-west axis so that its long elevations will face north and south. At the latitude of Gainesville, this configuration minimizes thermal exposure to the hot summer sun but also limits daylighting opportunities.

Although Croxton agrees that the east-west axis made sense when passive solar design was in its infancy, he argues that technological advances over the years—specifically, high-performance glazing that lets in the visible light spectrum while filtering out hotter infrared rays, plus continuously operating light sensors and dimming ballasts that minimize energy usage when daylighting is plentiful—has changed all this. His

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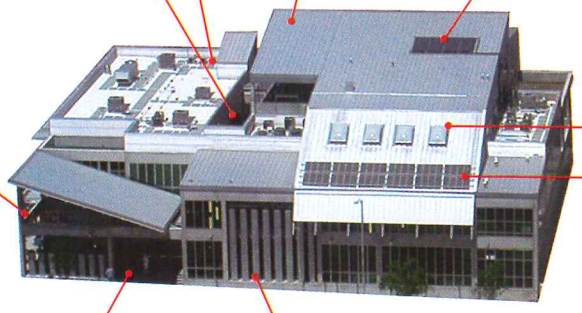
Austin Resource Center for the Homeless (ARCH), Austin, Texas

This 26,800-square-foot municipal building (top) by LZT Architects exhibits numerous sustainable strategies (below right). For example, a 13,000-gallon rainwater-collection system (below) helps to minimize local flooding concerns. A "stack-cast tilt-frame" structural system (right) reduces the amount of formwork required while increasing the quality of the concrete finish, thereby reducing the total amount of materials needed for the job.



GREEN FEATURES

research—through previous projects and computer modeling—suggests that, when designed correctly, a building oriented along the north-south axis can actually benefit, in terms of both energy efficiency and indoor environmental quality, from its more abundant and varied daylighting.

The organization of the 47,300-square-foot building is straightforward: The main entrance near the center of the west facade leads to a central, skylit circulation spine that runs north-south. On a sunny day, a beam of light cascades down the atrium's open staircases to mark solar noon. The brightly lit vertical space is flanked on both sides by classrooms, laboratories, staff offices, and student facilities. Multiple bridges on the second and third floors connect the two sides.

Because of the orientation, daylight control is highly sophisticated. On the east and west facades, the architects specified large exterior windows with spectrally selective glazing to admit abundant visible light while blocking solar heat gain. Interior solar screens installed just above eye level can reduce light transmission by 97 percent when deployed.

Above the solar screen is a system of extruded aluminum louvers that bounce light toward a sloping ceiling. The carefully crafted geometry allows daylight to penetrate significantly deeper into the building for longer periods of time than would be possible in a similarly proportioned building oriented east-west at the same latitude.

Coupled with artificial lighting that is controlled by photosensors and dimming ballasts, this careful manipulation of natural light saves a significant amount of energy by greatly reducing the need for electrical illumination. But Croxton argues that the benefits go far beyond the simple economics: "The power of the building is that you can live a day in nature." Occupants on either side of the building enjoy half a day with abundant diffused light—the most ideal form of illumination—and half a day with the delightful variations in light conditions that occur as the sun traverses the sky between zenith and horizon. Connecting to the latter—nature's own circadian rhythm—allows occupants to experience what Croxton describes as "the most primitive, deep-seated aspects of comfort."

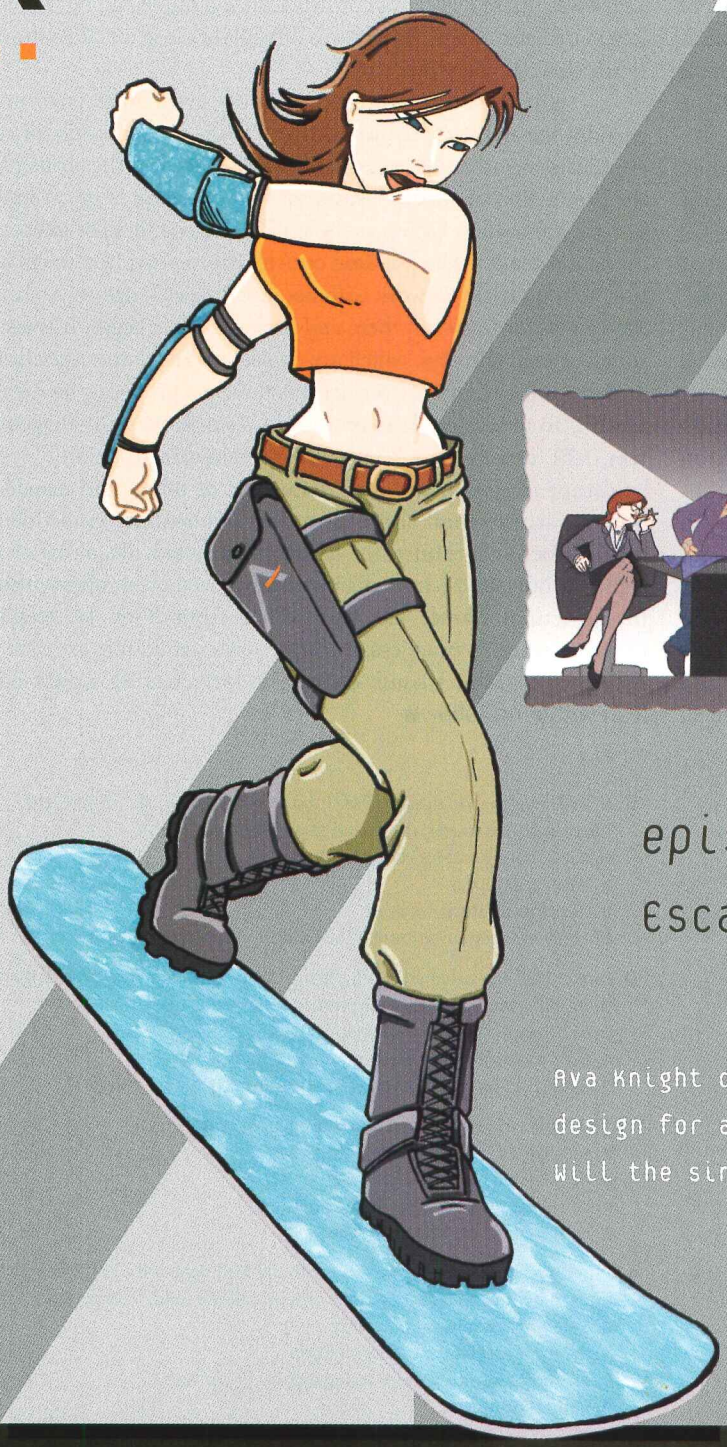
Austin Resource Center for the Homeless

Completed in April 2004, the 26,800-square-foot Austin Resource Center for the Homeless provides both temporary shelter and long-term support programs for the indigent on the site of a former gas station in the heart of Austin, Texas. The city-run facility, designed by the local firm

PHOTOGRAPHY: © THOMAS MCCONNELL PHOTOGRAPHY

Avonita

Designer Superhero



episode 1

Escape from blah color hell

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LZT Architects, includes a double-height lobby, health clinic, laundry facilities, locker room, and computer room on the first floor; kitchen, dining room, meeting rooms, showers, sick room, and administrative offices on the second floor; and sleeping quarters, restrooms, and an outdoor terrace at the top. The building's exposed structural system, a series of parallel concrete frames braced perpendicularly with concrete beams, affords spatial orientation, multiple visual connections, and abundant daylight—qualities that offer much-needed comfort, security, and hope to an underprivileged population.

During the predesign phase, Austin's city council approved an ordinance requiring that the design of any new municipal building follow the guidelines developed by the U.S. Green Building Council for its LEED rating system. "We were very excited about that," says project architect Murray Legge, AIA, "because it gave the client a set of helpful parameters." It also gave the design team an opportunity to engage local environmental building consultant Gail Vittori of the Center for Maximum Potential Building Systems.

The team was particularly resourceful in their approach to material selection and water management. The structure, for example, relies on an innovative process dubbed "stack-cast tilt-frame." Traditional cast-in-place concrete is expensive (because of the extensive amount of formwork required) and difficult to finish properly, so structural engineer David Powell of the local firm P.E. Structural Consultants proposed instead that the 12-inch-thick concrete frames be cast on the ground—one on top of the other like a stack of pancakes—with reusable forms, and then lifted into place with a crane. This approach allowed the contractor to easily and efficiently pour and agitate the concrete mix so that it would flow into all corners of the mold, resulting in a clean, attractive finish at a reasonable cost. Because the surface was of such high quality, the structural elements could remain exposed on both the exterior and interior, thus reducing the total amount of finishing materials required for the building. Overall, Legge was pleased with this construction technique, but he would prefer a larger area next time: "Staging was difficult because we had a tiny little site in which to lay the pieces out."

To make the concrete assembly even more environmentally friendly, the architects requested that fly ash—a by-product of coal-fired electrical generation—be substituted for 45 percent of the portland cement, the production of which releases significant amounts of carbon dioxide into the atmosphere each year. Fly ash is stronger and, since free for the taking, less expensive than portland cement. It also provides a warm brownish tint. "But it's tricky to work with because it takes longer to set up, forcing the contractor to sit out there and babysit," notes Legge. It is also poorly suited to cold climates, which are subject to frequent freeze-thaw cycles.

Austin suffers from serious flooding problems because it lacks topsoil. To reduce the load on the city's storm-water-management system, LZT developed a 13,000-gallon rainwater-collection system for landscape irrigation and for the flushing of toilets and urinals. Seeing both an architectural and educational opportunity embedded in this highly functional feature, the designers installed, like a row of sentries, eight 21-foot-tall, 24-inch-diameter galvanized-steel tubes within one of the structural frames just east of the front door. In keeping with resource-efficient practices, the water cisterns double as solar-shading devices in front of a south-facing window, creating a diffused, pearly light within the lobby. ■

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- **Read the article "The Pick of the Sustainable Crop" using the learning objectives provided.**
- **Complete the questions below, then fill in your answers (page 264).**
- **Fill out and submit the AIA/CES education reporting form (page 264) or download the form at www.architecturalrecord.com to receive one AIA learning unit.**

QUESTIONS

1. Sustainable design lends itself to which type of design issues?
- **a.** universal design issues
- **b.** community design issues
- **c.** unique environmental design issues
- **d.** regional design issues

2. COTE Top Ten buildings must demonstrate which qualities?
- **a.** good performance and good location
- **b.** good design and good performance
- **c.** good design, good performance, and good location
- **d.** good location and good design

3. Which best describes the documentation included with drawings and photography for COTE awards?
- **a.** performance characteristics in 10 categories of sustainable design
- **b.** impact on commercial urban neighborhood
- **c.** calculations of amounts of daylight
- **d.** amount of fly ash contained in the concrete mixture

4. Which was not one of the earliest ecological decisions at Pittsburgh?
- **a.** adapting a vacant two-story structure
- **b.** selecting a site with good access to public transportation
- **c.** using salvaged translucent-corrugated-glass panels
- **d.** selecting an urban site

5. In order for the Pittsburgh Glass Center to draw fresh air through the unconditioned spaces, the design team had to do which?
- **a.** use 2-hour fire doors and partitions
- **b.** use fire dampers
- **c.** use ducted return systems
- **d.** apply for a variance to treat the building as an atriumlike space

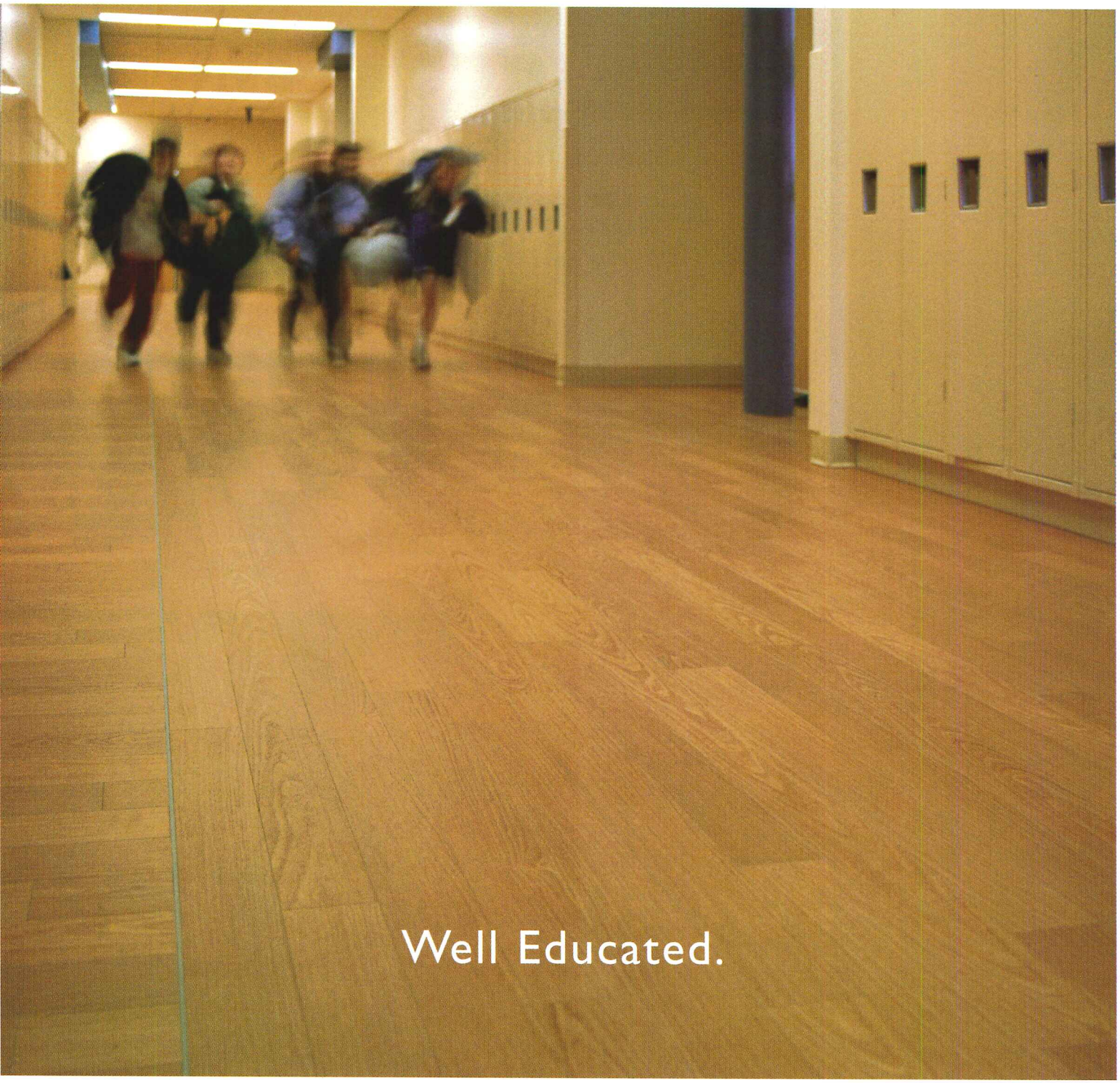
6. Rinker Hall was oriented along a north-south axis for all except which reason?
- **a.** to minimize exposure to the hot summer sun
- **b.** to be respectful of existing landmarks
- **c.** to take advantage of the abundant daylight
- **d.** to keep a view of the memorial tower from two dormitories

7. The Rinker Hall solar screens allow daylight to do which?
- **a.** penetrate deep into the building
- **b.** be reflected out of the building
- **c.** penetrate the perimeter of the building
- **d.** be stored for use at a later time

8. When occupants spend a half day with diffused light and a half day with variations in light conditions, Croxton says this allows them to experience what?
- **a.** a significant amount of energy
- **b.** the most ideal form of illumination
- **c.** the most primitive, deep-seated aspects of comfort
- **d.** natural healing

9. The Austin Resource Center used tilt-frame concrete for which reason?
- **a.** because they had limited space to work
- **b.** in order to reuse one form, saving the expense of many
- **c.** to make the concrete pouring process faster
- **d.** to make the concrete finishing process cleaner, more attractive

10. Fly ash was added to the concrete for all except which reason?
- **a.** to cut down on the carbon dioxide released into the atmosphere
- **b.** less expensive than portland cement
- **c.** fly ash provides a warm brownish tint
- **d.** sets up quicker than portland cement



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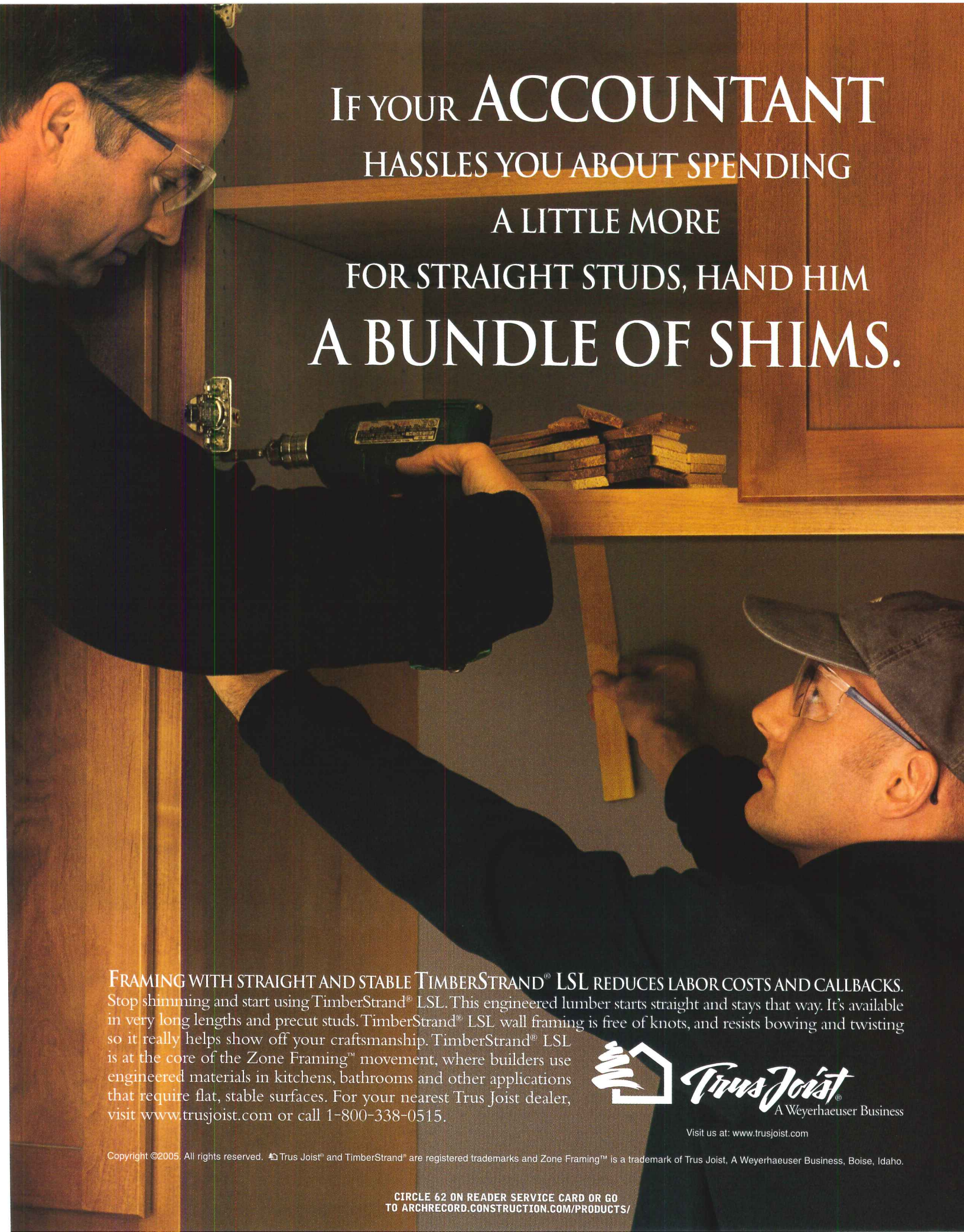

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Tech Briefs

Systems: A renowned engineering firm builds a headquarters that announces its expertise • Process: Eisenman Architects employs a little prefab and a lot of sitework for a new memorial

Breathing room: Arup's new London headquarters celebrates its mechanical systems

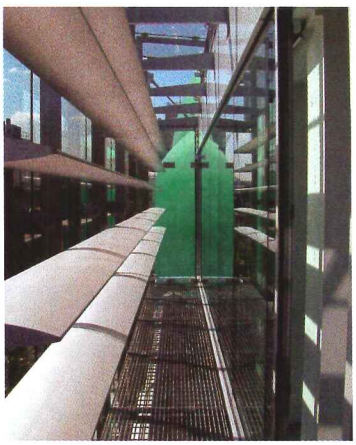
In today's era of sick-building syndrome and fears of SARS outbreaks and bioterrorist attacks, most architects and engineers strive to obscure a building's mechanical systems, or at least place the necessary equipment out of harm's way. But architect Sheppard Robson and the engineers of Arup have done just the opposite at the Fitzrovia Building, the latter's newly designed, 125,000-square-foot headquarters in London, which boldly displays the innards of its HVAC system. In so doing, the design team has created an alluring new relationship between architecture, engineering, and urban space—one that negotiates the complex role of air-handling technologies in an age of environmental and security concerns.

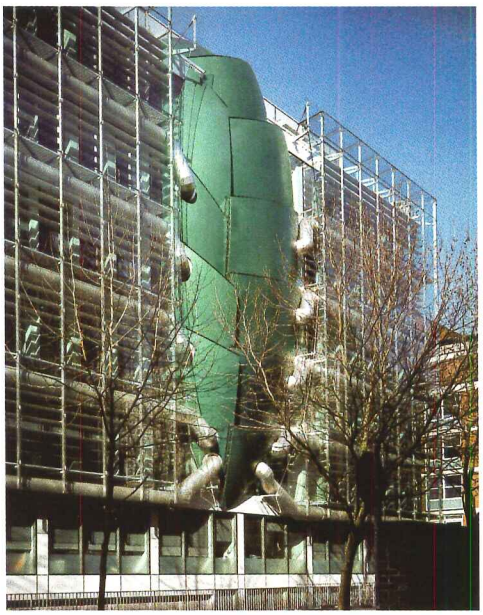
Over the past 50 years, Arup has expanded its operations to include numerous buildings in and around the Fitzroy Street area of London, just north and west of the heart of Bloomsbury. The collection of buildings, dubbed the "Fitzrovia Estate," was a sprawling aggregation of structures with few physical connections. In March 2001, Arup, Sheppard Robson, and real estate management firm London Merchant Securities announced plans to use architecture, small-scale urban planning, and sustainable engineering to turn the collection of buildings into a campus for Arup. "The project will establish a coherent campus that will reflect both externally and internally what Arup stands for. It will provide an exciting and inspirational workplace to support and encourage the firm's philosophy of creativity and innovation," said Arup officials at the project's onset. The Fitzrovia Building is the first step in this plan.

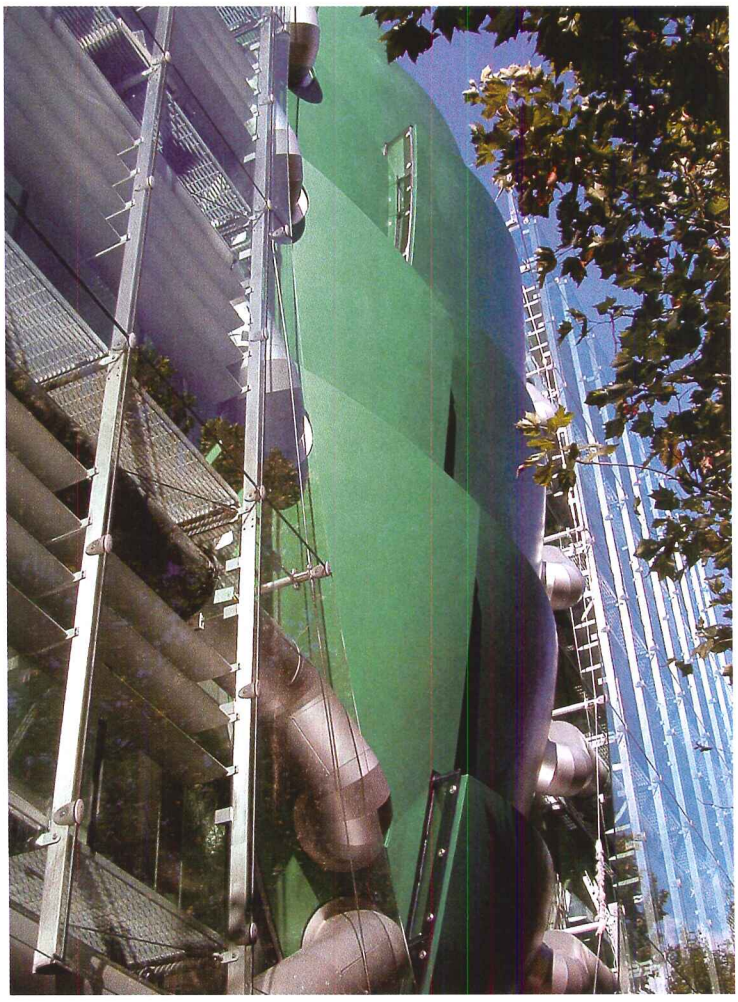
Turning HVAC inside out

Sheppard Robson and Arup used the distribution of air and light as a leitmotif in bringing together two seven-story, 1960s-era office blocks that constitute the new building. It now reads as a unified ensemble, laced together with pronounced ductwork, a dramatic double-glazed curtain wall, and a standout component: a lozenge-shaped element, called "the hub," which forms the locus of a unique air-delivery system for the complex.

In the existing buildings, low floor-to-ceiling heights precluded the use of underfloor air distribution for heating and cooling, an energy-saving strategy that Arup pioneered years ago. Instead, the engineers mounted air-handling ducts on the exterior of the building, in a clearly visible space within the cavity of a double-glazed curtain wall. Solar-shading louvers are also installed between the glazed faces of this curtain wall to reduce heat gain within the complex. The windows facing Fitzroy Street are operable to encourage natural ventilation, whereas those that look out on the warmer, south-facing Howland Street are fixed, and the HVAC ducts in this area more protected in the plenum space between the double glazing. A computerized building management system (BMS) controls the entire operation, maintaining comfortable indoor temperatures while







The HVAC system for Arup's new campus on Fitzroy Street in London is clearly visible through a double-glazed curtain wall (left), with ducts and louvers mounted in the plenum space (far left). The ducts meet in the bright green "hub" (left and below), where air enters and exits.

PHOTOGRAPHY: © MORLEY VON STERNBERG/ARCAID (TOP AND LEFT); COURTESY SHEPPARD ROBSON (BOTTOM)

Tech Briefs

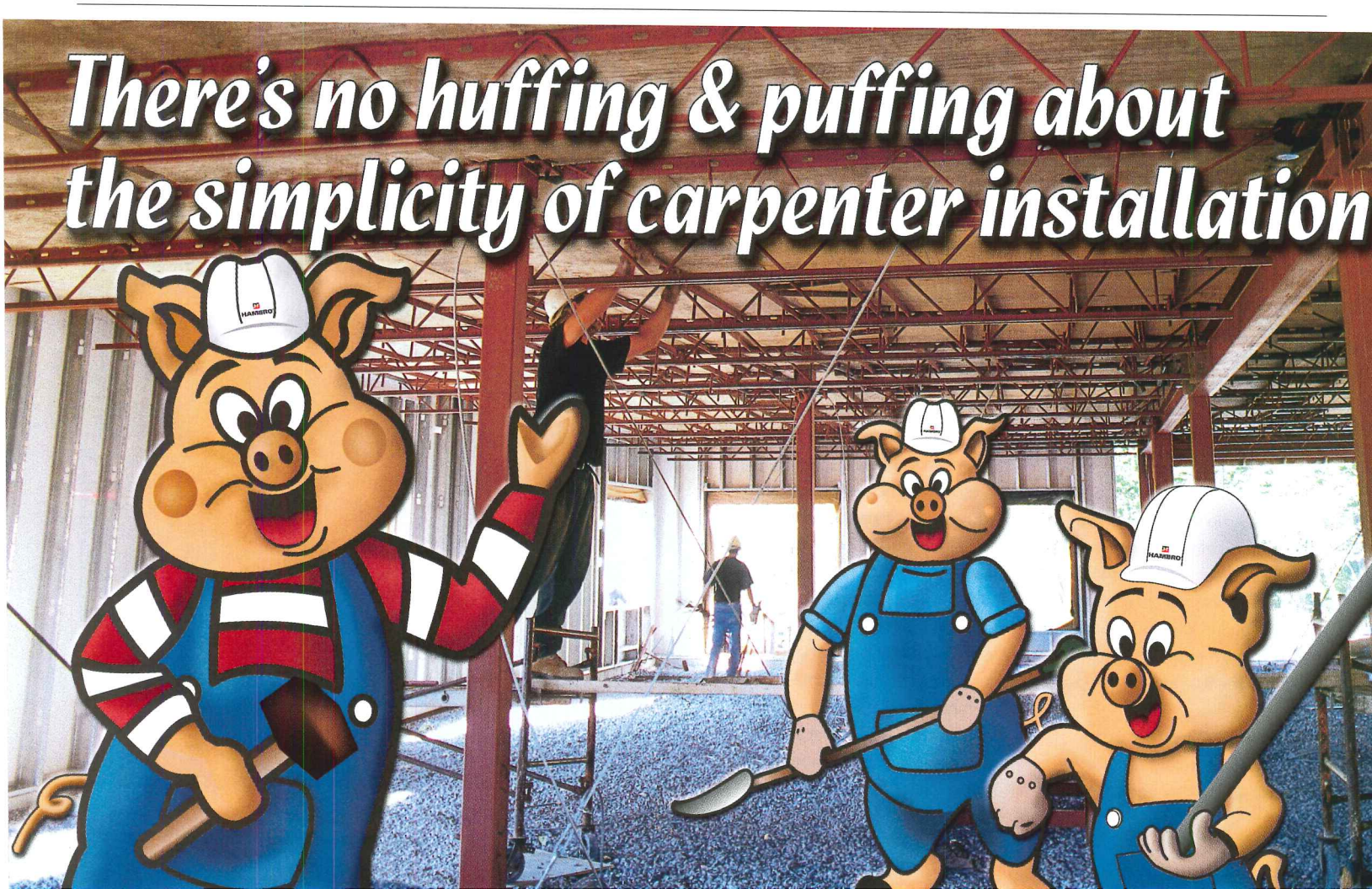
Arup employees gather informally in "the hub," which was designed to allow air to move efficiently through the building's HVAC system.

also balancing energy consumption. Though the double glazing, louvered shading devices, and BMS are common features in Europe's energy-conscious architecture, this project's brazen display of its HVAC equipment makes it exceptional.

The hub, a mixing chamber and circulation space for both people and incoming air, is clad inside and out with bright-green composite panels manufactured in Germany. The panels splay and peel open haphazardly, distorting the hub's egglike form and providing areas for air entry and exit through the gaps between the panels and into the exterior ductwork. Originally, this part of the building was to be clad in copper panels, but the matte-plastic skin actually harmonizes better with the rest of the building's palette of industrial materials. From outside, the hub appears as a distorted technological element, cracked and warped for the provision of air. Inside, its green skin partially encloses gathering areas for Arup's employees to use as informal breakout and meeting space, as well as for public functions.

As technically proficient as it is visually contemplative, Sheppard Robson and Arup have created at the Fitzrovia Building a compelling essay on air and urbanism. The ducts sealed within the double-glazed wall, along with the fractured geometries of the hub, seem to suggest the uncertain contemporary aesthetics of expressing how building systems work. On the one hand, these systems make buildings habitable and (in the best cases) more comfortable; on the other hand, they can serve as a vector for causing harm to occupants, whether intentionally or not. While a powerful form, the hub invokes a far more hesitant image of this machinery than late-Modernist works such as the 1984 Lloyds Building of London by Richard Rogers, or his earlier Pompidou Center in Paris, completed with Renzo Piano in 1977. Both these buildings were also engineered by Arup, and may have been the "last gasp" (so to speak) of a purely technological building language rooted in Archigramian aesthetics. Today, the architectural expression of these systems faces a far more tentative future, when so much concern has been raised about their gluttonous energy consumption, their vulnerability to attack, and the difficult maintenance and air-quality issues they entail. It's into this unique historical moment that the new Arup headquarters exhales an audible, striking sigh. *David Gissen*

PHOTOGRAPHY: © MORLEY VON STERNBERG/ARCAID (THIS PAGE)



In Berlin, meticulous sitework and off-site production help piece together a sober memorial

The field of steles (pillars) at Eisenman Architects' Memorial to the Murdered Jews in Europe [page 120], and the rolling terrain and visitors center they sit on, required close coordination of design and engineering issues during construction.

The 2,711 reinforced, self-compacting concrete steles were prefabricated off-site at an average rate of about 60 per week, depending on their size (the shortest are about 1.6 feet tall; the tallest are 15 feet). The design team and the fabricator, Firma Geithner, checked each stele against an approved prototype before authorizing it for shipment to the site. Meanwhile, the 4.7-acre site was filled in and graded to form the memorial's gently undulating topography. A grid plan for the steles was laid down, and the site's soil was then excavated to create individual "terraces" of compacted soil where the steles would sit.

Working with engineers Buro Happold, the design team conceived what are essentially rectangular strip foundations, or footings, to support the steles. Each one is held up by two such footings. Four extra supporting "bumps" fitted with rubber gaskets were added to each footing to accommodate the varying weights and tilt angles of the steles. Installation was completed in December 2004.

As the sitework and stele fabrication progressed, the below-grade visitors center was taking shape. Structurally, it consists of simple retaining walls and concrete columns supporting a poured-in-place concrete coffered ceiling that varies in height as it mimics the rolling topography above. Wood forms were built for the ceiling pour, with wood beams and ribs overlaid by large sheets of plywood to re-create the land form. The construction team used MDF board to hollow out spaces for the 1-foot-deep coffered areas. All the concrete was left uncoated, which contributes to the center's stark ambience. *Deborah Snoonian, P.E.*

Each stele was lowered into place with a crane (left). Formwork for the coffered ceiling (middle) followed the site's lines, and the concrete was left uncoated (right).

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Yale Center for British Art, New Haven, Connecticut; architect: Louis I. Kahn, FAIA; completed by Pellecchia & Meyers; photo by Richard Caspole, courtesy of the Yale Center for British Art

AIA/ARCHITECTURAL RECORD
CONTINUING EDUCATION Section: July 2005

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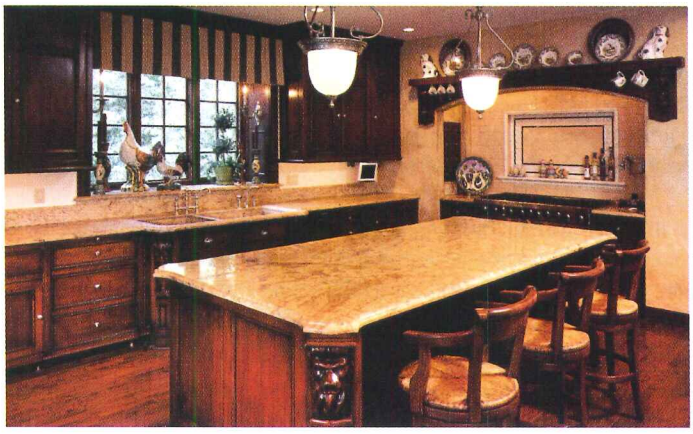
Silence is Golden: Controlling Sound in Non-Residential Structures

Sponsored by Marvin Windows and Doors

LEARNING OBJECTIVES:

- Recognize situations that require sound control in non-residential structures
- Understand sound transmission as it relates to occupied buildings
- Identify the appropriate sound rating systems for glass and framing materials used in windows and doors
- List and compare the primary advantages and disadvantages of window and door options



From Quarry to Residential Countertop

Sponsored by Marble Institute of America

LEARNING OBJECTIVES:

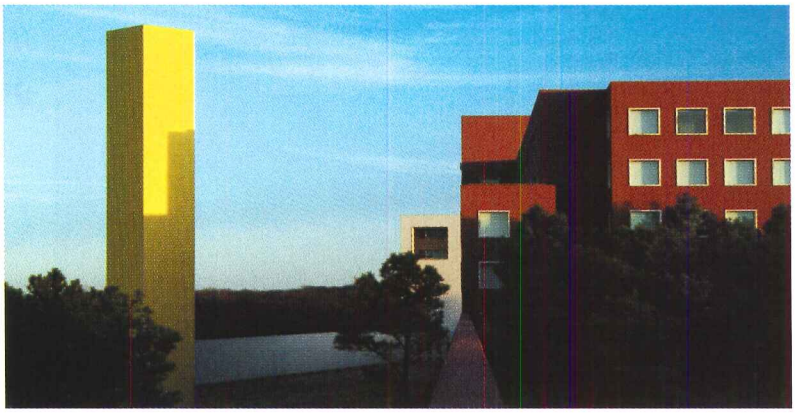
- Know basic sequencing of processes for natural stone to go from quarry to countertop
- Learn elements that influence selection for interior applications and factors that affect cost
- Understand factors to consider regarding sealing natural stone

Green Product Evaluation Necessitates Making Trade-Offs

Sponsored by USG

LEARNING OBJECTIVES:

- Better judge the sustainability of materials
- Specify "green"
- Understand and apply the concept of "embodied energy"

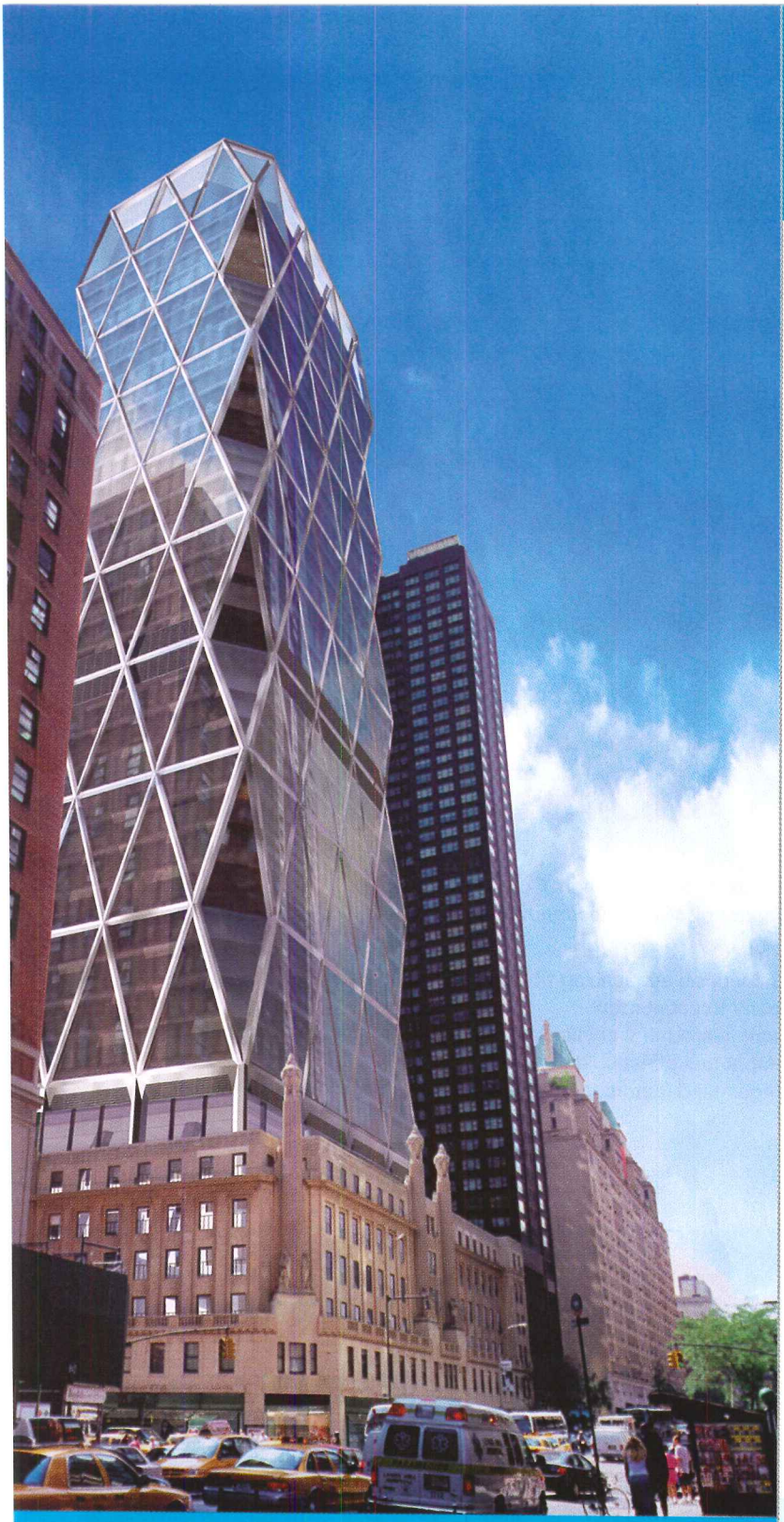


Specifying Ceilings

Multi-sponsored

LEARNING OBJECTIVES:

- Recognize the trends in ceiling design
- Know the primary materials being used to satisfy these trends
- Understand the impact of ceilings on building performance



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Rock Island Lofts exterior: Marvin's extruded clad wood windows enhance views, while meeting wind loading requirements at the Rock Island Lofts by Oertel Architects in Minneapolis, Minnesota.

MARVIN WINDOWS AND DOORS PRESENTS

Silence is Golden: Controlling Sound in Non-Residential Structures

Sound is everywhere and it affects our lives in many ways. Some sounds we choose and enjoy—music, friendly conversations, rain softly falling on the roof, birds welcoming the morning sun, water splashing on a sandy beach. Others are forced upon us—road traffic, the pounding of a passing car's audio system, emergency sirens, airplanes taking off and landing, trains rumbling through town, jackhammers on a construction project, commercial lawn mowers, the clap of thunder and lightning.

CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Silence is Golden: Controlling Sound in Non-Residential Structures.** To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit, answer the questions on page 173, then follow the reporting instructions on page 267 or go to the Continuing Education section on *archrecord.construction.com* and follow the reporting instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

- *Recognize situations that require sound control in non-residential structures*
- *Understand sound transmission as it relates to occupied buildings*
- *Identify the appropriate sound rating systems for glass and framing materials used in windows and doors*
- *List and compare the primary advantages and disadvantages of window and door options*

Although we need some sounds to make us aware of our surroundings, loud sounds and vibrations become unwelcome and irritating noises. In non-residential buildings these can disrupt business meetings, annoy potential clients, reduce employee productivity, interrupt classroom sessions, and potentially cause damage to the human ear.

But as many cities continue to rebuild their downtowns with commercial and residential development, and urban sprawl absorbs the countryside, the increased density of people and buildings raises outside noise levels everywhere.

Inside an office, we expect the normal sounds of business—phones ringing, business conversation or soft background music. But other sounds such as private business discussions or meetings that include audio-visual presentations can disrupt co-workers if they are not contained within the place of origin.

Understanding the relationships between acoustics and health and safety is critical, particularly in the design of a building occupied by hundreds or thousands of people each day. Studies of acoustics to provide solutions to reducing emissions of sound at the source and controlling its infiltration into buildings show that careful design and selection of windows and doors can control sound transmission into and inside of non-residential structures.

Acoustically improved windows are cost-effective long-term solutions to damping noise, and they allow greater design flexibility in non-residential structures. This makes it increasingly important for architects to know how to choose windows and doors that offer significant sound attenuation.

Designing Acoustic Controls

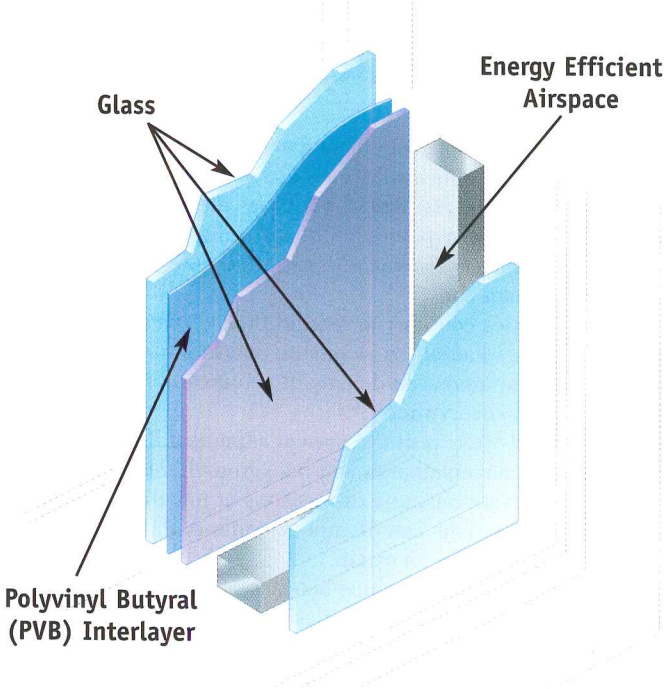
The design phase is the best spot to address acoustic issues. If steps are not taken at this point to identify potential acoustic problems, they will surface after the building is occupied with the possibility of making it unusable without a major retrofit.

