

# ARCHITECTURAL RECORD

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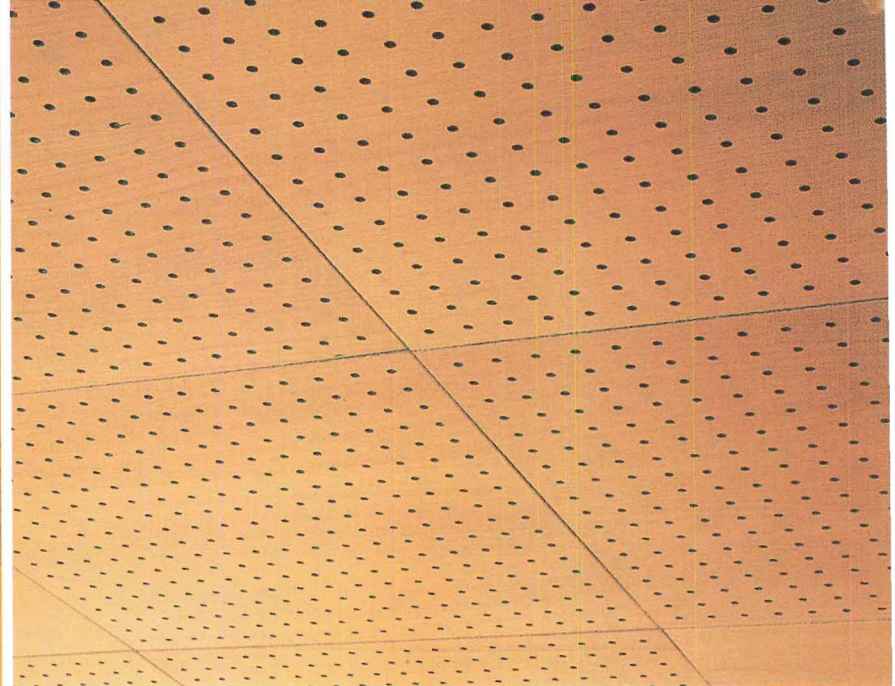
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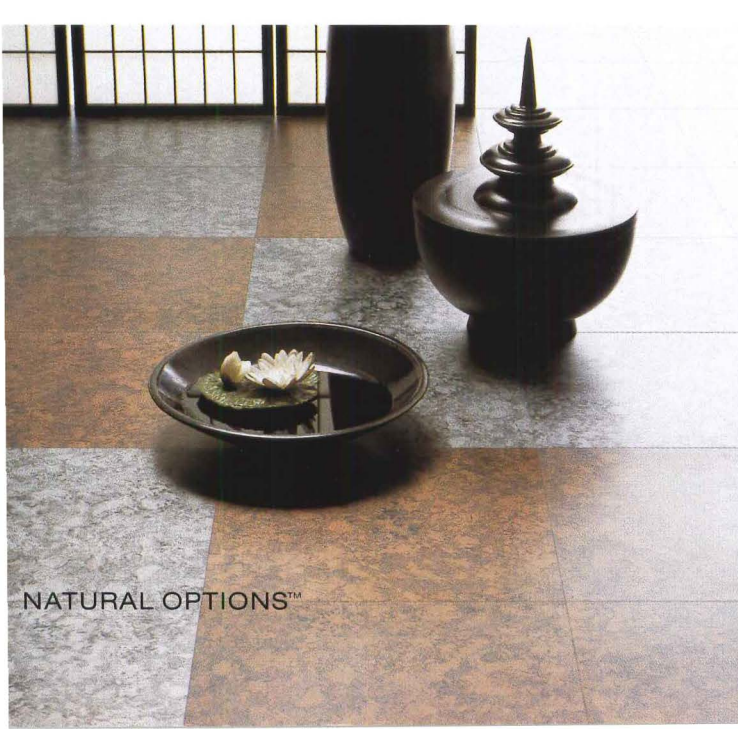
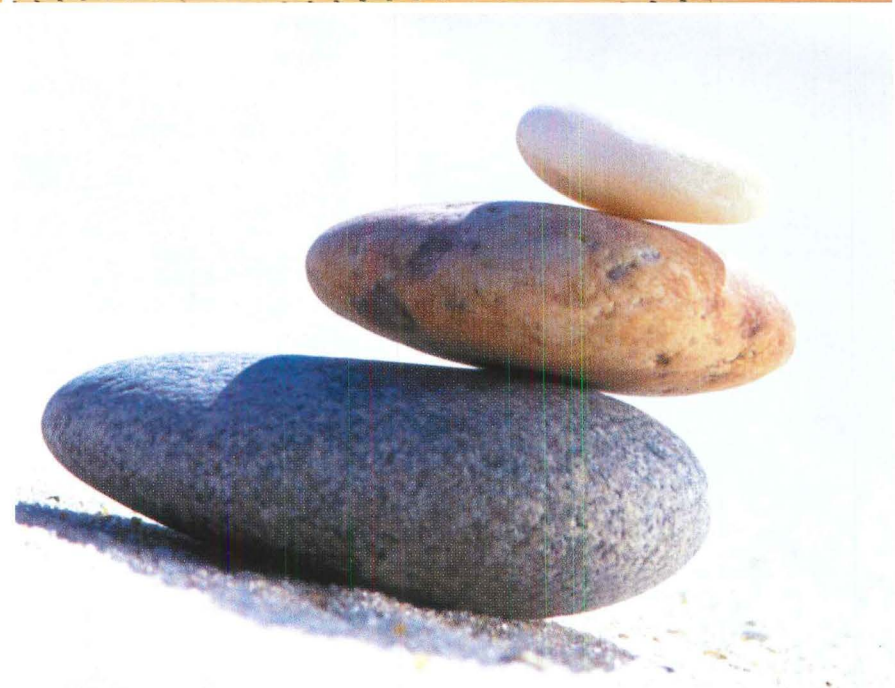




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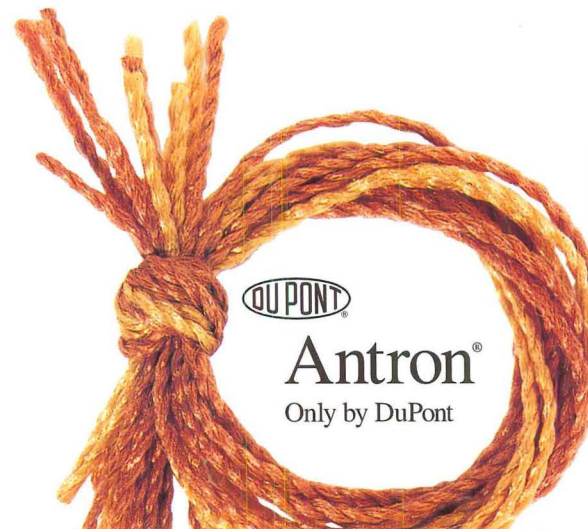
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light,

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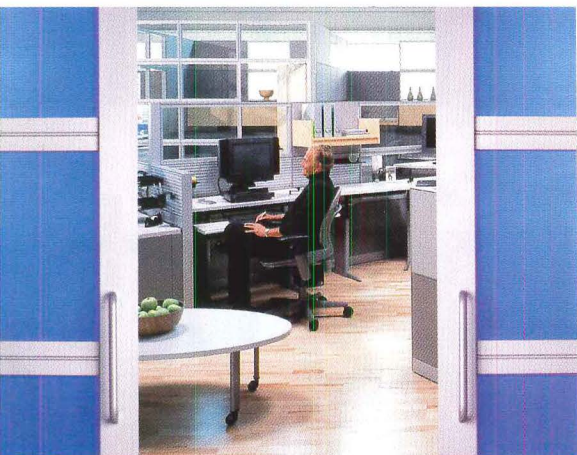


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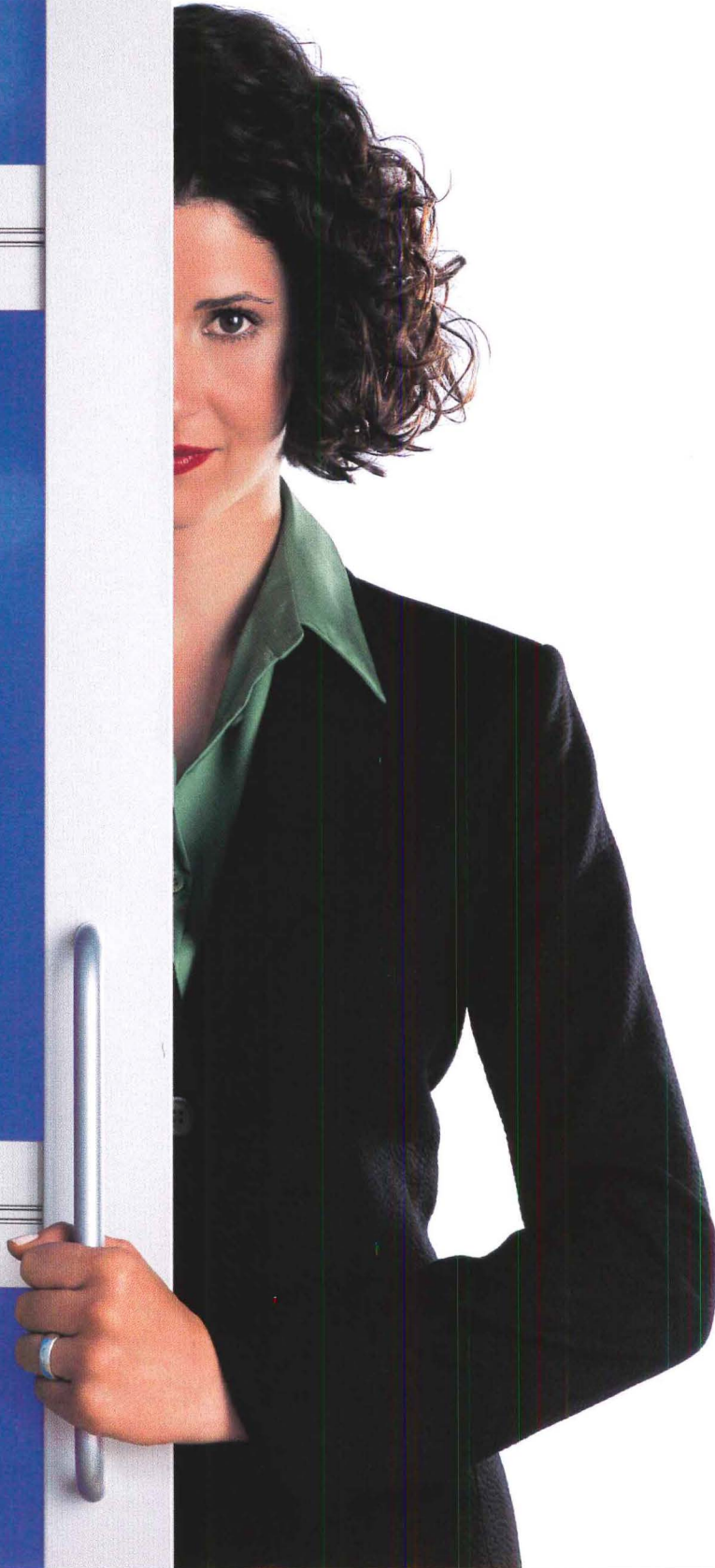
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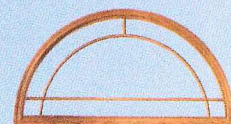
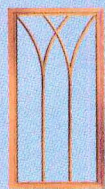
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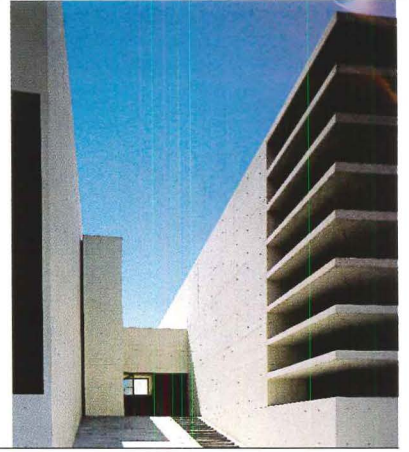
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# ARCHITECTURAL RECORD

## 06.2002

**On the Cover:** *The Gallery of Horyuji Treasures. Photograph by Shinkenchiku Sha*  
**Right:** *Catalunya Congress Center, by Carlos Ferrater. Photograph by Alejo Bagué*



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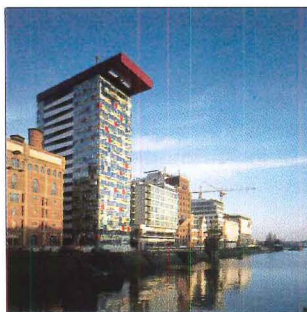
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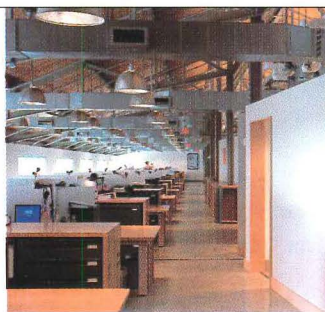
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BTS: Offices



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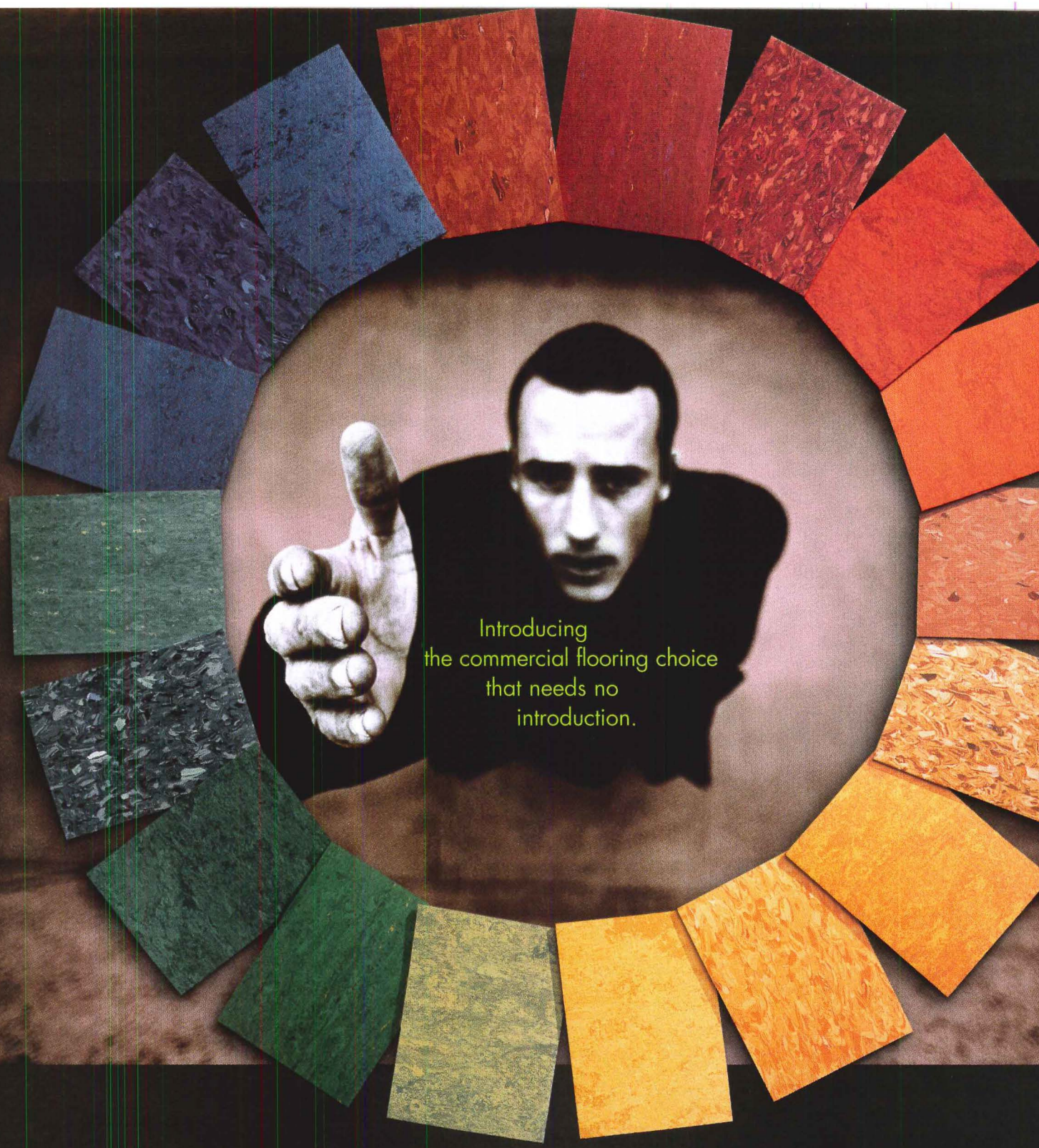
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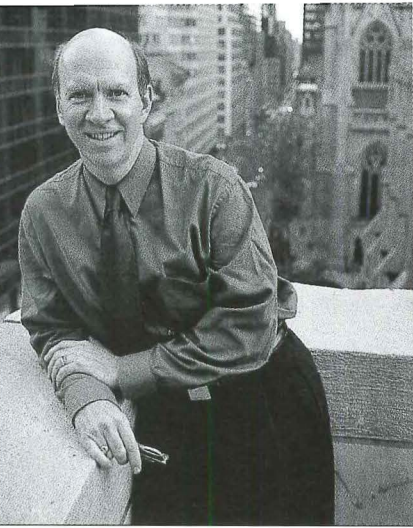
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# Is Idealism Dead?

## Editorial

By Robert Ivy, FAIA

**I**f you didn't know better, to talk to some architects you might think that idealism had vanished from the architectural scene. After years of wide-eyed innocence, many of us have become savvy to the markets and worldly-wise. Perhaps too shrewd. Along the way, some design professionals have even dropped the mention of architecture from their names and marketing materials, recasting themselves as branding experts who happen to build. While diversification, even perceived financial necessity, might dictate such an identity shift, we must wonder if we have entered a tougher new architectural era.

Architect Richard Swett, FAIA, the former U.S. ambassador to Denmark and a former member of Congress, thinks otherwise. Swett has used his own skills, including the ability to program complex information, to synthesize diverse views, and to develop plans, as managerial tools for organizations like the U.S. State Department. He believes that other architects should use their talents to improve their communities. This spring, he participated in a revitalized Leadership Institute, formed by a partnership of the AIA and Georgetown University in Washington, D.C. This small group of architect/leaders from across the country found that leadership traits can be learned and transmitted to others, shared inside and outside firms.

Like Ambassador Swett, we architects, by nature and by training—almost by definition—listen carefully, and we care. Despite adversity or stringent markets, our work begins in hope and is sustained by optimism: The long life of a project, translating ideals into concrete reality, may require years of support; architecture demands it. The personality of caring, however, varies from generation to generation. The generation that reads Nylon today shades its hopes in cooler terms than the sixties generation fed by Joan Baez's plaintive arias for social responsibility and change. The X and Y crowd have found their own causes and advertise them on the Web.

For anyone with doubts, meet contemporary leader and 28-year-old architect, Cameron Sinclair. In 1999, this architect founded Architecture

for Humanity, a "volunteer nonprofit organization set up to promote architectural and design solutions to global, social, and humanitarian crises." In a world fraught with problems, Sinclair designs his way toward change. Architecture for Humanity's first venture, transition housing for refugees returning to Kosovo, launched a competition that attracted over 250 entries from 30 countries, resulting in an international exhibition that toured in 4 countries and raised over \$80,000 for charity. Two of the program's winning proposals have already been constructed; two more are underway.

Leaders do not stand still. Currently, Sinclair's group is sponsoring a competition for a mobile HIV/AIDS clinic for Africa. Because of the magnitude of the pandemic (in sub-Saharan Africa, 6,000 die each day; 14,000 more are infected) and the need for mobile facilities, Architecture for Humanity is attracting international attention and support and encouraging plans to build transportable clinics for education, prevention, and treatment. By advertising the program on the Web at [architectureforhumanity.org](http://architectureforhumanity.org), Sinclair hopes to attract entrants by the November 1, 2002, deadline, allowing the jury to announce its selection by World Aids Day, December 1.

Architecture for Humanity represents the finest of the new breed of architectural leadership, employing architectural skills and directing them for the larger good. Active publicity has resulted in support for the organization from established leaders in the profession (prominent names serve on the organization's board) and from the public. Committed, unapologetically architectural in name and mission, Architecture for Humanity stands up for people in need. It demonstrates a quality of leadership, providing renewed appreciation for architecture and winning respect and trust. Who ever said idealism was dead?



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# Letters

## “The Case for Tangible Reality”

On the cover of the December 2001 issue of RECORD was a beautiful computer-generated drawing of a building that floated with no context and almost no sense of materiality. This stunning drawing led me to conjecture that our profession's current fascination with the computer's almost magical ability to manipulate spaces may have blinded us to the reality of the physical and emotional circumstances that contribute to the making of architecture. It is my belief that in the long run we will find a deeper and more profound use of the computer and will use it as a tool for creating designs that more thoroughly reveal and reflect the nature of our visual and emotional experiences.

I have written this letter not because I think that the views expressed are the only way to consider the making of buildings, but because it is one way; one that is rich in design opportunities, that is applicable to most of our building types and locations, and that the architects doing the everyday buildings of this world should know, if not embrace. I learned this view of the world from my teacher, Louis Kahn, and feel obligated to pass on what, to me, is still a rich and varied path.

—Jim Cutler, FAIA  
Seattle, Wash.

*These comments were excerpted from Jim Cutler's essay, "The Case for Tangible Reality," that appears on our Web site. Read it in the In the Cause of Architecture section at [www.archrecord.com/inthecause](http://www.archrecord.com/inthecause).*

## Not a-mused

I was just leafing through your April issue and was brought to my feet cheering when I read the letter from Craig Purcell regarding “the silencing of the muse” [Letters, page 18] and the lack of drawing ability among the younger generation of

architects. While I may be a humble mechanical engineer, I totally sympathize, and have experienced the same erosion of artistic capability and general drawing quality over the past 10 years.

CAD drawings may look really nice and consistent, but what about the quality of the information? It is my opinion that the quality of information has gone downhill in many ways, since the drawing is now produced on a 15-inch screen, and it is difficult, if not impossible, to see the “big picture” of a full-size drawing laid out in front of you. Not to mention that the drawing now consists of colored lines input by CAD operators, who may have a good understanding of the software but don't realize they are drawing 3D material in 2D.

I firmly believe that a mandatory prerequisite to taking a CAD course should be to spend one year “on the boards” doing manual drafting in order to understand how and why drawings are created and used.

I am trying to initiate some feedback to our local technical schools that push out these keyboard punchers, to try and teach manual drafting and teach these people “what is a drawing” again.

—Geoff McDonell

Earth Tech  
Burnaby, B.C.

## Waiting for winning stadiums

I would tend to agree with Elizabeth Harrison Kubany [Building Types Study, May 2002, page 245] that the over-nostalgic design approach of many of this country's newer sports venues is unfortunate. In their defense, however, both Camden Yards and Coors Field—and, especially, San Francisco's Pacific Bell Park (located near my office and my home)—achieve a much better integration with their surroundings than any of the projects featured in last month's article.

The scale and articulation of the facades wrapping the new wave of “retro” ballparks echoes that of the surrounding urban fabric, and consequently these buildings feel like an intrinsic part of the cities in which they are located. Nevertheless, PacBell Park fares poorly when compared to Mario Botta's San Francisco Museum of Modern Art located four blocks away: Both use brick extensively, but whereas the former uses it in a cartoonish way, the latter uses it in a striking and contemporary manner.

It is unfortunate that no one in the architectural community has risen to the challenge of designing a stadium that embodies sound urban design principles without resorting to historicist architectural clichés. It is equally unfortunate that the more contemporary expression characterized by the four projects you feature seems to come hand in hand with a desire on the part of the architects to create object-buildings divorced from their context.

—Yann Taylor

Field Paoli Architects  
San Francisco

## Graves matters

The news brief “Graves gets playful in Minneapolis” [April 2002, page 41] is a sad joke. While the words describe the work for the Childrens Theater Company (CTC) as an “expansion to a 1972 white brick building by Kenzo Tange,” the drawings show a free-standing building. In fact, the Tange effort was an addition to the original 1912–1914 Beaux Arts building by McKim, Mead and White (source: *A Guide to the Architecture of Minnesota*, by Gebhard and Martinson).

I would hope that any architecture student presenting an out-of-context design like this would be admonished by the jury and graded appropriately for lack of con-

sideration for context.

The proposed project has met with local criticism and has generated a recent defensive editorial-page article in the Minneapolis *StarTribune* from the director of the theater. The public sentiment seems to be that Graves is world-class and he could do better (i.e., we've seen it before). The director's editorial essentially said, “But it has a really good floor plan.”

It should come as no surprise to anyone that one of the largest contributors to the CTC is Graves's toilet-brush-producing patron Target Corporation (source: phone call to development office of the CTC, who said Target is in the highest donor group at \$50,000 and above).

P.S. Even though I'm a huge Kenzo Tange fan, I think he was out sick the day his Minneapolis work was designed. His St. Mary's Cathedral and his Olympic stadiums, both in Tokyo, are fantastic.

—Charles Levin

Charles Levin Architects  
Minneapolis, Minn.

## Corrections

In the Neue Galerie article [May, 2002, page 222], Serge Sabarsky's name was misspelled. Also in May [Digital Architect, page 289], Branko Kolarevic's name was misspelled. In the May article about Gannett's headquarters [page 212], development manager Hines was omitted from the credits, as was curtain-wall consultant R.A. Heintges Architects. Also, Jamie Carpenter was not involved in the project as reported. In the April 2002 issue's table of contents [page 11], the author of the Beverley House story should have been listed as Thomas S. Hines. Also in April [Record Houses, page 132], photographer Nicolas Borel's name was misspelled.

Please e-mail letters to editor-in-chief Robert Ivy at [rivy@mcgraw-hill.com](mailto:rivy@mcgraw-hill.com).



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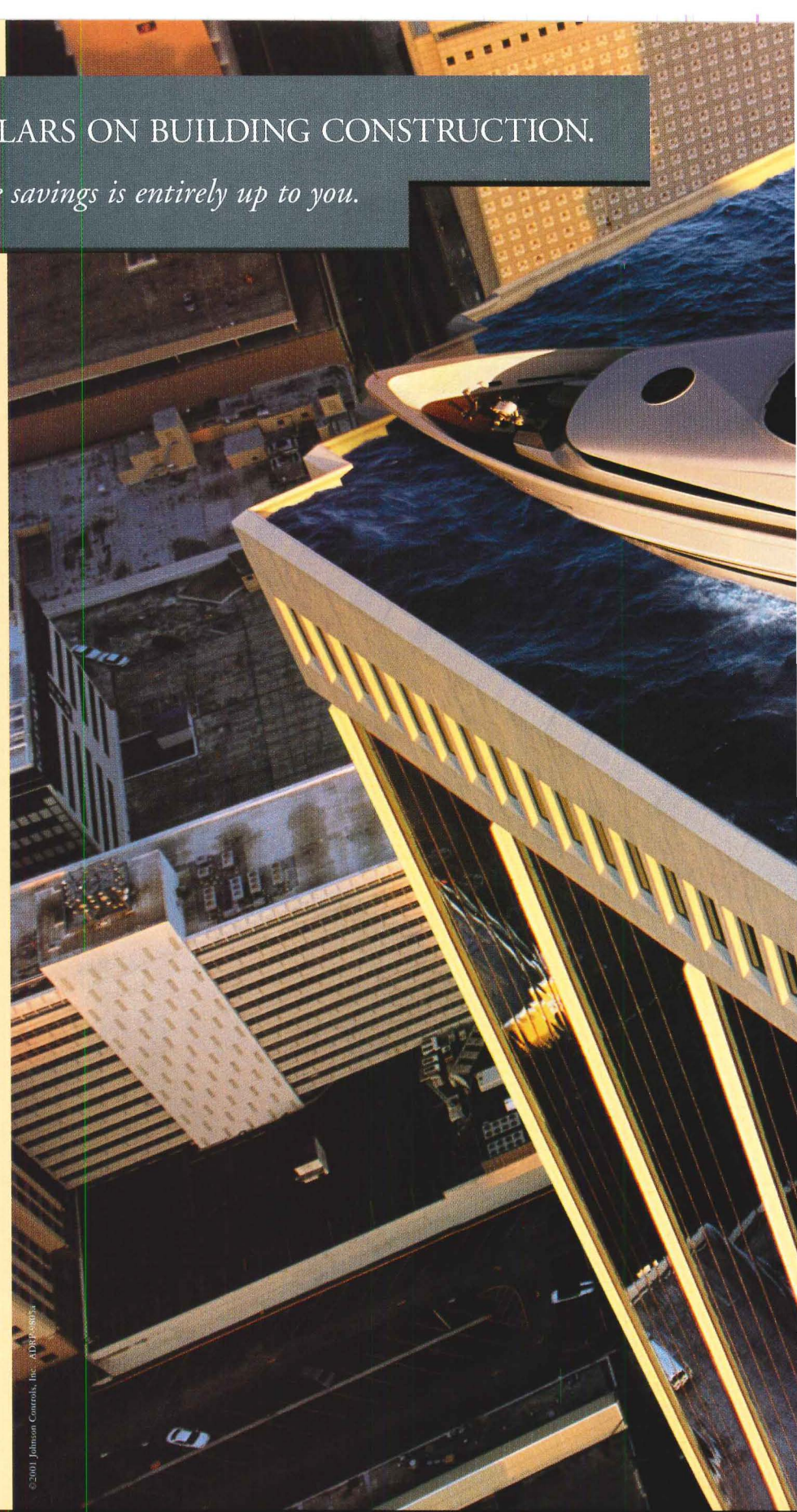
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## Wide implications of “design” examined at the AIA convention

Gathered at the annual convention of the American Institute of Architects (AIA), with the theme this year of DesignDesign, architects enjoyed the southern hospitality of Charlotte and good news about the AIA's financial status. The convention, held May 9 to 11, drew more than 15,500 attendees.

In its business session, the AIA reported that its financial condition is far better than it was a year ago and is surpassing projected goals. The AIA's net assets, now at approximately \$1.66 million, improved by \$3.1 million. The Institute expects to exceed \$3.5 million in net assets by the end of this year and \$4.5 million by the end of 2003, far exceeding the 2003 goal of \$2.5 million.

In the opening presentation, management guru Tom Peters excited, angered, and amused the full assembly hall. He challenged architects to broaden how they work and to diversify what they do. He also said the percentage of female architects is “pathetic.” His message to the AIA: “Eat or be eaten.”

### Ando awes

2002 AIA Gold Medal Winner Tadao Ando, Hon. FAIA, thanked the AIA for the honor and showed select images of recent projects. He noted how the 1995 Kobe earthquake had a resounding impact on his thoughts on the built environment and how good design can make a difference in providing safety. Ando closed his presentation by showing streetscapes of Kobe, which have been planted with more than 300,000 trees in the areas that were most devastated by the earthquake. His message: Taking care of nature is just as important as

rebuilding the city.

Convention delegates elected Eugene Hopkins, FAIA, as the 2003 AIA first vice president/president-elect and 2004 AIA president. Hopkins is a partner and senior vice president at SmithGroup, working out of the firm's Detroit and Ann Arbor offices. He founded the firm Architects Four, a firm specializing in historic preservation, in the 1980s. The 1994 president of AIA Michigan, Hopkins has been a director on the AIA national board since 1999.

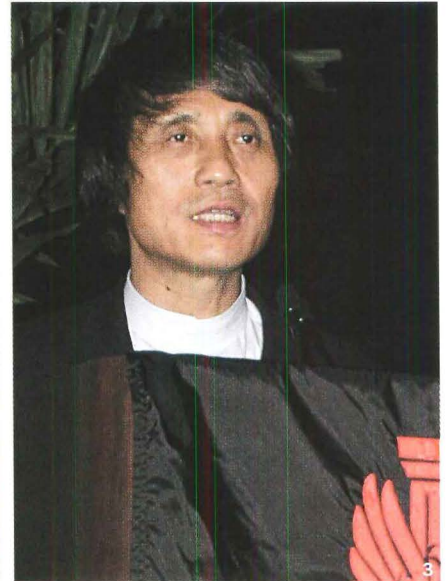
Bruce E. Blackmer, AIA, Robin M. Ellerthorpe, FAIA, and Katherine Lee Schwennsen, FAIA, were elected as AIA vice presidents for 2003, and Lawrence R. Livergood, AIA, was elected AIA secretary for 2003.

Delegates passed separate resolutions to add an associate member as a voting member on the AIA executive committee beginning in December 2004 and to create an International Associate member category for architects licensed in countries other than the U.S.

In his annual construction-outlook presentation, McGraw-Hill Construction's Vice President of Economic Affairs Robert Murray said construction will likely decline by 2 percent overall in 2002 and then increase by 4 to 5 percent in 2003. In a down year, Murray said, renovation work picks up, and that has been evident in 2002.

The AIA named McGraw-Hill Construction, publisher of ARCHITECTURAL RECORD, as the recipient of the 2002 AIA Cornerstone Partner of the Year Award.

The next AIA convention will be held in San Diego May 8 to 10, 2003. *John E. Czarnecki, Assoc. AIA*



(1) Tom Peters. (2) 2002 AIA President Gordon Chong, FAIA. (3) Tadao Ando, Hon. FAIA. (4) The 2003 AIA executive committee will include (top row, from left) Vice President Robin M. Ellerthorpe, FAIA, Vice President Bruce Blackmer, AIA, President Thompson E. Penney, FAIA, Vice President Kate Schwennsen, FAIA, First Vice President Eugene Hopkins, FAIA, (bottom row, from left) Treasurer Douglas Steidl, FAIA, E.V.P./C.E.O. Norman L. Koonce, FAIA, 2002 CACE President Karen Lewand, and Secretary Lawrence R. Livergood, AIA. (5) Michael Graves, FAIA, Richard Meier, FAIA, Arthur Erickson, Hon. FAIA, with moderator Jerry Hirshberg. (6) The Charlotte Convention Center.



## Record News

### OFF THE RECORD

A survey of the [National Council of Architectural Registration Boards \(NCARB\)](#) finds 102,002 architects in NCARB's 55 reporting jurisdictions.

The cost for the Milwaukee Art Museum addition by [Santiago Calatrava](#) [March 2002, page 92] is now estimated at \$120 million, up from \$100 million when completed last year. The museum is using its own collection as a guarantee for a loan.

[Donald Trump](#) is teaming with [Phil Ruffin](#), owner of the New Frontier hotel and casino, to develop a 60-story, \$300 to \$350 million Trump Tower Las Vegas with 300 condominium units.

[Pei Cobb Freed and Partners](#) has been selected to design the Air Force Memorial near the southern border of Arlington Cemetery in Arlington, Virginia. [Moore Ruble Yudell](#), [Morphosis](#), [Urban Instruments](#), and the [Washington-Alexandria Center for Architecture](#) had competed.

Los Angeles-based architect [Randall Stout](#) will design a new museum and IMAX theater for the Art Museum of Western Virginia, in Roanoke.

The European Union has said "thanks, but no thanks" to a [Rem Koolhaas](#) recommendation that the EU flag design of 12 stars on a blue background be replaced with a "flag bar code" of vertical stripes representing diversity. Rem was invited to take part in an EU brainstorming meeting last year.

Two notable figures in the world of architecture died recently. Ad executive [Jay Chiat](#), cofounder of Chiat/Day (now TBWA/Chiat/Day) died of cancer at age 70. As [Frank Gehry's](#) client for two offices, Chiat helped catapult the career of the Santa Monica architect. British architect [Sir Peter Shephard](#), dean of the University of Pennsylvania Graduate School of Fine Arts in the 1970s, died at age 80.

## Denver architect assists in Afghanistan

Its roof is long gone and its walls riddled with bullet holes. Afghanistan's National Theater (right), located in the capital city of Kabul, has been reduced literally to a shell of a building. Constructed by Germans in the early 1960s, the theater that once occupied the center of Kabul's rich cultural life has for years sat empty and desecrated.

"During the civil war," says Denver architect Steve Brooks, AIA, "the Shiites used the place as a prison. Mujahadeen were executed there. But there's hope this place could be turned from a place of death to a place of life."

Brooks, of Denver's OZ Architecture, is one of 15 volunteer architects and engineers who traveled to Kabul for two weeks in March at the invitation of Afghanistan's interim government. Their mission: to help aid efforts to repair hospitals and schools, design bridges, and plan the restoration of the National Theater.

Brooks, 46, paid his own way for the 16-day trip, which was spon-



Steve Brooks (below left) with Ahmad Yusuf Nuristani, interim president Karzai's spokesperson.



sored by the relief organization International Foundation of Hope.

Once in Kabul, the volunteers split into teams. Brooks was asked to help begin the process of rebuilding the theater. "And although that may seem less practical and less urgent" than the other projects, he says, "I found it to be extremely urgent to the people. It's an icon for their culture, an icon of hope."

The theater, Brooks says, is structurally sound, despite its pres-

ent condition. He and his colleagues spent most of their time assessing the damage and making detailed measurements of what's left of the structure. Brooks estimates that it will take millions of dollars to complete the project. "Afghanistan doesn't have the funds to do it," he says, so a major fund-raising drive is being planned by the country's Ministry of Culture. *David Hill*

## Pei's addition to the German Historical Museum nears completion

Ten days before the 85th birthday of I.M. Pei, FAIA, in April, the German Historical Museum celebrated the topping-out of the addition he designed for their building in Berlin in 1997. The addition (below), known as the Schauhaus, will be completed in February 2003 and will open to the public in May.



The federally financed project, which cost approximately \$48 million, consists of a three-story, triangular limestone building for temporary exhibitions. Extending from that volume is a glass-and-steel hall punctuated by a spiral staircase intended to animate the streetscape.

One story below grade, a passageway connects the Schauhaus to the Zeughaus (right in photo), the Baroque arsenal designed by Andreas Schlüter that now houses the museum's permanent collection. Together, the build-

ings create an entry to Berlin's Museum Island district. Pei also designed the renovation of the Zeughaus's courtyard to invite more public use.

Pei's addition, adjacent to two buildings by Karl Friedrich Schinkel as well as to the Zeughaus, is, according to museum exhibition director Ulrike Kreitschmar, "very pure architecture. The forms are classic. There is not really a break between all these older buildings and the Pei building." German architects initially criticized Pei's commission for this important project because he was not selected in a competition. *David Sokol*



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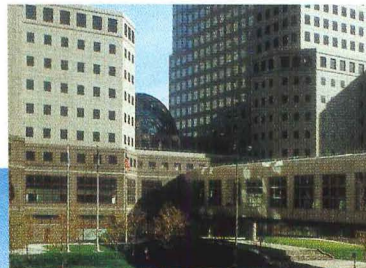
## Record News

### SPECIAL REPORT

## Pelli's redesigned Winter Garden on fast track for September

In the wake of the September 11, 2001, attack and resulting collapse of the footbridge connecting the Twin Towers to the World Financial Center (WFC), the WFC's Winter Garden lost its eastern facade. In late April, WFC owner Brookfield Properties disclosed the redesign for the facade by the Winter Garden's original architect, Cesar Pelli, FAIA. The facade will cost \$3.5 million of the Winter Garden's total \$50 million rebuilding, scheduled to be completed by this September 11.

**The Winter Garden eastern facade (prior to September 11, 2001, right) will have a new street-level entrance and glass wall (below).**



By using a Pilkington glass system of glass fins and point attachments, Rafael Pelli, the principal collaborating with his father on the project, says the new facade is "a very light enclosure between two very solid towers" that should be viewed "not as a new front door for the Winter Garden itself, but as a passageway beyond—almost as a grand arcade to the riverfront."

In the absence of the footbridge, a new lobby comprising 2,500 square feet will be moved to ground level; otherwise, the Winter Garden's original footprint will remain unaltered. Pelli stresses the importance of the new street-level entrance, which the Winter Garden previously did not have. Battery Park City president and C.E.O. Tim Carey adds, "If you consider the possibility of burying at least a piece of West Street in front of the WFC, that gateway will make a great connection" between the Hudson River and the rest of downtown Manhattan.

Melissa Coley, vice president of communications at Brookfield, says the redesign will not alter the Winter Garden's public arts and events programming. *D.S.*

## Urban design team to develop WTC land-use plan by year end

At press time in late May, a team led by New York firm Beyer Blinder Belle was being recommended by a selection committee to work with the Lower Manhattan Development Corporation (LMDC) and the Port Authority of New York and New Jersey to develop what the Port Authority describes as an "urban planning study of the downtown Manhattan area with special emphasis on ... the World Trade Center site and adjacent areas." Fourteen other teams had also submitted proposals for the job. The final selection was pending LMDC and Port Authority approval.

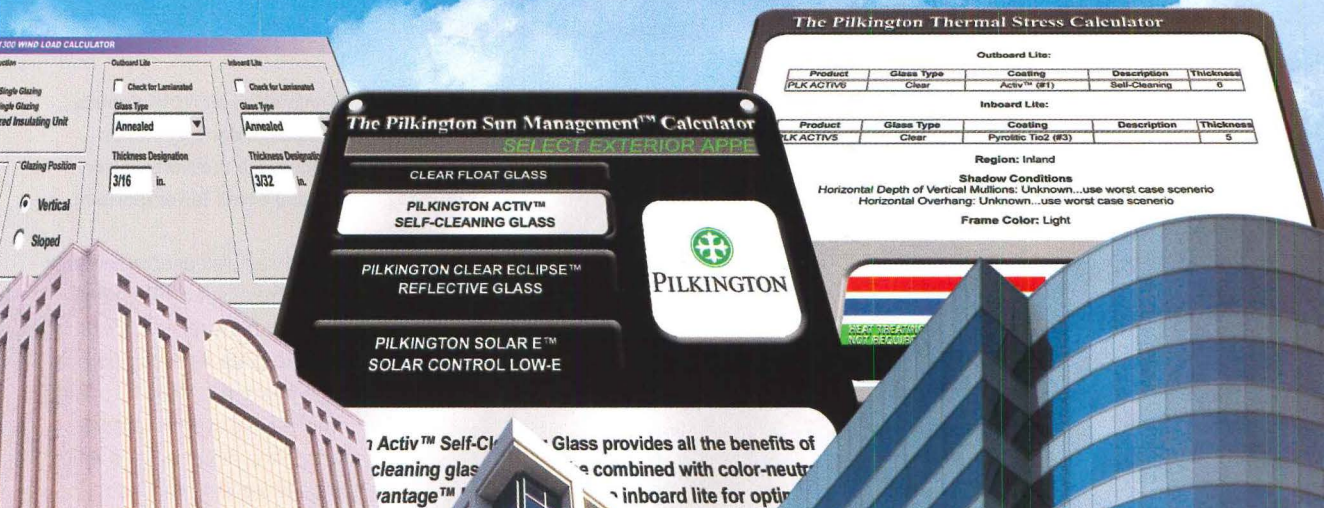
Funded by the Port Authority at an amount not to exceed \$3 million, the study will require a review of planning and transportation options by early July and a preferred land-use plan by December. The selected urban design team will

be working in concert with Alexander Garvin, the LMDC vice president for planning, design, and development, to develop the plan.

The LMDC has already taken exception to the usual RFP process and hired New York firm Peterson/Littenberg Architecture & Urban Design, led by Steven K. Peterson and Barbara Littenberg, as in-house consultants to the LMDC planning staff. Peterson/Littenberg has been working for the LMDC for more than three months, supplementing Garvin's LMDC planning staff with two phases of work to be completed by July for a \$375,000 fee. It is analyzing the existing context and conditions, examining memorial alternatives in terms of typology and potential location, and developing a booklet of design alternatives for the entire site. *J.E.C.*



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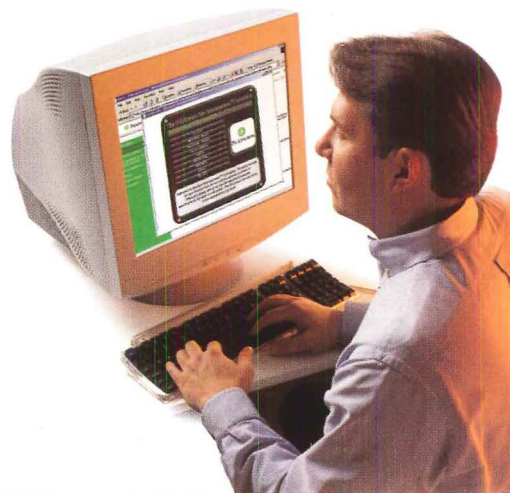
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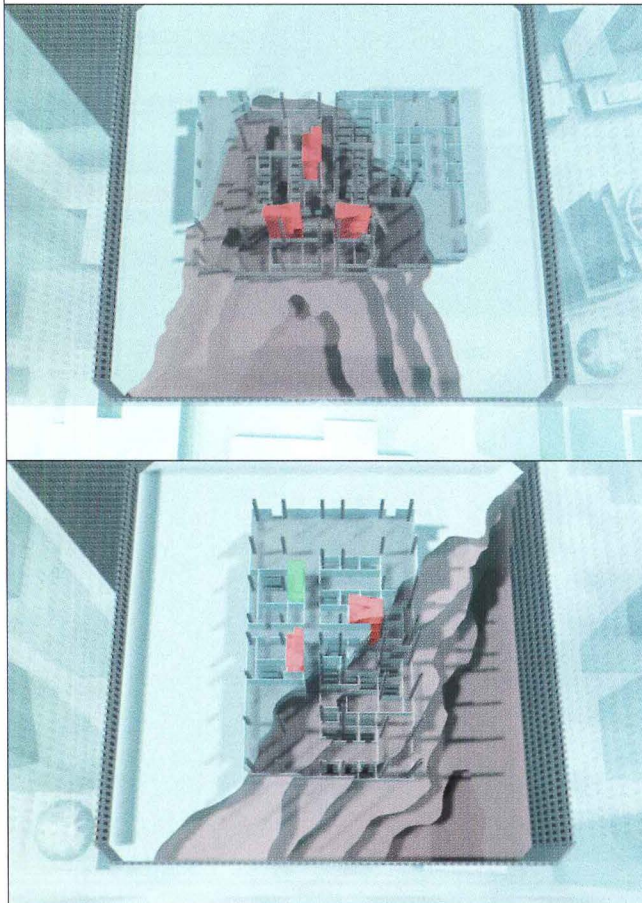
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## SPECIAL REPORT



An animation for NOVA depicts the damage done by planes crashing into the North Tower (top) and South Tower (bottom).

trusses was dislodged when they hit and fire ensued. "The heat output from these fires is estimated to have been comparable to the power produced by a large commercial power-generating station," the report says. The fire temperature likely reached 2,000 degrees Fahrenheit.

Recommendations include examinations of fireproofing-material quality, the placement and size of emergency stairwells, and evacuation procedures. The report further recommends "an improved level of interaction between structural and fire-protection engineers ... to consider the behavior of the structural system under fire as an integral part of the design process."

A wider inquiry is being planned. The National Institute of Standards and Technology (NIST), in Maryland, is awaiting approval to conduct a study, of which the first phase would cost

### Report on WTC collapse leaves more questions than definitive answers

The most comprehensive analysis to date of the collapse of the World Trade Center towers, a report by the Federal Emergency Management Agency and the American Society of Civil Engineers, was released May 1. While the report offered possible recommendations for skyscraper design in light of the disaster, it says designing buildings to withstand a possible disaster such as September 11 "may not be technically feasible." It goes on to say, "Resources should be directed primarily to aviation and other security measures rather than to hardening buildings against airplane impact."

The report acknowledges that national fire tests and standards proved inconclusive in evaluating how the buildings performed in this disaster. Thus, the report is unable to fairly measure the effect on the buildings of the attacks.

Most automatic sprinklers were likely disabled by the planes' impacts, the report notes, and much of the spray-on fireproofing on steel

\$16 million and last two years. Rep. Sherwood L. Boehlert (R-NY) and Rep. Anthony D. Weiner (D-NY) have cosponsored legislation to enable a new NIST agency—a construction safety board—to have wide investigative powers, including subpoena powers, to investigate building failures.

The PBS television program NOVA aired a special, *Why the Towers Fell*, to coincide with the release of the report. The show, which will re-air in September, examined the root causes of the towers' collapse by following a team of structural and fire engineers researching for the report. Visit [www.pbs.org/nova/wtc](http://www.pbs.org/nova/wtc) to learn more. J.E.C.

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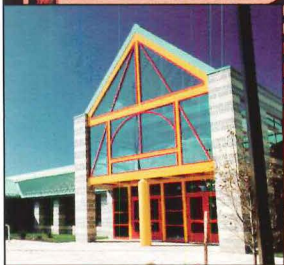
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## Record News

### CNU honors 18 projects with Charter Awards

The Congress for the New Urbanism (CNU) has named 18 projects as winners of its second annual Charter Awards. The projects will be honored at the 10th Congress for the New Urbanism in Miami Beach on June 15.

The winners are: **State of Maryland's Smart Growth and Neighborhood Conservation Initiative**—State of Maryland Office of Smart Growth; **The Confluence Master Plan: A Conservation, Heritage, and Recreation Corridor**, St. Louis—H3 Studio; **Development Plan for Sectors A & D**, Beirut, Lebanon—Skidmore, Owings & Merrill (SOM); **Initiative for a 20/20 Vision for Concord, New Hampshire**—Goody, Clancy & Associates; **Holly Park Redevelopment: Phase I**, Seattle—Weinstein Copeland Architects; **Stateway Gardens Redevelopment Plan**, Chicago—SOM; **Addison Circle**, Addison, Texas—RTKL Associates; **Hayward Downtown Plan & Cannery Area**, Hayward, California—Solomon E.T.C. Architecture and Urban Design; **University of Washington Tacoma Master Plan**—Moore Ruble Yudell Architects & Planners; **Riverview HOPE VI Housing**, Cleveland—Goody, Clancy & Associates; **Bethesda Row**, Bethesda, Maryland—Federal Realty Investment Trust; **Millennium Place**, Boston—Gary Edward Handel + Associates Architects; **Northeastern**



Howard University—Le Droit Park Revitalization Initiative

**University West Campus Residence Halls**, Boston—William Rawn Associates, Architects; **Howard University—Le Droit Park Revitalization Initiative**, Washington, D.C.—Sorg and Associates; **101 San Fernando**, San Jose, California—Solomon E. T. C. Architecture and Urban Design; **Chelsea Grande**, New York—Richard Cook & Associates Architects; **Seven Fountains**, West Hollywood, California—Moule & Polyzoides Architects & Urbanists; and **Timothy Dwight Elementary School Addition**, New Haven, Connecticut—Michael Haverland Architect/Yale Urban Design Workshop. *J.E.C.*



Millennium Place, Boston

### World Trade Center images and proposals at Biennale

An exhibition called *World Trade Center: Yesterday, Today, Tomorrow* will comprise the United States entry in the 2002 Biennale di Venezia, the international art and architecture exhibition that will be held September 8 to November 24, in Venice. The theme for this year's architecture section is "Next." ARCHITECTURAL RECORD editor in chief Robert Ivy, FAIA, serves as commissioner for the American Pavilion, the first U.S. exhibition at the Biennale to receive funding from the U.S. State Department.

Half of the architecture exhibition will feature the photography of Joel Meyerowitz, who, with a large-format camera, produced more than 7,000 images of Ground Zero over the course of seven months. The Meyerowitz photography show is entitled *The Aftermath and Before*. The second installation on display in the U.S. Pavilion will be *A New World Trade Center: Design Proposals*. The Max Protetch Gallery in New York City organized this exhibition of more than 60 design ideas for the World Trade Center site [RECORD, March 2002, page 59] submitted by an international roster of architects including Steven Holl, Daniel Libeskind, and the late Samuel Mockbee. *Kevin Lerner*





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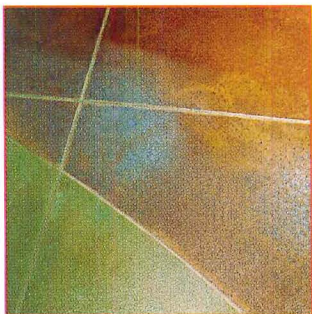
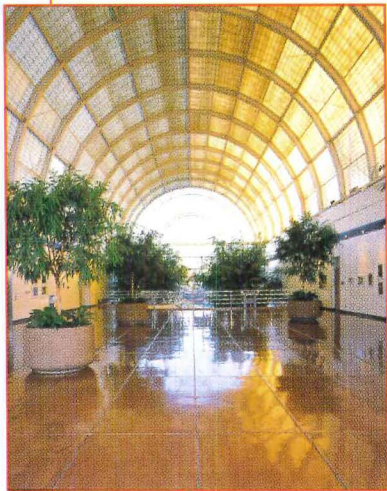
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## Record News

### Varying in scale and approach, AIA's Top 10 Green Projects hold lessons in human behavior as well as sustainability

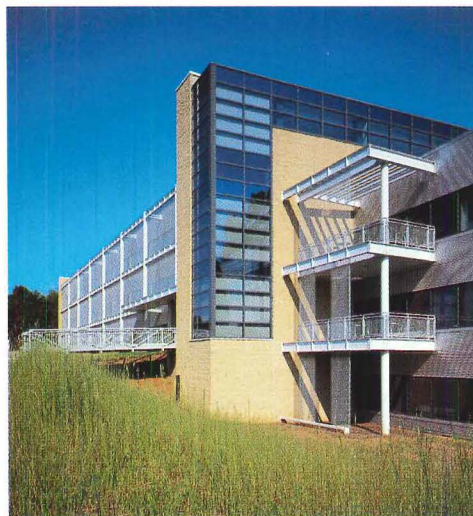
To recognize buildings designed to integrate architecture, technology, and natural systems, the American Institute of Architects' Committee on the Environment annually names the "Top 10 Green Projects." This year's winners illustrate how far the sustainable design movement in the U.S. has come in the five years since the program began, as well as some of the contradictions within it.

The jury—Randy Croxton, FAIA, Croxton Collaborative; Sim van der Ryn, Van der Ryn Architects; Horst Berger, City University of New York; and Guy Battle, Battle McCarthy—assessed each project's contribution to existing ecosystems, connections to the surrounding community, utilization of high-performance technologies, energy use, and material and resource use. Reducing a three-dimensional experience to two-dimensional representation has always been a challenge for design-awards submissions. These jurors had to consider an additional dimension: time. Understanding how a person lives in a building in nature over the course of a day is central to sustainable design.

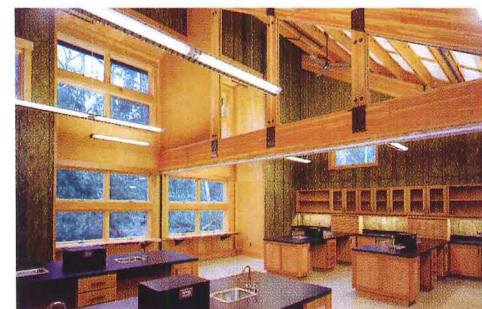
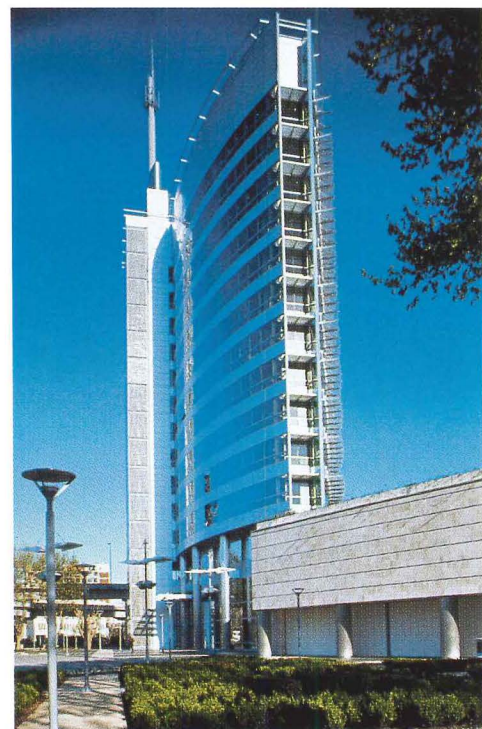
The top 10 include the **Bank of Astoria** in Manzanita, Oregon, by Tom Bender, Architect; the **Department of the Navy's Building 850** in Port Hueneme, California, by CTG Energetics; **Camp Arroyo** in Livermore, California, by Siegel & Strain Architects; HOK's **Edificio Malecon** in Buenos Aires; **Iowa Association of Municipal Utilities** in Ankeny, Iowa, by RDG Bussard Dikis;

the **National Wildlife Federation (NWF) Headquarters** in Reston, Virginia, by HOK; William McDonough + Partners' **Adam Joseph Lewis Center for Environmental Studies**, Oberlin College in Oberlin, Ohio; **Pier 1** in San Francisco by SMWM; Mithun's **Puget Sound Environmental Learning Center** on Bainbridge Island, Washington; and the **Tofte Cabin** in Tofte, Minnesota, by Sarah Nettleton Architects.

Scale and approach varied widely, from a 950-square-foot cabin to the 100,000-square-foot NWF Headquarters. The Puget Sound Environmental Learning Center and Camp Arroyo both utilized several sustainable design strategies, yielding an engaging architecture-as-laboratory result. Pier 1 is an elegant and inventive adaptive reuse that fully engaged its site, the water's edge, as part of its solution. *Kira L. Gould*



National Wildlife Federation Headquarters (above) and Edificio Malecon (top right), by HOK. Puget Sound Environmental Learning Center, by Mithun (right).