The first issue is to understand that sound control can be addressed in three areas: the source, the path, and the receiver. Controlling noise at the source is the optimum solution, but in designing a building, architects can typically control only acoustic conditions through the receiver and the path.

Excessive traffic noise is the greatest irritant for most Americans and the one that affects more people than any other environmental noise source. It can affect the ability to work, learn, relax, etc. And if the noise continues to be an irritant it can lead to health problems such as nerve damage to the ear or issues related to high stress. For buildings located near high traffic areas, some measures may control exterior sounds, including: adding a barrier wall, increasing isolation quality of the structure, masking the noise, or controlling the source.

But these may not be feasible, or may only solve part of the problem. Noise from the outside may still reach a building. When it infiltrates it and becomes a distraction, the windows or doors are often blamed because they have many more components and operational elements than other parts of the structure through which sound may pass. For example, exterior walls typically block between 45 to 50 decibels (dB) of sound and a superior quality window may block under 40 dB. But if a door or window is not sealed properly, air—and sound—can get around or through the seal.

Successful design of non-residential buildings depends on recognizing situations that may increase noise levels, and choosing windows and doors that help reduce sound transmission.



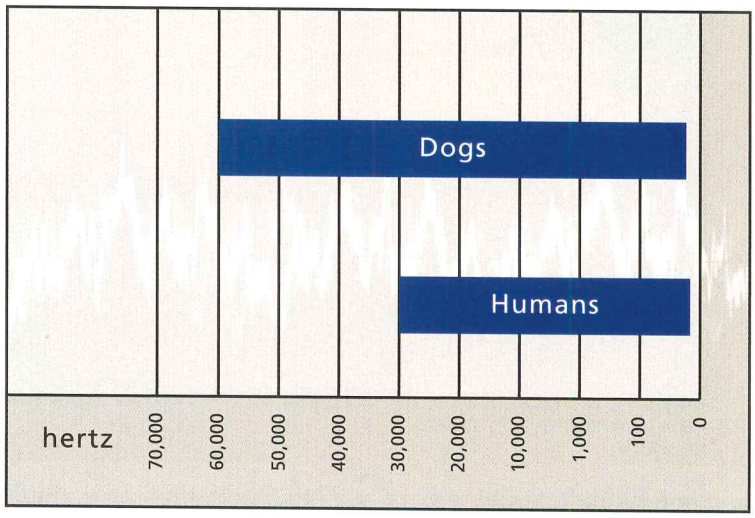
Creating air space between glass panes can improve the STC.

Understanding and Measuring Sound

To help in understanding how to control unwanted noise, let's first define what we are considering. Sound energy is a wave form that travels through matter. It begins when a sound source vibrates or otherwise disturbs the air immediately surrounding the source. Because sound is a wave form, it can travel through air and building materials.

Sound intensity is measured by observing sound energy passing through an area per unit of time. The frequency of sound, or its pitch, is measured in cycles per second, or hertz (Hz). One Hz equals the cycles per second (cps) of air pressure. Frequency is the measure of tonal or pitch quality of sound; a higher frequency indicates a higher pitch. The human ear can hear between 20 Hz and 20,000 Hz.

The intensity of sound is measured in decibels (dB), but a decibel does not quantify other sound characteristics. A higher dB signifies louder sound. The faintest sound detectable by the human ear is 0 dB; the loudest is more than 180 dB, which is the noise level at a rocket pad during launch. The loudest intensity the human ear can tolerate without pain is about 120 dBs.



Following Sound Transmission

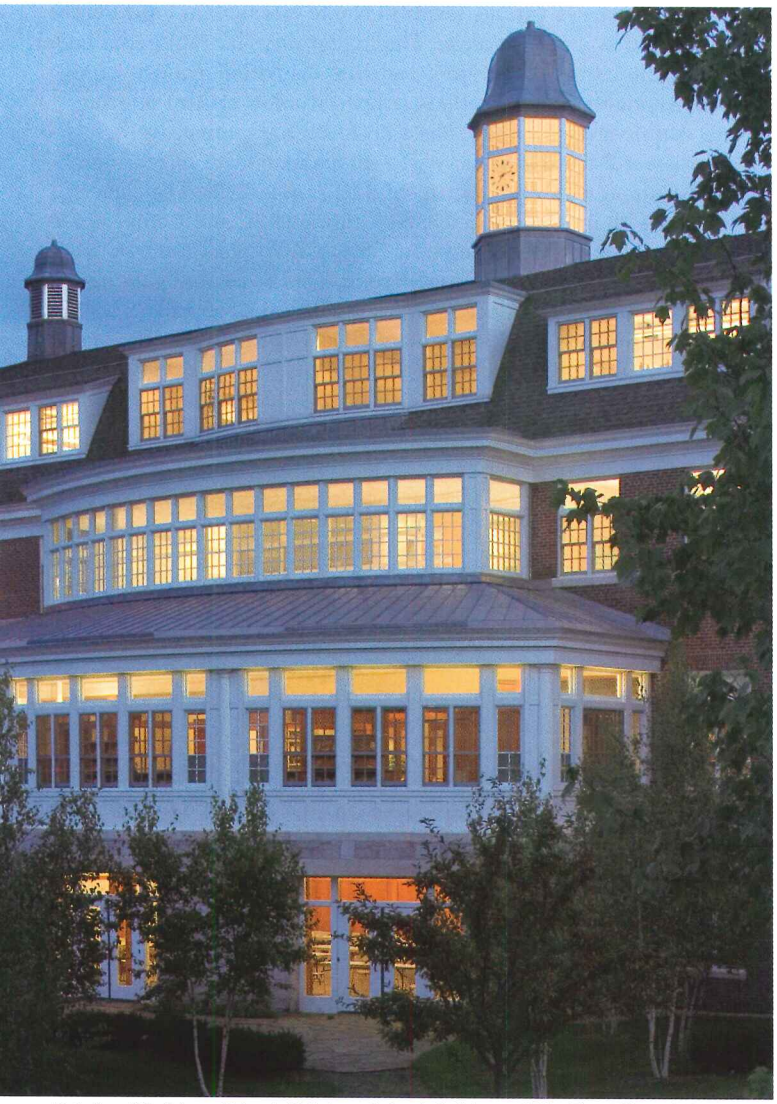
In measuring what happens to sound, several key terms need to be understood. They are: reverberation, reflection, sound transmission class, noise reduction coefficient, Mass Law and Limp Mass Law.

Reverberation is the prolongation of a sound in an enclosed space caused by continued reflections of the sound after the source has stopped emitting energy. Different spaces have different reverberation times. A high reverberation time, such as that caused by highly reflective room surfaces, will cause a build-up of noise level in that space.

Reflection refers to sound that strikes a surface or several surfaces before reaching the receiver. The shape of a space and the material on the surfaces affect reflection. Reflective corners or peaked ceilings can cause annoying reflections and create loud spaces. Parallel surfaces can cause standing waves of sound between them. Domes and concave surfaces cause reflections to be focused rather than dispersed. Absorptive surfaces can help eliminate reverberation and reflection problems.

Sound Transmission Class (STC) is a single-number rating of the barrier effect of a material or its assembly. Higher STC values indicate more efficiency in reducing sound transmission. The rating assesses airborne sound transmission at a range consistent with the frequency range of speech and does not assess low frequency sound transfer. Because of this, special attention should be given to spaces where noise transfer concern is other than speech, such as mechanical equipment, music, and transportation equipment sounds.

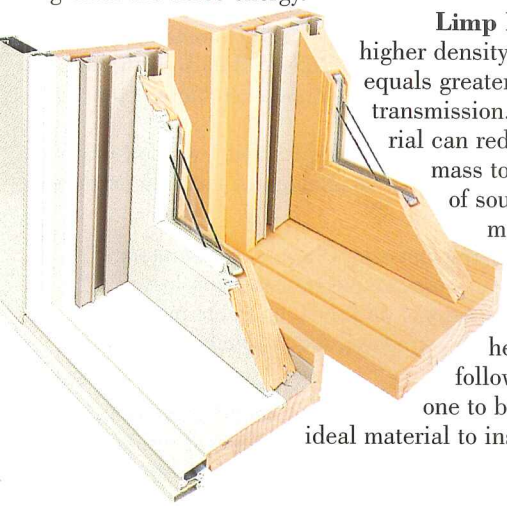
Additionally, any penetration, air gap or flanking path can seriously degrade the sound abatement on walls with a high STC rating. Flanking paths are a means for sound to transfer from one space to another by traveling through something other than walls and floors, such as ductwork, plumbing or corridors.



Exterior of Salisbury School: Salisbury School, Salisbury, CT by The Office of Michael Rosenfeld, Inc., Architects maintains old school appeal with new school technology.

Noise Reduction Coefficient (NRC) is a single number index for rating the absorption level of a material. The standard is the average of the mid-frequency sound absorption coefficient and is unrelated to a material's STC rating.

Mass Law is the principle of physics that explains transmission of noise from one area to another. It states that the more mass or weight a sound wave must move to create vibration transfer, the greater the noise energy.



Limp Mass Law states that higher density plus more flexibility equals greater reduction of sound transmission. The stiffness of a material can reduce the effectiveness of mass to slow down the transfer of sound, so very thin, stiff materials would have a very high vibration transfer. Thus, the ideal noise barrier would be heavy and flexible. Only following this law would lead one to believe glass is not the ideal material to insulate against sound because of its lighter weight and stiffness. However, one must also recognize that components of windows and doors, particularly the glass, can be modified to reduce sound transmission.

Using Rating Systems

Three primary factors affecting sound transmission into a building through glass are: glass thickness, the amount of air space between panes of glass, and damping of the glass. Each of these can affect a window or door product rating.

The most widely used and accepted rating for absorption level of material is the NRC. But according to the Web site, www.acoustics.com, NRC is a laboratory test rating that is not necessarily enforced. An NRC rating indicates an average of how absorptive a material is at only four frequencies: 250, 500, 1000 and 2000 Hz. Ratings range from zero for perfectly reflective to 1 for perfectly absorptive and are always expressed as a decimal rounded to the nearest .05.

This type of rating has some drawbacks. First, the four frequencies on which it is based are common to speech, but do not take into account other low frequency sounds such as traffic or heavy equipment. Second, materials with the same rating may not perform the same because the rating is only an average. Third, because the testing is done in a lab setting, the results in the field may not be the same due to variables such as installation.

In comparing absorptive characteristics of different products, it is important to know if the manufacturer's product was tested at the same four frequencies as the NRC rating.

Another important measurement to look for is transmission loss (TL), which shows a material's ability to block sound at a given frequency, or the number of decibels that sound is reduced in passing through a material such as doors, windows, space dividing elements, wall assemblies, etc. The less sound transferred through the material the higher the transmission loss. The basis for determining a material's STC is measuring its TL using a range of 16 different frequencies between 125 and 4000 Hz.

Although the STC rating is used to compare sound insulating properties of various building materials and assemblies, it is based only on types of noise commonly generated within buildings. So another rating method, the Outdoor Indoor Transmission Class (OITC), is used to evaluate the types of noise typically generated outside that may penetrate to building interiors.

The OITC rates lower frequencies of sound such as those generated by air and ground transportation—planes, trains, trucks and automobiles—and is a more accepted rating for building envelopes. But because OITC for windows is calculated over a specific set of frequencies, sounds at a particular frequency may not be rated through this method.

Determining Acceptable Sound Levels

It's understood that some sound will penetrate any building, so let's look at what's acceptable and how to measure it. Noise Criteria (NC) level rates the noise level for an interior space. The higher the NC rating, the louder the interior noise level. For new construction, an NC should be established based on the type of space and its intended use. For example, when designing a conference room it is important to have a very low background noise or NC level. A room with an NC 40 rating has significant background noise and would be unacceptable for a conference room. A conference room with an NC 30 rating may be acceptable, but an NC 20 rating is the optimum. For a classroom, the NC level should not exceed 35.

Comparison of Sound Intensity and Sound Pressure Level

Sound Intensity or Pressure	Sound Pressure Level in dB	Typical Sounds
1,000,000,000,00	120	Thunder Clap
10,000,000,000	100	Boiler Factory/Subway
100,000,000	80	Noisy Office
10,000,000	70	Average Street Noise
100,000	50	Average Conversation
100	20	Whisper
1	0	Threshold of Audibility

As shown in the chart above, the sound pressure level is a simple way of classifying sound intensity. The chart lists sound pressure levels in decibels (dB), and shows that a sound pressure level of 0 dB does not mean there is no sound, but rather that there is no sound detectable by a person with normal hearing.

Because decibels are measured logarithmically, this means as decibel intensity increases by units of 10, each increase is 10 times the lower figure. This means that 20 decibels is 10 times the intensity of 10 decibels and 30 decibels is 100 times as intense as 10 decibels. A 10 decibel change is perceived as a doubling or halving of the sound level by the human ear.

This rating system can be used to evaluate the acoustical performance of glass in windows or doors. The evaluation must consider the application in which the glass will be used, as well as the framing that supports the glass and its contribution, or effectiveness, at controlling sound transmission. Higher STC ratings can be achieved if windows are tested as a fixed units. Architects and specifiers should verify that product ratings reflect testing of the unit in its frame (not just of glass), and that tested units are operators if that is what is to be used in a planned project. Ratings on products also should be in accordance with ASTM standard and typically are shown in a two-digit designation.

The STC introduced in 1970 ASTM E 413, which rates a partition's resistance to airborne sound transfers at the speech frequencies of 125 to 4000 Hz. The higher the number, the better the isolation.

The OITC ASTM E 1332 is used with STC to simulate the human ear. The OITC rates sounds at 5 to 10 decibels lower than the STC ratings.

Reducing Sound Transmission

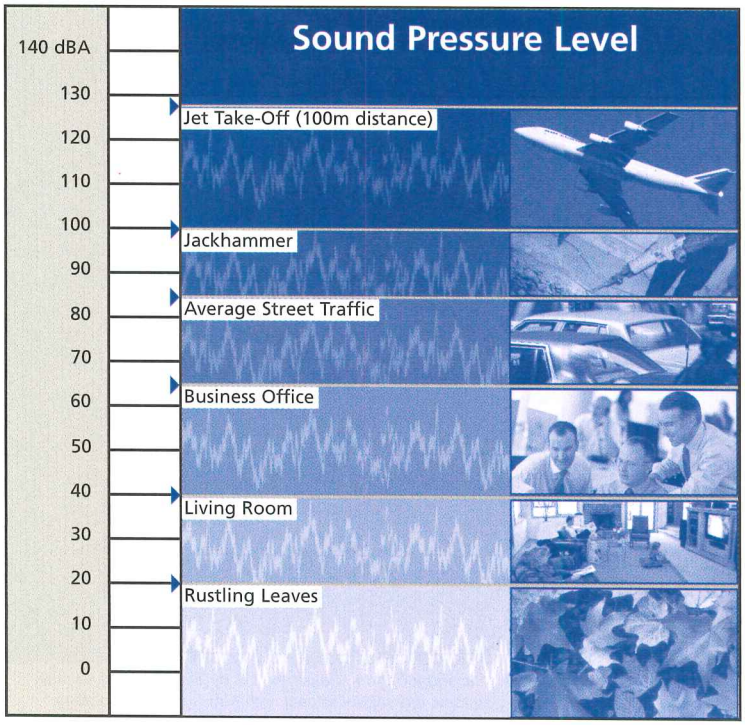
The location of a building has a very large influence on noise levels. Those in high sound areas near airports, freeways, transit systems, and high wind patterns are most easily affected. Airports are huge contributors to environmental and noise issues, and although progress has been made in regulating airport noise, it remains a major factor for site selection and the need for noise reduction measures for both residential and non-residential structures.

In some cases noise can be reduced or muffled with earth-berm barriers for lower levels before it reaches a building, but in most cases it is the building materials and sound attenuating windows and doors that help reduce the amount of unwanted noise penetrating all levels of a building.

Acoustical Properties of Glass Types

Acoustic Performance	Glass Type	Threshold STC
Poor	Single pane	22
Moderate	Single pane + storm panel	28
	Insulating glass	28
Better	Traditional laminated glass	35
	IG w/1 laminated pane	35
Best	Heavy single pane laminate	39
	IG w/2 laminated panes	42

This chart shows various levels of sound attenuation for different types of window and door glass. The higher the STC rating, the better the capability of the glass type to provide insulation against sound. A modern double-pane, weather-stripped window or door offering 3-mil, double-strength glass, has a 28-to-32 STC rating. By comparison a 2-foot-by-4-foot wall with a single layer of 5/8-inch drywall with an empty cavity has an STC rating of 33. The same wall filled with insulation has an STC rating of 39 and a solid wood door can have an STC ranging from 35 to 45. To push the STC past the mid 40s, requires combining several techniques and conditions including: creating air space between panes, layering and laminating the glass, checking the method and quality of weather stripping, evaluating framing and storm panels and verifying installation methods.



Improving the STC rating of a window or door depends on the structure, its location, and factors such as the difference between flexible and solid installation, air gaps, and the addition of weather stripping. Specifications for airport locations, and other noisy areas, for example, often require STC ratings between 35 and 45. If an exterior background sound level is 75 dB or slightly higher than the general noise produced in an office environment, (experts recommend) an interior partition with an STC rating of 40 should be specified to provide the proper sound control. However, the most critical step is to determine the degree of tolerable noise within the structure as well as the needs of the owner and occupants at the outset of a project.

In determining specific STC ratings of glass and a window or door assembly performance to certain ASTM standards should be required including:

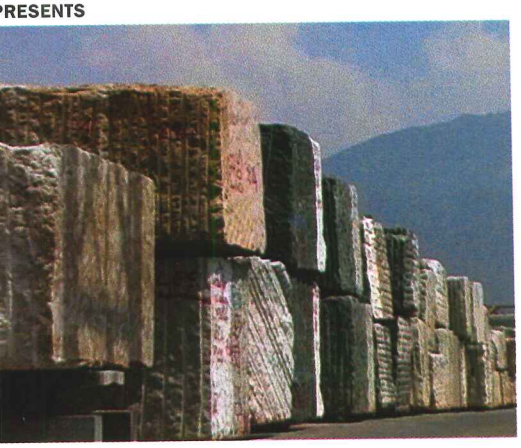
ASTM E 90–90, Sound Transmission Class, is a laboratory test method for measuring airborne sound transmission loss of building partitions such as walls of all kinds, operable partitions, floor-ceiling assemblies, doors, windows, roofs, panels, and other space-dividing elements.

ASTM E 413–04, Classification for Rating Sound Insulation, covers methods of calculating single-number acoustical ratings for laboratory and field measurements of sound attenuation obtained in one-third octave bands. ■

AIA/ARCHITECTURAL RECORD
CONTINUING EDUCATION Series

MARBLE INSTITUTE of America
Setting the Standards in the Natural Stone Industry

MARBLE INSTITUTE OF AMERICA PRESENTS



From Quarry to Residential Countertop

Courtesy of the Marble Institute of America

Thanks to a robust supply, new technologies, and a growing appreciation for a virtually maintenance-free product that takes nature millions of years to create, there is a renaissance in the use of granite, marble, limestone, travertine and other members of the natural stone family in residential construction. From kitchens and baths to foyers and fireplaces, natural stone is becoming homeowners' material of choice.

This article will familiarize you with the harvest, refinement and installation of natural stone products. It will also offer insights into why natural stone is a sound choice for interior applications.

Residential Countertops

While many of the current uses of natural stones are traditional architectural applications, a relatively new application has gained popularity in recent decades. This application is the use of a natural stone surface for residential countertops. It is not an entirely new concept, as natural stones have been used for this function for many years, but only in the past 10 to 15 years has the practice gained widespread popularity. The driving force behind the explosion of the residential natural stone countertop market is undoubtedly the reduction in price due to the efficiencies of modern quarrying and fabrication technologies. Natural stone countertops are more affordable now than any previous time, and that affordability has been complemented with increased product selections, greater availability, and reduced lead times. What was once a product only enjoyed by wealthy owners of extremely high-end construction is now becoming common in modest dwellings, enabling a much greater percentage of the population to enjoy the beauty and benefits of natural stone surfacing.

Natural stone is used increasingly in home building and remodeling, especially for residential countertops. In fact, in keeping with the National Association of Home Builders' Remodeling Market Index (RMI), granite countertops are the most popular single home remodeling feature, by a wide margin, according to a national survey of remodelers. Good looks and low maintenance, plus a trend toward larger kitchens and more bathrooms in residential construction, have made natural stone one of the top 10 most popular materials in home design.

The growth in granite imports over the past decade supports this trend. Since 1992, U.S. granite imports grew 2500 percent, from 64 tons to 1,611 tons in 2004. U.S. demand for residential kitchen and bath countertops is forecast to increase over two percent annually to 467 million square feet in 2007, according to "Kitchen & Bath Countertops," a new study from The Freedonia Group, Inc., a Cleveland-based industrial market research firm.

CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **From Quarry to Residential Countertop.** To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit, answer the questions on page 179, then follow the reporting instructions on page 266 or go to the Continuing Education section on *archrecord.construction.com* and follow the reporting instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

- *Know basic sequencing of processes for natural stone to go from quarry to countertop.*
- *Learn elements that influence selection for interior applications and factors that affect cost.*
- *Understand factors to consider regarding sealing natural stone.*

Advances in countertop demand will be stimulated by overall growth in the remodeling segment, which accounted for 71 percent of sales in volume terms in 2002. This is partly because kitchen and bathroom improvements are among the more popular home remodeling projects, and countertops are a key aspect of many of these remodeling projects.

Selecting the stone

Stones for residential countertops must be chosen with regard to functionality. Foods and their handling will affect long-term appearance as acids and grease come in contact with the surface and not all stones demonstrate the same degree of stain resistance. Therefore, selection should be carefully considered. In all cases, and regardless of the type of stone, spills should be wiped up immediately and cutting knives not used directly on the surfaces. There are also nontoxic sealers (necessary in food preparation areas) that can improve the performance of a stone to a great degree. As a rule, lavatory tops in residential bathrooms can be chosen according to taste, since the surface receives little abuse other than pollutants that might be contained in cosmetics.

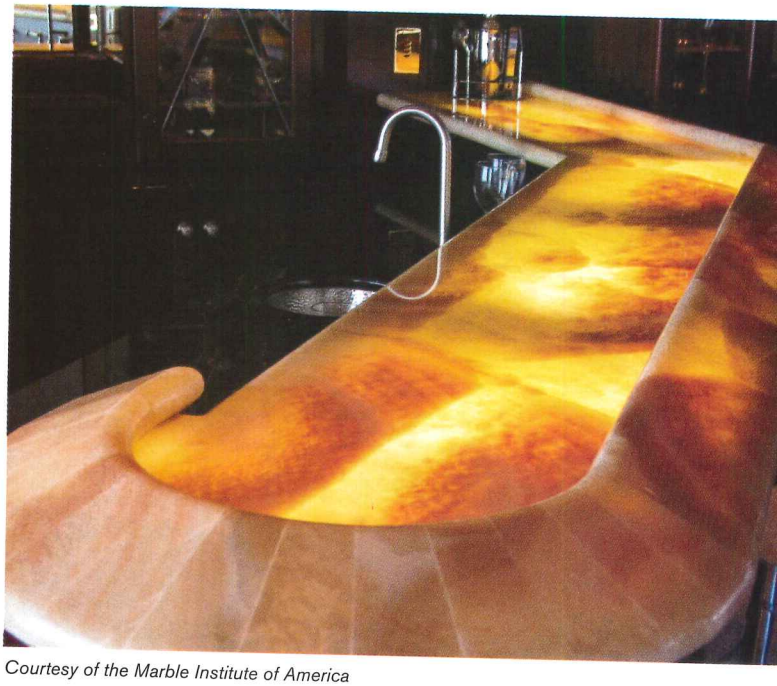
Courtesy of the Marble Institute of America

Classification

Natural stone is classified into two general categories: siliceous stone and calcareous stone. Siliceous stones are granite, quartz-based stone, serpentine, slate and soapstone. They are durable and easy to maintain under normal conditions of use.

Calcareous stones are limestones, marble, onyx and travertine. These stones are also durable, but more sensitive to acids and strong alkaline compounds.

While any number of stipulations may direct selection of a particular stone for a specific application, there are several significant influencing factors. Among them are aesthetics, color, strength, durability, design, texture, finish, size, thickness, availability, stone testing, stone sampling, and last, but certainly not least, cost. The effects any of these factors may have on another can influence the final choice. But aesthetic considerations nearly always drive the selection process.



Courtesy of the Marble Institute of America

Colors

A palette of colors and a variety of textures provide ready options in the aesthetic choices among dimension stones. Yet it is advisable to examine and apply other factors that may recommend alternatives to a selection based purely upon aesthetic appeal. A stone that is most desirable in appearance, for example, may lack the strength needed or durability for a particular application. The cautions regarding exterior applications are of far less concern when considering interior installations. Aesthetics can be allowed much freer rein for stone that is not subjected to the elements.

Variegated or veined materials, especially marbles, that offer interesting colors and patterns, and which are by their nature "faulted," are often highly valued for their decorative qualities in interior installations. Vein trend should run in only one direction unless approved otherwise by the Client. Inclusions and veins must be sampled. Translucence occurs in some white or very lightly colored marbles and onyxes having a crystal structure that will transmit light to varying degrees depending upon stone thickness and finish. Translucence can be an aesthetically intriguing decorative attribute.

Composition

Granites are made up of several different minerals, each mineral having a different hardness. Granites commonly contain quartz, feldspars, biotite, amphiboles, ferrous titanium oxides, and other mineral combinations. On the Mohs' Scale, a scale of relative mineral hardness, diamonds are the hardest mineral with a rating of 10. Feldspars have a hardness of 6.5 to 7 and are very durable. On the other hand, biotite (the black minerals throughout the slab), are very soft (2.5) and flake easily.

All true granites have biotite in their composition. Because biotite is soft and flaky, the first few layers are removed during the polishing process, causing pits throughout the slab. Some granites have more biotite throughout their composition than others. The higher the biotite content of the stone, the more pits it will have. Most, polished igneous rock will have varying degrees of pits, depending on the amount of biotite, muscovite, and phlogopite.

The pits do not make the granite less durable or otherwise inferior. Pits are common in all granites and should be expected when dealing with a natural, polished stone containing several types of minerals with different hardnesses.

What's it going to cost?

A key factor in determining which stone to use is the price. Today, thanks to the development of new technologies, stone is plentiful and competitively priced with man-made materials. The real cost is on the design and its installation costs. There are many alternatives in stone selection, with a range of prices to fit any budget. The specifier should ask for a budget price when initially considering a stone for the stone only. In the final consideration and determination, the specifier should know the real cost of the stone based on the design and its installation costs to see if the stone fits into the job's budget.

Going to the source

One of the reasons for the growing interest in natural stone is the new supply. Currently there is a vast inventory of raw material being quarried around the world—in the United States, Canada, South America, Italy, China, India, Africa and more. Many of these sources were not available a decade ago. Furthermore, where selection of natural stone for a project was once limited to what was locally available, today's stone marketplace is basically worldwide.

Stone quarry sites are discovered in several ways, the most common being the visible presence of an outcropping of stone that has been exposed through erosion or uplifting. The stone prospector takes samples of the stone from near the surface and polishes them to determine the color and texture of the stone. From these samples a determination as to the marketability of the material is made.

Cores are drilled to significant depths into the stone mass to assess the consistency, continuity and extent of the deposit. Petrographic examinations are performed to identify and quantify the various mineral contents within the stone matrix. Throughout this evaluation process, stones with inconsistent color, excessive cracking, or deposits including corrosive or staining mineral inclusions will not be pursued as candidates for the dimension stone market.

As new sources of supply are discovered, new technology has already made it possible to greatly reduce the cost of quarrying, processing and installing natural stone, which makes it competitive with man-made materials.

Extracting and shaping natural stone

The separation of the stone blocks from their long-held position is done by a variety of methods. The use of explosive charges loaded in drilled holes is the historically favored method in granite quarries. While still in use today, environmental concerns over dust and noise levels, plus quality concerns stemming from explosive-induced cracking in the stone have made this method less popular.

High-pressure water cutting technologies have been used in quarries of all stone species, but the equipment is a rather substantial investment, the noise levels are quite high, and the process does not lend itself to subfreezing temperatures. In quarries of granite materials with a presence of quartz minerals, the use of propane flame cutting has proven effective and reliable. This process takes advantage of the differing rates of thermal expansion between the various minerals to produce a thermal desegregation from the stone mass.

Rapidly advancing as a popular choice among quarries of all stone species is the use of diamond cable saws. This technique involves the use of a cable fitted with diamond abrasive segments. Intersecting holes, horizontal and vertical, are drilled in the stone mass to facilitate the threading of the diamond cable. The cable is then spliced to form a loop, which is propelled by a pulley, and grinds a kerf through the entire mass of stone. The diamonds are cooled and lubricated by water as they cut through the stone. This technology provides several advantages from both environmental and product quality perspectives. Environmentally, it is one of the lowest noise-producing methods, and as a result of the water-cooling, it does not produce airborne dust. No mechanical or thermal shock is introduced into the stone blocks, so the development of new cracks or promulgation of existing cracks is not likely.

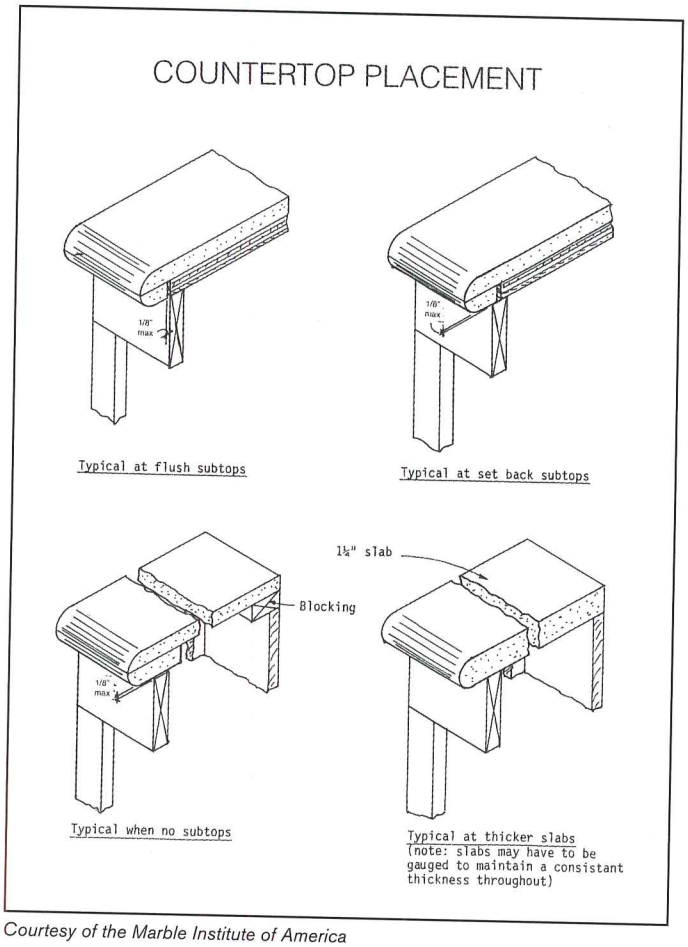
Courtesy of the Marble Institute of America

In many stones, particularly sedimentary varieties, there exists a natural horizontal separation plane within the stone mass. The quarry will take advantage of these natural separations, or "beds," which eliminate the need to make horizontal cuts in the stone mass.

The layout within the quarry is done to take full advantage of the natural rift, crack and vein properties of the quarry. Care is taken, to the greatest extent possible, to quarry in a direction coincident with these natural features, thereby maximizing yield and minimizing waste. The blocks are trimmed to regular, rectangular shapes and inspected upon extraction. Most quarries produce stone for diverse product lines. Each product line can have specific structural performance or visual grading criteria, commanding different market prices.

Obtainable block sizes will vary from quarry to quarry. In some quarries, the presence of natural cracks occurs so frequently that the largest block sizes yielded may not exceed $1m^3$ ($35 ft.^3$). In quarries experiencing less natural interruption, block sizes can

be enormous. There are quarries that have yielded industrial application blocks exceeding 13m (44 ft.) in length. From a practical perspective, most blocks are trimmed to a maximum size of 1.7 x 1.7 x 3.2m (5'-6" x 5'-6" x 10'-6"). This size, when obtainable, is optimal for transport by truck, as the weight of this block approaches 50,000 lbs. (22 metric tons) and can usually be hauled in most regions without permits or specialized equipment. After slabbing and trimming are completed, this block will produce usable slabs of approximately 1.5 x 3.0m (5'-0" x 10'-0").



Courtesy of the Marble Institute of America

In natural stone processing plants, high-speed gang saws running 24 hours a day can slab a 20-ton block of granite in little more than two days with flatness and thickness tolerances not previously enjoyed in the industry. Computerized cutting machines can make cuts measured in thousandths of an inch.

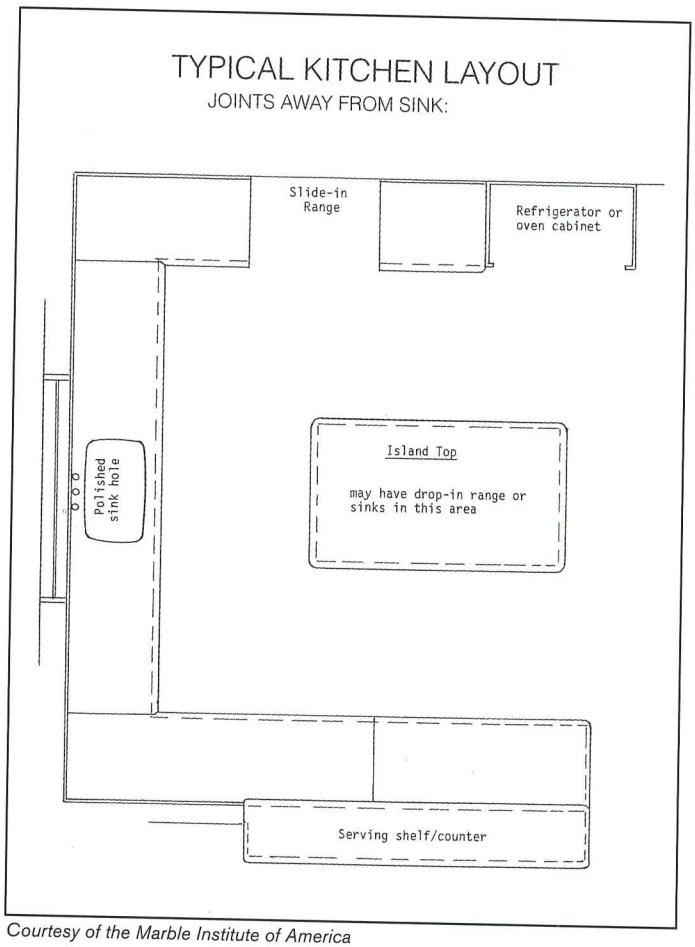
Slabs can be sawn using wires carrying a silicon carbide slurry as an abrasive, or with wires fitted with diamond abrasive segments, with large (3.5 m ø - 11.5 ft ø) diamond segmented circular saws, or with reciprocating gang saws. For the thin slabs used in countertop fabrication, the most common method would be the reciprocating gang saw, and the most common abrasive used is steel shot. The slurry containing the steel shot will normally include lime, as this will increase the viscosity of the slurry and aid in holding the steel shot in suspension. Since steel is softer than many of the minerals found in natural stones, this process is very time consuming. In the harder varieties of stone, the downfeed rate of the saw is approximately one inch per hour, with a 'sawout,' or complete sawing of one block, often requiring in excess of 50 hours of operating time.

Finishing it up

There are a variety of finishes applied to natural stone slabs, but the overwhelming favorite for countertop applications is the polish finish. A polish finish is achieved by grinding the face of the slab with progressively finer abrasives. Modern stone producing factories will accomplish this task on a continuous line comprised of 12 to 24 'heads' that grind the stone surface as the slabs are moved on a conveyor. The speed of the line varies with the particular equipment and abrasive used, as well as with the hardness of the material. Specific fabricators may use gloss meters for internal quality control purposes, but at this time there are no industry-mandated gloss meter specifications established. After polishing, the slabs are inspected for the quality of the finish and any blemishes or cracks that appear in the polished surface.

Aesthetic value of the finished countertop is largely influenced by the type of edge profile on the stone. A simple 90-degree polished edge provides a refined, conservative look, while a more complex ogee edge can convey a more delicate elegance to the countertop. Some edge profiles can be vulnerable to chipping due to their sharp projections. The edge profile is cut with diamond abrasive heads on either a router or a CNC (computer numeric control) machine. The latter equipment is far superior, but due to the substantial investment for the equipment, CNC machinery is likely to be found only in the larger shops where the investment can be recovered by keeping the machine busy with a continuous flow of work. Cutouts for sinks and other installed equipment can be done with the CNC as well. Round holes, such as faucet and soap dispenser holes, are normally core drilled with water cooled diamond bits.

After the kitchen and bathroom cabinets are in place, the stone fabricator will visit the project site to procure field dimensions. Normally the dimensions are supplemented by full-sized templates to ensure quality fitting of the countertop. Accessory items, such as sinks, faucets, dishwashers, and cooktops must be available at this time so their requirements can be included in the field dimension and template process.■



Courtesy of the Marble Institute of America

CLICK FOR ADDITIONAL REQUIRED READING
The article continues online at:
archrecord.construction.com/resources/conteduc/archives/0507marble-1.asp
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The following quiz questions include information from this material.

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION Series

LEARNING OBJECTIVES

- *Know basic sequencing of processes for natural stone to go from quarry to countertop.*
- *Learn elements that influence selection for interior applications and factors that affect cost.*
- *Understand factors to consider regarding sealing natural stone.*

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self-report form on page 266. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self-report form on *Architectural Record's* web site—*archrecord.construction.com* to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

1. What type of examinations are performed to identify and quantify the various mineral contents within the stone matrix?
   - **a.** Petrographic
   - **b.** Photographic
   - **c.** Paleographic

2. Which method is rapidly advancing as a popular choice amongst quarries of all stone species?
   - **a.** Explosive charges
   - **b.** High-pressure water cutting
   - **c.** Propane flame cutting
   - **d.** Diamond cable saws

3. For the thin slabs used in countertop fabrication, the most common method for sawing a block into slabs would be:
   - **a.** wires carrying a silicon carbide slurry as an abrasive
   - **b.** reciprocating gang saw with steel shot as an abrasive
   - **c.** diamond segmented circular saws with diamond abrasive segments

4. Which is more cost effective?
   - **a.** stone originating from quarries yielding larger blocks
   - **b.** stone originating from quarries yielding small blocks

5. The favorite finish for countertop applications is:
   - **a.** Polish finish
   - **b.** Flamed finish
   - **c.** Honed finish

6. True or False: Stone fabricators must adhere to industry established mandated gloss meter specifications?
   - **a.** True
   - **b.** False

7. The most popular joint filler material for seams between individual stone pieces currently in use is:
   - **a.** silicone caulking
   - **b.** epoxy resin
   - **c.** polyester resin

8. Granite, quartz-based stone, serpentine, slate and soapstone are classified as:
   - **a.** Calcareous stones
   - **b.** Siliceous stones

9. In order to ensure quality fitting of the countertop, dimensions are supplemented by:
   - **a.** Vein trend
   - **b.** Accessory item requirements
   - **c.** Mineral hardness
   - **d.** Natural separation

10. True or False: Proper installation of the countertop requires the stone slab to be dry fit:
    - **a.** True
    - **b.** False

About the Marble Institute of America

For sixty years, the Marble Institute of America (MIA) has served as the authoritative source of information on standards of natural stone workmanship and practice and the suitable application of natural stone products. Membership in the association is worldwide and includes nearly 1,300 natural stone producers, exporters/importers, distributors/wholesalers, fabricators, finishers, installers, and industry suppliers—all committed to the highest standards of workmanship and ethics.

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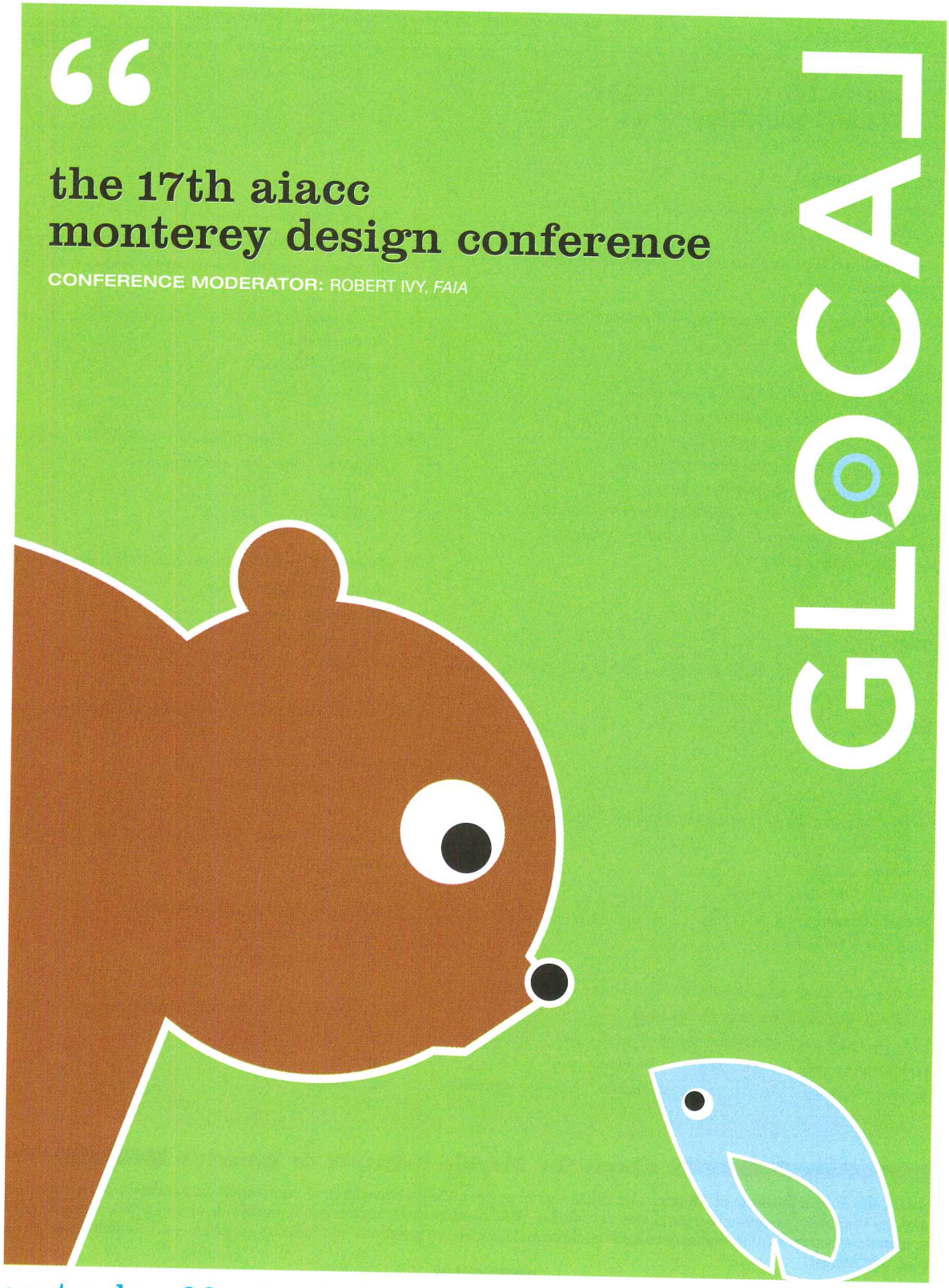
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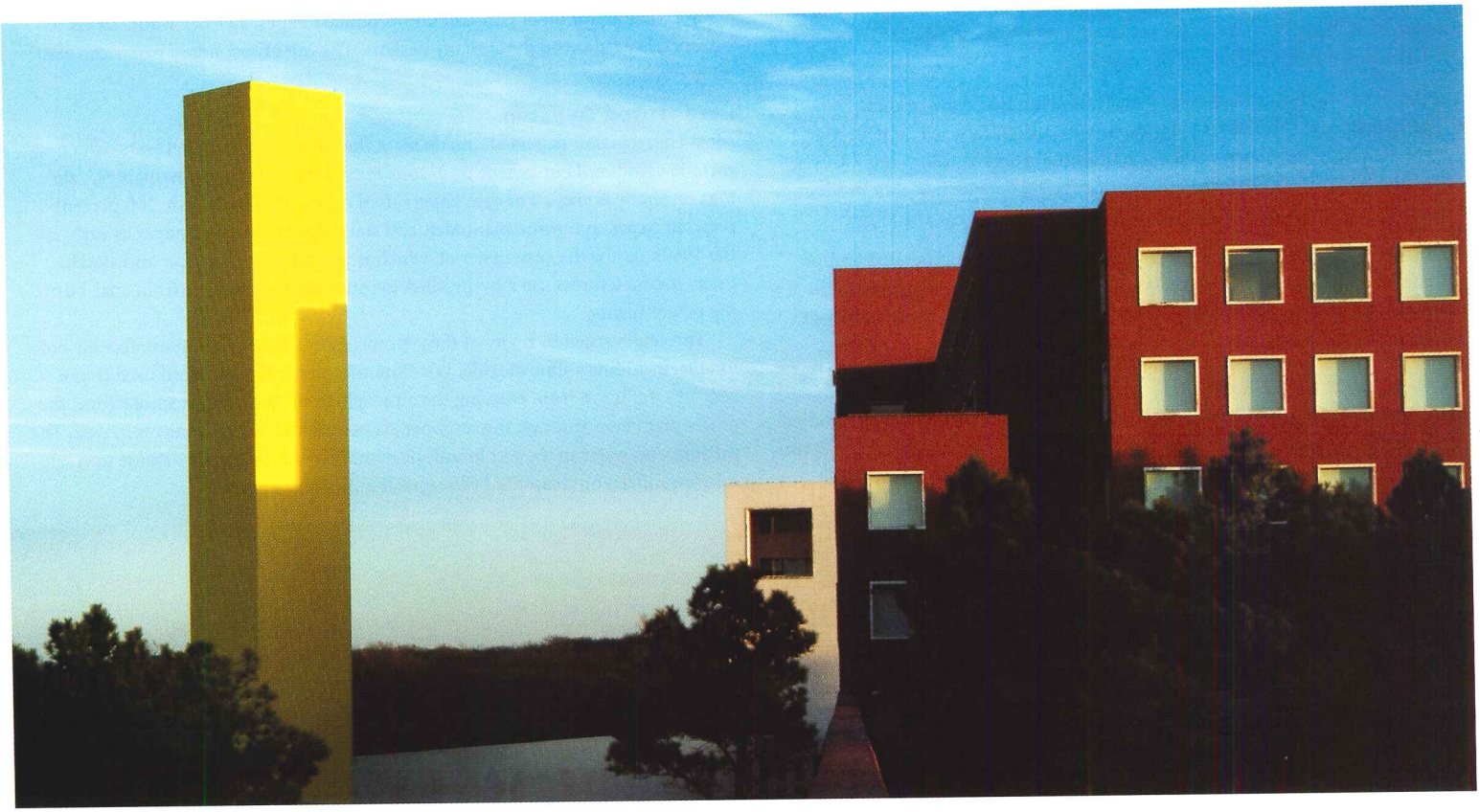

USG PRESENTS

Green product evaluation necessitates making trade-offs

By Richard C. (Rik) Master, AIA, CSI
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CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Green product evaluation necessitates making trade-offs.**

To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit, answer the questions on page 185, then follow the reporting instructions on page 266 or go to the Continuing Education section on *archrecord.construction.com* and follow the reporting instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

- *Better judge the sustainability of materials*
- *Specify "green"*
- *Understand and apply the concept of "embodied energy"*

ANY WAY YOU LOOK AT IT, SUSTAINABILITY HAS BECOME A FUNDAMENTAL PRINCIPLE UNDERLYING SUCCESSFUL BUILDING DESIGN. FROM A GLOBAL STANDPOINT, SUSTAINABILITY IS IMPERATIVE, as it offers a critically important means for conserving our dwindling natural resources. From an architectural business standpoint, it's becoming an increasingly important consideration, as a growing percentage of building owners and homeowners not only desire "green" buildings, but are now demanding them.