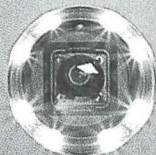
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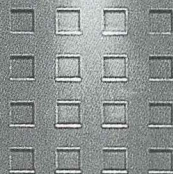
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## Record News

### Soldier Field reconstruction begins despite opposition

An Illinois state court decision in April cleared the way for the adaptive reuse of Soldier Field as a state-of-the-art 61,500-seat football stadium for the Chicago Bears. Though selective demolition began within hours of the Bears' playoff loss in January, opponents of the new design continued efforts to stymie the \$632 million project by questioning the legality of the complex public/private funding approved by the Illinois legislature in November 2000.

Demolition of the old seating and ancillary structures is complete and foundation work is underway. A fast-track construction schedule promises to conclude the project in time for the 2003 football season. For 2002, the Bears will play 140 miles south of Chicago at the University of Illinois' Memorial Stadium at Urbana-Champaign.

Soldier Field was completed in 1926 as a memorial to the soldiers of World War I. Designed by Chicago's Holabird and Roche, the horseshoe shaped, cast-stone structure is perhaps best known for its signature element—a pair of 57-foot-tall Greek Revival colonnades overlooking the gridiron from atop a 48-foot-tall plinth.

As planned by Chicago-based Lohan Associates and designed by Boston's Wood and Zapata, the new design inserts a steeply pitched seating bowl clad in stainless steel and glass within the old envelope. The distinctive colonnades will be located outside and under the seating of the new stadium that rises almost 40-



Work has begun on the Soldier Field reconstruction (top), shown in a model (above).

feet above the facade's crowning acroteria. The old stadium "was a Greek amphitheater," explains Dirk Lohan, FAIA, where "people accepted craning their necks a little bit." He cites more demanding modern expectations about sightlines as the driving factor in developing the new design.

Since the design's original unveiling, Friends of the Parks and the Landmarks Preservation Council of Illinois have vociferously questioned the scheme's aesthetics, bulk, and whether an NFL sports facility is a genuine public use of the lakefront park property. *Ed Keegan*

### Guggenheim wants Gehry canopy to be permanent addition

Frank Lloyd Wright shocked New York's Upper East Side with his design for the Solomon R. Guggenheim Museum in the 1950s. Today, the museum is again testing the aesthetic sensibilities of its wealthy neighbors by filing a request to the city's Landmarks Preservation Commission to have a 42-foot-long titanium-clad canopy designed by Frank Gehry, FAIA, made a permanent addition to its exterior. The \$250,000 canopy, commissioned by Guggenheim director Thomas Krens for the Gehry retrospective show that ended last fall, remains over the museum's Lefrak terrace.



Gehry's curvy Guggenheim canopy might stay.

Designated a city landmark in 1990, the Guggenheim requires approval for the canopy from the city's Landmarks Preservation Commission. The local Community Board 8 voted unanimously in April to recommend that the commission reject the proposal. At press time, the commission had not made a decision. "The Guggenheim has been involved in lots of fights over the years," board member Charles S. Warren told *The New York Observer*. "This is an additional insult to the building." *J.E.C.*



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## Record News

### A grass roof will top the Des Moines Library, one of Chipperfield's first U.S. public projects

The new main public library near downtown Des Moines will be green, literally. A grass roof is planned to cover the library, one of London architect David Chipperfield's first public projects in the United States.

Construction of the 110,000-square-foot, two-story building will begin in spring 2003 and take 18 to 24 months, says Cal Lewis, FAIA, principal of Herbert Lewis Kruse Blunck, the Des Moines-based firm working with Chipperfield on the \$32 million project. Chipperfield won the job in a 2001 competition.

To be built on a block with only one other existing building, a Masonic Temple, the library will stretch along the edge of a series of blocks (in green, in photo far right), called Western Gateway Development, that will be developed as an urban park.

"The library plan explores the concept of park and library engaging each other, as opposed to one being subservient to the other," Lewis says. The building will include a winter-garden approach to the entrance from the park. Exterior walls will have a large amount of glazing facing the park side for daylight. Inside, library stacks will be configured to allow maximum views of the park. The grass roof is Chipperfield's response to local businesses that were concerned that views from their taller surrounding buildings would look down on one expansive gray surface.

"Our challenge has been to create a building

that responds to its place in the city as well as defines the location," says Martin Ebert, an architect with David Chipperfield Architects. "From the beginning, the idea has been to design an incubator that starts the development of the Gateway West project." In plan, the building form is configured to both maintain an urban street corner edge and stretch at various angles into the park. A path through the library, which will include a conference center, bookshop, and café, will link downtown to the park.

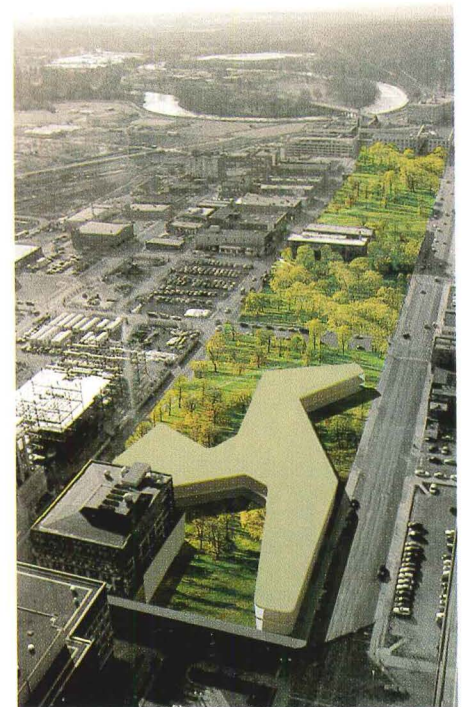
This will be one of



The library will be on the edge of a new linear urban park (right), and stacks (above) will be situated for park views.

two Chipperfield projects in Iowa, including the \$30 million, 82,000-square-foot Figge Art Center in Davenport, Iowa, where construction will begin this year.

Linda Hallam and J.E.C.



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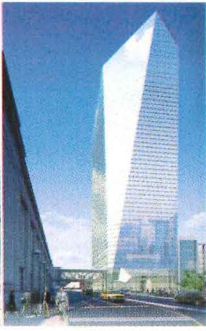


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## News Briefs

**A 30-story tower by Cesar Pelli is planned for a site adjacent to Philly's 30th Street Station.**



**Pelli skyscraper to rise in Philadelphia** Cash-strapped Amtrak announced it is leasing a site next to Philadelphia's 30th Street Station to Brandywine Realty Trust for a 32-story office tower by Cesar Pelli & Associates. The tower, which could be complete by 2005, would be the first new skyscraper in Philadelphia since 1991.

**GSA issues order for public building information** The U.S. General Services Administration

(GSA) has released new directives for a category of information about its public buildings known as "sensitive but unclassified." The directives cover information that could benefit potential terrorists, such as equipment plans, operating plans, and the

locations of secure functions of GSA buildings. In order to maintain open access to these documents for tenants, architects, engineers, and contractors, the GSA set out three principles governing the distribution of the newly protected materials: (1) only give the information to those who have a need to know; (2) keep records of who received the information; and (3) safeguard the information during use and destroy it properly after use. All of the protected materials must bear

prominent stamps marking them "for official use only." Architects and others with access to the information will be able to redistribute it, provided that they also follow the three principles, and all people with access to the information will need to provide proper identification.

**McDonough designs first museum project** Charlottesville, Virginia-based William McDonough + Partners has completed the design for its first museum, The Museum of Life and the Environment (right), in York County, South Carolina. Designed in collaboration with Nelson-Byrd Landscape Architects and Ralph Appelbaum Associates, the 120,000-square-foot "green museum" will focus on the heritage of the Carolina Piedmont landscape. The building will feature a radiant-floor system to regulate

temperature, photovoltaics for solar energy, exterior sunshading, and structural walls of custom concrete block.

**Plans for Pentagon Memorial competition** The U.S. Army Corps of Engineers has announced plans for an open competition to design an outdoor memorial to the victims of the September 11 attack on the Pentagon. The memorial will occupy



**The Museum of Life and the Environment (above and left) will open in 2005.**

a site near the point of impact. Submissions are due in September. For more information about the competition, visit <http://pentagon-memorial.nab.usace.army.mil>.

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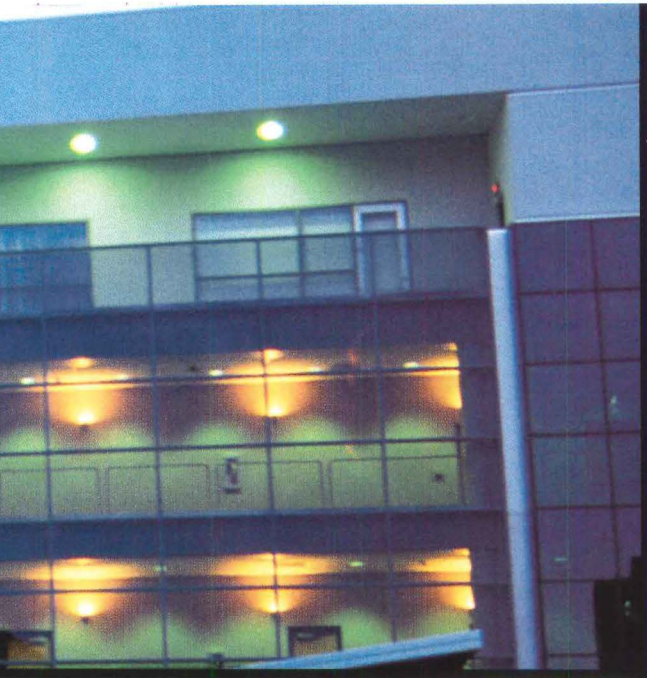


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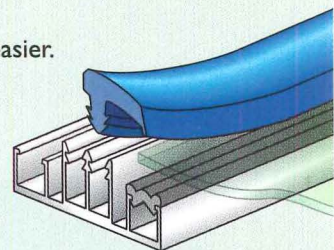
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# Dates & Events

## Ongoing Exhibitions

### **The Nature of Architecture: Photographs by Amy Lamb** Washington, D.C.

May 3–July 26, 2002

In former biologist Amy Lamb's latest exhibition, she unveils the underlying similarities between organic form and the built environment through a series of photographic interpretations that illustrate the relationship between the two. At the Octagon. Call 202/626-7486 for information.

### **Gerald Zugmann: Blue Universe** West Hollywood, Calif.

May 9–September 8, 2002

This exhibition illustrates the decade-long collaboration between architectural photographer Gerald Zugmann and avant-garde Austrian architectural firm Coop Himmelb(l)au. At the Mak Center. Contact 323/651-1510.

### **Skin: Surface, Substance + Design** New York City

May 7–September 15, 2002

This exhibition skims the surface to explore the different ways skin is articulated in design. On display are a variety of objects and artifacts by such notable designers as Greg Lynn, Petra Blaisse, Ross Lovegrove, and Marcel Wanders, organized into five themes, each delving into questions of beauty, technology, and artificial life. At the Cooper-Hewitt, National Design Museum. Contact 212/849-8400.

### **Houses X Artists=Design Without Rules** West Hollywood, Calif.

Through June 25, 2002

This is the first phase of the six-month exhibition *Houses by Artists*. The Mak Center, in collaboration with New York-based firm OpenOffice, has invited 10 contemporary artists to stretch their imaginations and design a house free of the typical constraints imposed on architects. Their proposals will be presented in model and digital form as they evolve in three phases over the next six months. At the Mak Center. Contact 323/651-1510.

### **Utopia & Reality: Modernity in Sweden** 1900–1960

New York City

Through June 16, 2002

This timely exhibition surveys Swedish art and

culture from the first half of the 20th century, when youth, progress, and innovation became vehicles for understanding Modernism and the rapidly changing world of the time. A full range of artistic expression will be covered, from architectural drawings and models to painting, sculpture, graphic design, and photography. At the Bard Graduate Center. Call 212/501-3000 for information.

### **Museums for the New Millennium: Concepts, Projects, Buildings** Milwaukee

Through August 4, 2002

This exhibition presents a cross section of the most significant museum projects designed and built within the past 10 years. Through drawing, photographs, and original models, the show features 25 museums from around the world,

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including Milwaukee Art Museum expansion by Santiago Calatrava. At the Milwaukee Art Museum. Contact 414/224-3200.

### **Designing the Future: The Queens Museum of Art New York City**

*Through July 7, 2002*

An exhibition featuring the drawings and models from the Queens Museum of Art Design Competition. On view are the works of 198 competitors and five Stage II finalists. The exhibition also

traces the history of the museum's building. At the Queens Museum of Art. Contact 718/592-9700.

### **The Geometry of Seeing: Perspective and the Dawn of Virtual Space Los Angeles**

*Through July 7, 2002*

Through illustrated treatises, drawings, and prints, this exhibition traces the complex yet fascinating history of perspective drawing over a period of four centuries. On display is an extraordinary range of theories and rendering techniques,

including those of Leon Battista Alberti, Albrecht Dürer, and Sebastiano Serlio. At the Getty Center. Contact 310/440-7360.

### **Bridging America With Frank Lloyd Wright Minneapolis**

*Through July 7, 2002*

In his lifetime, Wright designed more than 40 bridges and skyways, few of which were actually completed. These bridges are the focus of the exhibition, as well as a tribute to the new Third Avenue Bridge in Minneapolis designed by Taliesin Architects. Through models, drawings, and video, Wright's futuristic ideas about bridging space for man and car will be on display. At the Minneapolis Institute of Art. Contact 612/870-3131.

### **Gaudí Experiences: Space, Geometry, Structure, and Construction Barcelona, Spain**

*Through September 27, 2002*

Throughout his career, Gaudí's feats of structural ingenuity and seemingly impossible design never ceased to amaze the public. In a tribute to his genius, this exhibition unravels the mystery behind Gaudí's construction by exploring the extraordinary methods of calculation used by the architect. At the Museu d'Historia de la Ciutat. Visit [www.gaudi2002.bcn.es](http://www.gaudi2002.bcn.es) for more information.

### **On Track: Transit and the American City Washington, D.C.**

*Through October 27, 2002*

This exhibition hopes to inform decisions on the future of both transportation and the city by exploring the spatial, political, technological, and human dimensions of transit's relationship to the city. At the National Building Museum. Visit [www.nbm.org](http://www.nbm.org), or call 202/272-2448.

## Lectures, Symposia, & Conferences

### **Building for the 21st Century: Lessons from North American and European Green Buildings Washington, D.C.**

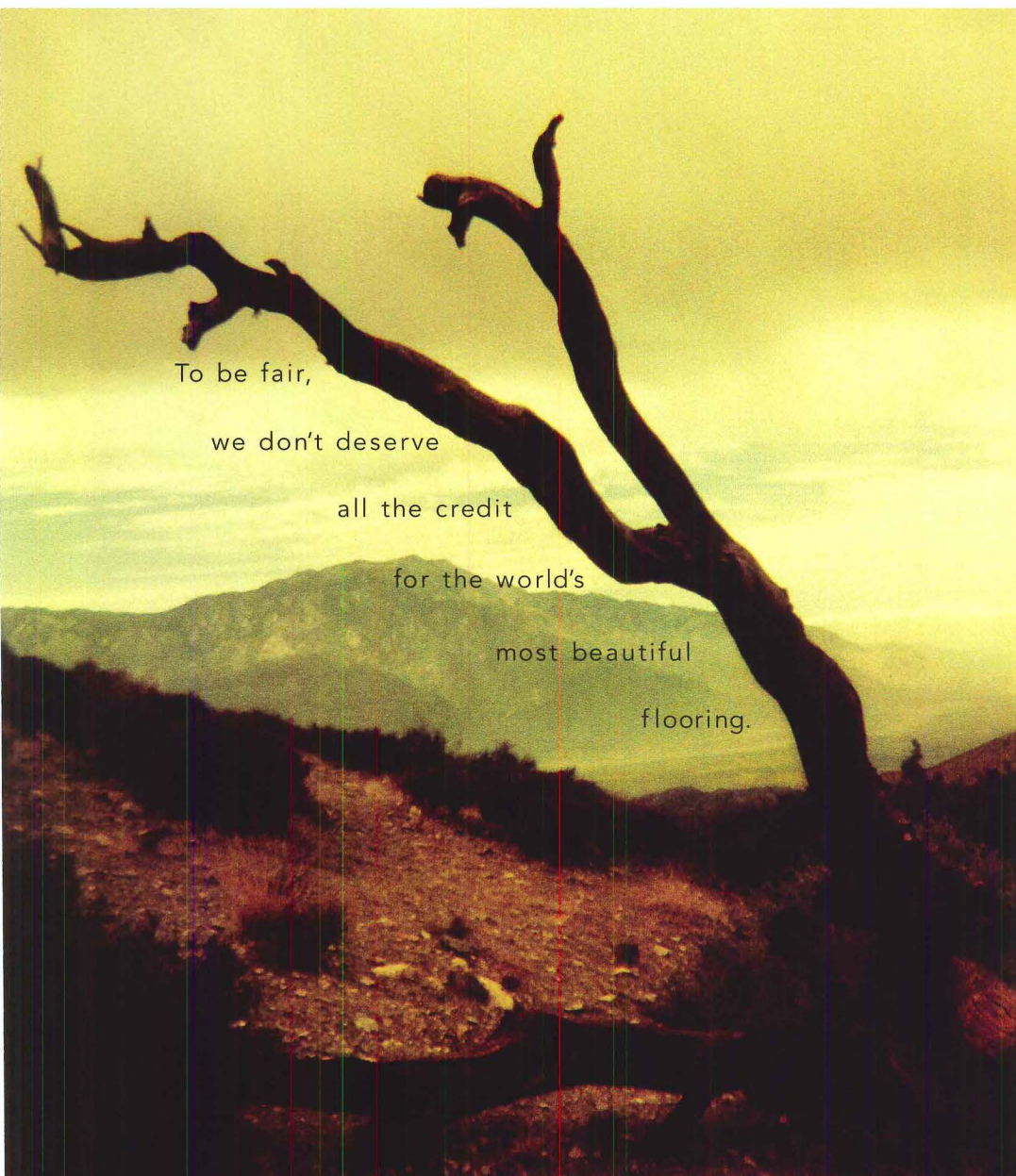
*June 12, 2002*

Bill Browning of the Rocky Mountain Institute will discuss recent sustainable European and American buildings. At the National Building Museum. Visit [www.nbm.org](http://www.nbm.org), or call 202/272-2448.

### **Legacy of the Rural Studio**

*June 18, 2002*

For 10 years, the late Samuel Mockbee and Auburn University's Rural Studio students created buildings from recycled and salvaged materials



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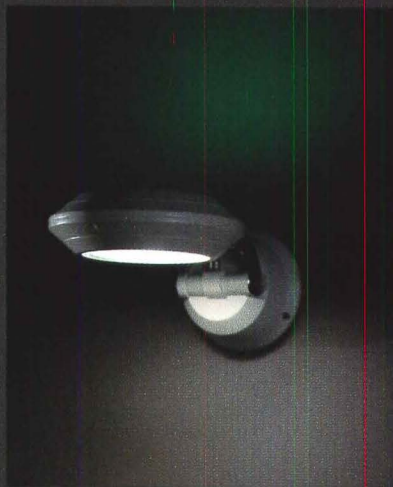
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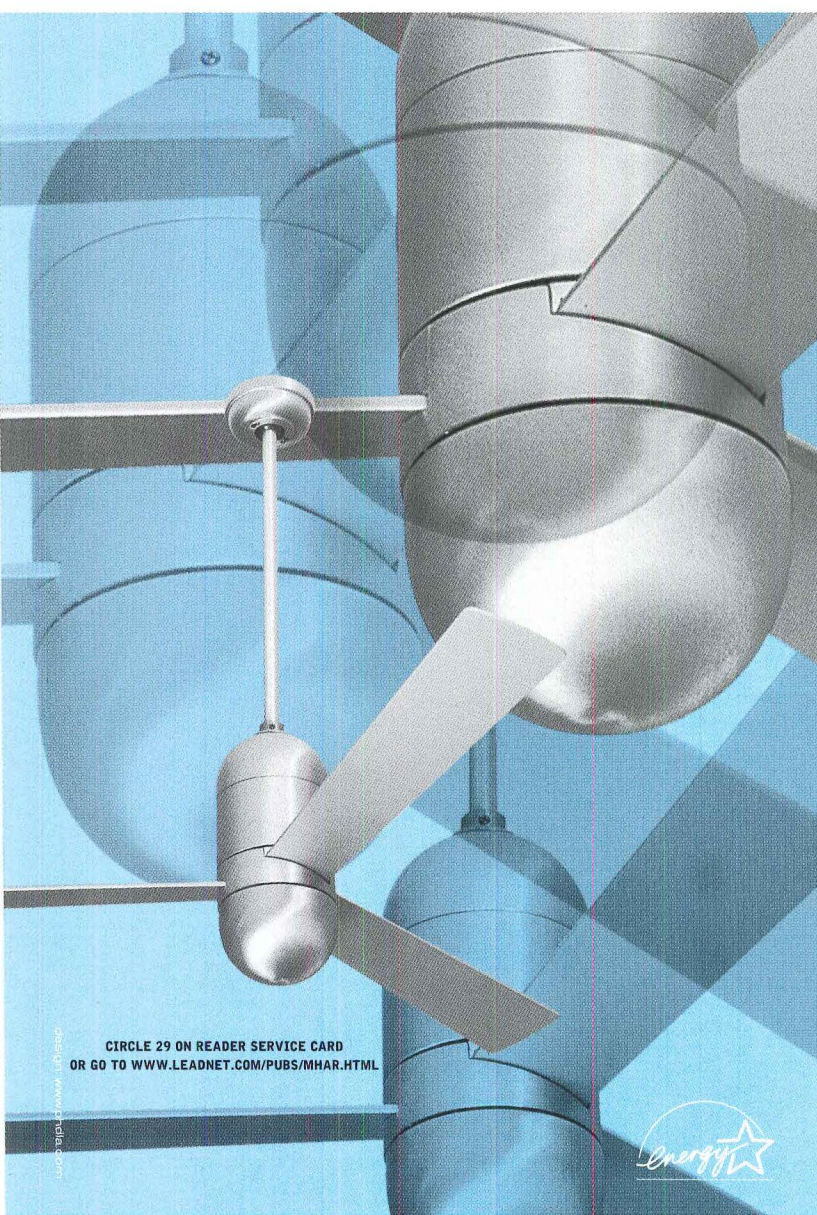




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## Dates & Events

for the impoverished residents of Hale County, Alabama. Author Andrea Oppenheimer Dean and Rural Studio professors Andrew Freear and Steve Hoffman will discuss the legacy of Mockbee, who died last December. Visit [www.nbm.org](http://www.nbm.org), or call 202/272-2448.

**A+A: Reflections on Architecture**  
**Barcelona, Spain**  
*June 20-22, 2002*

A festival devoted to the fusion of architecture and the moving image. Architects, computer programmers, artists, and filmmakers are invited to analyze possible relationships between animation, experimental film, digital technology, and the creation of 3D space. Sponsored by the Col·legi d'Arquitectes de Catalunya. E-mail: [coacanimatica@coac.es](mailto:coacanimatica@coac.es).

**International Quingue Symposium**  
**Newport, R.I.**  
*June 27-30, 2002*

This four-day symposium brings together architects, artisans, and scholars to examine key issues in historic preservation practices. It will feature the work of local preservationists and institutions. At the Salve Regina University, 401/341-2156.

**What Matters Now: 52nd International Design Conference**  
**Aspen, Colo.**  
*August 21-24, 2002*

Join leaders in architecture, the arts, and science in this year's annual design conference. 2002 program committee members include Walter Hood, Michael Rotondi, Lorraine Wild, Paola Antonelli, Bran Ferren, Gregg Pasquarelli, and Billie Tsien. Visit [www.idca.org](http://www.idca.org), or call 800/815-0059, for more information.

**Universal versus Individual: The Architecture of the 1960s**  
**Jyvaskyla, Finland**  
*August 30-September 1, 2002*

This conference will explore the architecture of the 1960s by illuminating universal currents as well as individual and regional trends. Keynote speakers include Beatriz Colomina, Claes Caldenby, and Dennis Doorman. Sponsored and organized by the Alvar Aalto Academy. For more information, visit [www.alvaraalto.fi/conference/universal](http://www.alvaraalto.fi/conference/universal).

## Conventions

**The BuildingsNY Show**  
**New York City**  
*June 18-19, 2002*

Join more than 10,000 industry suppliers, distributors, manufacturers, and trade associations in New York's premier building, renovation, and restoration event. At the Jacob Javits Convention Center. Contact 888/334-8702.

**XXI World Congress of Architecture**  
**Berlin**  
*July 22-26, 2002*

The Union Internationale des Architectes invites architects and students from around the world to discuss responsibilities and strategies for environmental and sustainable design within an urban context. At the International Congress Centre Berlin. Contact 49 30 9012 1314 for more information.

**Rail-Volution 2002**  
**Washington, D.C.**  
*October 3-6, 2002*

This year's conference focuses on the community's role in making transit and land-use decisions and brings a unique cross section of citizen activists, business leaders, elected officials, and planners to the table to discuss the issues. Rail-Volution features a variety of sessions, including hands-on workshops, case studies, and moderated panel discussions. Contact 800/788-7077.



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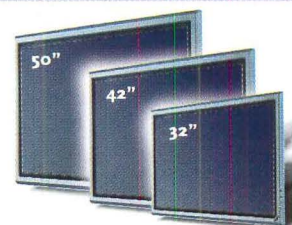
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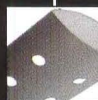
Twin Rail  
End Plate



Basis Track  
End Plate



Blank  
End Plate



Z  
Direct · Indirect



Y  
Direct · Indirect



X  
Indirect

## Dates & Events

### Competitions

#### 55 Water Street Design Competition

*Deadline: July 8, 2002*

The New Water Street Corporation and the Municipal Arts Society are pleased to announce a design competition for the elevated public plaza at 55 Water Street in Lower Manhattan near the World Trade Center disaster site. Architects and landscape architects are invited to submit their proposals. Six individual firms will be selected and given a stipend to develop their plans. Visit [www.mas.org](http://www.mas.org) for more information.

#### 11th Annual Unbuilt Design Awards

*Deadline: July 15, 2002*

The Boston Society of Architects invites architects, educators, and students to submit projects that, to date, remain unbuilt. Both theoretical and client-sponsored projects are eligible. Visit [www.architects.org](http://www.architects.org) for more information.

#### The Great Egyptian Museum Competition

*Deadline: August 10, 2002*

An open invitation to architects from around the world to participate in the creative design of this new museum. Located near the Giza pyramids, the museum will house some of Egypt's most ancient monuments and treasures. Visit [www.gem.gov.eg](http://www.gem.gov.eg).

#### Shinkenchiku Residential Design Competition 2002

*Deadline: September 2, 2002*

This competition, held annually by The Japan Architect, invites architects from around the world to explore the theme "Dwelling Where the Muses are Served/Spared Emptiness." The entire competition will be judged by one architect. The committee this year has selected Daniel Libeskind as judge. Sponsored by Shinkenchiku-sha Company. Visit [www.japan-architect.co.jp](http://www.japan-architect.co.jp).

#### 26th Annual Cooper Source Awards

*Deadline: October 25, 2002*

Open to any lighting designers, architects, interior designers, or other professionals who use light in an interior or exterior application. Two categories are available, one for professionals, the other for students, who will compete for a \$1,500 cash prize. For more information, visit [www.cooperlighting.com](http://www.cooperlighting.com).

#### Mobile HIV/AIDS Health Clinic

*Deadline: November 1, 2002*

Architecture for Humanity, a non-profit organization, announces its 2002 international design competition. Architects are invited to submit designs for a fully equipped mobile medical unit and HIV/AIDS treatment center for use specifically in Africa. Entry fees, donations, and additional fundraising sources will be used to build the winner's prototype. Visit [www.architectureforhumanity.org](http://www.architectureforhumanity.org).

### Events & Programs

#### Summer Design Institute 2002

##### New York City

*July 15-19, 2002*

Educators and designers are invited to join a panel of international design educators to discuss strategies for engaging K-12 students in the design process. Hosted by Cooper-Hewitt, National Design Museum and the American Institute of Graphic Arts, this one-week program will feature workshops, studio visits, and keynote presentations by notable designers, including David Kelly, Eames Demetrios, John Maeda, and Eileen Adams. At Cooper-Hewitt, National Design Museum. Contact 212/849-8385.

*Please send event and competition listings two months prior to the event or deadline to [ingrid\\_whitehead@mcgraw-hill.com](mailto:ingrid_whitehead@mcgraw-hill.com).*

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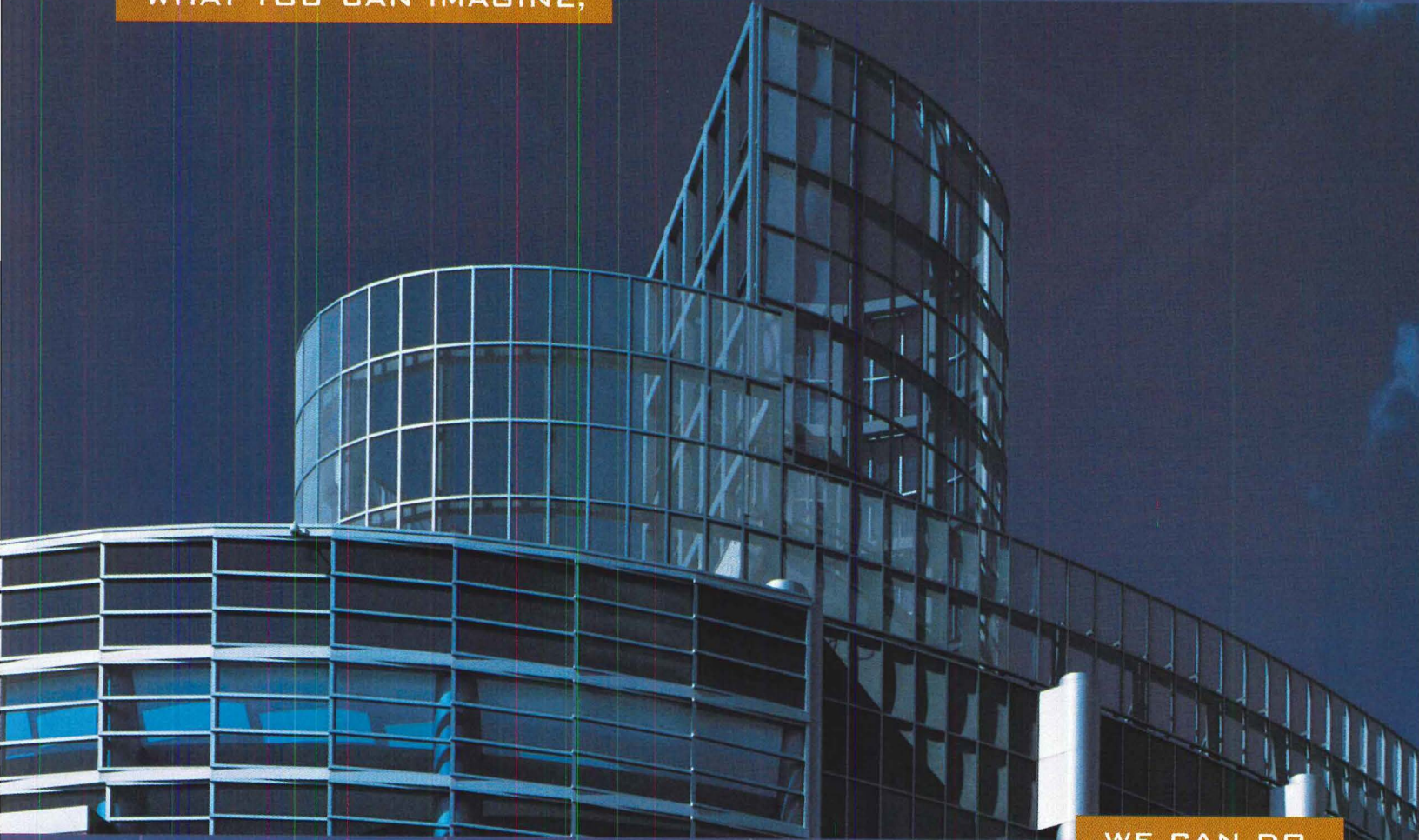
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# For and about the next generation of architects

## archrecord2

### FOR THE EMERGING ARCHITECT

DEPARTMENTS

More than anything else, passion keeps young architects going. For David Hu, featured in this month's Design profile, passion means connecting with his clients to communicate ideas about architecture. In Live, meet Eric Whiting, whose passion for cycling led him to design his own three-wheeled cycle. archrecord2 exists to display such passions and to kindle them in its readers. For more information on how to share yours, visit archrecord2 on the Web.

#### DESIGN

### David Hu Builds a Temple of Tea



When David Hu was earning his undergraduate architecture degree in Taiwan, he learned a very important lesson about architecture. But he didn't learn it in school. He learned it in the nightclubs where he was singing with his band.

"I realized you have to learn how to understand people in order to communicate architecture to them," Hu said. "We're dealing with people who don't have a lot of time to think about buildings, so you have to work with them to bring out that interest, that desire. And then maybe you'll be able to do something that has a special life to it. But dealing with people isn't a skill they teach us in our training. The ability to listen to people that I picked up in my music days has helped me a lot."

Hu's concentration on relationships has brought him some of his best work to date, and his communication skills have produced some wildly different architecture for the same client, and even for the same client with an almost identical program.

In this case, the two Wild Lily Tearooms, both in New York City, reflect two different "moods" of tea. The first Wild Lily is in the Chelsea neighborhood and reflects a masculine aesthetic, with warm woods, brick, a lily pond, and straight lines everywhere. The newer of the two locations is a smaller storefront where Hu felt that straight lines would be too dominating. So curves became the norm, and transparent materials entered the picture. There was also no room for the signature lily pond, so Hu worked with the owner of the teahouses to come up with a compromise, an almost unseen—but not unheard, at his client's request—waterfall, that trickles behind a transparent resin wall that has tea leaves embedded in it. Shelves for tea boxes are imprinted with his client's favorite poem.

Hu started his New York practice in 1996, after several years in Taipei. It



#### Wild Lily Tearoom 2, New York City, 2002

David Hu Architect. An unseen fountain hides behind a resin panel that has different varieties of tea embedded within it (left). A group of shelves that hold tea boxes (above) are marked with a poem selected by the client.



(continued from previous page) was a fateful time for him. He had no clients in the U.S., though he did earn his M. Arch. at Washington University in St. Louis and was not a complete stranger to the country.

"Coming to New York was a leap of faith," Hu said. "But, you can never wait for things to happen. You have to make them happen."

Hu got his hands on an early project, the remodeling of a loft, but he was soon laid up with a stroke. "My client at the time heard that I had a stroke," Hu said, "and she said, 'Well, he's out of the picture.' I called her up, and she said, 'Can you still do it?' And I said, 'Yes, I can.' I couldn't do the sketches to the same detail that I usually could, but I spent more time with the contractor out on the site."

But Hu's leap of faith and his persistence through what he refers to as a "convergence of cosmic forces" have really paid off for him. He continues to shuttle back and forth between New York and the Far East, and has residential and commercial projects in his portfolio, as well as an interesting commission to design a temporary sales-office building for a speculative residential tower in Taiwan. And on top of that, he's designing his own chess set.

Is it something akin to fate that has Hu's career looking up, or is it his hard work? He has his own, slightly cryptic, answer: "My contractor, who's Chinese, told me—I don't know if it's a proverb or not—but he said, 'If you build a temple, the people will come to burn their incense.'" *Kevin Lerner*

Go to [architecturalrecord.com/archrecord2](http://architecturalrecord.com/archrecord2) for pictures of other David Hu projects, and to learn how to submit your own work for publication.



**Wild Lily Tearoom 1,  
New York City, 1999**

*David Hu Architect. The original tearoom features a lily pond near the entrance, a tea bar at the end, and a variety of discrete spaces. Each table was designed to have its own unique view and environment.*



Water changes *shape*. Drops of rain.

Blocks of ice.

Waves of ocean.

Water changes *color*.

From crystal clear.

To earthy browns.

To brilliant greens.

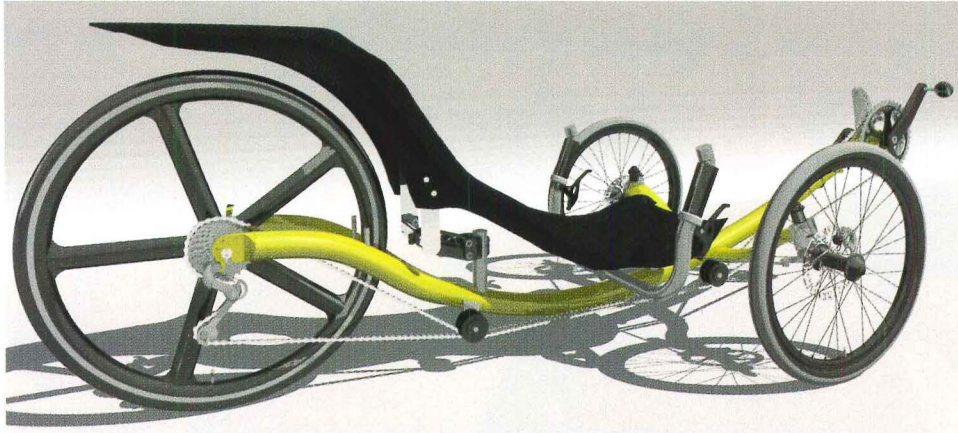
Water constantly  
*reinvents* itself.



## Reinventing the Three-wheeler

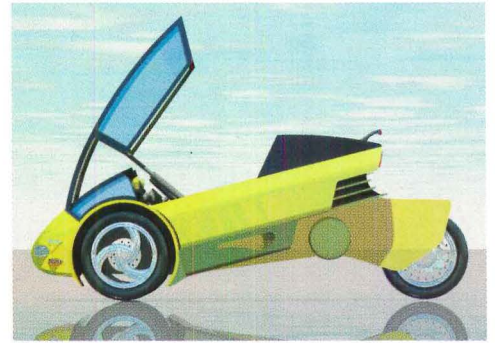
Eric Whiting, of Saratoga Associates in Saratoga Springs, New York, thinks he can probably remember every brand of bicycle he has ever owned. And if all goes well, his next could be one of his own design.

Although, of course, it won't technically be a bicycle. Whiting is working on a design for a trike, a three-wheel cycle that is ridden lying down. Recumbent cycles hold many of the speed records for human-powered vehicles, but they have been lacking in design.



"Trike design is really in its infancy," Whiting says, "since the trike has only been in evolution since the 1980s. That fact alone warrants further design study. However, with few exceptions, current recumbent cycles in production seem overengineered and lacking any emotional design input."

Whiting's skill at 3D rendering made his work on the trike (below) easier than it would be with paper and pencil. He used the same techniques to design a three-wheeled car (above). Whiting began work on the car but sold what had been built for



money to continue working on the trike. The current owner plans to continue developing the car to Whiting's specifications.

Before he even sat down to start sketching his trike, Whiting sought input from riders around the world, and the result is a trike that he can be proud to present to the international community. And building his own project has taught him the value of design efficiency.

But more than anything, Whiting has approached this project because he loves doing it.

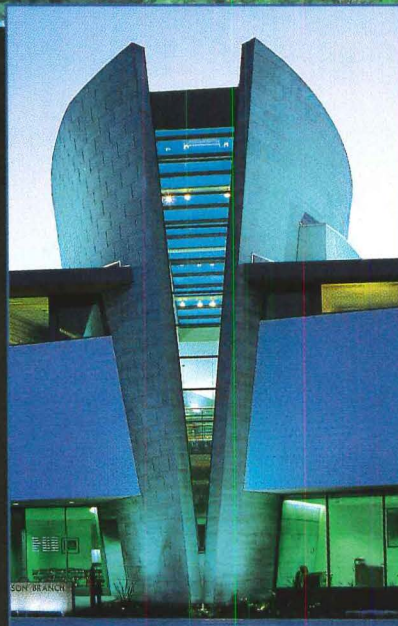
"Trikes are cool," he said. "They're like comfortable, aerodynamic, leg-powered dragsters. Besides, I guess bicycles to me are like chairs to other designers: beautiful utilitarian objects. I can't stop staring." *Kevin Lerner*

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# Rem to Earth: Resistance is futile. Just keep shopping until everything is junked

## Critique

By Robert Campbell, FAIA

Does Rem Koolhaas ever go shopping? If he does, why does he always appear in public wearing the same low-fashion, black T-shirt outfit? His clothes are as unvarying as those of Jughead Jones or a monk—a figure that Koolhaas, with his closely shorn head, might find congenial. I'm told the clothes are really all Prada, the store where low style is high style, but who can tell the difference at 10 feet away?

If Koolhaas doesn't shop, why does he produce a book of 800 pages, weighing in at five and three-quarter pounds on my kitchen scale, entitled *The Harvard Design School Guide to Shopping*? The book's message is that shopping has taken over the world and now offers the only kind of public space that still exists.

Taken over the world? Well, not everyone. I don't think I'll run into Rem trying on new identities at the local Banana Republic. And the fact that I won't is encouraging. It means some of us are still able to place ourselves outside the shopping economy. It is Rem the nonshopper I admire, not the Rem who lectures us on the importance of shopping.

I was prepared to dislike this book. At first glance, it looks like a coffee-table scrapbook, overfed and underorganized, the kind of book people buy but never read—the kind of book, in fact, you buy when you're shopping for brand status rather than

content, since the Koolhaas name today is a certifiable brand in architectural circles.

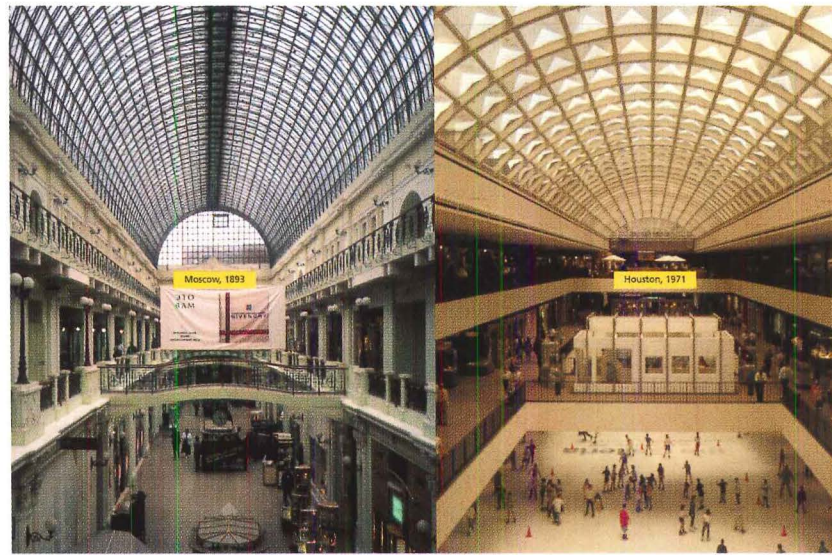
Nothing could be farther from the truth. This is a brilliant work, a classic of its kind, absolutely worth reading. And it isn't as intimidating as it seems. Its heft is the result of its coated stock, the better for the quality of the illustrations. And since maybe half of the book is made up of photos or charts of some kind, it's not such a lengthy read either. The prose is clear and pungent. It's a far cry from the illiterate pomposity of so much academic writing, such as what is encountered at a typical ASCA conference. Everywhere, there are fascinating facts, brilliant insights, informative graphics. The organization is odd but impeccable. The book consists of 42 essays by 15 authors. They are arranged in alphabetical order by title—a subtle riff, perhaps, on the nonhierarchical, globalized world that the book describes.

Each essay begins with a summary page on yellow paper. Each ends with footnotes, citing sources. This is not original research so much as a synopsis of published work by others, but it's a superb compendium nevertheless. The essays are cross-referenced in case you want to pursue a particular theme. Otherwise, it doesn't matter what order you read them in.

Only one essay is by Koolhaas himself, who is also listed as one of four editors. The same group of editors has also produced, almost simultaneously, an equally hefty book called *Great Leap Forward*,

on development in China. Both are products of a studio led by Koolhaas since 1996 at the Harvard Design School. Called "Project on the City," the studio sends students out to study a different topic or part of the world each year. Three more books on different topics are planned so far, all to be published by Taschen.

into what the authors call a "Brand Zone"—in other words, the brand "Madison Avenue," or even the brand "New York," becomes itself just another high-end salable. We now understand urban life as being the life of shopping. Sources for this attitude can be found in the work of Jane Jacobs and in the festival mar-



Moscow, Houston, what's the difference? Not much in the world of shopping.

The argument of the *Guide to Shopping* is basically this: The Western market economy has taken over and turned the whole world into a shopping center. Traditional forms of public space have either been subsumed into shopping or else have been replaced by the media. Even urbanism itself is now a subset of shopping, because the city street is morphing into an outdoor mall. Madison Avenue is cited, with a photographic street elevation on which we can count 53 brand-name boutiques, making the street

ketplaces of James Rouse. In shopping space, there is no true outdoors and no natural world. Everything, including what passes for nature, is a constructed artifact. Authenticity therefore becomes an impossibility. As one essay puts it, "In seeking to define and construct the authentic, it becomes unattainable." You can't be authentic when you're consciously creating "authenticity."

Whether you buy the book's theme or not—and I pretty much do—you'll enjoy the sidetracks. The authors delve into the history of

Contributing editor Robert Campbell, FAIA, is the Pulitzer Prize-winning architecture critic for The Boston Globe.



# Critique

shopping. They investigate the invention of such essentials of shopping space as the elevator and air-conditioning. They sketch the biographies and careers of shop-meisters Jon Jerde and Victor Gruen. They print the floor plans of 64 shopping spaces, from Trajan's Market to the Mall of America and the latest Kmart, all at the same scale. It's a browser's delight.

Here's a quote to suggest the flavor: "Public space as it once existed has disappeared ... Instead of an occupiable, physical entity, public space has been thinned to a series of surfaces: the screen of a television, the screen of a computer, the expanse of an amplifier, the sheet of a newspaper, the leaf of a magazine, the page of a journal. As a result, public exchange occurs through the mediation of surfaces: no longer spontaneous, natural, personally experienced, or existing in

time, it is deferred, impersonalized, delayed, vicarious. In its voracity to become absolute, shopping has made public space consistent with its one-dimensionality. Shopping has flattened public space."

## Let them have junkspace

But the authors weren't shopping when they wrote this book. They were collaborating, probably in some "occupiable, physical entity." They're elitists with binoculars who are bird-watching the shopping world. The most amazing example is Koolhaas's own essay. Called "Junkspace," it is set in larger type than anyone else's (so what happened to the nonhierarchical format?). Koolhaas's text sounds like the furious ranting of a misanthrope on uppers. He never bothers to define *junkspace*, but we can assume it means the space of shopping. Some samples:

"Junkspace will be our tomb.



Sprawl, Chinese style: A billboard tells the future in the Pearl River delta.

Half of mankind pollutes to produce, the other half pollutes to consume. The combined pollution of all Third World cars, motorbikes, trucks, buses, sweatshops pales into insignificance compared to the heat generated by junkspace. Junkspace is political: it depends on the central removal of the critical faculty in the name of comfort and pleasure." This is the preaching of the monk in black. "At the moment of its greatest emancipation, humankind is subjected to the most dictatorial scripts: from the pushy oration of

the waiter, to the answering gulags on the other end of the telephone [he means telephone trees, of course], the safety instructions on the airplane, more and more insistent perfumes, mankind is browbeaten to submit to the most harshly engineered plotline." Insistent perfume? This is a guy who truly suffers.

Or listen to this: "Junkspace is space on vacation; there once was a relationship between leisure and work, a biblical dictate [note "biblical" in this context] that divided our



weeks, organized public life. Now we work harder, marooned in a never-ending casual Friday." It all sounds like a sermon by Savonarola.

At a recent Harvard symposium, almost every speaker described the *Guide to Shopping* as "nonjudgmental." Indeed, so did Koolhaas himself. People who make value judgments, he said, are "dumb." We should write of the world as it is, not as we think it should be. We should learn, he said, not prescribe. Well, so we should. But value judgments are impossible to avoid, and Koolhaas certainly doesn't avoid them.

Calling people who make value judgments dumb is, as we all know from high school, just a way of being cool. Maybe his posture of cool is what makes the Koolhaas persona so appealing to students. But the Koolhaas of "junkspace" is more like their nagging parents. He's totally uncool. He's furious at the sinful, lazy world he and his colleagues have researched so diligently. *Delirious New York*, take a cold shower. This is the Koolhaas I like.

### Shopping till we drop

I read another book about the same time I was reading the *Shopping Guide*. Both are brilliant. Both books give you the impression that they are talking about the whole world. Yet the world of one book never even appears in the other.

The second book is E. O. Wilson's *The Future of Life*. Wilson is a biologist and his book is an intensely felt warning about the danger to our planet. The biosphere, that thin blanket of life that coats the earth, is disappearing. Species, both plant and animal, are becoming extinct at appalling rates. The earth's ecosystem, says Wilson, is far too complex to be replaced by any future human genetic engineering. We will never recover the loss. He suggests we leave the following message to posterity:

*We bequeath to you the synthetic jungles of Hawaii and a scrubland where once flourished the prodigious Amazon forest ... Accept our apologies and this audiovisual library that illustrates the wondrous*

*world that used to be.*

What links these two books is a simple fact: It is precisely the activity described in the *Guide to Shopping* that is creating the disasters described in *The Future of Life*. The Amazon rain forest, and all the species for which it is sole habitat, is disappearing because the land is being converted to grazing for cattle in order to make hamburgers. The shopping world is devouring the rest of the world in a quite literal way.

I remember a student, far back in the 1970s, saying of his design project, "At least it's relevant." He didn't say relevant to what. In those days, *relevant* was a buzzword, and the buzzword was enough. No doubt he meant relevant to some social issue. Of course, he was being silly. But it occurs to me that this is something you would never hear from a student today. Nobody talks about architecture as "relevant."

The literary critic Northrup Frye once made a useful distinction. He was talking about literature but could have been talking about architecture.

He said literature is two things: It is playful and it is ethical. It is about creating wonderful aesthetic form, and it is also about understanding life and reflecting on values. Both aspects must be present.

When we look at a work such as Frank Gehry's Guggenheim Museum in Bilbao, it's easy to see we're in a great era for the playful side of architecture.

But we're at a low ebb on the ethical side. The planet is at risk. Architects should respond. Our "junkspace" is one of the culprits. So is the heedless, resource-consumptive, cancerlike spread of human-development sprawl worldwide. If anyone can, architects should be able to understand these issues.

Despite an unconvincing chapter on companies that market themselves as ecologically responsible, Koolhaas's book fails to make the seesaw connection between the rise of the world of shopping and the fall of the world of nature. But you can tell he's worried. ■

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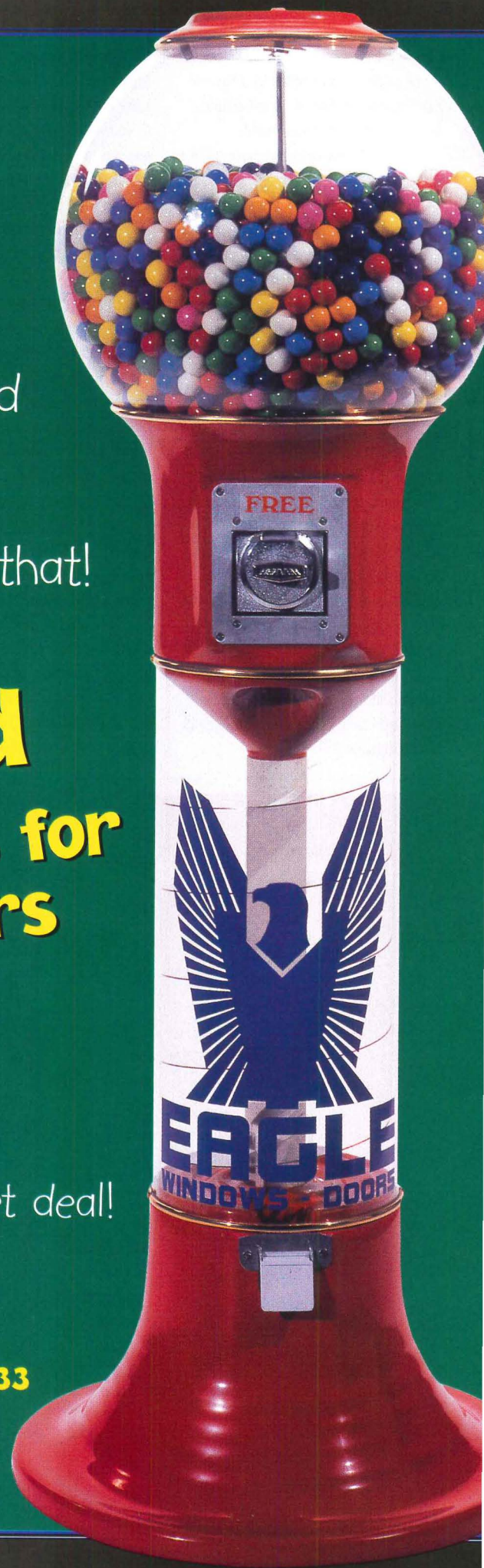
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# Snapshot



By Jane F. Kolleeny

Looking like a friendly octopus hugging a little ship in the sea, Kasahara Amenity Hall presents a disarming invitation to the surrounding community it serves. Designed by Ushida Findlay Architects, whose work reflects a synthesis of the Japanese and Scottish cultural backgrounds of its partners, the building's extraordinary form resulted from an imaginative response to its function, combined with site considerations and climate. Located in Gifu Prefecture, Kasahara is a bedroom community on the perimeter of Nagoya, Japan, which is cold and dry in winter and hot and humid in summer. This small industrial town of about 3,000 is known among Japanese builders for its tile products, used liberally in this building. Indeed, the exterior, wraparound, undulating surface of the building is inlaid with small, circular ceramic tiles, which easily accommodate the organic, curvaceous form of the building.

In contrast to its polluted and industrial environs, the hall is a landmark of sustainable architecture. According to Kathryn Findlay, "It explores a new morphology based on the unseen energy of climatic conditions." This has

## Kasahara bows in service to the community





## Snapshot

resulted in a fascinating design. Conceived in response to the sun's movement across the sky, the project is described by the architect as "self-regulating." It modulates heat for warmth in winter and protection from high temperatures in summer. The protective arm shades the building from the sun, and a peripheral gap around the roof allows rain to enter and wash down the walls, cooling the interior. A masonry wall in back of the building regulates solar gain, holding it or blocking it depending on the weather.

A wide range of community activities take place at Kasahara—funerals, weddings, classes, meetings, performances. Consequently, the plan resembles a micro-organism with smaller cells to house the diverse uses. The nucleus is the main gathering hall, which is shaded by a shallow half-hat roof exposing a crescent-shaped clerestory, allowing light and the path of the sun to mark the tile floor inside. Maximum sun penetration occurs on the winter solstice, at noon on December 21, when it is most needed. Says Findlay, "These features make use of the invisible forces of nature." ■



The undulating exterior of the building is inlaid with small, circular ceramic tiles from the local factory (top). A crescent-shaped clerestory in the main gathering hall allows light and the path of the sun to mark the tile floor inside (left).