Green has, in fact, gone mainstream. Architects are giving high priority to environmental concerns in their product selection, builders and developers are acutely aware of how sustainability can impact project success and retailers are proactively promoting green products.

Despite its growing acceptance, sustainable building design remains a complex undertaking. Because environmental issues can — and should — be considered in virtually every aspect of the design process, specifiers need to have a working knowledge of a wide range of green definitions, criteria, standards and applications. Sustainability is a long-term evaluation of every decision made, without compromise to future generations.

This article will attempt to clarify some of the issues relative to green product selections and design specifications as they relate to walls, ceilings and substrates.

Green Product Selection

Green product selection is a key component of sustainable design. However, sustainable design should also encompass life-cycle analysis, product durability, embodied energy, the effect on indoor environmental quality, manufacturing locations and the company's environmental record and commitment. In general, green products have traditionally been defined as those that reduce, recycle and renew. Specifically, sustainable products:

- *Reduce* the amount of raw materials and/or the amount of energy needed. Lighter products generally require the use of less energy for transportation, storage and construction. The term "reduce" can also refer to decreasing the amount of material used and/or wasted, thereby fostering manufacturing efficiencies and optimal use of the material.
- Offer high *recycled* content and/or environmentally friendly reuses. The benefits here are obvious. Products with a high recycled content may decrease raw material usage, energy consumption and landfill waste. "Recycle" can also refer to the potential of a product being remade into that product again or into another product as in adaptive reuse (closing the loop).
- *Renew* the environment by using materials that can be regenerated and/or materials offering environmentally friendly benefits, including renewable resources such as agriculturally based materials or products made without chemically bound methods.

Defining Embodied Energy

The virtues of these principles must be considered in terms of how embodied energy and the life-cycle environmental impact of a material affect its sustainability. Embodied (or embedded) energy is the amount of non-renewable energy required to extract, manufacture, transport and construct building products. Embodied energy is this energy studied from a beginning point of obtaining all raw materials (cradle) until a finished use point (gate or market), instead of to the end of a useful life (grave).

"Cradle to grave" is not an appropriate term if we all understand there are options to simply disposing of old building materials in a landfill. Perhaps a better name is "cradle to reuse" or "cradle to cradle:" from the beginning to a new beginning. This consideration must be factored into all green product specifications, as it can significantly – and sometimes surprisingly – impact sustainable design.

Generally speaking, products with low embodied energy are good sustainable design choices, and products with low embodied energy are usually less expensive than products with higher embodied energy. However, this is not to say that products with high embodied energy are always poor sustainable choices.

A high-embodied-energy product may provide significant savings in energy usage over the life of a building. The initial high level of embodied energy in the product is more than compensated for by its ability to reduce a building's recurring long-term energy needs (such as heating and cooling).

One aspect of embodied energy that is sometimes overlooked is the amount of energy used in obtaining the raw materials utilized in making the product. Simply requiring all construction products to be made from recycled materials is often not as efficient from a sustainability viewpoint as one would think. In fact, the energy required to recover and reuse some materials can be much greater than simply producing new materials.

Wood is a prime example of this misconception. While construction and demolition (C&D) wood waste has many reuse options, refurbished lumber accounts for a small percentage of this waste reuse. Most of it is turned into other products ranging from chip-based panels to paper products to compost.

Through life-cycle assessment or embodied energy studies, we can see the effects of recycling products back into the same products.

Assessing Embodied Energy

Up to 95 percent[1] (65 percent is a more realistic value) of aluminum's embodied energy can be saved by using recycled material. This reflects the high energy consumption required in extracting and purifying aluminum from rock (glass made from sand can yield energy savings of 5 percent.[1]) These savings are reflected in the product's cost.

While glass is inexpensive in relationship to aluminum, the recycling savings for aluminum is much greater. But should you specify aluminum over glass? It depends on the use and how it affects your total design solution.

This simple example shows the complexity involved in making product selections and developing sustainable product specifications.

So, what about other construction products? Paper, another wood-based product, is used throughout many designs. The use of secondary paper can save 35 percent[1].

Recaptured Gypsum

Most construction papers are made from the wood industry's leftovers, which include cardboard cut-offs or post-consumer papers (usually newspapers, catalogs or phone books). The face papers used on gypsum panels are 100 percent recycled paper, and some manufacturers started using recycled paper as early as the 1960s. As for the core material, which is primarily gypsum, air and starch, many manufacturers use a by-product gypsum source obtained from coal-burning power plants.

The coal burned in many of these power plants produces undesirable air pollutants, including sulfur dioxide. Wet limestone scrubbers are often used to prevent this pollution from entering the atmosphere. As the exhaust smoke from the power plant rises through the scrubber, its pollutants are chemically removed. The calcium and water in the wet limestone combine with the sulfur dioxide to create calcium sulfate, or recaptured (flue-gas desulfurized) gypsum.

Manufactured from 95 percent recycled materials, the high-performance gypsum fiber products available include interior wall panels, floor underlayments and exterior sheathings.

Recaptured gypsum currently accounts for 25 percent of the gypsum needs of the U.S. construction market[2]. It is predicted that with the increased building of new power plants, the production of recaptured gypsum could account for up to 40 percent of the industry's annual gypsum requirements.

Wallboard manufactured from recaptured gypsum is indistinguishable in terms of performance, appearance and quality from panels made from natural gypsum rock. Given these benefits, the use of recaptured gypsum in drywall would seem to be a "win/win" situation. And in most cases, it is. Let's look at the embodied energy (cradle to market) of paper-faced drywall.

Obtaining raw materials accounts for less than 1 percent of the total (3.6 MJ/kg averaged across the U.S.) embodied energy, while manufacturing accounts for 80 percent[3], followed by raw material shipping (15 percent[3]) and the remainder in shipping drywall from the plant to the distributor (4 percent[3]).

Because gypsum comprises the majority (95 percent) of the raw materials, why use recaptured gypsum if a manufacturer can obtain only 1 percent energy savings? There are several reasons for this, most notably that most power plants are built near large metropolitan areas where drywall demand is very high. Second, because the plants are located nearby, we can factor the raw material shipping energy into the potential savings (15 percent + 1 percent = 16 percent).

So, should we specify recaptured gypsum drywall in all markets? First of all, recaptured gypsum is not available in all parts of the U.S. When the transportation of recaptured panels or recaptured raw materials over a greater distance is factored in, the green value of the recaptured gypsum can be diminished significantly.

In fact, the energy consumption in extracting natural gypsum is so low it equals the fossil fuel used to ship it 50 miles by diesel truck[3]. Transportation requires the use of non-renewable fossil fuels that, under certain circumstances, can negate the benefits of an otherwise excellent sustainable product selection. Therefore, specifying drywall panels simply on their recycled content versus locally produced panels may not necessarily be environmentally sound.

So let's recap drywall and look at some additional interior construction products.

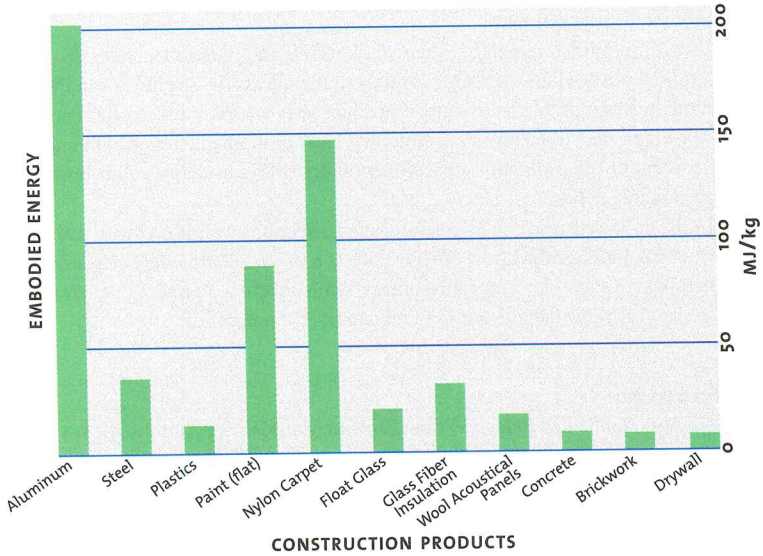
Gypsum Board Panels

Gypsum board scores extremely high on nearly all sustainable design criteria. Gypsum, the primary raw material used to make gypsum panels, forms naturally like salt or limestone, and is one of the most abundant minerals on the planet. It is neither rare nor endangered. The bulk of the remaining materials in gypsum board consist of paper (recycled from newspapers, phone books, old corrugated cartons and cardboard cuttings) and corn or wheat starch binders. These starch binders, which serve as the "glue" in the manufacturing process, are renewable agricultural resources.

The embodied energy of gypsum board is extremely low (see accompanying chart). Drywall has less embodied energy than a wide variety of building products, including brickwork, concrete, particle board, insulation, glass, vinyl flooring, plastics, steel and aluminum[1]. It is also important to note that manufacturing gypsum board is a low-waste production process. In fact, approximately 95 percent of the raw materials entering a board plant leave as finished product. And most of the remaining 5 percent is recycled into small strips used to support stacks of finished gypsum panels. Overall, high-efficiency board plants can produce less than 1 percent material waste.

Construction waste gypsum panels can be reground and made into new gypsum panels when the paper is removed. This waste can also be used for many other functions, including agricultural uses or concrete set material. It is estimated that about 8 million tons of construction and demolition drywall waste are generated each year.

Other reuses for drywall include its addition as a soil amendment (using gypsum as a high-calcium fertilizer or as a method for treating high soil pH), neutralizing the high pH levels caused by road salt applications, odor treatment and concrete setting agent. The majority of this waste is from new construction cut-offs (about 6 million tons). Currently, more than 3 million tons[2] of gypsum are used as soil amendments annually and another 4 million tons[2] are used as concrete setting agents.



Green product evaluation necessitates making trade-offs.

Many acoustical ceiling panels are made from mineral wool, gypsum and smaller amounts of paper and starch, as well as other miscellaneous materials. The mineral wool is made from slag, a by-product of steel manufacturing that consists of calcium silicate and other impurities.

Acoustical Ceiling Panels

Many acoustical ceiling panels are made from mineral wool, gypsum and smaller amounts of paper and starch, as well as other miscellaneous materials. The recycled content in ceiling panels varies significantly, depending on the product type, manufacturing process and plant location. Check the manufacturer's literature to determine the recycled content of the specific panel.

The mineral wool used in ceiling panels is made from slag, a by-product of steel manufacturing that consists of calcium silicate and other impurities. The slag is melted in coke-fired cupolas or electric melters and spun into fibers that are incorporated into the ceiling panel production process. The use of slag reduces the need to mine naturally occurring materials such as basalt rock (this also reduces its embodied energy). It also decreases landfill waste (16 million cubic feet per year).

A high percentage of the paper used in the manufacturing process is recycled pre-consumer (cuttings from cardboard box manufacturing) and post-consumer (newspapers) content. The starches used as binders in the manufacturing process are renewable agricultural resources. Like gypsum board manufacturing, acoustical ceiling production is a low-waste process. Panels that are chipped or broken during manufacturing are recycled and returned to the process (manufacturing efficiencies are 85 percent).

In addition, these panels have high acoustical performance and light reflections. They can enhance the positive effect on the occupants of your design solution. Acoustical ceiling panels can be recycled into new ceiling panels if they have not been contaminated or painted. However, shipping distances need to be evaluated in terms of their impact on embodied energy.

Gypsum Fiber Panels

The gypsum fiber manufacturing process combines gypsum and cellulose paper fibers to create a variety of newly introduced high-performance panels, including interior wall panels, floor underlayments and exterior sheathings. These products are made from 95 percent recycled materials. Specifically, 85 percent of the content in these panels comes from recaptured gypsum and 10 percent is from post-consumer recycled paper fiber.

Gypsum is the primary raw material used to make gypsum panels, which score extremely high on nearly all sustainable design criteria. Most of the remaining materials in gypsum board consist of paper and corn or wheat starch binders.

The panels offer an excellent sustainable alternative to other wood-based panels, most notably lauan, which is harvested from endangered, old-growth forests.

The embodied energy[3] of these panels (5 MJ/kg) is slightly higher than that of paper-faced drywall (3.6 MJ/kg), with most of the increase resulting from shipment of the panel to market. Because these panels are relatively new to the industry, they are manufactured in limited locations and then shipped to various markets.

The recycling of these panels would be similar to that of conventional gypsum panels.

Cement Board Panels

Cement board, a water-durable, multiuse panel commonly used as a backer for ceramic tile, is made from approximately 20 percent recycled materials (fly ash). Fly ash is another waste stream material from power plant emission control processes that features cement-like properties. It is produced by electrical power companies in the combustion of coal and other solid fuels, and is subsequently purchased by concrete and cement board producers for use as an aggregate.

All products impact the environment, and the key is to reduce this impact as a goal of sustainable design. It is very important to look at the cumulative effect a material and its constituent components or processes may have on the environment, both currently and in the future.

For instance, does the material need a finish requiring solvents and adhesives? Will it need to be cleaned or maintained by using toxic chemicals? Or does the material trap dust and toxins more than an alternative material? Consider long-lasting local products that vastly reduce resource consumption, as well as other environmental impacts associated with construction and remodeling.

Green Specifications

In order to maximize the sustainable value of these – and other – building products, architects should incorporate sustainable design criteria into building specifications. Proper specification details ensure that the benefits inherent in green products are supported during the construction process and fully realized throughout the building's life cycle.

The first step in creating an effective green specification is to use a standard specification layout, such as MasterFormat™ from the Construction Specifications Institute. MasterFormat divides specifications into three categories:

- PART 1: ***General:*** *Describes general procedures and administration.*
- PART 2: ***Products:*** *Describes materials, products, equipment and systems.*
- PART 3: ***Execution:*** *Describes the proper procedures for the installation of specific products and systems into designed applications.*

The three-section format provides architects with a structure to add detailed notes and complete explanations of the environmental requirements expected for each project. There's no need to include additional sections, as this may only confuse contractors and building owners who are already familiar with the MasterFormat structure.

When creating environmental specifications, make sure to define your terms. Don't assume that users of the specification will know the exact meaning of recyclability, post-industrial materials or other environmental terms.

Also consider including the following general criteria in your specifications as needed to meet the sustainable objectives of a specific project:

- Outline on-site product storage procedures. Given the fact that standing water is a common occurrence on many construction sites, materials should not be stacked on the ground and cartons should not be left opened and exposed to weather.
- Detail appropriate methods for storing and discarding construction waste that cannot be eliminated. Conduct a pre-construction meeting with appropriate contractors to discuss methods for minimizing construction waste and disposal and to explore alternative reuse options.
- Encourage the establishment of good construction practices. Realistic construction schedules will enable contractors to fully enclose buildings to minimize moisture penetration that may contribute to poor product and system performance.

Sustainable Walls, Ceilings and Substrates

Do *not* include descriptions of a project's environmental goals in the specification, such as attaining a LEED (Leadership in Energy and Environmental Design) rating in the specification. Rather, include this information as part of your instructions to bidders. As stated previously, the selection of green products is only a small part of sustainability.

For a more encompassing guideline, review ASTM E2129 (*Standard Practice for Data Collection for Sustainability Assessment of Building Products*) from the American Society for Testing and Materials and compare manufacturers' responses and backup documentation to this tool.

Note that ASTM E2129 is not a pass/fail standard, but rather a guideline by which to evaluate manufacturers' commitments to sustainability. Manufacturers should provide detailed explanations for each ASTM E2129 response, rather than just a simple "yes" answer to each question. While architects can reference ASTM E2129, they cannot require compliance to it because it is only a guideline rather than a strict standard.

Last but not least, remember the *reduce, recycle* and *renew* principles discussed previously when selecting products to include in the specification. Bear in mind, however, that effective green product selection requires a careful analysis of a wide range of factors. A product with low embodied energy, high recycled content or other obvious environmental benefits is usually a solid choice for sustainable design.

In the end, well-researched green product selections, combined with intelligent sustainable specifications, offer architects a practical and effective solution for helping conserve our natural resources, while meeting a growing demand for environmentally friendly design and construction practices.

References:

[1] AtlaNews, *Embodied Energy in New Zealand Materials,* by Andrew Alcorn

[2] U.S. Geological Survey, *Mineral Commodity Summaries,* by Donald W. Olson

[3] The Athena Sustainable Materials Institute, *Life Cycle Analysis of Gypsum Board and Associated Finishing Products,* by George J. Venta

CLICK FOR ADDITIONAL REQUIRED READING

The article continues online at: **archrecord.construction.com/resources/conteduc/archives/0507usg-1.asp**. To receive AIA/CES credit, you are required to read this additional text. For a faxed copy of the material, contact USG at (800) USG-4YOU. The following quiz questions include information from this material.

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION Series

LEARNING OBJECTIVES

- *Better judge the sustainability of materials*
- *Specify "green"*
- *Understand and apply the concept of "embodied energy"*

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self-report form on page 230. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self-report form on *Record's* website — *archrecord.construction.com* — to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

1. The amount of non-renewable energy required to extract, manufacture, transport and construct building products is termed:
   a. embodied energy
   b. synergystic energy
   c. transformation coefficient
   d. utility
2. A high-embodied energy product may provide significant energy savings over the life of a building.
   a. true
   b. false
3. "Recaptured" gypsum accounts for what current percentage of the overall gypsum needs of the U.S. construction industry?
   a. 15
   b. 25
   c. 43
   d. 72
4. Wallboard manufactured from recaptured gypsum is distinguished from "natural" gypsum board by its slightly green tint.
   a. true
   b. false
5. It is important to include a project's environmental goals in the specification.
   a. true
   b. false
6. Which of the following characteristics do not generally make a material a solid choice for sustainable design?
   a. high recycled content
   b. high embodied energy
   c. low embodied energy
7. It is estimated that ___ million tons of construction and demolition drywall waste is generated each year.
   a. 4
   b. 8
   c. 14
   d. 23
8. Drywall waste can be recycled as a soil amendment, as a concrete-setting agent and in the manufacture of cosmetics.
   a. true
   b. false
9. Gypsum and cellulose paper fibers can be combined to create high-performance products for all but which of the following applications?
   a. shingles with asphalt-like characteristics
   b. exterior sheathing
   c. floor underlayment
   d. interior wall panels
10. Cement board can contain 20 percent recycled content due primarily to the addition of:
    a. calcium sulfate
    b. calcium silicate
    c. fly ash
    d. polymers

About USG

USG Corporation is a Fortune 500 company with subsidiaries that are market leaders in their key product groups: gypsum wallboard, joint compound and related gypsum products; cement board; gypsum fiber panels; ceiling panels and grid; and building products distribution.

United States Gypsum Company, a subsidiary of USG Corporation, is the nation's leading manufacturer of gypsum board panels and the largest user of recaptured gypsum. The company uses more than 3.0 million tons of recaptured gypsum annually in the production of its SHEETROCK® Brand Gypsum Panels. Overall, the panels contain an average of 37 percent recycled content—5 percent post-consumer waste and 32 percent post-industrial waste.

The company also manufactures FIBEROCK® Brand AQUA-TOUGH™ Interior Panels, FIBEROCK Brand AQUA-TOUGH Sheathing and FIBEROCK Brand AQUA-TOUGH Underlayment, all of which are made from a gypsum fiber manufacturing process that utilizes 95 percent recycled materials. These products have also earned the Green Cross certificate from Scientific Certification Systems for their high recycled content. The panels offer an excellent sustainable alternative to wood-based panels, most notably lauan, which is harvested from endangered, old-growth forests.

USG Interiors, Inc., another subsidiary of USG Corporation, is the only manufacturer to offer a limited lifetime warranty against mold growth on acoustical ceiling panels. The warranty is available on the company's ECLIPSE™ CLIMAPLUS™ and ASTRO™ CLIMAPLUS Ceiling Panels, both of which feature a USG-patented anti-microbial treatment for superior performance.

For additional information about USG's environmental practices and products, or to obtain a copy of its *Committed to the Environment* brochure, write to USG Corporation, 125 S. Franklin St., Chicago, IL 60606-4678, call USG's Customer Service Department at (800) USG-4YOU or visit the company's Web site at *www.usg.com*.

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SPECIFYING CEILINGS: From Classic o Curved

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CONTINUING EDUCATION

The following learning objectives will help you focus your study as you read **Specifying Ceilings: From Classic to Curved.** To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit, answer the questions on page 196, then follow the reporting instructions on page 267 or go to the Continuing Education section on *archrecord.construction.com* and follow the reporting instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

- *Recognize the trends in ceiling design.*
- *Know the primary materials being used to satisy these trends.*
- *Understand the impact of ceilings on building performance.*

Subtlety is always in style.

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Architect: Zuliani + Associates
4′ x 4′ panels

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CEILINGS

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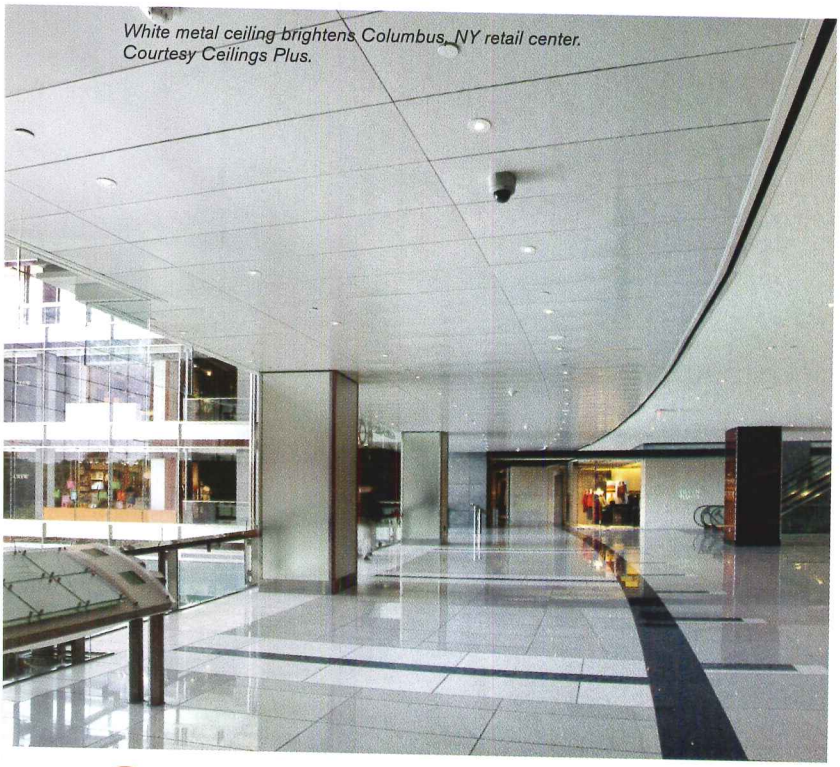


White metal ceiling brightens Columbus, NY retail center. Courtesy Ceilings Plus.

Specifying Ceilings:
From Classic to Curved

Specifying Ceilings: From Classic to Curved

Classic tile ceiling products were created in the 1920s as an alternative to plaster ceilings. These systems were made of cork and fiberboard and offered acoustic and insulation values. According to historical information from Armstrong, during the economic depression of the 1930s product advances were limited to evaluating different raw materials. Cork was rather expensive, so product manufacturers began to develop other fiberboard products from materials such as corn, hay and pine chips, a byproduct of grinding tree stumps.

During the 1940s, ceiling tile products began to rapidly evolve as post-war commercial construction picked up. Fire-retardant products and the first non-combustible ceiling tiles were launched in this period and insulation and acoustics benefits were added.

Through the next several decades more product features were added such as humidity control to prevent sagging, mold-resistant materials and high reflectance surfaces that save energy by reducing artificial lighting needs.

Evolution of these ceiling systems also focused on aesthetics such as perforations or patterns that improved appearance and acoustics. In the last 20 years, acoustics have been improved and perforations have been limited or eliminated by changes in core formulation and surface options.

More Choices

Along with these material improvements, more options in shapes and sizes were developed. As commercial building designs changed, the need grew for accessibility to building systems in the plenum and the suspended grid system came into play. These typically held 2-foot-by-4-foot panels stapled, cemented or suspended on a grid system. Now systems can hold panels as small as one-foot square or as large a 4-foot-by-8-foot and offer other options such as a three-dimensional look where panels sit on the grid and only a small portion of grid is visible.

Today these traditional systems still offer a low-cost, attractive and lightweight ceiling solution. Although more unique ceiling products continue to pop up, standard light-colored ceiling panels have remained the mainstream in commercial or institutional projects.

But they never have been considered the final design solution. Many still refer to the perfect ceiling as plaster/drywall but that does not provide acoustic performance or above-ceiling access— two key issues in commercial buildings. Through their evolution, suspended ceiling systems have maintained a classic appeal and now offer the benefit of meeting today's high performance standards with a monolithic appearance—imitating the perfection of the plaster ceilings they once replaced.

Composition ceiling panels or tiles in white or light shades hold the majority market share for total percent of ceilings installed in commercial structures. Sources from Armstrong indicate wood and metal ceiling products are gaining more attention, but combined they account for only 1 % of the total commercial market and typically cannot compete in cost with composition tiles on a dollar-per-square-foot installed basis.

Pushing the Envelope

Ceiling products continue to evolve both aesthetically and in performance. The creative drive of architects and the desire for more comfort inside commercial buildings have led to development of a broader variety of ceiling options. Greater concern about noise by building owners and occupants has led to products with greater sound reduction. Changes in building operating systems, communications cabling and fire prevention requirements have spurred improvements in ceiling weight, accessibility and fire-resistance. As more owners consider building life cycle costs, manufacturers have developed more durable surfaces that resist scratches and nicks.

And, according to Ceilings Plus, ceiling system suppliers are now meeting an increasing demand for integration of all the systems,

Clinton Library features metal/wood laminate panels. Courtesy Ceilings Plus.

including light, and HVAC into the ceiling system design rather than having portions of it specified by different manufacturers.

Advances in product design and manufacturing technology now allow larger sized panels and a variety of shapes once considered custom, such as radial and trapezoidal, to be available through standard processing.

Technology also has created an image transfer process that, according to Simplex Ceilings, allows client-specific designs, patterns or logos to be simulated on metal ceiling panels.

New fabric options are also now available in large format acoustic panels that provide a drywall texture in a concealed suspension system. However, although dozens of colors are available for panels and suspension systems, nationwide focus group research by Hunter Douglas shows the color specified for 85% to 90% of the acoustical panels is white. This includes composition material as well as metal panels that have a textured appearance through the use of a light color laminate or perforations that create a pattern.

Curved translucent panels brought into the market in the last few years also open up design options. They can be used as canopies tensioned either convex or concave in the ceiling to offer more light and openness while maintaining acoustic values. The panels, which range in color from subtle to bright, help set an atmosphere. The translucent material can be backlit for drama and interplay of light and texture. The same curved system is also available in natural fiber material and corrugated metals. If these panels are installed into a standard suspension system they also allow plenum accessibility.

Sustainable design has also become a strong influence on ceiling product development. Guidelines such as the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program have brought sustainability to the forefront. Requirements for techniques such as daylighting have brought out more reflective ceiling finishes that can reduce the number of light fixtures needed in a given space, a benefit to energy efficiency and potentially adding LEED points to a project. And, required improvements for indoor air quality (IAQ) have brought modifications in coatings, core materials and adhesives used in ceiling systems.

The growing importance of the LEED program on projects has also given more visibility to certain materials such as metal for its recycled content and ability to be recycled. Wood is also a critical material in LEED certified projects.

Although the market for metal and for wood in ceilings has developed in part because of this added visibility in the green building movement, traditional mineral fiber tiles are also important because they are sustainable by design. According to information from Armstrong, mineral fiber products have between 30%-to-90% recycled material content and are made from mineral wool made from slag, a by-product of steel production, and post-industrial and post-consumer recycled newspaper. Because many composition tiles are recyclable, Armstrong also instituted the first recycling program for certain types of ceiling tiles in which 20 million square feet of ceiling material has been recycled since 1999.

Installation methods and costs also have become a consideration in new ceiling options. To allow creativity on a budget, pre-engineered wall and ceiling systems that integrate curved, domed, and conventional flat drywall ceilings have been developed. Their factory engineering offers fast installation that reduces labor time and costs and easy transition of ceiling elevations and types.

A new capability from Armstrong also offers architects and designers the ability to use radial ceilings in wood, metal or fiberglass. Because these ceiling systems are also factory-engineered they can eliminate the need for drywall bands or field cutting and can be designed to provide access to the plenum.

Although maintenance of ceiling panels is not often a major consideration, accessibility is. Traditionally panels lift up and shift over for access. But many panels now can swing down so maintenance staff don't have to worry about banging panels into wires, ductwork or other things in the plenum or damaging the panel, which is important if the architect has to factor replacement costs into the project.

Because ceiling replacement can affect a building's life cycle cost, the long-term durability of metal and wood as ceiling materials can reduce replacement needs, which some manufacturers say can be as short as 7 years for certain applications and products.

If genuine wood ceilings are desired, many options are available. Typically, solid wood panels will reflect most of the sound that strikes them but the noise reduction coefficient (NRC) of solid wood ceilings have been improved with perforations or other openings for sound waves to pass thru or the addition of fleece backing. According to Ceilings Plus, perforations of at least 10% or greater in wood ceilings can now bring the NRC rating to a range of 0.75 to

Courtesy Simplex Ceilings.

0.80 with the use of sound absorbing materials. An NRC of 1.0 is the highest possible.

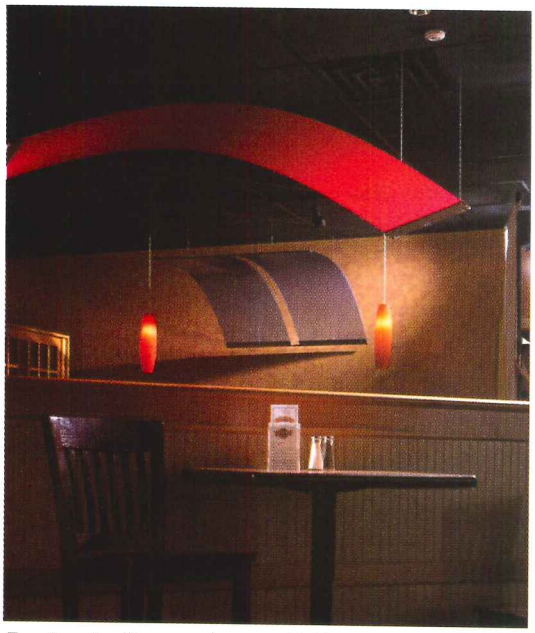
Wood in an open grid ceiling also lets sound and light penetrate into the space and the open grid allows integration of illumination, acoustic treatment, air distribution and sprinklers without interfering with the design. Wood grid ceilings are available in many species such as red oak, maple, cherry, birch, poplar or walnut which can be sealed with a clear lacquer, fire treated, stained or painted to fit the desired look. Modular wood louvers are also offered with luminous or non-luminous applications. Monolithic wood louver systems, also available in many species, use main runners and cross member suspension components to create a seamless appearance.

Wood ceilings are also offered in curved and serpentine panels that can create unique free form designs and in planks that can absorb sound and offer accessibility to the plenum.

The appearance of wood ceilings also has changed. Armstrong has introduced a reconstituted wood finish that provides the look of natural wood with a more consistent color and grain pattern in 2-foot-by-2-foot panels that install into standard grid systems. Armstrong also has created a new wood ceiling system with a modest reveal between panels that offers plenum access.

New technology is allowing manufacturers to create systems that combine materials such as wood and metal in ceiling products that achieve the specifications for acoustics, plenum accessibility and light reflectance. These products can provide a wood look with either a veneer or faux wood finish.

Bamboo's popularity as an ecologically friendly material has also put it in the forefront of ceiling finishes. Bamboo finish panels on a core of aluminum can be perforated for appearance and acoustics, offering a sustainable combination based on aluminum's high recycled content and bamboo as a readily renewable resource.



Translucent ceiling canopies grace Fuddruckers restaurant, Lancaster, PA. Courtesy Armstrong World Industries, Inc.

Reaching Up

These new product options are letting ceiling designs become as individual as the people who create them and those who occupy the space beneath them. The driving forces behind the designs are a desire for greater visual appeal and the need for spaces that feel larger and less confining.

As a result, today's ceiling designs are clean and monolithic -- spiced up with curves and influenced by green building goals. More designs now are sculpted or curved, with clouds, transparent forms and a growing variety of creative open grid patterns. Curved panels are also used to diffuse sound or to act as acoustical reflectors.

Vaulted applications of curved ceiling designs are also used more frequently. And waves are floating into ceilings in all types of solid and translucent materials.

Curved ceilings and unusual wall shapes are being designed with wood, metal, drywall, translucent or composition materials. Curved accent panels are used as floating ceiling canopies to create "spaces within spaces." Suspending the panels at different heights is used to add visual impact and create a custom look with standard components.

The open cell remains another popular technique to give the feeling of open space. Mechanical systems are still visible but more open cells are being placed beneath them to create a more attractive appearance while maintaining the sense of openness.

Wood or the appearance of wood is another growing design trend. The newest technique beginning to spread across the United States aesthetically combines metal and wood, contrasting the warmth of wood with the vibrancy of metal.

Placing the Systems

Blending creativity with ceiling product advances offers many exciting opportunities on projects. If you design casinos, they are all about image. Hospitality and retail are also focused on image – plus comfort. Airports and transportation centers need functional materials. Security always requires metal. In exteriors, particularly in extreme weather areas such as Florida, materials will need to withstand excessive wind loads if ceiling materials are used on exterior soffits. Translucent panels as canopies may be used in a wide variety of applications ranging from high profile corporate interiors to upscale retail environments.

John and Mary Pappajohn Center, Des Moines, Iowa. Courtesy Hunter Douglas Contract.

In laboratories or other areas with sensitive equipment, or where humidity and corrosion control and enhanced fire-resistance are critical, ceilings and surfaces usually need smooth surfaces to prevent dust collection and air precipitators or filters to keep any particles such as dust or lint to a specified minimum level.

Acoustics are important in most spaces, including offices, call centers, schools or auditoriums, but in others such as parking garages it has no significance.

Curves can be used to reflect a company's image. A perfect example is the Reebok World Headquarters near Boston where a dramatic 47,000 square-foot curving spine weaves throughout the unique 522,000-

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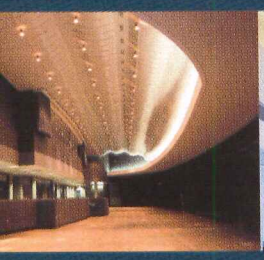

If you're searching for ceiling options to make your project a thing of beauty, Simplex Ceilings' diverse selection of products can most certainly help you out. From airports to casinos, we've helped architects and contractors for over 50 years make their projects look even better than they imagined. By following the wave of design and manufacture of commodity and specialty acoustical metal ceilings, we offer a flexible variety of incredible-looking shapes, colours and finishes.

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Curved, segmented panel ceiling. JFK Airport Terminal 4, New York, NY. Courtesy, Simplex Ceilings.

square-foot structure. The four-story building was designed by Seattle-based NBBJ Architects and features unique wall and window curves, tight angles, and sleek interiors with ceilings that curve into walls using Hunter Douglas curved metal panels.

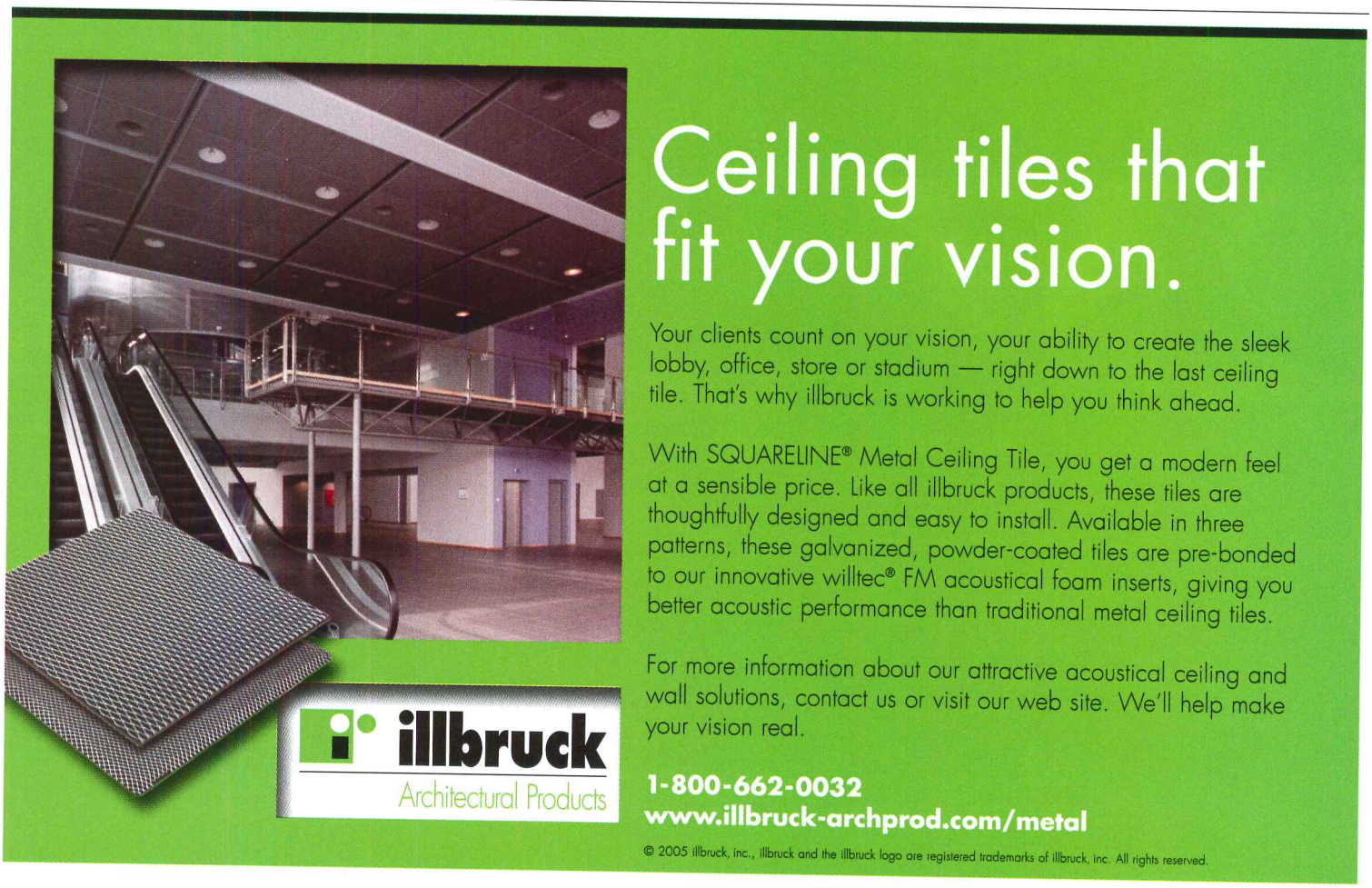
Unifying different spaces into one with a monolithic design was achieved at the new Jen Library at the Savannah College of Art & Design where the ceiling was designed to blend old and new structures. Creating the interior of this building in the city's beautiful historic district was a challenge because the 85,000-square-foot structure was actually three buildings -- each made from different materials of brick, wood and concrete -- merged with one façade. The solution was an open cell ceiling system that enhances the space and creates a clean, modern and continuous visual of one open area. Ceiling heights varied, HVAC systems twisted through the space at different elevations. The ceiling system from Hunter Douglas masked the plenum while providing easy access for service personnel.

A unifying system can also blend style with plenum accessibility. The LEED-certified Capital East End government building in Sacramento features a custom designed torsion spring system in an exciting three-level oval shaped ceiling. The metal ceiling system from Simplex Ceilings has downward accessibility and its torsion spring system allows workers to pull down one side of the panel for access to the plenum while the opposite side sits on the springs.

Downward demountable ceilings such as this are essential if ongoing maintenance is required. Some systems are upward demountable; in both options the panel does not need to be lifted out which eliminates the possibility of damaging panels during maintenance. This feature is also important in applications, such as airports, where panels are exceptionally large and sometimes heavy.

Metal ceilings also can provide energy efficiency. Daylighting techniques at the National Institutes of Health, a LEED certified project, used metal ceilings panels from Ceilings Plus that were curved and canted to all the exterior windows. The reflected light the system provided was the daily light source for the laboratories within the building.

Sustainable objectives were also met with metal at the Clinton Presidential Library in Little Rock, Ark., where more than 9,000 square feet of metal panels with a custom bamboo finish were installed last year. Ceilings Plus developed the bamboo finish panels at the request of the project's architect New York-based Polshek Partnership. Bamboo was chosen because it is a rapidly renewable material and the panels' core was made of aluminum because it



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Admiral's Club (LAX) features a metal and wood laminate system. Courtesy Ceilings Plus.

contains up to 98 % recycled materials. Both materials helped the building qualify for credits under the LEED program and the panels were custom perforated to provide the desired appearance and acoustics.

But metal's most frequent ceiling application is in high volume transportation centers such as airports and train stations where durability and low maintenance are important, such as New York's JFK Airport. This project at Terminal 4 uses a custom curved segmented metal ceiling system that provides a true alignment between panels for a seamless fit. Irregularities caused by sagging, deviation and misalignment of long planks are eliminated, producing a clean and monolithic appearance in a system that is completely accessible.

At Philadelphia's Airport a curved ceiling features an innovative application of style and practical performance. The corrugated perforated metal panels have an 11% open area with a woven acoustic textile adhered to panels for sound insulation. The panel's decorative and versatile properties create stunning visual effects while its flexibility, low weight and sound attenuation meet practical requirements.

Evaluating Options

Using new products and systems to make ceiling designs a reality begins with an outreach for information. While appearance is critical, ceiling options need to be evaluated on other levels, including: acoustical performance, accessibility, light reflectance, recycled content, durability, humidity resistance, fire resistance, size and cost.