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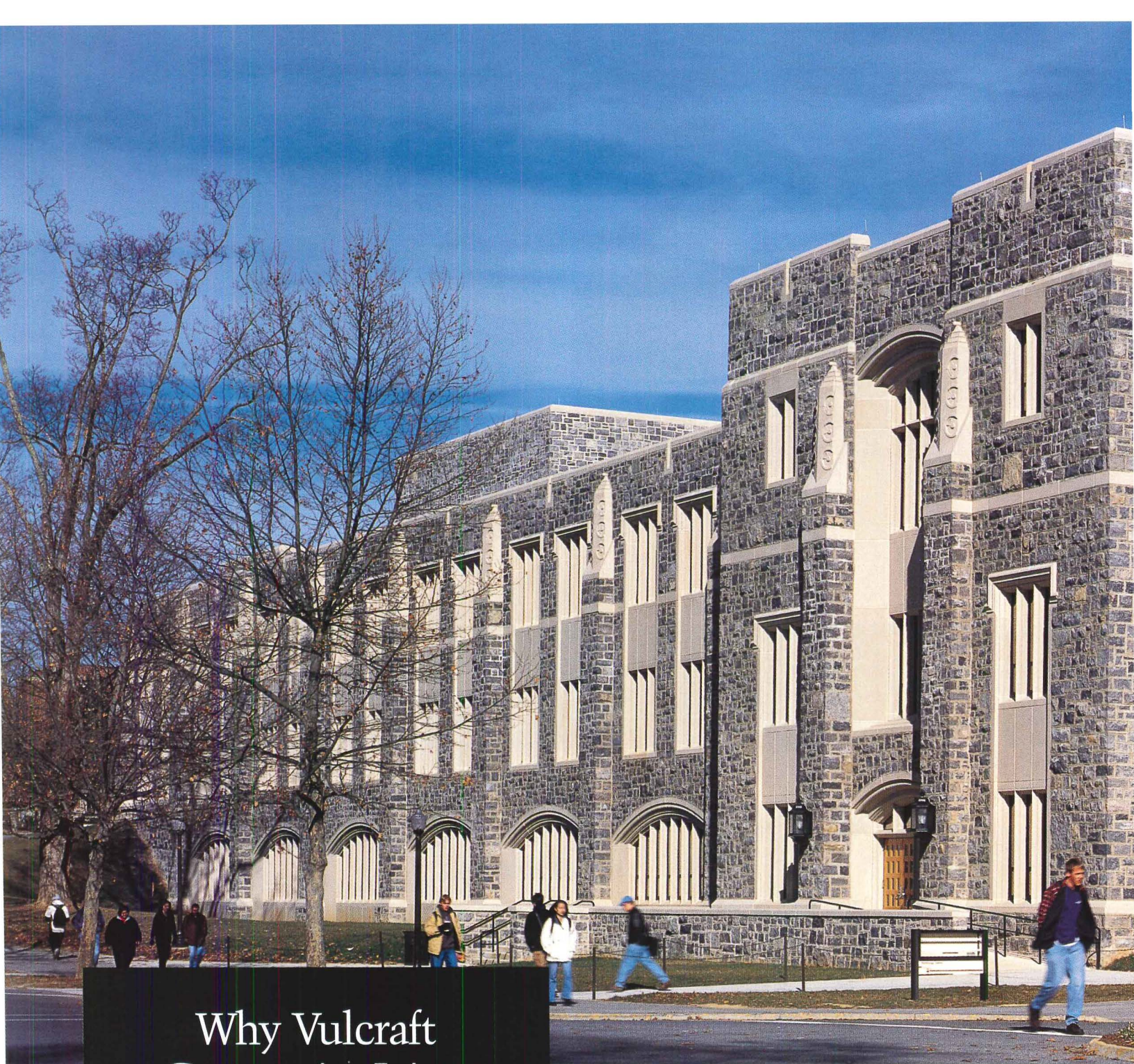


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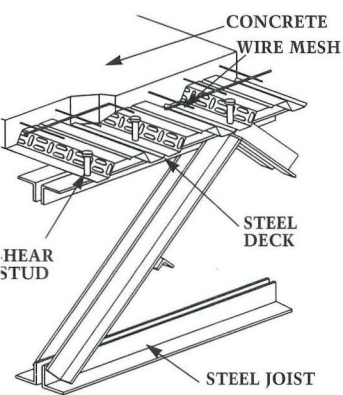
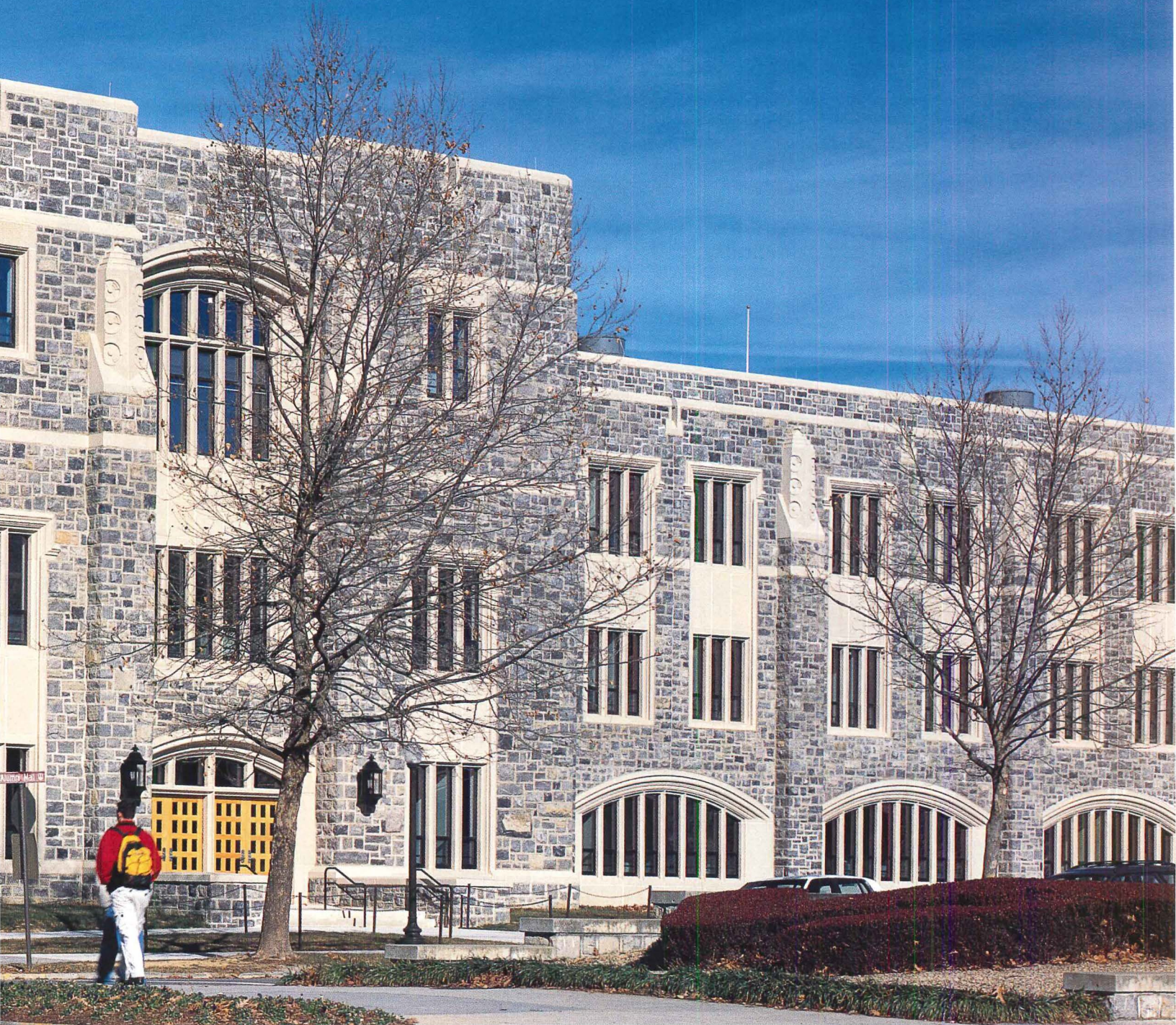
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When planning the \$21 million Torgersen Hall at Virginia Tech's advanced communication, information and technology center, the architecture/engineering firm of Sherertz Franklin Crawford Shaffner, Inc. faced a number of design challenges. They included cost





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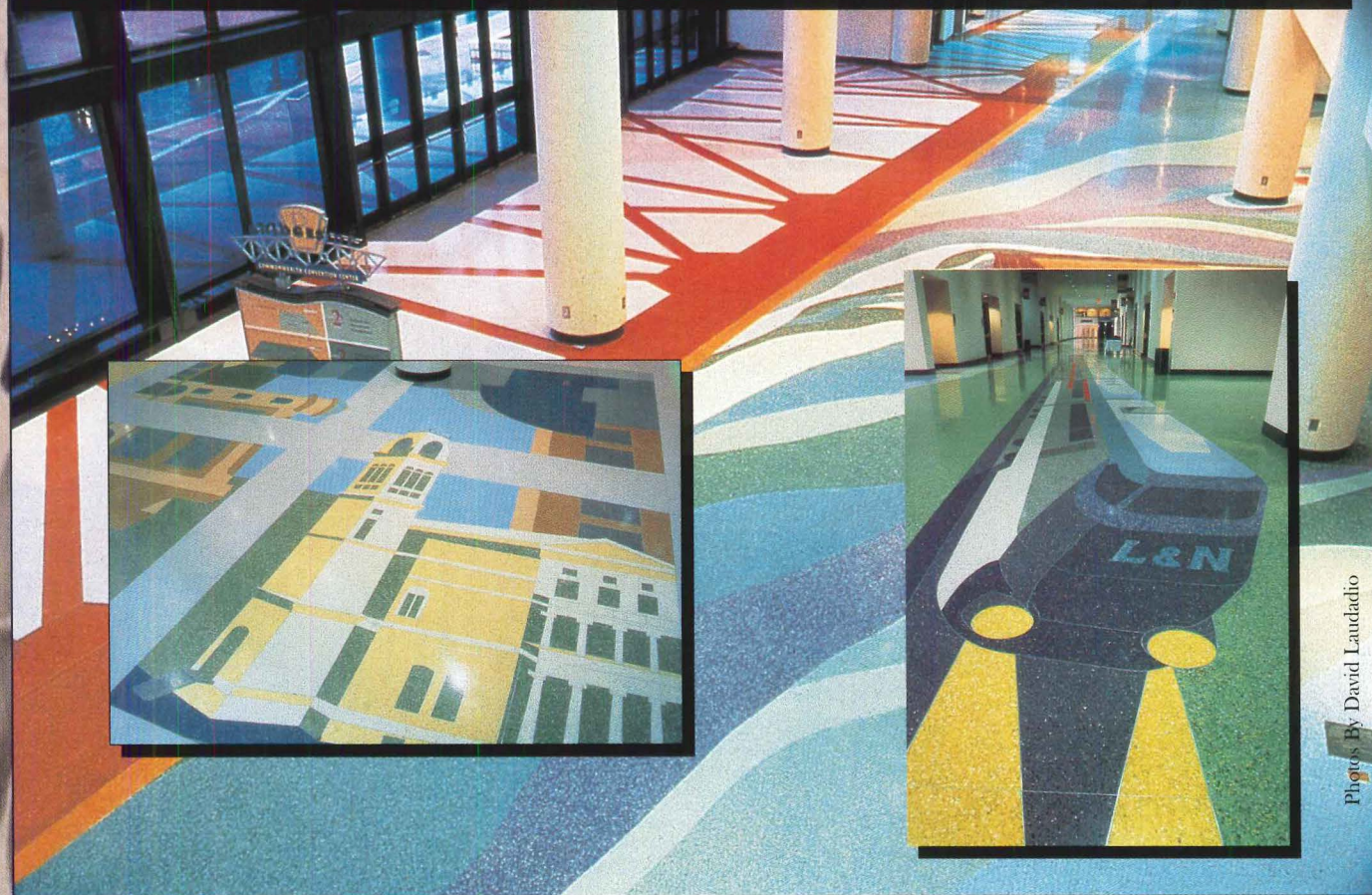
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Photos By David Laudadio

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A pedestrian bridge spanning a lake completes the ground-floor circulation loop that links all buildings of the Ericsson campus.



1. Employee access
2. General parking
3. Wetlands
4. Garden courts
5. Future amphitheater
6. Existing lake
7. New lake



# Innovation in Dallas



Ericsson's Swedish sensibilities influence the design of its Texas headquarters to create a workplace infused with freshness

FEATURES

By Francis Duffy

One of the many striking contrasts between the contemporary architectural scene in Europe and the U.S. is that Europeans often import American architectural practices to design large office buildings because commercially minded Europeans believe that American architects know everything there is to know about office design—while Americans tend to import European architects to design art galleries and museums, presumably because everyone on this side of the Atlantic assumes that European architects know all about culture. Why Europeans (with the interesting recent exceptions of Renzo Piano and Norman Foster) are not supposed to be able to design office buildings, and American architects arts centers, is a mystery to me. Nevertheless, it is in exactly this way that old roles and outdated stereotypes are perpetuated—yet another reason why innovation is so hard to achieve in architecture today.

For once, something has changed, and in office design—a field of architecture that has become particularly formulaic and predictable in this country. From the evidence that meets the eye, it is easy, and only slightly unfair, to imagine that most architectural practices that design offices in the U.S. have been brainwashed into believing that the office-design problem has been cracked, that the rules are fixed for all time, and

*Francis Duffy is a founder of DEGWA, an international consultancy and design practice. He is a past president of RIBA and of the Architects' Council of Europe.*

that all offices should be the same. And yet, amazingly, in Dallas—that facsimile of SimCity in a desert of banal commercialism—an exemplary and highly innovative office building has recently been completed, a building so fresh and humane that it makes the conventions that govern North American office design look bankrupt and obsolete.

The rare success of this office building raises many questions about the conditions under which innovation was achieved. Why should any client wish to do anything new in Dallas, where there is so much land and money, so little time, and even less patience? Is this innovative project an isolated freak, the result of some foreign eccentricity, or a whim of the great? Did it take longer than usual to design and build? Did money do the trick? Was there anything different about the briefing and the design process? What was so special about the business objectives that this remarkable project was intended to address?

I shall attempt to answer these questions. But I should say at the outset, as a commentator on international office design, that the most hopeful feature of all, and one that goes against most clients' habitual overdependence on local contacts and established track records in choosing an architect, is that this innovative office project, the North American headquarters of the Swedish telecommunications giant Ericsson, has been designed by a relatively little known American architectural practice, Thompson Vaivoda & Associates (TVA), which is based in Portland, Oregon.



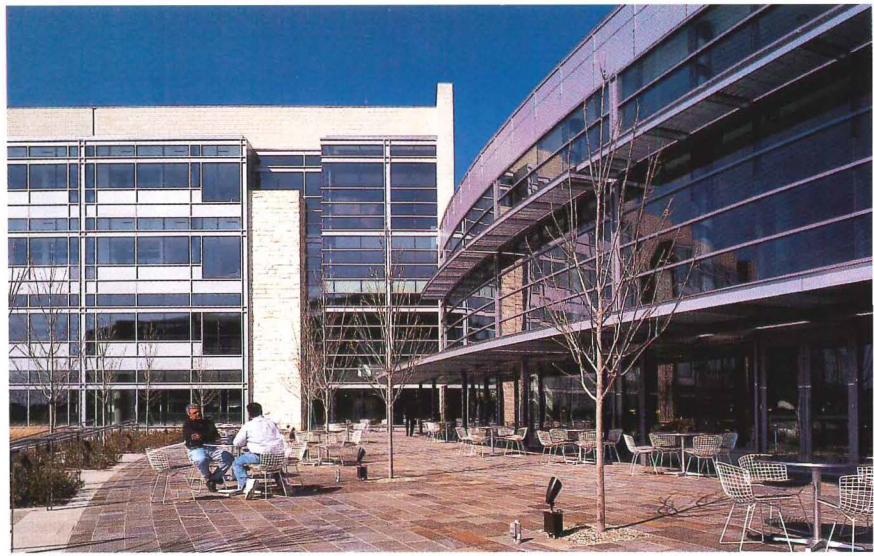
### What makes Ericsson Village different?

Imagine the approach on the freeway driving north out of Dallas toward Plano—the big sky, the endless distances, the increasingly spaced-out alternation of flashy, self-aggrandizing office structures and even more attention-grabbing shopping malls. Farther away are the instant-housing subdivisions: gray boarding, synthetic-slate pitched roofs, formulaic, indistinguishable. Right across from the Ericsson site is a three-story developer's office building of the most conventional sort—brush; squatting on the landscape, without any concession to place, site, view, or aspect; introverted; deep in plan; mean in construction; clueless in design.

Ericsson Village is exactly the opposite. There is little attempt to grab attention. The site is what matters—it is large: 110 acres, of which about 11.5 acres are wooded and much of the rest wetlands. The first impression is the excellent landscaping, which has taken advantage of the existing water table to restore the delicate ecology of the mid-Texas plain. Only after appreciating the landscaping do you begin to understand how skillfully this large, first-phase structure (500,000 square feet accommodating customer facilities and 1,700 Ericsson staff) has been slipped onto the site. Entry to the building is at second-floor level, so much of its bulk is hidden. The two-story customer center (which is also the main visitor entry point) acts as a hinge linking two four-story wings (or “bars,” as the architects call them) of office space. The bars of offices face each other at an angle across a restored lake, over which a delicate, Japaneselike footbridge joins the farther ends of the office wings to complete the site's main pedestrian circulation loop. The facades are a mixture of a beautiful, tawny local stone and a simple grid of gray metal and glass.

Superior design quality is already very evident. On entering the building, three other major divergences from conventional office design become apparent. The first is that, amazingly, your location is completely

**A double-height gallery, or pedestrian street (right and above), connects buildings at the ground floor. Casual meeting areas provide comfortable seating and great views of the lake (below).**

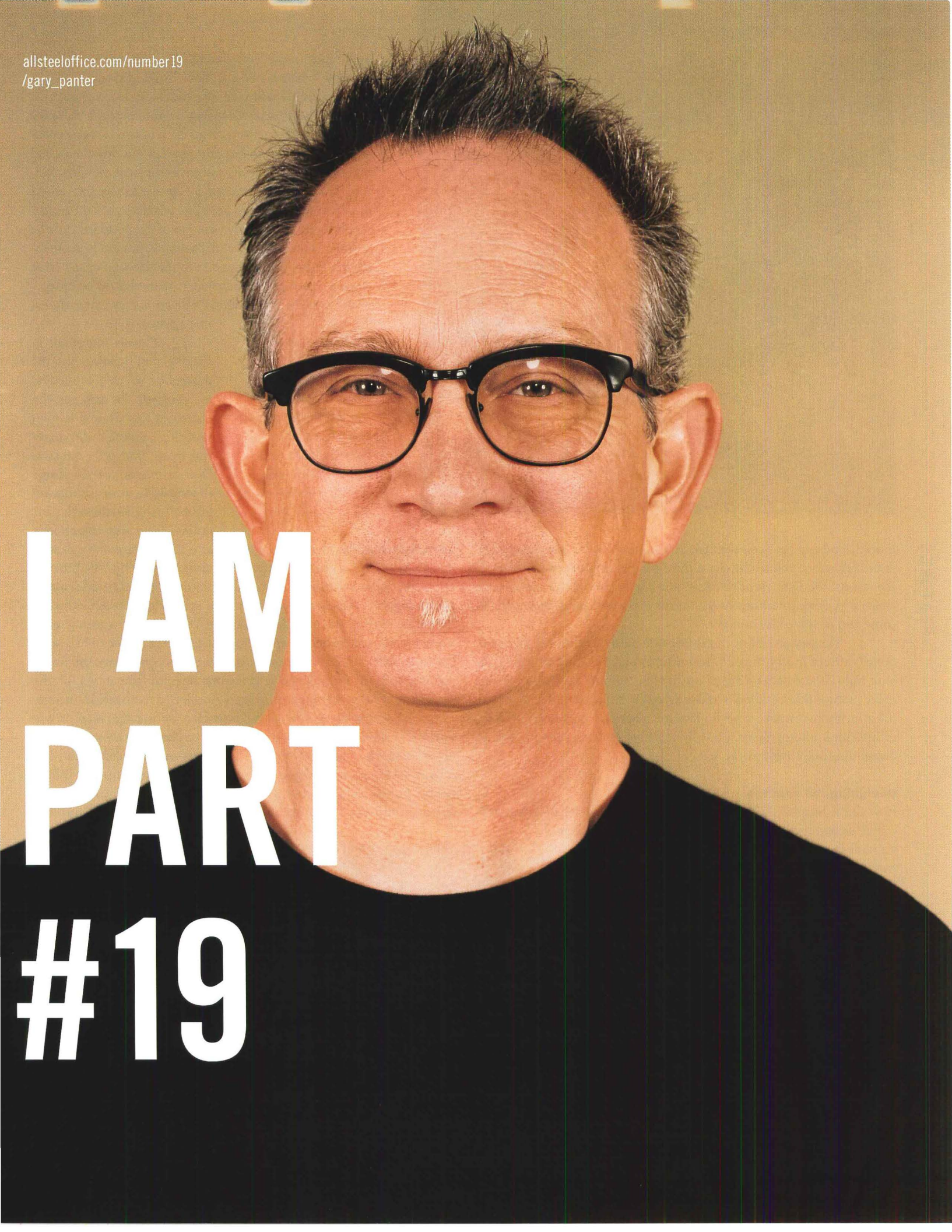


obvious no matter where you find yourself throughout the entire building. To achieve this, the architects took advantage of the falling site that made it possible to enter at the second-floor level and created two double-height main circulation routes that face each other across the lake (honoring the “village” metaphor by really feeling like streets). The second big difference from common practice is that light floods across the big office floors (approximately 140 feet across: 45,000 square feet in the southern office bar and 65,000 square feet in the northern one). External views are accessible to everyone—a feat made possible by lots of glazing; by keeping the walls around workplace cubicles as low as possible; by consistently locating the small, glass-fronted, enclosed office rooms (exactly the same footprint as the cubicles) strictly in the middle of the three zones that structure the floor; and, most importantly and unusually, by locating primary, on-floor circulation routes right up against the building's glassy perimeter.

So far, so functional. The third difference from the banality of the conventional office interior is more purely visual. It is what used to be called architecture: the skillful interplay of structure, materials, aspect, daylight, and color. The interior spaces in both the customer center and the office bars are layered in a most subtle way. Grandiosity is avoided. No space is made too big. The scale always feels right. All the interior spaces interpenetrate and interconnect. Architecture and interior design—and,

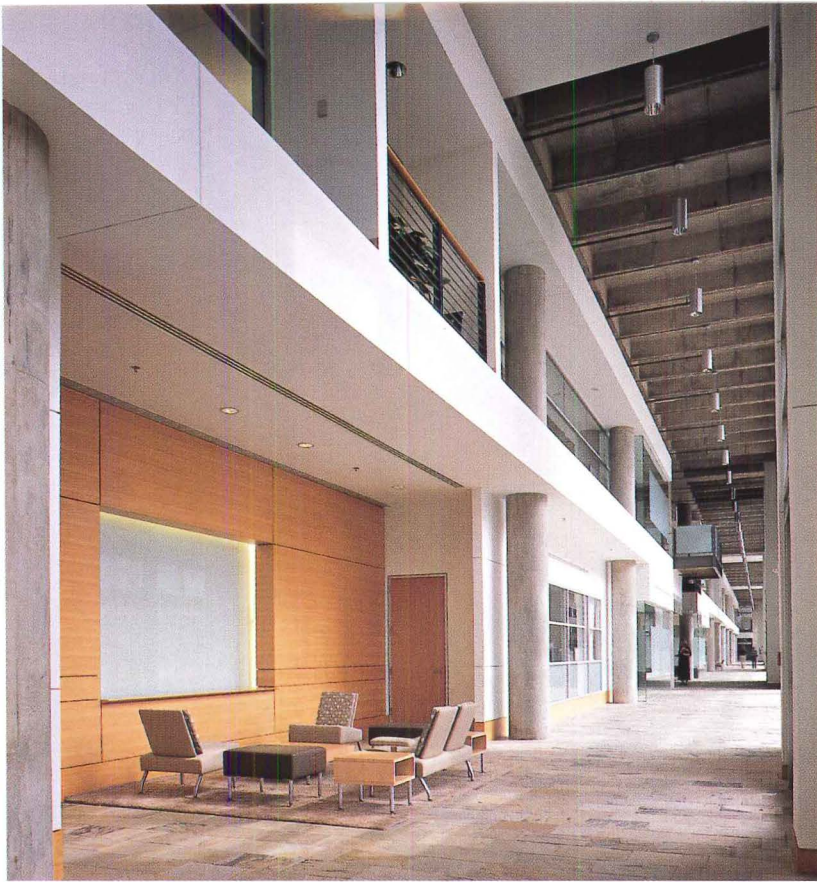


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A close-up portrait of a middle-aged man with short, dark hair, wearing black-rimmed glasses and a black t-shirt. He has a slight smile and a small white goatee. The background is a plain, light-colored wall.

# I AM PART #19





and much more environmentally responsive, with, for example, chilled ceilings, floor-based displacement air-conditioning, as well as climate-modifying external skins.

Such narrow building depths and such elaborate environmental systems are a function of two factors: expensive energy and much more demanding and empowered end users. Given Texan habits and environmental extremes, they must have seemed to Ericsson in this case to have gone a step, or indeed two steps, too far. More positively, it is quite clear that Ericsson deliberately went out of its way to instruct the architects to respond to local conditions, not just in the shaping of the floor plates but also in the selection of materials and the design of the landscaping. All this is a deliberate part of the Swedish multinational's determinedly extranational management style.

**Meeting niches located along the pedestrian street are equipped with glass white boards for both chance and planned interaction (left). Employees are encouraged to use the campus dining area as an alternative workspace (below).**

Equally important in shaping this building was the process by which the building was designed. The manager who conceived this process is John Brownrigg, Ericsson's director of real estate in North America. Over a period of 10 years, Brownrigg's team conducted feasibility studies, chose the site, justified the project in economic

indeed, landscaping—complement one another, so that the strong, fair-faced concrete structure, the views, the clever lighting, the stone paving of the streets, the light wood finishes, and the bright fabrics combine to create a working environment that seems to radiate charm and sunlight, come rain or shine, day or night.

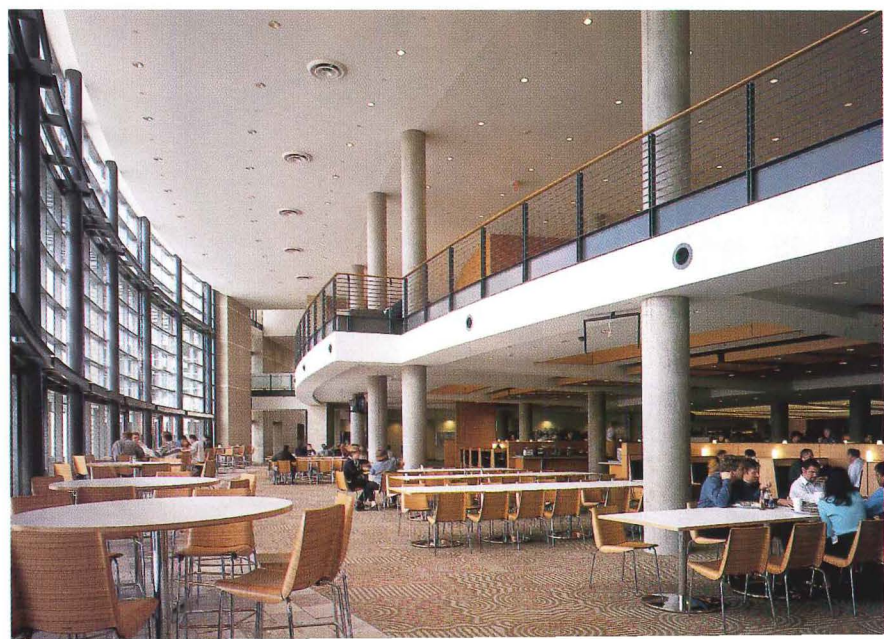
The physical fabric of the Ericsson head office creates an exceptionally attractive acoustical environment, as well. Not only does the place look right, it also sounds right—busy, alive, stimulating. This is a rare office interior that both looks and feels as if it has been designed, not by office furniture manufacturers for facilities managers, not by architects for architectural photographers, but by sensitive designers for intelligent, demanding knowledge workers.

### Designing the process

How did it happen? Ericsson is a Swedish company, design-aware, self-conscious, and protective of its brand. Hence, it is not entirely surprising—although rather unusual for a European company operating in North America (unlike Americans abroad, European companies in the U.S. are generally content to follow local standards and practice)—that there is a Scandinavian directness and freshness throughout the design. Certainly, Ericsson's Swedish chief in-house architect and design manager, Helena Hambræus, took a personal interest in the project at all stages of its development, not least because it was a major opportunity to apply Ericsson's new workplace model. However, in many respects this is by no means a typical Northern European building planted randomly in Texas. The main office floors, for example, are at least five times deeper, glass to glass, than is customary in most contemporary Northern European office buildings. Not only are those buildings generally narrower than their North American counterparts, but they are also more expensive—not least because, more often than not, they are more cellular

terms, assembled the design team, and managed the interface with the users. BOSTI Associates, a workplace consulting firm based in Buffalo, played a critical part in surveying users and establishing an empirical basis for a program of work methods and general needs. Brownrigg's business case for Ericsson's new building in Dallas was, first, to economize by releasing many scattered sites and properties in order to concentrate as much of Ericsson's Dallas operations as possible in one main site and, second, to use this financial opportunity to facilitate a corresponding movement within the company toward a more rationalized and coordinated managerial structure.

For a variety of internal and external reasons, rationalization was slow and complicated, but one fortunate consequence was the close working relationship that Brownrigg built with an Ericsson consultant, Bill Adams, of Program Management, an office consultancy firm in Dallas. Adams, trained as an architect, acted throughout the entire U.S. headquarters consolidation program as an adviser to Brownrigg and the





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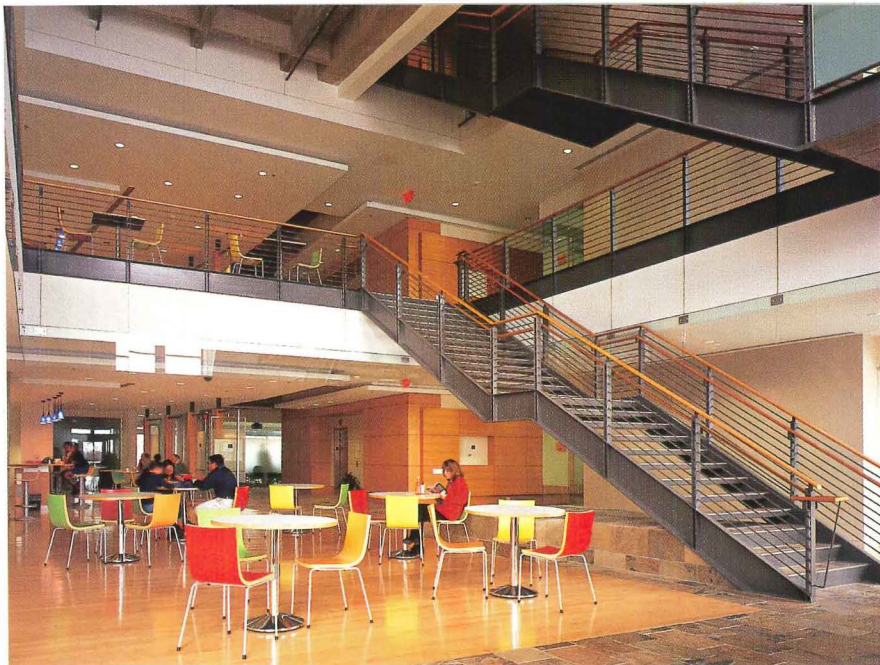
#19



Stockholm-based real estate unit on strategic planning and property matters (and continues in this capacity). It was Adams and Hambræus together, who, despite—or perhaps because of—the experience of two previous false starts for the project, were able to quickly deploy a sophisticated international architectural sensibility to help Brownrigg through a third and final architect-selection process. An eye-opening series of nationwide visits to architects' offices (and to their completed buildings), plus competitive sketch designs prepared in a parallel commission of four firms, resulted in the surprising appointment in January 1999 of TVA, an outstandingly talented but out-of-state architectural practice, to lead the design effort, supported by Gideon Toal, a local Fort Worth firm. Immediately after this appointment, Brownrigg, again working with Adams and Hambræus, organized building-team visits to significant Ericsson office projects in Northern Europe, an experience that proved critical in communicating Ericsson's subtle corporate culture to the newly appointed designers. Despite extensive programming and change management, design was completed and construction started by December 1999. The first of the 1,700 occupants began to occupy the completed building in February 2001.

### Resisting conventional pressures

How did Brownrigg protect his newly appointed design team from the influence of financiers, developers, development consultants, and design-and-build operators, all of whom must have been anxious to get their hands on the building to make it conform to conventional office real estate norms? Ericsson is unusual. Unlike most contemporary businesses, it does not regard real estate as a noncore and undesirable overhead. Brownrigg, as Ericsson's director of real estate in the U.S., was in the fortunate, and somewhat unusual, position of being able to justify a purpose-built building because of the obvious real estate and operational efficiencies gained by consolidating so many scattered premises.



He was doubly lucky to be working within a culture that regards the office environment as a powerful stimulant to improving the effectiveness of the business. Innovation was encouraged in Dallas because ERA, Ericsson's new streamlined real estate unit, had recently chosen to pursue a worldwide initiative to use the design of office settings to achieve concrete business objectives, to break down departmental barriers, use information technology to encourage mobility, improve interaction between all parts of the business, promote transparency and knowledge sharing, attract and retain customers and staff, and provide the infrastructure needed for them to work together in rapidly changing teams on complex, shared, open-ended problems.

Brownrigg was also in a position to do something even more unsettling from the point of view of conventional real estate practice. With his own particular position, skills, and experience, he was able to rethink the whole building-delivery process in ways that sharply cut costs. Although a construction manager was appointed, no profits or fees were paid to a real estate broker, developer, project manager, cost estimator, quantity surveyor, or change manager. Brownrigg arranged to finance the entire project off the balance sheet and demanded no extra in-house staff apart from those resources provided by the design team.

**Each office floor has its own mini café (above). The "Living Room" (left) contains furnishings specifically chosen to connect the visitor to the company's global brand.**

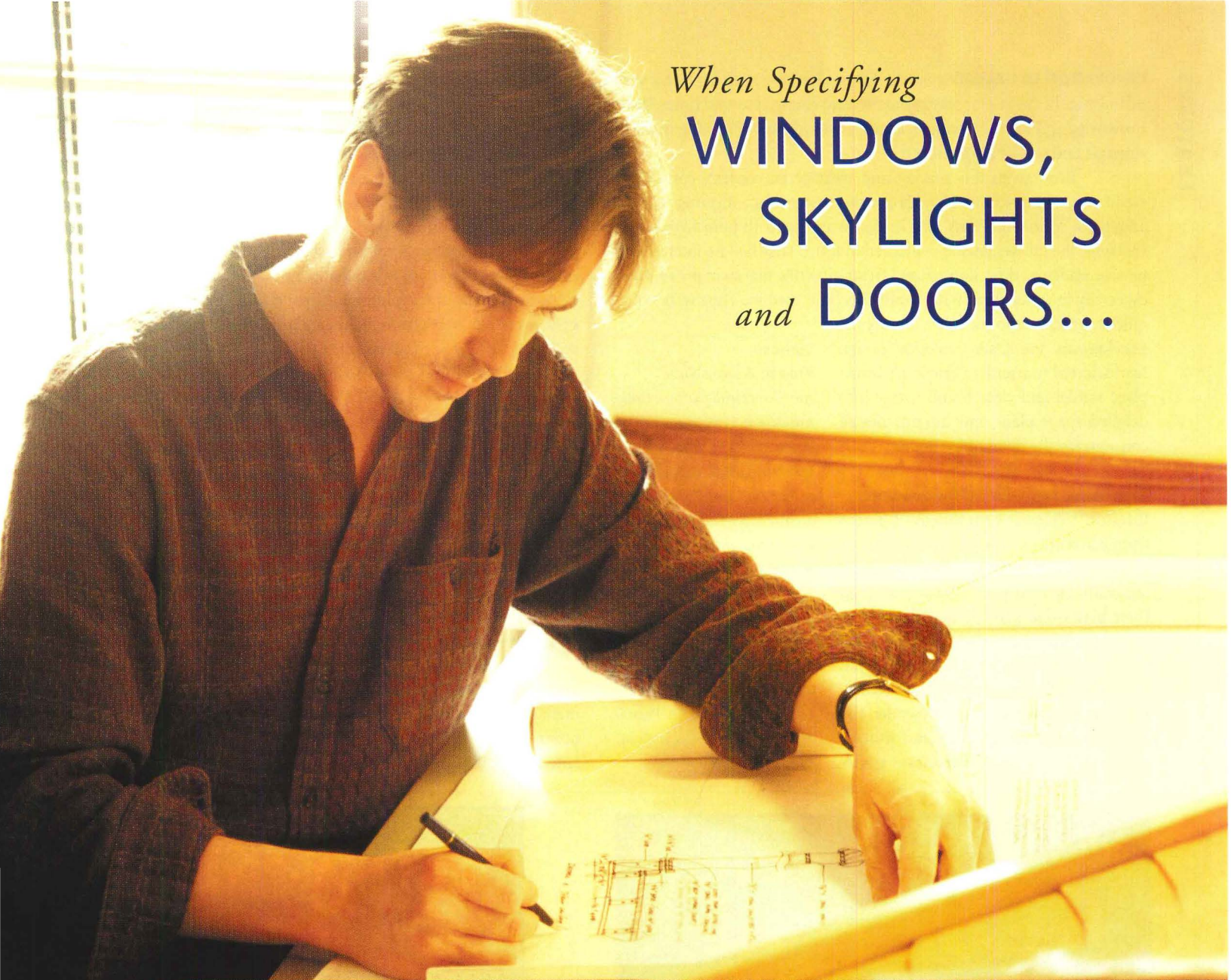
What he did was all too rare. He treated the headquarters project as if it were exactly the same as any other large Ericsson in-house project—such as the development of a new product or the launching of a new marketing campaign. Achieving success was not a mysterious process needing expensive outside expertise. Success depended solely on the exercise of superior managerial rationality.

To achieve this program, Brownrigg and his project manager, Joe Corcoran, an architect, had to communicate Ericsson's business culture to the design team. They also had to communicate the same messages internally to Ericsson's staff in Dallas, especially because, during the whole period of design and construction (from 1999 to today), the telecommunications industry was

(continued on page 74)







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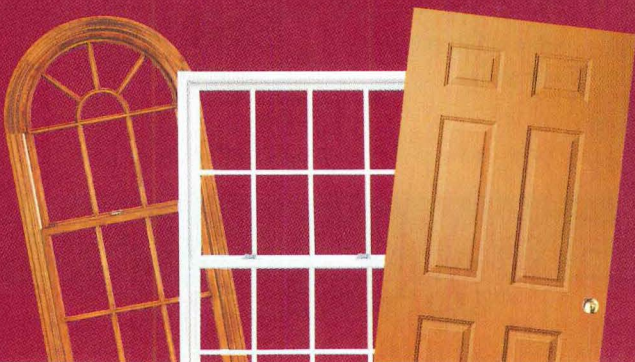
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**INNOVATION IN DALLAS** (continued from page 72) experiencing severe turbulence. Ericsson's top management team changed several times, leaving Brownrigg and his team with an especially tough job of driving through a strategic and challenging project.

Even given this market and managerial context, considerable credit must be given to TVA. From the first project meeting, the firm adopted a confident, open, and inclusive approach to hold together and challenge the full design and construction team. They had no interest in the passive, undemanding, limited, and frustrating role that so many architects, especially in office design, have sadly become used to. They were equally quick to reach out to the users, as were the Lauckgroup, the Dallas interior design firm selected to translate Ericsson's workplace model and clear brand image into detailed space plans and interior design concepts for the main office floors.

#### Removing barriers to innovation

Ericsson Village is refreshingly different from conventional low-rise offices in four key physical respects: sensitive siting and landscaping; clarity of circulation; deep floor plates that provide light and views for everyone; and varied interior spaces that are neither too grand nor too mean. It sounds easy, doesn't it? Without resorting to major architectural fireworks, the building rivals the business and human advantages—interconnectedness, trans-

parency, sense of place, aspect—of the best contemporary European office buildings, such as the British Airways Waterside Headquarters near Heathrow (architect: Nils Torp) and the new Nokia Headquarters in Finland (architect: Helin & Siitonen). In both of these projects, the big spatial and organizational idea is also a central interconnecting street, but the architectural resources deployed to achieve this are much more complex.

In the context of the U.S., this innovative Ericsson project is a particularly cheering exception to the generally low level of contemporary office design. This is not to say that there is nowhere further to go. In some respects, such as the exploitation of sustainable environmental systems, greater use of wireless technology, and other new ways of working, there is still plenty of scope for development.

The project serves to make a much more fundamental point: Failure to innovate may be due to more insidious causes than simply lack of money or time. While such failures are certainly not the result of any inherent shortage of design skills, many architects have become mesmerized by the notion that office buildings are an inert commodity to be provided, within a formula, by the square foot, at the cheapest price. Clients have also lost sight of a great opportunity: Designed properly, an office building is a business tool, a powerful device to share knowledge and generate wealth. Architects and clients have allowed themselves to be bamboozled by two industries, construction and real estate, that are largely driven by supply-side pressures and deliver what they like to deliver, not what any human being would ever dream of wanting.

Reversing this situation is not easy. Ericsson Village proves that only by escaping from conventional procurement and project-management processes can a breakthrough in the design of working environments occur. Following the conventional procurement route is not only a guarantee of banality; it may also be the ideal recipe for commercial sclerosis. ■

#### Sources

**Project:** *Ericsson North American Headquarters, Dallas*

**Architect:** *Thompson Vaivoda & Associates Architects—David P. Gellos, AIA, design principal; Clint Cook, project architect; Anthony Burke, project manager*

**Associate architect:** *Gideon Toal—Randy Gideon, FAIA, principal in charge; J. Bruce Benner, AIA, project manager; Greg Ibanez, AIA, project architect*

**Interior design:** *Lauckgroup—Brigitte Preston, design principal; Ted Kollaja, AIA, project manager*

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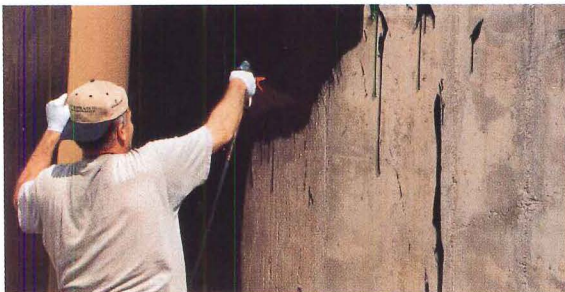
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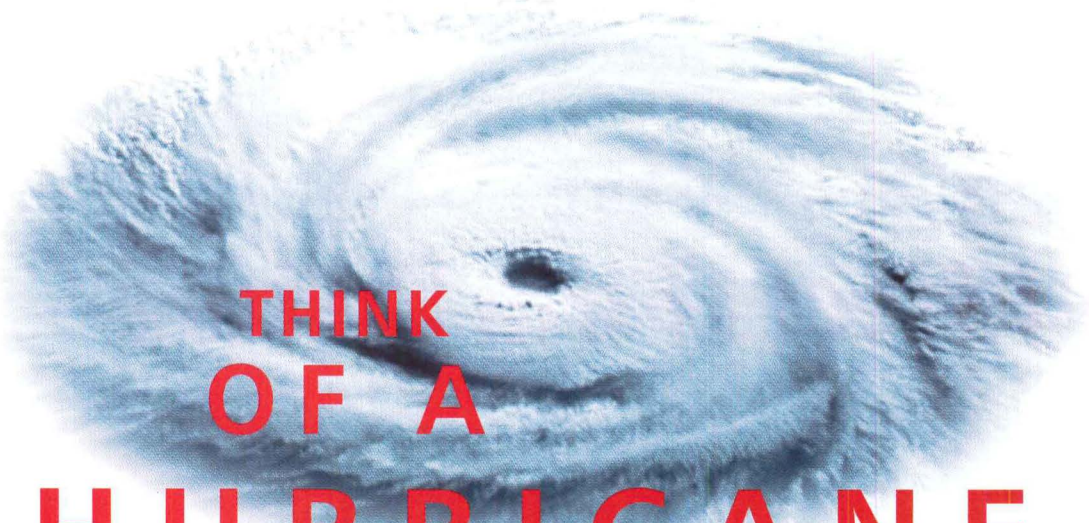
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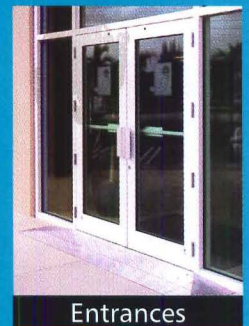




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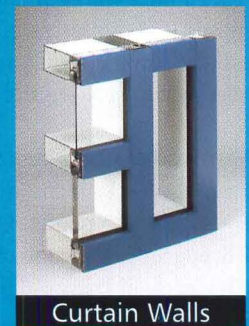
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# Lessons from the best-managed firms

## Small, medium, and large

# Size Affects Firm Culture

By Jane F. Kolleeny and Charles Linn, FAIA

**A**rchitecture firms often forget the importance of their organization's culture, which is the sum total of the human qualities that characterize a firm: the teams, small or large, of human beings working together. "It is one of the most significant signals a firm sends to the outside world," says Frank Stasiowski, of PSMJ Resources. Is yours a dynamic and outspoken or a quiet and studied culture? Is it corporate and slick, or modest and familylike? Is it casual or formal, young or old, large or small? Culture determines how firms behave as organizations: whether they are satisfying places to work, what kinds of projects they pursue, and who their clients will be. It is "the environment that reflects the values, commitments, and interpersonal attitudes of the people in the organization. Effective culture draws out and aligns peoples' skills and energies toward the goals of the firm and contributes to synergy that elevates individual talents," says Hugh Hockberg of the Coxe Group. In Part II of our series on firm size, we examine three areas where size has a direct bearing on culture: worker satisfaction, firm organization, and the relationship between size and the design-and-profitability equation.

### Firm culture as a source of worker satisfaction

Firm managers are the architects of their office culture. They must design a work environment, coordinate its parts, and provide the comforts that will engender the goodwill necessary to encourage staff to maintain the high levels of energy and creativity required to serve clients. Architects' work is mentally taxing, with enormous potential for liability, and it demands long hours. Providing commensurate benefits to counterbalance the stress of work is essential.

According to *How Firms Succeed*, a recently published book by James P. Cramer and Scott Simpson, prospective employees want to work in firms whose culture offers recognition and reward for their talents;

elders and mentors to work with and admire; and adequate opportunities for growth.

For young architects, the variety of tasks is one of the most rewarding things about small office culture. According to Robin Donaldson, AIA, of Shubin + Donaldson, in Culver City, California, with 12 employees, "We compete with the bigger companies for talent but offer the advantage of being in a small office where staff work on all phases of projects, not being just the 'stair-detail guy.'" Smaller firms are often unable to pay the salaries large firms can, but graduates, in particular, accept this as a worthwhile trade-off in jump-starting their careers and finishing their education in a well-rounded fashion.

Firms like AC/2 Studio, in New York City, with five employees, and Randy Brown Architect, Omaha, whose firm varies from four to 12, have both found that younger architects are less focused on benefits. Jim C. Childress, FAIA, of Centerbrook Architects, Centerbrook, Connecticut, with 75 employees, concurs. "Younger people without families tend to be more interested in income and paid time off."

By the same token, one of the advantages of the culture of large firms is that they have the resources to offer their employees valuable in-house educational opportunities. Hellmuth, Obata + Kassabaum (HOK) in St. Louis, with 1,850 employees; Harley Ellis, in Southfield, Michigan, with 313 on staff; and RTKL, in Baltimore, with 750 employees, all offer their own "universities." RTKL hired John McRae, former dean of the School of Architecture at Mississippi State University, to head up its program. In most cases, these curricula evolve from informal in-house seminars and intern-development programs to highly structured programs that often allow AIA continuing-education units to employees. These programs focus not just on architectural know-how, but leadership development, project management, marketing and business, and related disciplines, such as interior design, landscape architecture, and art.

Some firms have upped the benefits ante even further than the standard 401K plans and bonuses. Centerbrook Architects offers a travel





## Part II

A FIRM'S SIZE AFFECTS ITS CULTURE, WHICH INFLUENCES EVERYTHING FROM BENEFITS TO ORGANIZATION TO PROFITABILITY.



Of the 52 firms that submitted data for the following confidential chart, about one-quarter did not provide financial information on their firm. The designation "NG" means "not given" and appears in those fields where information was not provided.

	SIZE OF FIRM	MULTIPLIER	PRINCIPALS' SALARY	ASSOCIATES' SALARY	ENTRY-LEVEL SALARY	MARKETING/DIRECTORY COORDINATOR SALARY	CFO/ACCOUNT-MANAGER SALARY	IT DIRECTOR'S SALARY	% REVENUE FOR FINANCE/HR	% REVENUE FOR MARKETING/PR	% REVENUE FOR IT	BENEFITS	MBE/WBE	% MINORITY	% WOMEN	TYPE OF FIRM: DESIGN, SERVICE, FACILITY TYPE, OTHER	ORGANIZATION: BY GROUP, PROJECT TYPE, PRINCIPAL, OTHER
FIRM 1	SMALL	NG	\$60,000	NG	\$34,000	NG	\$40,000	NG	8%	10%	2%	BONUSES, AIA DUES, STUDY FOR LICENSURE	NO	25%	30%	DESIGN	STUDIO
FIRM 2	SMALL	2.7	\$70,000	NG	\$40,000	NG	NG	NG	NG	NG	NG	BONUSES, PROFIT SHARING, 401K, HEALTH	WBE	50%	10%	DESIGN	PRINCIPAL
FIRM 3	SMALL	2.5	\$75,000	\$45,000	\$35,000	NG	NG	NG	10%	10%	5%	BONUSES, 401K, HEALTH	NO	0	60%	DESIGN, SERVICE	STUDIO
FIRM 4	SMALL	1.5	\$75,000	\$60,000	\$30,000	NG	NG	NG	10%	10%	NG	BONUSES	WBE	0	90%	DESIGN, FACILITY TYPE	PROJECT TYPE
FIRM 5	SMALL	3.25	\$75,000	\$60,000	NG	NG	\$45,000	NG	5%	NG	5%	BONUSES, 401K, AIA DUES	WBE	10%	60%	NG	NG
FIRM 6	MEDIUM	2.5	\$85,000	\$70,000	\$40,000	NG	\$53,000	NG	1.50%	5%	1%	401K, HEALTH, PROFIT SHARING AIA DUES	NO	14%	22%	DESIGN, FACILITY TYPE	NG
FIRM 7	MEDIUM	1.67	\$88,000	\$70,000	\$32,000	\$36,000	NG	\$47,000	2%	10%	4%	401K, AIA DUES, STUDY FOR LICENSURE	NO	10%	38%	DESIGN	PROJECT TYPE
FIRM 8	SMALL	3	\$90,000	\$60,000	\$40,000	NG	NG	NG	1%	NG	NG	BONUSES, 401K, HEALTH	NO	NG	NG	DESIGN	PRINCIPAL
FIRM 9	SMALL	2.2	\$90,000	\$60,000	\$40,000	\$60,000	\$80,000	\$45,000	10%	3.5%	5%	BONUSES, 401K, STUDY FOR LICENSURE	NO	50%	60%	DESIGN	STUDIO
FIRM 10	MEDIUM	1.4	\$90,000	\$75,000	\$34,000	\$65,000	\$58,000	NG	7%	5%	3%	BONUS, PROFIT SHARING, HEALTH, 401K, AIA DUES	WBE	25%	44%	SERVICE	PRINCIPAL
FIRM 11	EXTRA LARGE	1.8	\$90,000	\$60,000	\$44,000	\$70,000	\$99,000	\$90,000	1%	1%	1.20%	BONUSES, PROFIT SHARING, 401K, HEALTH, AIA DUES	NO	NG	NG	DESIGN	STUDIO
FIRM 12	EXTRA LARGE	NG	\$90,000	\$70,000	\$37,600	NG	NG	NG	1.17%	6%	3.55%	BONUSES, 401K, AIA DUES	NO	24%	36%	DESIGN, FACILITY TYPE	STUDIO
FIRM 13	LARGE	1.2	\$92,000	\$58,000	\$32,000	\$45,000	\$40,000	\$55,000	3%	1.50%	\$120K PER/YR	BONUSES, PROFIT SHARING, 401K, HEALTH, AIA DUES	NO	2%	36%	SERVICE, FACILITY TYPE	STUDIO
FIRM 14	LARGE	NG	\$95,000	\$75,000	\$35,000	\$80,000	\$80,000	\$95,000	5%	5%	2%	BONUSES, PROFIT SHARING, HEALTH, 401K, AIA DUES, STUDY FOR LICENSURE	MBE	NG	NG	NG	PROJECT TYPE, PRINCIPAL
FIRM 15	EXTRA LARGE	1.75	\$99,000	\$75,000	NG	NG	NG	\$86,000	3%	4%	1%	BONUSES, PROFIT SHARING, HEALTH, 401K, AIA DUES, STUDY FOR LICENSURE	MBE	7%	28%	DESIGN	MARKET
FIRM 16	SMALL	2.5	\$100,000	\$74,000	\$38,000	NG	NG	\$38,000	10%	10%	15%	BONUSES, HEALTH	NO	14%	50%	DESIGN	PRINCIPAL
FIRM 17	MEDIUM	2.5	\$100,000	\$75,000	\$36,000	\$40,000	\$50,000	NG	2.50%	5.40%	2.40%	BONUSES, PROFIT SHARING, 401K, AIA DUES	NO	11%	33%	DESIGN	NG
FIRM 18	LARGE	3.15	\$100,000	\$80,000	\$40,000	\$85,000	\$125,000	\$85,000	20%	5%	5%	BONUSES, PROFIT SHARING, HEALTH, 401K, AIA DUES, STUDY FOR LICENSURE	NO	12%	33%	DESIGN	STUDIO
FIRM 19	EXTRA LARGE	3	\$115,000	\$65,000	\$50,000	\$80,000	\$90,000	\$75,000	1.50%	3%	2%	BONUSES, PROFIT SHARING, HEALTH, 401K, AIA DUES, STUDY FOR LICENSURE	NO	22%	35%	DESIGN	PROJECT TYPE
FIRM 20	EXTRA LARGE	3	\$117,500	\$67,100	\$37,750	\$109,500	\$135,500	\$137,750	2%	5%	2%	BONUSES, PROFIT SHARING, 401K, AIA DUES	NO	20%	36%	DESIGN, SERVICE, FACILITY TYPE	REGIONAL OFFICE, MARKET, SERVICE
FIRM 21	SMALL	3	\$120,000	\$60,000	\$38,000	NG	NG	NG	NG	2.50%	NG	401K, STUDY FOR LICENSURE	NO	0	25%	DESIGN, SERVICE	NG
FIRM 22	MEDIUM	1.5	\$120,000	NG	NG	\$80,000	NG	NG	2%	3%	4%	BONUSES, PROFIT SHARING, 401K, AIA DUES	WBE	25%	50%	NG	STUDIO
FIRM 23	LARGE	1.6	\$122,000	\$74,000	\$30,500	\$52,000	\$70,000	\$52,000	NG	5%	2%	BONUSES, 401K, HEALTH, AIA DUES	NO	4%	42%	SERVICE, DESIGN, FACILITY TYPE	PROJECT TYPE, SERVICE, PRINCIPAL
FIRM 24	SMALL	1.85	\$125,000	\$65,000	\$30,000	\$44,000	NG	NG	NG	5.50%	2%	BONUSES, PROFIT SHARING, 401K, HEALTH BENEFITS	MBE	10%	45%	DESIGN	PRINCIPAL
FIRM 25	EXTRA LARGE	1.25	\$125,000	\$85,000	\$35,000	\$70,000	\$150,000	\$95,000	1.40%	14%	1.30%	BONUSES, PROFIT SHARING, 401K, AIA DUES, STUDY FOR LICENSURE	NO	15%	29%	SERVICE	MATRIX BY PROJECT TYPE, DISCIPLINE
FIRM 26	EXTRA LARGE	3.1	\$129,285	\$70,659	\$37,750	\$75,000	\$90,000	\$78,000	8%	10%	NG	BONUSES, PROFIT SHARING, 401K, HEALTH, AIA DUES	NO	11%	32%	SERVICE	STUDIO
FIRM 27	MEDIUM	NG	\$130,000	\$60,000	\$32,000	\$25,000 (PART-TIME)	NG	NG	1%	0.50%	0.25%	BONUSES, PROFIT SHARING, 401K, HEALTH, AIA DUES, STUDY FOR LICENSURE	NO	15%	40%	DESIGN	STUDIO
FIRM 28	EXTRA LARGE	NG	\$140,000	\$95,000	\$34,000	\$70,000	\$120,000	\$80,000	1.50%	2.50%	5%	BONUSES, 401K, HEALTH, AIA DUES, STUDY FOR LICENSURE	NO	35%	45%	FACILITY TYPE	STUDIO
FIRM 29	SMALL	1.5	\$145,000	\$70,000	\$50,000	\$55,000	\$55,000	NG	4%	6%	2%	BONUSES, PROFIT SHARING, HEALTH, AIA DUES, STUDY FOR LICENSURE	NO	20%	40%	DESIGN	STUDIO
FIRM 30	MEDIUM	2.8	\$150,000	\$65,000	\$32,000	\$65,000	\$65,000	\$37,000	2.50%	3%	1%	BONUSES, PROFIT SHARING, HEALTH, 401K, STUDY FOR LICENSURE	NO	10%	35%	DESIGN, SERVICE, FACILITY TYPE	STUDIO
FIRM 31	SMALL	2.75	\$150,000	\$45,000	\$30,000	NG	\$75,000	NG	0.50%	15%	15%	BONUSES, 401K, HEALTH	MBE/WBE	40%	50%	DESIGN	PRINCIPAL
FIRM 32	SMALL	NG	\$150,000	NG	\$30,000	\$40,000	\$50,000	\$40,000	5%	3%	3-4%	BONUSES, PROFIT SHARING, 401K, HEALTH	NO	15%	15%	DESIGN	STUDIO
FIRM 33	MEDIUM	1.56	\$195,000	\$80,000	\$35,000	\$75,000	\$85,000	\$46,000	12%	15%	5%	BONUSES, 401K, PROFIT SHARING, STUDY FOR LICENSURE	MBE/WBE	20%	40%	DESIGN	PRINCIPAL
FIRM 34	LARGE	2.8	\$500,000	\$82,400	NG	\$68,000	\$100,000	\$92,500	2.20%	5.70%	4.90%	BONUSES, PROFIT SHARING, 401K, AIA DUES, STUDY FOR LICENSURE	NO	1.30%	36%	DESIGN	PRINCIPAL
FIRM 35	MEDIUM	2.5	\$150,000	\$85,000	\$32,000	\$85,000/\$45,000	\$65,000	\$65,000	2%	0.50%	NG	NG	NO	NG	NG	NG	NG
FIRM 36	SMALL	NG	NG	NG	NG	NG	NG	NG	1%	1%	0.50%	BONUSES, HEALTH, 401K	NO	0	0	DESIGN	PRINCIPAL
FIRM 37	LARGE	2.5	NG	NG	NG	NG	NG	NG	NG	NG	NG	BONUSES, 401K, HEALTH, AIA DUES, STUDY FOR LICENSURE	WBE	5%	35%	DESIGN, FACILITY TYPE	PRINCIPAL
FIRM 38	LARGE	1.9	NG	NG	NG	NG	NG	NG	2.50%	3%	1%	BONUSES, PROFIT SHARING, 401K, HEALTH, AIA DUES, STUDY FOR LICENSURE	NO	0	28%	DESIGN	PROJECT TYPE
FIRM 39	LARGE	2.75	NG	NG	\$35,000	NG	NG	NG	2%	5-6%	4%	BONUS, 401K, AIA DUES, STUDY FOR LICENSURE	NO	NG	NG	DESIGN, SERVICE	PRINCIPAL
FIRM 40	LARGE	NG	NG	NG	NG	NG	NG	NG	NG	NG	3.50%	HEALTH, PROFIT SHARING, 401K, AIA DUES, BONUSES	NO	0	NG	NG	NG
FIRM 41	LARGE	1.5	NG	NG	NG	NG	NG	NG	2%	9%	4%	BONUSES, HEALTH, AIA DUES, STUDY FOR LICENSURE	NO	NG	NG	DESIGN	PRINCIPAL
FIRM 42	EXTRA LARGE	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	BONUSES, PROFIT SHARING, 401K	NO	28%	13%	NG	DISCIPLINE
FIRM 43	LARGE	3.27	NG	\$57,000	\$32,000	\$80,000	\$60,000	\$80,000	2%	9%	4%	BONUSES, PROFIT SHARING, 401K, HEALTH, AIA DUES	NO	10%	38%	DESIGN	CASE BY CASE
FIRM 44	EXTRA LARGE	NG	NG	NG	NG	NG	NG	NG	1.80%	2.10%	1.70%	HEALTH, 401K, PROFIT SHARING, AIA DUES	NO	22%	42%	NG	STUDIO, PROJECT TYPE
FIRM 45	EXTRA LARGE	NG	NG	NG	NG	NG	NG	NG	3.30%	2.75%	6-8%	BONUSES, PROFIT SHARING, 401K, HEALTH, AIA DUES, STUDY FOR LICENSURE	NO	32%	33%	DESIGN, SERVICE, FACILITY TYPE	DISCIPLINE, STUDIO
FIRM 46	SMALL	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	MBE/WBE	50%	50%	DESIGN	PRINCIPAL
FIRM 47	EXTRA LARGE	NG	NG	NG	NG	NG	NG	NG	14%	16%	9%	BONUSES, 401K, HEALTH, AIA DUES, STUDY FOR LICENSURE	NO	NG	NG	DESIGN, SERVICE	NG
FIRM 48	SMALL	3.2	NG	\$60,000	NG	NG	NG	NG	5%	NG	0.50%	401K, HEALTH, AIA DUES	NO	0	0	NG	STUDIO
FIRM 49	SMALL	1.45	NG	NG	NG	NG	NG	NG	1%	1%	NG	BONUSES, 401, HEALTH, AIA DUES	NO	NG	41%	DESIGN	NG
FIRM 50	EXTRA LARGE	2.5	NG	NG	\$33,500	NG	NG	NG	4.80%	8%	9%	BONUSES, 401K, AIA DUES	NO	13%	34%	DESIGN	PROJECT TYPE
FIRM 51	EXTRA LARGE	NG	NG	NG	NG	NG	NG	NG	9%	6%	5%	BONUSES, PROFIT SHARING, AIA DUES	NO	41%	31%	DESIGN	PROJECT TYPE
FIRM 52	MEDIUM	NG	NG	NG	NG	\$50,000	NG	NG	NG	1.5%	NG	BONUSES, 401K	WBE	30%	40%	DESIGN	STUDIO



grant to one associate and two staff members every year to see architecture somewhere in the world. These trips are documented and shared with firm members. RNL Design, in Denver, with 200 employees, offers what would appear to be an extraordinary travel perk for employees—the use of a villa in the Provence region of France, which all employees can sign up for, free of charge!