When decisions are made on specific features and product options, information from appropriate suppliers can be accessed to help determine what product, material and supplier can achieve what is needed for the design. It is advantageous to do this early in the project because suppliers are sources of experience and product knowledge that can have a positive influence on the final outcome and potentially help the bottom line.

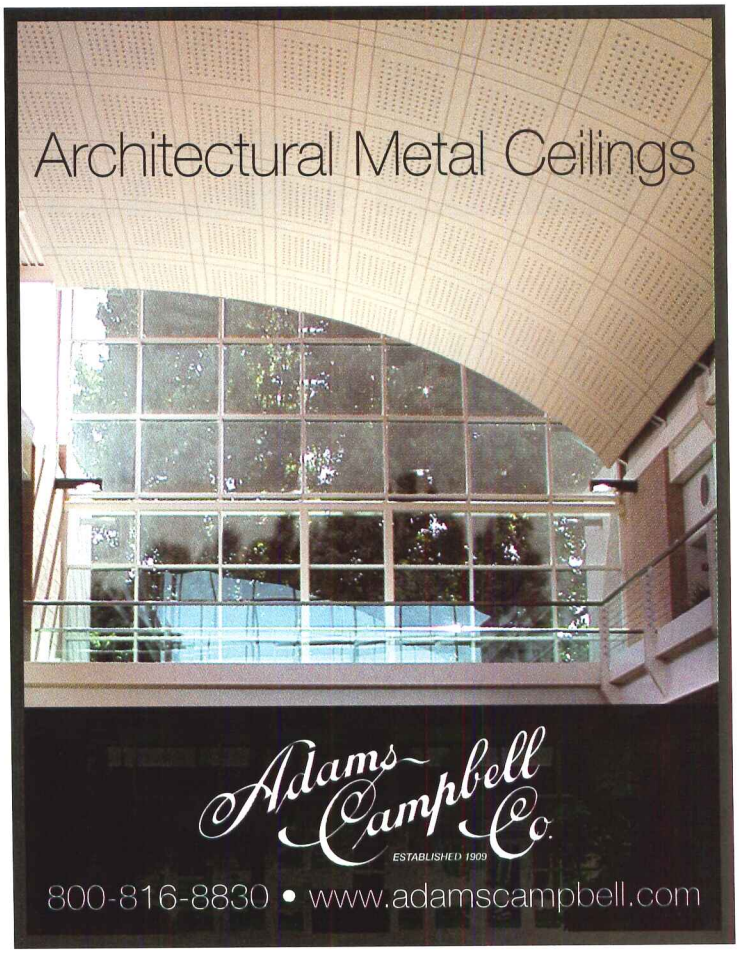
Don Smith, Director of Technical Services for Association of the Wall and Ceiling Industry, says it is critical to check expectations of how materials will come together in a building design so that any adjustments can be made before work begins. "The local market has a bearing on the availability of products and skilled installers. Area representatives of product manufacturers can help determine what's happening in the market where the project will be built. Checking early on this helps confirm costs at the start of design."

Ceiling product manufacturers generally are aware of local code requirements and will provide limits on size and weight of light fixtures, air diffusers and other ceiling loads with their product. They also provide ratings on all products for different applications according to pertinent standards. In comparing these product ratings, check performance measurements for laboratory or actual field-testing.

If acoustics are critical, an acoustical consultant may be the first step in determining the best material for the space.

But if a project will be submitted for LEED certification, these guidelines will have a major bearing on product options and the team should evaluate them in the first stages of the process.

The ceiling choice also has affects a building's IAQ. Ceilings that allow accessibility to the plenum are important to helping maintain the air quality of the space because easy access allows maintenance staff to more quickly measure and adjust air flow systems as needed. ■



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The article continues online at:
archrecord.construction.com/resources/conteduc/archives/0507ceilings-1.asp

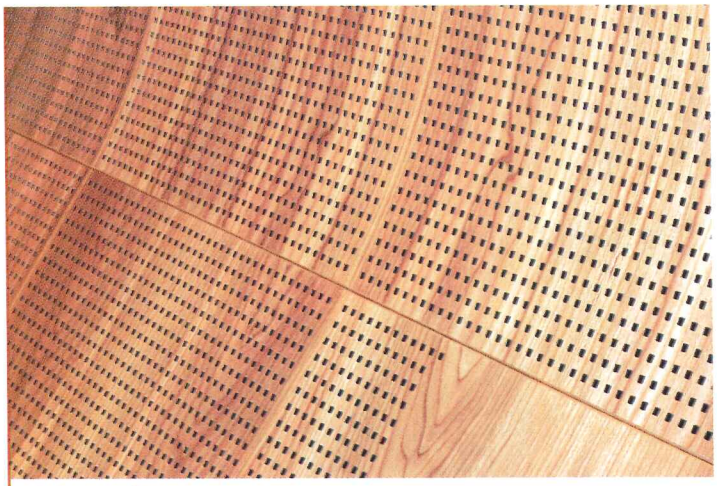
To receive AIA/CES credit, you are required to read this additional text. For a faxed copy of the material, call Marissa Wyss at 1-800-394-4309. The following quiz questions include information from this material.

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self-report form on page 267. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self-report form on *Architectural Record's* web site—*archrecord.construction.com*—to receive one AIA/CES health/safety/welfare Learning Unit.

QUESTIONS

1. Standard white or light colored acoustic ceiling panels are specified by what percent of architects?
   - **a.** 40-45%
   - **b.** 60-65%
   - **c.** 85-90%
   - **d.** 90 –95%
2. Metal and wood ceilings account for half of today's commercial ceiling market.
   - **a.** True
   - **b.** False
3. For appearance, which ceiling type is considered the most perfect?
   - **a.** Metal panels
   - **b.** Composition tiles
   - **c.** Plaster/drywall
   - **d.** Solid woode
   - **e.** Wood veneer
4. Advances in the integration of product design and production technology allow products once considered custom to be made through standard processes.
   - **a.** True
   - **b.** False
5. Choice of ceiling systems can help add LEED points for:
   - **a.** Recycled content
   - **b.** Recyclable material
   - **c.** Daylighting techniques
   - **d.** All of the above
   - **e.** None of the above
6. Metal is the only ceiling material with recycled content.
   - **a.** True
   - **b.** False
7. Accessibility to the plenum through the ceiling is necessary primarily for:
   - **a.** Maintenance or repair of building systems
   - **b.** Cleaning ceiling panels
   - **c.** Replacement of ceiling tiles
8. About 20 million square feet of composition ceiling material has been recycled since 1999.
   - **a.** True
   - **b.** False
9. The Noise Reduction Coefficient of solid wood ceilings can be improved by:
   - **a.** Perforating the panels
   - **b.** Applying sound absorbing materials to panels
   - **c.** Creating openings between panels
   - **d.** All of the above
10. Current design trends in ceilings include:
    - **a.** Curves
    - **b.** Monolithic
    - **c.** Open cell
    - **d.** Blending wood and metal
    - **e.** All of the above



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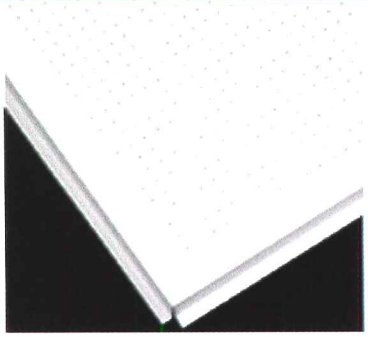

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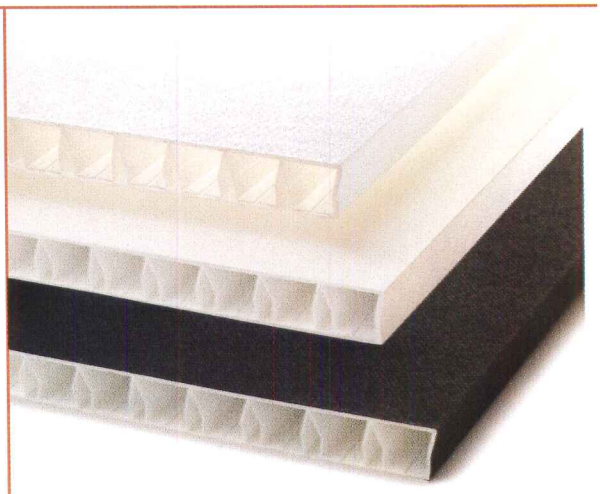

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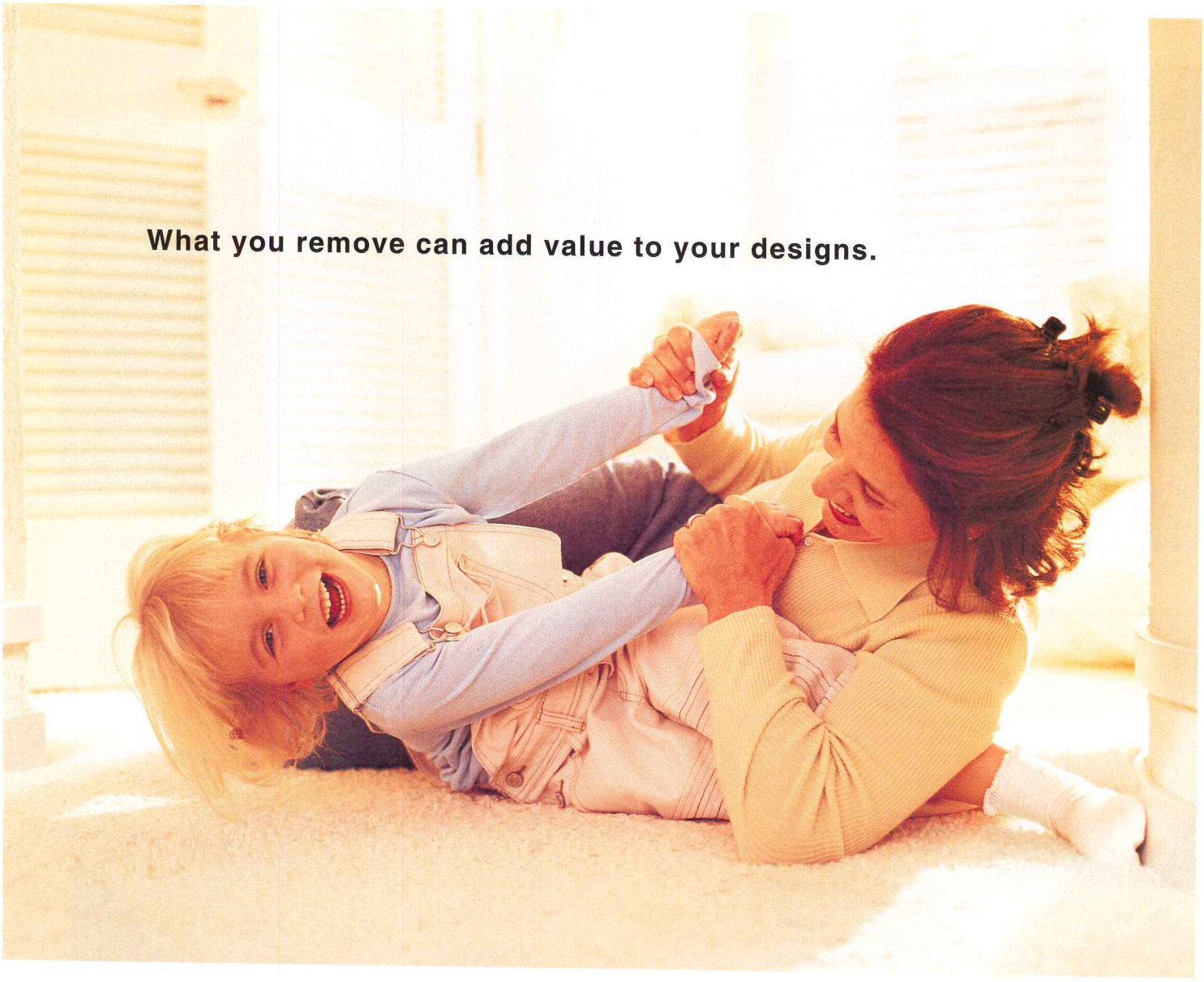

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Residential

Metal bears the load in more ways than one in these four houses located in distant and nearby places

BRIEFS

Interdisciplinary design firm Mithun won the international Cradle to Cradle Home competition, honoring innovation in sustainable residential design. A two-story "hearth," which includes mechanisms for rainwater collection and treatment, ventilation, and support for solar-energy collection, forms the core of the house. Walls made of spinach-protein cells sandwiched between glass generate additional photosynthetic energy. For more information, visit www.cradletocradlehome.com.

The EPA has delayed action on passing regulations against the hazards of lead-based paint in residential construction. Instead, EPA asks that businesses comply voluntarily with guidelines that require workers to be certified in safe practices against lead contamination before remodeling houses constructed before 1978, when lead-based paint was banned. This could lower renovation costs but would ultimately raise health-care costs. It drew an angry response from public health advocates and Democrats in Congress.

HUD's Partnership for Advanced Technology in Housing (PATH) with Mercedes Homes unveiled two hurricane-resistant prototype homes on Florida's eastern shore. The designs incorporate wind-resistant features such as steel reinforcement, secondary roof coverings, and tie-downs. Concrete bolsters the structures and protects against water absorption. University of Florida students will monitor performance during hurricane season. Ultimately, PATH and Mercedes Homes plan to incorporate the improvements into future projects in hurricane-prone regions. For information, visit www.pathnet.org.

Next year, the OPEN Prototype Initiative, a collaboration between MIT and New Hampshire builder Bensonwood Homes, will build its first house in under 30 days. Constructing a prototype house every 18 months until 2010, this initiative tests advanced designs, materials, systems, and fabrication strategies. The successful application of academic research to building industry norms will set a precedent for how personalized homes can be built quickly and cost-effectively. Visit www.openprototype.com.

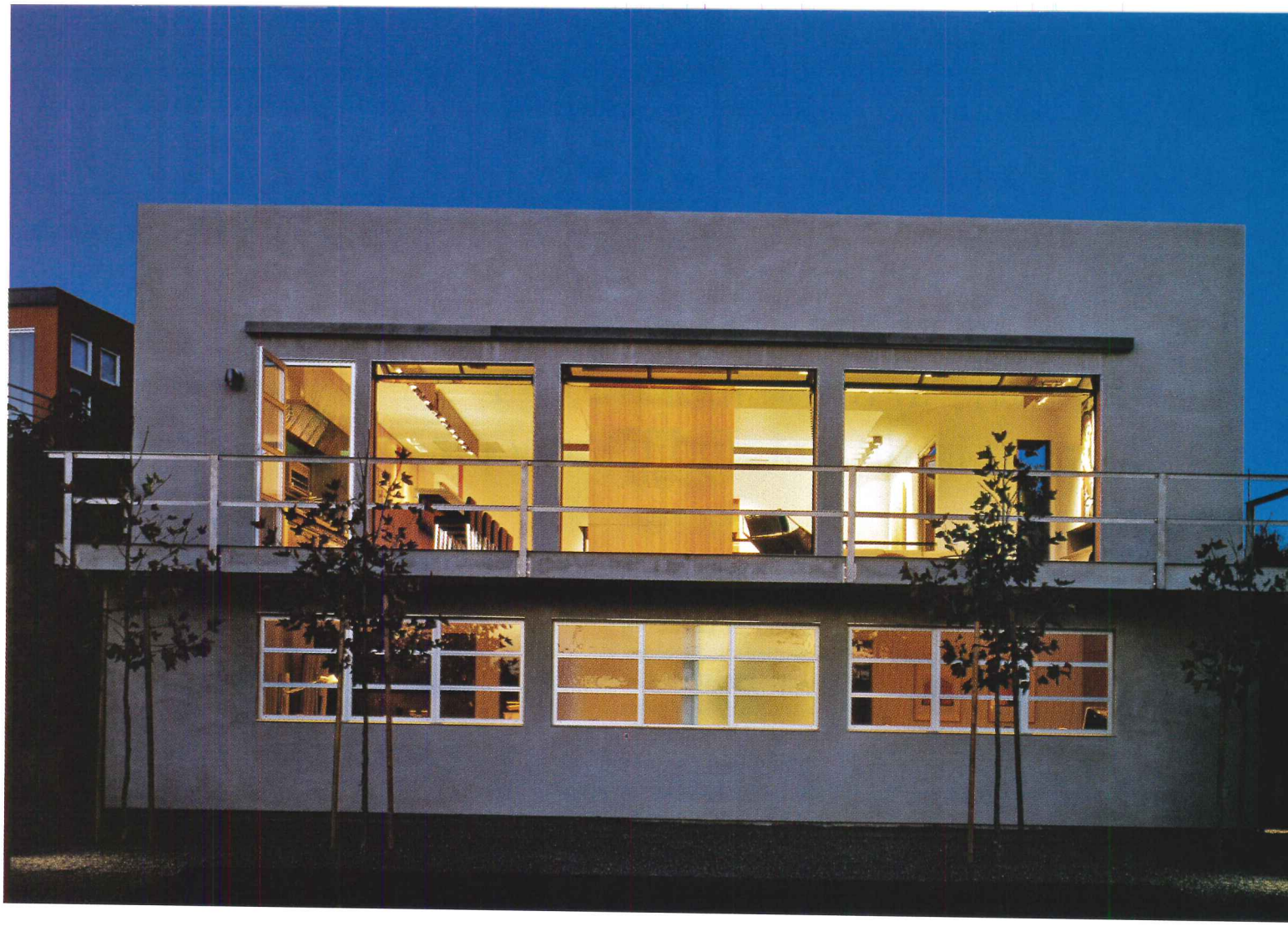
This fall, 18 teams of college students from the U.S., Canada, and Spain will construct a "solar village" on the National Mall in Washington, D.C. Called Solar Decathlon, the competition will judge each house on its energy efficiency as well as aesthetics. Innovative materials and processes developed over the past two years will be later applied to conventional home design. On view from October 7 to 16. Visit www.solardecathlon.org.—*Larissa Babij*

CONTENTS

200 **Burton House**
LUCE et Studio
206 **Ecoms House**
Riken Yamamoto & Field Shop
210 **James-Robertson House**
Dawson Brown Architecture
214 **Villa Lucy**
WPa
221 **Kitchen & Bath Portfolio**
231 **Residential Products**
236 **AIA Housing/HUD Award**

For years, metal has been used for studs in residential construction, but today it is assuming a more prominent role as a featured player in the architectural expression of many houses. It is energy efficient, and fire-, mold-, and termite-resistant. It is airtight, so it handles strong winds. Framing a metal house goes quickly, and metal is routinely collected from construction sites and recycled. Here we present four houses that feature primarily steel and aluminum. The Burton House demonstrates the virtues of a steel floor—cool in summer, warm in winter. An experiment in lightweight, strong, easy-to-process aluminum, the Ecoms House derives from a prefab kit of parts. Villa Lucy features steel columns, balcony, framing, and detailing. And the entirely steel James-Robertson House (below) was dropped onto its site in pieces by helicopter. The impressive virtues of building with metal are demonstrated here. *Jane F. Kolleeny*

PHOTOGRAPHY: © PATRICK BINGHAM HALL



LUCE et Studio brightens a California suburb with the steel-framed **Burton House**

By Ann Jarmusch

Abbie and Bill Burton run a landscape-architecture firm north of San Diego in a busy design district. Home is their tranquil, orderly haven. Unless, that is, they're entertaining, which requires serious cooking in their 40-foot-long commercial kitchen.

Their two-story, 1970s-era suburban house in Cardiff-by-the-Sea has been turned upside down, so to speak, in a renovation by LUCE et Studio. The designers relocated rooms traditionally at street level—kitchen, living room with a deck, dining area—and the master bedroom to the second floor. The move also captures views of the Pacific Ocean and further removes the couple from intrusions.

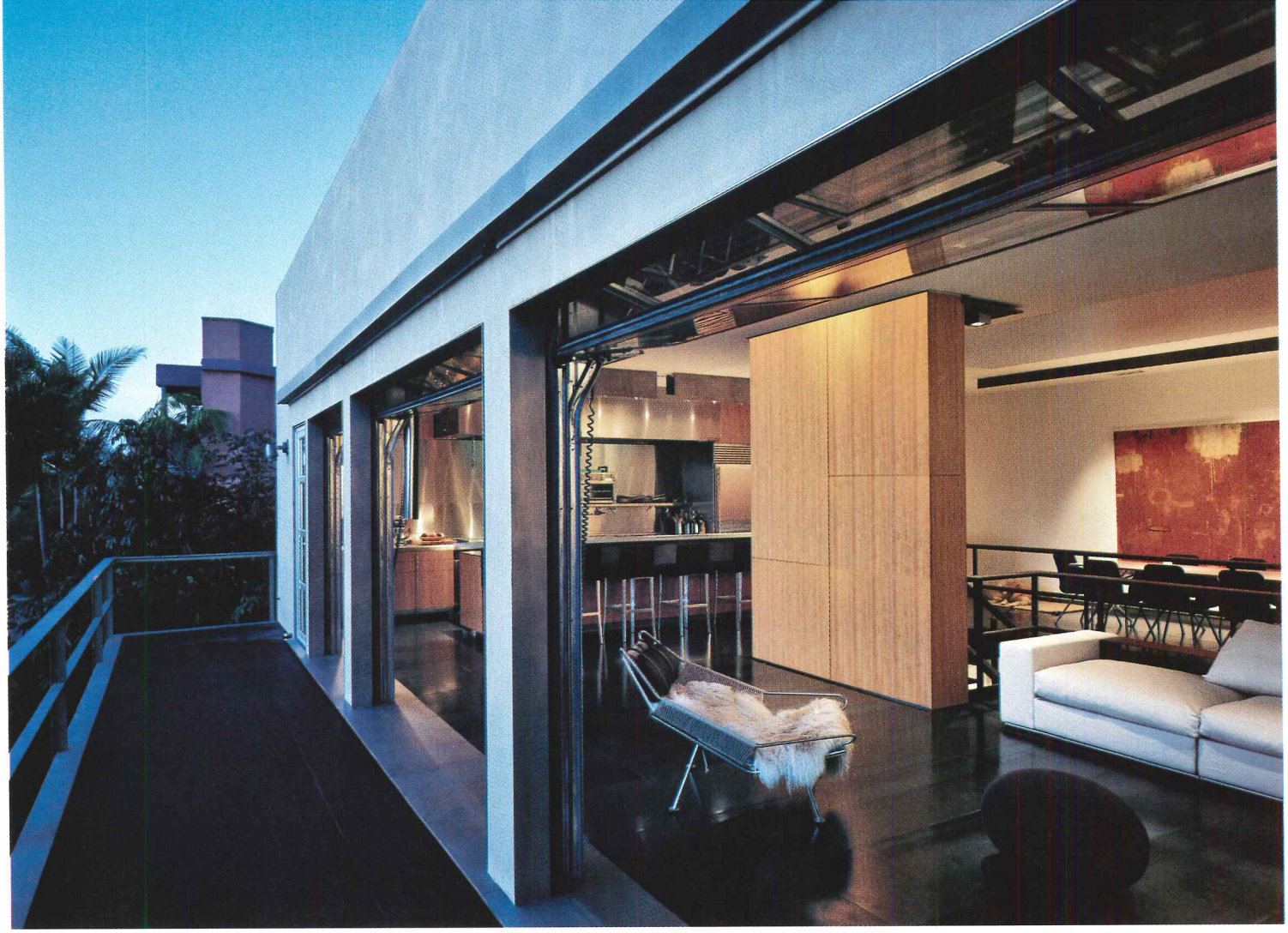
The kitchen, central to their lives, actually adjoins the master bedroom. Bill Burton likes to roll out of bed and start the soup stock, for example. Thus begins a weekend of roaming along the kitchen counter/dining bar and row of stainless-steel appliances, as he preps meals and watches cooking shows on a wall-mounted TV.

Ann Jarmusch is the architecture critic for The San Diego Union-Tribune.

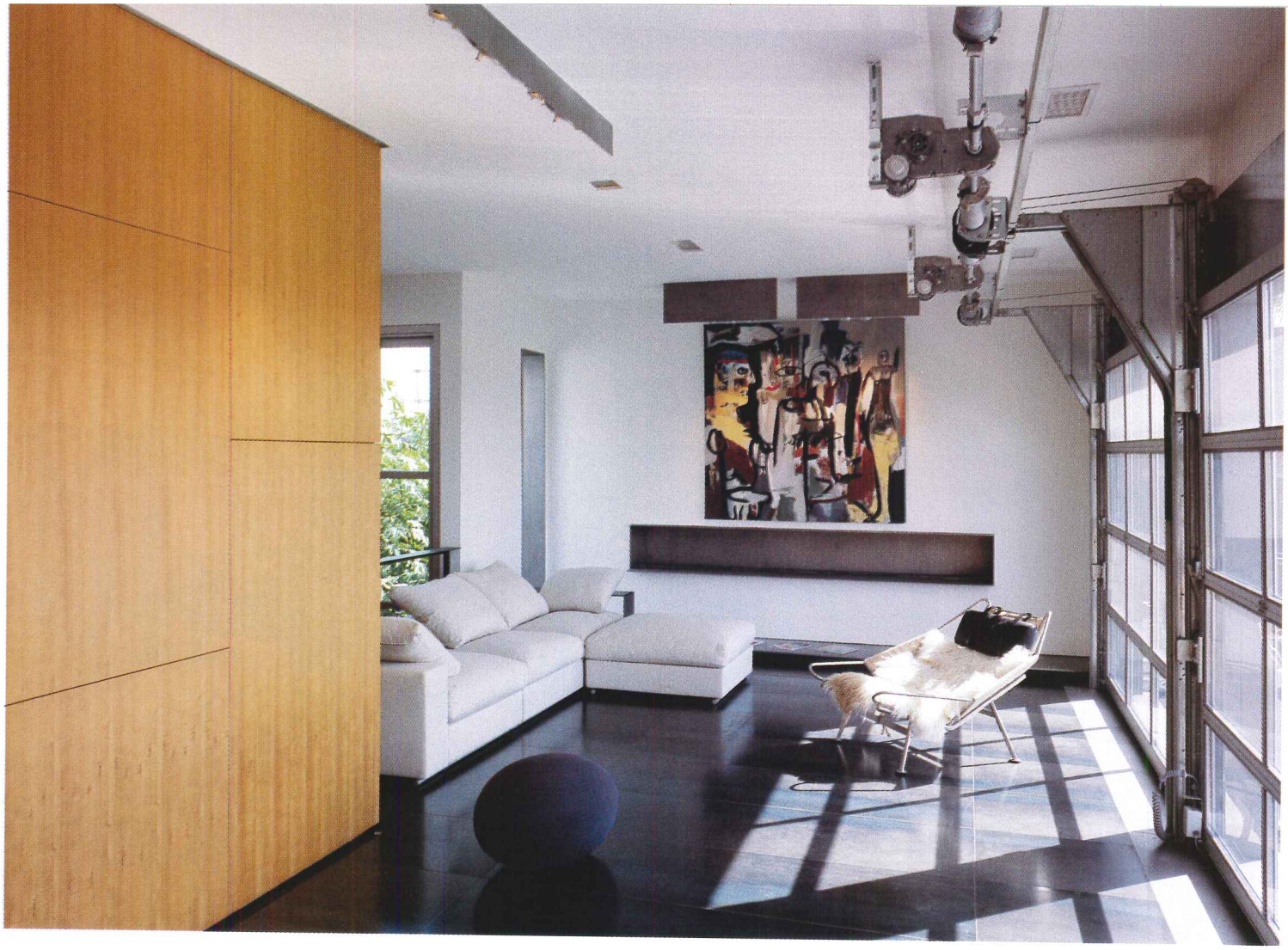
The Burtons' combination of introverted and gregarious personalities fueled LUCE et Studio's redesign of their home, which was accomplished within the original form and footprint. Jennifer Luce, AIA, a friend of the couple, had already collaborated with them to transform an old warehouse into their office. Talk about redoing the Burton home began with a basic landscape architect's question: What is the ground plane? "That's how the steel floor came to be," Luce said, referring to the bluish-gray steel plate that begins inside the front door, then moves into the house to blanket floors on both levels. Visitors often mistake the

Project: *Burton House, Cardiff-by-the-Sea, Calif.*
Architect: *LUCE et Studio Architects—Jennifer Luce, AIA, principal in charge; Aaron Anderson, project manager; Lindsay Bresser, Sharon Stampfer, Amy Larimer, design team*
Engineers: *R.L. Biggers & Associates*
Consultants: *Burton Associates (landscape); Burke Lighting Design (lighting); Conover Design (exterior colorist)*
General contractor: *Beacham Construction*

PHOTOGRAPHY: © ARCH PHOTO/PAUL RIVERA



A bank of three, fold-up glass firehouse doors open to a second-floor deck that spans the width of the house (opposite). Inside, the living room, dining room, and an ample kitchen take advantage of the open, well-lit space (above). A silvery, stainless-steel garage door and sliding front door shimmer in the sun (right). The wide front door slides open to a generous hall inside (left).



Sited on the second floor, the public areas take advantage of views of the ocean. Abundant light flows from a skylight, glass firehouse doors, and French doors (above and left).

flooring for stone, perhaps because it was laid like stone. But steel is superior, staying cool in summer and warm in winter.

"Since we and the Burtons are all interested in steel, we discussed an all-metal house, but decided to mediate it with a little wood," Luce added, referring to the western hemlock cabinetry and doors. Still, steel is the star, appearing with rough, polished, and waxed finishes inside and out. From the street, the blank-walled, acid-washed, aggregate-plaster house reveals nothing about its occupants. Luce installed a silvery garage door and sliding front door, both made of bead-blasted stainless steel—simultaneously impenetrable and alluring.

When the heavy door slides open, the house begins to reveal its flowing spaces punctuated by thick hemlock doors and walls. Cabinets 2.5-feet deep, designed for storing Abbie's essentials, such as art, wine, and linens, form a full-height wall—and another protective layer between public and private space. Flush doors in the wall lead to a powder room and the Burtons' two teenagers' bedrooms.

Luce uses controlled natural light to modulate spaces and focus attention on outdoor views the Burtons chose. Daylight pours in from a skylight above a central, open stair—which LUCE et Studio redesigned and reconstructed in steel with rubber treads—to the second floor. The parents spend most of their time at home on this floor, sometimes retreating to the master bedroom to soak in a sculptural, hand-poured-resin tub.

The second floor became an airy, U-shaped loft after Luce added a narrow, cantilevered steel dining area that seats 12 at a long table.

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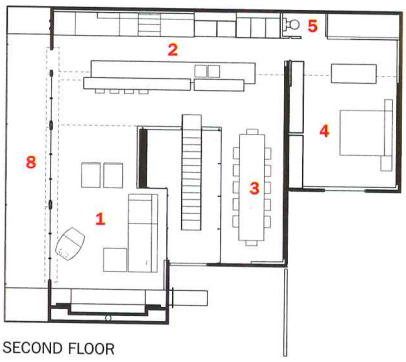
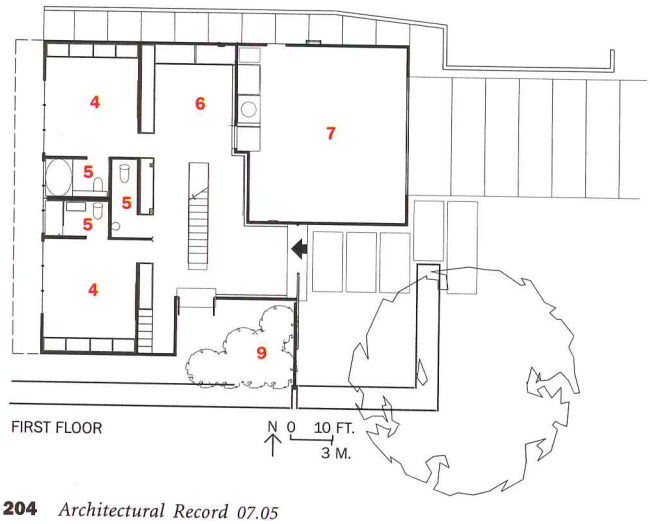


SECOND FLOOR

1. *Living room*
2. *Kitchen*
3. *Dining room*
4. *Bedroom*
5. *Bath*
6. *Laundry*
7. *Garage*
8. *Balcony*
9. *Garden*



FIRST FLOOR

An industrial-size kitchen abuts a dining area that accommodates numerous guests for the dinner parties and culinary pleasures that the Burtons so enjoy (above).

She also opened the rear wall to views of the ocean and the Burton-designed backyard with a bank of three, fold-up glass firehouse doors and a pair of French doors, all of which open onto a deck. Luce framed this western view and one of a small side garden (newly accessible through elongated French doors so tall they deliver light to the second floor) to mask unwanted glimpses of other houses.

In a playful corollary to the Burtons' emphasis on privacy, LUCE et Studio created a first-floor powder room and a water closet off the master bedroom as impeccably designed surprises to be discovered—or not—behind thick hemlock doors. Crafted to blend seamlessly with built-in cabinetry, these doors lack hardware or any other clue as to their existence. "Another hidden object," is how Luce describes these elegant little rooms.

Like the Burtons, the house has become dynamic and tranquil, bold and intimate, earthy and refined. It's now a place where the fragrance of herbs and sauces mingles freely with the salty ocean breeze. ■

Sources

Aluminum windows: *Arcadia*
Glazing: *Barrisol (skylights); A&A Glass (glass)*
Doors: *Arcadia (aluminum); Jacobs Woodworks (wood); Crawford-Amber (electric)*
Lighting: *Erco (interior ambient lighting and exterior); Osram (surface lighting); IDL Lighting Services (downlights); Ingo Maurer (task lighting); Lutron Homeworks (controls)*

For more information on this project, go to Residential at **www.architecturalrecord.com.**

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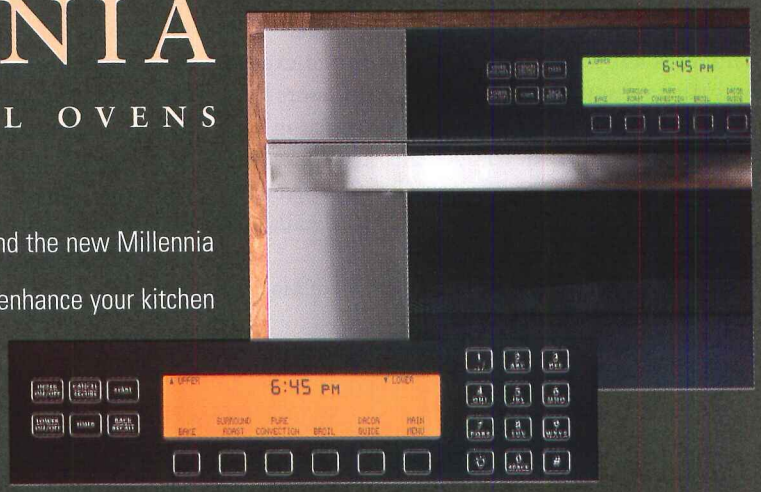

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Riken Yamamoto & Field Shop develop the unique **Ecoms House** as a kit of aluminum lattice parts

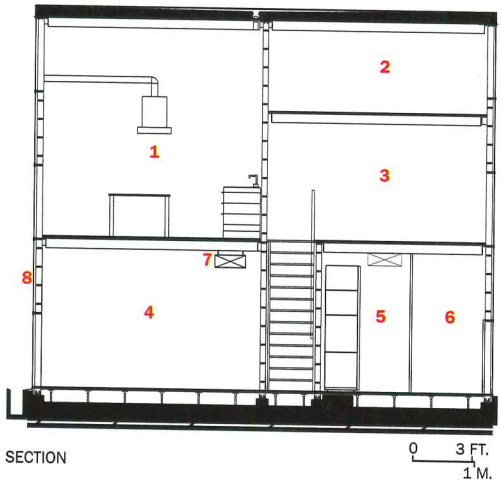
By Naomi Pollock

Japan, the birthplace of the tatami mat, has a long history of modular building. For centuries, the dimensions of these straw pads have dictated the size of rooms, walls, and windows. Picking up where traditional carpenters left off, Yokohama architect Riken Yamamoto has designed a prefabricated aluminum construction system. Ecoms House is the system's first residential prototype. Developed at the request of SUS Corporation, a manufacturer of aluminum precision machine parts and furniture, the house is located in Saga Prefecture on Kyushu, at the southernmost tip of the Japanese archipelago.

Situated next to the SUS factory that was also built using Yamamoto's prefabricated aluminum technology, the house is a 24-by-24-foot cube made from a kit of parts based on a 4-foot module. Each of its four sides is composed of 34-foot-square, 4-inch-thick panels, some transparent, some opaque, and some glass-covered-aluminum lattice that are a little of both. The framework of metal crosses is not only the system's signature element but also functions as a structural support, holding the entire building without sacrificing light and view.

Intended to demonstrate the system's flexibility—it is equally suited to residential and commercial applications—the prototypical house contains two bedrooms, a bathroom, and a storage space on the ground floor; a kitchen, dining area, and workspace on the second. The two floors could be easily flipped for an owner who prefers an office at grade.

While Yamamoto is not the first Japanese architect to experiment with aluminum structural systems, most of his predecessors have simply translated steel technology's post-and-beam construction elements. By contrast, Yamamoto devised components that take full advantage of aluminum's unique properties. Though a lightweight material, it is 1.5 times as strong as steel of the same weight. Because its melting point is lower than that of steel, aluminum is easier to process. If forced through an extrusion machine, cylindrical ingots of the soft metal (which is made from a mixture of recycled cars, cans, and newly processed bauxite) can be molded into almost any shape—even with complicated or intricate details.



1. *Kitchen/dining*
2. *Loft*
3. *Home office*
4. *Bedroom*
5. *Movable shelf*
6. *Bath*
7. *Air duct*
8. *Aluminum lattice panel*

Working within the constraints of the standard pressing machine, which can handle cylinders with diameters up to 10 inches, Yamamoto began creating components that could be put together to make load-bearing walls. The quest for more transparency inspired Yamamoto to refine and simplify the basic building block as much as possible. The latest version is the 9-by-9-inch cross shape made of 0.2-inch-thick flanges joined end-to-end that comprise the 4-foot-square lattice panels used to build Ecoms House. Each flange ends with a hooked tip that dovetails neatly with that of its neighbor. The two pieces are then secured tightly with a tap bolt, resulting in an elegant connection that enriches the lattice's visual texture without obscuring its crosshatched pattern. Though the complexity of the interlocking pieces is reminiscent of Japan's traditional wood joinery, each component is factory-made and mass-produced.

Aluminum has another benefit. Lightweight aluminum panels

Naomi Pollock is RECORD's *Tokyo-based correspondent and author of* Modern Japanese Home *(Phaidon, 2005).*

PHOTOGRAPHY: © SHINKENCHIKU-SHA (THIS SPREAD)

At dusk the house glows through its transparent and semitransparent panels (this page). The house sits next to the SUS Corporation, built with the same prefab system (opposite).

can be easily transported and quickly bolted together on-site, shortening overall construction time and saving the client money. Built-in shelving and a unit kitchen (with mix-and-match components) bridge the gap between architectural and human scales. Also reinforcing the human scale is a line of freestanding furnishings Yamamoto designed, which includes tables and bed frames—all of aluminum, of course.

Though the Ecoms system has been used successfully to build a factory, a flower shop, and a beach shelter, no one has used it for a full-time residence yet. While the idea of living in a metal house may be a hard sell (Yamamoto concedes that it is hot in summer and cold in winter, necessitating a 1-inch layer of insulation), the system's remarkable flexibility and its recyclability are big draws. Indeed, it is possible to add, subtract, or even reuse entire walls. Someday Yamamoto hopes that homeowners will be able to lease wall and floor panels as needed. And, as Yamamoto says, "you can't do that with wood or concrete." ■

Project: *Ecoms House, Saga, Japan*
Architect: *Riken Yamamoto & Field Shop—Riken Yamamoto, Naoko Kawaguchi, Jinyu Tei, Miki Matsuda*
Engineers: *Iijima Structural Design Office (structural); Sogo Consultants (mechanical)*

Sources
Aluminum fabricator: *SUS Corporation*
Glazing: *T2 Glass Construction*
Flooring: *Sakaeya*
Roofing: *Gantan Bearty Industry*
Electrical: *Oki Wintech*

For more information on this project, go to Residential at **www.architecturalrecord.com**.

The compact house features a home office on the second floor, which can easily be switched to the first floor (below). The component-based system of interlocking parts reflects the use of the traditional tatami mat, a unit of measure for centuries in the Japanese home (top).

PHOTOGRAPHY: © MICHIKAZU MOTONISHI (TOP); KOICHIRO OTSUKA (BOTTOM)

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Two steel pavilions nestled in the trees define Dawson Brown Architecture's **James-Robertson House**

By Christopher Moore

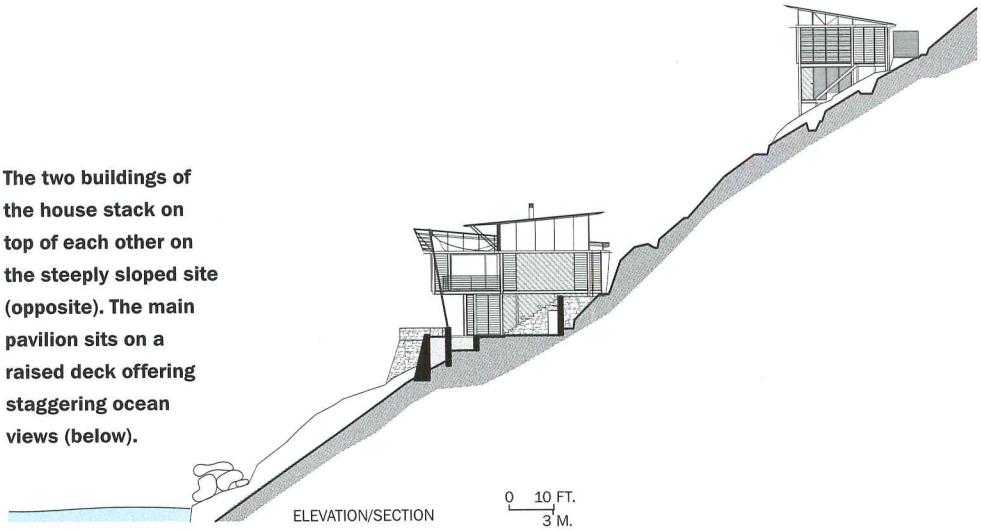
A mollusk-encrusted pier is the visitor's sole introduction to Great Mackerel Beach, the address of the James-Robertson House by Dawson Brown Architecture. Although located not far from the center of Sydney, Australia, this secluded hamlet of fifty or so houses is in a world of its own. The pier is the only point of ingress—endless acres of impenetrable national park behind the houses deny any road access at all.

Architect Robert Brown and his family live at Great Mackerel Beach themselves, and clients Marcia and Dougal James-Robertson are neighbors who got to know Brown while spending weekends in an existing shack on their property. Eventually, the couple commissioned Brown's firm, Dawson Brown Architecture, to design a house more suited to permanent residency—a house without termites and without a giant python living in one of the walls.

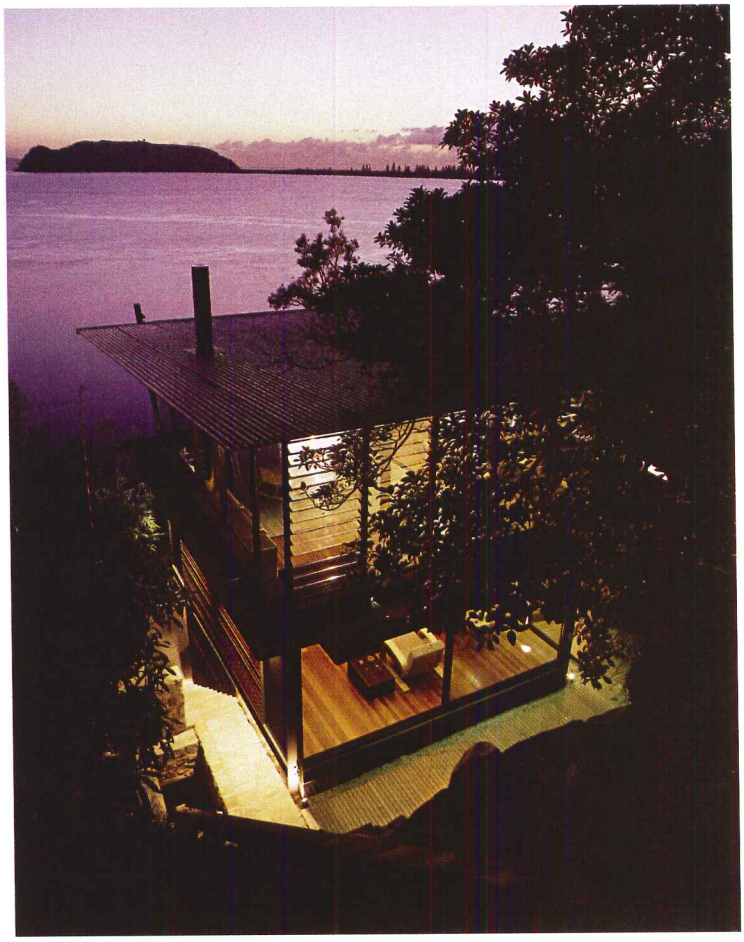
A short stroll along the beach leads to a narrow path that winds up through fortresslike sandstone foundations. These retaining walls secure the site, sloped at 45 degrees, and provide a sturdy plinth for the all-steel house. The inherent drama of the rocky site and the disarmingly open program (a few key words written on the back of an envelope) imbued this project with a culture of architectural experimentation and engineering derring-do. Brown pauses at the stone base to explain that every single part of the building, except the stone that was cut from the site itself, had to be ferried over by boat or dropped in by helicopter. He likens the design to that of a biplane, the structure as minimal and rational as possible.

The project includes two discrete, steel-framed, double-story pavilions that are anchored to the site via vertical members embedded in the rock. The lower pavilion contains guest bedrooms and a bathroom downstairs, and an upper-level kitchen/dining and living area reached via external stone stairs. Exterior materials have been juxtaposed in an assured manner—corrugated copper walls and eaves abut the painted steel uprights, separated by a strip of stainless steel to avoid galvanization. All the steelwork is painted black, which helps the building visually recede

Christopher Moore is a Melbourne-based design and architecture writer and a regular contributor to Houses, *the Australian contemporary residential magazine.*



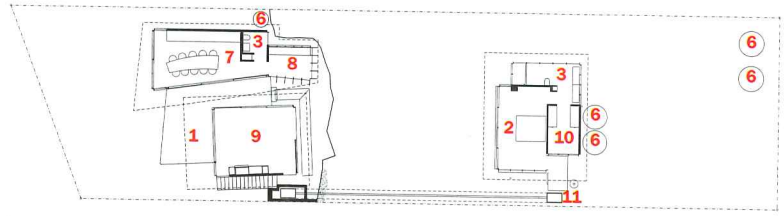
The two buildings of the house stack on top of each other on the steeply sloped site (opposite). The main pavilion sits on a raised deck offering staggering ocean views (below).



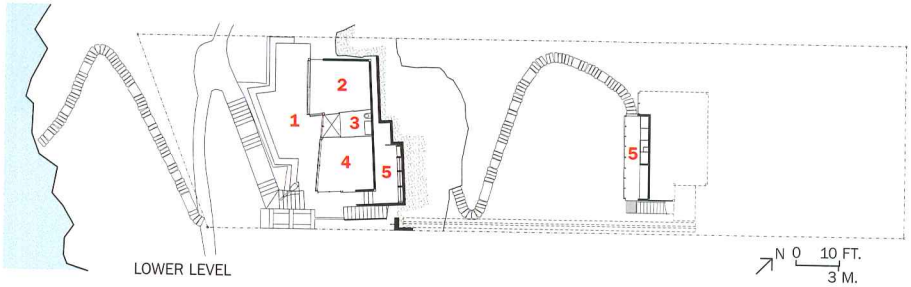
Project: *James-Robertson House, Great Mackerel Beach, New South Wales, Australia*
Architect: *Dawson Brown Architecture —Robert Brown, principal; Aaron Cook, Hernan Alvarez, project team*
Interior and furniture design: *Caroline Casey*
Consultants: *Murtagh Bond (engineer); Bangalley Earth and Waterscapes (landscape)*
General contractor: *Bellevarde Constructions*

PHOTOGRAPHY: © ANTHONY BROWELL, EXCEPT AS NOTED

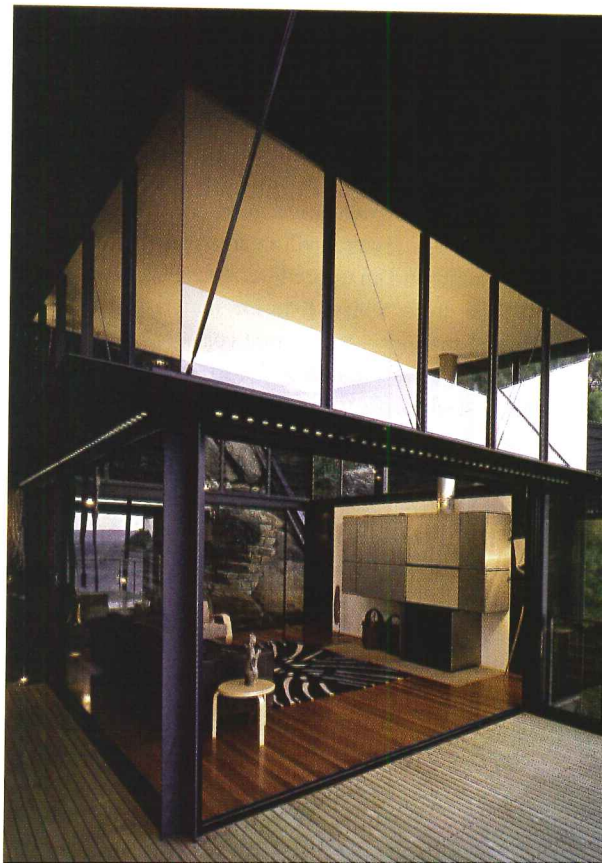
1. *Deck*
2. *Bedroom*
3. *Bath*
4. *Study*
5. *Laundry*
6. *Water tanks*
7. *Kitchen/dining*
8. *Pantry*
9. *Living room*
10. *Closet*
11. *Inclinator*



UPPER LEVEL



LOWER LEVEL



Framed in glass and steel, the dining and living rooms occupy the second floor of the lower pavilion (opposite two). Steel walls create a layered effect on the lower level (above).

into the afternoon shadows when viewed from the water. The entire structure is exposed, down to the last bolt—very little of the steel fabricator's or builder's craft is concealed inside or out.

At the top of the stairs, a timber boardwalk runs close by the sheer rock face before turning left and out to a deck to embrace postcard-perfect views. This part of the house is a platform, raised about a foot off the ground so that native creatures (including the 6-foot-long lizard that chased the clients' Wheaten Terrier down to the beach) and runoffs from summer rains may continue their passage undisturbed.

Standing on the deck, one may observe how the living room and kitchen have been designed as separate entities, joined only by the central timber walkway. The wide, browlike steel eaves and copper roofs shielding both pavilions overlap without touching, the roof of the double-height living space hovering over the raked skillion of the kitchen. The two rooms are encased in large sheets of glass held in place by very fine steel frames and diagonal supporting cables. There are only two solid walls—one in the living room, which houses the fireplace and steel-mesh-fronted storage units; and another in the kitchen, which provides the anchor for a stainless-steel bench and integrated appliances. These solid elevations also screen neighboring houses. In the glazed sections, panels slide back to open these rooms out to the central walkway and deck.

The owners make a nightly journey via an open-air inclinator (a mechanical, chain-driven elevator) to transport themselves from the lower living pavilion to their private domain, farther up the hill. This secondary pavilion echoes the structural program of the main building, with black steel columns rising from the rock to give form to the main bedroom and bathroom upstairs, and laundry and storage below. Nearby tanks collect rainwater for general household use, and above-ground pipes take treated waste water and sewage and distribute it back into the garden.

The clients recall the gradual process of becoming acclimated to this small, but heroic, house, a world away from their former home, an inner-city apartment. A feat of engineering and construction bravado, it breaks down indoor-outdoor conventions and harnesses the elegant, unobtrusive strength of steel to provide rewarding living spaces while quietly embracing the surroundings. ■

Sources

Flooring: *Australian Architectural Hardwoods*
Lighting: *Inlite (exterior/interior); ECC Lighting (wall uplights); The Design Coalition (fiber-optic light and mast)*
Windows: *John Waters Industries; Baymill Distributors*
Stainless steel: *Stainless Steel Products; Paul Minter Rigging*
Bathrooms: *Britex Stainless Steel; Gosford Stone and Terrazzo*
Heating: *Floorheat; Jetmaster*

For more information on this project, go to Residential at **www.architecturalrecord.com**.

PHOTOGRAPHY: © PATRICK BINGHAM HALL (OPPOSITE, BOTTOM)

The valiant trees of the site define the life of the house, an antidote to the routines of introverted city living. It sits like an observation deck for viewing the natural setting, rather than a stationary object in a domesticated space. Occupants are exposed to ample light, and to the moods and rhythms of the landscape (this page). The house is entered via a long bridge that terminates at a center-pivoting, red-stained wood door (opposite).

WPa designed **Villa Lucy** both to meld with the wild terrain and peer out like a lookout at cliff's edge

By John Pastier

Seattle architect Anthony Pellecchia grew up in Hoboken, New Jersey, a densely populated city like its neighbor New York. His mother had resided there all her life in brick row houses. Last year, he built his first weekend house in a fir, cedar, madrona, and alder forest, on a bluff overlooking the waters of the Strait of Juan de Fuca, situated in the Pacific Ocean off the coast of Washington. He named it Villa Lucy to honor the parent who never got to live in such scenic surroundings.

Unlike many of his neighbors, who cut down trees to maximize their water views and create suburban lawns, Pellecchia kept his piece of forest and also preserved natural rainwater runoff patterns by building on stilts. While the house defers to its 6-acre natural setting, it does so within a rational sensibility. It's not a typical western Washington exercise in romantic woodsy regionalism bristling with eaves and gables, but a precisely formed, nearly flat-roofed, crisply detailed rectangular Platonic solid.

The steel frame raises the 1,400-square-foot house so the ground can slope largely untouched below it. Likewise, a steel entry bridge hovers above grade, leading to a large, square, center-pivoted red-stained wood front door that provides the sole color accent in an otherwise subdued palette. This Russian Constructivist–derived splash of red was a family decision undertaken with the architect's spouse and business partner, Kathy Wesselman, a graphic designer in their firm, WPa (Wesselman Pellecchia Associates). Another family member, the architect's son Aran, was the general contractor and chief carpenter.

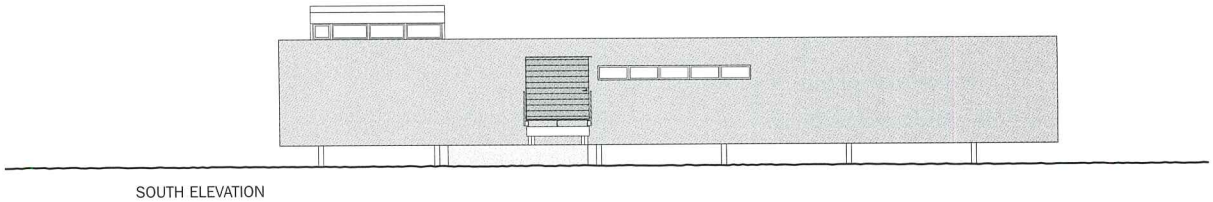
With its 13-foot 4-inch bay window size and several other dimensions determined by standard lengths of building materials, Villa Lucy embodies a completely modular piece of design and construction. Pellecchia calls it a "glass-box loft" and a contemporary version of a Case Study House, referring to the extensive demonstration program of Modern houses sponsored by *Arts and Architecture* magazine in California from 1945 to 1966. He says that it could have been designed in the 1960s.

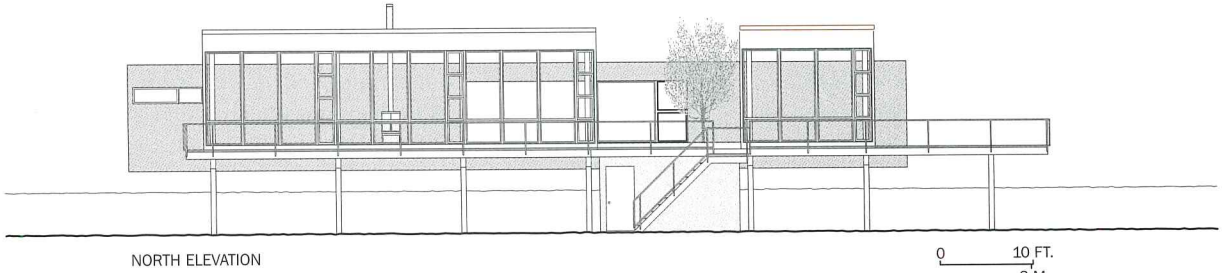
Early in his career, Pellecchia worked in Louis Kahn's office. Villa Lucy's plan embodies Kahn's principle of clear differentiation of served

John Pastier is a Seattle-based architecture critic and design consultant.

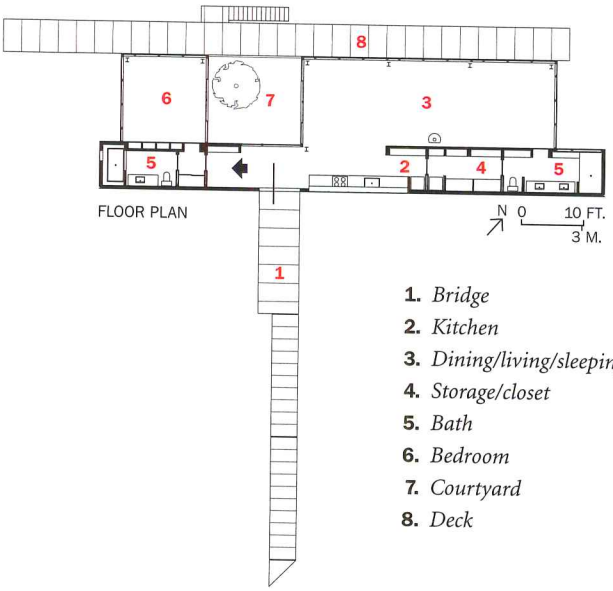
PHOTOGRAPHY: © LARA SWIMMER/SWIMMER PHOTOGRAPHY

Project: *Villa Lucy, Strait of Juan de Fuca, Washington*
Architect: *WPa—Anthony Pellecchia, designer and partner in charge; Anthony Goins, project architect*
Engineer: *Dayle Houk & Company (structural)*
General contractor: *Aran Pellecchia Construction*





The main public space of the house includes a dining area, a kitchen, and counter seating separating the two.



1. *Bridge*
2. *Kitchen*
3. *Dining/living/sleeping*
4. *Storage/closet*
5. *Bath*
6. *Bedroom*
7. *Courtyard*
8. *Deck*

and servant spaces. Pellecchia also worked for Robert Venturi, but no trace of his design approach is apparent in the house. The main areas—guest room, dining, living, and sleeping zones—form a broad band on the north portion of the house, while support functions such as storage, bathrooms, kitchen, pantry, and dressing area occupy a narrower parallel band to the south. A concrete cube located below a landscaped outdoor courtyard that separates the guest quarters from the rest of the house accommodates the utilities.

The house features a steel-and-wood hybrid structural system. Six welded steel moment frames provide seismic resistance while carrying the floor, roof, and external balconies and walkways. Wood truss joists form a secondary structure, and flooring for the extensive balcony, entry bridge, and cantilevered viewing deck is industrial grating that allows rainwater to drip into the ground. (A future exterior stair will also be built of this grating.) Outer walls are floor-to-ceiling glazing; whatever isn't a window wall or clerestory is clad in smooth beige-stained cedar.

THE ARCHITECT NAMED THE HOUSE VILLA LUCY TO HONOR HIS MOTHER, WHO NEVER LIVED IN SUCH SCENIC SURROUNDINGS.

Exterior steel columns and balcony guardrails have been left to rust naturally, but the columns within the living spaces were hand fin-

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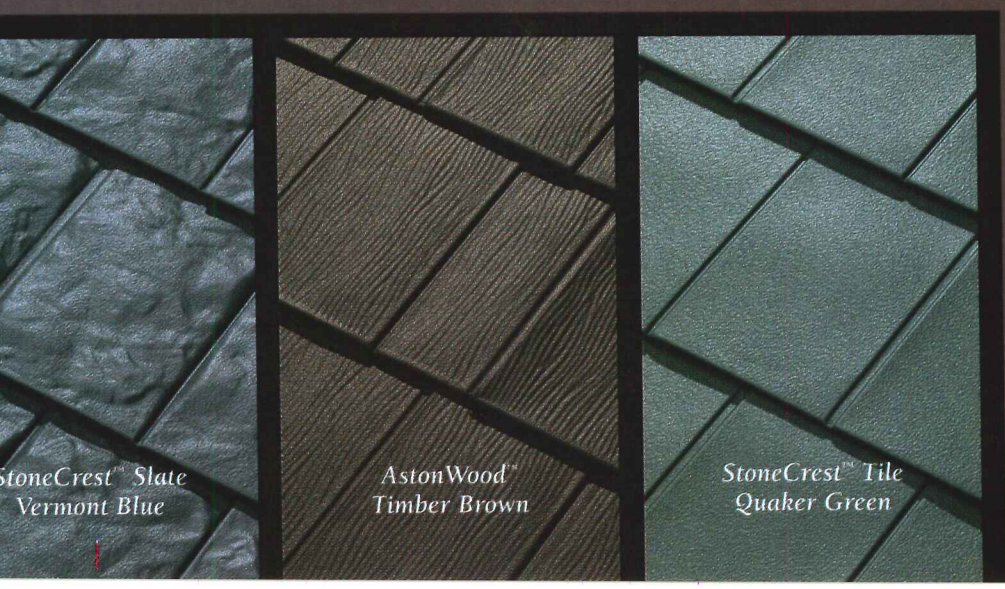

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The house perches on top of a cliff open to nature (above). The living room, a simple space sheathed in floor-to-ceiling glazing, is exposed to the forest view (below).

ished with black shoe polish. Horizontal stainless-steel cables form much of the guardrail assembly, and a large L-shaped piece of aluminum above and to the left of the red door projects 2 feet to form an entrance canopy and wind buffer.

The blending of wood and metal at Villa Lucy can be seen as a metaphor for the house in its surroundings—it is an unapologetically rational, precisely shaped object that's deferential and complementary to its organic setting. It slips into the voids of the woodland, leaving nature essentially intact. Ironically, the more common local vacation house typology—a woodsy, romantic, retro-Craftsman regionalist essay built closer to the bluff escarpment on cleared and sodded land—is far less environmentally sensitive, despite its warm, fuzzy imagery. For all its East Coast roots, Villa Lucy achieves Northwestern regionalist goals through simple, almost Minimalist means. ■

Sources

Exterior cladding: *LC Cedar Company (wood)*
Roofing: *AEP SPAN (metal)*
Windows: *Milgard (aluminum)*
Glazing: *Milgard*
Doors: *Aran Pellecchia Construction*
Cabinet hardware: *Blum*
Cabinetry: *Henry Built*
Paints/stains: *Cabots*
Paneling: *Comton Lumber*
Chairs: *Living; Aalto; Herman Miller*
Wood burning stove: *Rais*
Plumbing fixtures: *Kohler; Rohl*

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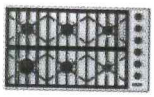
Viking products look beautiful. But rest assured, plenty  of substance lies beneath those gleaming exteriors. Viking originated professional performance for the home. And only Viking offers a complete professional kitchen. Well, two of them, actually. Both the heavy-duty Professional Series and sleek Designer Series deliver ultra-premium features and design consistency. Both lines are built to the same specifications. So no matter which style your client chooses, you know exactly what you're working with. And up to 14 exclusive finishes give you even more options to achieve perfection.

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Kitchen & Bath Portfolio

At once practical and whimsical, the kitchens and baths selected for this year's Portfolio welcome us into their bright and well-crafted spaces without imposing on the rest of the residence. These open areas serve double-duty as both workhorses and beauty queens. *Rita Catinella Orrell*

A kitchen "light box" and bathroom "lanterns" serve as beacons in a New York City loft

62 Cooper Square, constructed in 1926 for renowned music publisher Carl Fischer, now serves as a luxury residential building in New York City's Astor Place neighborhood. Desai/Chia Architecture recently converted 5,000 square feet of the seventh floor into a permanent home for a young, growing family. Wrapped with windows on three sides, the condo's design sustains the industrial feeling typical of city lofts, yet approaches the layout in a novel way.

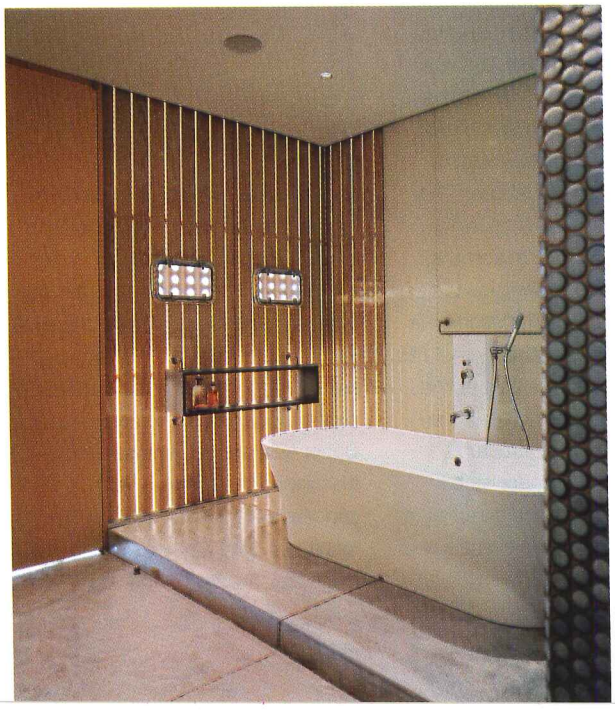
"Maintaining the sense of the flow of light was one of [the clients] goals," explains Chia. With that in mind, the firm wanted the bathroom and kitchen spaces in particular to feel luminous both day and night.

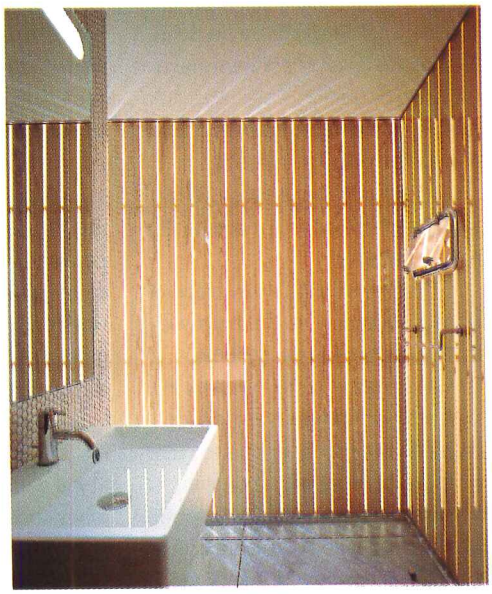
The apartment is anchored spatially by two cores sheathed with a sleek wood-and-glass skin: One core houses the private bathrooms, the other a guest bathroom and home office space. Rather than fit the bathrooms in solid boxes in the center of the loft, they work as "lanterns" in the space. The bathrooms feature an offset solid-ash-wood slat system that is constructed to allow light to penetrate while blocking direct views. The clear glass on the inside not only lets in light, but also serves as a waterproof membrane, acoustical barrier, and structural surface for hanging towel bars, storage boxes, and operable portholes that the architects found through a Dutch sailing company. Round openings cut into the glass-and-wood slat system allow for ventilation and views from within the cores when the portholes are open.

Serving as the hub of family life for the client, the kitchen features a 9'-long, cantilevered island that can be used for food prep, homework, or as the setting for a casual dinner party. The team worked with a structural engineer to create a bridge truss system beneath the cantilevered section. Concealed lighting along with a variety of reflective, transparent, and translucent materials in the kitchen dematerialize the surfaces of the room. "It's kind of an architectural piece," adds Chia of the kitchen, "and that's what they like about it." The apartment has proved to be popular with more than just the clients—it was awarded an AIA/New York Design Award last fall. *R.C.O.*

A clear glass soffit in the kitchen (left) exposes the air-conditioning duct and acts as a large light box. The translucent, transparent, and reflective materials prevent the room, a hub of activity, from dominating the surrounding open areas of the loft. The walls of the loft's three bathrooms (two shown below) let light flow in and out of the spaces through a custom glass-and-wood slat system.

Architect: *Desai/Chia Architecture—Kathy Chia, Arjun Desai, Philip Kerzner, project team*
Contractor: *Giovannitti*
Sources: *Dornbracht, Agape, Vola (plumbing fixtures); Wolf (cooktop, oven, microwave); Sub-Zero (fridges); Bosch (dishwasher); Nulux (lighting)*





PHOTOGRAPHY: © PAUL WARCHOL PHOTOGRAPHY

Kitchen & Bath Portfolio

Exposed beams supporting the roof contrast with the stainless-steel surfaces of the kitchen (left and above), while natural light floods the bath (below), displaying the connection between fixtures and structure.

Material consistency enhances a naturally elegant residence in the woods of Idaho

According to Jim Cutler, as an architect he is always striving "to make things fit appropriately into their circumstances." Tanglefoot, a house in the pristine forest of northern Idaho designed by his firm, Cutler Anderson Architects, evolved from the concept of material integrity. The design reveals structural connections and allows each material to resonate at its true frequency.

"Every material, every piece of wood had some voice in that building," says Cutler of his scheme. The wood frame of the house is left exposed, set off from the exterior envelope of window glass and outer walls. Inside, each of the beams that stretch to the ceiling in an intricate web are integral to supporting the roof and its annual snow load.

In contrast to the internal "forest" of fir beams that support the house, the all-stainless-steel kitchen stands out like a creature alighted from outer space. In fact, that was the architect's intent. The kitchen, a room filled with imported metallic machines, is literally elevated 6" on a stainless-steel platform. The stainless-steel appliances, sinks, cabinets, and fixtures assert their alien relationship to Tanglefoot's woodsy setting while reflecting the glow of the maple cabinetry that fills the two adjoining breakfast nooks.

In the master bath, as in the rest of the house, the structural frame dominates. Slender metal tubes connect lights and switches in utilitarian simplicity to the larger electrical infrastructure of the building, visually illustrating how the system works. The stainless-steel "horse trough" tub was designed by Cutler on request from the clients after they witnessed his mastery of the material in the kitchen. Contrary to many scenarios where the architect's design is constricted by budget and time limits, Cutler was actually encouraged by his client—an inventor—to push the concept as far as it would go. The result is a light, airy volume of pure elegance. *Larissa Babij*

Architect: *Cutler Anderson Architects*
Contractors: *Tanglefoot Master Builders; Humble Homes*
Structural engineer: *Coffman Engineers—Craig Lee*
Sources: *Traulsen, Viking, Bosch (kitchen appliances); Tipke Manufacturing (sleigh tub, sink brackets, frame); Wirsbo (thermostats); Appleton (switches, outlets)*

PHOTOGRAPHY: © ART GRICE

Bathrooms in a Tucson home offer serenity through a minimal, spa-influenced design

"Out of clutter, find simplicity," reads the Albert Einstein quote on the Web site of Ibarra Rosano Design Architects. Perhaps this was the motto the team followed when they worked on the Winter residence in Tucson. Ibarra Rosano was originally hired to remodel the clients' cluttered master bathroom, but once the renovation began, it became clear that the entire house needed updating.

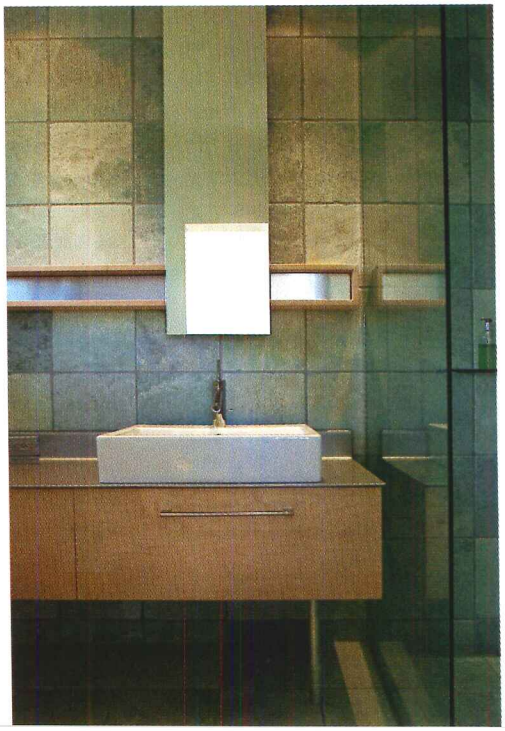
Formerly a nondescript 1940s brick house with a circulation-driven program and limited natural light, the Winter residence was transformed by the architects' decision to open up the walls and ceiling. This coincided with the clients' desire to have a house that encapsulated the aesthetics of boutique spas and hotels they had visited around the world. Room by room, the architects exposed the house to daylight and incorporated a series of courtyard gardens in the circulation.

This principle of eliminating unnecessary walls in favor of spare, crisp spaces was particularly applied to the bathrooms. Originally dark and cramped, the master bath is now airy, with sunlight filtering through several windows. The architects removed a dividing wall between the master closet and bath to enlarge the area for changing and dressing. At the bathroom's center is a vanity cabinet and cantilevered horizontal mirror that appear to float above the floor. The vanity also functions to separate the dry areas from the ones designated for bathing.

To create a calm atmosphere resembling that of a spa, the architects kept the detailing as pared down as possible. All the bathrooms feature a similar palette of materials and colors: tumbled-marble floors, glass and tile in shades of blue and green, and maple plywood cabinets with aluminum handles.

The design team provided plenty of storage space to keep the bathrooms tidy, and although the house may be simpler and less cluttered now, it has also gained a level of complexity. *Diana Lind*

Architect: *Ibarra Rosano Design Architects—Luis Ibarra, principal designer*
Contractor: *Repp Design + Construction*
Sources: *Mark Perry (custom cabinets); Bisazza (mosaic glass tile); Duravit (sink basins); Hansgrohe (faucets); tumbled Carrara marble (flooring); Abbot Metals (custom cantilevered mirror)*



All of the bathrooms in the house have a similar palette of materials and colors. The master bath features a custom cantilevered mirror (above), as well as several exposures for natural light (left). The architects kept the detailing minimal in the guest bathrooms (right).

PHOTOGRAPHY: © BILL TIMMERMAN

Kitchen & Bath Portfolio

Professional chef's kitchen is ideal setting for work and play

When construction crews were poking around behind a Sheetrock wall in order to run electrical wires into the renovated New York City apartment of chef and television personality Tyler Florence, they discovered something serendipitous: a brick wall that had once been the exterior of the building next door that bore the remnants of a painted advertisement. Time was running short to complete the project: Besides being Florence's residence, the apartment was to serve as a set for his new show, *Tyler's Ultimate*, and filming was weeks away. Florence initially wanted to push through with the original design, but something nagged at him, and he called architect Thomas C. Lekometros, the principal of the New York City office of The Lawrence Group Architects.

"Leko," Florence said, "if you think there's something cool back there, then we have to take down that wall."

Much of the design process for the space was a balance of excavation and additions that would not feel too jarringly modern. To play off the rough feel of the newly discovered brick wall, Florence and Lekometros selected a handmade green tile for the back wall of the kitchen that it faces. The slightly uneven tiles are set off by sleek blue cabinets. The countertops came from an industrial-stainless-steel manufacturer two doors away from the apartment. Florence asked for open shelving rather than cabinets above the countertops, which resulted in the pie shelf and meat rack that line the wall. The meat hooks serve as a pot rack.

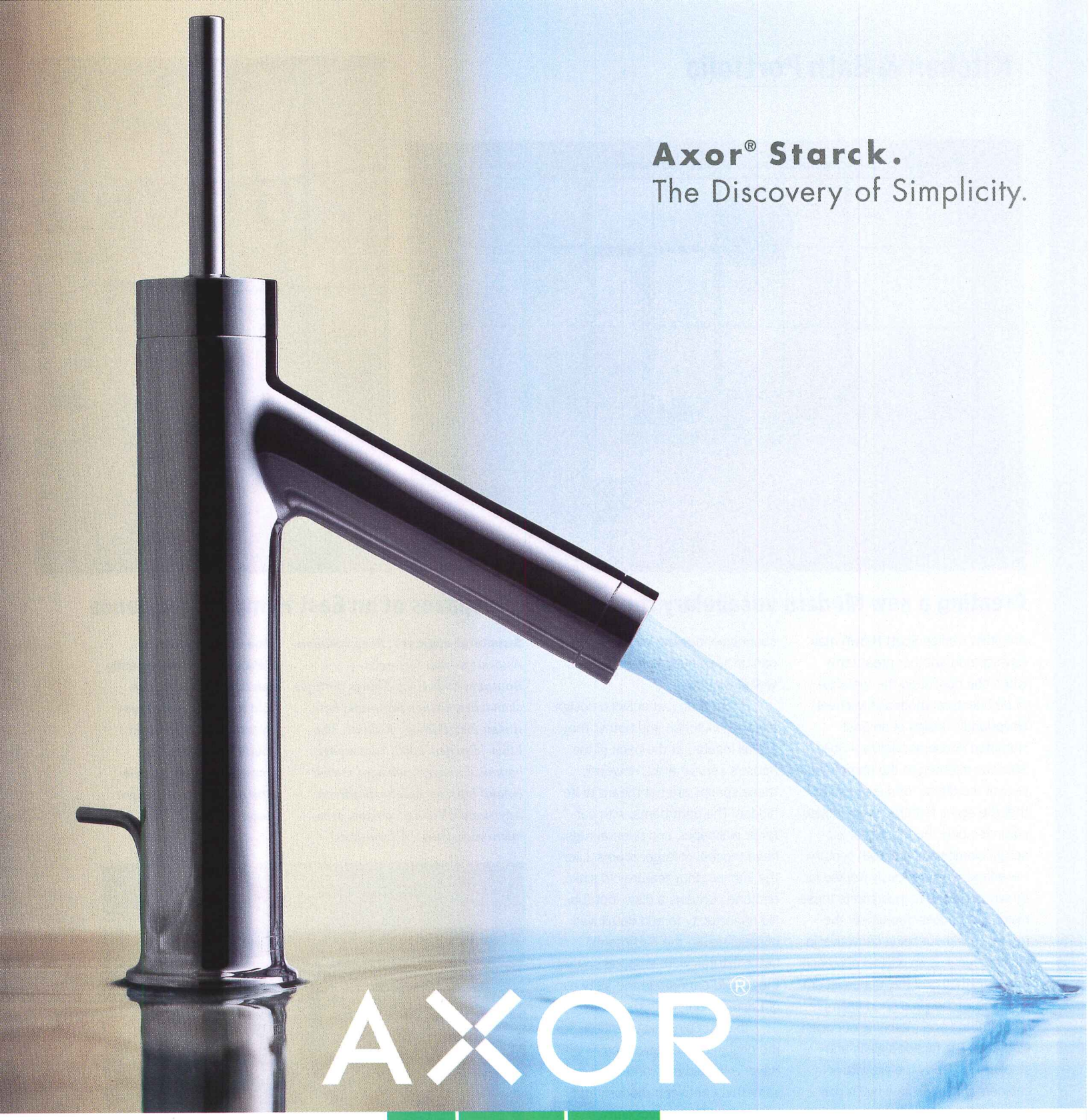
As a professional chef, Florence had established a working relationship with Viking, which allowed him to select the appliances he needed to outfit the kitchen, as well as a grill for his outdoor terrace.

The loftlike, open nature of the kitchen has allowed the Food Network to film in the space with no trouble, and has helped Florence keep to his philosophy, as Lekometros describes it, "that live and work and play are all the same thing." *Kevin Lerner*

Architect: *The Lawrence Group Architects, New York—Thomas C. Lekometros, principal; Tim Wynter-Stoner, associate in charge*
Contractor: *Richmond Remodeling and Construction—John Orgera*
Sources: *Ann Sacks (wall tile); Viking Range (appliances); IKEA (cabinets); Master Kitchen Supplies (custom stainless steel); B4 It Was Cool Antiques (cutting-board table)*

The kitchen (above and right) has the custom functionality required by a professional chef, along with the stage presence needed for the set of a television show.

PHOTOGRAPHY: © FRANK OUDEMAN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Kitchen & Bath Portfolio

Creating a new Modern vocabulary for the intimate spaces of an East Hampton residence

Architect Denise Scott Brown may have coined another great term when she described the mélange of architectural modes in Michael Haverland's design of an East Hampton house as "Survival Style." She was referring to the phrase "survival of the fittest," and suggesting that the styles featured in the house comprise only the most evolved design elements of the 20th century. Haverland, who previously worked for Brown, managed to incorporate these historic influences throughout the residence without being derivative; in fact, the result is an original approach to the aesthetics of the Modernist era.

The kitchen is a good example of the mixing and matching of design elements. The facade's glass and steel are offset by the warmth of cabinets within inspired by French decor of the 1940s and adorned with decoupage botanical prints. In contrast to the usual industrial look of Viking appliances, here the full suite, from oven to refrigerator, is a creamy tone of "Lemonade." Other subtle subversions of the house's Modernist structure include pendant lights and a crystal chandelier that moderate the scale of the high ceilings. Wood flooring echoes the landscape that can be seen outside the kitchen's wall of windows.

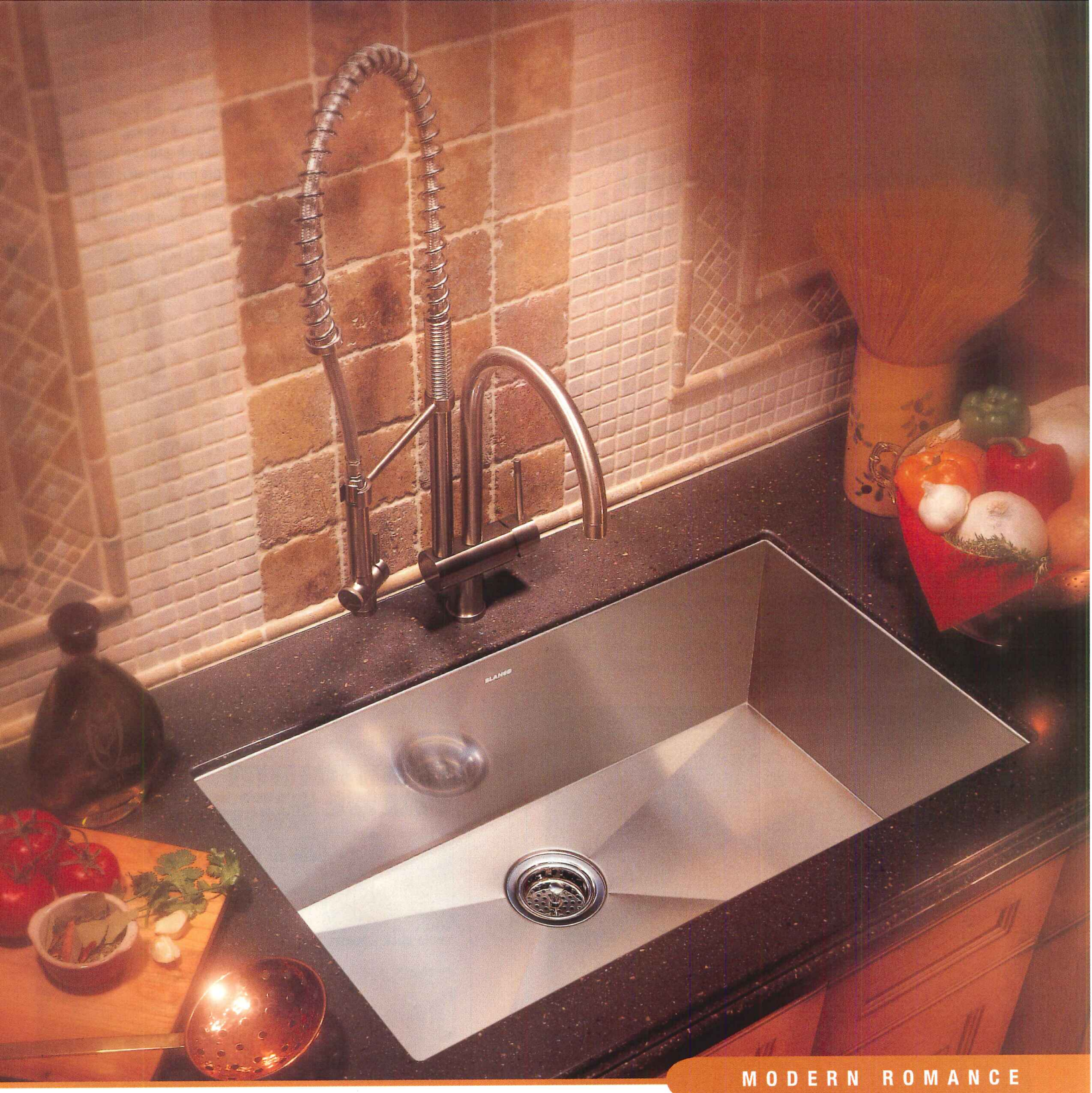
More than just eclectic design aligns the kitchen and baths: They are all located at the back of the house's service area. However, these spaces are not meant to be hidden. The bathrooms, with curtains, wallpaper, and oriental rugs, have the feel of larger rooms. Like the kitchen, they feature old sinks, and one contains a claw-foot tub. No opportunity to add detail was missed—even the bathrooms' brass fixtures were stripped so that they could patinate in the salty air of Eastern Long Island.

In describing his intentions for the design of this residence, Haverland said he wanted "to do something between modern and traditional." The project certainly fits within those parameters, but one can see why this house requires a new vocabulary to accurately describe it. *D.L.*

Architect: *Michael Haverland Architect*
Contractor: *DM Design*
Interiors: *Philip Galanes*
Structural engineer: *Robert Silman Associates—Joe Tortorella*
Sources: *Olde Good Things (antique chandelier, kitchen farm sink, bath sinks); Pierre-Joseph Redouté,* The Lilies *[Taschen, 2000] (decoupage botanical images); salvaged marble (island top); Fornasetti (bathroom tray/stand); Viking (cooktop, oven, microwave, fridge, dishwashers)*

The modern kitchen (above two) is intelligently anachronistic, with an old farm sink, salvaged-marble island top, and botanical prints. The main bathroom creates the ambience of a larger room (below).

PHOTOGRAPHY: © LAURIE LAMBRECHT (TOP TWO); BILLY CUNNINGHAM (BOTTOM)



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Kitchen & Bath Portfolio

A dialogue of eras in the kitchen and bath of an architect's San Francisco Victorian

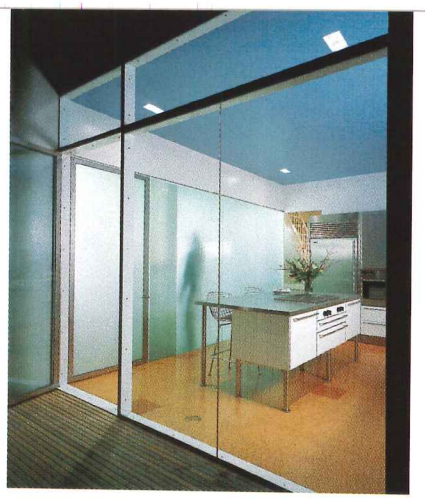
When people first come to architect Anne Fougeron's house, an 1890s San Francisco Victorian, they often hesitate to use the bathroom. It's separated from the kitchen by a translucent wall of laminated glass, which allows light—as well as silhouettes—to be transmitted between the rooms.

"My house is south-facing in the back, so it gets really good sun, and Victorian houses are dark in the middle," she said. "So I wanted to open up the back of the house as much as possible."

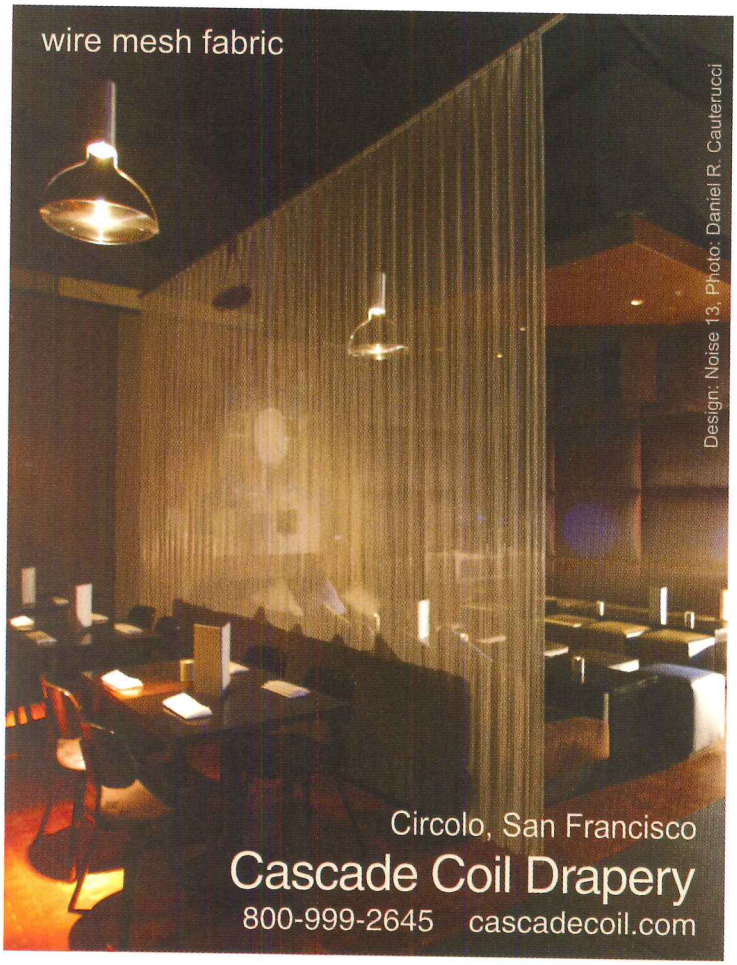
The sleek and clean-lined kitchen and bathrooms contrast with the original structure in what Fougeron calls "a dialogue between old and new." In Victorian times, the owners didn't spend much time in those spaces, so she didn't feel the need to design something historical. She also adds, from a design standpoint, "I don't do Victorian."