The long hours necessary to complete tasks in architects' offices are also part of firm culture. The design charrette, where the methodology of "work till you're done" is observed, no matter what the time constraints, is common in the field of architecture but little known outside of it. Some firms have even formalized it: At NBBJ, in Seattle, which has 862 employees, an intensive, annual 24-hour design charrette is conducted as an internal exercise to inspire creativity, where all levels of expertise are represented. A prestigious jury is assembled, consisting of designers and those representing other key disciplines outside the firm.

While this is all well and good, businesses large and small have to cope with burnout, and one solution some turn to is flextime. Says Gilles Depardon of Ogawa Depardon Architects, New York City, with eight employees, "There is no minimum or maximum amount of hours per week within reason as long as the work gets done. We have found this type of arrangement allows employees to take responsibility and be more productive." HOK offers a slightly more complicated flextime plan where "days can be used for time away from work, used to reduce the cost of other benefits, or invested in the 401K plan," says Bill Valentine, president. NBBJ's definition of employee fatigue takes into account its long-term effects: In divvying up vacation time, they count the total number of years employees have been working professionally, including experience they accrued before coming to the firm.

As competition for qualified staff has heated up and graduates from architecture schools have become scarcer (see Part III of this series in our August issue), benefits have increased in importance: They keep staff happy and motivated and establish a sense of empathy between management and employees. While benefits were often cited by our surveyed firms as one of the costliest overhead expenses, and put a particularly tough burden on small and medium-size firms, it may well be that good benefits plans are more cost-effective than the training and recruiting necessary for frequent turnover.

### **Size and culture shape firm organization**

As we have seen, architects choose to work in large or small offices in order to achieve career goals. Firm principals also choose to keep their practices a particular size to gain the advantages of a specific culture. For example, Suman Sorg, of Sorg & Associates, is the sole designer for her Washington, D.C., firm of about 30 staff members. The size of her firm is

directly proportional to her ability to oversee the design. Her reputation as an excellent designer, the award-winning projects she completes, and the familylike atmosphere of her firm have attracted young employees. They get the chance to experience everything from production drawings and cost estimating to contract administration. But, some will probably move on after a few years so they can progress on their own, which is an economic burden to the firm. This is the trade-off Sorg is willing to accept to maintain design control.

In a way, the tale of this firm is a paradigm for the ways in which size affects the culture of any firm, large or small. The decision to keep the

## **REWARDS FOR HARD WORK AND EXTRA HOURS SHOULD BE A PART OF ANY FIRM'S OFFICE CULTURE.**

size small influences how closely the principal can control design, which employees do what jobs, and what kind of projects the firm takes on, both in terms of building type and scale. While analyzing the results of our firm survey, we observed that large firms frequently organize themselves in ways that allow them to function as multiple small or medium-size businesses under one roof. This enables workers to enjoy responsibility and autonomy, while principals can retain control over the design product as well as reap the benefits that come with a large firm's economies of scale. It is even possible for activities like marketing, budgeting, bill collecting, and human resources to operate with some autonomy within



these modest-size units. In *How Firms Succeed*, Cramer and Simson quote anthropologist Robin Dunbar. Dunbar says that business units in large organizations that exceed 150 persons do not function efficiently or create manageable social relationships. At Microsoft, units are kept to 200 maximum. Dunbar goes on to state that the architectural firms they analyzed limited their unit or studio sizes to between 12 and 15 persons (although in our surveyed firms we've seen studio sizes as large as 30 to 60 that work well).

Over the past 20 or 30 years, firms of all sizes have been exploring different ways to organize themselves to maximize their talent and respond in the most efficient fashion to the needs of clients. Typically, firms have evolved from the "matrix" system—with intersecting, discipline-based groups governed by flat layers of management that separate design, production, and contract administration—to the "studio" system, in which staff follow a project from beginning to end under the guidance of one leader or leadership team. Our surveyed firms have shown an almost infinite number of variations on these types of organizational structure.

Joan Blumenfeld, principal at Swanke Hayden Connell Architects of New York City (300 staff) defines the matrix system as "one where resources are allocated from an entire organization on an as-needed basis. Often employees wind up working on more than one project at once and may have multiple managers to report to. This can cause conflicts of interest and a lack of accountability and direction in the work flow. Also, in a matrix system, it is hard to meet changing deadlines because leaders have to share personnel and can't easily reassign them according to need." These problems seem to be endemic to the matrix system, no matter what size the firm, yet many firms use it

because when the work flow is uneven, it is easier to shift people around to keep them busy.

Many of our surveyed firms cited the strengths of the studio system, including the clients' desire to work with the same people throughout a project, the advantages of minimizing learning curves, and the sense of community that small groups engender. Others acknowledge that the studio system has its challenges. Philip Goedert, president and C.E.O. of RNL Design, says, "The studio can be too territorial and competitive, challenging in terms of consistent staffing. Studio leaders who must balance their time between marketing and managing often compromise both."

Herbert Lewis Kruse Blunck Architecture, in Des Moines (47 staff), has discovered the value of horizontal, integrated organization and

encourages its staff to "swallow their egos," according to partner Rod Kruse, FAIA. Rico Cedro, AIA, of Krueck and Sexton, in Chicago, with 14 employees, says, "Large clients expect an organizational model similar to their own." It isn't always easy to do this, given the relatively modest size of most architectural firms, as compared to some corporate and institutional clients.

Dennis M. King, FAIA, principal and corporate chairman of Harley Ellis, in Southfield, Michigan, with a staff of 313, says that being so large has limitations involving the balancing of talent, management of human resources, and sharing of resources. "Our firm utilizes a hybrid of the studio system with the flexibility and responsiveness available from a matrix structure." It has core teams that stay with a project, and a cadre of more fluid support staff ready to join teams at critical times where increased manpower or technical know-how is needed.

Gruzen Samton, in New York City, with 135 employees, is not organized by studio but is divided by market. Each sector has a partner in charge and staff that frequently work together. "This enables our marketing efforts to be focused without being inflexible and allows staff to work for multiple market sectors. Simultaneously, certain teams are in place that cultivate a rapport that deepens on every given project," says Meredith Berman, marketing director.

Many firms use a third organizational type, the principal-in-charge (PIC) model. Teams are assembled from studio personnel as needed and there are no "star" designers, although there may be a "design principal." This model is common in firms that once had a single, charis-

## LARGE FIRMS ORGANIZE THEMSELVES TO REGAIN THE BENEFITS THEY ENJOYED WHEN SMALL.

matic principal who created, nurtured, and controlled the firm. The model caught on and has changed only as new principals assumed leadership throughout a firm's history. Because the PIC's role in operations and decision making is so pivotal, the number of operating partners often determines the size of the firm.

At Lohan Associates, in Chicago, with a staff of 65, Floyd D. Anderson, AIA, says, "Our principals are 'hands-on' in all aspects of the business. If we were larger, principals could spend more time working on their projects while a C.F.O., business development staff, and HR staff could spend their time running these aspects of the business." At Perkins Eastman Architects, in New York City, with a staff (continued on page 240)





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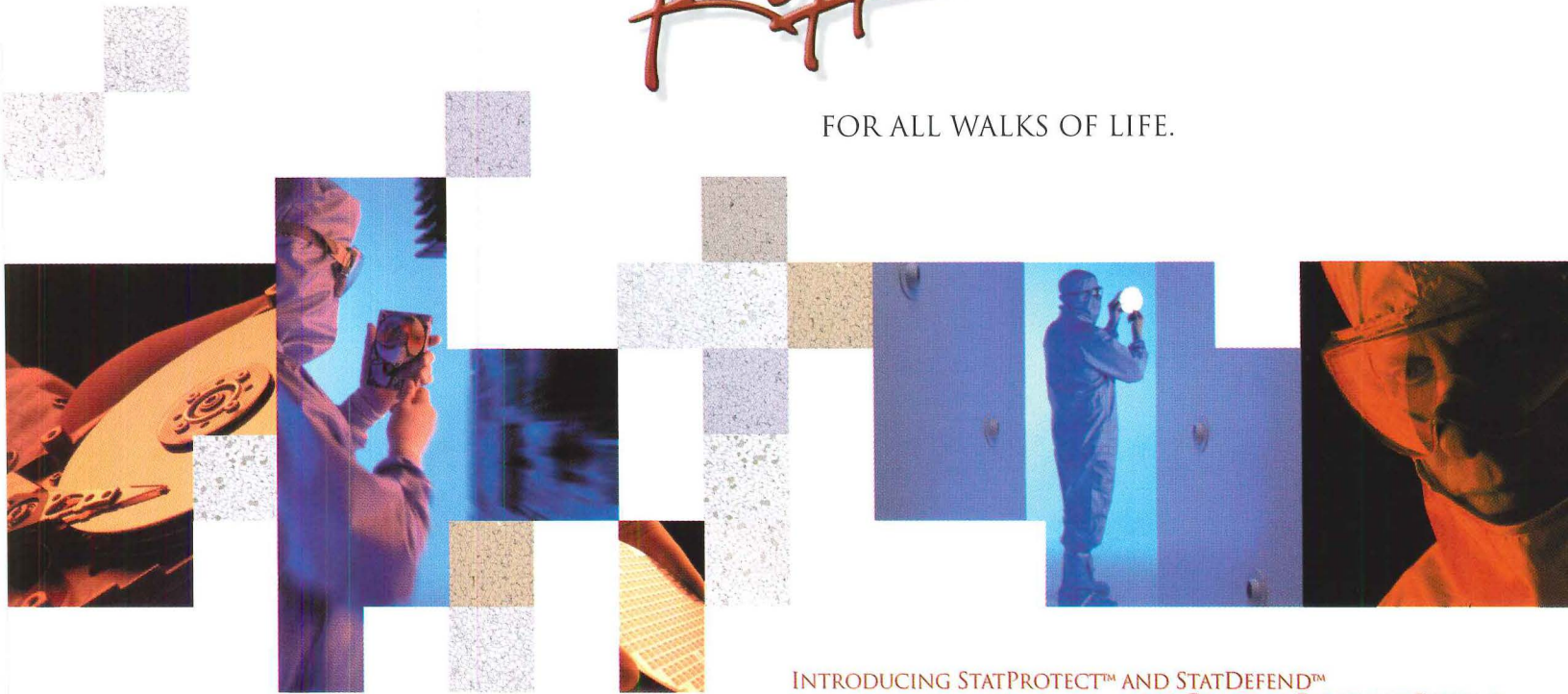




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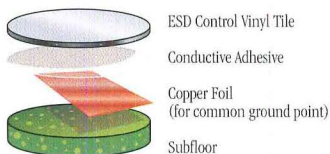
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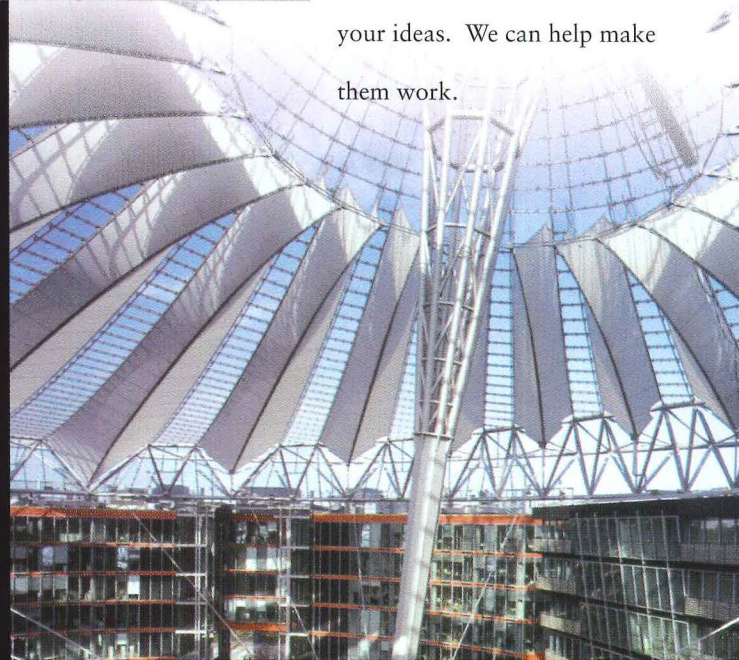
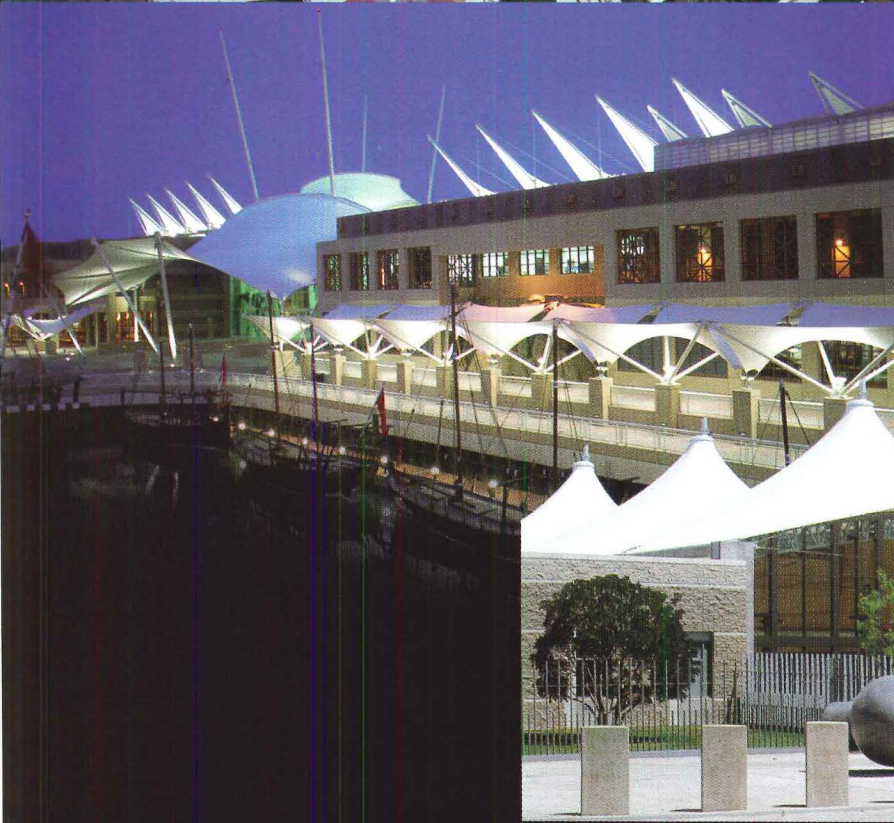


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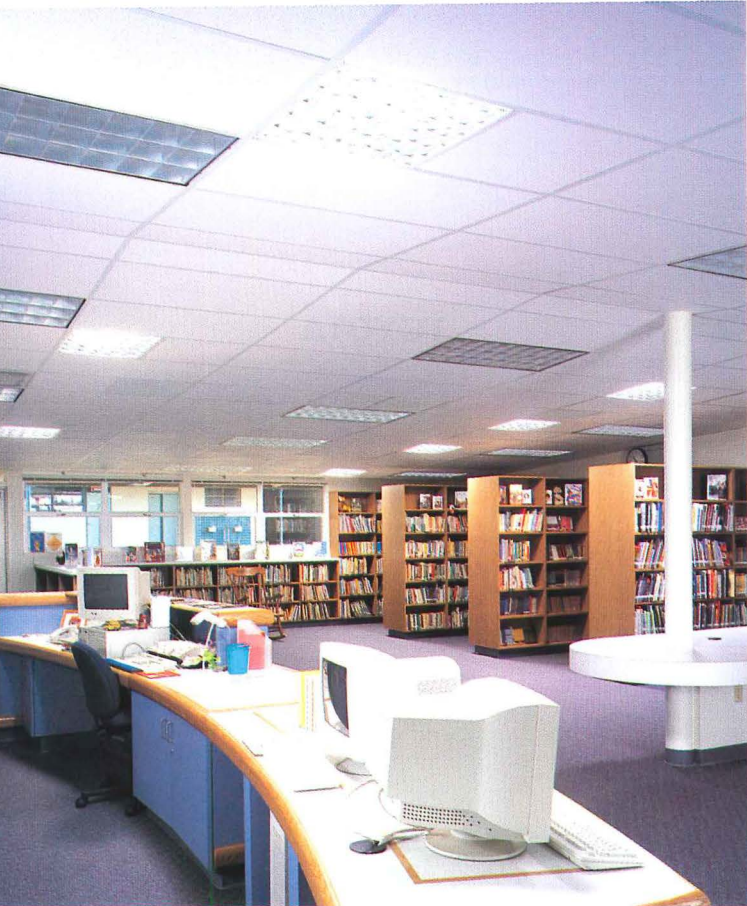
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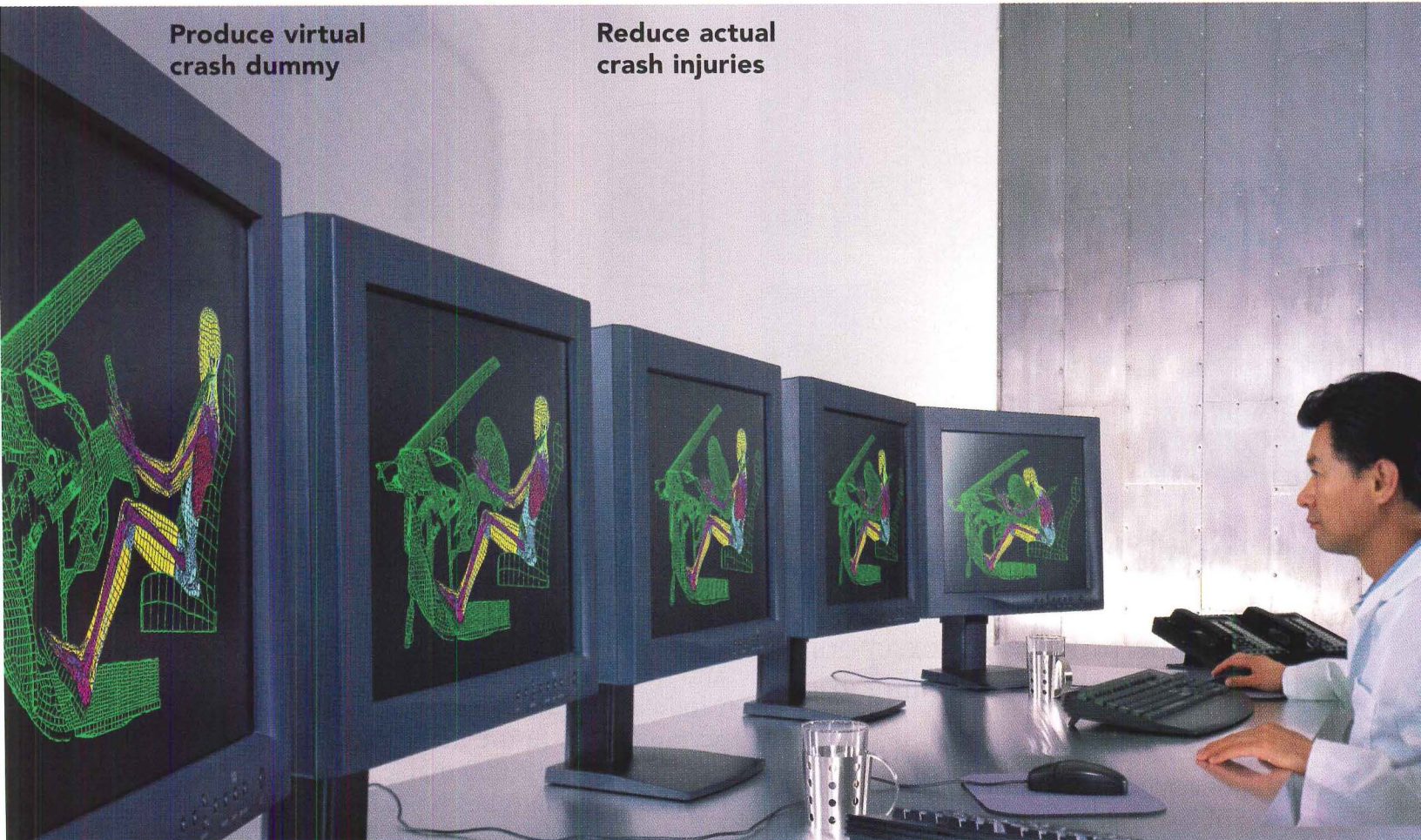
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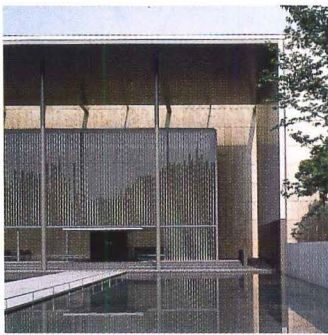


# Why Modernism?

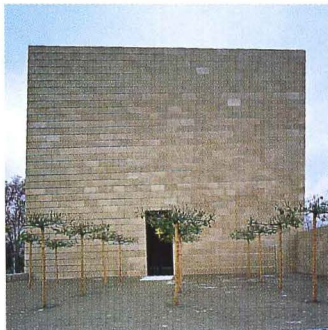
**I**t is still by no means necessary to conclude that the ‘International Style’... should be considered the only proper pattern or program for modern architecture.” Written for the August 1951 issue of *ARCHITECTURAL RECORD*, those words by Henry-Russell Hitchcock modified and updated the original manifesto declaimed by Hitchcock, Philip Johnson, and Alfred Barr at the landmark 1932 Museum of Modern Art show that introduced the style’s name. Hitchcock’s addendum came more than a quarter century after Gropius’s Bauhaus, and after Le Corbusier’s Pavilion of the Esprit Nouveau made its debut at the Exposition of Decorative Arts in Paris in 1925. He spoke of an architectural world made richer by Alvar Aalto, by Frank Lloyd Wright, and he cited lesser designers, as well. Modernism held sway, though not completely.

Despite the heady early days in Europe and the United States, the pure precepts of the movement—including volumetric, spatial rendering devoid of excessive ornamentation, and a rejection of Neoclassical rules, such as symmetry—had not achieved hegemony. Despite the International Style’s critical successes, personal expression, organicism, and historic references abounded. Robert Venturi’s book *Complexity and Contradiction in Architecture* added leavening to the architectural brew, seducing Johnson himself back to his roots in architectural history.

Why then Modernism? Why, at the dawn of this new century, do talented architects and willing clients find comfort in the spare tectonics and taut detailing that underlie a movement formerly impelled by social ideology and polemic? Why should Yoshio Taniguchi, gifted in architectural craft, proportion, and massing, make new buildings drawn from the Modernist idiom? Why should others of talent, worldwide, continue to draw inspiration from a style that an educated public has never fully embraced? What moves us, as architects, to make these particular new buildings among older surroundings? This issue of *ARCHITECTURAL RECORD* harks back to Hitchcock’s essay and responds in its own, compelling graphic voice. *Robert Ivy, FAIA*



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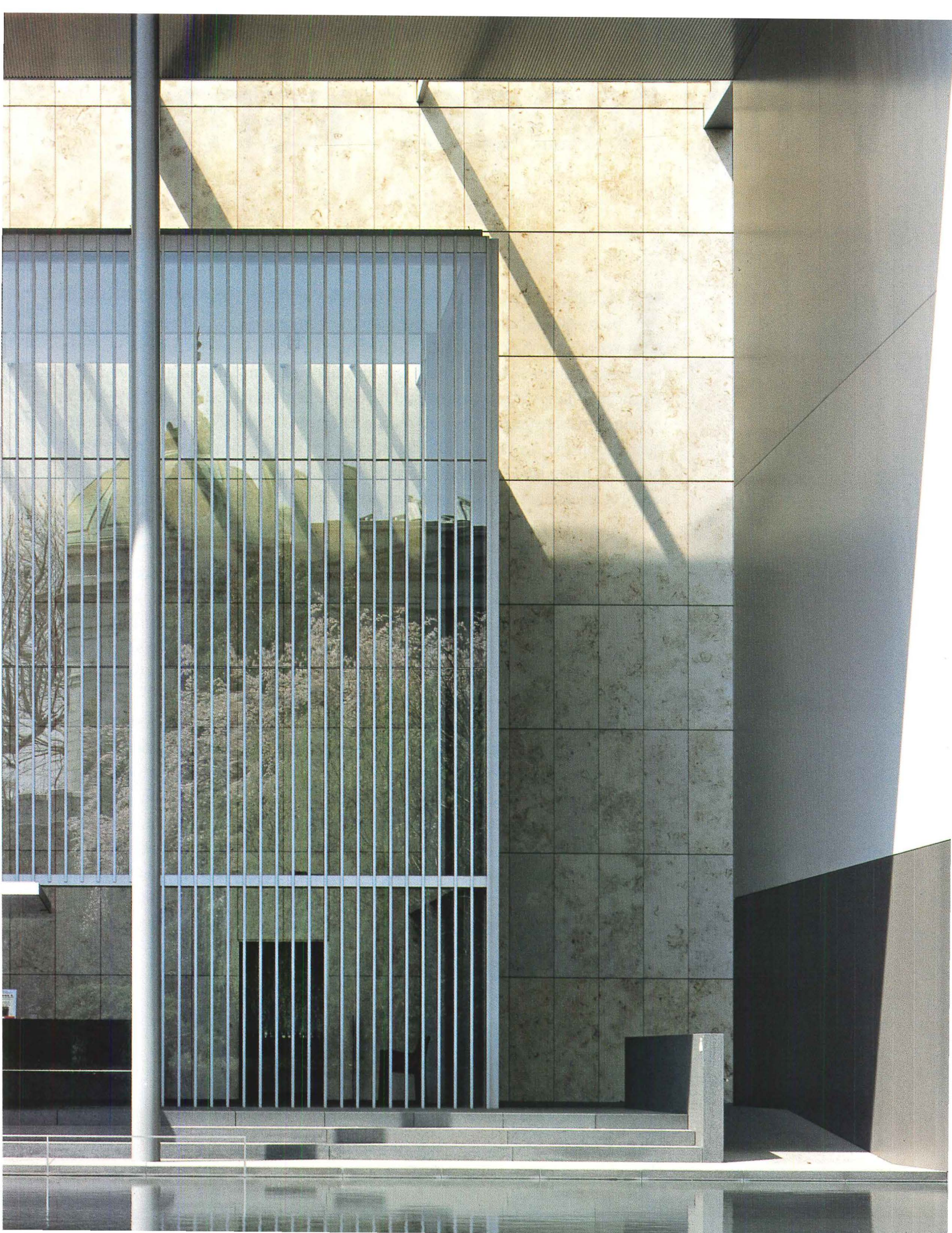


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# Yoshio Taniguchi weds the ancient with the contemporary in his **GALLERY** **OF THE HORYUJI TREASURES** in Tokyo

By Robert Ivy, FAIA

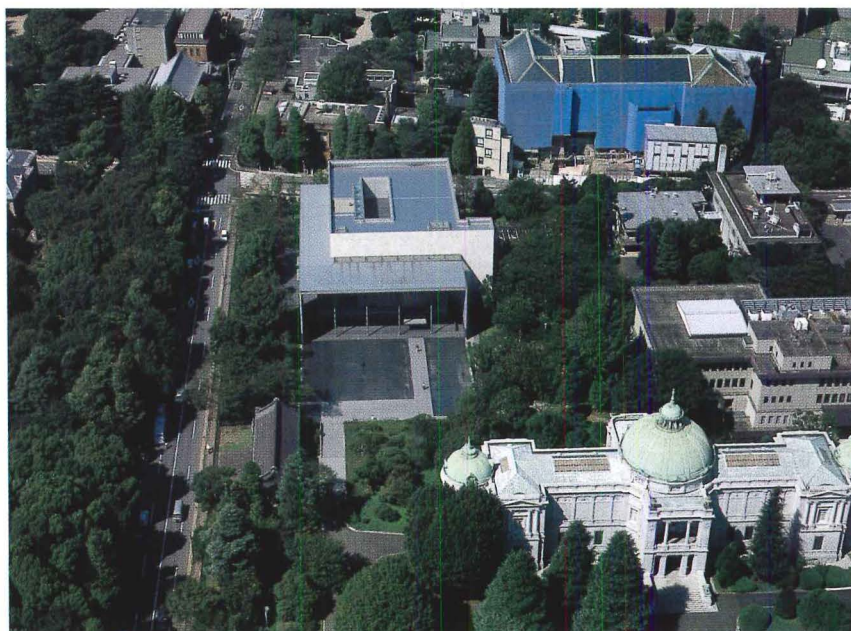
**M**odernism has provoked continual dialogue between the general and the specific. The aptly termed “International Style” challenged subsequent generations to test its precepts of spare machined perfection in widely varying cultures, climates, and topographies. In late-20th-century Japan, the architect Yoshio Taniguchi faced such a challenge when confronting the question: What architectural vessel should appropriately house national artistic relics embodying the soul of Japanese civilization? The collections for which he would design a new home—the Shosoin and Horyuji Treasures—are considered by their current curator, Hiroaki Kaneko, to be “the two greatest treasure houses of ancient art in Japan.”

Rather than revert to historicist antecedent, Taniguchi designed the Gallery of the Horyuji Treasures (also housing the Shosoin works), in Tokyo’s Ueno Park, as an unabashedly Modernist museum, wedding ancient ideas and sensibilities with contemporary thought, materials, and execution. The building distills more than a thousand years of Japanese culture, capturing it through a clear, new lens.

Despite the authoritative weight of history, Taniguchi was emphatic: “This was to be like a frame for a painting. It doesn’t have to look like Horyuji,” he said, referring to the 7th-century temple complex at Nara, near Kyoto, that originally housed the objects now on display in Tokyo. Dating from A.D. 700, the temple’s main hall and the pagoda of the west precinct are considered by scholars to be the world’s oldest extant wooden structures. In 1878, Horyuji donated 319 objects, many of which were eventually deemed national cultural treasures, to the Imperial Household. In 1949, they became the property of the national government. By the 1990s, their extreme delicacy necessitated giving them their own home, and Taniguchi’s gallery, a component of the Tokyo National Museum, resulted.

Within the larger park, the museum now resides in a symbiotic relationship with nature. Reminiscent of earlier Japanese architecture, such as the Shinden residences of the Heian aristocracy, the building is poised beside a pond, allowing views in from the approach and out toward trees and water from the interior. The elegant play between interior and exterior, art and nature, evokes the spirit of Japanese prints.

As is typical of Japanese garden architecture, Taniguchi’s gallery is sited off-axis, tucked along a path behind the more imposing Beaux-Arts structures that anchor Ueno Park’s main pedestrian thoroughfare. The



approach to the building entails a sequence of encounters with objects (including a so-called Black Gate from an Edo period residence), sensory stimulation (from flowering trees and the sounds of birds and rippling water), and measured spatial experiences. A relatively narrow clearing opens, unexpectedly, onto a quiet pond reflecting the gallery’s portico.

Other distinctly Japanese characteristics unfold. Asymmetrically placed and compressed, the building’s entryway leads just past a narrow pedestrian causeway into a broad visitor’s lobby bathed with sunlight from above. From within the space, slender aluminum mullions and a finely detailed glazed wall mediate views to the pond and garden.

According to Taniguchi, the pathway and materials refer to Japanese spatial traditions. In a typical historic Japanese house, he explains, “You cannot see the planes—there is something dark ahead. In old Japanese houses, there is a gradation of darkness, and then you see the tokonoma decorative alcove.” As in such houses, the visitor in this new gallery proceeds across a plane into gathering darkness: A diagonal path-

**The compressed and asymmetrically placed entry is reflected in a pool (opposite). The gallery is tucked amid trees and buildings in Ueno Park (above).**

**Project:** *The Gallery of Horyuji Treasures, Tokyo National Museum*

**Architect:** *Taniguchi and Associates—Yoshio Taniguchi, Satoshi Muneo, Koji Ogawa, Brian Aamoth, Toshitsugu Kitajima*

**Engineer:** *Kozo Keikaku Kenkyusho (structural); Morimura Sekkei (MEP)*

**General contractor:** *Obayashi Corporation (architectural); Nihon Densetsu Kogyo (electrical); Sanreisha (mechanical); Daiko (elevators)*







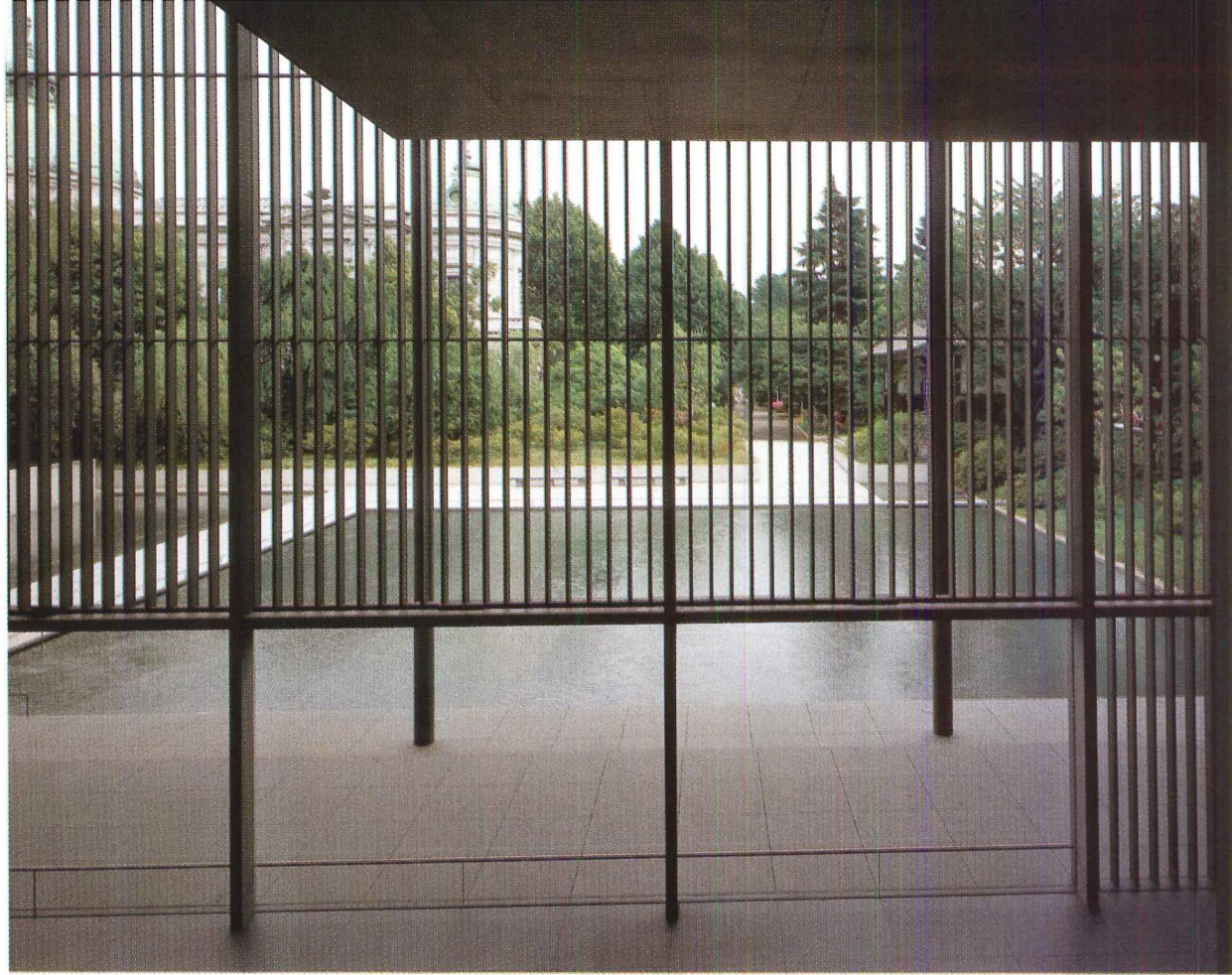
The pool reflects the primary elevation of the layered facade, which combines glazing and aluminum mullions with elegantly spare planes of German limestone.











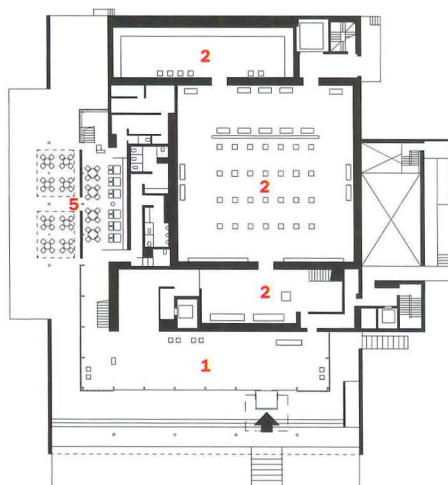
The foyer (opposite) admits filtered light onto limestone walls. Suspended aluminum mullions surrounding the entrance gracefully screen views to the reflecting pool and the verdant natural setting (this page).



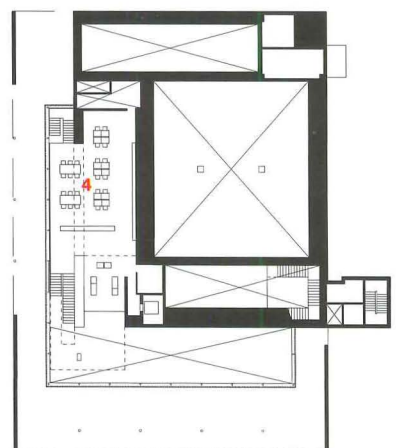




1. Entrance hall
2. Exhibition gallery
3. Art storage
4. Reference/research
5. Restaurant
6. Mechanical
7. Courtyard



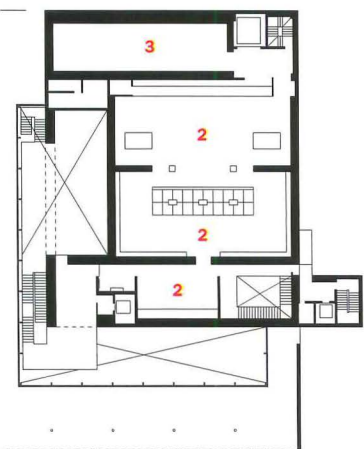
FIRST FLOOR



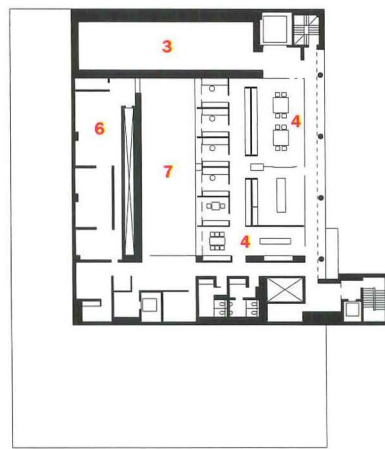
SECOND FLOOR



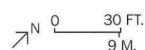
From above a staircase (opposite), daylight flows into a passageway punctuated by an ancient gilt object in a display case. With minimized detailing and extensive glazing, the cases effectively highlight and protect valuable works.



FIRST FLOOR



FOURTH FLOOR



way past smooth German limestone walls penetrates further into the darkened treasury within. Here, layer within layer unfolds in fiery darkness, with gilt-bronze Buddhas housed in transparent vitrines lit from above. In this near-sacred precinct, simple materials provide a backdrop for the display. Two large columns lend scale—“a sense of space,” according to the architect—while stone flooring separates the display cases from the darkly painted surround.

Besides the sensory qualities and traditional Japanese features of the design, scientific considerations also underlay the scheme. As Taniguchi asserts, “The objects are so precious, so vulnerable and easy to break, and so important.” Conservation demanded radical thinking about how to preserve them while admitting a curious public intent on seeing them.

To give visiting scholars access to a permanent collection of objects from as early as the 7th century—masks for *gigaku*, an ancient dance drama;



At the heart of the treasury is a point grid of customized individual glazed cases containing miniature gilt-bronze Buddhas,

some dating from the 7th century A.D. Twin columns provide scale and gravity to spare spaces where detailing has been intentionally downplayed.











paintings, including the exquisite 11th-century *Pictorial Biography of Prince Shotoku*; incense burners; and ceremonial banners—introduced a range of curatorial demands. Among the requirements were elaborate systems for protection against fire, theft, earthquake, and temperature variation, which demanded engineering attention prior to architectural resolution.

While the gallery suggests, and offers, actual solidity and protection, the building appears to evanesce upward, its membrane thinning out into the landscape. Controlled natural light bathes the stairwells, which culminate in skylit staff and research spaces on the top floor. Building systems mimic the progression of dark to light, with metal and glass stairwells allowing visitors literally to see through them toward the canopy of trees outside. Lightest of all, the mullioned curtain wall provides a delicate fabric or veil around the glazed exterior—a condition permitted by its suspension from the roof. Freed of carrying its own load, the curtain wall seems to float.

Although well known in Japan as a designer of museums, Yoshio Taniguchi has been thrust into the international spotlight since being selected as architect for the reconstituted Museum of Modern Art in New York. Now the world may focus on the Gallery of the Horyuji Treasures, as well. At this museum in Tokyo, Taniguchi displays a finely tuned sensibility, revealing a capacity to interpret Modernism for other kinds of artworks and museum goers. The exacting proportions, materiality, and detailing of the gallery evoke deep cultural memories, yet speak contemporary Japanese. The architect's forthcoming design for New York will speak another, perhaps more emphatic, language of Modernism. ■

**Sources**

**Exterior stainless-steel panels:**

*Kikukawa Kogyo Company*

**Interior limestone:** *Sekigahara Stone*

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



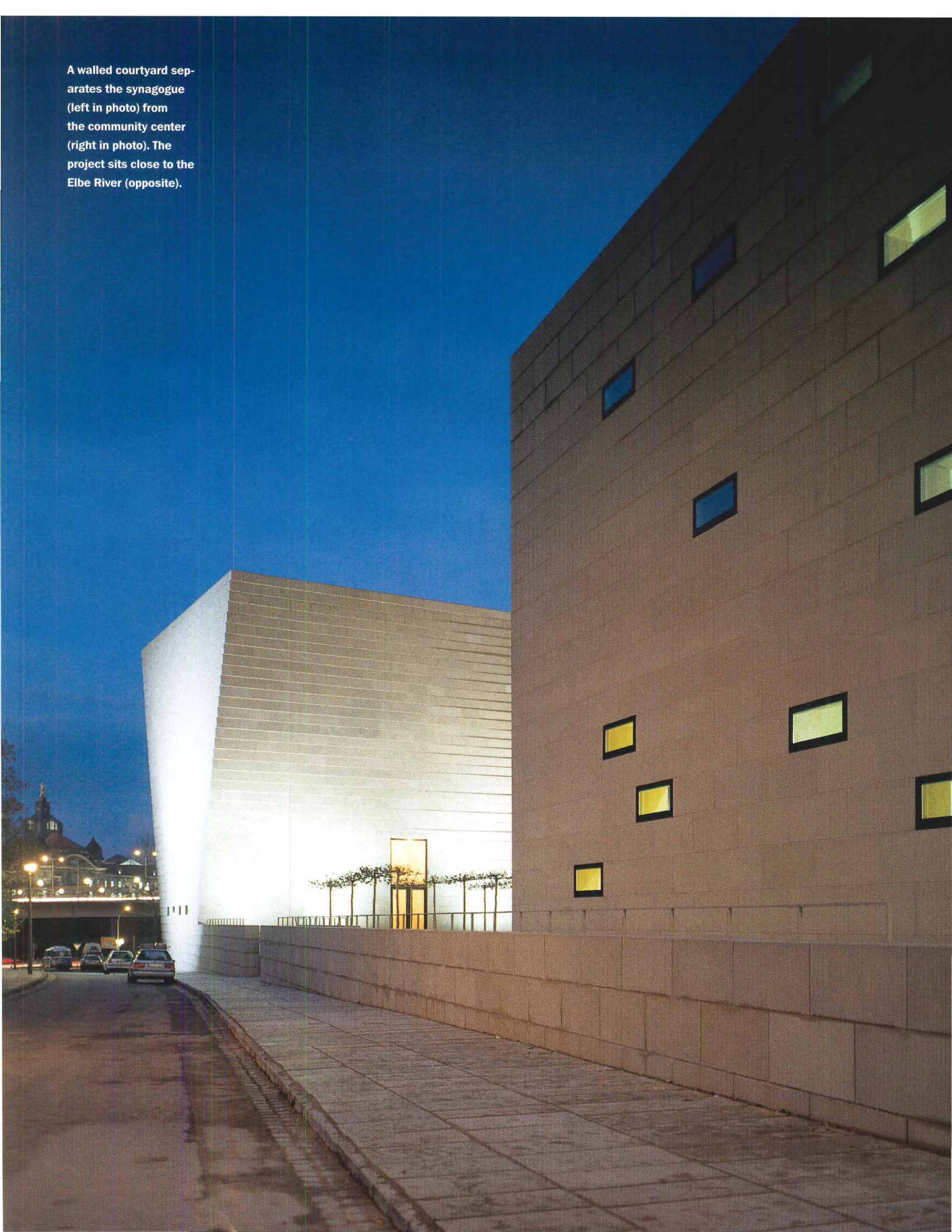
Indirect lighting minimizes heat buildup on textiles and paintings (opposite) and is less distracting to viewers. Masks for *gigaku*, a ritual dance drama, seem to float in the

darkened room. Throughout the gallery, complex but hidden systems protect against such threats as fire, theft, earthquakes, and variations in temperature.





A walled courtyard separates the synagogue (left in photo) from the community center (right in photo). The project sits close to the Elbe River (opposite).





# A complex and tragic history informs Wandel Hoefler Lorch + Hirsch's poetic design for the new DRESDEN SYNAGOGUE



By David Cohn

The view of Dresden from the banks of the Elbe River in the former East Germany has changed little since it was painted by Bellotto in the 18th century. But recently, the Baroque towers, Renaissance gables, and Classical pediments of its palaces and churches have been joined by a stark modern form: a rectangular block without ornament or windows, which twists slightly as it rises, like a deck of cards drifting out of alignment, or the solemn, tentative beginnings of a spiraling Baroque caprice. This enigmatic gesture belongs to Dresden's new synagogue, a symbol of the rebirth of its Jewish community.

The beauty of the scene is deceptive, for it disguises a complex and tragic history. With its rich artistic patrimony, Dresden has been called "the Florence on the Elbe," but it was largely destroyed by an Allied bombing attack shortly before the end of the Second World War in which between 35,000 and 135,000 people were killed. Virtually all of its palaces, churches, and monuments are careful postwar reconstructions, which form a historic vignette within the quiet industrial city of wide boulevards and modest apartment buildings that has replaced the old Dresden.

An elaborate Byzantine-style synagogue once had a place on this skyline. Designed in 1838 by Gottfried Semper, architect of the Dresden opera house (destroyed in 1945; rebuilt in 1985), it was burned by SS troops on Kristallnacht ("the Night of Broken Glass"), November 9, 1938, when Jewish shops, homes, and synagogues were attacked all across Germany. Of the city's Jewish community of roughly 6,000, only a few dozen remained by the end of the war; at least 1,500 were deported to concentration camps.

Since 1990, however, the city's Jewish population has grown with the influx of immigrants from former Soviet republics, chiefly Russia and the Ukraine. It currently numbers 300 and is expected to double in

*David Cohn is RECORD's Madrid-based correspondent and is the author of Young Spanish Architects, published by Birkhauser in 2000.*

the next three to four years. The campaign to build a synagogue on the site of the Semper building was launched in 1996, with financial backing from the regional government of Saxony and the city of Dresden, which contributed \$4 million, and a private foundation that raised the remainder of the \$11 million budget.

The architects of the new synagogue—Wandel Hoefler Lorch + Hirsch—are all in their early 40s. They are based in Saarbrücken, near Frankfurt, and they designed Frankfurt's Börnerplatz Jewish Memorial. Their project for Dresden won third prize in a limited competition and, according to Wolfgang Lorch and Nikolaus Hirsch, was selected by the local Jewish community for its functional plan and "for the way that it relates to the Elbe." Unlike other entries, their project divided the complex into two buildings, the synagogue and a community center, which face each other across a narrow raised courtyard enclosed in low walls. In the center of the courtyard, the footprint of the original location of Semper's building is marked by a paving of broken glass—a moving, tactile reference to its destruction.

The synagogue is built of horizontal rows of precast concrete blocks. Its rotating form arises from the conflict between the orientation of the site and the ritual requirement for worshipers inside the temple to face east. Each successive row is slightly rotated in relation to the row

**Project:** Dresden Synagogue, Dresden, Germany

**Architect:** Wandel Hoefler Lorch + Hirsch—Andrea Wandel, Hubertus Wandel, Rena Wandel Hoefler, Andreas Hoefler, Wolfgang Lorch, Nikolaus Hirsch, partners; Kuno Fontaine, Christoph Kratzsch, Dirk

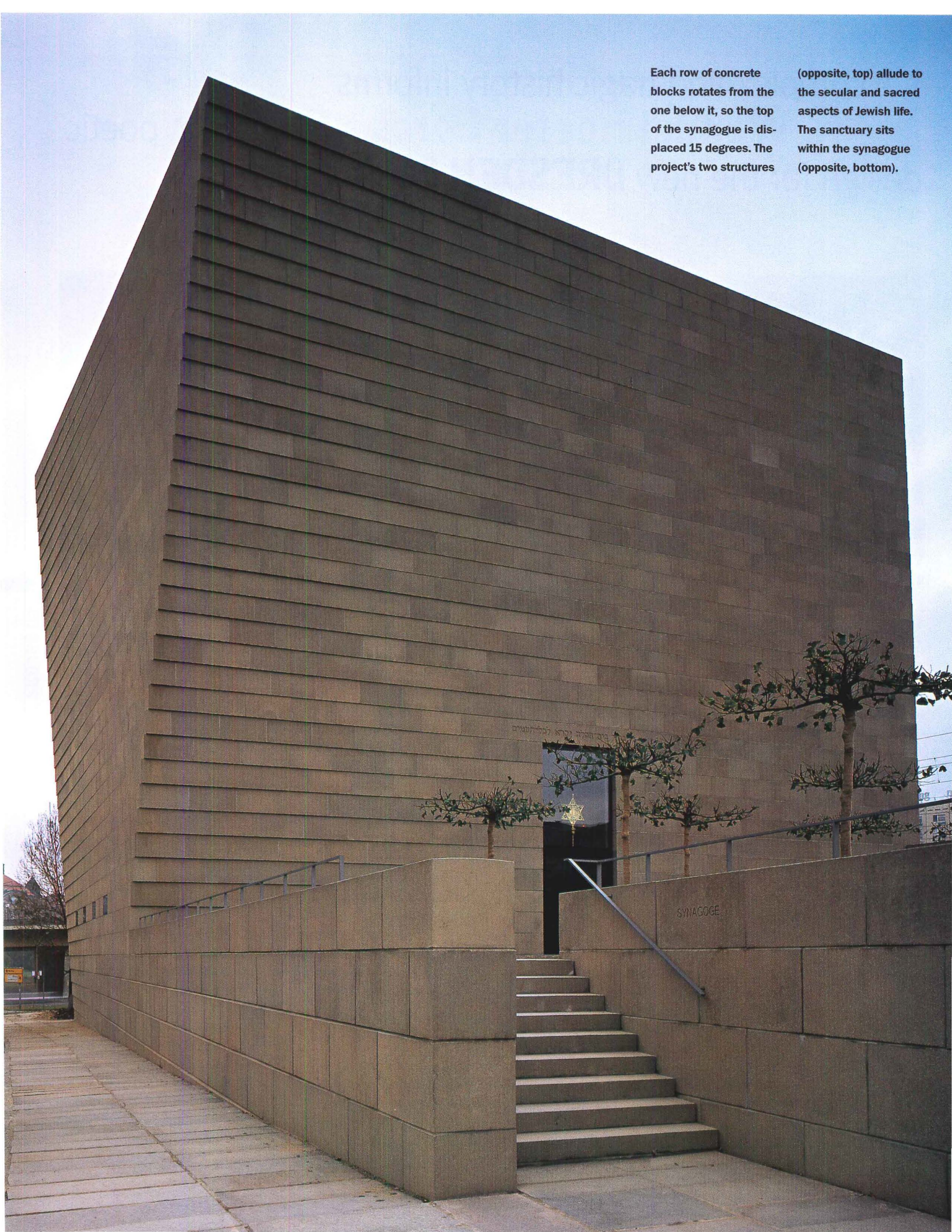
Lang, Lukas Petrikoff, Tobias Wagner, project team

**Consultants:** Schweitzer Ingenieure (structural); Müller BBM (acoustics); Zibell Willner & Partners (mechanical and electrical)

**Project manager:** Fischer Projektmanagement



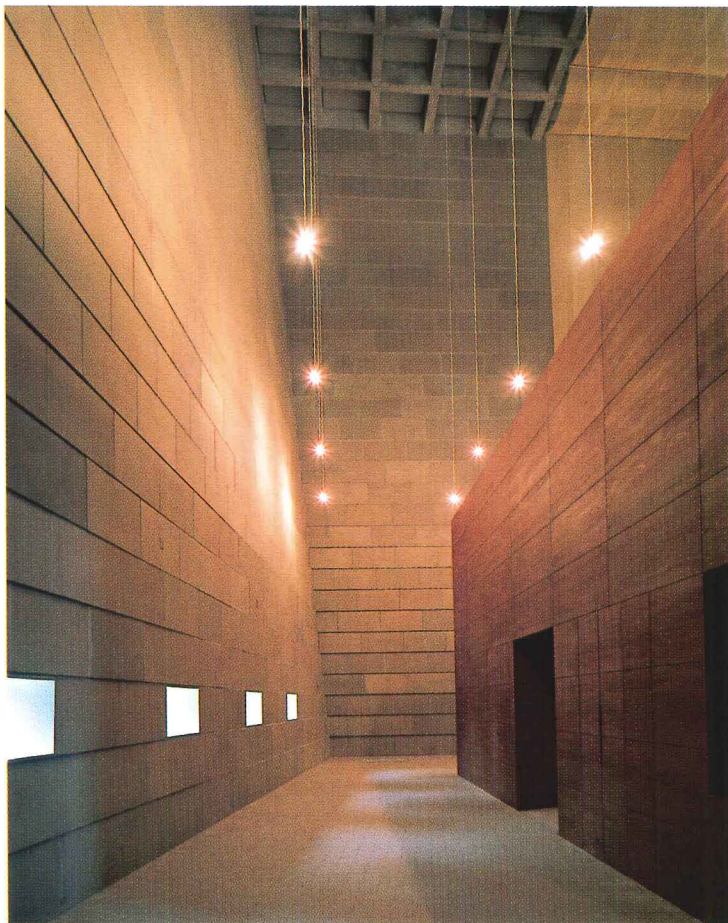
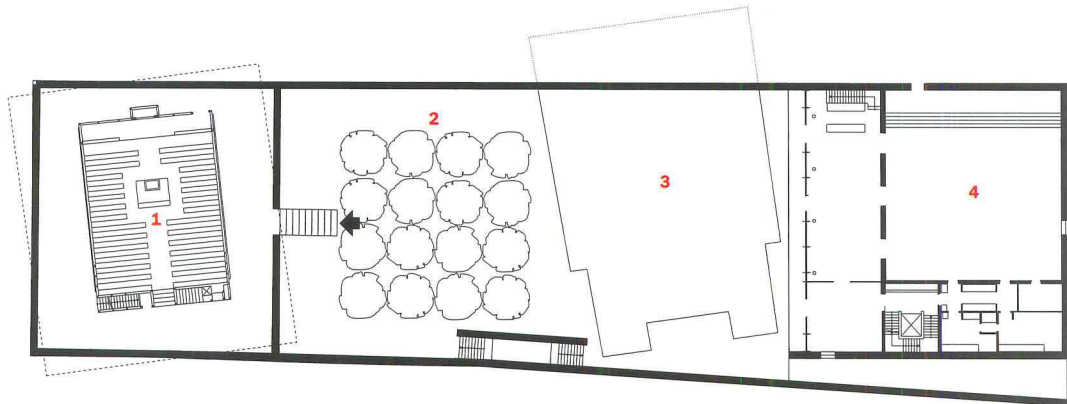
Each row of concrete blocks rotates from the one below it, so the top of the synagogue is displaced 15 degrees. The project's two structures (opposite, top) allude to the secular and sacred aspects of Jewish life. The sanctuary sits within the synagogue (opposite, bottom).