Fougeron says her houseguests are no longer intimidated by the design. "I like to have dinner parties and have people over," she said. "But the kitchen also a place my daughter and I can eat during the week, just the two of us. I can't get guests into my living room anymore." *K.L.*

Architect: *Fougeron Architecture—Ann Fougeron, AIA, principal in charge; Russ Sherman, Michael Pierry, Todd Aranaz, project team*
Contractor: *Young & Burton*
Sources: *Bulthaup (kitchen cabinets); Benjamin Moore (paints, stains); American Terrazzo (epoxy terrazzo flooring); Sub-Zero (fridge); Gaggenau (stove); Miele (oven)*



The view from the deck at night showcases the kitchen—a silhouette is visible on the glass wall adjoining the bathroom (left). The south-facing kitchen lends light to the guest bathroom (bottom two).



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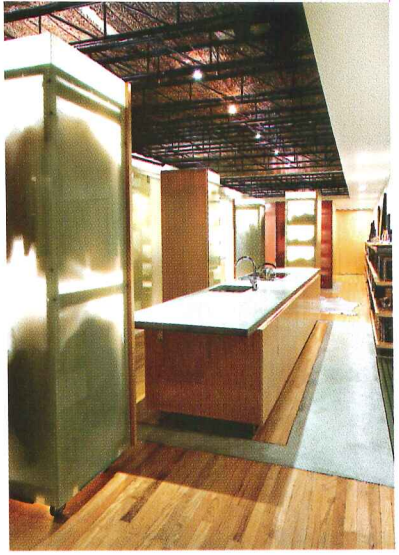

A narrow stainless-steel refrigerator fits inside one of the custom rolling cabinets (far left). The architect custom-designed many features in the apartment, including the laminated glass panels (near left) and the bathroom's cast "waterfall" sink (right).

An Ottowa apartment flows with the custom creations of its owner-architect

From the handheld shower and drainable wood-slat floors in the entryway to the removable wooden chaise in the poured-concrete bathtub, the theme of water flows through architect Paul duBellet Kariouk's Ottawa apartment. At the center of this is the sculptural faucet that breaks the flat plane of the kitchen counter—one of the few design elements that does not move.

Linen-backed glass panels slide across the windows. A desk can be rolled to extend the countertop. The cabinets roll and attach to the ceiling for electricity. Even the refrigerator is on wheels.

"A lot of times people play with the ideas of moving systems, and they stay in one place forever," Kariouk said, "but that's not the case here; they really do get moved all the time."

The design sprang from practicality. For instance, the movable units allow him to use his apartment as an office, and the glass wall laminated with red silk behind the bathtub conceals a service column that could not be relocated.

The shower in the entryway also plays a practical role in snowy Ottawa: "A 120-pound dog covered with slush and grit isn't necessarily the happiest fit with high design," explains Kariouk. *K.L.*

Architect: *Kariouk Architecture—Paul duBellet Kariouk, principal; Chris Davis, job captain; Adam Frankowski, assistant*
Contractor: *Ralph Lawrence Construction*
Sources: *Neoform Cabinetry (kitchen millwork); Vola (dog-shower fittings); Grohe (kitchen fittings); Bosch (cooktop, oven); Miele (dishwasher); Liebherr (fridge); custom by architect (rolling cabinets, floors, laminated glass, bathroom sinks)*

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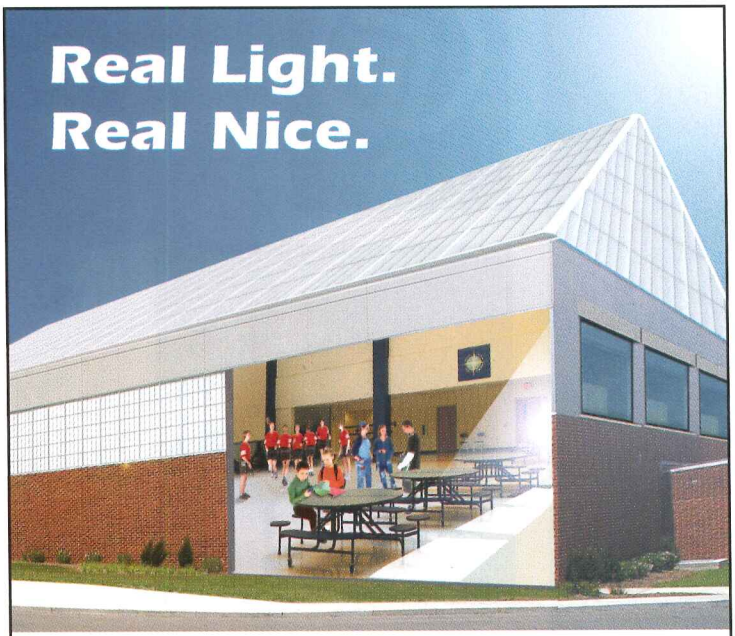

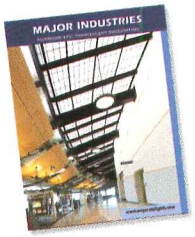

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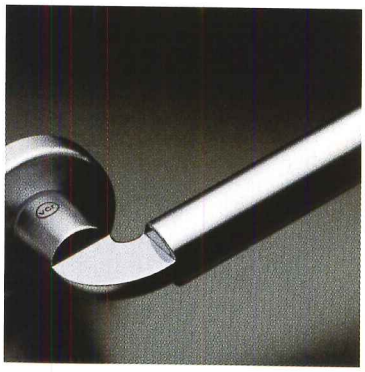

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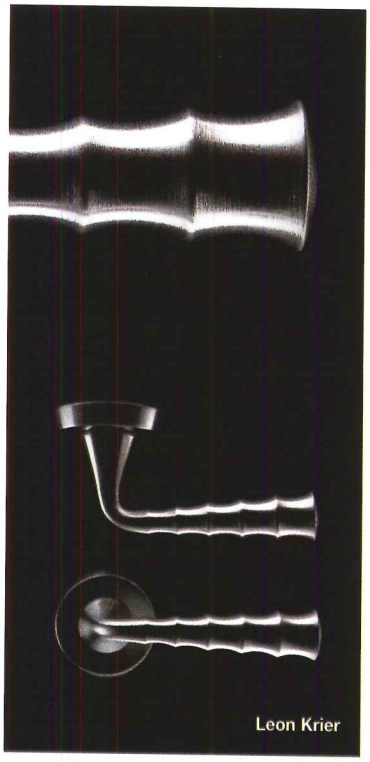

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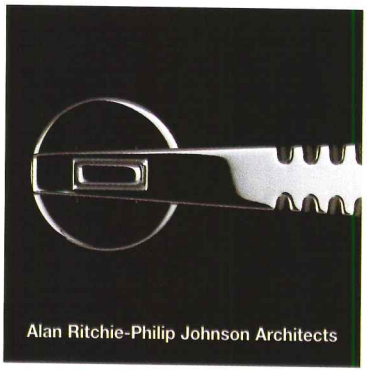

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Residential Products
Kitchen & Bath Show

The annual Kitchen/Bath Industry Show, held last May in Las Vegas, was the largest edition of the show to date. Among the trends to note: a greater selection of options in design, dimensions, materials, and pricing for products ranging from appliances to plumbing fixtures and fittings. *Linda C. Lentz*

▼ Steel washbasins shape up

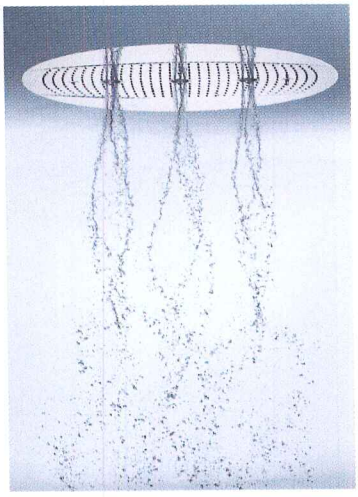
Elkay has developed a line of semirecessed and vessel-style sinks dubbed the Asana Lavatory and Entertainment Collection. Fabricated from 18-gauge, type 304 nickel-bearing satin stainless steel, this handcrafted group is notable for its substantial edge, which can be specified with a mirror or satin finish. The line includes a counter-mount 15½"-diameter vessel, and semirecessed 20" x 12" rectangle and two 16" x 16" squares—one with a step-pyramid-shaped bowl. Elkay, Oak Brook, Ill. www.elkayusa.com **CIRCLE 200**

▲ Stylish lineup

The Miele MasterChef Collection comprises built-in single and double convection ovens, speed ovens, steam ovens, built-in coffee systems, warming drawer, and Lift Doors (to hide small appliances) that align precisely no matter how they are stacked or configured. In black glass or stainless steel, the 24" appliances are available with stainless-steel trim kits to accommodate 27½"- and 30"-wide openings. Miele, Princeton, N.J. www.miele.com **CIRCLE 202**

▼ Aqua force redux

Topping overhead shower dimensions with an impressive 24" diameter, the Hansgrohe Downpour Air Rainmaker is outfitted with 350 spray channels. Integrating seamlessly into the ceiling, the shower offers five spray modes, including 12" and 24" air-infused Rain Air modes, three whirl-massage jets, and combinations thereof. A proprietary self-cleaning system ensures the channels remain free of debris and limescale build-up. Hansgrohe, Alpharetta, Ga. www.hansgrohe-usa.com **CIRCLE 201**



▼ "Cool" commercial-style food storage

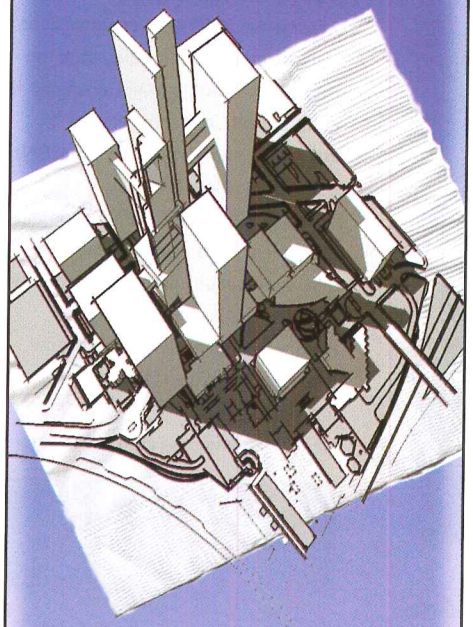
Finally, there is a solution for those who want the look of commercial refrigeration in a model designed for a residential kitchen—minus the usual code and specification issues. The Sub-Zero Pro 48 not only possesses a restaurant-worthy 18.4 cubic feet of refrigeration and 11.4 cubic feet of freezing capacity, it is available in both freestanding and built-in versions that are available with or without a triple-pane, argon-filled glass refrigerator door. Constructed of 100 percent welded stainless steel inside and out, the Pro 48 is notable for its dual refrigeration system and three evaporators—a feature that allows for the setting of different temperatures in the two bottom refrigerator drawers. Sub-Zero, Fitchburg, Wis. www.subzero.com **CIRCLE 203**

▲ Fitting pleasures

Notable for its streamlined linear profile and intelligent proportions, Dornbracht's new LuLu collection of faucets, fittings, and accessories by Michael Sieger was designed to attract a hipper, younger customer. Available in polished chrome and platinum matte, this softly curved group includes single-lever deck-mount (left) and wall-mount lav faucets, a floor-mount tub filler, and taps for bidet, shower, and bath. The wall-mount shelf, towel bar, and storage components are infused with a jolt of such high-wattage hues as green, magenta, or orange, plus a playful material mix of wood, porcelain, and glass. Dornbracht, Duluth, Ga. www.dornbracht.com **CIRCLE 204**

For more information, circle item numbers on Reader Service Card or go to www.archrecord.com, under Products, then Reader Service.

LOVE SKETCHING ON NAPKINS?



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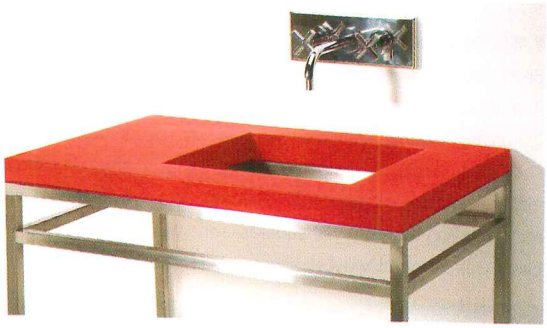
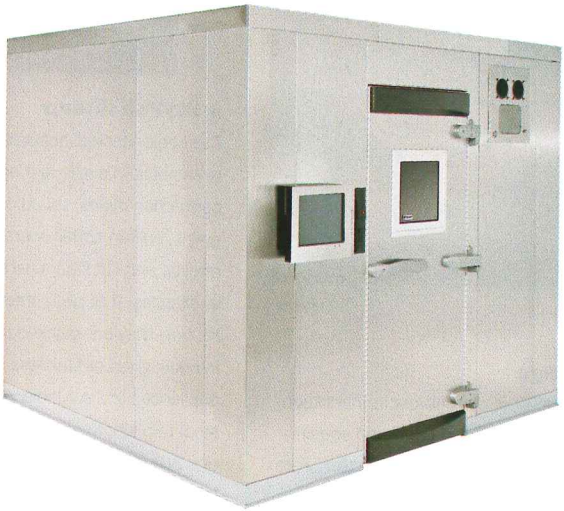
Residential Products

Kitchen & Bath Show

► Ebb and flow



Neo-Metro has developed a collection of console tables to complement its popular Ebb Basins—one-piece, 16-gauge stainless-steel drop-in or undermount units notable for their concealed drain openings and unique sizes that range from 19" to 38" wide with bowl depths of 2½" to 7". Topped in either clear glass or a selection of colorful resins with varying opacities (such as the subtly translucent Cranjuice model, right), the console frame is made of recyclable stainless steel and sports a clean architectural silhouette. To enhance the deck material's luminescent tendencies, the company recommends the installation of undercounter lighting, which is not included. Neo-Metro, City of Industry, Calif. www.neo-metro.com **CIRCLE 205**



◄ Bacchanalian keeping room

Engineered to install in a day, the GE Monogram Walk-in Wine Vault is ideal for serious oenophiles. At approximately 8' x 8' x 8', this insulated stainless-steel chamber maintains as many as 1,100 bottles of wine at a guaranteed cavelike humidity level and an optimum temperature for long-term storage. Its cutting-edge, 3,000-BTU cooling system is monitored electronically by a self-calibrating temperature probe to ensure consistent conditions, while an Inventory Management System keeps contents in check. The interior sports redwood racks, crown molding, white walls, and motion-detection halogen lighting. GE Monogram, Louisville, Ky. www.monogram.com **CIRCLE 206**

► Custom shower building blocks

As custom showers go, the Kohler WaterTile body-spray system is one of the most versatile—and creative—with its selection of near-flush-mount, 5"-square adjustable sprays designed to be installed in any number of configurations—on a wall or ceiling, solo or ganged in clusters—as body sprays or showerheads. A coordinating wall-mount showerhead is similar in design but wrapped in a curved, angled sleeve. Both are available in two spray intensities: a 54-nozzle spray for soothing water coverage and a 22-nozzle for a stimulating spray pattern. Finishes include polished or brushed chrome and nickel, brushed bronze, and French gold. Kohler, Kohler, Wis. www.kohler.com **CIRCLE 207**

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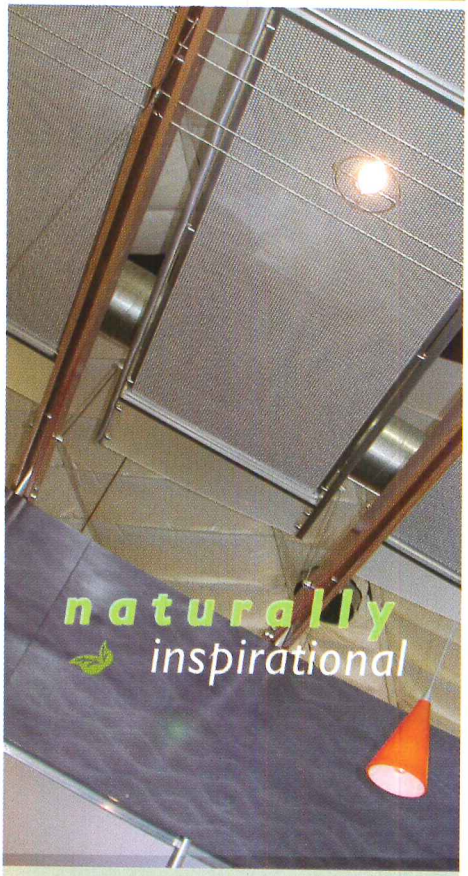

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Residential Products

Kitchen & Bath Show

◄ Vanities with flair

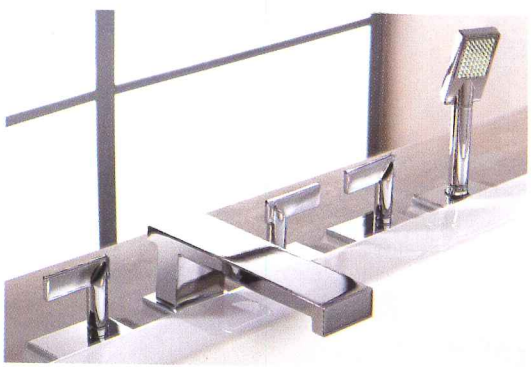
A noteworthy source of tile and stone, Walker Zanger has enhanced its bath appeal with a luxurious collection of vanities in styles including American Neoclassic, Hollywood Regency, Art Deco–inspired, Asian-influenced, and contemporary. The bases, made from solid hard woods, nickel-plated brass, stainless steel, and antiqued bronze, are topped with the company's marble and limestone. Each has been fitted with practical storage solutions. The modern Scala Wash Stand Noir (left) features an integrated sink top carved from a solid block of marble. It is available with a Statuary White top on an espresso-finished solid oak base or with "Walnut" Travertine on solid walnut. Walker Zanger, Sylmar, Calif. www.walkerzanger.com **CIRCLE 208**

► Couture de cuisine

To satisfy popular demand in addition to a wide variety of installation requirements, KitchenAid has added a line of French Door bottom-mount refrigerators to its Architect Series. These include 36" freestanding and counter-depth models, as well as a sizable 42" built-in. Preferred by designers for its narrow refrigerator door swing, the French Door style is prized by cooks and entertaining enthusiasts for its full-width top refrigerator, which allows for storing items such as serving trays and baking pans. Both the freestanding and counter-depth models will be available beginning summer 2005 in stainless steel, black, and white. Following in early 2006, the new 42" built-in model will be offered in stainless steel with the signature curved Architect Series handles or with the ability to accept custom overlay panels. KitchenAid, Benton Harbor, Mich. www.kitchenaid.com **CIRCLE 209**

▼ Luxurious line extensions

To supplement its popular and comprehensive offering of bath accessories, lighting, and mirrors, Ginger has moved into the realm of plumbing—a new venture for this established company. The modern and urbane Surface exhibits the same elegantly contemporary lines as the original decorative pieces that were introduced a year ago. Made of solid brass, its components feature neat mitered corners and include lavatory and bidet faucets, Roman bath sets (left), thermostatic showers, pressure-balanced showers, rainfall-sensation showerheads, hand showers, and body sprays—all finished in either polished chrome or satin nickel. Circe, a contemporary interpretation of a traditional design, is available in satin nickel, polished brass, polished chrome, or oil-rubbed bronze. Ginger, Fort Mills, S.C. www.gingerco.com **CIRCLE 210**



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It's defined as modern, but its sophistication is timeless.

Architectural
BA72X

ROHL MODERN

Clean lines and simplicity define the Modern Bath Collection from ROHL. This stunning collection is comprised of two distinctly stylized series. Cones, curves, cylinders and points create the design interest of the Minimalist series. The Architectural series, designed by world-renowned architect Giampiero Peja, is marked by meticulous detail in a new wave of modern style—clearly punctuated by its generously proportioned cross handles shown here. Finish your modern décor with the Modern Bath Collection from ROHL. See more at www.rohlhome.com or visit a dealer showroom near you.

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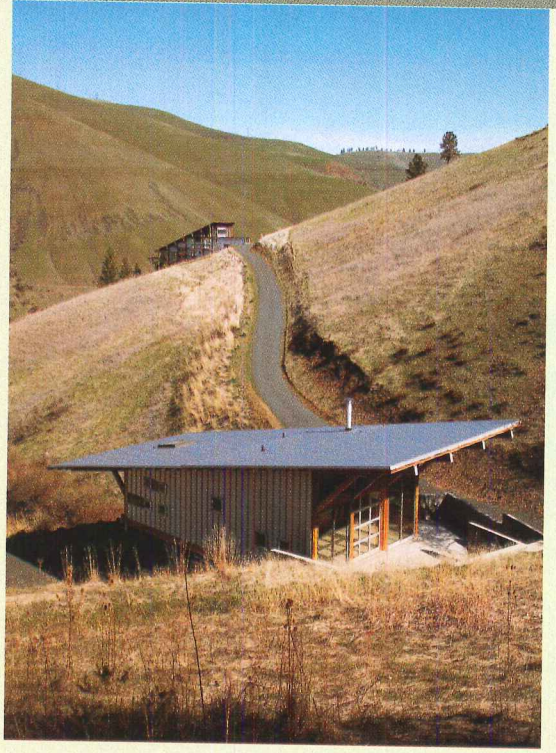
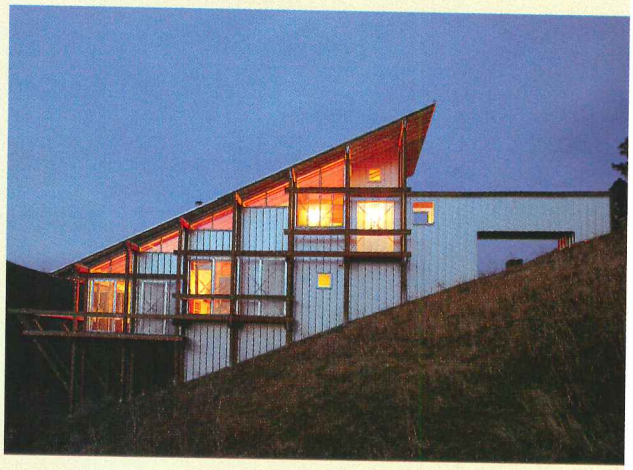
The American Institute of Architects Announces the 2005 Housing PIA and HUD Awards for Design Excellence

SINGLE-FAMILY CUSTOM



Project: *The Canyon House*
Location: *Julietta, Idaho*
Architect: *Paul Hirzel Architect*
Client: *Ken and Jean Campbell*

Two buildings make up the Canyon House—the bunkhouse and the studio house. Separating program elements into two buildings promotes outdoor activity across the 40-acre site. The house serves as a retreat for a couple, who go there to fish and spend time with their extended family. Reflecting the surrounding rolling hills, the buildings are composed of simple forms and straightforward materials. The house has, as one juror noted, "a real presence that is integrated, but not overpowering."



Project: *Lake Austin Residence*
Location: *Austin, Tex.*
Architect: *Lake/Flato Architects*

Similar to a fishing camp, this residence includes various buildings—a main house, guesthouse, boathouse, and home office. A boardwalk lines a canal, serving as the project's organizing spine, with the buildings unfolding along it. By stringing the 6,000-square-foot home along a narrow site, the architects wove water and land into the fabric of the house, at times creating water courts within the buildings. Breaking the whole into parts brings the scale down and allows the house to embrace the land. The interiors are light and spacious and use the same material palette as the exteriors.

The AIA Housing Committee Knowledge Community established this awards program in the year 2000 to recognize quality residential design. The program affirms that housing is not only a necessity of life, but an inspiration for owners and a valuable part of the built environment. The quality of the current winning projects corroborates this view. Categories include single-family custom, single-family market, multifamily, innovation in housing design, and community design. Also, in association with HUD, the committee created the HUD awards program to recognize excellence in housing and community design. Both programs provide important benchmarks of good design for the housing industry.

SINGLE-FAMILY MARKET

Project: *Urban Infill 01*
Location: *Milwaukee*
Architect: *Johnsen Schmaling Architects*

Flexibility is the key to this affordable home located in downtown Milwaukee. Intended as a prototype for urban renewal, the design can be adapted as either a single-family home or two-family duplex, with a plan that can accommodate multiple lot sizes. Three interlocking components distinguish the house—a cedar-clad box for entry and vertical circulation, a stucco box for the main living space, and a concrete veneer wall that transforms into a freestanding garden wall. A large second-floor window with an overhead garden trellis offers framed views of the neighborhood.

Project: *Greenwood Avenue Cottages*
Location: *Shoreline, Wash.*
Architect: *Ross Chapin Architects*

An architect/developer team finds a comfortable balance between privacy and close-knit camaraderie in this project. A unique zoning code enabled the team to double the number of houses established for the area, yet each of the quaint houses is detached from its neighbor, ensuring a sense of autonomy. A common lawn and garden, along with welcoming front porches, promote a strong feeling of community.

Residential News

MULTIFAMILY HOUSING

Project: *Soma Studios and 8th + Howard Apartments*
Location: *San Francisco*
Architect: *David Baker + Partners, Architects; IA Gonzales Architects (associate architect)*
Client: *Citizens Housing Corporation*

This boldly colored, five-story building adds vitality to a San Francisco neighborhood while maintaining its diverse population by providing 74 apartments and 88 studios, all of which are affordable. Community rooms, double-height lobbies, covered parking, and open courtyards please the residents, while a child-care center and retail space at the street level engage the larger community. "Takes an entire block in a blighted area of San Francisco and transforms it," said one juror.

COMMUNITY DESIGN

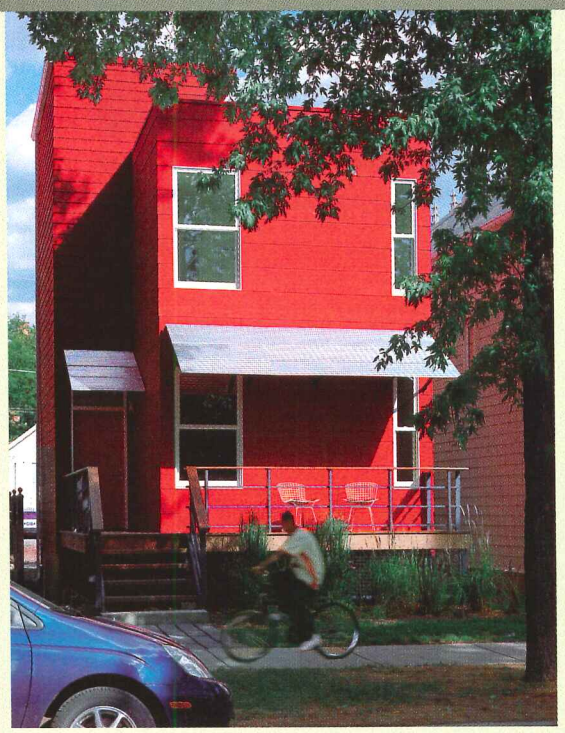
Project: *LeMoyne Revitalization*
Location: *Memphis*
Architect: *Torti Gallas and Partners*
Client: *Memphis Housing Authority*

Input from local residents and city representatives guided the design of this new community. Blending with and enhancing the existing neighborhood, this project provides twice the density of a typical single-family neighborhood of the area. All the houses were built for $55 per square foot and can accommodate individuals, families of varied financial means, or senior citizens.

Project: *The Garlands of Barrington*
Location: *Barrington, Ill.*
Architect: *Torti Gallas and Partners*
Client: *Barrington Venture*

"Every jury member would love to retire here," said one juror of this senior residence near Chicago. The complex resembles a small village or academic campus rather than a retirement community. Though all the amenities one could ask for are available on the premises, the complex is not isolated and welcomes the community. A range of housing types allows for residents with varied needs.

INNOVATION



Project: *F10 House*
Location: *Chicago*
Architect: *EHDD Architecture*
Client: *City of Chicago Department of Environment; City of Chicago Department of Housing*

This affordable house disproves the myth that green design must be expensive. Built for the Chicago Department of Housing, F10 House both fits comfortably in its urban context and incorporates sustainable elements throughout. A central solar chimney, for instance, fills the house with light and air, and durable materials and a green roof promote efficiency and low maintenance costs. A juror called it "sustainable in every way."

HUD AWARDS: COMMUNITY BY DESIGN

Project: *Linden Court and Chestnut Court*
Location: *West Oakland, Calif.*
Architect: *David Baker + Partners, Architects; Michael Willis Architects*

Just half a block from one another, these two projects offer a unique solution to neighborhood revitalization. Each project, designed by a different architectural team, has its own layout and style, but together their sensitive massing, active street fronts, varied roof heights, and interior courtyards bring security and a sense of pride to residents.

HUD AWARDS: MIXED-USE/MIXED-INCOME

Project: *Main Street North*
Location: *Boulder, Colo.*
Architect: *Wolff Lyon Architects*
Client: *Main Street North*

At the entrance to a new mixed-density neighborhood, this mixed-use hub incorporates retail, office, and affordable housing residential units. With wide sidewalks, a bustling bakery and restaurant, parking, and attractive outdoor areas, the project successfully promotes and establishes a community where there was none.

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Products

Sustainable Choices

Maybe one day there won't be a need to highlight **sustainable building products** since they will be the norm, not the exception. Many of the products featured this month have been recycled from materials that would have ended up as waste, while others **prevent waste** in the first place. *Rita Catinella Orrell*

Eco-Terr has a recycled content of 80 percent and can be specified for countertops (above), backsplashes (right), or flooring.

Recycled granite, marble, and glass blended into a LEED-friendly kitchen countertop

For his 4,000-square-foot Fischer Island home, accessible by ferry off the coast of Miami Beach, Ron Burton wanted to use eco-friendly finishes either made with recycled content or emitting low or no VOCs. At the same time, Burton required an enduring material that would have a contemporary, Minimal look.

To match his home's white, black, and silver color palette, Burton selected a Black Diamond–colored Eco-Terr countertop and backsplash from Coverings Etc. Made from recycled granite, marble, and tempered-glass chips, and held together with a cement binder, the finish boasts a recycled content of 80 percent. The product's high recycled content helps commercial and residential projects attain LEED points, since it falls under Credit 4.1 and 4.2 Recycled Content.

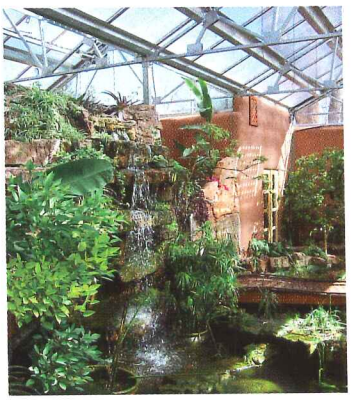
Eco-Terr is available in a choice of 24 colors, but can be custom colored for larger projects. Tile sizes are 16" x 16" x ⅝" and 24" x 24" x ¾", and slabs measure 100" x 57", in ¾" and 1¼" widths.

In addition to countertops and backsplashes, Eco-Terr can be specified as a sustainable flooring material. Coverings Etc., Miami. www.coveringsetc.com CIRCLE 211

The next generation in wastewater treatment

Introduced by Dharma Living Systems (DLS) at last year's USGBC national conference in Portland, Oregon, a new generation of Living Machine wastewater-treatment systems can provide higher levels of water quality, use less energy, and are cost competitive with other wastewater-treatment options. Dharma Living Systems comprises a group of engineers, architects, and ecologists that provide integration services for natural living systems for projects that need water conservation methods to reduce their impact on natural resources.

The newer machines require no environmental enclosure, even in temperate climates, and can be integrated into the green spaces of a variety of project scales. The new systems do not use some of the earlier conventional processes like clarifiers or forced-air components, do not produce waste bio-solids, and can withstand large variations of loadings associated with seasonal uses. Living Machines, Taos, N.M. www.livingmachines.com CIRCLE 212



The systems integrate into the project's green spaces.

The panels will no longer use formaldehyde.

Plywood plants switch to soy-based adhesive

Columbia Forest Products announced it has begun to convert its veneer-core hardwood plywood plants to formaldehyde-free manufacturing processes using a patented, soy-based adhesive cooperatively developed by Columbia, the College of Forestry at Oregon State University, and Hercules. Hercules has awarded Columbia a license to utilize its adhesive system on an exclusive basis for all of Columbia's North American decorative-panel markets. The new adhesive, made primarily of soy flour, will allow Columbia to completely eliminate formaldehyde from its veneer-core and Woodstalk agrifiber-core panel products. The company expects the conversion to be complete within a year. Currently, there are few no-added-formaldehyde alternatives to UF-based adhesives on the market, and all are significantly higher in cost. Columbia Forest Products, Portland. www.columbiaforestproducts.com CIRCLE 213

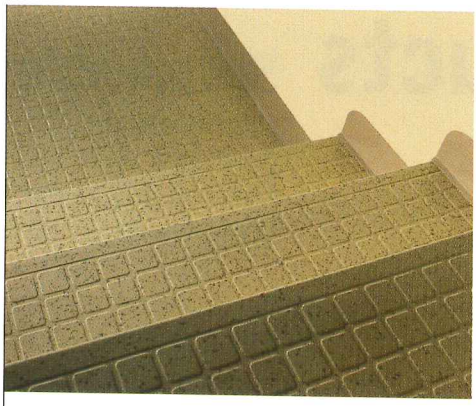
Products Sustainable Choices

▲ Waste not, want not
Bentley Prince Street has developed a new manufacturing process that repurposes industrial waste to create broadloom and carpet-tile products. Scan and UPC, the company's two new product lines, are the fruit of the process. They utilize postproduction yarn, or "tail outs," the small cone of yarn that is left over at the end of a production run. Scan is a pin-striped broadloom, while UPC is a whimsical complement available in 18" x 18" carpet tile. Bentley Prince Street, City of Industry, Calif. www.bentleyprincestreet.com **CIRCLE 214**

► Ambient power

Solis, the newest addition to Sloan's Water Conservation Division, is an electronic, solar-powered faucet that operates via ambient lighting. Solis features an integrated-power-plant storage cell that transforms light from any source into electrical energy. Batteries provide back-up energy and can last up to 10 years. The single-hole faucet comes standard with integral temperature control, a ½-gallon-per-minute aerator to regulate water flow, and an electronic sensor for "hands-free" operation that turns water on and off automatically. The faucet comes in a durable chrome finish, and optional trim plates are available. Sloan Valve, Franklin Park, Ill. www.sloanvalve.com **CIRCLE 216**

◄ Reduce noise and waste
EverQuiet sound barrier wallboards from New Frontier Industries (NFI) typically reduce noise pollution by 50 percent. Manufactured from 95 percent postconsumer recycled plastic, the panels use a proprietary process that recycles a range of plastics beyond milk and soda bottles. The walls can be engineered up to 30' high and are capable of withstanding 150-mph winds. New Frontier Industries, Milton, N.H. www.newfrontierindustries.com **CIRCLE 218**



▲ New green brand
Roppe recently introduced EcoEffect, a new brand for its environmentally friendly products, including tiles, treads, wall base, and adhesives. The brand will define products made with renewable resources or postindustrial/postconsumer waste, including Fiesta tile and tread (left). Fiesta is PVC-free, contains 10 percent postindustrial waste, and features a flecked design made from recycled rubber products. Roppe adhesives feature microbial growth inhibitors and emit low VOCs. Roppe, Fostoria, Ohio. www.roppe.com **CIRCLE 215**

► Solid-colored recycled composites

Made of 40 percent recycled plastic and 60 percent industrial-waste wood fiber, Tendura composite boards are fungus- and termite-resistant. The TenduraPlank line features a tongue-and-groove floorboard designed specifically for covered-porch applications. The boards are available in a new Solid collection, which does not need to be painted. Battleship Gray (shown) is the first color available in the line, and more colors will be added soon. Tendura also offers a Classic primed model that allows homeowners to paint their porch any color they choose. Tendura, Troy, Alabama. www.tendura.com **CIRCLE 217**

▲ Intelligently green seating fabric
Mardi Gras, the latest Eco Intelligent Polyester seating fabric, is an environmentally safe product jointly developed by Canadian contract textile manufacturer Victor Innovatex and McDonough Braungart Design Chemistry (MBDC) using a new antimony-free catalyst. Mardi Gras meets MBDC's Level 4 protocol for eco-effectiveness, and is designed for optimal value recovery with closed-loop systems. The seating fabric, which features a flower motif, is available in 12 colors exclusively by Teknion. Victor Innovatex, Quebec. www.victor-innovatex.com **CIRCLE 219**

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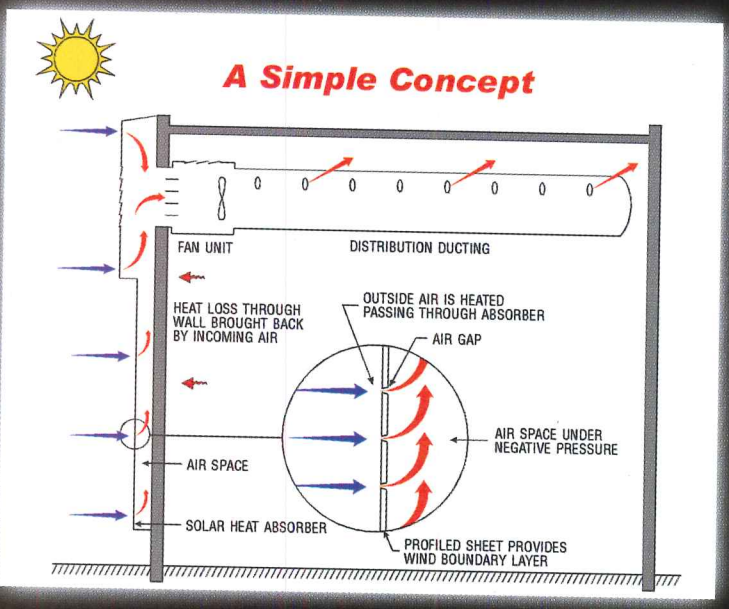

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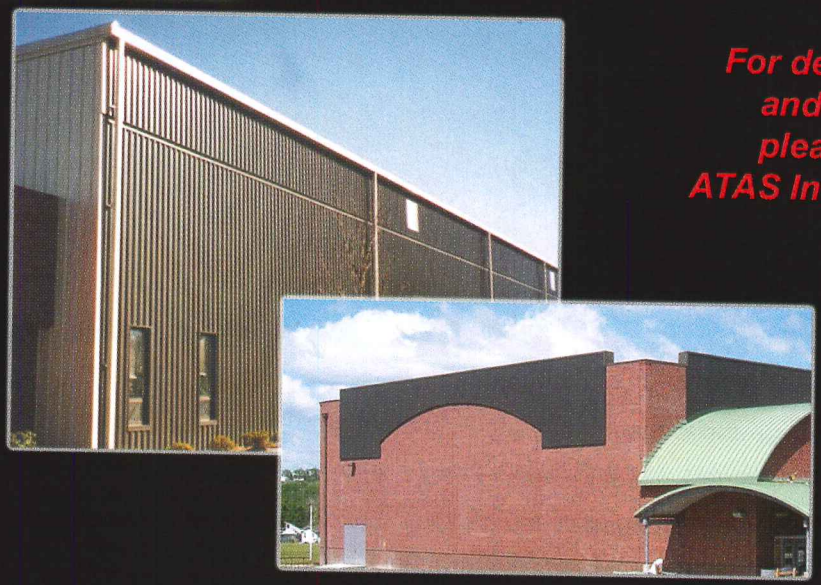

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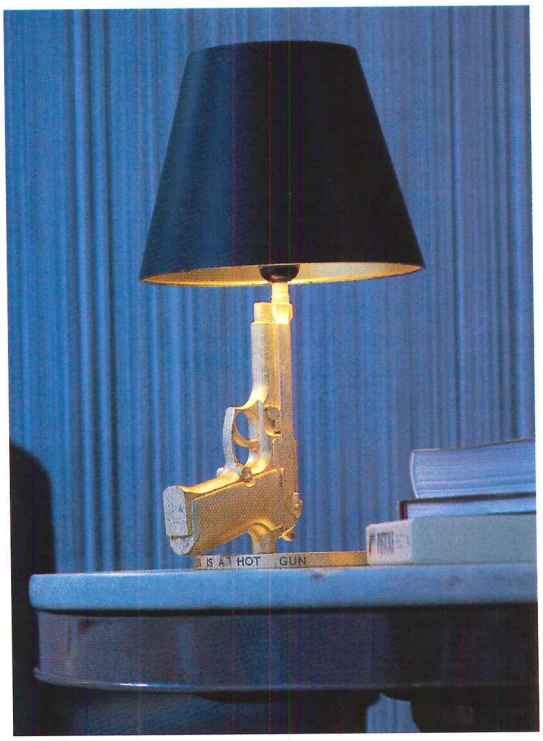


Playful and perforated forms thrive at the Milan Furniture Fair

Pierced, punched, die-cut, lacerated: Many products unveiled at last April's Milan Furniture Fair displayed a penchant for perforation. Louise Campbell's Prince chair for Hay, for example, featured cutouts that evoked a child's paper snowflake made in crafts class, but its black rubber surface put a sinister spin on the whimsy (page 250). Ron Arad's Ripple chair for Moroso (this page, bottom right) offered a curvaceous bucket seat with side openings that created a sculptural profile. Also for Moroso, Konstantin Grcic's Osorom ottoman plied white molded plastic into a latticelike surface (page 246).

Vibrant colors and adventurous shapes again stood out from the standard Minimalist fare. The Campana brothers created chair backs inspired by brooms for Edra, offered in rainbow shades (page 246). The prolific Patricia Urquiola, with no less than a dozen products and installations on display for various manufacturers, favored tracery etched into vibrant-hued Plexiglas for Kartell's tables (page 246).

Architects also climbed aboard the furniture-design bandwagon. The new British company Established & Sons unveiled its line, including a swooping table by Zaha Hadid (page 246). Ben van Berkel made the rounds with a circular seating unit at Walter Knoll (page 248). On the following pages, see more of the highlights from Milan. And for expanded coverage of the fair, go to Products at www.archrecord.com.

William Weathersby, Jr.

Arresting designs were everywhere at the Fair (clockwise from top left): Ezri Tarazi's New Baghdad table was part of a showcase of furniture from Israel; Philippe Starck created gilt gun lamps for Flos; Ron Arad's chairs floated at Moroso; a Mini Cooper was clad in a Bisazza-tile tartan.