1. Synagogue
2. Courtyard
3. Footprint of old synagogue
4. Community center



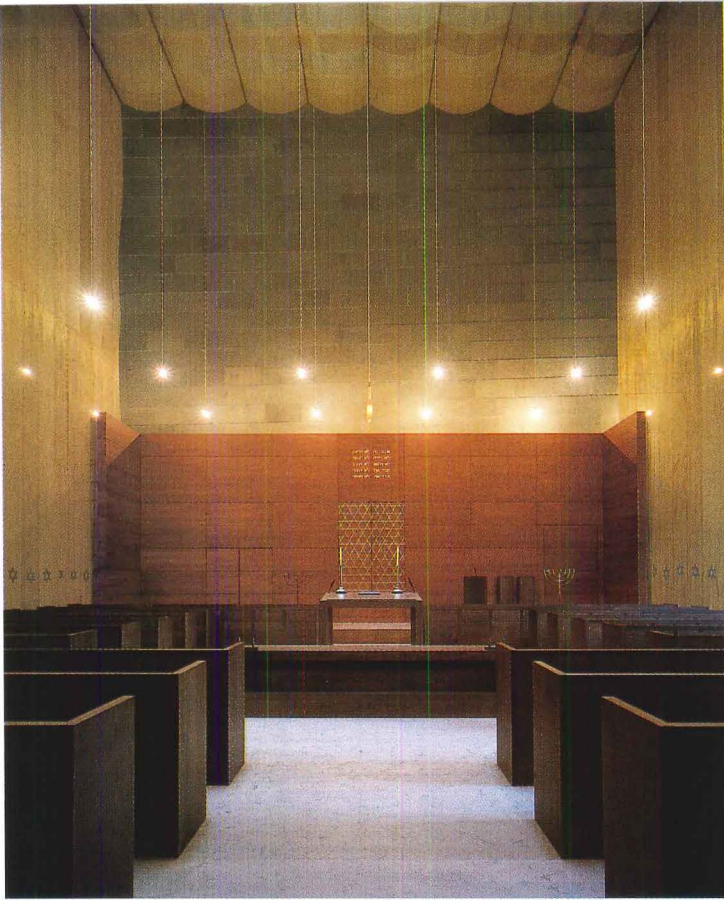
below, following a common vertical axis, so that the top of the building is displaced about 15 degrees. The Star of David over the entrance is the only surviving fragment of the Semper temple, where it crowned one of the two towers; it was hidden during the war by a Dresden fireman, who returned it to the local Jewish community in 1945.

Inside the synagogue, the sanctuary is enclosed in a gossamer fabric of tiny rings of tombac (a metal similar to brass), suspended like a tent, and is illuminated by a central skylight. Its simple furnishings are built of dark-stained oak: the pews; a small balcony; the bima, or reader's desk, in the center; and the ark holding the Torah, or sacred scriptures, on the eastern end, with Stars of David woven into the metal fabric behind it. The sanctuary was designed to accommodate any of the different Jewish practices, from Orthodox rigor to Reform modernizations.

Lorch says that the tentlike form within the solid volume "speaks about the historic conditions of Judaism in an architectural context." He points out that there has never been a single accepted style or form for synagogues. But looking into history, he explains, the architectural settings of Judaism alternate between the temporary, as in Moses' tabernacle in the desert, and the permanence of Solomon's temple, whose surviving "Wall of Lamentations" in Jerusalem is distantly recalled by the rough sandstone-colored blocks of the Dresden synagogue.

In contrast to the windowless sanctuary, the community center overlooks the courtyard through a glass curtain wall framed in oak. Inside, oak partitions fit into the exposed concrete structural walls like cabinetwork. Windows around the perimeter walls appear frameless from the outside and match the dimensions of the precast concrete block cladding, giving the perimeter a fortified appearance. The central block includes a multiuse hall for receptions, banquets, exhibitions, and performances, with provisions for a café that can serve outdoor tables in





the courtyard, as well as offices, classrooms, and a kitchen. On the top floor, a walled terrace sits above the multipurpose hall.

As the defensive perimeter wall and limited access to the synagogue suggest, security issues had an important impact on the design and the selection of precast concrete block as the primary building material. (Like other Jewish centers in Germany, this one also has a guard on duty at all times.) In addition, the architects preferred concrete to the local sandstone used in many of the city's monuments because it doesn't blacken over time. They did incorporate the sandstone, however, as an aggregate in the concrete and set a few blackened and worn blocks salvaged from the Semper temple in the courtyard walls.

In the context of the reconstruction of historic Dresden, the decision not to rebuild the Semper synagogue is of symbolic significance in its own right. At the moment, the attention of Dresdeners is focused on rebuilding their last great ruin, the 18th-century Frauenkirche, or Church of Our Lady, with its 300-foot-high dome, and the Baroque buildings that once surrounded it. For the Jews of Dresden, there can be no such spirit of return or continuity with the past. At the same time, the new Jewish community remains fragile. After five decades of official atheism under Communism, religious practice in any form withered in East Germany, and the sense of Jewish identity among many of the newcomers is not strong. The restrained, expressive design of the building captures this spirit well. It reaches into ancient Jewish tradition for its sources, spans the terrible history of the recent past with a void of shattered glass, and offers a tentative gesture of hope for the future. ■

#### Sources

**Facade windows:** VHB

**Roofing:** Bauzentrum Leipzig

**Masonry:** Bau Nossen Stetzler

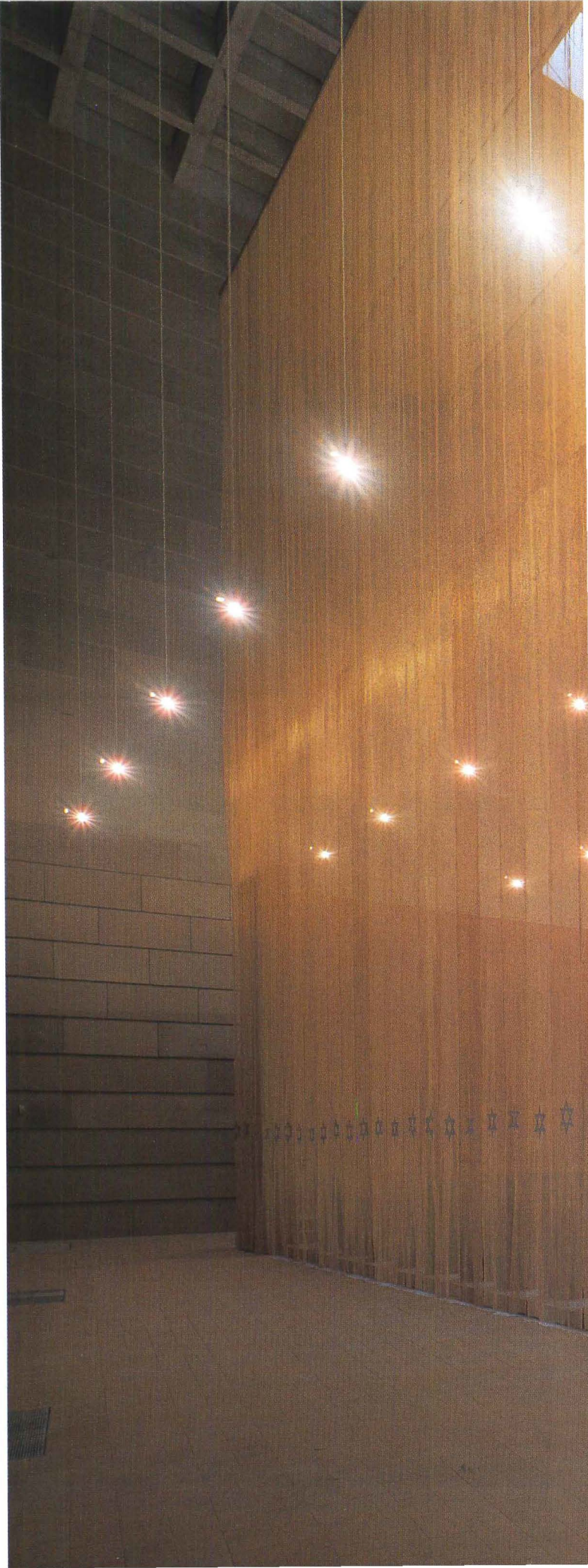
**Lighting fixtures:** Wilms

**Synagogue furniture:** Deutsche Werkstätten Hellerau

**Community center furniture:** SMS

*Innenausbau*

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







The architects enclosed the sanctuary with suspended fabric made of tiny rings of tombac, a brasslike metal. Furnishings and the ark holding the Torah are made of dark-stained oak (opposite, top).



Along a busy highway,  
the Factory's colorful  
curves convey its  
experimental agenda.





# Sauerbruch Hutton

roll out a bright wrapper  
for the **EXPERIMENTAL  
FACTORY**

By **Nina Rappaport**

**O**tto von Guericke, a 17th-century physicist from Magdeburg, Germany, demonstrated the force of atmospheric pressure by sealing two hemispheres with a vacuum. A pair of horses could not pull them apart, thereby demonstrating the force of atmospheric pressure. His experiment established a reputation for scientific excellence in this city, 70 miles southwest of Berlin. Driven by local research, the city became an industrial center, but saw its role decline while it was part of East Germany. In the reunified nation, Magdeburg is the capital of the economically troubled state of Sachsen-Anhalt and hopes to capitalize once again on its tradition of innovation by attracting emerging scientific and manufacturing research institutions.

At the southern end of the university named for the city's earliest innovator, a cluster of three new buildings forms a "research park"—or, as sponsors would like to think, a mini Silicon Valley—along a major traffic artery. The most visually striking building of this ensemble, which also includes the Fraunhofer and the Max Planck institutes, is the 56,000-square-foot Experimental Factory Magdeburg (EFM), which Berlin-based architects Matthias Sauerbruch and Louisa Hutton designed. Its undulating, pajama-stripe pink, ocher, and gray metal roof advertises Germany's investment in innovation.

*Nina Rappaport, a freelance writer, edits Constructs for the Yale School of Architecture and has taught on the subject of postindustrial-factory design.*

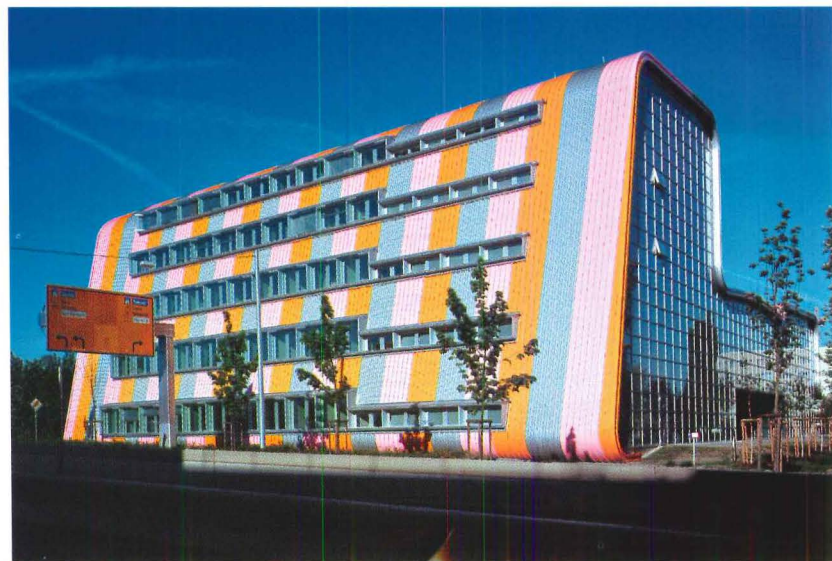
**Project:** *The Experimental Factory Magdeburg, Magdeburg, Germany*

**Owner:** *Center for Product, Process and Production Innovation*

**Architect:** *Sauerbruch Hutton Architects—Matthias Sauerbruch,*

*Louisa Hutton, design partners; Andrew Kiel, project architect; Marcus Hsu, Philip Engelbrecht, Barbara Suter, Mehmet Dogu, Bettin Pinks, team*  
**Engineers:** *Bautra (structural); Canzler Ingenieur (environmental)*

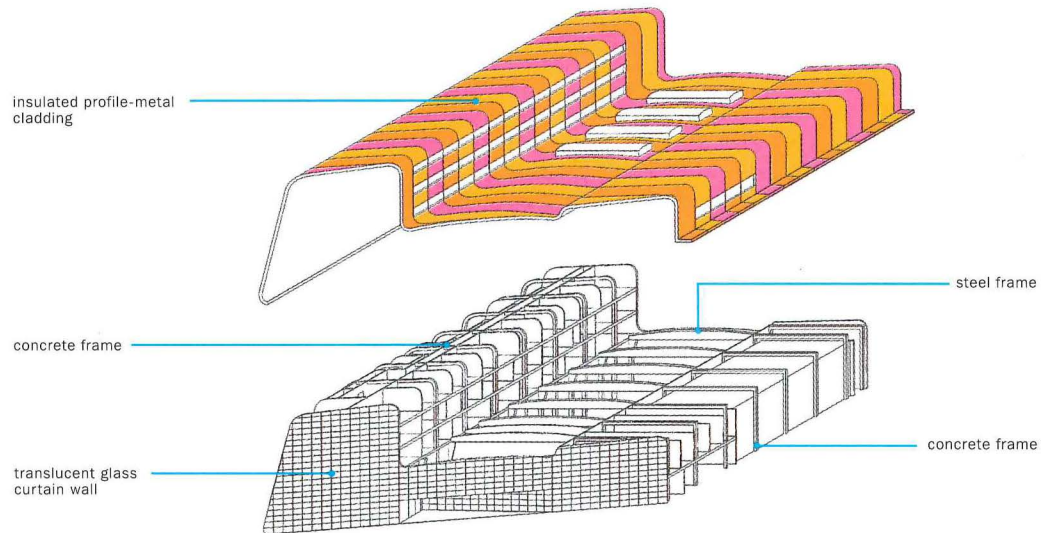
PHOTOGRAPHY: © BITTER + BREDT (THIS PAGE AND OPPOSITE); GERRIT ENGEL (RIGHT)







The roof/wall insulates as its curves express the tripartite program (diagram, right). Volumes from left to right in photo above comprise the electromagnetic-field lab, the large hall, and the taller office/lab wing. Hutton describes the fritted-glass elevation as “like looking through a veil.” Researchers can see out, but passersby are able to see in only at night.



### Collaborating to incubate

The university and local manufacturers, with major support from the European Community, invested \$12 million in the Center for Product, Process and Production Innovation (ZPVP), a new organization that built the EFM. The factory is conceived as an incubator of sorts, where businesses and academic scientists can test industrial machinery, processes, and products in leased laboratories and production halls. A company’s experts, the facility’s scientists, or university researchers can collaborate in what Dr. Karl Grote, who runs the center, calls an “open source environment, where scientists can exchange information.”

Sauerbruch Hutton’s design of the EFM is simple but bold. It unites a five-story office and research laboratory; a central, large-scale, multipurpose testing hall; and an electromagnetic-field testing room. The separate structures of the tripartite program combine prefabricated concrete panels, poured-in-place concrete, and a steel frame for the large testing hall.

### The “draped blanket” as image of innovation

The building’s extruded form, as though cut from a continuous mold, represents the flow of production processes, and results in a curvilinear and funky adaptation of the extruded shapes Albert Kahn developed in many of his elegantly functional American factories, such as the Dodge



The main entry on the north is an unobtrusive wedge-shaped recess cut into the translucent fritted-glass facade.

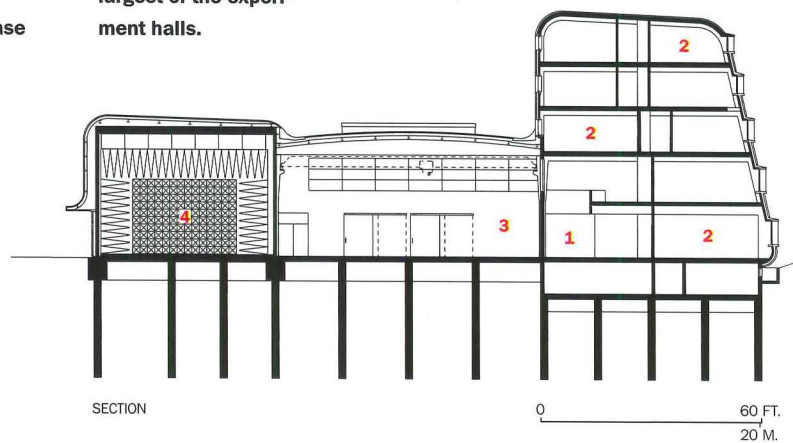
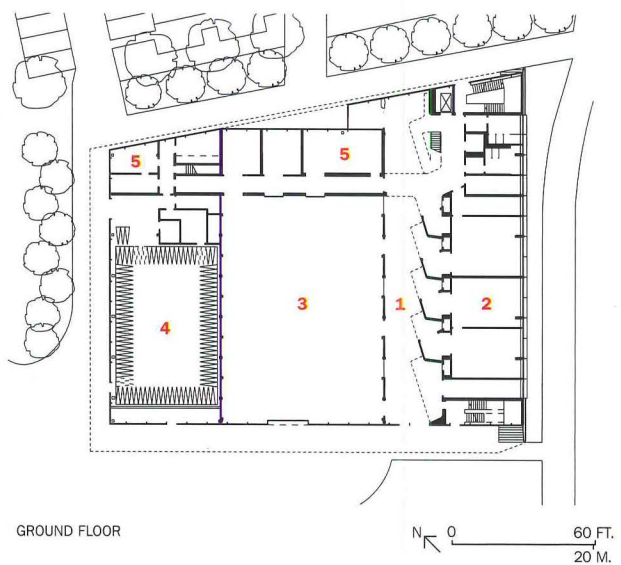






In the main double-height lobby, the architects enliven the space with wall elevations painted in bright ribbons of color (above). A staircase

(opposite) leads to the sinuous mezzanine balcony, from which researchers can gaze through glass into the largest of the experiment halls.



1. Internal street
2. Lab/office
3. Large experiment hall
4. Electromagnetic-field testing
5. Office





Half-Ton Truck Plant of 1938. The undulating, highly insulated roof wraps vertical as well as horizontal surfaces, becoming a facade itself—or, as the architects call it, a “draped blanket”—punctured with bands of windows for the offices in the five-story volume. The roof’s paint coating can also be seen as an allusion to one of the material-coating research processes conducted inside.

The lobby forms an internal street that not only serves the building but also forms a path connecting a line of research facilities. Individual laboratory offices project into the lobby at an angle (plan, opposite), and there is a checked pattern of brightly painted concrete panels and windows that allow views into the main testing hall, thereby creating the desired access between researchers and that being researched, as well as inviting curiosity from visitors.

In the 28-foot-high main hall—an open factory floor complete with an overhead crane—companies can lease segments of floor area to investigate various manufacturing issues. The kinds of projects already undertaken suggest the hall’s versatility. One project assessed how long production lines can damage goods. Others considered laser-cutting-machine precision and measurements and how to make cutting tools outlast the materials being cut.

Across the main lobby, in the five-story structure, the architects successfully combined offices, laboratories, and common rooms to encourage communication among the researchers—who number 150 when the facility is fully leased. The laboratories are simple spaces, some of which access shafts accommodating a variety of gas sources and exhaust.

In the volume at the opposite end, the ZPVP requested an isolated room, in which lightweight conical elements line the walls, ceiling, and floor, like an inside-out porcupine. Here, scientists measure electromagnetic fields generated by appliances.

The bright colors seem to some a bit glib for a serious industrial complex. Although they are an unabashed Sauerbruch Hutton trademark, they’re not entirely unknown in this otherwise largely dour city. One of Germany’s early Functionalist masters, Bruno Taut, headed the city building agency in the 1920s when he built the Modernist garden city, Reform, tinting the stucco facades in vibrant hues of blue and yellow (though few were aware of their full chromatic vibrancy until a 1995 restoration). It’s too soon to tell how successful the EFM will ultimately be, but if bright colors help lure talented collaborators, the 20 percent of Magdeburg’s population that is unemployed will find these hues inspiring indeed. ■

#### Sources

**Formed-aluminum cladding:** *Kal-Zip*

**Curtain wall, aluminum framing, entrance doors:** *Hueck Facade Systems*

**Soundproof and solar-protection glass:** *Pilkington*

**Special fire and industrial doors:** *Schörgruber; Frankonia*

**Acoustical ceilings:** *Gyproc*

**Paints and stains:** *NCS-Color Systems*

**Rubber flooring:** *Freudenberg*

**Tiles:** *Villeroy & Bosch*

**Electromagnetic-field-room construction:** *Frankonia*

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



Ferrater split the program into a series of articulated, but attached, volumes—as in the exhibition and office components (this page). The massing lends the Diagonal Avenue elevation the sense of a traditional street front (opposite).





# Barcelona architect **Carlos Ferrater** deftly casts concrete into pure, crisp, brilliantly white forms at his **CATALUNYA CONGRESS CENTER**

By David Cohn

**F**inished largely in exposed, poured-in-place structural concrete, the Catalunya Congress Center in Barcelona demonstrates the versatility and beauty of a material that, in less skillful hands, can be rough and unreliable. The brilliant white forms of this building, by local architect Carlos Ferrater, have the sharp-edged, crystalline quality of marble or limestone while taking full advantage of concrete's enormous plastic potential. To achieve these results, Ferrater combined marble aggregates and careful workmanship with high-strength mixes developed for civil-engineering applications.

This 385,000-square-foot convention facility was selected by the Spanish government as the site for last March's summit meeting of the European Community's 15 heads of state. It was developed by the owners of the adjacent 1992 Hotel Juan Carlos I, also designed by Ferrater. The two buildings stand on the grounds of a former estate on Diagonal Avenue (Avenida Diagonal), near the point where the boulevard exits the city's western limits and becomes a major highway.

Along the Diagonal, Ferrater assembled the program into a series of attached but well-defined volumes: a rectangular auditorium, an exhibition hall faced in louvers and glass, a service tower, and a curving restaurant. Staggered, these elements create an urban street front as well as a dynamic backdrop to the fast-moving traffic. Here, the horizontal lines of concrete canopies and louvers and glazed strip openings give a sense of weightlessness, a floating quality, to large areas of solid wall and to simple rectilinear massing.

For all the virtuosity of the concrete work, Ferrater assigns it a mere supporting role—as a medium to transmit and reflect the play of light. The ground marble added to the aggregate gives the concrete a brilliant white color, a luminous surface, and delicate texture. (The exteriors are protected from staining by a coat of transparent waterproofing sealant.) Crisp corners, with no blunt edges, were obtained through exquisite control in the pouring process with conventional metal formwork. The white granular finish also permitted post-pour touch-ups, as

David Cohn is RECORD's Madrid-based correspondent.

needed. In one particularly tricky detail, the exhibition hall's horizontal louvers were poured successively one over another through stacking wooden formwork. Though Ferrater has extensive experience with concrete, he admits in retrospect that the quality achieved here entailed a "suicidal operation," requiring two years of intensive on-site supervision.

Inside, the architect organized the building around an interior promenade or circulation spine that provides a visual axis between the boulevard elevation and the estate's surviving garden. This thoroughfare separates the auditorium from the exhibition hall, leading from the entry vestibule to a reception foyer overlooking the garden down a slope at the



rear of the site. The internal "street" also provides vertical circulation with access to the building's 32,000 square feet of banqueting halls and meeting rooms on its lower garden level.

In developing the interior, Ferrater explains, "We made the lighting the main protagonist, focusing on the different ways it floods into the building and is reflected by the concrete." In a related subtheme, all the major spaces have windows that terminate axes with views. This feature, unusual in such facilities, orients movement in the building toward the exterior.

**Project:** Catalunya Congress Center, Alcolfol; Pepe Cortés  
Barcelona, Spain

**Architect:** Carlos Ferrater

**Associate architects:** José María Catañá; Rafael Alabernia (technical); Alberto Peñín (collaborator)

**Interior design:** Euroamykasa;

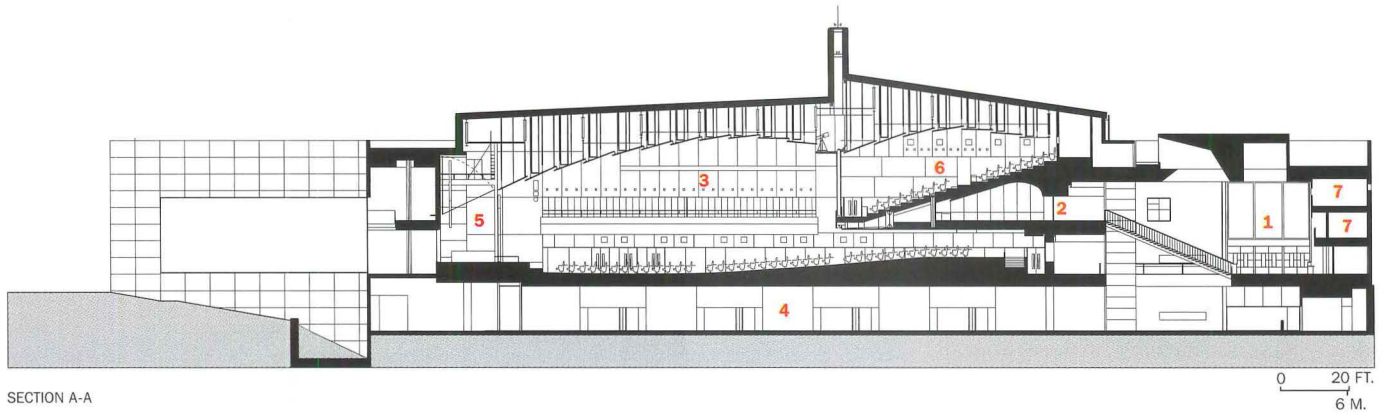
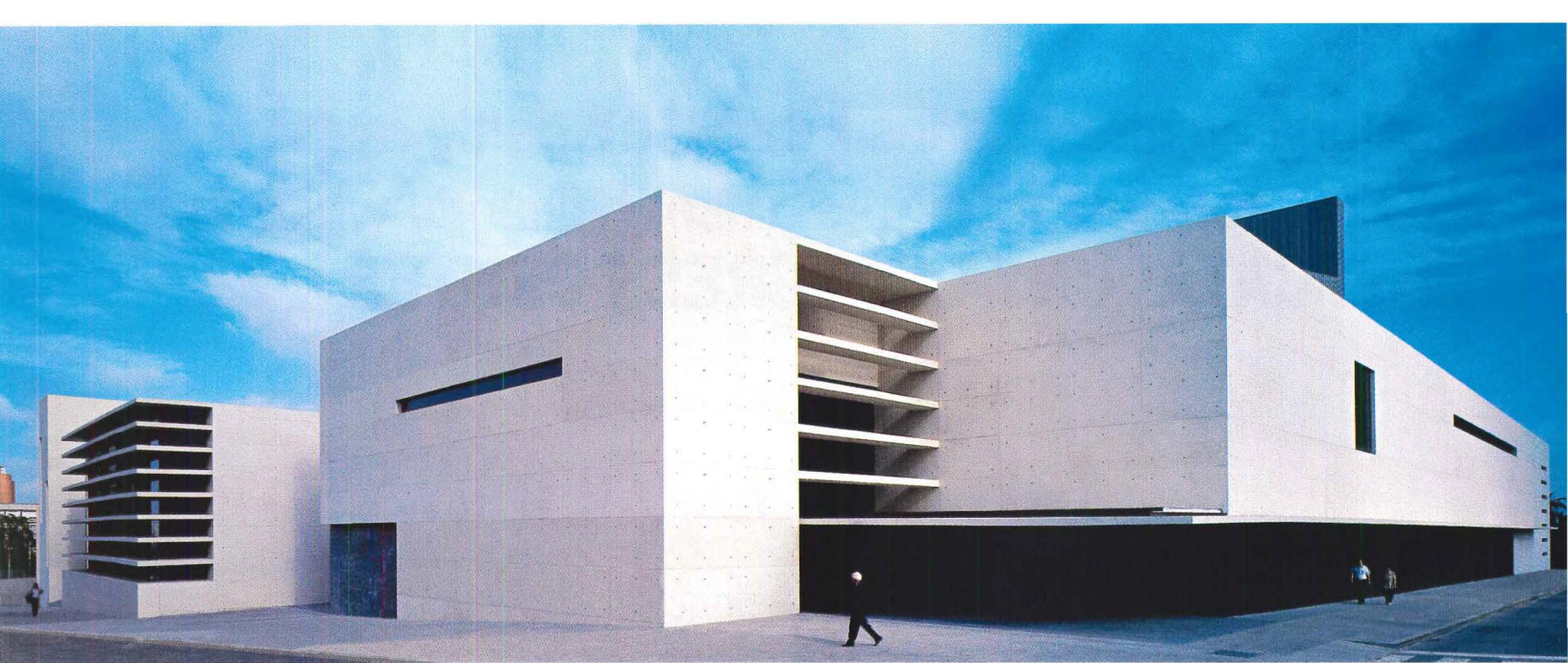
**Alcolfol; Pepe Cortés**

**Engineers:** Agroman; Pondio

**Consultants:** Crespo y Blasco (lighting); Robles 9 (formwork); Chemtrol (stage machinery); Lluís Diéguez (topography); ATISAE (quality control)

**General contractor:** Ferrovial-Agroman





SECTION A-A

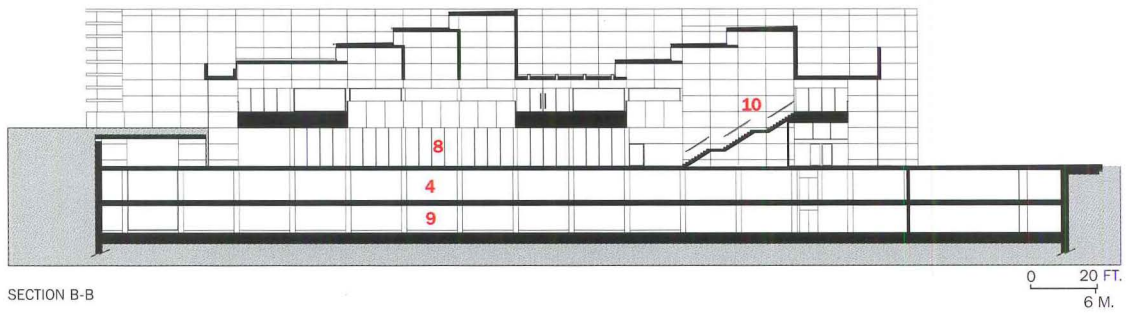
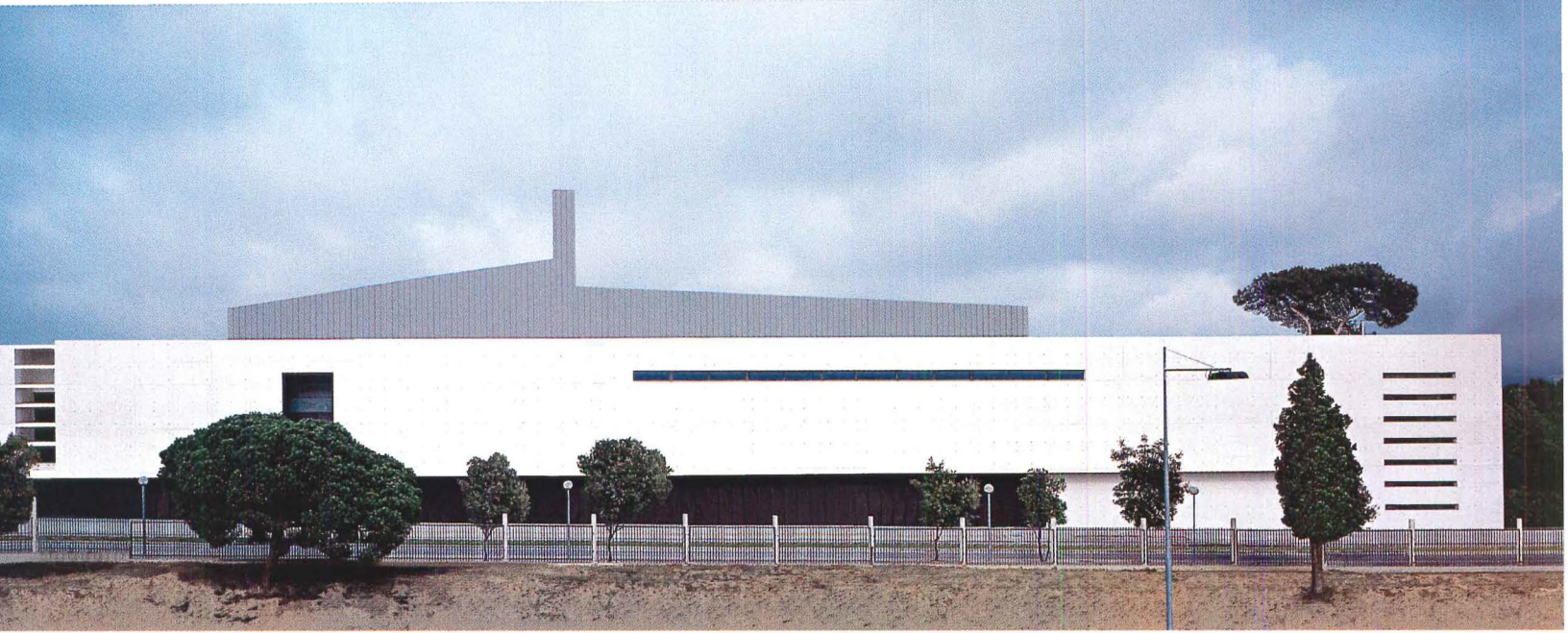
- |  |   |
|--|---|
| 1. <i>Entry foyer</i>                      | 6. <i>Balcony</i>                           |
| 2. <i>Press mezzanine</i>                  | 7. <i>Offices</i>                           |
| 3. <i>Auditorium</i>                       | 8. <i>Interior promenade</i>                |
| 4. <i>Banquet halls/<br/>meeting rooms</i> | 9. <i>Services/garage</i>                   |
| 5. <i>Reception foyer</i>                  | 10. <i>Stairs to auditorium<br/>balcony</i> |

Horizontal louvers and strip openings, along with simple planar canopies, give a weightless quality to great expanses of wall and large rectilinear

volumes. With ground marble in its aggregate, the concrete has the exceptionally luminous character of fine stone (this page, top, and opposite).





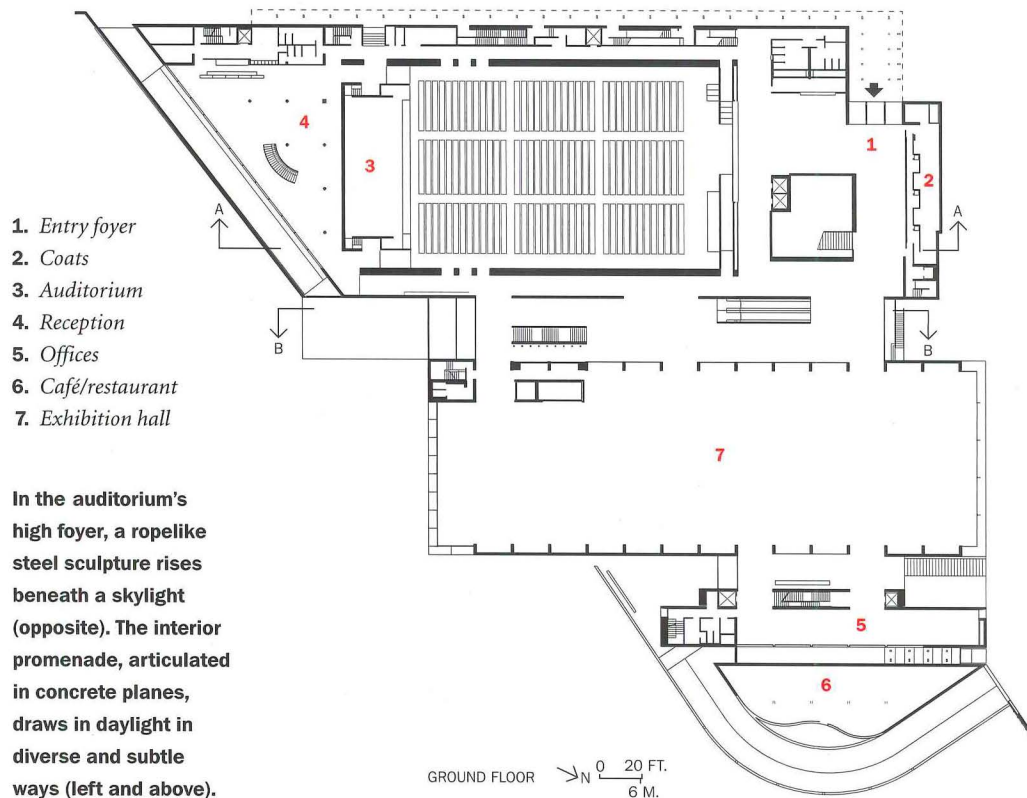
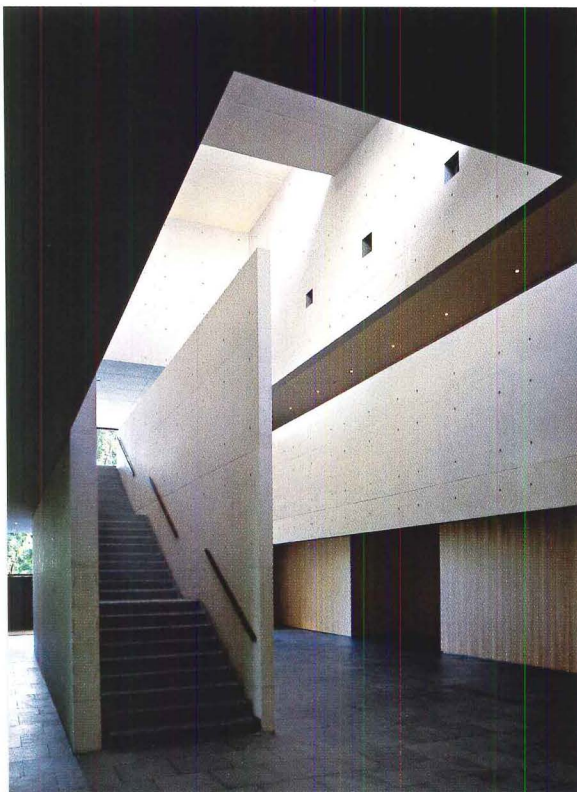


Ferrater's attention to detail, lighting nuances, and material refinement make his Minimalism unusually rich and compositionally balanced—as in

the exhibition hall (opposite page, bottom) and the auditorium's reception foyer (below), with its chromed-steel cruciform columns and curving stair.











Modulated in varied and subtle ways throughout the complex, daylight animates the public spaces. Beyond the shade of a low exterior canopy, the auditorium's double-height entry foyer is illuminated by four concrete skylights, each facing a different cardinal direction to capture a different "temperature" of light. *The Fountain*, a ropelike steel sculpture by artist Andreu Alfaro, rises under one of the skylights, beside a delicate stair to a mezzanine. The 2,000-seat auditorium beyond, lined in Canadian maple, has a large window behind the stage that can be uncovered to reveal views.

The roof over the internal promenade is a staggered series of horizontal concrete canopies with clerestories, admitting northern light to the entry and garden floors. The 20,000-square-foot exhibition hall has glazed end walls, as well as two rows of glass-roofed concrete boxes that line the side walls at the clerestory level and introduce daylight indirectly. Operable vertical louvers, faced in maple and teak, control the light entering through the modules. Along the internal street, these high concrete boxes also serve as exhibitors' display vitrines. Maintaining clean-lined surfaces throughout the project, Ferrater also developed a galvanized-steel-mesh ceiling, which incorporates the hall's mechanical services and lighting.

With structural finesse, the architect achieved apparently delicate concrete work while creating elements capable of withstanding 5,690 pounds per square inch. Such strength was needed to handle the project's complex cantilevers and counterweights in, for example, its structurally ambitious auditorium balcony or its pretensioned beams with spans exceeding 90 feet over the banquet hall. Extra reinforcing in the long western elevation, as well as the collagelike massing of independent vol-

umes, minimized the need for expansion joints—giving the stonelike surfaces an unfamiliar, seamless appearance, like an exotic superplastic.

Before embarking on the Catalunya Center, Ferrater had established a reputation for public works, as in his recent Barcelona Botanical Garden, and for luxury and subsidized housing. He is currently building the Zaragoza High Speed Train Station and a concert hall in Castellón, both in Spain. Formally, his work is related to that of several of his Spanish contemporaries, including Guillermo Vázquez Consuegra of Seville, author of the recent Museum of the Enlightenment in Valencia; Francisco Mangado of Pamplona, designer of the congress center currently under construction there; and Juan Navarro of Madrid, architect of the Princeton University Music Library. Their designs all feature simple and clearly legible forms, intuitively organized and articulated with an apparently casual elegance.

Like these architects, Ferrater is a rigorous and demanding builder for whom the technical details of construction are inseparable from the design process. In the Congress Center, this pairing of technical sophistication and design sensibility creates a fluid modern idiom that is at once pragmatic yet open to poetic intuition. ■

#### Sources

**Curtain wall:** *Talleres Inox*

**Concrete:** *Valencia de Cementos; Pioneer*

**Hardware and locksets:** *Tecosur; Arcon*

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

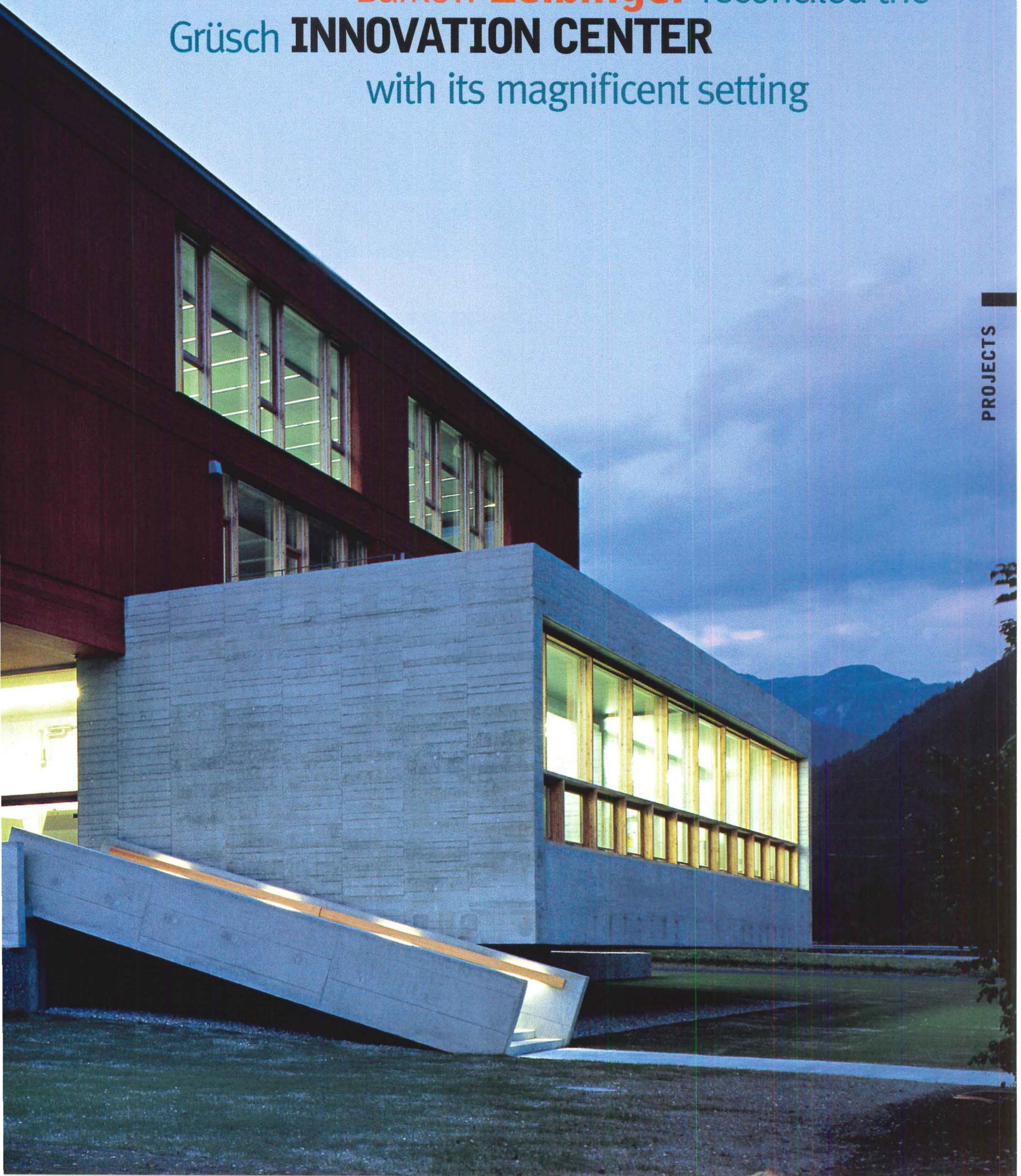


The gray "box beam" form of the column-free main workshop level cantilevers out from the body of the building while supporting the wood-paneled office levels placed cross-wise above.





Using sophisticated engineering,  
Barkow **Leibinger** reconciled the  
Grüsch **INNOVATION CENTER**  
with its magnificent setting





A garden ramps under the western entrance elevation (opposite, top), leading up along the east side (this page). It opens a below-

grade cafeteria to the stunning views and visually locks the building into the landscape. The main entrance (opposite, bottom).







By James S. Russell, AIA

**W**hat cubicle-bound slave of the high-tech economy has not dreamed of a workplace set in a postcard-perfect Swiss Alpine valley? In Grüşch, you can shut down the computers and, a few miles later, schuss the slopes of Davos. Although such amenities draw Americans to treasured natural landscapes in the states, development too often threatens the environment that attracted people in the first place. This region values its farmland and its traditional density in contrast to the tumbled Alpine expanse. It is by design that farm fields wrap mountain haunches, and the village, sharply bounded by fields, hugs the valley's flat upper edge. Like plenty of other towns, Grüşch wants to encourage economic growth and diversity without compromising an extraordinary setting. Few find the way to deal with this sensitively and without rancor.

The Canton of Graubünden, of which Grüşch is one village, wanted to expand the inventory of business space and incubate sophisticated new enterprises. Trumpf, a multinational maker of machine tools, power tools, electronics, and medical devices, wanted to expand beyond its 150,000-square-foot existing facilities. But there was not much space to expand into, without plowing under farmland. The city and corporation, aided by a bank, made a deal. The incubator would be built as an extension of the Trumpf facility, and the company would share space—and its know-how—with start-up businesses. The town would help lower the rents.

The intriguing program and magnificent setting were rich in



**Project:** *Innovation Center, Grüşch, Switzerland*  
**Client:** *Trumpf Grüşch*  
**Architect:** *Barkow Leibinger Architects—Frank Barkow, Regine Leibinger, partners; Anne Marie O'Connor, project architect; Christina Lill, Ariel Huber, Esther Righetti,*

*Thomas Strelbel, project team.*  
**Associated architect:** *Aves Architekturbüro*  
**Engineers:** *Conzett, Bronzini, Gartmann (structural); Züst Hans-Luzi Züst-Stock (mechanical); Brüniger & Co. (electrical)*  
**Consultant:** *Büro Keifer (landscape)*



The clarity of the building structure is echoed in the varied concrete textures, ranging from board-formed, in partition in the cafeteria (right) and in the entry porch (previous page, bottom), to the smooth surface of the ground-floor lobby's exposed ceiling and floor (below).



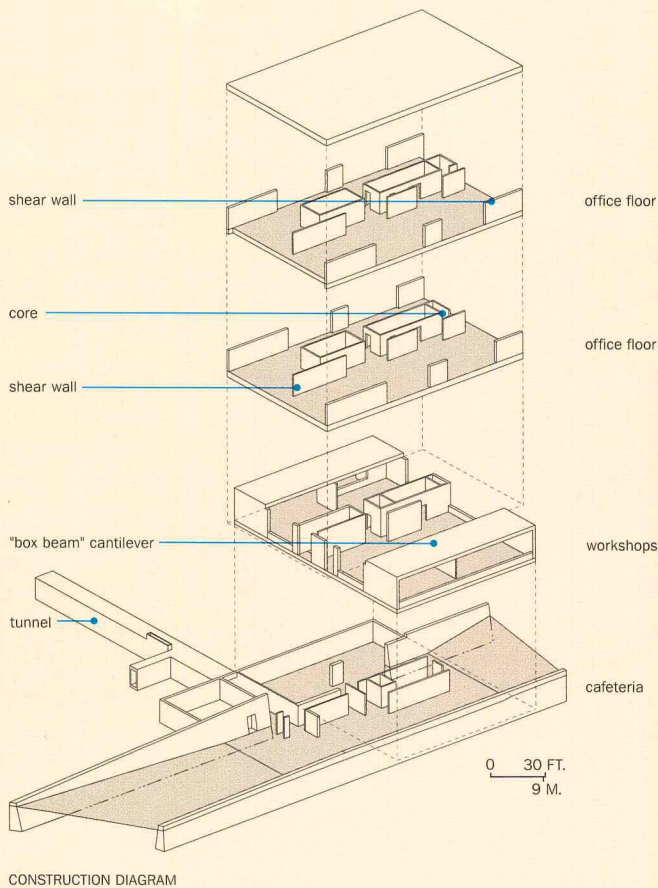
potential. But how to make one work with the other? Architects Regine Leibinger (she's German, Harvard trained) and Frank Barkow (he's American, also Harvard trained) found a common thread in another local tradition—that of brilliant engineering. Graubünden's numerous ravines nurtured the bridge-building genius of legendary engineer Robert Maillart, whose elegant essays in poured-in-place concrete brought a long history of spectacular masonry-arched structures into the 20th century. "We had done some landscape-generated projects," explains principal Frank Barkow. "We had been doing a studio at Harvard that looked at bridges, retaining walls, tunnels, cantilevers—we wanted to see how these could be appropriated in spatial terms and at the scale of buildings."

They "folded down" the landscape, they explain, carving a ramped declivity east to west and lining it with exposed-aggregate-concrete retaining walls. By spanning the glazed, column-free lower level with a board-formed concrete ground floor oriented north to south, the agricultural surroundings appear to flow through the building. Up to four light-industrial tenants can share the long-span, light-industrial space. The architects mounted two upper levels, clad in red-stained larch, perpendicular to the floor below. These, also divisible in a variety of ways, accommodate offices.

This cross-stacked "house of cards," as the architects call it, is not as capricious as it seems. The projecting upper floors shelter the building entrances underneath from frequent rains and bouts of wet winter snow. The roof of the workshop level offers pleasing outdoor terraces, now planted (though not visible in photos). The excavated lower level allowed the architects to tuck four floor levels below a residential-scale height limit while hewing to the tight footprint desired by the Canton.

The building takes full advantage of the region's "great craft tradition in concrete," noted Barkow. The exposed-aggregate retaining wall on the lowest level carries itself right through the cafeteria (top) and is echoed in the large size of the aggregate in the polished surface of the ter-





**Sophisticated simplicity:** Jürg Conzett, partner in the structural-engineering firm of Conzett, Bronzini, Gartmann, helped strip what is a structurally complex building back to two simple volumes stacked crosswise over each other. With prestressed reinforcing, Conzett supported the cantilever of the workshop-level volume by structurally uniting the solid walls with the floor and ceiling, forming, in effect, a rigid box beam, augmented by slim shear walls within the space and in the core (diagram). Clear spans on this level and the similarly formed upper office levels range up to 50 feet. Massive steel inserts with pressure reinforcements were cast into the concrete to carry the massive loads where the volumes overlapped, configured to maintain a consistent thickness of walls and floors. The design also maintained the building's crisp corners by avoiding dropped headers and haunches. With so much concrete visible as a finish (with insulation placed on whichever side was not exposed), the design team carefully calibrated pour-joint lines and calculated shrinkage during cure to avoid cracking.

1. Garden (below)
2. Lobby
3. Workshop
4. Loading
5. Existing factory
6. Office

razzo floor. "The building feels like a single, homogenous pour," Barkow explains. The varied finishes—crisper and sleeker at the highest parts of the building, rougher and heavier at the bottom—visually convey the action of static forces, akin to the geological forces pent up in the region's stunning topography.

Mechanical systems have been carefully located to avoid deep ceiling plenums—the height limit again. A single-tube fluorescent fixture is wedged in the few inches between the acoustical ceiling panels and the slab at the cafeteria. The presence of Trumpf's power-tool assembly line has attracted a small maker of robotic prosthetics. Two electrical engineers, some software start-ups, and an insurance company have divided up the office space. Two or three more similar-size structures may be added next to the center at minimal loss of farmland.