Product Briefs Milan Furniture Fair

▼ ► Clean sweep

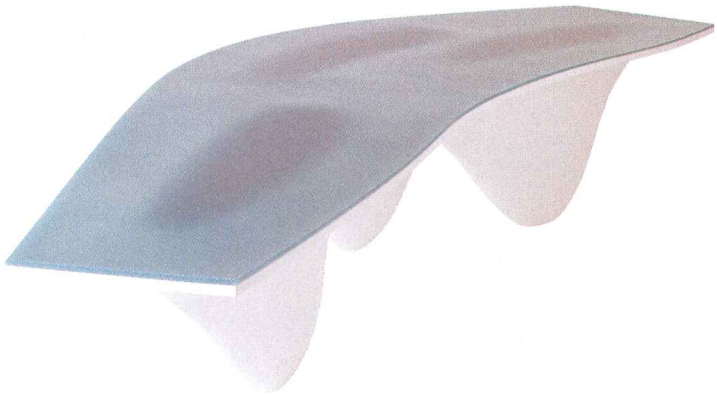
The Jenette side chair for Edra features a broomlike back composed of thin PVC rods attached to a polyurethane-coated steel base (below). Designed by Fernando and Humberto Campana, the armless chairs come in six bold colors. The Mummy chair (right), designed by Peter Traag, wraps a traditional beech-framed chair with strips of leather and elastic, evoking a mummy or perhaps a small-scale project by the artist Christo. Moss, New York City. www.murraymoss.com **CIRCLE 220**

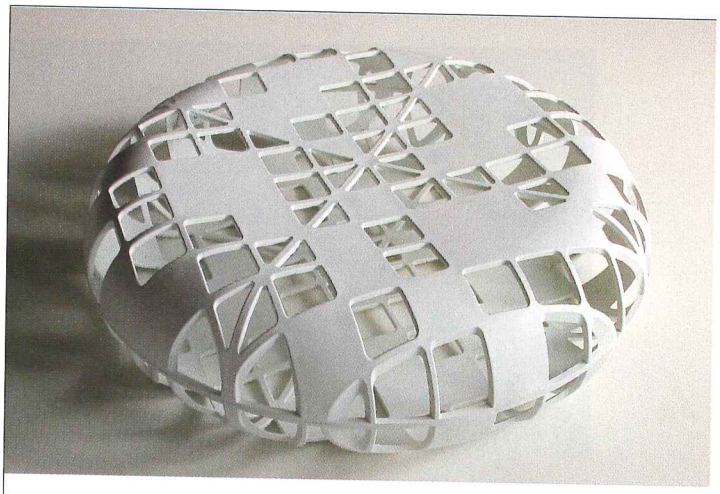
► Ron Arad rocks

This rocking chair is part of Ron Arad's new MT 1-2-3 line for Driadestore, which also includes an armchair and divan. Meant for indoor or outdoor use, the shapely furniture is constructed of rotomolded plastic. The line will initially be offered in two color combinations: cream/orange and red/blue. Driadestore, Milan. www.driade.com **CIRCLE 222**

▼ Zaha Hadid catches a wave

The new British manufacturer Established & Sons unveiled its premiere line of furniture in Milan. Among the designers of the inaugural collection of tables, chairs, sofas, and accessories were architects Zaha Hadid and Future Systems, along with U.K. design stars Michael Marriott, Ed Barber, and Jay Osgerby. Hadid's Aqua dining/conference table has a wavelike form that blurs the line between horizontal and vertical surfaces. A structural polyester base supports a translucent top constructed of silicon gel. The tabletop's color gradations reveal three markings on the surface's underside. Established & Sons, London. www.establishedandsons.com **CIRCLE 221**



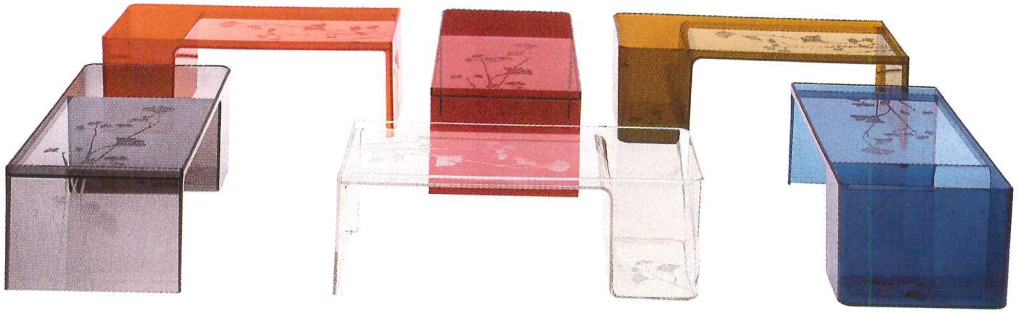


▲ Space-age ottoman

Konstantin Grcic reinterprets the ottoman as a futuristic, latticelike orb with the Osorom seating unit for Moroso. The designer says he wanted "to create an environmental sculpture that boasts airiness." The frame is a combination of fiberglass and resin, conveying transparency in a seemingly random pattern. The seat shell is a multilayered, technopolymer composite. Also from Moroso, Ron Arad's Ripple chair (page 245, bottom right) is made of white polished, injection-molded thermoplastic. Moroso, Cavalicco, Italy. www.eventi.moroso.it **CIRCLE 223**

► Tracery tables

Spanish-born Milanese designer Patricia Urquiola combines the functions of a magazine holder and table in the Usame line for Kartell. Made of molded polycarbonate and available in a range of transparent colors, the piece can function as a side or coffee table, nightstand, or bed tray. Etched with abstract floral tracery, the table measures 33½" x 16", with a height of 12". Kartell US, New York City. www.kartellus.com **CIRCLE 224**



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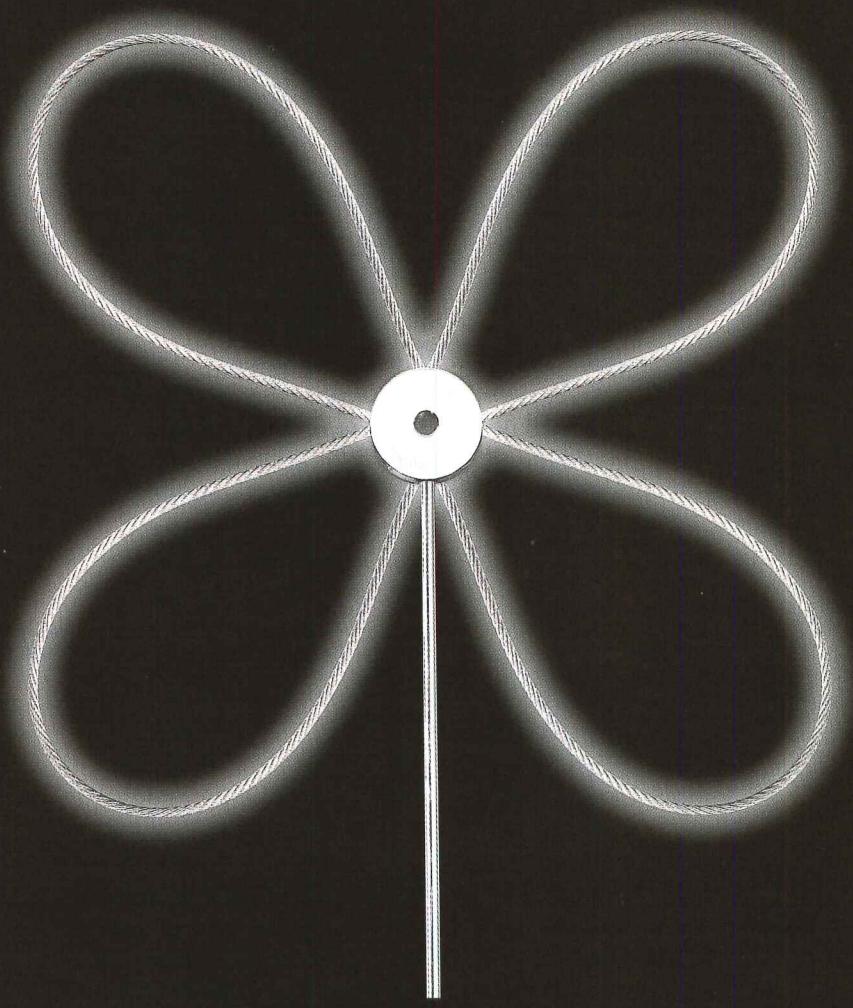

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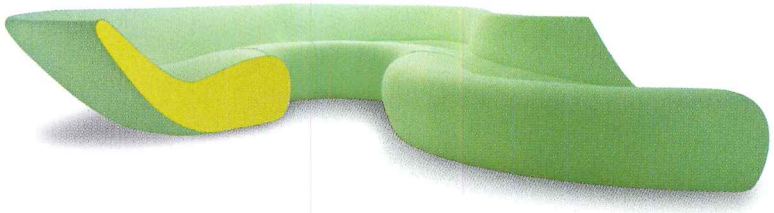
Product Briefs Milan Furniture Fair

▼ Winner's circle

Architect Ben van Berkel of Amsterdam's UN Studio demonstrates his deftness at furniture design with the launch of Circle seating for Walter Knoll. The seating unit is composed of four parts, two that combine to create a semicircle or all four forming a round seating "sculpture." The slope of both the back and the seating plane create an unbroken flow of user movement, from sitting upright to reclining. Flexible configurations "allow a dialogue between concave and convex formations," says Van Berkel. The seating will be initially offered in two color combinations: green/yellow and slate/red. Walter Knoll, Herrenberg, Germany. www.walterknoll.de **CIRCLE 225**

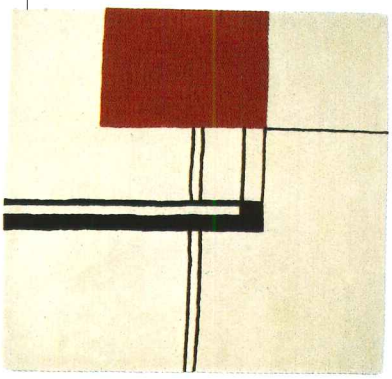


▲ World Wanders

New Antiques is a series of imaginative tables designed by the prolific Dutch designer Marcel Wanders. The occasional or tea table (above) is accompanied by a full-length dining table. The black-painted wood tables feature three-dimensional plastic ornamentation that seems to mildly mock the flourishes of classical furniture designs. The smaller table features a fumé glass top. Cappellini, Milan. www.cappellini.com **CIRCLE 226**

▼ Shades of Gray

Furniture and rugs designed by Eileen Gray in the 1920s and '30s never seem to go out of style. Before she practiced architecture, Gray ran her own design and production studio. Some of her striking rug patterns are now available again as reeditions: abstract textile pieces of 100 percent wool, handwoven with a density of 80 knots per square inch. The Wendingen rug (below) was Gray's tribute to the famed Dutch architectural journal that raised her profile. ClassiCon, Munich. www.classicon.com **CIRCLE 227**



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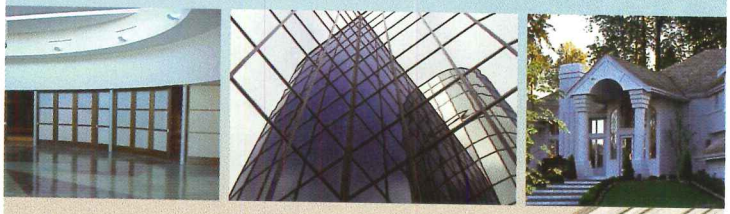

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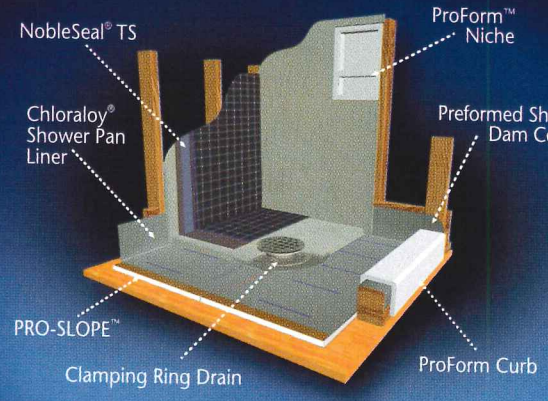

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◄ Pivot at work

Designer Antonio Citterio continues his longstanding collaboration with B&B Italia with the introduction of the Arne furniture line. A bookcase takes the form of a curved wood container with a lacquered interior finish; a steel pin enables the unit to pivot away from a desk that rests on chrome-plated steel rods. The line also includes a sofa and a low table made of curved wood with light oak, gray, brown, and cognac finishes. B&B Italia, Milan. www.bebitalia.it **CIRCLE 228**

► A delicate balance

The Jonker coffee table created by Christopher Combes and Cristiana Giopato balances its glass tabletop on six angled glass supports. The table measures 12 3/16" high x 35 1/16" wide x 35 1/16" deep. Fiamitalia also displayed the Slash coffee table designed by Rodolfo Dordoni, which features a diagonal bridge of smoked glass independent of a lacquered wooden base that comes in black or white. Fiamitalia, Tavullia, Italy. www.fiamitalia.it **CIRCLE 229**

► Full circle

The Giro chair by Gala Wright for Coro is composed of a satin-finish steel frame supporting an elastic mesh seat. The seat, which can be specified in a range of colors, can swing and rotate within the circular support. When not in use, the seat can be tilted up to lie flat vertically within the frame. For the fair, the company also presented its Fellini line of upholstered seating pieces, including sofas, chaise longues, and side and lounge chairs. An accessories line has expanded the collection of cutlery and dinnerware. Coro, Monza, Italy. www.coroitalia.com **CIRCLE 230**

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Product Briefs Milan Furniture Fair

▼ Light fantastic

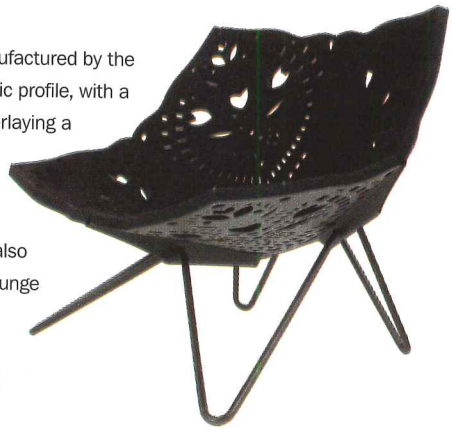
William Brand and Annet van Egmond are two artists who design and manufacture handcrafted lighting and furniture. Trained as a sculptor and an architect, respectively, the partners create fanciful forms from forged metals and handblown glass. Dramatic, one-of a-kind chandeliers, like the one shown below, are complemented by chairs and settees whose backs sometimes feature the same manipulated metalwork. Other pendants in the line incorporate Swarovski crystals, nickel finishes, and multiple lamp sources. Brand van Egmond, Naarden, the Netherlands. www.brand-egmond.com **CIRCLE 231**

▲ Lean and green

Valvomo Architects is a design and architecture studio based in Helsinki, Finland, founded in 1993 by eight partners. Part of its latest furniture line, the Movie easy chair/sofa system (left) has units that can be attached to each other freely (corner parts are not needed). Pairing identical units, it is easy to change the function and proportions of the sofa. A backrest is attached to the seat with one axle that can be rotated. Valvomo, Helsinki. www.valvomo.com **CIRCLE 232**

► Prince's lace

Louise Campbell's Prince chair manufactured by the Danish company Hay cuts a dramatic profile, with a perforated black-rubber surface overlaying a metal foundation. The abstracted floral pattern and the unusual finish add a layer of mystery to this modern lounge chair. In Milan, Hay also showcased new sofas, tables, and lounge and side chairs designed by Leif Jorgensen and Jakob Wagner. Hay, Copenhagen. www.hay.dk **CIRCLE 233**



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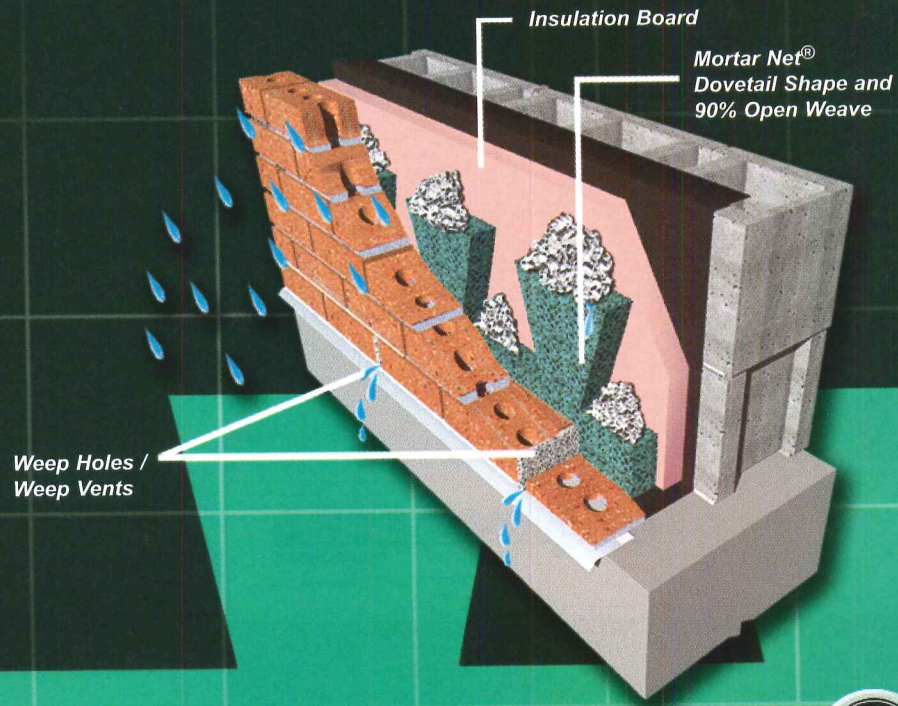

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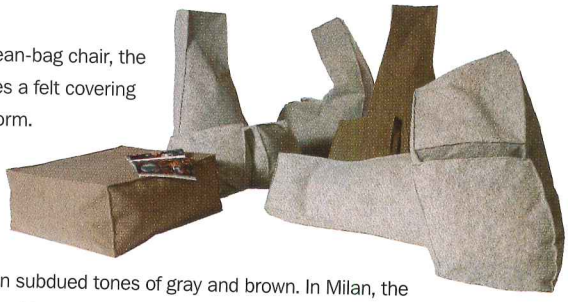
Product Briefs Milan Furniture Fair

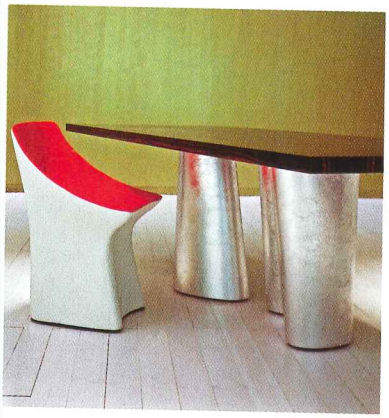
▲ The Bouroullec brothers are back

Designers Ronan and Erwan Bouroullec created a spectacular temporary space for Vitra during the fair, converting a former sports arena into a lively landscape showcasing furniture by Jasper Morrison, Philippe Starck, and Herzog & de Meuron, among others. The brothers' Late sofa for Vitra and Lantern for Belux (above) offered new twists on traditional designs. The light fixture consists of two identically shaped plastic bowls joined with a horizontal black plastic ring. The sofa comes with an attached side table. Belux, Birsfelden, Switzerland. www.belux.com **CIRCLE 234** Vitra, Wien, Austria. www.vitra.com **CIRCLE 235**

► Sack out



A modern take on the bean-bag chair, the Dickies "sit sack" features a felt covering over a fiber-filled inner form. Designed by Anthony Kleinepier for Moooi Design, the irregularly shaped pieces come as a chair or ottoman, and in subdued tones of gray and brown. In Milan, the company also unveiled the Naked chair designed by Marcel Wanders, which adapts a custom chair he originally designed for the charity restaurant Fifteen, run by TV's "Naked Chef" Jamie Oliver. Wanders's Two-Tops secretary hides a laptop in a cove beneath a flip-up desktop. Moooi Design, Amsterdam. www.moooi.nl **CIRCLE 236**



◄ A fine romance

Romeo and Giulietta are a sculptural table and chair paired to complement each other. Designed by Franco Poli, the Romeo table has a square or rectangular top of Macassar ebony, resting on a silver- or gold-plated base. The Giulietta chair comes upholstered in fabric, leather, or a polymer synthetic, and can be specified in a solid or two-tone finish. Bernini, Milan. www.bernini.it **CIRCLE 237**

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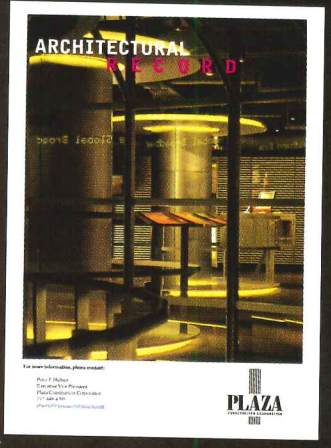

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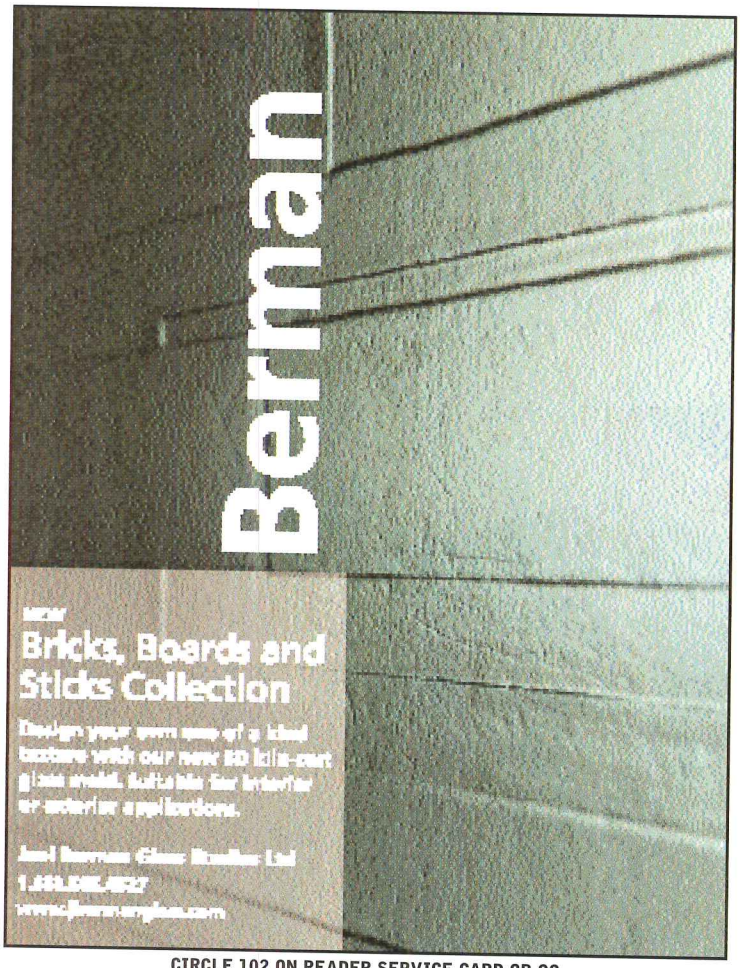

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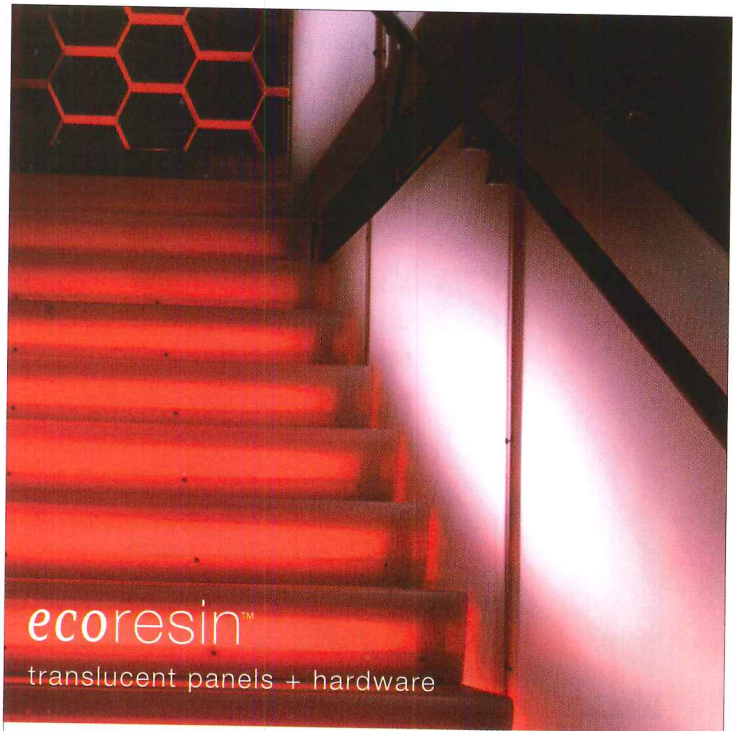

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Product Literature

Lighting spec catalog

FC Lighting has released a fully updated specifications catalog. The comprehensive, 320-page catalog showcases FC Lighting's full product line, including 48 new additions, through a combination of full-color booklets and detailed specification sheets. The catalog is organized into four sections: Exterior, Interior, Tracks, and Recessed. FC Lighting, Addison, Ill. www.fclighting.com **CIRCLE 238**

Hurricane-resistant systems

Specialty-glazing contractor Harmon offers a new product brochure highlighting its two hurricane-impact curtain-wall systems for single- and multispan commercial building applications. Harmon, Golden Valley, Minn. www.harmoninc.com **CIRCLE 239**

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Nucraft has refreshed and updated its surface materials offerings with a number of new veneer finish choices, the addition of a matte finish as a standard choice, and the availability of metallic silver and graphite paint options on more products. A new brochure features the surface material additions. Nucraft, Grand Rapids, Mich. www.nucraft.com **CIRCLE 240**

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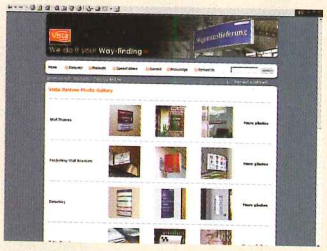

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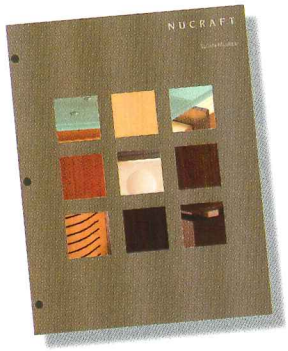
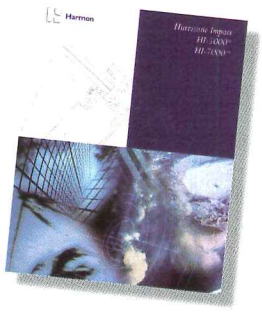
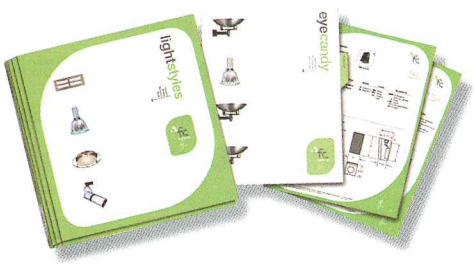
The latest from the infamous Dutch designer. **www.marcelwanders.com**

Tile color additions

Altro has updated the colors of its Altro Quartz tile range of high-performance commercial flooring. Now available in 25 solid colors and 10 chipped colors, Altro Quartz Tile features more than 30 percent recycled content. Altro has created a new architectural folder and sample box to showcase the new tile. Altro, Mississauga, Ontario. www.altrofloors.com **CIRCLE 241**







For more information, circle item numbers on Reader Service Card or go to www.archrecord.com, under Products, then Reader Service.

Product Literature

Recessed-downlight brochure

Prescolite offers a new brochure detailing its complete line of Architektur decorative recessed-ceiling-downlight products and trims. The 36-page brochure covers a range of recessed-downlight fixtures and reflector, lamping, and trim options. The brochure provides general application support information, such as suggestions on how products can be used to best illuminate high-ceiling, slope-ceiling, and other challenging interiors, and accenting the architecture of a space with lighting. Prescolite, Spartenburg, S.C. www.prescolite.com **CIRCLE 242**

Decorative glass lighting

Besa Lighting is offering a 174-page catalog featuring a complete line of lighting solutions designed with decorative glass from the world-famous Herner Glass Factory in Germany. The catalog includes color photos, specs, and other information on a myriad of lighting fixtures featuring a range of luminaire styles, colors, metal finishes, and lamping options. Besa Lighting, Columbus, Ohio. www.besalighting.com **CIRCLE 243**

Exec casegoods brochure

CCN International has announced a new brochure that details the executive/management casegoods product titled Prizein. The 12-page color brochure opens with a brief description of the product's scope, followed by a series of application photographs that illustrate some of the design possibilities. CCN International, Geneva, N.Y. www.ccninternational.com **CIRCLE 244**

Wayfinding guidebook

The 82-page *Guidebook 2 Signs* from Vista System features more than 500 examples of sign types, including wayfinding signs. It is available in eight languages. Vista System, Sarasota, Fla. www.vistasystem.com **CIRCLE 245**

Faucet/shower combo

Hansgrohe has released an 84-page brochure that combines the company's two premium faucet and shower product series: Interactiv and Retroactiv. Both series are exclusive to the North American market and carry midrange price points. Hansgrohe, Alpharetta, Ga. www.hansgrohe-usa.com **CIRCLE 246**

For more information, circle item numbers on Reader Service Card or go to www.archrecord.com, under Products, then Reader Service.

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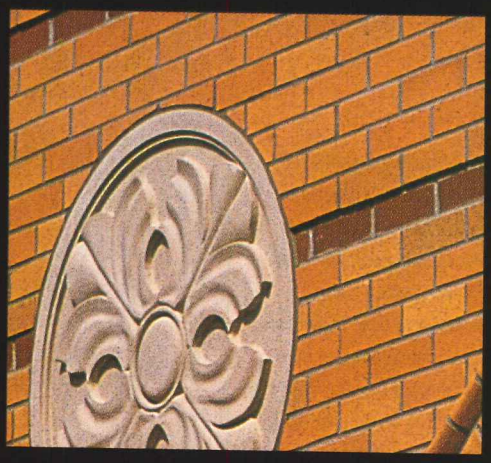


Colors

Belden Brick is available in a world of colors including soft whites and creams, golden buffs and dusty tans, delicate pinks and cinnamon reds, chocolate browns, pewter grays and coal blacks. With so many colors to choose from your options are truly endless. Here is a small sample of over 200 color ranges, 13 textures and 16 different sizes.

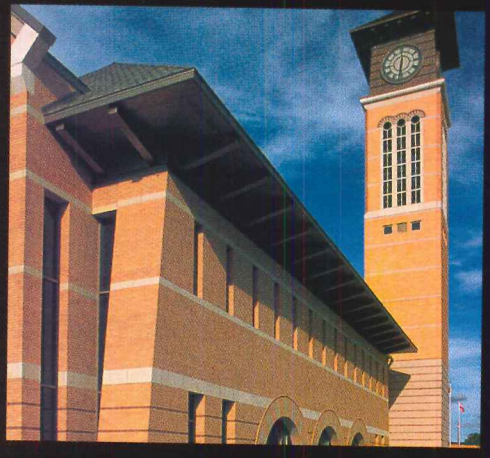
Landmarks in Brick

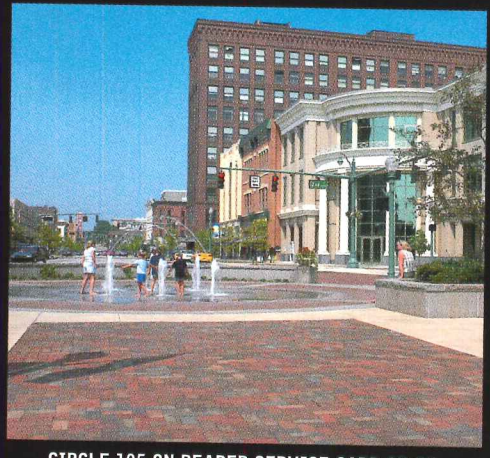
Sizes & Shapes

More sizes mean lower wall costs. With as many as sixteen different sizes to choose from Belden has the size you need. Plus, Belden has made thousands of special shapes to provide special details for individual projects. Need an "impossible" shape for your project? Then call Belden Brick and learn how the impossible can become reality.

Textures

Belden Brick offers thirteen different textures that range from silky smooth finishes to rugged randomly textured styles. Each texture can make its own distinctive contribution to the visual impact you seek.





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Dates & Events

New & Upcoming Exhibitions

Designed for Living: The Modern Interior
Chicago
July 1–August 27, 2005
The concept of modernity used as a marketing device began in the early 20th century. Design drawings by G.M. Niedecken and two modern masters, Alfonso Iannelli and Henry P. Glass, are featured in this exhibition. At the Architech Gallery of Architectural Art. Call 312/475-1290 or visit www.architechgallery.com.

Going, Going, Gone? Mid-Century Modern Architecture in South Florida
Fort Lauderdale, Fla.
July 8–October 30, 2005
Can we still save South Florida's midcentury Modern architecture? This exhibition is a photographic journey through Broward and Miami-Dade counties, featuring the work of photographer Robin Hill, who has shot dozens of outstanding South Florida structures dating back to the mid-20th century. At the Museum of Art. Call 954/525-5500 or visit www.moafl.org.

Mies
Miami
July 11–September 30, 2005
A photo exhibition by photographer Paul Clemence celebrating the work of Mies van der Rohe. The photographs zero in on the architectural details of some of Mies's masterpieces, like the Farnsworth House, Crown Hall, and the German Pavilion at Barcelona. At the Florida International University School of Architecture. Call 305/348-3181 or visit www.fiu.edu.

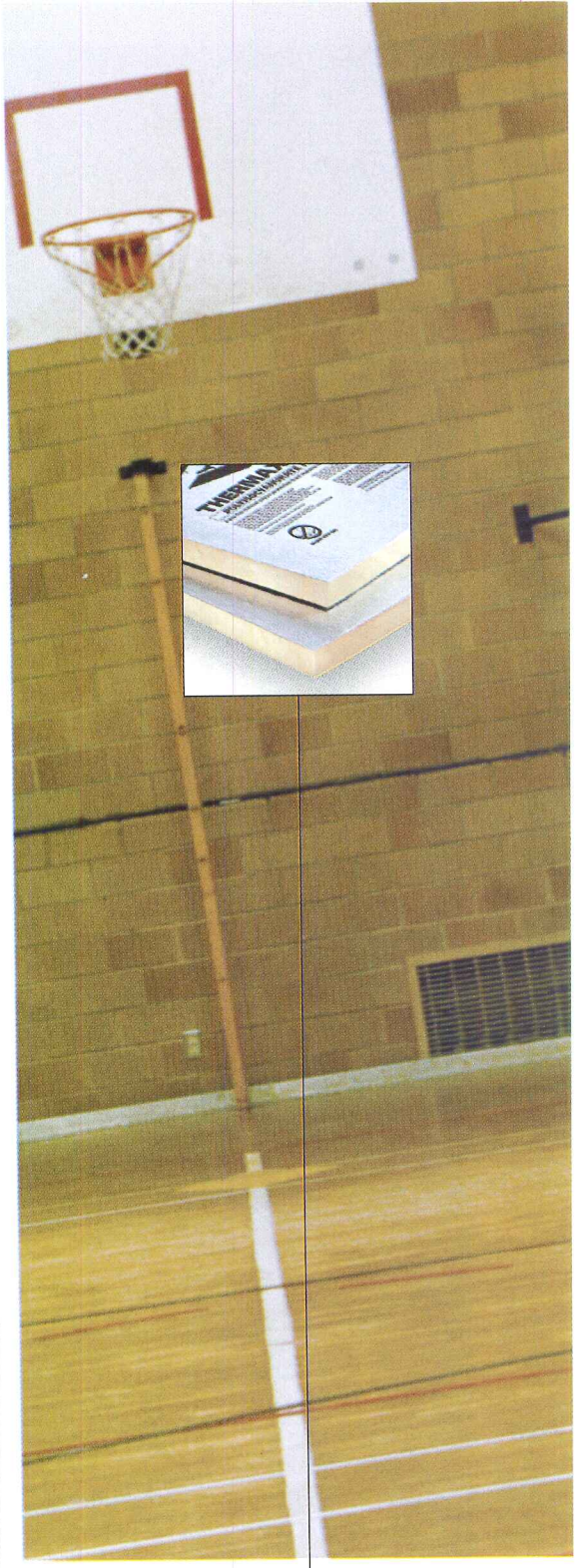
Romantic Modernist: The Life and Work of Norman Jaffe, Architect
Southampton, N.Y.
July 24–September 18, 2005
Norman Jaffe built more than 600 projects during his 35-year career. He received numerous architecture awards and also participated in national and international exhibitions at leading institutions, including New York's Museum of Modern Art. Eastern Long Island is where Jaffe found his place in American architecture, creating unique vacation homes while exploring his love of light and form. This is the first major exhibition to examine the life and work of this important American architect. At the Parrish Art Museum. Call 631/283-2118 or visit www.parrishart.org.

Jean Prouvé: Three Nomadic Structures
West Hollywood
August 14, 2005–November 27, 2006
The first American presentation of the work of celebrated French designer and architect Jean Prouvé (1901–84), this exhibition includes furniture, vintage photography by Lucien Hervé, and architectural elements that address the most important aspects of Prouvé's practice: technological innovation, itinerant housing, the development of modular systems, and the use of aluminum. The exhibition installation, designed by Evan Douglis, is inspired by Jean Prouvé's commitment to exploring the most advanced technology of his time. At the Museum of Contemporary Art (MOCA) Pacific Design Center. Call 213/626-6222 or visit www.moca.org.

2005 Serpentine Gallery Pavilion Program
London
Summer 2005
Portuguese Pritzker Prize–winning architect Alvaro Siza and his long-time collaborator, the distinguished architect Eduardo Souto de Mouro, will design the next Serpentine Gallery Pavilion. Since the commission was launched in 2000, it has resulted in four landmark temporary structures. At the Serpentine Gallery. Call 020/7402-6075 or visit www.serpentinegallery.org.

A Touch of Cass Ramsey Hill Historic House Tour
Saint Paul, Minn.
September 11, 2005
The 2005 tour will focus on homes designed by renowned architect Cass Gilbert, in honor of the centennial celebration of Gilbert's most famous Minnesota masterpiece—the State Capitol Building. For information, call 651/228-9111 or visit www.ramseyhill.org.

Raymond Loewy: Designs for a Consumer Culture
Atlanta
September 15–December 23, 2005
A pioneer of the industrial design profession, Loewy crafted a signature style by blending the traditional with European Modernism. The exhibition showcases the work of Loewy and his



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Dates & Events

associates with an array of original drawings, models, products, advertisements, photographs, archival documents, and rare footage of Loewy at work over five decades. It brings together the career of the prolific and influential figure who did much to define the culture of consumption. At the Museum of Design Atlanta. For more information, call 404/688-2467 or visit www.museumofdesign.org.

Renewing Wright
Pittsburgh
October 1, 2005–January 15, 2006
This exhibition brings together two iconic buildings by Frank Lloyd Wright with, in each case, an associated project by a leading visionary architect of today. At the Heinz Architectural Center, Carnegie Museum of Art. Call 412/622-3131 or visit www.cmoa.org.

Ongoing Exhibitions

Policy and Design for Housing Beyond the Minimum: Lessons of the Urban Development Corporation 1968–1975
New York City
Through September 10, 2005
In response to the lack of housing units being built for families with limited income, a concerned group of architects, planners, policy makers, public advocates, and environmental psychologists will take a look at the situation by presenting an evaluation of the housing produced by the New York State Urban Development Corporation. The exhibition will use plans and photographs of a sample of projects around New York State that demonstrate housing of differing conditions: urban and suburban; mixed income; high-rise and low-rise; various densities; and various building materials and technologies. At the Center for Architecture. Visit www.udchousing.org or www.aiany.org.

The Architect Jean Nouvel Meets Louisiana
Humblebaek, Denmark
Through September 18, 2005
Jean Nouvel is one of the most famous members of the generation that has been called the New Wave of French architects, all of whom participated in "Les Grands Projets" in Paris during the Mitterrand era. Jean Nouvel's self-curated exhibition aims to demonstrate his fundamental architectural principle—the strong dialogue with the spirit and specific character of a place that forms the point of departure for every Nouvel project. At the Museum of Modern Art. Call 45/4919-0719 or visit www.louisiana.dk.

Carlos Garaicoa
Los Angeles
Through July 17, 2005
The first U.S. museum survey of recent work by Cuban artist Carlos Garaicoa, who addresses Cuba's politics and ideologies through the examination of Modern architecture. At the Museum of Contemporary Art (MOCA) Pacific Design Center. Call 213/626-6222 or visit www.moca.org.

Trading Places
Las Vegas
Through July 18, 2005
Killefer Flammang Architects' pioneering adaptive reuse work in downtown Los Angeles is being highlighted with that of Las Vegas–based Marnell Corrao Associates—the preeminent Nevada design/build firm—in this exhibition. At the Donna Beam Fine Art Gallery at UNLV. Call 702/895-3893 or visit www.unlv.edu.

Heather Allen: Architectural Textiles
Washington, D.C.
Through July 29, 2005
This exhibition features 30 of Allen's handwoven and -painted rugs and wall textiles. The architectural imagery represents Allen's exploration of interior space and emotional color. At the Octagon, the museum of the American Architectural Foundation. For information, call 202/638-3221 or visit www.theoctagon.org.

Vanishing Point
Columbus, Ohio
Through August 14, 2005
This exhibition features photographs, paintings, drawings, video, and mixed-media installations that explore the aesthetics of contemporary urban "nonspaces." These ubiquitous public realms—convenience stores, hotel lobbies, shopping malls, airport terminals, parking lots—are often considered anonymous, banal, or otherwise socially and culturally insignificant. Rather than objectively documenting these spaces, the artists in *Vanishing Point* interpret them by focusing on their experiential and atmospheric qualities. At the Belmont Building,

Dates & Events

Wexner Center for the Arts. Call 614/292-0330 or visit www.wexarts.org.

2005 Young Architects Program Proposals
New York City
Through August 22, 2005
An installation of the proposed designs by the five 2005 Young Architects Program finalists: the winner, Xefirotarch (Los Angeles), and finalists Aranda/Lasch (New York), Forsythe + MacAllen Design (Vancouver, B.C.), Graftworks (New York), and WW (Boston). In the Louise Reinhardt Smith Gallery at the Museum of Modern Art. Call 212/708-9400 or visit www.moma.org.

Claesson Koivisto Rune—The Models
Stockholm
Through September 4, 2005
An internationally recognized design and architecture practice, Claesson Koivisto Rune was formed in 1995. A large number of models, representing 85 different projects ranging from rough mock-ups to presentation models and finished prototypes, will be on view. At the Arkitekturmuseet. Call 46(0)8/587-27000 or visit www.arkitekturmuseet.se.

Filigree Spaces:
Textile Installations by Piper Shepard
Baltimore
Through September 18, 2005
The two new installations, featuring a dramatic curtain wall in the Baltimore Museum of Art's lobby and a "room within a room" design in the museum's textile gallery, explore the connection between textiles and architecture. At the Baltimore Museum of Art. Call 410/396-7100 or visit www.artbma.org.

a_show Stage 2: Austrian Architecture in the 20th and 21st Centuries
Vienna
Through September 2005
Due to the sheer scope of material covered by the exhibition, *a_show* is being subdivided into 10 themes to be opened successively in three stages. The first stage, covering the period 1850–1918, opened in March 2004 with much success. *Stage 2* extends to the period from 1919–58. At the Architekturzentrum Wien. Call 431/522-3115 or visit www.azw.at.

On Tour with Renzo Piano & Building Workshop: Selected Projects
Los Angeles
Through October 2, 2005
Featuring several seminal works, the exhibition shows an intimate view of one of the most respected and visionary architects of our time. Piano's involvement in each stage of a building's development—from concept and master plan to construction and detailing—is chronicled. In the Ahmanson Building at the Los Angeles County Museum of Art. Call 323/857-6000 or visit www.lacma.org.

Transformed: Uncommon Uses of Materials in Contemporary Design
Philadelphia
Through October 9, 2005
With a focus on both form and function, this exhibition comprises 19 contemporary design objects in the Philadelphia Museum of Art's collection, providing an illuminating look at what happens when today's designers fuse utilitarian objects with unconventional materials, such as silicon, recycled plastic, fibrated concrete, and even goose feathers. The exhibition includes pieces by Ingo Maurer, Frank O. Gehry, Tokujin Yoshioka, and Fernando and Humberto Campana, among others. At the Philadelphia Museum of Art. Call 215/763-8100 or visit www.philamuseum.org.

Lectures, Conferences, and Symposia

The Reel Architecture Film Series
Washington, D.C.
July 9, 10, 13–August 24, 2005
In celebration of the National Building Museum's 25th anniversary, this free series will screen American films that reflect themes found in the National Building Museum's 25 years of exhibitions, such as sustainable architecture, transportation and transit, and office design. Films will be shown in the National Building Museum's Great Hall. Call 202/272-2448 or visit www.nbm.org.

Glenn Murcutt International Architecture Master Class
Sydney
July 10–24, 2005
Since 2001, participants in the annual Master

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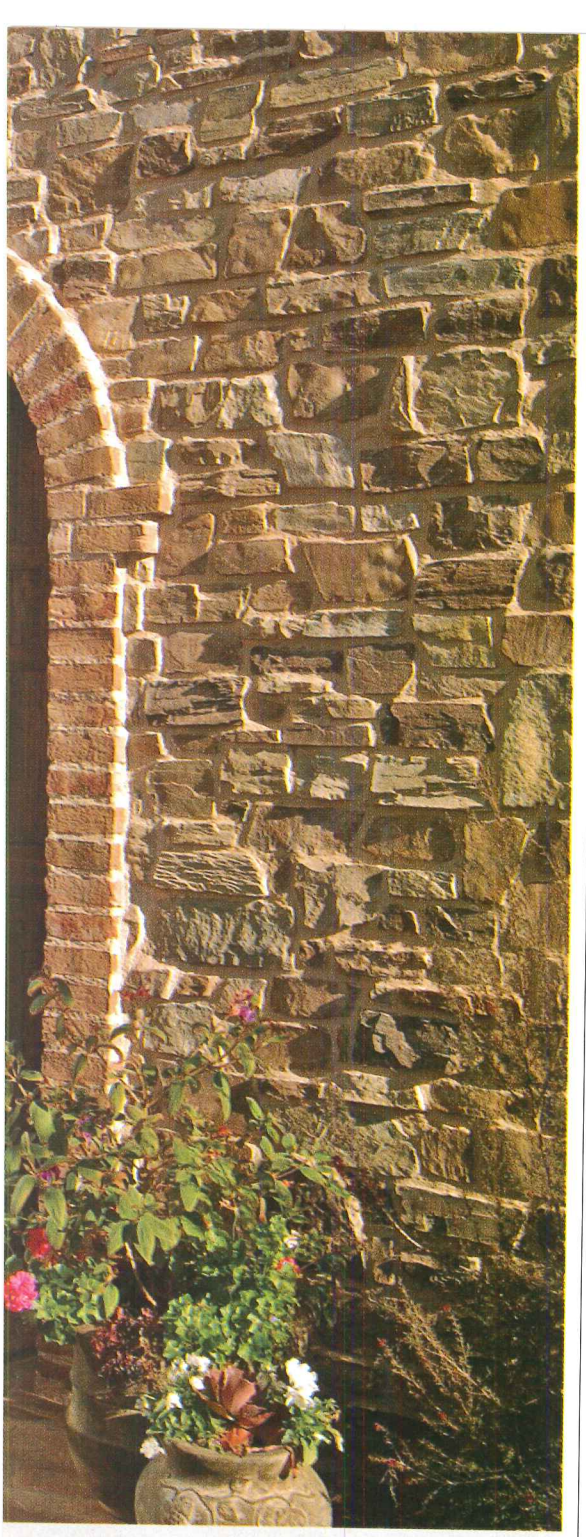

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Class have included architects, academics, post-graduates, and senior students from around the world. Glenn Murcutt, 2002 Pritzker Prize Laureate, leads the Master Class, a two-week residential studio program which will be held for one week at the Boyd Education Centre "Riverdale" (described as Murcutt's "master work"), on the banks of the Shoalhaven River, and for the second week at the University of Sydney School of Architecture. Visit www.ozetecture.org.