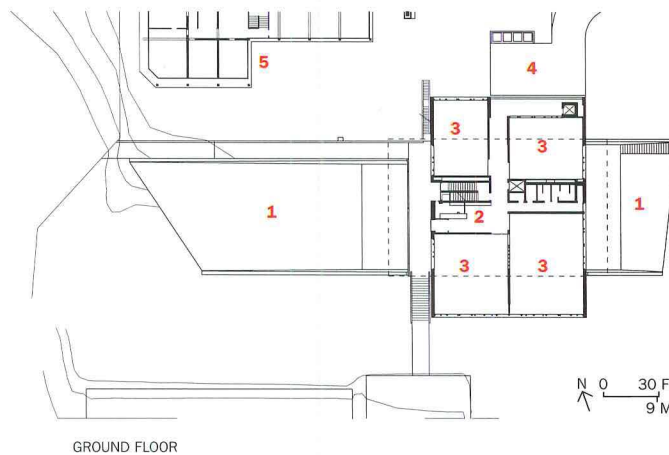
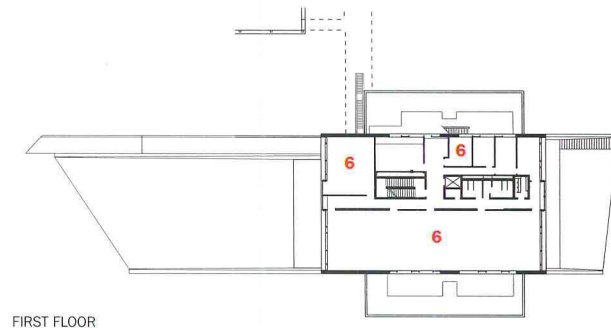
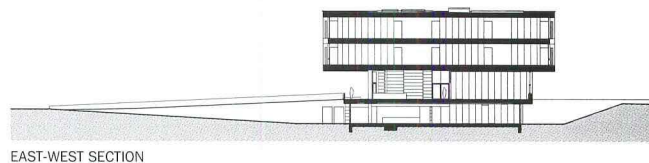
The Innovation Center's assertive, contemporary image clearly sets itself apart from the red-tile roofs of the village's prevailing chalet-style aesthetic without overwhelming it or the tight residential scale that allows the village to fit so charmingly within its surroundings. At the same time, the center projects its identity in spite of the shotgun-marriage program. Whether Trumpf grows or shrinks, whether tenants stay or go, the Innovation Center will hold its own. ■

**Sources**

- Concrete:** Vetsch Klosters
- Wood window wall:** Lötscher + Co.
- Exterior fabric rolling sunscreens:** Schenker Storen
- Hardware:** Glutz; INOX Forster; Regens; Kaba-Benzing
- Finish ceilings:** Montalta Nova (acoustical, perforated plywood); Monatage (expanded metal)

- Paints and stains:** Pittsburgh Paint
- Furniture:** Vitra; Wilde + Spieth; Artec; Castelli; Zoom
- Lighting:** Tulux; Zumtobel; Bega; Regens

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

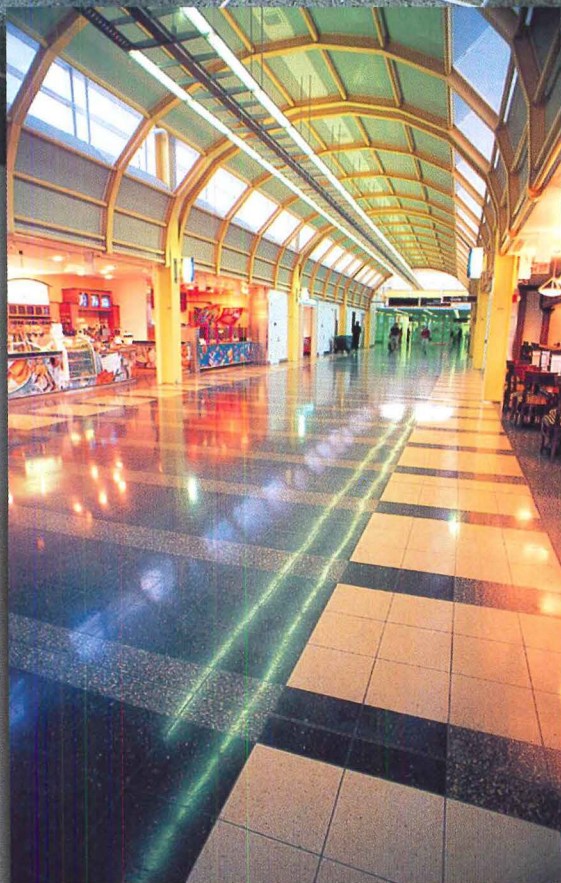




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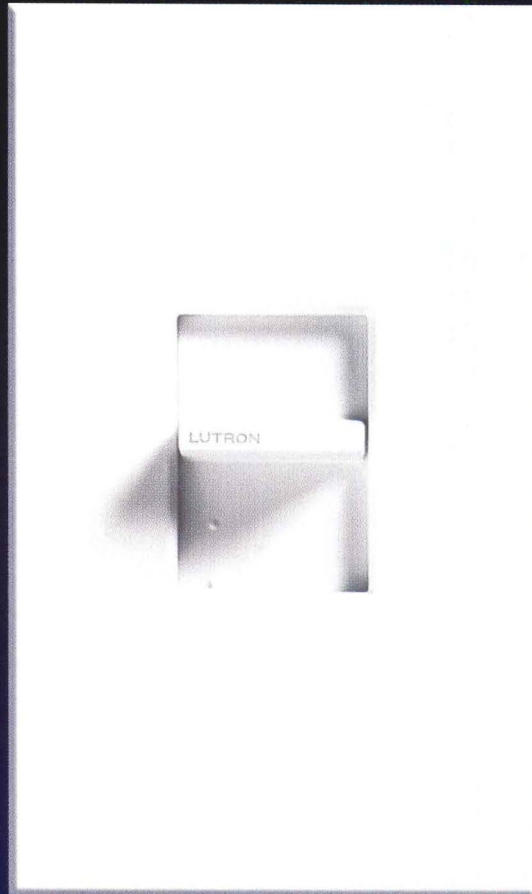
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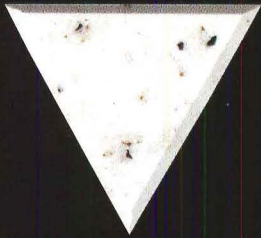




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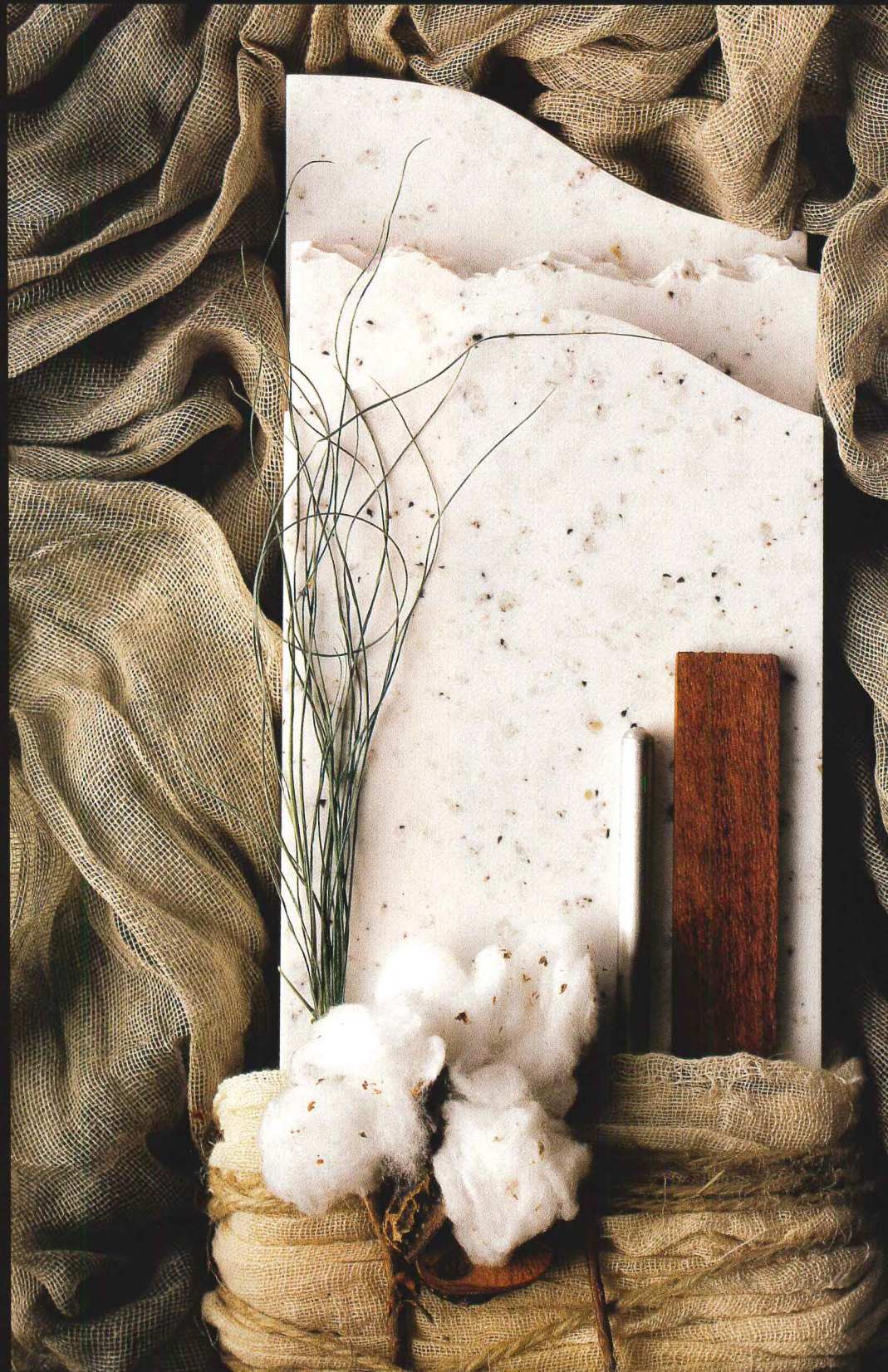


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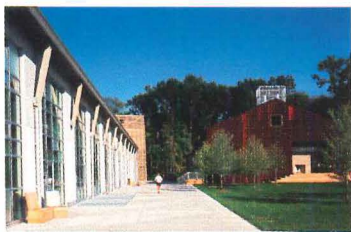


## OFFICES

# Breaking the Mold

**A SERIES OF SMALL OFFICE BUILDINGS HIGHLIGHTS THE IMPORTANCE OF VISUALLY ARRESTING STRUCTURES WITH AMPLE LIGHT AND A STRONG CONNECTION TO THE OUTDOORS.**

By Suzanne Stephens



1.

### New Albany, Ohio

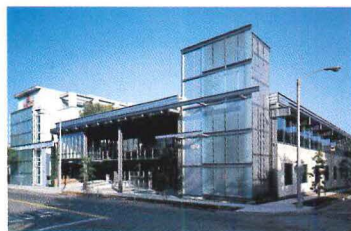
*Anderson Architects designs a camp-like setting for a clothing company geared to keeping its employees happy in the woods.*



2.

### Austin, Texas

*A two-building complex by Lawrence Speck Studio of PageSoutherlandPage is clad in a local limestone to relate to vernacular buildings on the site.*



3.

### Beverly Hills, California

*For a film-production company, Barton Myers Associates creates a dramatic mise-en-scène with steel and wood framing elements.*



4.

### Dusseldorf, Germany

*Alsop Architects' 18-story tower sparks up a once-decrepit waterfront with a colorful screen-printed ceramic-frit-glass exterior.*

For more than a century, the high-rise office building has served as the architectural icon of the workplace. The small office building has often got short shift in terms of design. These types of projects provide the bread and butter work for sizable firms whose clients think only in terms of a brick box by the highway or a square concrete doughnut in a corporate park.

Fortunately, exceptions occur, as the three low-rise projects and the diminutive tower on the following pages indicate. Here, serious effort has been made to inject architecture into this ignored building type. Whether it is a renovation, such as the Beverly Hills office building by Barton Myers Associates; or a new, two-building complex in Austin, Texas, by the Lawrence Speck Studio of PageSoutherlandPage; or the casual wood-framed, shedlike structures by Anderson Architects outside of Columbus, Ohio, each solution enlivens the office environment with a mix of materials and colors, the admittance of ample natural light, and, in several cases, varied interior spatial configurations. Gone is the sense of being trapped in the typical boxy, brown-glass, low-ceilinged, fluorescent-lit storage unit.

The only tower in this selection is small by skyscraper standards. Designed by Will Alsop Associates in London, and built on the waterfront of Dusseldorf, Germany, it comes with a strong urbanistic agenda: to attract “creative” types, such as advertising and media firms, to a revitalized waterfront. The visually riveting building abuts a narrow through-block plaza that takes pedestrians past the entrance on one side of the tower to the waterfront on the other.

Dusseldorf's Colorium building isn't the only urbanistically inclined structure. Lawrence Speck's Computer Science Corporation in Austin also faces a lakefront that is being renovated and upgraded as part of a downtown renewal. And Barton Myers' renovated warehouse can make urbanistic claims, as well. Located in an industrial section being gradually transformed by the arrival of offices for recording studios and film production companies, the building is next door to an old icehouse Myers also remodeled, now occupied by Madonna's Maverick Records.

Anderson Architects' scheme for Abercrombie & Fitch introduces another kind of urbanity as its response to the corporate office park. Here, a headquarters is conceived as a villagelike cluster of structures with easy access to outdoor recreational areas. Clearly, all these alternatives to the prosaic small office building benefit both employees and the community. Now, more clients need to be persuaded. ■

www For additional small offices, and more information on the people and products involved in the following projects, go to Building Type Study at [architecturalrecord.com](http://architecturalrecord.com).



# Abercrombie & Fitch Headquarters New Albany, Ohio

# I

**ANDERSON ARCHITECTS' DESIGN FOR A CAMPLIKE SETTING IN THE WOODS  
REVS UP THE IMAGE OF A YOUTH-ORIENTED CLOTHING COMPANY.**

By David S. Morton

**Architect:** Anderson Architects—Ross Anderson, FAIA, principal in charge; MJ Sagan, AIA, project director; Michael Nikolajuk, project architect, office campus; Caroline Otto, project architect, distribution center; Scott Lauer, project manager

**Associate architect:** NBBJ—Daniel Pickett, AIA, principal in charge; Robert Hatfield, project architect

**Client:** Abercrombie & Fitch

**Consultants:** Lantz Jones Nebraska (structural); M-Engineering (mechanical); EMH&T (civil); BBC&M (geosciences engineering); Sedlak (process engineer for distribution center); Joe Karr & Associates (landscape)

**Size:** 1.1 million square feet

**Cost:** \$130,000,000

**Completion date:** 2001

## Sources

**Glue-laminated beams and columns:** Unit Structures

**Insulated sandwich panel:** R-Control Building Systems

**Custom steel trusses and structural steel:** Ferguson Steel

**Light gauge metal framing:** Dietrich Industries

**Masonry cladding:** Wellnitz

**Metal and glass curtain wall:** Kawneer

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

A decade ago, Abercrombie & Fitch, the 110-year-old clothing retailer, scrapped the leather elbow patches and chinos and focused all its energies on designing baggy cargo pants and muscle shirts for the collegiate set. In the late 1990s, the newly youthful Columbus-based company broke with its corporate parent, The Limited. Last year, Abercrombie moved into its own 300-acre-campus headquarters among the country-club estates 10 miles from Columbus.

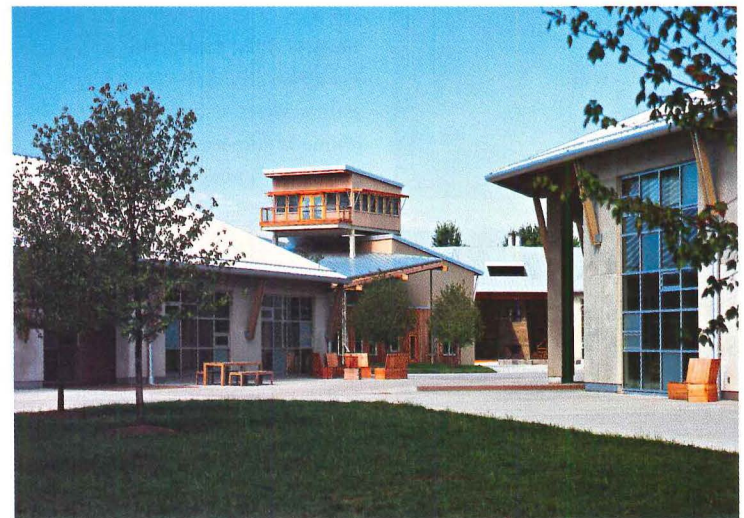
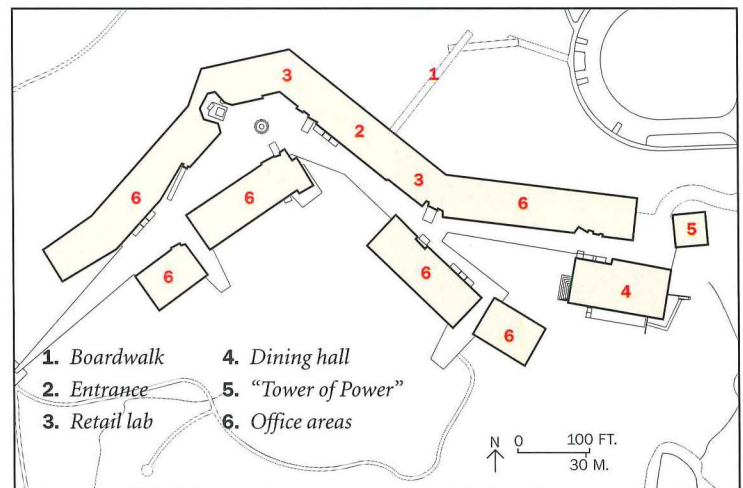
## Program

The Columbus area is a giant city-suburb so thoroughly average that demographers have made it America's de facto test-marketing capital for consumer goods. Within this context, Abercrombie's C.E.O., Mike Jeffries, wanted to create an office complex with a definite character and identity. He asked Anderson Architects to pretend it was designing a sylvan camp deep in New York's Adirondack region, the area that had originally inspired the company's founders in 1892.

## Solution

Ross Anderson and project director MJ Sagan sited the headquarters deep in the thick of the forest, where nothing of the outside world can be seen or sensed. (The company's 750,000-square-foot

*David S. Morton is the news editor of the Cleveland Free Times.*



national distribution center, planted at one corner of the property, proved harder to hide in tree cover.)

To avoid dominating the natural surroundings and to foster a village-like community, Anderson proposed breaking down the headquarters into

smaller sheds, roughly analogous to lakeside summer lodges. These two-story, pitched-roof buildings are arranged along a bow-shaped central street across which employees travel, using scooters, the nonmotorized vehicle of choice.





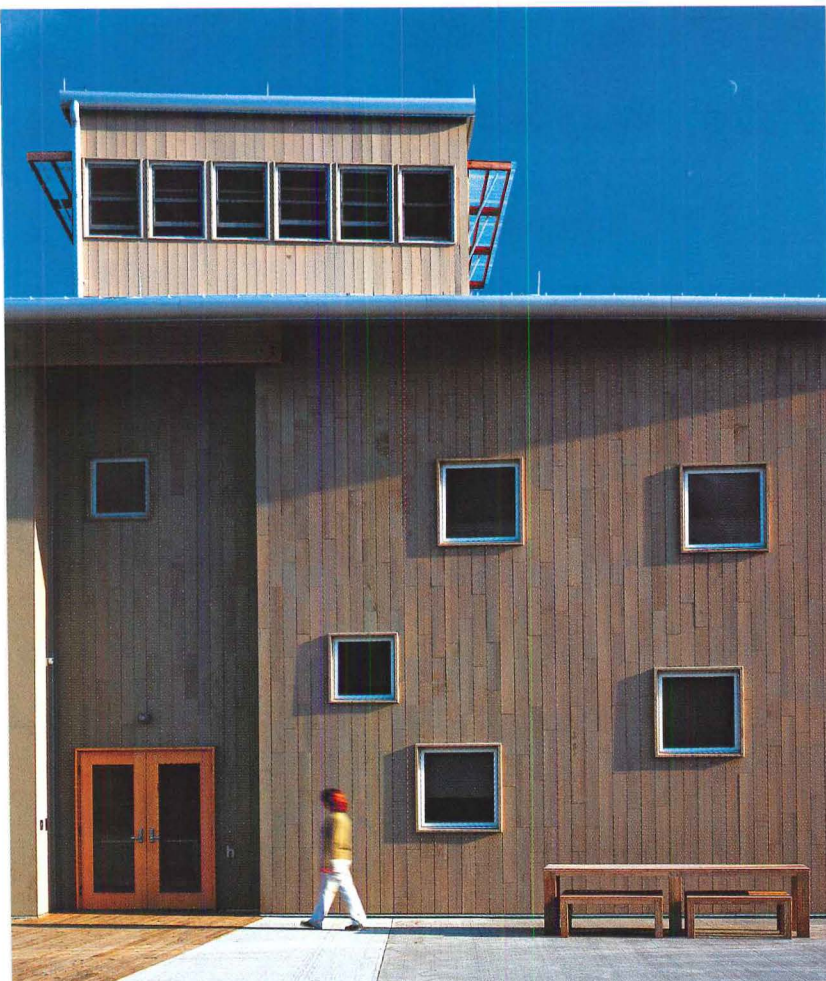
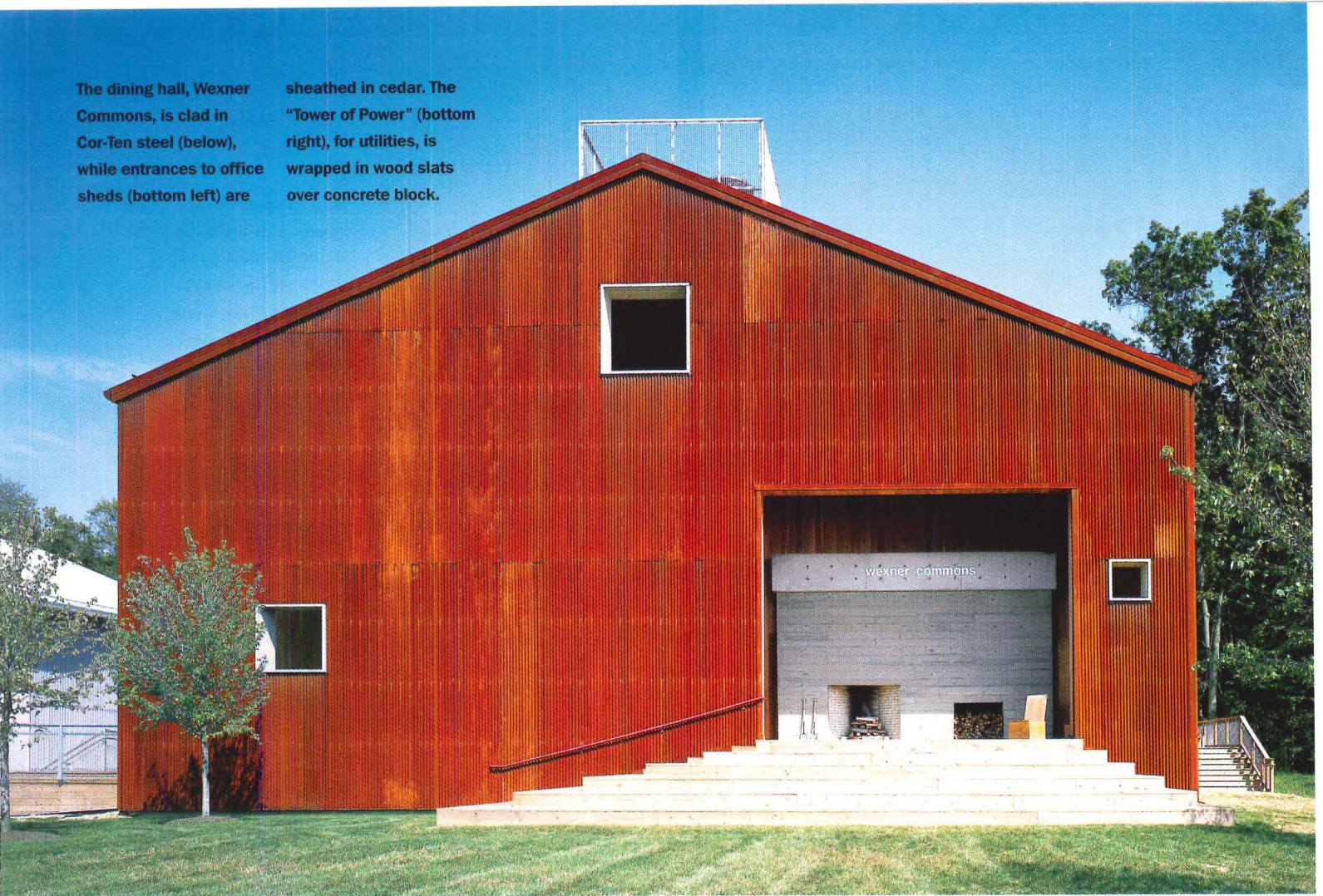
A bow-shaped central street forms the spine of the office campus, with the dining hall at one end (left). A tree-house meeting room (opposite page, below) signals the location of the C.E.O.'s offices underneath. Wood decks, porches, and plazas offer numerous meeting spots in the villagelike complex.





The dining hall, Wexner Commons, is clad in Cor-Ten steel (below), while entrances to office sheds (bottom left) are

sheathed in cedar. The "Tower of Power" (bottom right), for utilities, is wrapped in wood slats over concrete block.

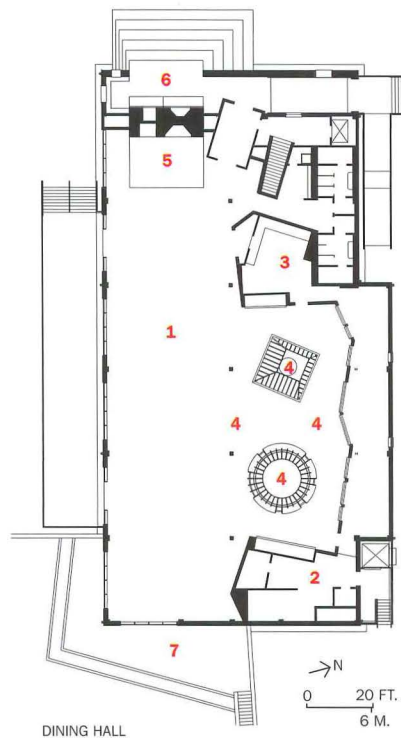




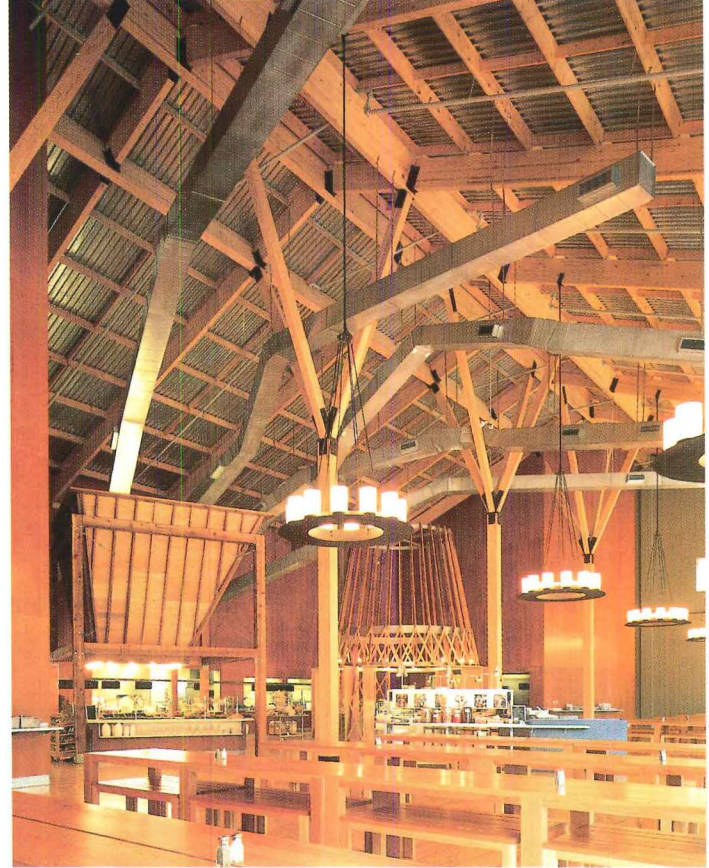
Even in this corporate village, one building—actually a chain of sheds—dominates the others. The single snaking structure forms the whole north perimeter of the street, marked by a central segment, which, with its bulging roof and the two-story gape of a timber-frame main entrance, can be seen easily from afar.

Although this is a campus, the client wanted to create a strong distinction between being inside and outside the complex proper. Hence, the walls facing out to the parking areas or the trees are clad in corrugated concrete board and punctured only by small square windows. But within the complex, on the central street where the sheds face each other, surfaces are pale tinted plaster and stucco, and large, loftlike, two-story gridded windows become the prevailing architectural features.

The sheds can accommodate 550 fashion designers, “merchants,” graphics people, and marketing and finance personnel in a mix of flexible workspaces. Key to breaking up the otherwise imposing consistency of shed and window-grid motifs are the many multiuse outside rooms, includ-



1. Dining
2. Food preparation
3. Dishwashing
4. Food service
5. Fireplace seating
6. Front porch
7. Gym/exercise



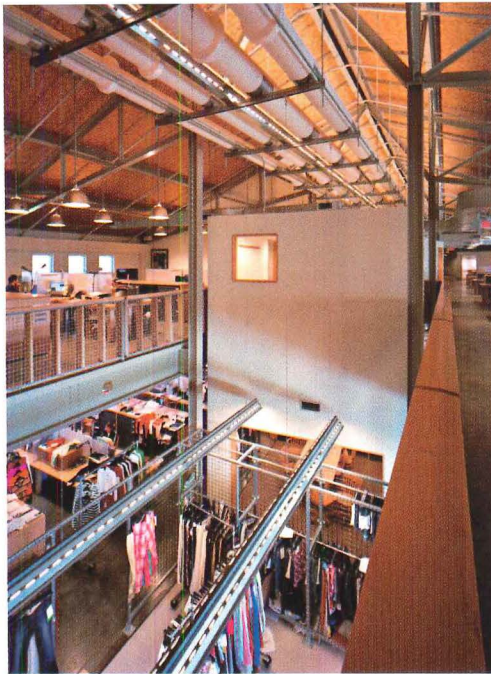
Inside the Cor-Ten steel-clad barn, glue-laminated beams and columns create a spacious dining hall (above). Other gather-

ing spots include the indoor/outdoor fireplace at “The Bite” (below), located on the northwestern part of the office campus.





The sheds accommodate a range of functions, such as working and meeting areas (right), along with the C.E.O.'s conference room (far right) and reception areas (below). Small rooms running down the spine of the halls (opposite) contain storage, bathrooms, and other services.



ing the several fireplaces one discovers around the campus. And while entrances to the central street are treated in cedar—with wood entrance “carpets”—each portal is handled differently. One hides under an extended dormer. Another is contained in a cedar box that appears to pivot out from the main building.

At the end of the central street sits Wexner Commons, which, despite its location, is the spiritual heart of the place. Appearing on the outside to be a slightly oversize red barn, the large volume of its triple-height interior comes as a dramatic surprise to first-time visitors. The wrapping of Cor-Ten steel helps diminish the sense of bulk and gives the building a rusty gleam that stands out from the otherwise pallid building colors.

### Commentary

Abercrombie & Fitch's office complex is deliberately isolated. Outside influences have been banished in favor of immersion in its brand identity, with the natural setting providing both relief and inspiration. But one imagines that workers might benefit from interaction with other creative milieus. The relentless thumping of techno music—the same soundtrack used in Abercrombie retail stores—loops endlessly through every space of the campus, replacing the buzz of real life. The headquarters succeeds on its own terms, but presents this conundrum: How does one retreat from a retreat? ■







# Computer Sciences Corporation Austin, Texas

# 2

**A PAIR OF LOW-RISE BUILDINGS BY LAWRENCE W. SPECK STUDIO OF PAGESOUTHERLANDPAGE RETURNS OLD URBAN VALUES TO DOWNTOWN AUSTIN.**

By David Dillon

**Architect:** Lawrence W. Speck Studio of PageSoutherlandPage—Matthew F. Kreisle III, AIA, principal in charge; Lawrence W. Speck, FAIA, lead designer; E. Douglas McClain, P.E., F. Keith Hall, AIA, project managers; Gwen Jewiss, AIA, Peter Hoffmann, project architects; Tom Hurt, Rommel Sulit, Scott Grubb, design team

**In-house interior designers:** Wendy Dunnam Tita, Assoc. AIA, Jen Bussinger, Bob Stapleton, Rheannon Cunningham, design team

**Engineers:** PSP Engineering (structural, MEP, and civil); Architectural Engineers Collaborative; Jaster-Quintanilla & Associates (structural)

**Contractor:** Hensel Phelps Construction

**Client:** Computer Sciences Corporation

**Size:** 350,000 square feet (two buildings)

**Cost:** \$65,224,894

**Completion date:** 2001

## Sources

**Reinforcing steel:** Capital City Steel  
**Lueder limestone cladding:** Mezger Enterprises

**Curtain wall:** WAUSAU Window and Wall Systems

**Glazing:** Viracon; GE Lexan

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

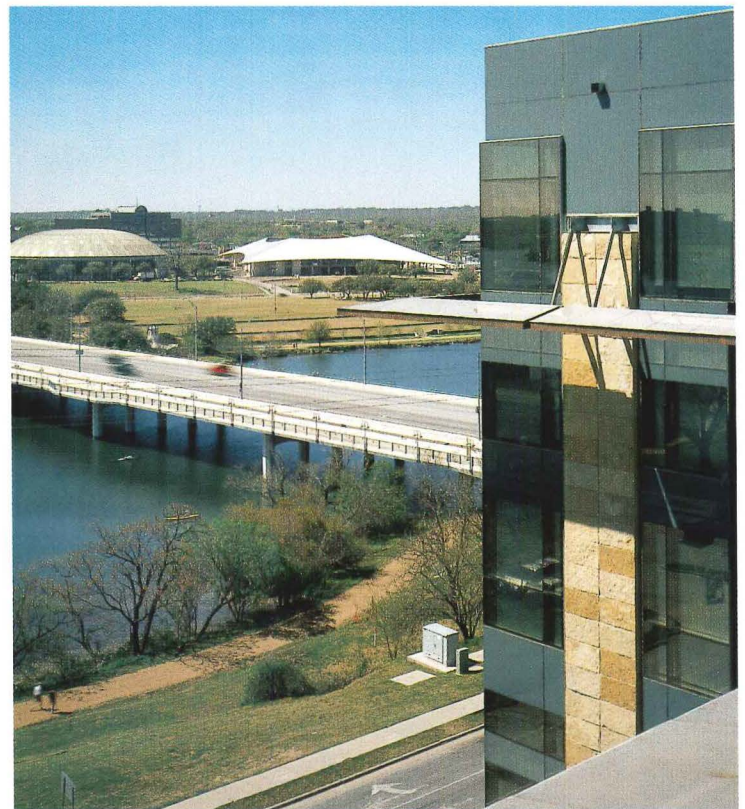
The new Computer Sciences Corporation (CSC) buildings in Austin, Texas, reflect an old-fashioned urbanism of street, block, and square that the city once embraced and then almost lost. In the 1980s and early 1990s, its downtown became a dumping ground for hun-kering modern office towers that blocked views, snuffed out street life, and generally turned it into a bad Houston or Dallas parody. In a city celebrated for its kicked-back, boots-and-blue-jeans culture, this was a startling transformation, like seeing Willie Nelson in Gucci.

## Program

CSC, the world's third-largest software maker, was an unlikely urban pioneer. Like many such companies, it preferred semipastoral suburban locations with lots of trees and a gloss of anonymity. Its first home was north of Austin, on the fringe of the Hill Country; later, it started looking at rolling sites south of the city, including one directly over the fragile Edwards aquifer.

Enter Austin mayor Kirk Watson with an offer CSC couldn't refuse: four acres of city land on the southern edge of downtown, overlooking Town Lake and within walking distance of stores, restaurants, and apartments. Although

*Contributing editor David Dillon is the architecture critic for The Dallas Morning News.*



the area still featured a motley collection of warehouses, parking lots, bars, and clubs—not to mention a water-treatment plant—the mayor persuaded the company that its presence there could make it a flourishing urban neighborhood and a new gateway to downtown.

"It was a radical move for the people at CSC," says Lawrence Speck, design architect for PageSoutherlandPage. "They had major concerns about security, access, parking, and the size of

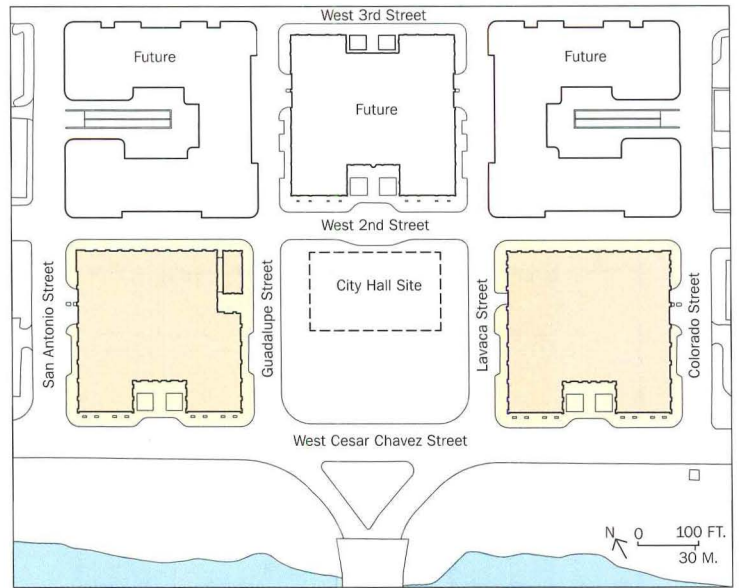
floors. Our challenge was to reinvent the suburban office building they had in a downtown location. To our surprise, they went along."

CSC earned additional good-corporate-citizen points by agreeing to Speck's proposal for three six-story buildings instead of one 20-story tower and siting them to frame a new city hall being designed by Antoine Predock. They would fill out their blocks, as good urban buildings should, and include shops, restaurants, and cafés at the corners. A





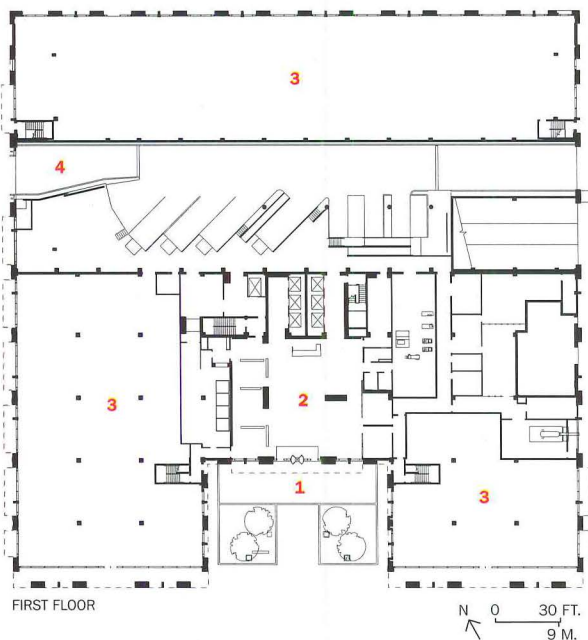
Located on the southern edge of downtown, the two-building CSC complex (one half shown at left) faces Town Lake but also engages Austin's street grid. One of the buildings even wraps around a beloved 19th-century store (below). A copper sunscreen acts as a cornice (opposite) for each of the glass-and-limestone structures.







FOURTH FLOOR



FIRST FLOOR

1. Entrance
2. Lobby
3. Retail
4. Parking
5. Conference rooms
6. Offices

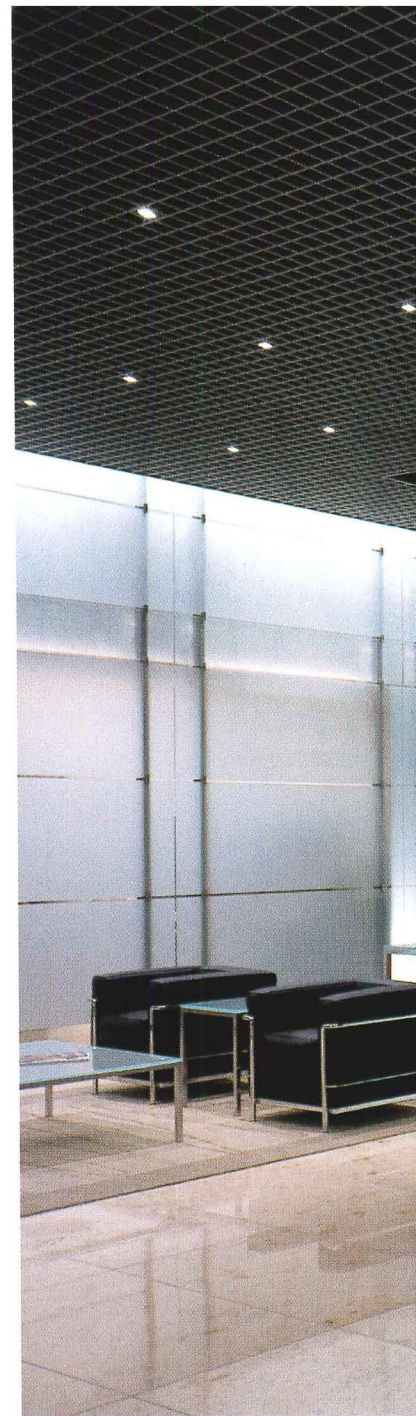
chunk of one building would be carved away to accommodate the restored J.P. Schneider dry goods store, a beloved 19th-century limestone structure with a plausible future as a restaurant. All cars would be tucked away in attached garages finished like the rest of the complex.

Here, in short, was a New Urbanist corporate development without the period costuming and empty nostalgia for times gone by. Even though the planned third CSC building was scrapped because of the high-tech meltdown, the basic scheme remains intact, and two structures are now completed.

### Solution

CSC is a conservative company that had no interest in aggressive, cutting-edge architecture. Consequently, its buildings are quiet, crisp, and tailored, with piers of local Lueders limestone enclosing planes of gray, green, and white glass, some fritted, some not, with a copper sunscreen for a cornice. The color of the limestone ranges from cream to caramel, creating an attractive quilted facade that recalls the older warehouses and commercial structures in the area. The sunscreen is a neighborly gesture to Predock's city hall, projected to be a copper-and-stone sculpture with a plaza, terraces, and fountains. A tunnel connecting the two CSC buildings runs beneath the plaza, thereby resolving several knotty security and access issues. Each building contains a small courtyard facing Town Lake that seems to pull the riparian landscape inside, as though one were an extension of the other. At night, the buildings become twin lanterns marking the southern entrance to the city.

The interiors are a mixed bag. The first-floor lobbies, with their backlit glass walls, exotic woods, and bold red, yellow, and blue columns, display a certain Mediterranean brio that is entirely appropriate for Austin, with its slanting light recalling Tuscany. It is easy to imagine managers moving staff meetings into these spaces just for the sensory stimulation. The floors



above, on the other hand, are conventional arrangements of modular offices and conference rooms, some with nice views of Town Lake and the downtown skyline, but none that require a long second look.

### Commentary

The strength of the CSC complex is its urbanity. Its buildings were conceived as parts of a civic and commercial landscape, not as discrete, grandstanding objects. They don't strut or preen; they are content to fit in rather than take over. In an age of steroidal architecture, you have to applaud that. ■





Each of the CSC buildings has a first-floor lobby with backlit glass walls, exotic woods, and columns painted red, yellow, or blue (above). Office floors combine conference rooms and areas for workstations (left).



# 9350 Civic Center Drive Beverly Hills, California

# 3

**BARTON MYERS ASSOCIATES MAKES AN OLD WAREHOUSE WORK AS A HIP OFFICE BUILDING BY BRINGING LIGHT INSIDE AND PUTTING CARS ON TOP.**

By Thomas S. Hines

**Architect:** Barton Myers Associates—Barton Myers, FAIA, principal in charge; Stephen Lee, associate in charge; Beth Holden, Isabelle Massicotte, Don Albert, Don Mills, AIA, Aaron Campbell, design team

**In-house interior designers:** Edward Levin, associate in charge; Sigrid Geerlings, project manager; Peter Rutti, Melissa Schrock, Kengo Nozu, Jorge Narino, design team; Peter Robertson, graphic design

**Client:** Bank of America (trustee)

**Consultants:** Ishler Design & Engineering Associates (structural); Davidovich & Associates (MEP); The J. Byer Group (geotechnical); Hotron Lees Brogden (interior lighting); Arup Acoustics (acoustical)

**Contractor:** Peck/Jones Construction; Corporate Contractors (interiors)

**Size:** 40,000 square feet

**Cost:** Withheld

**Completion date:** February, 2002

## Sources

**Steel structure:** Plas-Tal (fabrication and erection)

**Sheet metal for exterior cladding and roofing:** Weiss Sheet Metal

**Aluminum and glass curtain wall:** Vistawall; The Carvist Corporation (glazing contractor)

**Concrete:** ReyCon Construction

**Skylights:** Metcoe Skylight Specialties

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

Intermedia, an indie film production company, recently moved into a remodeled Beverly Hills office building by Barton Myers Associates. In one of the company's hits, *Sliding Doors*, Gwyneth Paltrow plays the same character in two parallel, interwoven stories. In the first, she misses, by a split second, her Manhattan subway connection; in the second, she slips through the sliding doors and makes it. The two-track film then contrasts her subsequent journeys as a parable on contingency in travel and in life.

Though less dramatic in timing and circumstance than *Sliding Doors*, Barton Myers's renovation of an obsolete 1930s warehouse offers an innovative response to urban contingencies that shaped a variety of architectural scenarios.

## Program

Located in a once industrial district of the city, the property is owned by a family trust and managed by Bank of America, which wanted either to expand the existing warehouse or tear it down and construct a new building. An entirely new structure would have cost more, been subjected to zoning requirements for greater setbacks, and required more parking based on total square footage. It would also have necessitated costly underground excavation and delays in the approval process.

Thomas S. Hines teaches history and architecture at UCLA.

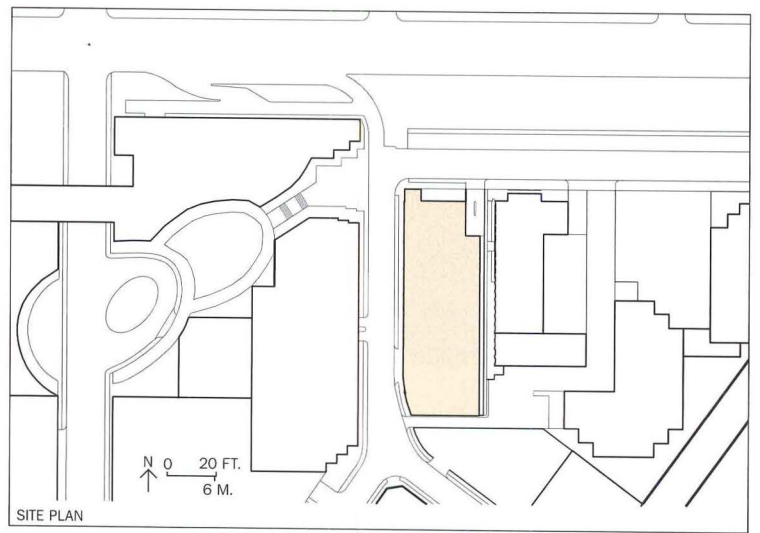


## Solution

The alternative scenario was a major remodeling and enlargement of the old warehouse. But this raised the formidable problem of on-site parking. Excavation under the existing building would be difficult and expensive, while ground-floor parking with offices above would be unsightly and preclude the tenants having visual and physical access to the street.

The solution that made the option viable was to use the roof of the two-level building for open-air parking in the tradition of Los Angeles automobile showrooms. While the Myers proposal was first deemed "crazy" by the clients, it proved to be a unique, cost-saving answer. New steel bracing supports this rooftop parking and seismically reinforces the 39,000-square-foot structure,

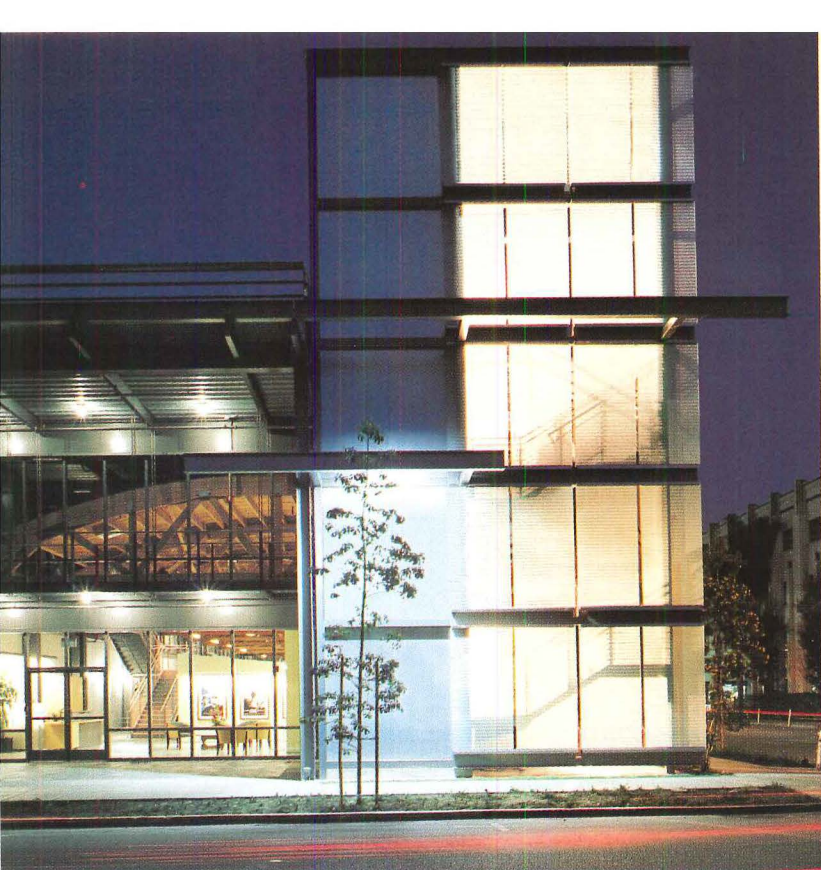




A new L-shaped addition wraps around the old warehouse, which has been retrofitted with new glass-and-steel elevations (opposite and this page).







with construction costs coming in at approximately \$150 per square foot.

As reconstituted, the major work space occupies the western half of the old warehouse and is capped by a handsome wood bowstring vault, a remnant of the older structure. A new L-shaped extension wraps around the renovated space and has a mezzanine that doubles available work space. Partially enclosed car ramps to the roof run through the eastern part of the original building. The view of the vaulted wood truss provides workers and visitors on the ground floor and mezzanine with a sense of texture and patina not usually found in the slick environments of most Hollywood production offices.

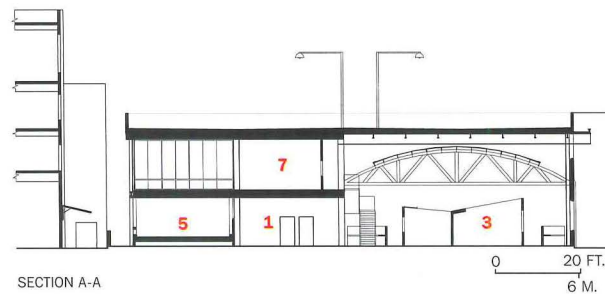
Consciously or unconsciously, clients and office workers have probably come to realize that this sophisticated integration of old and new offers a respite from the boredom of most urban offices, while the height of the vaulted space counters any feelings they might have of workplace claustrophobia. The sense of openness is enhanced by skylights on the roof, street-front walls of glass, large punched windows in the original brick west wall, and clerestory glazing. In contrast to the domi-

nant textures of steel, glass, wood, and brick, workstations in the office areas are painted from a palette of warm green and salmon colors.

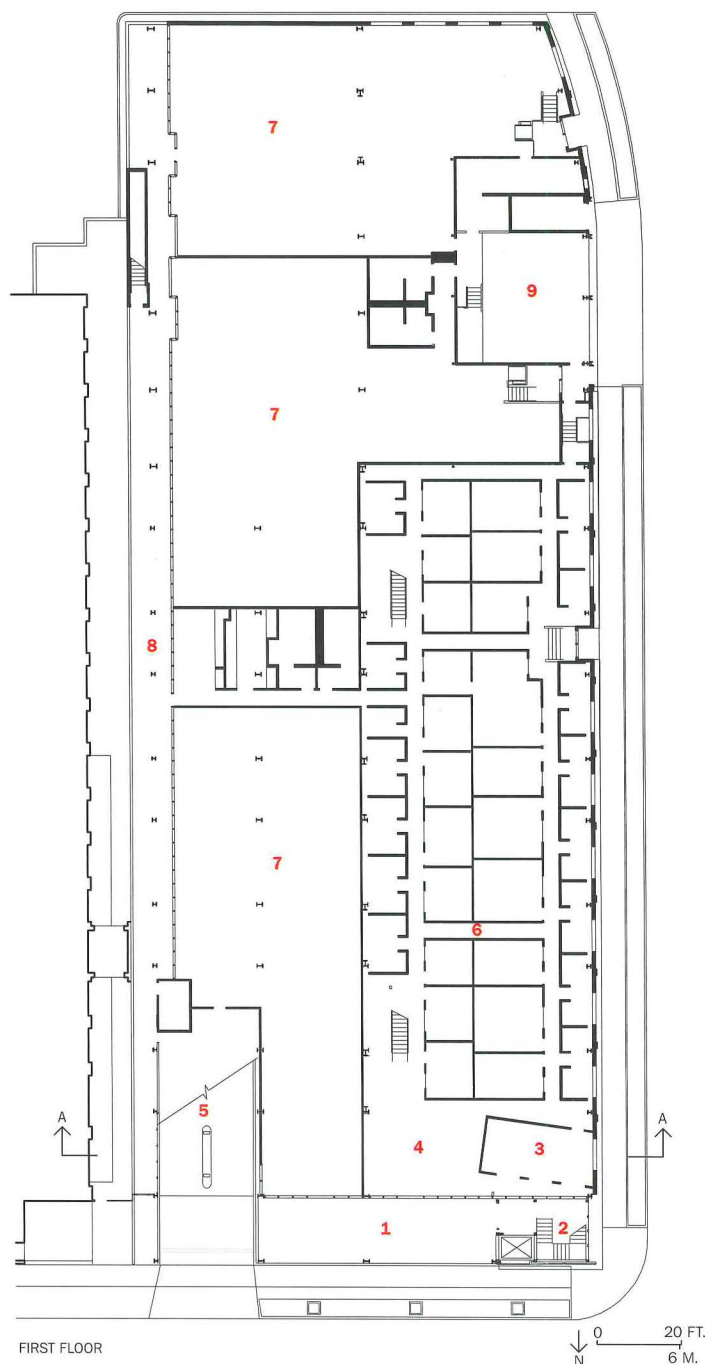
### Commentary

At the northwest corner of the complex, an opaquely glazed elevator-and-stair tower serves the mezzanine and rooftop parking areas. Seen from the street through the building's glazed front, the sculptural richness of the old bowstring truss and the new steel frame helps connect the building to the old Ice House next door (now occupied by Madonna's Maverick Records), which Myers also renovated.

At the rear of the building is a synagogue, another vestige from prerenovation days and a poignant counterpoint to the main tenant—Intermedia—the epitome of hip, 21st-century Hollywood. Such variety in its tenants echoes the building's integration of diverse structural, programmatic, and material components—historical and contemporary. For cities that have a surplus of older, industrial structures but need new office space, Myers's resolution of competing scenarios offers a model of cost-saving efficiency and environmental richness. ■



- |                         |                 |
|-------------------------|-----------------|
| 1. Entry court          | 6. Offices      |
| 2. Stair/elevator tower | 7. Tenant space |
| 3. Conference room      | 8. Open walkway |
| 4. Reception            | 9. Loading dock |
| 5. Parking ramp         |                 |







Myers added a mezzanine level to the old warehouse but kept the original bowstring trusses (left and below). A new glass tower provides vertical circulation to the office spaces (opposite).





# Colorium

## Dusseldorf, Germany

# 4

**ALSO P ARCHITECTS HELPS A ONCE-INDUSTRIAL HARBOR FIND ITS FUTURE BY WEAVING A RICH TAPESTRY OF COLOR INTO A NEW LANDMARK.**

**By James S. Russell, AIA**

**Architect:** *Alsop Architects*—Will Alsop, principal in charge; Jonathan Leah, project director; Uwe Frohmader, project architect; Christophe Egret, Sonia Hibbs, Andy McFee, Neil Pusey, Sabina Riss, Shaun Russell, Max Titchmarsh, design team

**Client:** *Ibing Immobilien Handel*

**Engineers:** *Arup (structural); intecplan (mechanical)*

**Consultants:** *DS-Plan (facade); Hossler, Hass und Partner (fire safety); Schlotfeldt Licht (lighting)*

**Project manager:** *Drees & Sommer*

**Size:** 18 stories; 133,000 square feet; 4,700-square-foot typical floor

**Cost:** Withheld

**Completion date:** June 2002

### Sources

**Curtain wall:** *Bug-AluTechnic*

**Glass processing and printing:** *Eckelt Glas*

**Elevators:** *Otis*

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

The city of Dusseldorf has put eye-catching architecture front and center in its effort to revitalize a derelict industrial riverfront. With the intent of differentiating itself from the dozens of similar-size European cities with which it competes, the city has created a "Media Harbor." Its strategy was to attract a wide variety of advertising, multimedia, and design firms around a core of

television broadcast facilities. But earlier phases of the project have appealed to a much wider range of tenants, according to Christian Simanek, an executive with the local office of the real estate firm of Jones Boone LaSalle. "It has attracted branches of large design and architecture firms," he says, "but also high-quality office tenants like law firms and consultants." The

striking Colorium is among the latest additions in a newly developed street in the harbor.

### Program

The port agency prepared sites for redevelopment, including the conversion of many older structures to new business and residential uses. To attract image-conscious advertising and media firms, it offered open sites for new development, explicitly requesting developers to team with architects of international stature. Buildings by Fumihiko Maki, David Chipperfield, and Steven Holl have risen among the beefy brick warehouses, along with a sinuous, three-building complex built by Frank Gehry. The office construction has drawn trendy bars and restaurants, enlivening the once-overlooked residential streets that thread their way amid the former industrial structures.