Landscape Design Intensive Program
New York City
July 11–August 12, 2005; July 25–August 26, 2005
A five-week program with landscape architecture and design professionals. At the New York Botanical Garden. Call 718/817-8845 or visit www.nybg.org.

The League of Historic American Theatres 29th Annual Conference
Kansas City, Mo.
July 20–23, 2005
The conference, *Creating a Legacy: Historic Theatres in the Middle of It All*, includes tours of historic theaters, professional development and educational sessions, peer-group discussions, the 2005 LHAT Awards Banquet, a silent auction, and the annual "Meet the LHAT Service Providers and Suppliers" reception. Visit www.lhat.org or call 410/659-9533 for more information.

Lecture: Cameron Sinclair: Design Like You Give a Damn
Washington, D.C.
July 21, 2005
Following last December's tsunami in the Pacific Ocean, the nonprofit aid organization Architecture For Humanity (AFH) raised more than $500,000 in donations and pro bono services to help rebuild critical infrastructure and community buildings in the disaster region. AFH founder Cameron Sinclair will discuss his recent travels to the devastated areas and the organization's response to global, social, and humanitarian crises through architecture and design. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Lecture: Richard Neutra and His Miller Home
Washington, D.C.
July 26, 2005
In 1936, St. Louis socialite Grace Lewis Miller commissioned internationally acclaimed architect Richard Neutra to design a winter house in the burgeoning desert resort of Palm Springs, California. Stephen Leet, associate professor at Washington University, will first briefly discuss Neutra's career and then trace the Miller House from conception to realization. He will also examine the complex relationship between the architect and client as detailed in their extensive and impassioned correspondence. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Lecture: Romantic Modernist: The Life and Work of Norman Jaffe, Architect
Southampton, N.Y.
July 23, 2005
Alistair Gordon, the Parrish Museum's Robert Lehman Curator and curator of the exhibition, will present an overview of this architect, his work on the East End, and his importance in 20th-century architecture. At the Parrish Museum. Call 631/283-2118 or visit www.parrishart.org.

CA/BOOM II: The State of Contemporary Design Now
Santa Monica, Calif.
July 28–31, 2005
This three-day event is dedicated to showcasing contemporary architecture and independent contemporary design. Professionals and design enthusiasts will be exposed to a stimulating array of contemporary and nontraditional architecture, interior design, furniture design, and landscape design through a provocative and entertaining mix of exhibition, guided home tours, and speaker conferences. At the Santa Monica Civic Auditorium. Call 310/306-6677 or visit www.caboom2.com.

Lecture: East End Dream House
Southampton, N.Y.
August 5, 2005
This talk with Alicia Longwell, Lewis B. and Dorothy Cullman Chief Curator, Art and Education, at the Parish Museum, will trace the history of domestic architecture in the Hamptons, focusing on the rise of the Hamptons beach house in the postwar period and the social and cultural trends that shaped this phenomenon. At the Parrish Museum. Call 631/283-2118 or visit www.parrishart.org.

GlassBuild America
Atlanta
September 13–15, 2005
The Glass, Window, and Door Expo will be held at

Dates & Events

the Georgia World Congress Center. For further information, visit www.glassbuild.com

Prague: 20th-Century Architecture in Transition
Prague
September 17–23, 2005
The AIA Committee of Design conference will explore design of buildings, sites, and the city in relation to political, social, cultural, and economic transitions and the permanence of the historic, climatic, and geographic environment. At the Hotel Alcron. For further information, visit www.aia.org.

Internship Conference: Designing Tomorrow's Architect
San Antonio
September 22–24, 2005
Seventy-five invited participants will include key leadership from each organization and a diverse group of stakeholders in the internship process. Cosponsored by the AIA and NCARB, the conference will be held at the historic Empire Theatre. For more information, visit www.designingtomorrowsarchitect.org.

ArtHouses: New Directions in Museum and Exhibition Design
Houston
September 28–October 26, 2005
A lecture series presented by the Rice Design Alliance. As the program for art has evolved over the past half-century, so has the design for spaces to exhibit that art. A new generation of architects has emerged to imaginatively address the challenges of designing for art of our time with bold and technically fascinating solutions that often include collaborations with the artists themselves. Lecturers include Brad Cloepfil of Allied Works Architecture, Tony Fretton of Tony Fretton Architects, Galia Solomonoff of OpenOffice: art + architecture collaboration, and David Adjaye of Adjaye/Associates. In Brown Auditorium at the Museum of Fine Arts. For additional information, call 713/348-4876 or visit www.rda.rice.edu.

Competitions

Shinkenchiku Residential Design Competition 2005
Deadline: July 13, 2005
A call for entries that explore new potential in architecture through the design of "the residence, a place for human dwelling." Two architects, Tadao Ando and Richard Rogers, will serve as judges. Visit www.japan-architect.co.jp/english/5info/topics/skcompe2005/skcompe2005.html.

2005 Brick in Architecture Awards
Deadline: July 15, 2005
Licensed architects are encouraged to submit their best work completed since January 1, 2000, in which brick is the dominant building material. Visit www.gobrick.com for further information.

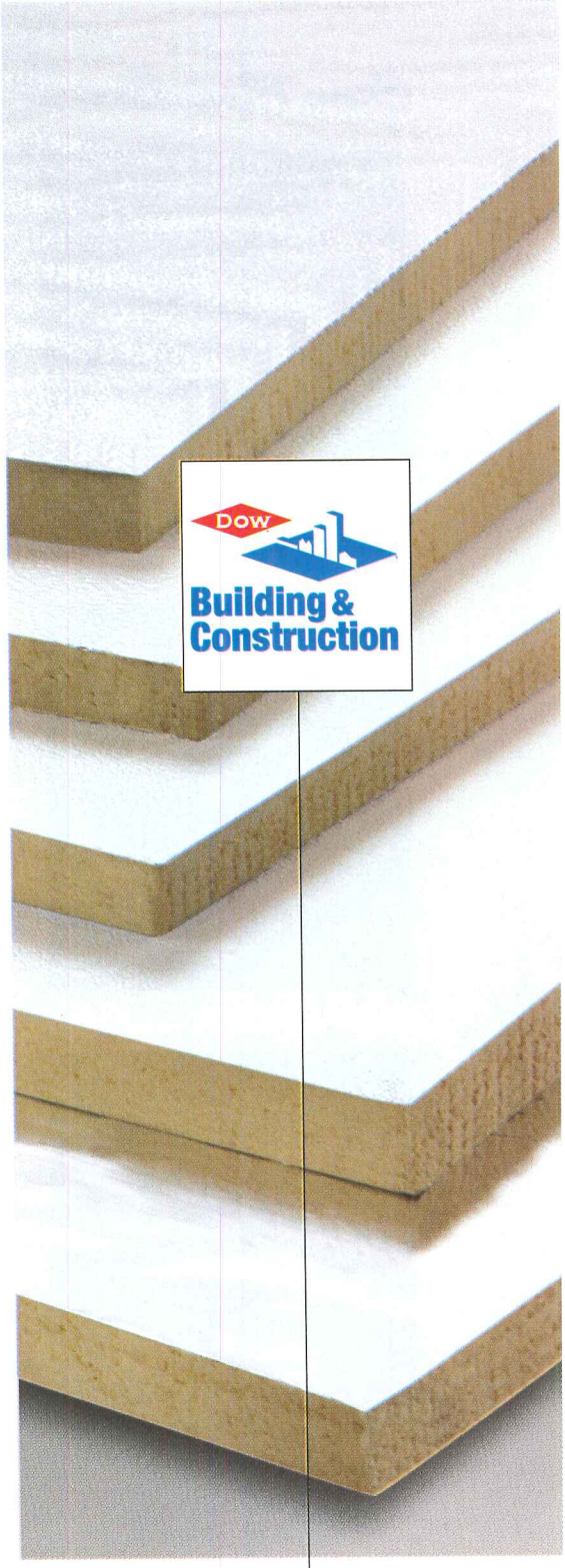
Unbuilt Architecture Design Awards
Deadline: July 19, 2005
Any architect, architectural educator, or architecture student anywhere in the world may submit unbuilt client-sponsored and/or theoretical projects. For information, visit www.architects.org/awards.

2005 Pinnacle Awards Competition
Deadline: July 29, 2005
Sponsored by the Marble Institute of America, the competition covers four categories, including commercial exterior, commercial interior, residential interior/exterior, and renovation/restoration. For further information, call 440/250-9222 or visit www.marble-institute.com.

Juried Photo Exhibits at Build Boston
Deadline: August 1, 2005
All New England architects, landscape architects, and interior designers who are members of the AIA, ASID, ASLA, or IIDA are eligible. Visit www.architects.org/awards.

Honor Awards for Design Excellence
Deadline: August 4, 2005
Any built project or any type anywhere in the world by any Massachusetts architect is eligible, and any architect anywhere in the world may submit any project built in Massachusetts. Visit www.architects.org/awards.

Boston Foundation for Architecture: Grants for Public Education Programs
Deadline: August 10, 2005
An invitation to educators, community groups, other organizations, and creative individuals to submit grant proposals for public-education programs in Massachusetts related to planning, design, and the built environment. Call 617/951-1433 or visit www.bfagrants.org.



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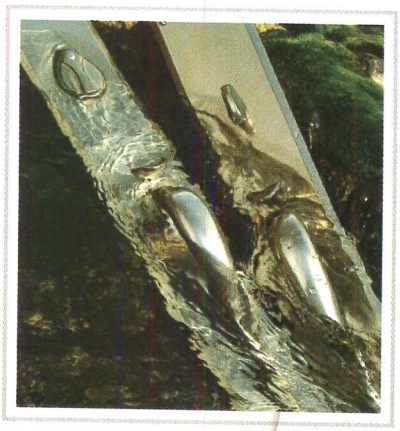

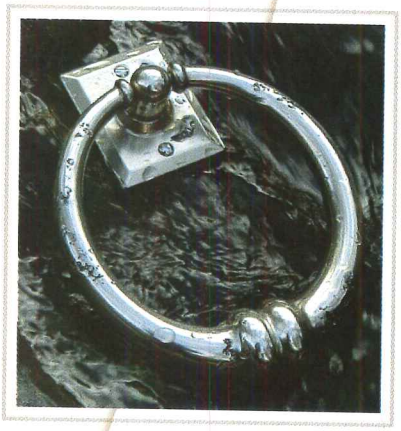

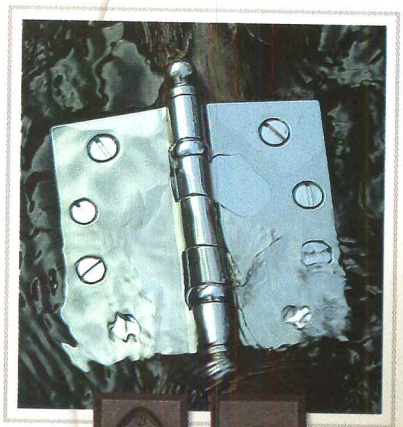

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The 22nd Antron Fiber Design Award

Deadline: September 16, 2005

This award program recognizes designers who are setting new standards of creativity in commercial interior design through the innovative use of carpet. Visit www.antron.invista.com/designwards.

Windscape: An Ideas Competition Envisioning Renewable Energy for Cape Cod

Deadline: September 30, 2005

The competition, led by a group of young designers, challenges participants to explore the notion of renewable energy and to better understand the environmental, visual, and other implications of the infrastructure of a wind farm. Visit www.architects.org/windscape.

2005 Source Awards

Deadline: December 2, 2005

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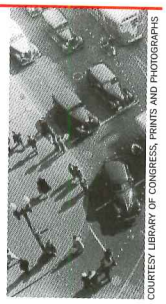
July 12
Louis Kahn: Building Art, Building Science
Thomas Leslie, AIA, assistant professor of architecture at Iowa State University

July 21
Cameron Sinclair Design Like You Give A Damn
Cameron Sinclair, founder of Architecture For Humanity (AFH)

July 26
Richard Neutra and His Miller House
Stephen Leet, associate professor at Washington University

exhibitions



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Program title: **"The Pick of the Sustainable Crop," Architectural Record (07/05, page 153).** 075EDIT7

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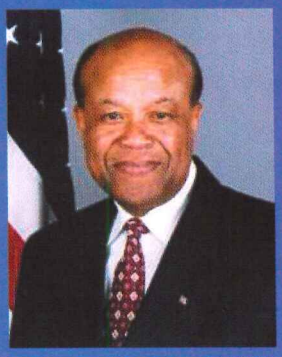

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Barbara Jackson, Construction Management Department, College of Architecture and Environmental Design, California Polytechnic State University
Rod Wille, Senior Vice President, Manager of Sustainable Construction, Turner Construction Co.
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AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

Program title: **"From Quarry to Residential Countertop," (07/05, page 175)**

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Program title: **"Green Product Evaluation Necessitates Making Trade-offs," (07/05, page 181)**

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Program title: **"Silence is Golden: Controlling Sound in Non-Residential Structures," (07/05, page 169)** 075SPONW

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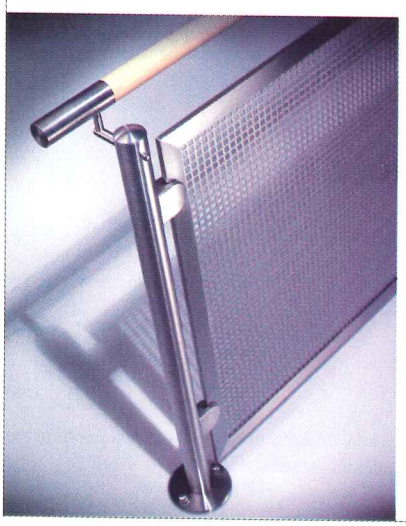

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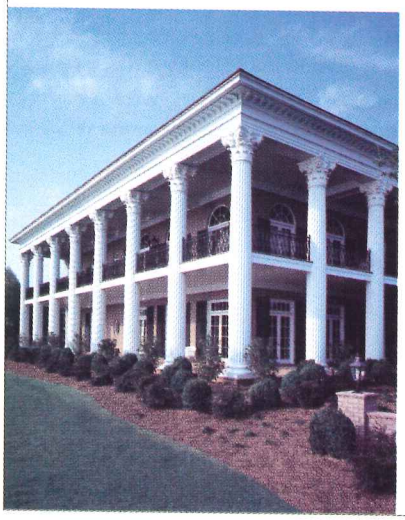

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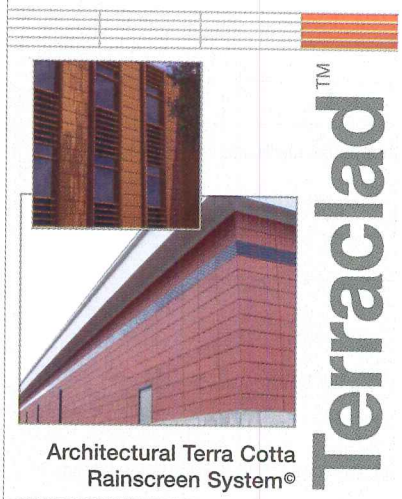

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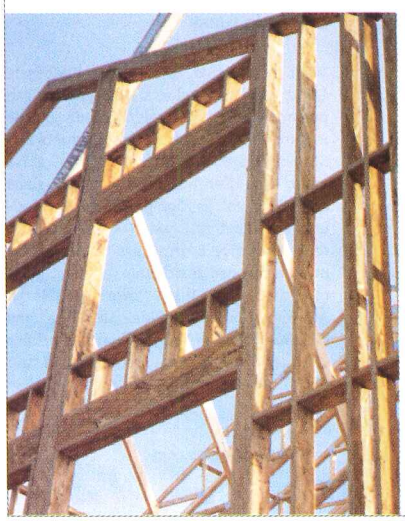

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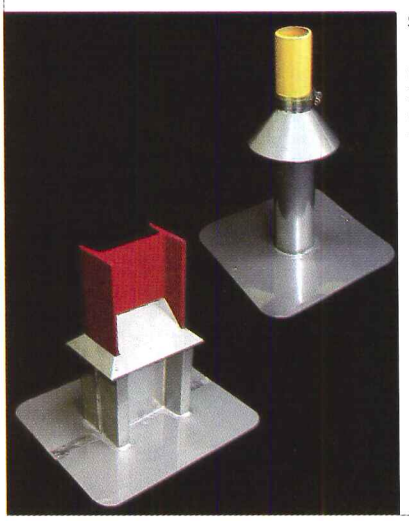

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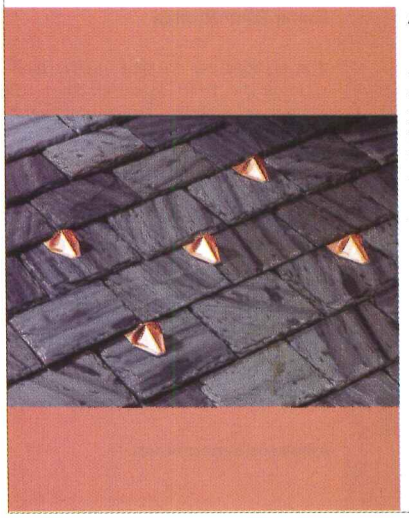

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With innovative technology, Oldcastle Glass® creates products that satisfy both performance and design needs. These include highly visual design products like Stackwall's™ soaring structural glass walls and Bentemp's® dramatic glass curves, as well as high performance products for blast mitigation solutions, and their exclusive StormGlass™, one of the most advanced hurricane-resistant glazing available. With over 40 North American locations, Oldcastle Glass® has the products you want, when and where you need them. Photo courtesy of the Clinton Foundation.

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www.oldcastleglass.com

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Window Covering Treatments

8 Doors & windows

MechoShade Systems, Inc.

With over 30 years experience, MechoShade® is one of the leading single-source manufacturers of complete integrated solar shading systems, controls and daylighting solutions. They offer a wide variety of control solutions for commercial and residential applications. From simple line voltage switches to networked, addressable, building-wide controls, MechoShade offers a variety of solutions including integration into 3rd party Lighting, BMS and A/V Systems. With over 100 visually transparent shade cloths in various weaves, densities and colors, they can meet any performance or design requirement.

718-729-2020
www.mechoshade.com

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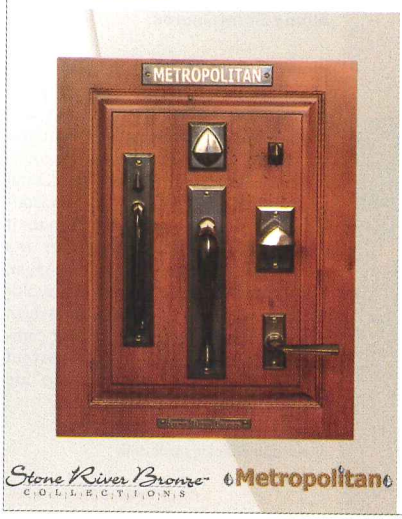
Hardware Accessories

8 Doors & windows



Stone River Bronze

The Metropolitan Designer Series hardware options cover doors, windows, and cabinet accessories. Design highlights include unique casting detail, multiple finishes and texture options, matching bronze screws, strikes, and faceplates, and bronze template mortise hinges. Their Window & Patio Door program offers the most comprehensive and authorized hardware options in the industry. Beyond the cosmetic detail, Stone River Bronze products offer several patent pending features and a lifetime warranty. Please visit StoneRiverBronze.com.

www.stoneriverbronze.com

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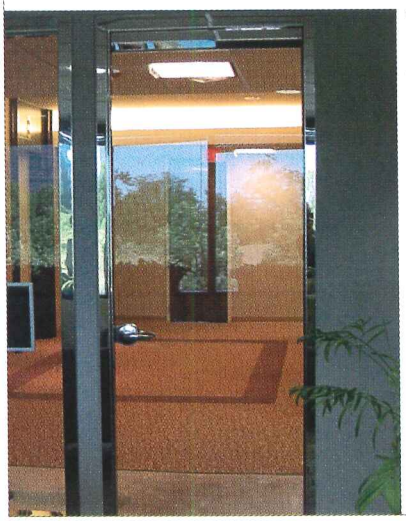
Fire-Rated Doors

8 Doors & windows



VETROTECH Saint-Gobain

Architects want creative freedom and maximum transparency, while at the same time respecting fire resisting building regulations. Vetrotech Saint-Gobain introduces the world's first 20-minute ALL-GLASS fire-rated door. Manufactured with SGG PYROSWISS EXTRA glass technology, furnished with a complete hardware package and available in a variety of finishes. In tempered safety glass (CPSC CAT II), two sizes are available—3-ft. by 7-ft. and 3-ft. by 8-ft. in 3/8-in. or 1/2-in. glass thickness. Contact VETROTECH Saint-Gobain at their Web site.

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www.vetrotechUSA.com

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Granite & Limestone Materials

9 Finishes

Ancor Granite Tile Inc.

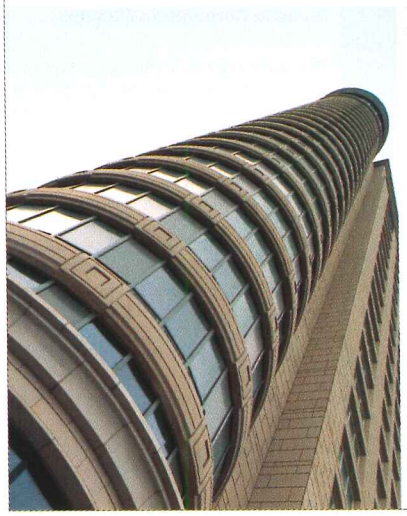
Ancor Granite Tile is now pleased to afford you the design freedom and distinction you have been denied to date. Think of custom sizes: 12-in. by 16-in., 12-in. by 18-in., 16-in. by 24-in. in over 100 granite and limestone materials. Ancor is pleased to offer tiles up to 24-in. by 24-in. and sizes in between from 3/8-in. to 1-1/4-in. in thickness, in a variety of finishes from high polish to matte, textured and antiqued. Put their 20 years' of specialization to work for you. Usher in a new age of stone design. Contact Ancor to discuss an upcoming project idea; they look forward to hearing from you.

www.ancor.ca

Circle Reader Service #171

Windows

8 Doors & windows



Wausau Window and Wall Systems

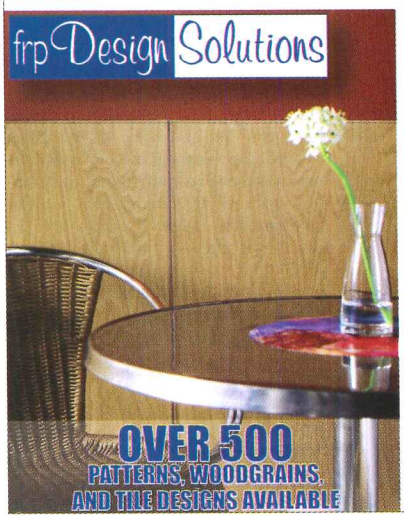
Designed by Lucien Lagrange, Chicago's 840 North Lakeshore's luxury high-rise presents a distinguished silhouette on the skyline. Its stone façade is dotted with Wausau's 4250 Series windows and features a castle-worthy, window-encircled rotunda. The windows' distinctive aesthetic detailing also delivers high-performance comfort withstanding the Windy City's demanding environmental challenges.

877-678-2983
www.wausauwindow.com

Circle Reader Service #169

Decorative Wall Panels

9 Finishes



Kemlite Company

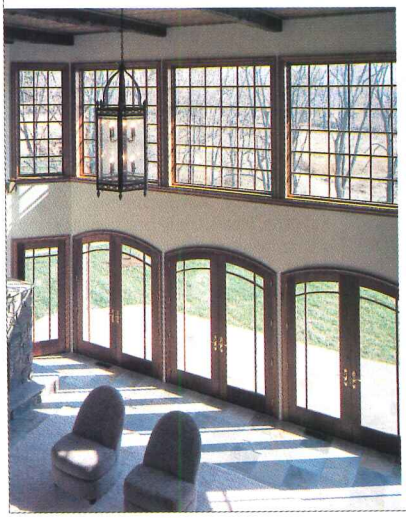
frpDesign Solutions is a family of decorative wall panels that provides an alternative to traditional wall coverings such as ceramic tile, wood paneling or vinyl wall coverings. Offering both functionality and design, products in the frpDesign Solutions line are made of a moisture-resistant frp panel with a decorative finish that includes myriad colors, patterns, and woodgrains, as well as a tile-look panel. Available with over 500 hundred choices, frpDesign Solutions is easy to install and maintain. For more information, visit Kemlite on the web.

888-332-6377
www.frpdesignsolutions.com

Circle Reader Service #172

Wood Interior Windows & Doors

8 Doors & windows



Weather Shield Windows & Doors

Engineered with unique features and built for unparalleled performance, the Weather Shield Legacy Series is simply one of the best window and door lines available for custom and luxury homes. Available in tilt double-hung, casement, awning, and direct-set windows and French doors, the premium windows feature elegant wood interiors in a variety of wood species from Weather Shield's Custom Wood Interiors Collection™.

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www.weathershield.com

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Decorative Finishes

9 Finishes

Nevamar Company, LLC

Mysterious, sexy, and illuminating, new Nevamar Manhattan laminate actually appears to emit light from within. With their exclusive Armored Protection™ Surface, it meets all NEMA performance standards, so it's suitable for horizontal and vertical applications. Available in three natural metallic hues, Manhattan is among the 18 new additions to the broad Nevamar line.

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Cork & Linoleum Floating Floors

9 Finishes

Nova Distinctive Floors

Nova Cork and Linoleum Floating Floors embrace design, function and environmental consciousness. In 1-in. by 3-in. 'klick' (glueless) system planks, Nova Distinctive Floors' 2005 line boasts 28 designer patterns in cork and the bold 9 linoleum colors with accent tiles. Harvested from forests that meet environmental, social and economic standards, Nova Cork, Linoleum, and Underlayment products have received the "Green Spec" distinction from Building Green, Inc as well as FSC and SCS certifications and offer a 20-year residential and 10-year commercial warranty.

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www.novafloorings.com
AIA booth 1384

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Modular Sign Systems

10 Specialties

APCO Graphics

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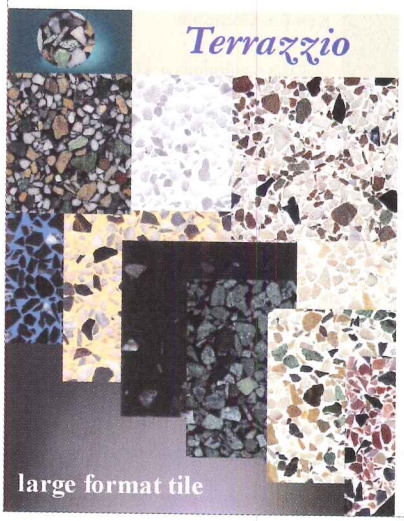
www.apcosigns.com

Circle Reader Service #177

Authentic Terrazzo

9 Finishes



Surface Elements

Terrazzio is an Authentic Terrazzo used for floors, counter tops and as an exterior or wall panel. Terrazzio is first manufactured as a 4-ft. by 8-ft. by 1/4-in. bisque then polished and cut to your specifications. With twelve 'time tested' traditional colors, and twenty-two vibrant contemporary colors, Terrazzio has the beauty and durability of traditional terrazzo with today's warm tones and refreshing colors. Terrazzio is ideal for schools, dazzling 'up scale' restaurants and retail stores.

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www.Terrazzio.com

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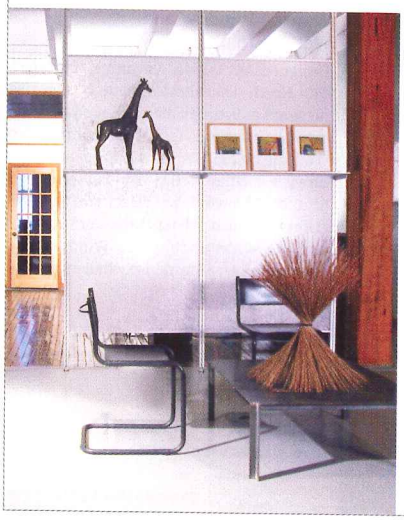
Compression Support Pole

10 Specialties



Rangine Corporation / Rakks

The latest addition to the Rakks family of shelving hardware is the PC4 floor-to-ceiling compression support pole. Shown here with Rakks shelf support brackets and extruded aluminum shelf, this pole features threaded compression mounts and can accommodate floor to ceiling heights of up to 12-ft. When properly anchored to the ceiling, this pole can function as both a room divider and shelving system—perfect for lofts and apartments.

www.rakks.com

Circle Reader Service #178

Ceramic Floor Tiles

9 Finishes

Viva Ceramica

TEXTURA tiles, where colors meet the purest clay, forged and pre-compacted in a higher than normal thickness (11-mm). Complete penetration between body and color grants lasting optical results, maximum ultimate tensile strength and absolute resistance to acids, scratches, frost and dirt. Their completely environmentally-friendly manufacturing process is assured by the ISO9001 quality system. The TEXTURA series is guaranteed 20 years for private homes and 10 years for public areas. Proudly manufactured in Italy.

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Textiles

12 Furnishings

Carnegie

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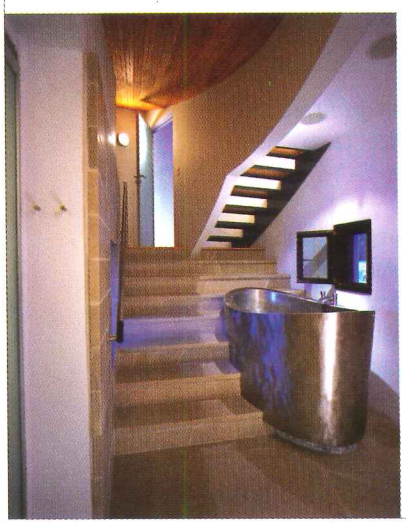
Metal Plumbing Fabrication

13 Special construction



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Diamond Spas specializes in metal plumbing fabrication. The DSI line consists of soaking baths, whirlpool baths, Japanese baths, shower pans, lavatories, kitchen sinks and spas/hot tubs. What sets Diamond Spas apart from other manufacturers is their ability to customize. Every bath fixture or spa is designed and built specifically for the client. Your visions become reality when Diamond Spas is part of your project. DSI has the talent and expertise to create artistic, sophisticated, highly durable products for the upscale home.

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Elevator Door Facings

14 Conveying systems

Gage Corporation, Intl.

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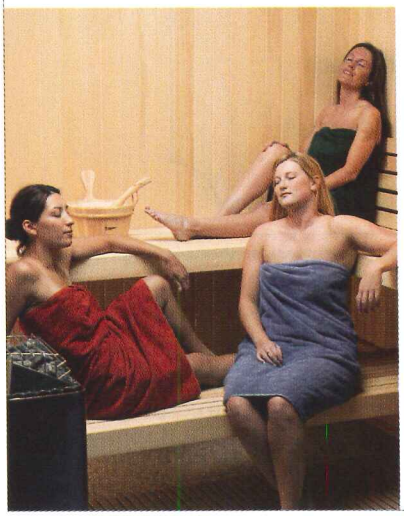
800-786-4243
www.eco-nor.com

Circle Reader Service #183

Saunas

13 Special construction



Finlandia Sauna Products, Inc.

Finlandia Sauna has manufactured exclusive and authentic saunas since 1964. Finlandia offers precut sauna packages and modular sauna rooms as an affordable luxury that can be included in any remodel or new construction. The company markets four all-clear western softwoods and is the only manufacturer to use 1-in. by 4-in. paneling, instead of the cheaper 1/2-in. by 4-in. material used by others. Finlandia's packages include all room parts, a choice of a Finnish made electric heater, a prehung door with choice of glass, and all necessary accessories.

800-354-3342
www.finlandiasauna.com

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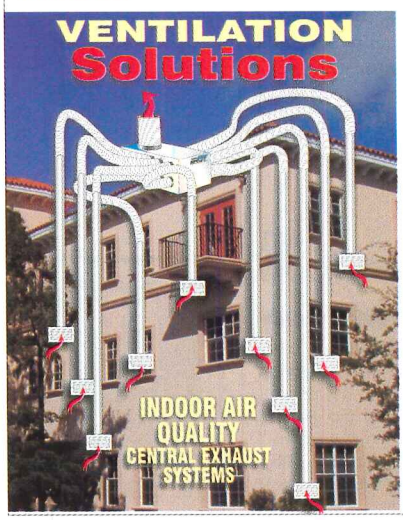
Exhaust Ventilation Systems

15 Mechanical



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14 Conveying systems

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16 Electrical

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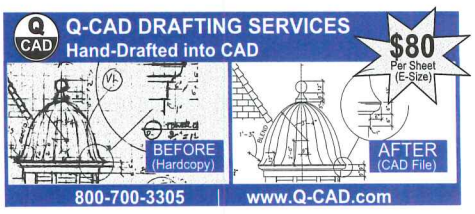

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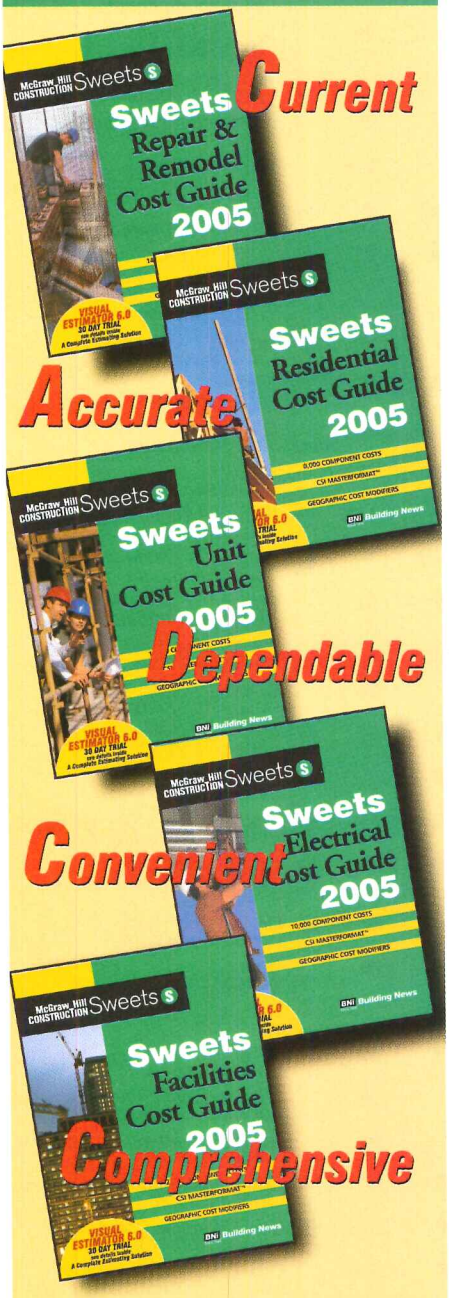

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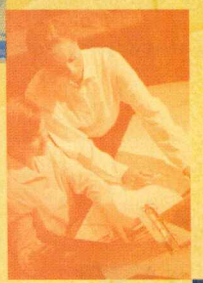

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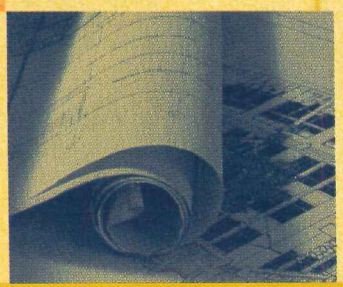

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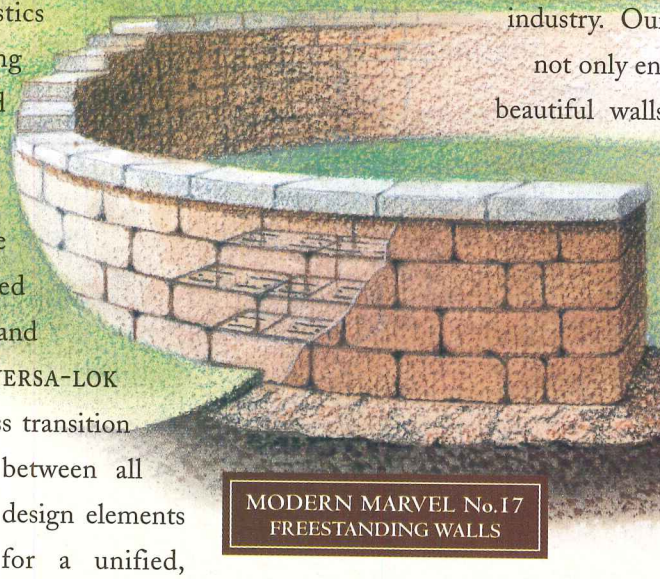

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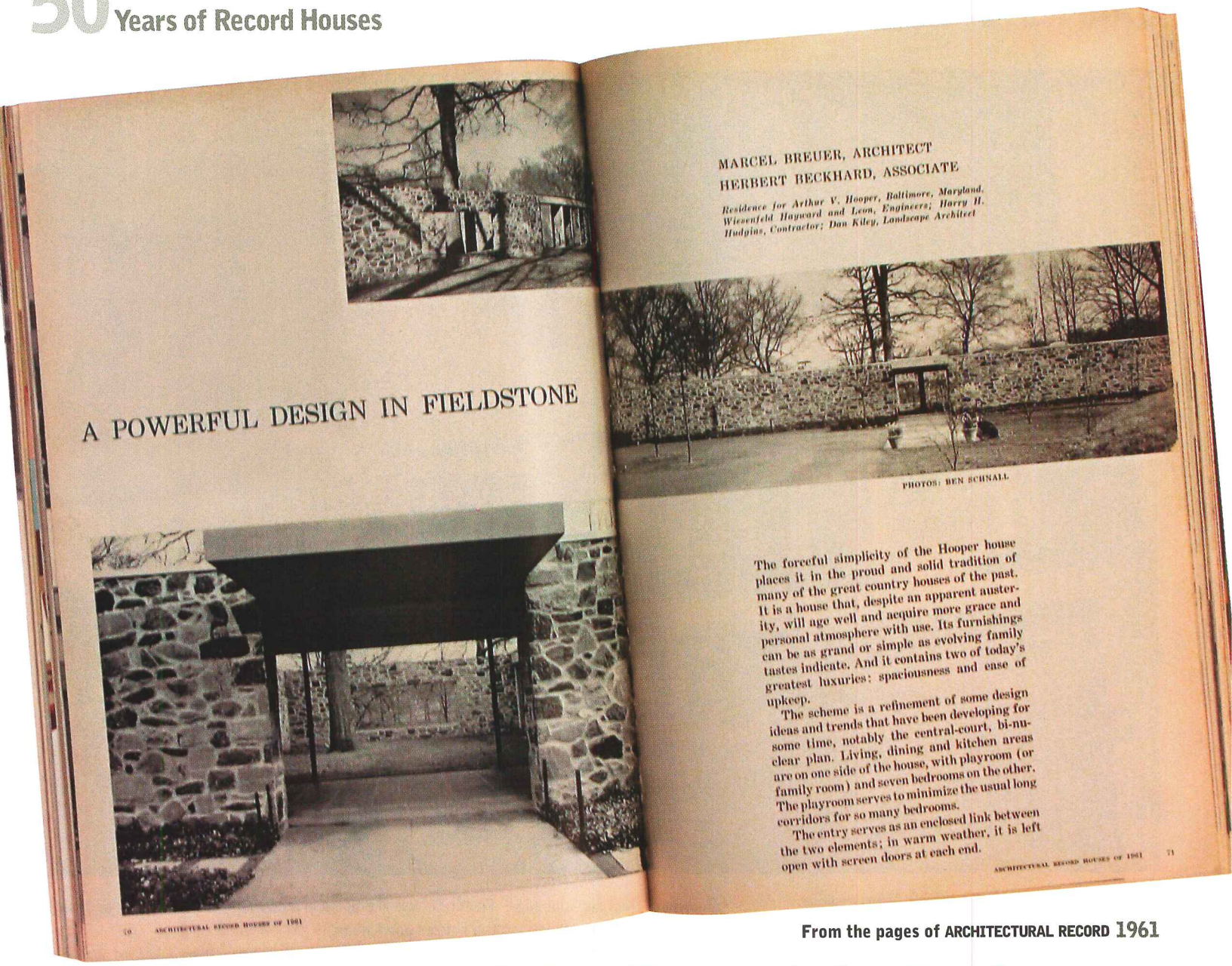

A POWERFUL DESIGN IN FIELDSTONE

MARCEL BREUER, ARCHITECT
HERBERT BECKHARD, ASSOCIATE

Residence for Arthur V. Hooper, Baltimore, Maryland. Wiesenfeld Hayward and Leon, Engineers; Harry H. Hudgins, Contractor; Dan Kiley, Landscape Architect

PHOTOS: BEN SCHNALL

The forceful simplicity of the Hooper house places it in the proud and solid tradition of many of the great country houses of the past. It is a house that, despite an apparent austerity, will age well and acquire more grace and personal atmosphere with use. Its furnishings can be as grand or simple as evolving family tastes indicate. And it contains two of today's greatest luxuries: spaciousness and ease of upkeep.

The scheme is a refinement of some design ideas and trends that have been developing for some time, notably the central-court, bi-nuclear plan. Living, dining and kitchen areas are on one side of the house, with playroom (or family room) and seven bedrooms on the other. The playroom serves to minimize the usual long corridors for so many bedrooms.

The entry serves as an enclosed link between the two elements; in warm weather, it is left open with screen doors at each end.

ARCHITECTURAL RECORD HOUSES OF 1961 71

70 ARCHITECTURAL RECORD HOUSES OF 1961

From the pages of ARCHITECTURAL RECORD 1961

Going Beyond the Bauhaus

By Suzanne Stephens

PHOTOGRAPHY: © WALTER SMALLING

The houses that Marcel Breuer designed in the several decades after he arrived in the United States in 1937 stand out as masterful examples of the stringent principles of the Bauhaus, where he was both a student and teacher. Once in America, Breuer began to demarcate Bauhaus-style open plans and taut planes with local, natural materials, as seen by a house in Baltimore, Maryland, built in 1959–60 for Arthur Hooper, a lawyer, and his wife, Edith, a patron of the arts. With his associate Herbert Beckard, Breuer created a spectacularly long, low house of Maryland fieldstone, in a wooded sanctuary at the city's edge. The rectilinear, 5,000-square-foot house features a central, square courtyard that separates public (living, dining, kitchen) areas from private spaces (a cluster of six bedrooms and a family room). In this mostly one-level structure, stone walls and lally columns support the steel beams and wood joists of the flat roof, while the floors are concrete. Breuer took advantage of the grade change to tuck in a lower level for stables for the Hoopers' horses, a caretakers' apartment, and a garage. "I loved growing up in the house," says a daughter, Queene Hooper

This page: An opening in the rear wall of the courtyard, directly on axis with the entrance path, frames a view of the woods (top). Stone walls alternate with glass to partition spaces (above and right).

Previous page: At the rear of the house, glazed walls embrace the view.

(continued from previous page) Foster. "It was like being in a country club, with quick and easy access to the outdoors, and to the stables downstairs."

The house was put on the market in 1995, after Edith Hooper, by then a widow, passed away. But first, Queene's husband, Jonathan S. Foster, a New York architect, renovated it. Foster found the fieldstone walls to be in peak condition owing to the fact that Breuer had brought Italian masons to Baltimore to the erect them. Nevertheless, Foster needed to rebuild single-pane sliding glass doors. He also replaced the discolored acoustical-tile ceilings with white Sheetrock and substituted carpeting for vinyl-tile flooring in areas not surfaced in blue-stone. Fortunately, a buyer showed up in 1996 who was sympathetic to the architecture. Dr. Richard North, a neurosurgeon whose father, William North, was an architect in New York, explains, "I was attracted to the way the house brought in the outdoors with floor-to-ceiling glass, and framed the views of the lake." He made only a few adjustments to update the house for his family's needs—such as converting the stables into a garage, installing air-conditioning, and drilling holes in the concrete slab floor for cable and Internet access.

Even though Edith Hooper's art collection (with works by Calder, Noguchi, Klee, Johns, and de Kooning) had been given to museums and the furniture dispersed, a lot of Breuer built-in cabinets and shelves remained. North searched for furniture with a '50s Modern design look, along with art that goes with that period. "We wanted a place where Mrs. Hooper would feel at home if she were to walk back in," he says. ■