### Solution

Like other new buildings in the Media Harbor, the Colorium strays far from the rigid norms of American-style speculative office development. For one thing, both client and city wanted an architectural landmark. But London-based Alsop Architects quickly discarded their sculpturally complex initial instincts, bowing to numerous site constraints. "We were required to negotiate the footprint of our project with that of neighboring projects, so we've aligned the size

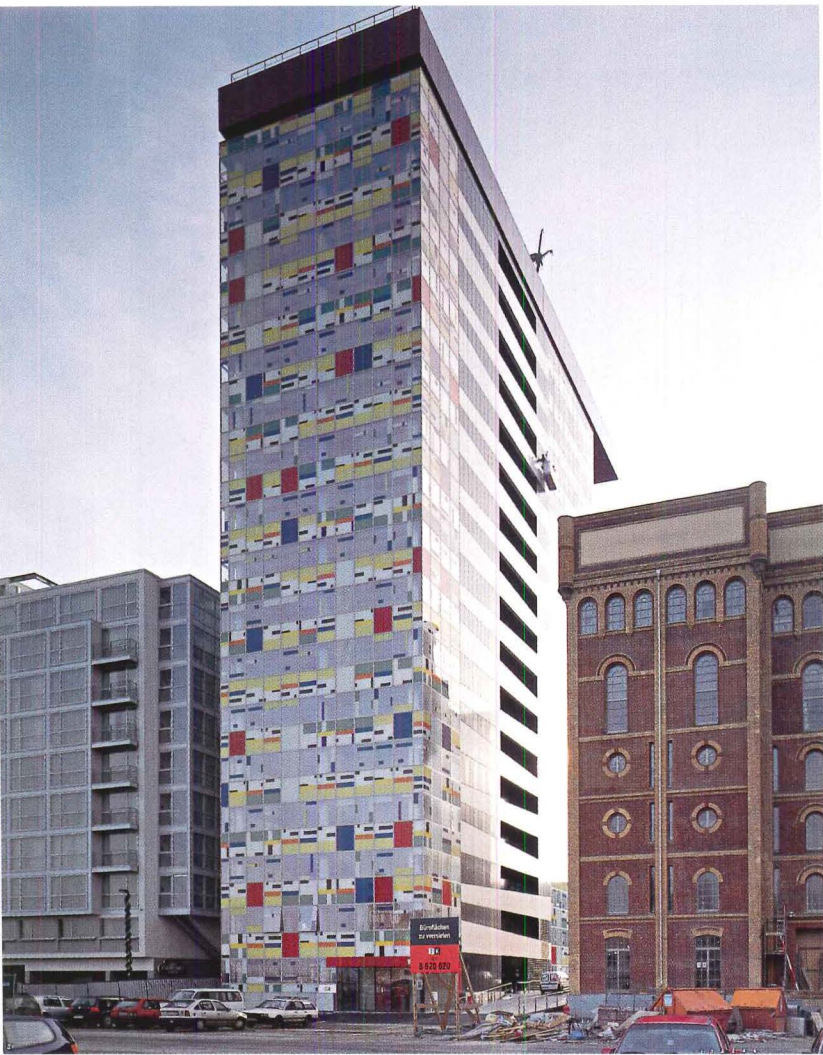




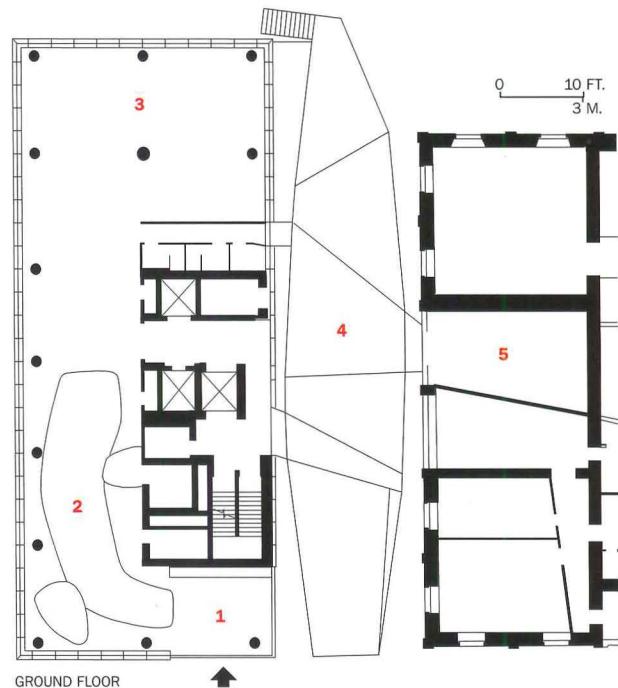
A red-painted "lantern" enclosing mechanical equipment (opposite) and a tapestrylike curtain wall reach out across the Rhine River. Close up, on the street side (this page) the building boogie woogies a once-derelict district into a new dimension.







1. Entrance
2. Lobby
3. Tenant
4. Public walkway
5. Adjacent development



The color pattern was refined to impinge minimally on vision-glass areas (lobby, below) while maintaining the

overall carpetlike design (street-facing elevation, above). Only 17 unique lites were used.

and setbacks to existing buildings," says Uwe Frohmader, Alsop's project manager. The floor plan shrank further when the city mandated a walkway linking the street to a new waterfront pedestrian promenade. (The complying ramp and metal stair are shown in plan, above, but were not completed when photos were taken). It became clear that the client's space requirements could only be accommodated in a prismatic slab, and then only with the most minimal of vertical cores. The local code permitted a single exit stair with the use of exterior, fire-separated balconies.

The designers turned to graphic means to heighten the tower's visual impact, overlaying the curtain-wall grid with boldly colored patterns in screen-printed ceramic-frit glass so that the onlooker would perceive an 18-story tapestry, rather than a decorative treatment alternating with bands of glass.

### Commentary

Whether you see Mondrian in its extraordinary walls or a patchwork of nautical burgees, resistance to the Colorium's appeal is futile. The larger question is: Does sexy design make sensible urban-redevelopment strategy? It's a little too soon to tell. Earlier projects, especially the Neuer Zollhof complex by Frank Gehry, have attracted international attention and filled with tenants, putting Dusseldorf on the map in a way that traditional economic-development efforts failed to do. But the building is only partly tenanted, which Frohmader attributes to Germany's sluggish economy. Simanek wonders if the floors aren't too small.

But it is the very modesty of its scale that allows the Colorium to be expressive without being aggressive. With its high-design neighbors, it creates the strong local identity this heterogeneous area lacks. There are lessons here for design-averse American real estate developers. ■





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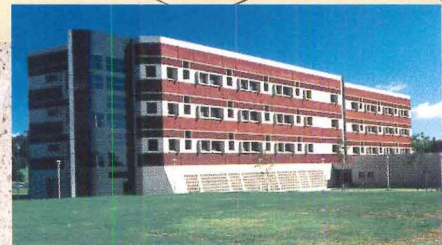


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# Urban Infrastructure: The “Out of Sight, Out of Mind” Mentality Is an Outmoded Concept

ARCHITECTS HAVE NEW DESIGN AND BUSINESS OPPORTUNITIES TO IMPACT THE BUILT ENVIRONMENT

By Barbara Knecht

**H**idden behind walls, buried in the street, or set beyond chain-link fences, infrastructure is largely invisible. Because it's out of sight, it's out of mind to most of us, as well, when we turn on the lights, gas, and water. Infrastructure is nearly everything that isn't actually the skin and structure of buildings. It is the wires, lines, and pipes that run under and over roadways and bridges, through tunnels, and into the walls to the fixtures and gadgets that serve our lives. It's also the plants and generators that feed those lines and cables with the services that they need. And it is the roads and streets and transit systems that get people and goods to and from cities and in and out of buildings. And, finally, infrastructure includes the switches and controls that keep all those systems and networks up and running. Still, most people's tangible connections seem to be limited to smokestacks belching pollutants, roadways closed down for months of repairs, or rolling brownouts.

In a supporting role to buildings and neighborhoods, infrastructure that safely carries away trash and waste water rarely gets credit for the terrific quality of life that most people enjoy. And despite dire warnings, its systems don't fail often or catastrophically enough to stimulate public interest in funding better design or maintenance.

This apparent lack of concern is the major dilemma facing our aging infrastructure systems today. “Although we tend to plan the surface

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



Peeling back the street surface of Lower Manhattan in 1913 revealed a tangled web of pipes and ducts, much of which is still part of New York City's complex infrastructure, and has been for over 100 years.

of our cities, we have historically ignored the subsurface, the underground,” observed Ray Sterling, the chairman of the International Society for Trenchless Technology and the director of the Trenchless Technology Center at Louisiana Tech University, in Ruston, Louisiana. “There are probably only a handful of cities in the world that plan the underground to make it an effective support for the rest of the city. And, because of this historical lack of planning, we pay a very high cost for what we do underground now.”

If infrastructure is as critical to the quality of the urban environment as buildings are, it seems curious that architects are rarely involved in the planning and design of it. This is especially puzzling since, first of all, infrastructure design is another business opportunity for architects, as the projects here show. Secondly, if architects knew more about these systems, they could integrate them into the design of any project, as some are now doing by incorporating photovoltaics as design elements into roofs and facades [RECORD, January 2001, page 121].

## Infrastructure as public art

And yet, it was two artists who first raised the bar for integrating public art and urban infrastructure planning. Michael Singer, a Vermont-based visual artist, got into major infrastructure with the widely acclaimed Transfer Station and Recycling Center in Phoenix, Arizona, which he

## 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 238 and follow the instructions.

## LEARNING OBJECTIVES

After reading this article, you should be able to:

1. Identify the current state of infrastructure systems.
2. Explain potential problems with infrastructure systems.
3. Describe new, self-sufficient infrastructure systems.

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



## Transfer Station and Recycling Center Phoenix, Arizona

The designers and the Department of Public Works integrated the project (this page) into the urban fabric of the community.



designed with artist Linnea Glatt and Black & Veatch engineers between 1989 and 1993. “These infrastructure projects are not just the plant and the walls around them; they affect entire systems,” says Singer. “In Phoenix, we wanted to think about how large interventions evolve and what they become over time. And in 10 years, the landscape has grown in and the site looks completely different than when it was first finished.”

The Public Works Department had the foresight to realize that a fast-growing community such as Phoenix would eventually require addi-

## ALTERNATIVE IDEAS ABOUT THE USE OF ENERGY ARE AT THE HEART OF IMAGINATIVE INFRASTRUCTURE SOLUTIONS.

tional waste-transfer facilities, so they adopted a good-neighbor policy from the beginning with a program that called for a major education component, with platforms for viewing the recycling, trash-separation, and transfer process, and public-awareness programs to educate residents about the ways people and cities create waste. An informed and sensitized public, the administrators theorized, will waste less and appreciate the challenges of waste management more.

“My understanding comes out of the Phoenix experience,” says Singer, who works with utility companies and communities here and abroad to develop major plants that address the environmental, social,

cultural, and economic needs generated by infrastructure projects. “Communities are going to have to accept new plants, and builders have to understand that there are real concerns that have to be addressed. It is more than architectural treatment, but there are design and engineering solutions to problems.” He leads design teams that tackle urban renewal, waterfront development and reclamation challenges, and gardens designed to filter air and water for facilities generated by major infrastructure interventions. His teams often include architects and engineers who question and evaluate design solutions, but they may also include experts in communications, business, education, urban planning, sustainability, systems analysis, and social anthropology.

### Getting off the grid

Alternative ideas about the production, ownership, and use of energy are at the heart of imaginative infrastructure solutions. Increasingly, problem solving inspires innovation. When developers Jacoby Development and AIG contemplated the redevelopment of the defunct Atlantic Steel Yard in the heart of Atlanta, they first had to convince the Environmental Protection Agency (EPA) that their proposed mixed-used scheme, to be called Atlantic Station, would not exacerbate Atlanta’s existing violations of the Federal Clean Air Act. The violations had resulted in a moratorium on new roads that require federal approval, and the proposed development needed a roadway connecting it to the rest of the city.



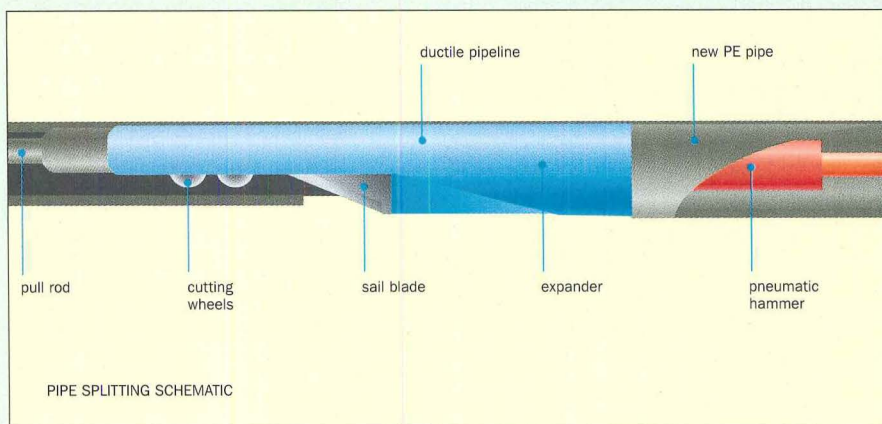


**Atlantic Station  
Atlanta, Georgia**

The developers of this 150-acre, mixed-use project picked a brown-field site (below) to prove that conscientious development could actually reverse some of the ills brought about in the past by unchecked sprawl. This included creating a multipurpose—pedestrian, auto, bicycle—bridge (left) to take commuters to a rapid-transit station. Their plans also provide a new storm-water culvert and upgraded sewer system.



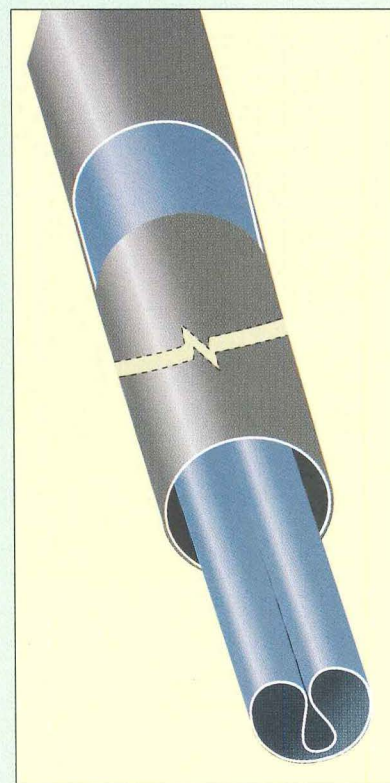




### Repairing the existing infrastructure, New York City

Pipe splitting (above and top) is a repair technique that splits old pipes using inexpensive and replaceable cutting wheels and then pulls new polyethylene (PE) pipes into the resulting space. In

tight-fitting cases, a PE pipe is folded into a C shape (right) and banded to hold the new form, then returned to its original shape after insertion into a lubricated cast-iron main. This reduces the amount of time and expense it takes to repair a damaged section.



The developers of Atlantic Station, which is isolated from midtown Atlanta by a pair of expressways, solved its potential air-quality problems and set the stage for a pedestrian-friendly development with a multimodal—pedestrian, bicycle, auto—bridge over the expressway and a shuttle bus to the rapid-transit station. When a private entity provides infrastructure for new development, it's an acknowledgment that the new construction is part of a larger environmental and infrastructure framework that both affects and is affected by the existing system.

In considering transforming the 150-acre brownfield site into a mixed-use development, Jacoby and AIG intended to demonstrate their strong environmental commitment. Before any building could occur, however, the overloaded storm and sewage system had to be upgraded. When the cash-strapped local government was unable to upgrade within the developers' timetable, the developers made the upgrades themselves. With precast, 36-inch concrete sections, they built a new storm-water culvert and upgraded sanitary sewer to serve the new development and the surrounding residential neighborhood, the first such independent system in Atlanta.

Decentralization—moving off the grid—was perhaps the most impressive innovation. At Atlantic Station, the developers brought in John Picard, a renowned environmental consultant from southern California who has worked all over the world. Along with Southern Company Energy Solutions, a sibling of Georgia Power, the local utility, they set out

to make Atlantic Station energy-efficient, self-sufficient, and cost-effective. Southern Company Energy Solutions contracted with the developer to provide air-conditioning and electrical power to the area's entire 8 million square feet of commercial space and 3,000–4,000 residential units.

Power for cooling and electricity is brought to the site through one meter, which gives the company cheaper industrial-market purchasing power. They will build a central cooling plant for the entire complex with a cold-water pipe ringing the site into which individual developments will tap.

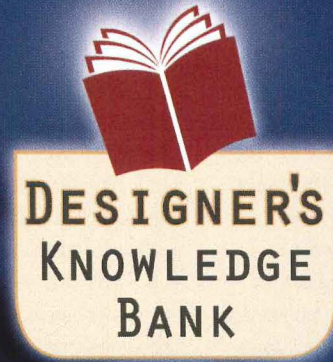
### DECENTRALIZATION—MOVING OFF THE GRID—WAS PERHAPS THE MOST IMPRESSIVE INNOVATION.

As an investor and operator, Southern will buy a chiller with the lowest life-cycle costs—that is, one with the highest quality and most energy-efficiency that will have far lower energy consumption than the aggregate of individual units. Small electrical turbines and a 300-kilowatt fuel cell are planned to supplement the power supply and ensure self-sufficiency.

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## Infrastructure is valuable real estate, too

The events of September 11 brought many kinds of destruction to Lower Manhattan, the most tragic being the loss of human life. While rescue and recovery were the top priorities, the disruption of services—transportation, power, telecommunications, water—at the site rippled out to affect the entire Metropolitan area, both directly and indirectly, and suddenly everyone became aware of something called “infrastructure.” One of the first groups formed to assess and mitigate damage at the World Trade Center site was the New York City Infrastructure Task Force.

Rethinking the infrastructure, especially in urban areas, means recognizing its value as real estate. The functions that take place in the underground are just as vital to the urban quality of life as those above, and, as Ray Sterling, director of the Trenchless Technology Center at Louisiana Tech University, in Ruston, Louisiana, says, they “demand the same consideration in planning as the surface.” Michael Fishman, vice president of urban design at the Sam Schwartz Company, in New York City, argues that we can now rethink the connections that users of the underground have to their destinations above ground, to keep the link between them visible. In Lower Manhattan, easy access to the underground for daily users can be built in as the system is rebuilt, and so, too, can access points—whole rooms, if necessary—to the myriad utilities that converge in the area. As Fishman describes it, “Grade is no longer thought of as a plane relative to

which things are only above or below. It can be seen as a volume containing levels that connect transit and street network, accommodate daylight and land use, and connect people to the places they want to occupy.”

Even more than rethinking the underground, since the September 11 attacks and the threat of bioterrorism that followed, there has been a flurry of concern over how to secure infrastructure systems. According to Richard Little, director of the Washington, D.C.-based Board on Infrastructure and the Constructed Environment (BICE), who has been working on this issue a long time, there are several levels of protection, and decisions about what is possible and cost-effective need to be made in a number of arenas. At the level of an individual building, there are state-of-the-art blast-protection measures that can be employed, but the relative need and the relative cost must be balanced. Other methods of detection—cameras and sensors—are relatively accessible, but, again, relative risk will justify additional costs.

The larger issue is the interdependence of infrastructure systems and their controls. For example, utility services may be controlled by a wireless or hard-wired system, which is operated by a telecommunications company. Loss of utility service may be because of an outage suffered by the telecommunications company, not the utility. The interdependence of systems—human and physical—has been revealed again and again since 9/11. *B.K.*

eration of motivations and responsibilities, as set out and defined by the Full Service Agreement between the developer and the energy company.

Everyone gets a system that is cheaper and more predictable than the grid. The distribution system is the cause of 95 percent of power outages in the U.S., costing the economy close to \$30 billion annually. Ultrasensitive computer systems and costly dependence on them will continue to make distributed generation (small-scale power-generation technologies) that creates power close to the users—and even smaller micropower systems, such as fuel cells—attractive alternatives or supplements to the power grid for residential applications.

### What to do with aging systems

According to Ray Sterling, there are 3.5 million miles of underground utilities—gas, electric, water, sewer, and telecommunications lines—in the U.S. municipal infrastructure, and they are often decades old; some of them even date back to the early 20th century, and very little undergoes regular maintenance and repair. For years, engineers have warned that much of our underground infrastructure is near the end of its design life, and, although it does perform nearly all of the time, sometimes there are spectacular failures, from water-main breaks to bridge collapses.

How we deliver infrastructure systems to buildings has to change. “An individual building is part of an area of a city, and the ability of that part of the city to grow will depend on the utility and transportation infrastructure,” Sterling reiterated. “If you want to have a building or an area of a city that is vibrant, with adequate services and transportation and a nice surface environment, then you have to think about how you plan the space and services below ground to support it. For example, the more you disrupt the street to repair, replace, and upgrade the support underneath, the more you will disrupt the surface transit patterns and the quality of the roadway. Pretty soon, a road with a design life of 50 years is so torn up, it has to be replaced after only 15 years.”

“Invisible construction,” a term coined by the Fort Miller Company, a precast-concrete-construction company in upstate New York,

has proven that prefab technologies can make major infrastructure replacement painless for the public—better, faster, and cheaper. The concept is simple: Prefabricate the parts in a controlled environment (better), install them overnight (faster), and you will finish the job in less overall time (cheaper). Fort Miller has used this technique for major roadway and bridge construction, where it would be impossible to shut down for weeks at a time. Says Michael Fishman, vice president of urban design at the Sam Schwartz Company, in New York City, “Invisible construction techniques have the ability to minimize gridlock, noise, duration, closures, and other headaches typically associated with road construction.”

With the development of “trenchless” technologies—really a kind of invisible construction—in the past 30 years, it is possible to install, maintain, and inspect underground utilities with limited or no excavation. The technology has advanced significantly in recent years, and proponents expect increasing failures to raise demand for this method to

## FOR YEARS, ENGINEERS HAVE WARNED THAT MUCH OF OUR INFRASTRUCTURE IS NEAR THE END OF ITS DESIGN LIFE.

inspect, rehabilitate, and replace pipes. Yet, in spite of the need for more investment in our infrastructure, the truth is our knowledge is limited by lousy data and virtually no inspection systems. “We may have state-of-the-art building systems, but they are often connected to a 19th-century distribution system about which we have little capability to predict what [part of it] will fail,” said Richard Little, director of the Washington, D.C.-based Board on Infrastructure and the Constructed Environment (BICE), a division of the National Research Council. “There are no benchmarks, we have so few tools to use what little data we do have, and no comparisons of what companies are doing well with their maintenance.” One solution to these problem are the new, better inspection devices, such as small cameras, that can motor through underground pipes. The technology has improved so that these cameras are able to send



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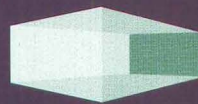


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back crystal-clear color images that show cracks and rats equally well. There are even cameras that can go down a main sewer line and launch a satellite to travel up a branch line to a building. If a system is planned initially with inspection and clean-out ports at strategic points, such as property and building lines, cleaning and maintenance—as well as anticipating and assigning responsibility for problems—becomes a snap.

Old, rough, and failing pipes can be renewed with slip linings called cured-in-place pipe (CIPP) that, as Sterling describes it, “are unfurled like a resin-impregnated sock that you turn inside out within the

## THERE ARE GOING TO BE MORE RECYCLING CENTERS AND BROWNFIELD DEVELOPMENTS IN OUR FUTURE, NOT FEWER.

pipe and then cure with heat so that you create a new thermoset pipe inside the old one.” Although it reduces the diameter of the pipe some, the reduced friction often means that flow can be maintained at the level it was prior to the procedure. There are variations on the method called Fold and Form or Deform/Reform, the choice depending on the type of pipe, but all have the potential to make the pipe as good as new—or at least extend its life significantly.

When a pipe is under capacity or too deteriorated for relining, pipe-bursting and -splitting methods that break up the old pipe and pull a new one in at the same time can be used to replace both brittle and

ductile pipes. Excavations need to be made to initiate the work, and at points where new connections are made, but the runs can be done with no excavations. For new installations, directional drilling and microtunneling can drill and tunnel precisely into the ground. The equipment is so easily manipulated that it is possible to steer it to angle under objects such as rivers and freeways. Directional drilling was used extensively in fiber-optic installation, but it has the capability of drilling for diameters as small as 3 inches and as large as 54 inches over distances from a few feet to a mile underground.

Impact moling is less precise and has a capacity for runs in the range of 30 to 50 feet. A pneumatic device hammers through the ground displacing the soil and creating a hole for cable or pipe. Unlike the steered drilling and tunneling methods, the device is aligned and then simply let go to do its work, ending up in a pit at the end of the run. Because it is a small piece of equipment, easy to set up and less expensive to operate, it is often used for building connections such as gas or water pipes.

There are going to be more recycling centers, waste-management plants, and brownfield developments in our future, not fewer. Although as a group they constitute a legitimate building type, they’ve attracted as much design interest as suburban strip malls. The reality, however, is that both the decentralization of power and the increasing need for better public works will demand that the architectural profession be prepared to deliver imaginative and innovative solutions. It’s time to start looking in manholes and over chain-link fences. ■



### AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

#### INSTRUCTIONS

- ◆ Read the article “Urban Infrastructure: The ‘Out of Sight, Out of Mind’ Mentality is an Outmoded Concept” using the learning objectives provided.
- ◆ Complete the questions below, then fill in your answers (page 238).
- ◆ Fill out and submit the AIA/CES education reporting form (page 238) or download the form at [www.architecturalrecord.com](http://www.architecturalrecord.com) to receive one AIA learning unit.

#### QUESTIONS

1. What is the cause of 95 percent of power outages in the U.S.?
  - a. power plants
  - b. dependence on oil
  - c. the distribution system
  - d. heat from solar gain
2. How many underground utility lines are in the U.S.?
  - a. 1 million miles
  - b. 3.5 million miles
  - c. 45 million miles
  - d. 200 million miles
3. Invisible construction makes use of all except which method?
  - a. prefab technology
  - b. trenchless technology
  - c. overnight installation
  - d. robotic installation
4. What needs to be done to the infrastructure systems?
  - a. ignore them and concentrate on new buildings
  - b. cap them off and build new infrastructure
  - c. inspect them with small cameras that can travel through them
  - d. replace all the old systems
5. Which is not true of cured-in-place pipe?
  - a. it reduces the diameter of the pipe
  - b. it extends the life of the pipe
  - c. it reduces the friction of water in the pipe
  - d. it reduces the flow of water in the pipe
6. Which method was used for fiber-optic installation?
  - a. directional drilling
  - b. microtunneling
  - c. impact moling
  - d. pneumatic hammering
7. Which method is less precise, but often used for building connections such as gas or water?
  - a. microtunneling
  - b. directional drilling
  - c. impact moling
  - d. splitting
8. “Grade” is no longer thought of as which?
  - a. levels that connect transit and street networks
  - b. a plane relative to which things are above or below
  - c. a connection for people to the places they want to occupy
  - d. a way to accommodate daylight and land use
9. Rethinking the infrastructure in urban areas means which?
  - a. recognizing it as valuable real estate
  - b. giving it the same consideration in planning as the surface
  - c. considering the connections that users of the underground have to their destination on the surface
  - d. all of the above
10. Infrastructure includes all except which of the following?
  - a. trains, planes, and automobiles
  - b. roads, streets, and transit systems
  - c. wires, lines, and pipes that run into fixtures in the walls
  - d. switches and controls that keep systems and networks up and running





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VISTAWALL PRESENTS

## Daylighting: Many Designers are Still in the Dark

*Rice School Library – A geodesic, half decagon-shaped translucent skylight, measuring 53 feet in diameter, brings natural daylight into Rice Elementary School in Houston, TX.*

Architecture based on designs that, in varying and ingenious ways, capture natural light are among the most elegant and inspiring creations we encounter. Daylighting, the term that has become synonymous with the use of natural light in buildings, spawned a flurry of design literature beginning in the 1980s and continues to be one of the most widely researched topics in construction.

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Use the learning objectives below to focus your study as you read **Daylighting: Many Designers are Still in the Dark**. To earn one AIA/CES Learning Unit including one hour of health safety welfare credit, answer the questions on page 165, then follow the reporting instructions on page 242 or use the Continuing Education reporting form located at [architecturalrecord.com](http://architecturalrecord.com).

### Learning Objectives

- Understand the impact of daylighting on human productivity, performance, and energy payback
- Correctly specify various glazing systems and methods
- Apply principles of daylighting to designs

New glazing materials, new curtain wall systems and skylight technology and new understanding of their interplay has opened the door to wondrous new design opportunities. Not as widely understood is the notion that daylighting has become an essential energy-saving tool.

Effective daylighting design introduces natural light while balancing the elements of artificial lighting, solar heat gain, heat loss through glazing, and internal sources of heat gain. It attempts to maximize diffused light throughout the building interior, minimize direct sunlight and control heat gain. To be most effective, daylighting must be integrated with electric lighting, lighting controls, heating, cooling, and ventilation

systems and occupant movement patterns. Success will provide a comfortable and energy-efficient building.

Daylighting, which curtain wall contractors say is still frequently perceived as “energy wasting,” has, perhaps surprisingly—since glazing has always been considered the least effective insulating element of a building—become an essential component of energy conservation programs across the country.

In California, which leads the nation in energy-efficient building construction—in the three years from 1999 to 2001, according to the Public Utilities Commission—energy efficiency programs, many of which are devoted to daylighting, saved 2.3 billion kWh of electricity, an amount sufficient to serve 362,000 homes—half the population of Delaware.

Skylighting offers potentially large energy savings—the average grocery store may save \$16,000 (or 32 cents per sq ft) in energy costs through daylighting; schools, typically \$7,500 (23 cents per sq ft) per year, industrial buildings up to 12 cents per sq ft, says Energy Design Resources, a consultancy funded by California utility customers and administered by Pacific Gas & Electric, San Diego Gas & Electric, and Southern California Edison, under the auspices of the California Public Utilities Commission.

Southern California Edison provides no-cost engineering and HVAC system improvement recommendations to owners of buildings in excess of 100,000 sq ft as part of its California Building Energy Initiative. PGE, as part of a now four-year-old Daylighting Initiative, conducts nearly 100 architectural workshops every year to get this message to designers: Daylighting saves energy.

The most common misconception among architects is that contemporary glazing is the answer to all our problems, says PGE Glass Class instructor George Loisos, AIA, Loisos + Ubbelohde Associates, Oakland, Calif. “The truth is, although glazing can help a lot, no glazing system is a substitute for good design.”

In Davenport, Iowa, through its Commercial New Construction Program begun in 1999, MidAmerican Energy, the state’s largest utility, offers consultation computer analysis and economic incentives of up to 14 cents per kWh (to developers of buildings



over 50,000 sq ft) for qualifying building designs. The program, to date, has resulted in average energy savings in excess of 30 percent in some 40 projects involving both new and rehabilitated buildings, MidAmerican says.

The Weidt Group, Minnetonka, Minn., MidAmerican's partner in the commercial conservation program, works with design teams to calculate relative energy impacts and costs associated with a range of design options. The program runs parallel with the design process, and promises not to delay the construction schedule, says Weidt Group principal David Ejadi.

The Weidt Group has conducted daylighting analysis of over 250 buildings. "We can now demonstrate 30-40 percent energy savings with a one-to-two-year payback and buildings that exceed code requirements," Ejadi says.

"When you take the time to do a comparative analysis of fenestration, building location, shading, glazing types and show the dollar implication and performance characteristics, and show clients the results, clients will make different decisions with regard to daylighting," says Ejadi.

There is no single "silver bullet" that will achieve a good daylighting solution, he insists. "This is a business that depends on collaboration."

Successful daylighting begins with building orientation and ends with proper daylighting controls, the correct combination of lighting, ballasts and sensors. But interior design is critical, Ejadi insists. "If interior design is poor, you end up subverting the daylighting system—space planning is important."

"There are somewhere between six and 10 key elements of a successful daylighting system. If you fail to do any of them perfectly, you fail to achieve the systemic effect of daylighting. If you do four things 90 percent right, mathematically you end up with a solution that is about 60 percent as good as it could have been. The reason why many daylighting systems fail is because many architects and engineers don't understand the interactive effects of the many elements that go into a daylighting system."

Selling daylighting isn't difficult, Ejadi insists. "You build consent through a series of small 'yeses.' You ask the client: Do you want a good building? Do you want your employees to be happy and productive? Do you want to save money?"



Fixed and movable features such as vertical blinds shown above can block and reflect direct sunlight entering through windows.

"Once you demonstrate that daylighting makes all those things happen, clients are much more willing to sit down and listen to what you have to say."

Artificial lighting accounts for as much as 40-50 percent of the energy consumption in most commercial and institutional buildings, and 10-20 percent of energy consumption in industry, says the U.S. Department of Energy. Daylighting can significantly reduce those costs, says the DOE.

Daylighting, once confined to museums, boutiques and architectural oddities, is, today, an increasingly integral element of contemporary design. Daylighting, as part of an integrated design, results in energy savings and increased performance by building occupants.

Despite the potential benefits of daylighting, only a tiny fraction is captured in buildings today.

"Many architects are knowledgeable about the benefits of daylighting design, but many are still in the dark (pun intended)," says Jeff Rutledge, head of the skylight division of a major U.S. curtain wall and skylight system manufacturer and installer.

Daylighting and the impact of daylighting strategies on the lighting, heating and cooling of buildings is, perhaps, the most intriguing, and the most vital, construction issue facing building owners and design professionals.

#### Daylighting and Productivity

Ongoing research into daylighting as a source of energy conservation is voluminous. The subject of daylighting became common currency, however, when the Heschong Mahone Group's now three-year-old study on daylighting and productivity caused such a cultural stir that results were reported by 50 newspapers. Author Lisa Heschong was surprised to find herself on National Public Radio and the CBS News.

The two-pronged Heschong-Mahone study concluded, in short, that daylighting, the effective combination of exterior glazing, skylights and control systems, greatly improved student performance in schools and boosted retail sales.

The report studied the correlation between daylight availability and human productivity. The study was done in two parts. One looked at the test scores of 20,000 elementary students in three school districts and concluded that daylight in classrooms resulted in a more than 20 percent improvement in test scores. A second part of the study looked at retail sales. Its conclusions: sales were as much as 40 percent higher in stores with skylighting.

In June 1993, Wal-Mart opened a new store in Lawrence, Kan., that became the prototype for a majority of the new Wal-Mart stores that followed—all of them daylighted.

A foray into sustainable architecture, designed by Tulsa-based BSW Architects, in



North Shore Senior Center, Northfield, IL: Skylights were added to North Shore Senior Center during recent renovation. The skylight system was installed directly over existing roof structure.





Chicago Police Headquarters, Chicago, IL  
To make the most efficient use of glazing systems, designers of Chicago Police Headquarters added a shading device, which is supported by the curtain wall system.

consultation with William McDonough Architects, the Center for Resource Management and the Rocky Mountain Institute and The Weidt Group, the Lawrence store was designed for energy efficiency. It had a glass arch at the entrance for daylighting, an efficient lighting system, an HVAC system that utilized ice-storage and special light-monitoring skylights developed specifically for the project.

As a cost-cutting measure, Wal-Mart decided to install skylights on only half the roof, leaving the other half without daylighting. Because each of Wal-Mart's cash registers is connected in real time headquarters in Bentonville Ark., it was soon apparent, says Tom Seay, vice president of real estate, that "sales pressure was significantly higher for those departments located in the daylight half of the store." Sales also were higher than for the same departments in other stores.

"We are daylighting the large majority of our projects now," says Bill Correll, Wal-Mart director of architecture.

Often, as the Hescong-Mahone study notes, daylighting may not even be apparent to those in the building. Interviews with shoppers done as part of the firm's 1999 survey asked the question: "What do you think of the skylights in this building?"

"The typical response was to look up, look puzzled, and then say, 'That's funny, I never noticed them before.'" Out of 42 interviews in 10 skylit stores, Hescong says, only three shoppers were aware of the skylights.

"The questioner then asked: 'Does this store feel any different to you than other stores like this?' By far the most common response (80 percent) was 'This store feels cleaner.' The second most common response (65 percent): 'It feels more spacious, more open.'"

#### Daylighting Design Strategy

Because daylight produces less heat per unit of illumination than many artificial lights, daylighting may reduce cooling costs when it replaces artificial lighting. As part of a passive solar heating system, sunlight can also provide supplementary building heat. If improperly designed, however, glazed areas that allow daylight into a building also contribute to heat loss in the winter and undesirable heat gain in the summer, leading to heating and cooling costs that can offset savings from reduced lighting

costs. Daylighting designs must be carefully analyzed to ensure that they reduce artificial lighting needs without increasing cooling or heating requirements.

The analysis must take into account a building's orientation with respect to the sun, the path of the sun at various times of the year. It involves some understanding of how a given glazing system transmits visible light:

*Visual transmittance (TV)* is a measure of the portion of visible light that passes through a window. Glazing systems with high TV values (0.7 to 0.9) provide good natural light.

*Solar heat gain coefficient (SHGC)* and shading coefficient (SC) are measures of a glazing system's net solar gain. Systems with high SHGCs (0.7 to 0.9) provide significant solar gain; those with values in the 0.2 to 0.4 range provide little solar gain. To reduce heating in northern climates, select the highest SHGC you can find so that winter solar gains can offset heating needs. In central climates, with significant air conditioning costs or summer overheating problems, look for SHGC values of 0.40 or less. A low SHGC is the most important window property in warm climates.

The *light-to-solar gain ratio* is TV divided by SHGC, and is an index of how much light a system provides in proportion to the solar gain produced. Systems with an LSG ratio greater than 1 provide more heat than light.

*U-value* expresses how much energy a glazing system transfers by conduction and convection. In general, select windows with U-values of 0.40 or less.

*R-value* is the insulating value of a material. Single-glazed windows have R-values of 1; double glazed panels, about 2. In laboratory tests, researchers are creating window systems with R-values of between 6 and 10. These are multiple-pane systems with two low-e coatings and interior air spaces filled with an inert gas, like argon, that conducts heat less than air.

In some climates, U-value should take precedence over the Solar Heat Gain Coefficient when selecting a glazing infill. It costs more to air-condition a space than it does to heat it. In warm climates you should choose an infill based on its SHGC. The lower the coefficient the less heat allowed by the infill. In cold climates you should choose an infill with a low U-value. A low U-value will slow the loss of air you've paid to heat by slowing heat transfer through the material.

It is important that designers consider vision glazings and daylighting glazings differently because they perform very different functions. Vision glazings typically use lower transmittances to provide comfortable views to the outside. Daylight glazings, because they are used to provide interior illumination, generally have a much higher visible transmittance than vision glazings. As a general rule, select a vision glass with a visible transmittance between 20 and 30 percent, and a daylighting glass with a visible transmittance of 50 to 60 percent.

Glazing may be clear, tinted, coated or filmed. Windows may be single- or multiple paned, and multiple-paned systems can be vacuum-sealed or filled with either of several inert gases. Glazing materials that selectively control the spectral aspect of solar radiation are now commonplace, and additional energy savings can be obtained by controlling the spectral characteristics of glazing with the new materials.

Low-emissivity coatings suppress infrared radiation, resulting in additional thermal insulation. Modified low-e coatings can reject unwanted heat gain due to solar infrared. In cold climates, low-e glazings have the effect of keeping warmth in the building during winter. A typical pane of single glass has a U-value of about 1.0 BTU/hr-sq ft; a typical low-e glass a U-value of about 0.63.

To optimize the response of glazing systems to unwanted radiation, researchers at the Berkeley National Laboratory, and elsewhere, are experimenting with "electrochromic" materials, whose optical properties change with the injection of light ions. A number of other options—photochromics, reflective hydrides, liquid crystals, thermotropics and suspended particle displays—all of which have peculiar characteristics that change in response to varying heat or light, are being studied to achieve the same result. The application of electrochromic technology is still limited, but may play an important role in glazing design in the not-too-distant future.

#### Practical Daylighting

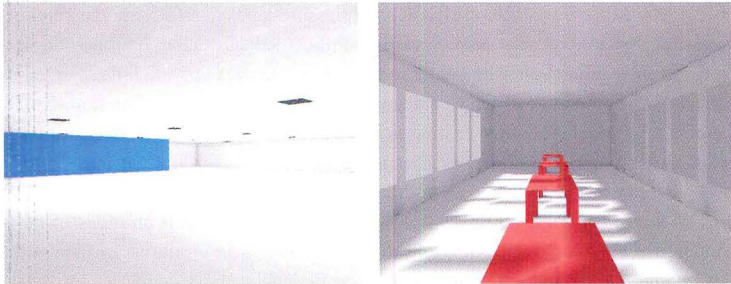
Use of large glazed openings does not guarantee good daylighting. One of the biggest challenges of daylighting is to provide illumination in areas where it is most needed, for instance on northern exposures, and on ground levels of buildings. There are several devices and architectural design techniques that achieve a desired quality and quantity of daylight. The devices serve three general functions: to redistribute sunlight



by diffusion or reflection, to eliminate excessive illumination on interior surfaces, and to eliminate glare and direct radiation.

Daylighting falls into two general categories: sidelighting and toplighting.

For buildings with long, shallow floor geometries, it is feasible to daylight up to 70 percent of the footprint with a sidelighting system relying on ceiling-height glazing in perimeter walls. Effective daylighting requires a ceiling height of at least nine feet, and ceilings of 10 feet, or higher, are recommended.



Tubular skylights collect and transmit natural light to areas difficult to light, such as buildings, with drop ceilings, lower floors of multi-floor buildings, museums and laboratories.

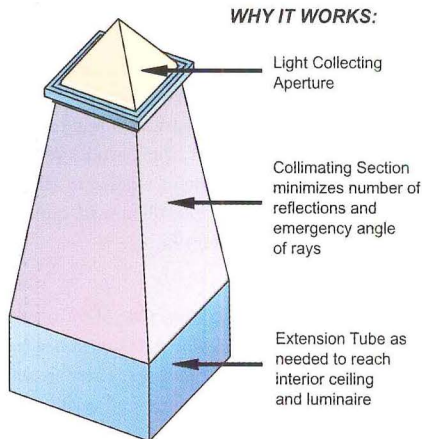
Toplighting—through roof monitors, clerestories, skylights, sawtooth elements and atria—provides natural light through rooftop openings and their orientation is not dependent upon the building orientation. Clerestories use rooftop glazings that run parallel to vision glazing on perimeter walls. Sawtooth components incorporate a series of vertical or sloped glazed elements separated by sloped roof elements.

A technique known as reflected (or beam) daylighting, redirects daylight from one portion of a building to another. One method is to mount reflective blinds in the upper two feet of a vertical window. Another is to install reflective shelves at the base, inside or outside, of a window. Exterior window overhangs with downward-facing reflective surfaces also transmit light reflected from the ground or other structures into interior spaces. This reflected daylight does not cause glare or overheating.

Various exterior features limit excess direct or diffuse sunlight. Overhangs projecting from a building's roof or exterior wall can shade windows. The depth of the overhang can be designed to block direct sunlight and to reduce heat gain in the summer, but still allow direct sunlight into a building to provide heat in the winter. Overhangs may be solid or opaque, and use flat or sloped designs. Fixed and movable exterior baffles or louvers running horizontally or vertically across windows can be used to reflect and diffuse sunlight. "Shading is the critical element in this equation," says Loisos.

Fixed and movable interior features such as drapes, blinds, louvers, and baffles, can block and reflect direct sunlight entering through windows. Reflective baffles, located inside roof monitors or along the ceiling plane, redirect or diffuse sunlight entering through a monitor. Louvers may be necessary to control skylight glare and solar heat gain.

Tubular skylights consist of angular tubes that direct and transmit light to areas where it is needed. The tubes contain reflective surfaces that direct daylight entering the tube down or horizontally into building interiors. Tubular skylights can provide high quality light with little heat or glare. They are useful in areas that are difficult to light, and in buildings that have special lighting requirements, such as laboratories and museums. They can also provide "skylights" for the lower floors of multi-floor homes or buildings.



**WHY IT WORKS:**  
Light Collecting Aperture  
Collimating Section minimizes number of reflections and emergency angle of rays  
Extension Tube as needed to reach interior ceiling and luminaire

#### Integration is Critical

The presence of daylight influences design of electric lighting and control systems. In the daylight zones, controls are necessary to maximize energy savings.

At the 47,000-sq-ft Dena Boer Elementary School in Salida, Calif., a Kenneth K. Kaestner & Associates (Modesto, Calif.) design incorporates deep overhangs at vertical windows and triple-glazed prismatic, spectrally selected acrylic skylights. Prisms refract light throughout classrooms, offices, multi-purpose rooms and the school library. Daylight alone is capable of providing 100 percent of the school's lighting needs (at up to 250 foot-candles) for much of the year.

The spectrally selective glazing allows visible light into the school interior while rejecting most ultra-violet and long-wave radiation that produces heat, but no light.

Electric louvers control the amount of light from the skylights, but other daylight controls are absent. The addition of dimmable electronic ballasts and a photocell-based control system offer the potential for up to \$9,000 (1.85 kWh/sq ft-yr) in additional energy savings annually, says Kaestner.

At the Gymboree Corporation's 270,000-sq-ft distribution center in Dixon, Calif., 360 4 ft X 8 ft prismatic skylights, are controlled by photosensors that send signals to controllers to dim or turn off electric lights. Occupancy sensors in about 60 percent of the building and bi-level controlled high-intensity discharge luminaires contribute to annual energy savings of about \$28,000, 1.2 kWh/sq ft-yr.

#### Cost Effectiveness of Daylighting

To be cost-effective, the savings on lighting and cooling must offset the costs of buying, installing, and operating daylighting features in a reasonable amount of time. Typically, and depending upon the percentage of the total construction budget devoted to daylighting, the payback period is from two to five years, say industry sources.

The amount of energy savings depends on climate, location, energy load, and design of the building. Gains or losses in worker productivity are more difficult to quantify.

Perhaps, surprisingly, says Loisos, daylighting can reduce overall construction costs—through dramatic reductions of mechanical system costs. Loisos says an unsuccessful entry (by Barcelona-based Benedetta Tagliabue) in the competition for the \$170-million California Department of Transportation's downtown Los Angeles headquarters (now in design by L.A.-based Thomas Mayne) would have done just that. The system designed by Loisos and Tagliabue incorporated the latest iteration of prismatic, light-redirecting glazing to overcome the common problem of glare resulting from direct sunlight in working areas. "It was the most sophisticated façade we ever designed," Loisos says.

The use of direct, diffuse, or reflected sunlight to provide full or supplemental lighting combined with energy-efficient lighting and electronic ballasts, has the potential to reduce the lighting power density, often the measurement of lighting efficiency, in office buildings from 2.2 W/sq ft to 0.88 W/sq ft, according to a 2001 study by the Paris-based International Energy Agency (IEA). (To measure lighting power density, add all of the potential power requirements for lighting in the building and divide that sum by the total usable floor area of the building.) The agency, which partnered with California's Lawrence Berkeley National Laboratory to show the potential of new daylighting technologies, says that while the correlation between daylighting and energy savings is clear, "robust models for integrated evaluation of daylighting concepts are not yet available."

The Weidt Group estimates its design of a high-performance glazing system with daylighting controls at the Skokie, Ill. Pharmacia Laboratory Building, resulted in a 38 percent annual saving in energy and operating costs. Daylighting installations at Pharmacia, utilizing high-efficiency lighting designs with controls and high-efficiency chillers, motors and heat recovery, also resulted in abatement of 16 million pounds of air pollution per year.

"Successful daylighting design requires complex tradeoffs," says the chairman of the IEA Task 31 (daylighting) subcommittee. "Optimization can be particularly difficult because there are numerous physical parameters to consider as well as a number of performance objectives and complex time-dependent issues."

#### Click for Additional Required Reading

As part of this learning activity, you are required to read the following additional material: "Analyzing Daylighting Designs," "Daylighting in Schools," and "Skylighting and Retail Sales." They will provide you with information on software available to analyze your designs and further details on the Heschong-Mahone Group's study. To access the materials, go online to [architecturalrecord.com](http://architecturalrecord.com). To receive a faxed copy of the material, contact Sharon Harper, Marketing Department, 800-869-4567 ext. 130 or email [SLHARPER@vistawall.com](mailto:SLHARPER@vistawall.com).



**Learning Objectives**

- Understand the impact of daylighting on human productivity, performance, and energy payback
- Correctly specify various glazing systems and methods
- Apply principles of daylighting to designs

**Instructions**

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 242. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self-report form on *Record's* website—[architecturalrecord.com](http://architecturalrecord.com)—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

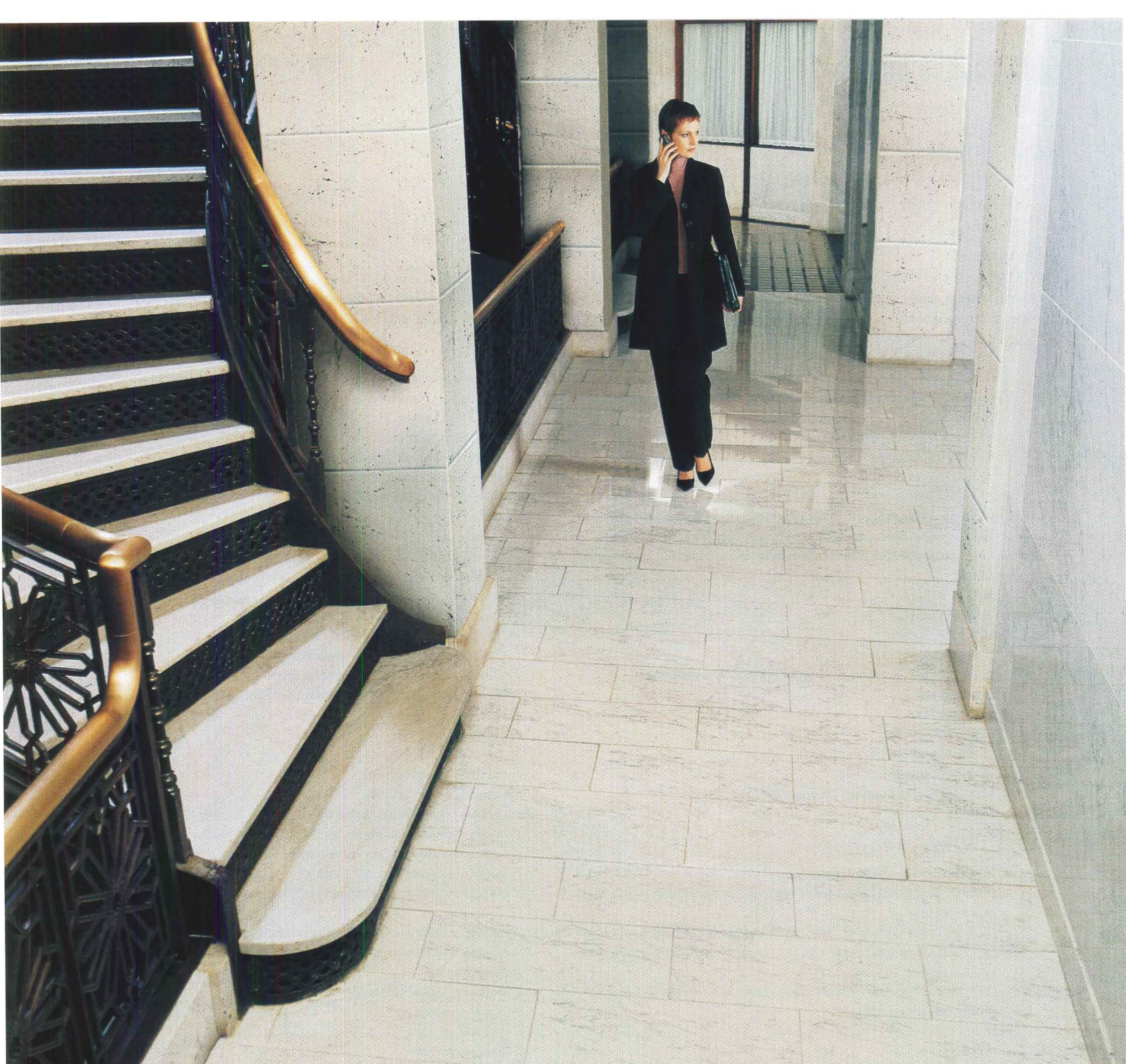
**Questions**

- Q: 1. According to Energy Design Resources, skylighting as a method of daylighting design can save a typical school how much per year in energy savings:
- A: a. \$40,000 (54 cents per sq ft)  
b. \$16,000 (32 cents per sq ft)  
c. \$7,500 (23 cents per sq ft)  
d. \$1,750 (8 cents per sq ft)
- Q: 2. Daylighting can significantly reduce the costs of energy consumption of artificial lighting which, according to the U.S. Department of Energy, accounts for as much as how much in most commercial and institutional buildings:
- A: a. 10% to 20%  
b. 25% to 35%  
c. 40% to 50%  
d. 50% to 75%
- Q: 3. Daylight produces less heat per unit of illumination than many artificial lights.
- A: a. true  
b. false
- Q: 4. Match the term with the definition.
- A: a. Visual transmittance (TV)  
b. Light-to-solar gain ratio (TV divided by SHGC)  
c. U-value  
d. R-value
1. Insulating value of a material .
  2. Index of how much light a system provides in proportion to the solar gain produced.
  3. Measure of the portion of visible light that passes through a window.
  4. Expresses how much energy a glazing system transfers by conduction and convection.
- Q: 5. Glazing systems with high visual transmittance (TV) values (0.7 to 0.9) provide good natural light.
- A: a. true  
b. false
- Q: 6. Which systems provide more significant solar gains? Those with high (0.7 to 0.9) solar heat gain coefficient (SHGCs) or those with low values (0.2 to 0.4 range)?
- A: a. high  
b. low
- Q: 7. A system with a light-to-solar gain ratio (visual transmittance value divided by the solar heat gain coefficient) greater than 1 is providing which:
- A: a. more heat than light  
b. more light than heat  
c. equal amounts of heat and light
- Q: 8. Designers can consider vision glazings and daylight glazings comparably because they perform similar functions.
- A: a. true  
b. false
- Q: 9. Fill in the blanks: As a general rule, select a vision glass with a visible transmittance value between \_\_\_\_\_ percent and a daylighting glass with a visible transmittance value of \_\_\_\_\_ percent.
- A: a. 10-20 (vision) and 60-70 (daylighting)  
b. 20-30 (vision) and 50-60 (daylighting)  
c. 50-60 (vision) and 20-30 (daylighting)  
d. 60-70 (vision) and 10-20 (daylighting)
- Q: 10. Which suppresses infrared radiation, resulting in additional thermal insulation?
- A: a. roof monitors  
b. reflective baffles  
c. multiple-paned systems  
d. low-emissivity coatings
- Q: 11. To redirect daylighting, all but which of the following are effective:
- A: a. mount reflective blinds in the upper two feet of a vertical window  
b. install reflective shelves at the base of a window  
c. specify high performance coatings for glass infill  
d. add exterior window overhangs with downward-facing reflective surfaces
- Q: 12. Typically, and depending upon the percentage of the total construction budget devoted to daylighting, industry sources estimate the payback period is from \_\_\_\_\_.
- A: a. building completion to two years  
b. one to two years  
c. two to five years  
d. five to ten years



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## USG Presents **Understanding Acoustics in Architectural Design**

by: *James D. Janning, AIA, CSI*  
Architectural Systems Manager, USG Corporation

In today's architectural environment, good acoustical design isn't a luxury – it's a necessity. Acoustics impacts everything from employee productivity in office settings to performance quality in auditoriums to the market value of apartments, condominiums and single-family homes.

While the science behind sound is well understood, using that science to create desired acoustical performance within a specific building or room is complex. There's no single acoustical "solution" that can be universally applied to building design. Each built environment offers its own unique set of acoustical parameters. The acoustical design for a business conference room, for instance, differs greatly from the design needed for a kindergarten classroom.

Understanding these differences and knowing how

to utilize building materials, system design and technologies are key factors behind successful acoustical design. This article will provide basic background on the science and measurement of sound, as well as insights into some of the principles of wall partition and ceiling system acoustical design.

### **The Science of Sound**

Technically speaking, sound is defined as a vibration in an elastic medium. An elastic medium is any material (air, water, physical object, etc.) that has the ability to return to its normal state after being deflected by an outside force such as a sound vibration. The more elastic a substance, the better it is able to conduct sound waves. Lead, for instance, is very inelastic and therefore a poor sound conductor. Steel, on the other hand, is highly elastic and an excellent sound conductor.

Sound vibrations travel through elastic mediums in the form of small pressure changes alternating above and below the static (at rest) nature of the conducting material. Picture a vibrating tuning fork. As it moves in one direction, it compresses the air particles next to it. They, in turn, pass on the reaction to adjacent particles of air. As the tuning fork vibrates in the other direction, it leaves a void or rarefaction. This rarefaction follows along behind the compression. It, in turn, is followed by another compression, and then another rarefaction and so on.

Each of these compression/rarefaction cycles is called a wave. The number of waves that occur per second is termed frequency. Frequency is measured in terms of hertz (Hz). One Hz is equal to one cycle per second. The human ear can discern sounds ranging from approximately 20 to 20,000 Hz. Human speech ranges between 125 and 4,000 Hz.

Use the learning objectives below to focus your study as you read **Understanding Acoustics in Architectural Design**. To earn one AIA/CES Learning Unit including one hour of health safety welfare credit, answer the questions on page 297, then follow the reporting instructions on page 368 or use the Continuing Education self report form located at [architecturalrecord.com](http://architecturalrecord.com).

### **Learning Objectives:**

- Know how sound waves form and how they travel through elastic mediums
- Understand how sound can be isolated and absorbed in building design
- Realize the benefits that sound masking provides for closed and open-office spaces



The amplitude of sound waves – how far they travel above and below the static pressure of the elastic medium they are traveling through – is measured in decibels (dB). The higher the decibel level, the higher the volume, or loudness of a sound. A jet airplane has an amplitude of 140dB, while a human whisper is approximately 20dB. A typical office environment usually falls in the 40 to 60dB range.

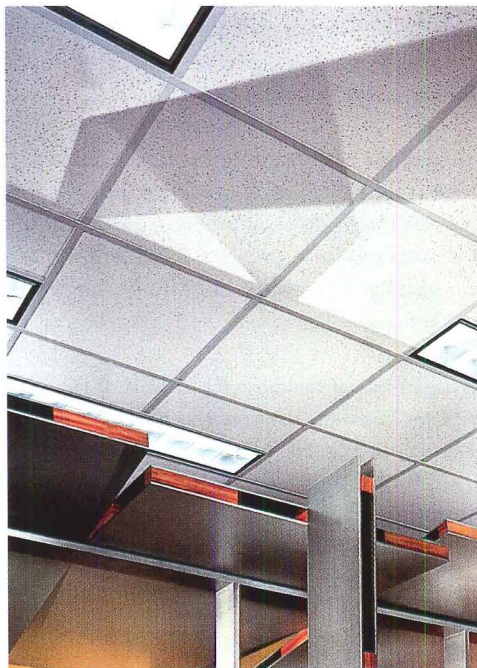
### Sound Movement

Architectural acoustics is the process of managing how both airborne and impact sound is transmitted – and controlled – within a building design. While virtually every material within a room – from furniture to floor coverings to computer screens – affects sound levels to one degree or another, wall partitions, ceiling systems and floor/ceiling assemblies are the primary elements that designers use to control sound.

Sound moves through building spaces in a variety of ways. Most commonly, it is transmitted through air. But wall partitions, ceilings and floor/ceiling assemblies can also transmit both airborne sound, such as human voices and ringing telephones, and impact sound, such as footsteps on a floor. Sound waves actually travel through many physical objects faster and with less loss of energy than they travel through air. Sound waves travel at a rate of 1,128 feet per second through air (at 70 degrees F); 11,700 feet per second through wood; and 18,000 feet per second through steel.

Sound reflection occurs when sound waves bounce off smooth, hard wall, ceiling and floor surfaces. Concave surfaces tend to concentrate or focus reflected sound in one area. Convex surfaces do just the opposite; they tend to disperse sound in multiple directions.

Sound reverberation is the persistence of sound reflection after the source of the sound has ceased. Reverberation can have both a positive and negative effect in architectural design. For example, specifying highly reflective ceiling panels directly above the stage area in an auditorium will help direct sound toward specific seating areas, thus enhancing the room's acoustical performance. However, that same reflective performance will become a negative factor if highly reflective wall and ceiling materials are installed in the rear of the auditorium. That's because the sound reflections from the rear of the room take too long to reach the audience, resulting in a distracting echo effect.



Water-felted mineral fiber panels have face perforations to improve acoustical performance. They are the most economical acoustical ceiling choice.

Sound can also diffract, or bend and flow around an object or through a small space or opening. This gives sound waves the ability to “squeeze” through very small openings with little loss of energy. The small openings under and around doors, floor tracks, electrical boxes and conduit and HVAC ducting are typical sources of sound diffraction. These are commonly referred to as “flanking” or “leaking” paths. They can be controlled by the proper application of acoustical sealant.

### Isolating Sound

A primary goal of a wall partition, ceiling system and floor/ceiling assembly design is to minimize the flow of airborne and impact sound through the use of special materials, methods of construction and designs.

The effectiveness of an assembly's ability to isolate airborne sound is quantified by Sound Transmission Class (STC) ratings. STC is expressed as a single number and usually ranges from approximately 35 to 70. It quantifies the transmission loss (TL) of an assembly. A wall partition or floor/ceiling assembly that reduces the overall incoming sound levels from 80dBA to 20dBA would have an STC rating of approximately 60.

A related measurement is Ceiling Attenuation Class (CAC). This rating quantifies how much sound is lost when it is transmitted through the ceiling of one room into an adjacent room through a common plenum. Like STC, a higher CAC rating indicates that the ceiling system allows less sound transmission. For closed-office environments, a CAC of 40 to 44 is usually desirable.

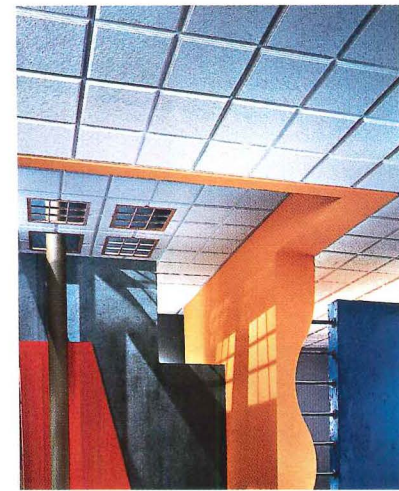
Impact sound transmission in a floor/ceiling assembly is quantified by Impact Isolation Class (IIC). This is a single number rating that quantifies an assembly's ability to isolate impact sounds generated from footsteps and other impact sources. It is tested in laboratory conditions by a tapping machine that impacts the floor of a “source” room. The sound of the tapping is measured in a “receiving” room, located directly beneath the source room.

### Wall Partitions and STC

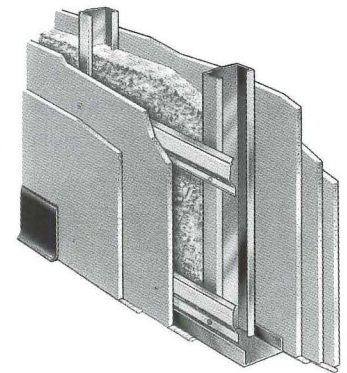
Reducing sound transmission through wall partitions can be accomplished in a variety of ways, including isolation (the separation of adjoining wall partition surfaces), mass, absorption, decoupling (inelasticity) and the elimination of flanking paths (sound leakage).

Increasing the mass of a partition forces sound waves to work harder and expend more energy to pass through the medium. Specifically, doubling the mass of a partition can reduce sound transmission by up to 5dB. However, using mass alone to increase sound control has definite limitations. To achieve a 60dB reduction, a total mass of 320 pounds per square foot is required. This is equivalent to approximately 3 feet of solid concrete, which is obviously impractical for virtually any building design.

Isolating air space within a partition is an effective means for raising STC performance, but like mass, it has its limitations. Doubling the partition air space can reduce sound transmission by up to 5dB, but to achieve a reduction of 60dB requires an isolated air space 4 feet wide. Again, this is hardly practical for building design. The effectiveness of air isolation is limited by the fact that the

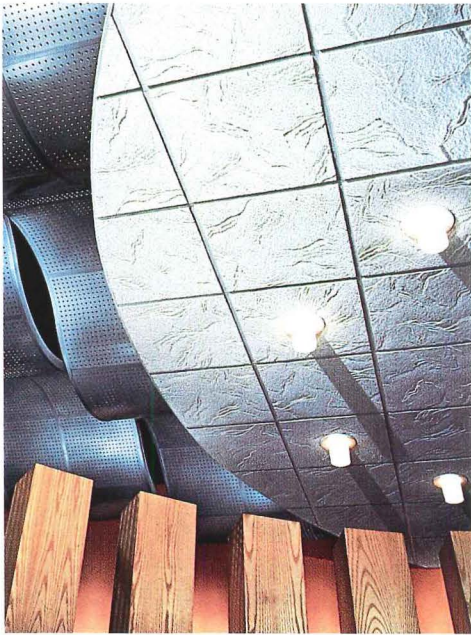


Polymer-matrix ceiling panels feature smooth, natural textures, excellent sag resistance and excellent NRC and CAC performance.



Designing High-STC Wall Partitions: This gypsum board wall assembly uses mass (2 gypsum board layers are on one side, and 3 layers are on the other side), decoupling (resilient channels are screw-attached to the steel studs) and absorption (a layer of mineral fiber insulation is friction-fitted in the partition cavity) to enhance STC performance.





Cast mineral fiber ceiling panels feature natural textures, integrated color and excellent durability. Their high NRC and CAC values make them a versatile option for a wide range of applications.

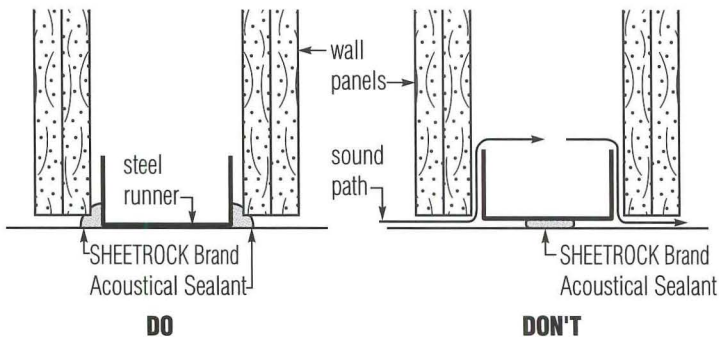
wood or steel studs attaching both sides of the partition assembly transmit sound no matter how wide the isolated space. Like electricity, sound waves seek the path of least resistance, which in this case is the structural framing.

Adding a layer of fibrous sound-absorbing insulation material, such as mineral wool, into the partition cavity dissipates sound by creating friction, which transforms sound energy into heat. Again, however, the effectiveness of sound attenuation blankets is limited by the presence of studs, which

provide a direct route for sound waves to travel through the assembly.

Decoupling the partition through the use of resilient channels, which decouples the surface diaphragm from the structural member, increases the effectiveness of both air isolation and absorption. Resilient channels are attached to framing, with the attachment leg facing down. The screws attaching the gypsum panels should not penetrate through the channel and into the stud, as this negatively impacts resilient channel acoustical performance.

Finally, sealing flanking paths (small air gaps that enable sound to travel with little energy dissipation) is a critically important factor in controlling sound transmission. A properly sealed wall assembly featuring two layers of 5/8-inch gypsum board on both sides and a 1 1/2-inch thick sound attenuation blanket achieves an STC of 53. The same wall without the acoustical sealant has an STC of approximately 29 – a dramatic difference. The key is to apply an adequate bead of acoustical sealant on the outside edge of the floor, ceiling and intersection tracks on both sides of the partition. Applying bead to only one side of the assembly does not fully seal all possible flanking paths. It is necessary to acoustically seal both the space between the floor track and the floor, and between the panel and the track.



Sealing flanking paths in wall partitions is a critically important factor in controlling transmission. An adequate bead of acoustical sealant should be applied to both outside edges of the floor, ceiling and intersection tracks (left).

## Ceiling Panels and NRC

Another way to control airborne sound within a room is through the use of materials that absorb sound by converting sound waves into heat. The ability of a material to absorb sound is quantified by Noise Reduction Coefficient (NRC) ratings. NRC represents the average amount of sound energy a material absorbs over frequencies between 250 and 2,000 Hz. NRC values range from 0.00 to 1.00. To have any acoustical value at all, a material must have a minimum NRC of 0.50. That means that the material absorbs 50 percent of the sound and reflects the other 50 percent.

An acoustical material that doesn't reflect any sound (it absorbs 100 percent) has an NRC of 1.00.

NRC is a key factor in determining the performance of acoustical ceiling panels. Various types of ceiling panels provide varying levels of NRC, as well as CAC performance.

Cast mineral fiber panels offer the best combination of NRC and CAC. The panels are made from an individual cast process that combines excellent sound absorption properties with outstanding durability. The NRC performance of cast panels ranges from 0.65 to 0.95 and the CAC performance ranges from 35 to 44. Cast panels are ideal for conference/speech privacy areas, as well as hospitality, entertainment and retail environments.

Polymer-matrix mineral fiber ceiling panels combine a smooth, natural texture with high NRC (ranging from 0.65 to 0.95) and high CAC (35 to 39). The panels offer superior sag resistance and outstanding dimensional durability. They are non-perforated and ideal for room-to-room privacy areas, as well as reception and lobby areas, hotels, offices and other applications where sound absorbency is needed.

Dry-felted glass fiber panels offer extremely high NRC ratings (0.95 to 1.00), but CAC ratings of 20 to 29 are lower than other types of acoustical panels. The lightweight, sag-resistant panels are ideal for open floor plans, retail stores, auditoriums and gymnasiums, conference rooms and executive offices, but are not recommended for office-to-office privacy.

Water-felted mineral fiber ceiling panels are made using a dense, continuous manufacturing process that orients the mineral fibers for optimal sound absorption. The panels feature perforations and fissures in the surface to enhance sound performance, and range in NRC from 0.50 to 0.60. Their CAC ranges from 35 to 39. The panels come in a wide range of textures and colors and offer a cost-effective choice for a variety of general-purpose applications.

Generally speaking, panels with a high NRC are good choices for open-office areas, healthcare facilities, schools and other applications where speech privacy is a priority. Panels with a high CAC are best for private offices and other areas where sound needs to be confined within a particular space.

In open-office settings, the ceiling's acoustical performance can be significantly enhanced through the use of sound-masking technologies. Sound-masking systems produce electronic sounds similar to that of softly blowing air. The sound is projected through special speakers installed above the ceiling panels. Sound masking is set 3 to 5 decibels above conversational speech, thus enabling speech privacy and alleviating distractions from other office noise. (For more



Dry-felted glass fiber ceiling panels typically offer the highest NRC values (.95 to 1.00) in the industry, making them ideal choices for open offices and other areas requiring speech privacy.



information on sound masking in open office environments, see the “Sound Masking: An Effective Solution for Open Office Environments” article below.)

### Successful Acoustical Design

When creating acoustical specifications, remember that every space presents a unique acoustical challenge. An employment office, for example, may require all-confidential private offices, while a bank may warrant varying levels of speech privacy. In office settings, conference rooms and executive offices usually require high levels of acoustical control, but other areas may require only moderate measures. Consider the past environment of the occupants. What are they accustomed to? Next, establish the privacy needs

of the occupants and finally, establish the privacy potential of each working space. Which areas, given the layout preference, offer the best potential for confidential uses? And which will work better in a more open environment?

Successful acoustical design is a detail-oriented process, both in terms of specification and construction. Careful material and systems specifications are imperative, as are good construction practices. Acoustical performance often depends not so much on what was done correctly, but what was done incorrectly. The key to success is careful attention to detail during all phases of planning, design and construction. ■

## Sound Masking: An Effective Solution for Open-Office Environments

The demand for open office environments isn't going away. A report by The International Facility Management Association (IFMA) shows that more than 80 percent of respondents use open-plan systems in their space planning.

In addition, many businesses are now allotting less space to employees within open plans, upping the number of people within a room in order to cut overhead. And the trend toward a “team” environment has brought upper management and other executives out of their once private offices and into the mix.

Add speaker phones, voicemail and other noisy technology, and the office environment can easily become distracting. With statistics showing that productivity levels in a non-distracting space will rise anywhere from 3 to 20 percent, open-office acoustics are an increasingly critical design issue for architects.

This isn't to say that the role of the architect is to create an office that is dead quiet. In very quiet environments, employees, clients and/or customers often won't speak in a normal tone of voice and instead will lower their voices to near-whispers in order not to distract other employees and to avoid being overheard. And the smallest of sounds, from a tapping pen to a clicking keyboard, can easily shatter the fragile concentration of coworkers.

As office walls come down and more employees are packed together into the workplace, privacy is affected as well. And industry research indicates that workplaces will continue to become noisier, affecting employee productivity, morale and retention.

Architects are increasingly turning to sound masking to override sounds that can't be absorbed or blocked by design elements such as carpeting, acoustical wall panels, ceiling panels or partitions. At the other end of the spectrum, sound masking in quiet environments allows employees to speak at normal conversational levels while maintaining speech privacy.

Today's sound masking has gone well-beyond simple white noise machines. Diffracted sound can be masked with electronically produced sound that's evenly distributed through a space by speakers placed above the ceiling.

Sound masking provides a constant, fixed level of unobtrusive background sound that is set to cover speech level and soften other office noises, which then do not appear as distractions to the human ear. To be effective, the masking level should

be 3 to 5 decibels louder than incoming speech from adjacent work stations. In an open plan office, the STC (Sound Transmission Class) and NRC (Noise Reduction Coefficient) must be balanced to achieve good speech privacy, while the background sound levels are comfortable and uniformly maintained.

Because sound masking is complementary to the speech spectrum and effectively covers speech levels, it reduces the intelligibility of conversations, which makes conversations less distracting to those working nearby.

Architects should consider specifying sound-masking units that have a step

attenuator, a rotating volume control for precise sound level adjustment volume control and a rotating volume control for paging/music. Units should be able to produce up to 86dBA to meet the requirements for all ceiling treatments, and should have adjustable sound spectrum shaping controls in order to meet the varying spectral requirements of drywall ceilings, various types of ceiling panels, air return grills and openings around lighting fixtures. The sound-generating units must also generate random sequence sounds and not produce a noticeable repetitive pattern or sequence.

While effective sound-masking systems have traditionally utilized loudspeakers strategically placed above the office ceiling to produce uniform sound masking throughout the workspace, one of the newest and most popular options for architects are sound-masking systems that work in tandem with acoustical ceiling panels. These ceiling sound-masking systems are superior to other types of centralized or flat-surface speakers alone, giving the architect more options and control over ceiling design and sound-masking systems. These systems can be ordered from the acoustic ceiling panel manufacturer and/or the sound-masking company.



*Lencore's Spectra Sound Masking creates a harmonious atmosphere in which to work that increases people's ability to concentrate, restores speech privacy and allows for greater employee productivity and efficiency.*

### Click for Additional Required Reading

As part of this CES activity, you are required to read the “Room Acoustics” section of USG Corporation's Sound Control Manual. To access the material online go to [http://www.usg.com/Design\\_Solutions/2\\_3\\_11\\_acoustics.asp](http://www.usg.com/Design_Solutions/2_3_11_acoustics.asp). To request a faxed copy of the material, contact Marty Duffy at (312) 606-5781 or [mduffy@usg.com](mailto:mduffy@usg.com). (For a further detailed discussion of sound and acoustics you can access other sections of this document at that site, but only the Room Acoustics section material is included in the final quiz.)



### Learning Objectives

- Know how sound waves form and how they travel through elastic mediums
- Understand how sound can be isolated and absorbed in building design
- Realize the benefits that sound masking provides for closed and open-office spaces

### Instructions

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 243. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—[architecturalrecord.com](http://architecturalrecord.com)—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

### Questions

- Q:** 1. The more elastic a substance, the better it is able to conduct sound waves.  
**A:** a. True  
b. False
- Q:** 2. A higher CAC rating indicates that a ceiling system allows more sound transmission.  
**A:** a. True  
b. False
- Q:** 3. Ways to isolate sound include all but which of the following:  
**A:** a. Increasing the mass of a partition  
b. Isolating air space within a partition  
c. Installing masking systems  
d. Sealing flanking paths
- Q:** 4. A wall partition or floor/ceiling assembly that reduces the overall incoming sound levels from 80dBA to 20dBA would have an STC rating of approximately:  
**A:** a. 100  
b. 60  
c. Minus 60  
d. One quarter (1/4)
- Q:** 5. To seal flanking paths, the key is to apply the acoustical sealant:  
**A:** a. On the side of the assembly where the source originates  
b. On both sides of the assembly  
c. On the side of the assembly where the sound is being received
- Q:** 6. An acoustical material that doesn't reflect any sound has an NRC of:  
**A:** a. 0.00  
b. 0.50  
c. 1.00
- Q:** 7. Which ceiling panels offer the best combination of NRC and CAC?  
**A:** a. Cast mineral fiber panels  
b. Water-felted mineral fiber panels  
c. Dry-felted glass fiber panels  
d. Polymer-matrix mineral fiber panels
- Q:** 8. Generally speaking, panels with a high \_\_\_\_\_ are good choices for open-office areas.  
**A:** a. CAC  
b. IIC  
c. NRC
- Q:** 9. The purpose of sound masking is to:  
**A:** a. Provide a distraction to speech and office sounds  
b. Cover speech level and soften other office noises  
c. Create an office that is dead quiet and therefore more productive  
d. Promote the open-office team environment
- Q:** 10. To be effective, sound masking should be:  
**A:** a. 3 to 5 decibels lower than incoming speech  
b. the same decibel level as incoming speech  
c. 3 to 5 decibels louder than incoming speech
- Q:** 11. Match the term with the correct definition:  
**A:** a. Noise Reduction Coefficient (NRC)  
b. Sound Transmission Class (STC)  
c. Ceiling Attenuation Class (CAC):  
1. Quantifies the effectiveness of an assembly's ability to isolate airborne sound.  
2. Quantifies how much sound is lost when transmitted through a ceiling of one room into an adjacent room through a common plenum  
3. Quantifies the ability of a material to absorb sound

## About USG

USG Corporation is a *Fortune 500* company with subsidiaries that are market leaders in their key products groups: gypsum wallboard, joint compound and related gypsum products; cement board; gypsum fiber panels; ceiling panels and grid; and building products distribution. The company received the 2001 AIA/CES Award for Excellence for its commitment to providing quality continuing education programs.

USG subsidiaries United States Gypsum Company and USG Interiors, Inc. are industry leaders in the design, development and testing of acoustical wall, floor and ceiling systems.

USG Interiors, a leading manufacturer of acoustical ceiling panels and suspension systems, offers a wide range of cast, polymer-matrix mineral fiber, glass fiber and water-felted mineral fiber ceiling panels to accommodate virtually any acoustical design. The company's recently introduced HALCYON™ CLIMAPLUS™ Ceiling Panels provide a highest-possible NRC rating of 1.0. The panels offer superior sound performance for open offices, lobbies, libraries and other areas where acoustical privacy is a priority.

USG Interiors has formed a strategic partnership with Lencore Acoustics Corp., to offer Lencore's state-of-the-art sound-masking systems with all USG acoustical ceilings.

Lencore Acoustics, the country's leader in sound masking, offers a full range of products and services that address the acoustics within office environments. By manufacturing the highest quality background sound masking systems available, and offering a full line of acoustical wall panel and baffle products, Lencore is in a unique position to meet the acoustical challenges of *Fortune 500* companies around the globe. The company is the only manufacturer of sound masking that can provide E-Sound™ and IndePage™ technologies. E-Sound ensures the highest quality masking sound, while IndePage allows for an individual volume control for paging. With a widespread network of representatives and manufacturing capabilities, Lencore can custom design the right sound masking system for virtually any office environment. The company backs its products with an unconditional 10-year full warranty. For more information, call Lencore at (516) 223-4747 or visit the company's Web site at [www.lencore.com](http://www.lencore.com).

For further information about USG's acoustical wall, ceiling and floor systems, write USG Corporation, P.O. Box 806278, Chicago, IL 60680-4124, call USG's Customer Service Department at 800-USG-4YOU or visit the company's Web site at [www.usg.com](http://www.usg.com).



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# WHERE WE STAND

## AIA First Quarter 2002 Financial Results

To members of the AIA,

Our new financial year is off to a healthy start with encouraging news. Our solid performance last year has been confirmed by the 2001 financial audit. The dissolution of AEC is final. Our continuing commitment to operating in a disciplined and business-like manner is demonstrated by the fact that we are ahead of budgeted targets for the first quarter of 2002.

### 2001 Audit Shows Income and Asset Targets Exceeded

We have received a clean audit opinion for 2001 from our accounting firm. Both net income and total net assets for 2001 exceeded our plan. The completed audit confirms that total net assets improved by \$3.1 million and now stand at a positive \$1.66 million. This significant change resulted from three factors: a) AEC's total lifetime cost to AIA was far less than expected; b) the extension of the magazine contract with McGraw-Hill; and c) the 2001 operating budget provided a positive contribution to assets of \$1.4 million, exceeding the budgeted goal. This is the second year in a row during which the Institute's operating revenues exceeded expenses.

### AEC Officially Dissolved

The Delaware Secretary of State has confirmed the corporate dissolution of Architects-Engineers-Contractors, Inc. (AEC), effective January 30, 2002. As a result, AEC's corporate life has officially ended.

### First Quarter of 2002 Ahead of Plan

Our balanced budget goal continues into the first quarter of 2002. Operating expenses for the first quarter of 2002 are down. Combined with a slightly higher than planned first quarter revenue, our operating net income is higher than budget as of the end of March. Overall, our first quarter net income exceeds our plan by 6.8%.

### Going Forward

We are progressing toward improved member service and feel confident that the growing financial health of AIA means better professional services for our 70,000 members. We have operated with balanced budgets and achieved surpluses for the last two years. We intend to make 2002 the third year in a row of fiscal stability and asset growth.

I welcome your comments.

Sincerely,

Norman L. Koonce, FAIA  
Executive Vice President/Chief Executive Officer

## AIA Balance Sheet (\$000's)

	Audited 2000	Audited 2001
<b>Assets</b>		
Cash	\$3,122	\$2,036
Investments	10,022	8,853
Property and Equipment, net	11,179	10,531
Deferred Publication Costs	3,175	2,704
Accounts Receivable	2,136	1,247
Other Assets	1,642	2,166
<b>Total Assets</b>	<b>\$31,276</b>	<b>\$27,537</b>
<b>Liabilities</b>		
Line of Credit	\$5,500	\$1,397
Accounts Payable	7,590	2,928
Deferred dues and other revenue	2,554	5,312
Notes Payable	17,107	16,237
<b>Total Liabilities</b>	<b>\$32,751</b>	<b>\$25,874</b>
<b>Net Assets</b>		
Unrestricted	(5,724)	(1,489)
Temporarily Restricted	3,194	2,097
Permanently Restricted	1,055	1,055
<b>Total Net Assets</b>	<b>(\$1,475)</b>	<b>\$1,663</b>
<b>Total Liabilities &amp; Net Assets</b>	<b>\$31,276</b>	<b>\$27,537</b>

## AIA Financial Results March 2002 (\$000's)

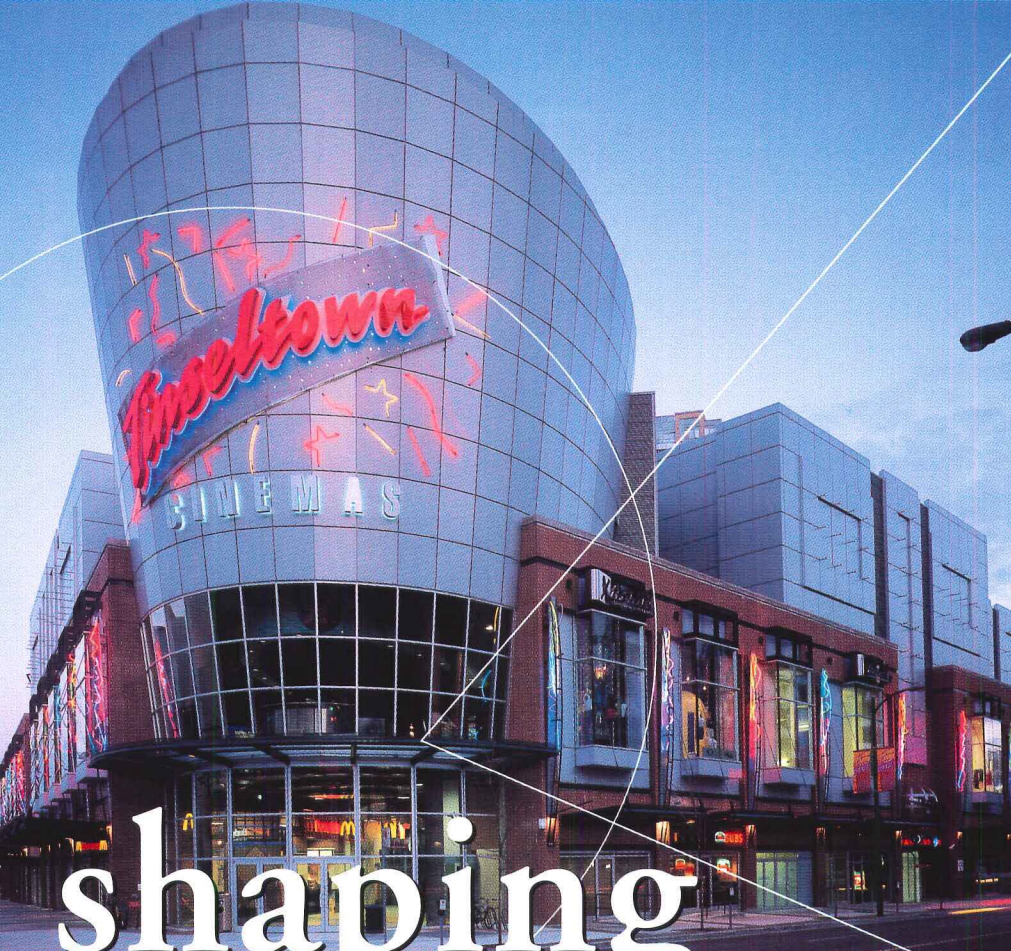
	YTD March Budget	YTD March Actual
Revenue	\$20,511	\$20,748
Operating Expense	(8,747)	(8,170)
<b>Operating Net Income</b>	<b>\$11,764</b>	<b>\$12,578</b>
Non-Operating Income	51	37
Unrestricted Net Income	<b>11,815</b>	<b>12,615</b>
Restricted Income	5	8
<b>Total Net Income</b>	<b>\$11,820</b>	<b>\$12,623</b>



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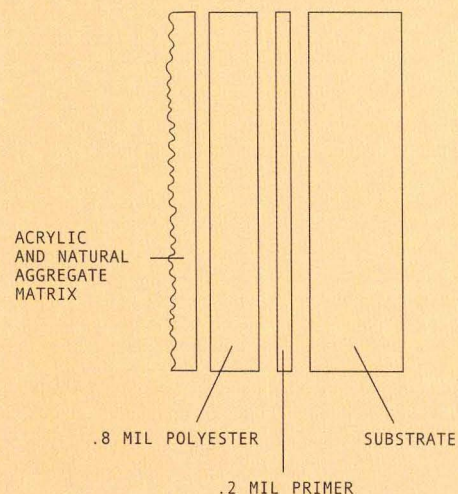
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# Digital Practice

**IN THIS SECTION:** Putting the Parthenon back together again [page 175] • AIA architects gather to talk collaboration [page 176] • How Hewlett-Packard could replace your repro house [page 178] • Mapping spaces and places: geographic information systems [page 180] • Digital Architect looks at display devices [page 189]. *Deborah Snoonian, P.E.*

## BYTES

In April, Autodesk acquired 3D CAD developer Revit Technology Corporation for \$133 million cash. Revit will continue to be headquartered in Waltham, Mass.

Graphisoft's new Plan2Model software can generate intelligent 3D ArchiCAD models from 2D floor plans produced in nonparametric CAD software.

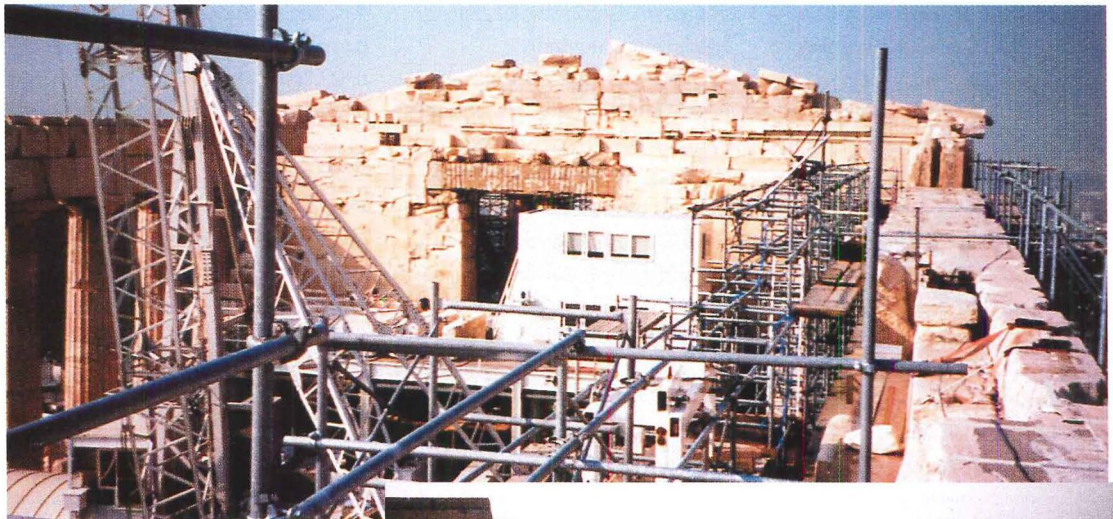
Timberline's latest release, CAD Integrator, is the first cost-estimating software to use Industry Foundation Classes (IFCs) developed by the International Alliance for Interoperability (IAI). Designers can use it to generate takeoff lists and cost estimates directly from IFC-compliant CAD models.

Newcomer Common Point Technologies is offering InviznOne, a CAD-based 4D visualization tool (three dimensions plus time) for design and construction management. The software was developed jointly by Walt Disney Imagineering and Stanford's Center for Integrated Facility Engineering, and it has been used on projects like Frank Gehry's Disney Concert Hall.

Bentley Systems filed for an initial public offering. The company says it will use a portion of the proceeds to acquire Rebis, a software developer for the manufacturing industry.

Meridian Project Systems has released Prolog Scheduler, an Internet collaboration product that helps geographically dispersed design and construction project teams coordinate their tasks. It's designed to work with the company's popular Primavera scheduling software.

## Parthenon's rebuilding may be aided by laser-scanning technology



Greek authorities are working to renovate historic monuments in Athens in time for the return of the Olympics in 2004. Buildings to be restored include the city's most significant landmark, the Parthenon. To assist with its restoration, members of the Institute for Monumental Architecture (IMA), a Washington, D.C., nonprofit organization that specializes in computerized spatial documentation, are offering to construct 3D models of the temple based on data gathered with laser scanning. If approved by the Greek Ministry of Culture, the effort will mark a significant development for a quickly advancing technique in restoration, says the IMA.

"I think this effort is going to have a profound impact on the course of architecture and preservation in the future," says Scott B. Knox, Assoc. AIA, president of the IMA. "The accessibility of a full three-dimensional [digital model] of existing architecture will help architects make more informed decisions on how to restore, renovate, and



**The Institute for Monumental Architecture is hoping to digitize the Parthenon so that 3D virtual models can be used to aid its restoration.**

preserve existing buildings."

According to the IMA's plan, light scanners will be placed around the entire surface of the Parthenon—at approximately 70 overlapping points—recording spatial data, which will be used to make high-resolution 3D computer models of the site. Software to be employed includes Polyworks, Rhino, AutoCAD, Microstation, and Solidworks. The digital models will also be compared to historical documentation of the Parthenon, particularly that produced by architect Francis Penrose—the first architect to measure and document

the building's geometry—in the 1840s and 1850s.

A 1:100 scale plastic model will then be produced using stereolithography, also known as 3D printing—a common production method in rapid prototyping for manufacturing. In this process, a machine reads the 3D digital model, which is converted into a solid shape by a laser that "cures" a liquid resin on contact into solid plastic in layers that are only  $\frac{1}{10}$  millimeter thick.

Both models, says Knox, will allow renovation architects to better visualize the Parthenon's physical structure, study its existing conditions,



# Digital Practice

## BYTES

An [online scholarly journal](#) focusing on digital technology and architecture will be available starting this fall at [www.architect.org](http://www.architect.org).

MIT's Media Laboratory and the Department of Architecture have created a new consortium called [Changing Places](#), an expansion of their House\_n research effort. It will focus on [the development of new technologies](#), new materials, and design strategies for the home, the workplace, and the city, including sensing technologies, delivery of "just-in-time" information, and a "Place Lab" to study how people interact with technology in the built environment.

CBN Systems has released a computer-based color-creation and -formulation standard that precisely matches on-screen colors to formulations of colorants, pigments, and dyes. The technology can be used to specify colors for paint, stain, concrete, stucco, and other building products and interior finishes. The specification software can be downloaded free of charge from [www.cbnsystem.com](http://www.cbnsystem.com).

The AIA and Rolf Jensen & Associates have developed an [online tool](#) that helps architects [understand the new International Building Code](#). It offers [analysis and side-by-side comparisons](#) with the current versions of the National Building Code, the Standard Building Code, the Uniform Building Code, and NFPA's Life Safety Code. The tool is available through the "MyAIA" member-only portal on [www.aia.org](http://www.aia.org).

[LaserPlans](#), a new floor-mapping system by [ActivMedia Robotics](#), consists of a wheeled sensing device that collects audio and odometric data as it is pushed through a building. Special software converts the data points into an electronic floor plan that can be augmented with photos, text labels, or other information.

and test future assemblies. Architects will be able to observe the temple at various distances and angles, and the virtual models can be animated, moved, and rotated in space.

"Once architects were master builders. They worked three-dimensionally on-site. With this technology, architects can design a project in 3D from the beginning again," sums up Knox.

Knox has gathered a group to assist with the project that includes Paul Debevec of the University of Southern California's Institute for Creative Technology; engineers from Spatial Integrated Systems, a firm that specializes in laser scanning;

and Arup & Partners. Funding would come from IMA's budget, provided mostly by grants from private donors.

The IMA is still seeking a permit from the Greek Ministry of Culture to proceed with the project, but preservationists appear to back the idea. Dr. Manolis Korres, head of the Committee for the Preservation of the Acropolis Monuments, a task force of the Greek Ministry of Culture that oversees renovations at the Acropolis, wrote in a statement to the IMA that the models would be useful for making an "accurate verification of the fractured surfaces," and for "production of marble additions for the damaged stones." He concluded: "I wholeheartedly support the proposal submitted by Mr. Knox." Knox is not fazed by the review process, saying the Ministry of Culture is being

necessarily thorough.

Blaine Cliver, secretary of the U.S. International Council on Monuments and Sites (ICOMOS), points out that while other techniques, like photogrammetry, can produce 3D virtual models, laser scanning is the best choice for the Parthenon because enough data points will be collected to take into account the weathered, uneven condition of the monument's surfaces.

Knox is confident the project will go forward and believes the arduous process of digitizing the Parthenon will pay dividends down the road. "Even to have a small role in [restoring] the Parthenon is worthwhile," he says. "This effort should spawn greater appreciation for efforts to preserve history around the world." *Sam Lubell*

## At "Six Degrees of Collaboration," architects mull over the conundrum of helping far-flung project teams work together

**At the peak of cherry blossom season in Washington, D.C., more than 100 architects, firm IT managers, and software manufacturers gathered at AIA's headquarters for two days to discuss how they're getting together—specifically, how they're using technologies that enable collaboration with others in the design and construction field. Sponsored by the AIA's Technology in Architectural Practice Committee (TAP) and Revit Technology Corporation, with assistance from Sigma Design, Graphisoft, Arc Second, and RECORD publisher McGraw-Hill, the conference aimed to assess how (and if) these tools have made inroads into practice, and to identify barriers to their use and implementation.**

**Most agreed that although technical limitations exist, they don't account entirely for relatively slow adoption of collaboration tools by architects [RECORD, March 2002, page 162]. "The issues that inhibit collaboration are social, political, and cultural," said James Brogan, AIA, during the the opening plenary session. Brogan was the 2001 chair of TAP and is currently the IT director at Kohn Pedersen Fox in New York. Others expanded on this theme. "We have boxed ourselves in and too narrowly defined our role," said Jonathan Cohen, AIA, author of *Communication and Design with the Internet* and a member of TAP's advisory group. Darren Rizza, Assoc. AIA, C.I.O. of Swanke Hayden Connell Architects, reminded the group that sharing architectural information with everybody from specifiers to owners is a radically new way of practicing, and one that "architects are still getting used to."**

**Breakout sessions addressed a range of topics, including business continuity, interoperability, research, and legal issues that arise due to increased data sharing. The most interesting technological discussions centered on schools of architecture that are testing collaboration methods. Ever at the forefront, the University of Washington's Design Machine Group is working with students to design more intuitive CAD programs, said assistant professor Ellen Yi-Luen Du. And Texas A&M is moving toward the notion of a "distributed design school," said professor Mark Clayton, with students in different disciplines and off-site campuses assigned to work on projects together, all mediated by communication technology. The fact that the schools are more of a collaboration hotbed than firms are is testament to the techno-prowess of younger architects and the flexibility afforded by educational programs that are neither fee-driven nor deadline-encumbered.**

**In the end, the conference was less about technology and more about questioning the status quo of practice, something the AIA has been examining from many angles. "Six Degrees" covered little new territory, but participants walked away knowing that the barriers they face in implementing solutions are shared by their peers, and they also felt better equipped to overcome them.**

**Although a handful of international participants made the trek to Washington, women and minorities were noticeably scarce during the proceedings, a reality that may have a lot to do with the hindered state of collaboration among architects today. Unless and until the profession itself can achieve a level of diversity that more accurately reflects the society in which designers work, collaboration with an increasingly global workforce might continue to be stymied. D.S.**



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## Digital Practice

### New service offered by Hewlett-Packard lets designers circumvent repro houses

Are you tired of rushing off to the repro house or waiting around for a FedEx package each time a cross-country colleague makes a change to a drawing? If so, Hewlett-Packard's new service may be for you. The company is rolling out HP Remote Printing, a new large-format document service that doesn't require sign-up with a repro house or online collaboration service like e-Builder or Constructware. The new service lets users exchange scanned-in, marked-up documents directly over the Internet for printout on HP plotters in their own offices.

Architect Gary Roberts, owner of GRA Architecture in Sacramento, California, was a beta tester for the new service. He used it with a group of engineering and contractor partners. "So much of what architects do is time-related, particularly once a job is under construction," says Roberts, whose five-person firm does commercial and institutional work. "I might have 10 people [waiting] around to see a drawing. Now, if I need a revised drawing from an engineer, I can have hard

copy in my office in time for my next meeting."

HP Remote lets an architect send a document to either a local plotter or to an e-mail address for printing. For security's sake, documents are encrypted and transmitted to an HP-operated Web server in read-only format. To transmit a document, the sender registers on the HP Remote Printing home page, clicks the "upload" button, and adds the e-mail address of the recipient. The recipient then receives an e-mail message with a link to a secure Web site, where she can view a thumbnail of the drawing and decide whether or not to accept it. No special software for the service is required for either the sender or the recipient.

Roberts had previously used timeworn methods of document distribution. "I'd [have] blueprints copied. Generally, we didn't get the drawings the same day," he admits. He purchased HP's service when it became available in March; the cost is \$360 annually with a free 30-day trial.

"HP Remote Printing is a new service, and it'll take a while for it to make its way into the industry. If contractors get plotters for their trailers, though, they'll be able to print out the updated drawings directly at the construction site," Roberts predicts.

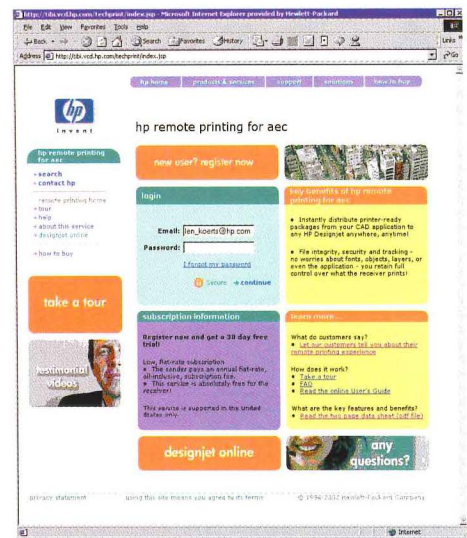
The catch to HP Remote, not surprisingly, is that it works only for HP plotters—specifically, the DesignJet large-format professional-series printers. Sandy Gramley, DesignJet manager at HP, cites alternative methods of remote digital reproduction, but dismisses them as less practical than HP Remote. "If you send me a document [attached] to an e-mail, I need your application to open [and print] the document. If you send it to me as a plot file, I need to have the driver for your printer. Even then, it might not print correctly," Gramley cautions. She stresses the service is not meant to replace repro houses. "We're simply trying [to provide] a tool for the iterative phase of design. If you need a large set of drawings for final distribution, or if you need

archives, a repro house is probably a better way to go."

Other companies are also trying to make large-format printing easier and more seamless for architects. CAD leader Autodesk is marketing its server-based Plans & Specs product, mainly to repro houses using Océ printers.

The repro houses pay a fee to Autodesk for the service, then charge their AEC clients in turn for the service. The fee varies depending on the number of drawings stored and printed.

One big Autodesk customer, though, has decided to act as its own service bureau: A large architectural firm (which wished to remain anonymous) has bought the server-based Plans & Specs product



**HP's newest service lets firms print to any registered Designjet printer via the Internet.**

for its own internal use—a hefty investment.

Meanwhile, repro houses are stepping into the fray with their own Web-based services for remote printing. American Reprographics Company offers PlanWell, a service that stores nonalterable images of drawings on a secure Web site. Plans can be printed by American Reprographics regional divisions, for either pick-up or overnight delivery. "The point is to relieve the [document] management burden for customers," says David Stickney, American Repro's director of marketing.

National Reprographics, on the other hand, hosts a digital vault service called ReproMax, which enables drawings to be printed out at either an AEC customer's office or at a repro house. To print locally, though, the customer must buy a large-format printer from among several brands, and a software accounting package directly from one of National Reprographics' 183 member shops. The software lets customers track printouts for billing purposes. The ReproMax package covers consumables like ink and paper, and pricing for the service varies.

Regardless of which option you choose, it looks as though the era of on-demand printing for large-format drawings is finally dawning. *Jacqueline Emigh*



**HP's DesignJet Copier cc800ps can be used with the Remote Printing service.**



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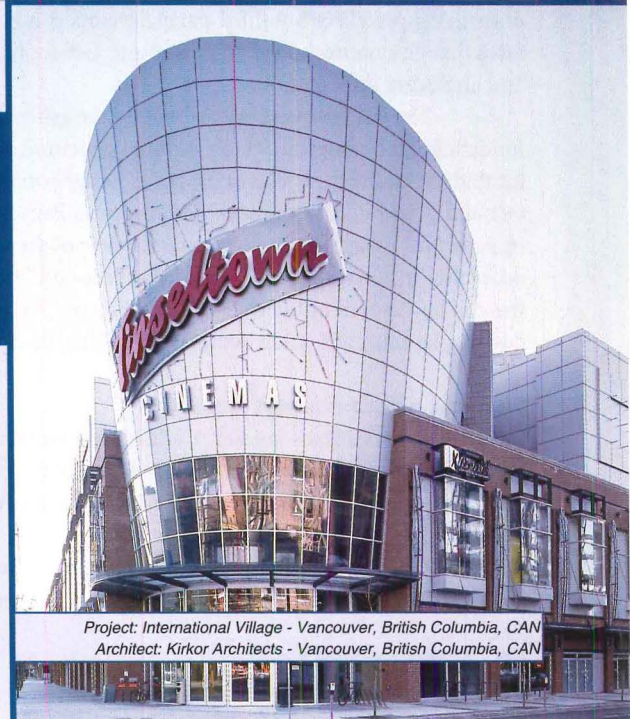
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# Mapping Places and Spaces

## GEOGRAPHIC INFORMATION SYSTEMS ARE IMPORTANT TOOLS FOR DEFINING THE SOCIAL AND ENVIRONMENTAL CONTEXTS OF URBAN DESIGN, PLANNING, AND ARCHITECTURE

By Bill McGarigle

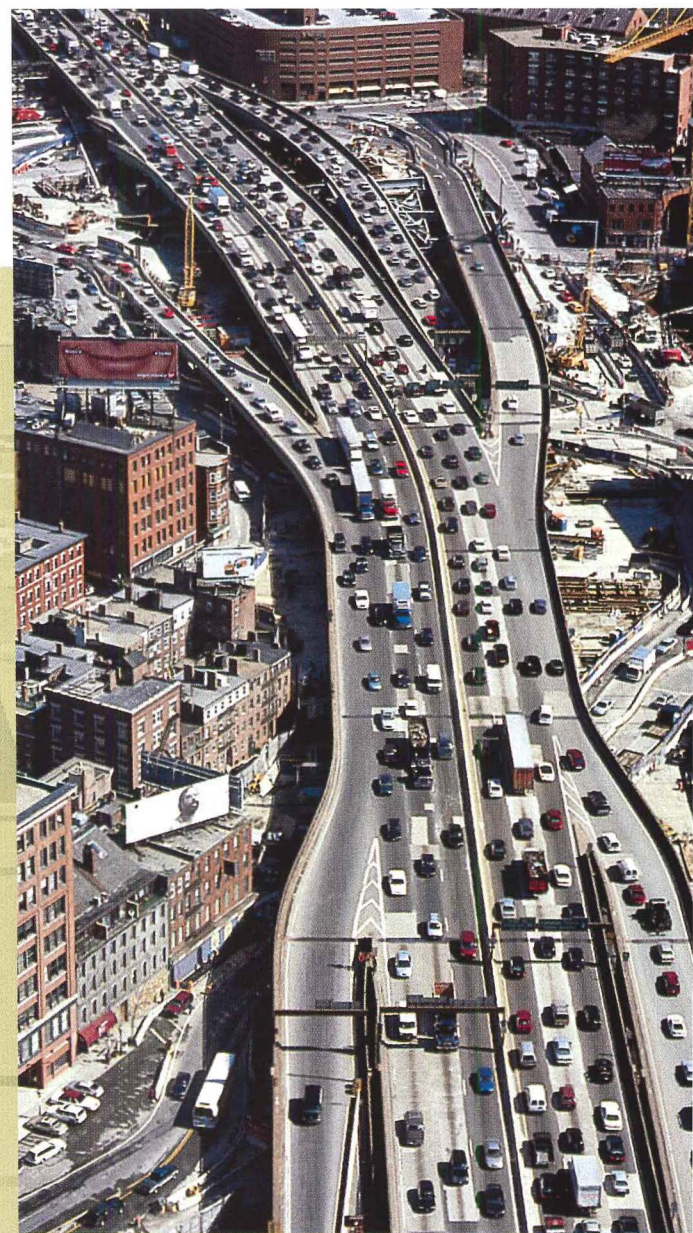
**A** geographic information system (GIS), a type of software system, enables a user to link any amount or kind of data to a location with either geographic- or user-defined coordinates. The data can be analyzed to find relationships and trends, and results can be visualized in 2D or 3D map layers, each representing a distinct group or class of information, such as wetlands, wildlife habitats, crime statistics, or demographics (much like the layers of a CAD file that represent different elements of a building). The amount and type of information that can be associated with a spatial or geographic location in a GIS is virtually unlimited, and the data can be integrated with imagery and other objects, stored in databases, and distributed as interactive maps via the Internet or other electronic means.

Once as unwieldy as first-generation word processors, GIS has been considerably tamed through automated operations and Windows-like interfaces. High-end systems and complex analyses are still the domain of specialists, but third-party developers now build custom interfaces that give nontechnical users access to GIS tools for developing maps and analyzing information.

The last few years have witnessed the growing use of GIS as a tool for defining the context in which we build structures and develop cities and for understanding the effects of proposed designs on their surroundings. "If our aim is to build sustainable designs," says Patrick Moore, director of Integral GIS, in Seattle, "we need a larger view of the world. And there's no other tool in town that can give us that like GIS." Case studies illustrate these issues, as well as the role and diversity of GIS applications in urban design, planning, and other architecture-related disciplines.

### Defining environmental impacts

In Los Angeles, GIS was used to conduct an environmental-justice analysis to determine whether distribution of environmental impacts from a proposed expansion of the Los Angeles International Airport (LAX) would



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*Bill McGarigle writes on communications and information technology. He is based in Santa Cruz, California, and can be reached at [bmcgari@cruzio.com](mailto:bmcgari@cruzio.com).*



fall predominately on minority and low-income communities. The study was undertaken as part of the environmental-impact statement prepared for the LAX master plan. It was conducted by PCR Services Corporation, an environmental consulting firm in Santa Monica, California.

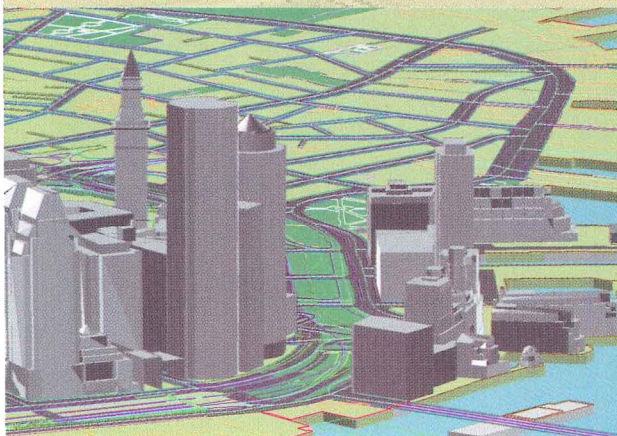
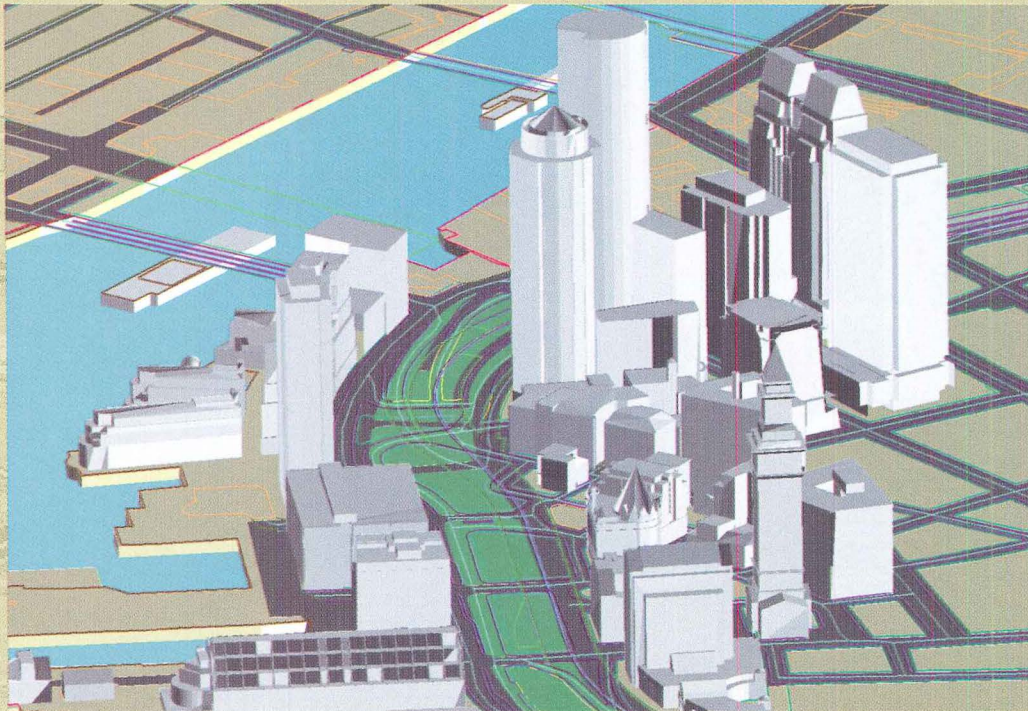
Using demographic data from the census and from federal guidelines, GIS specialists at PCR first identified the socioeconomic profiles of several communities close to LAX. Onto these they overlaid environmental-impact data in separate, thematic layers. PCR planner Paulette Wills said this data—which centered primarily on aircraft and construction noise, traffic patterns, and air quality—was gathered from other parts of the statement. “Through the overlay process,” Wills explained, “we could see who the affected populations were, and in what communities [they reside].” The team also overlaid noise contours onto maps showing individual property boundaries to determine the exact numbers of households and populations that would be affected by aircraft noise.

The final phase involves development of an environmental-justice program designed to mitigate or offset adverse impacts of the expansion—such as excessive noise, traffic congestion, and decreased air quality. Such a program might include increased public transportation, or installing air filters to improve indoor air quality in affected buildings. Whatever the outcome, GIS will have had a major role in defining the social and environmental contexts for the public review and administrative processes that follow, by helping decision makers analyze where to implement the various program elements.

### Forecasting 3D scenarios

The redevelopment department of Glendale, Colorado (population 4,527), recently used CommunityViz, an ArcView GIS-based planning and decision-support system, to inform a communitywide master plan focusing on a series of proposed redevelopment projects. Issues such as transportation, education, land use, utilities, tax-revenue generation, and cost of services were assessed as the plan was developed, and the software was also used to model alternative building plans and land-use scenarios for review and comment.

The goal of the ongoing project is to create a “walkable” community, affordable housing, and a new retail model to increase tax revenue and provide ownership opportunities. The project is still at an early stage, but as it develops, it will involve architecture, landscape architecture, urban design, and economic analysis. Steve Mullen, a senior consultant for CommunityViz, said using GIS helped the city move beyond policy planning to create a 3D physical plan detailed enough to measure conformance of proposals with community standards for growth. According to Mullen, the system met the agency’s goal by creating a framework for all new buildings and future developments. “That framework,” Mullen said, “will affect design guidelines for a mixed-use downtown, building-height limits, sidewalk character, and the design of individual buildings.” He added that CommunityViz was used to present a range of styles for local architecture, clearly depicting the choices that will support a consensus for final recommendations.



### Big Dig, Boston

As the massive Central Artery moves underground, hundreds of acres of land in and near Boston will be freed for development. A citywide GIS would help planners, designers, and the oversight agency,

the Boston Redevelopment Authority (BRA), coordinate and analyze proposals for the new areas. Researchers at Harvard’s GSD are working to develop a user-friendly GIS that would include digital 3D models of the city’s

major features, including buildings and roads. Designers could plug their proposed plans into the system, and the BRA and other reviewers could visualize the various impacts those schemes might have on surrounding areas.



### A window into time-based activities

During construction of Seattle's SAFECO Field, project scheduler Patrick Moore (then with Walter Construction) developed a GIS-based project-management system to visualize the erection sequence of the stadium in 2D and 3D layers. "By linking building elements with their associated tasks, times, and spatial coordinates, the system became a window into time-based activities, enabling everyone involved to visualize schedule-management issues, analyze the data, and make decisions from

### LEADING GIS DEVELOPERS INCLUDE ESRI, MAPINFO, AND INTERGRAPH; AUTODESK AND BENTLEY ALSO OFFER GIS TOOLS.

it," he said. The system was built on ArcView's GIS and combines 3D StudioViz and Primavera's scheduling engine, with a custom interface.

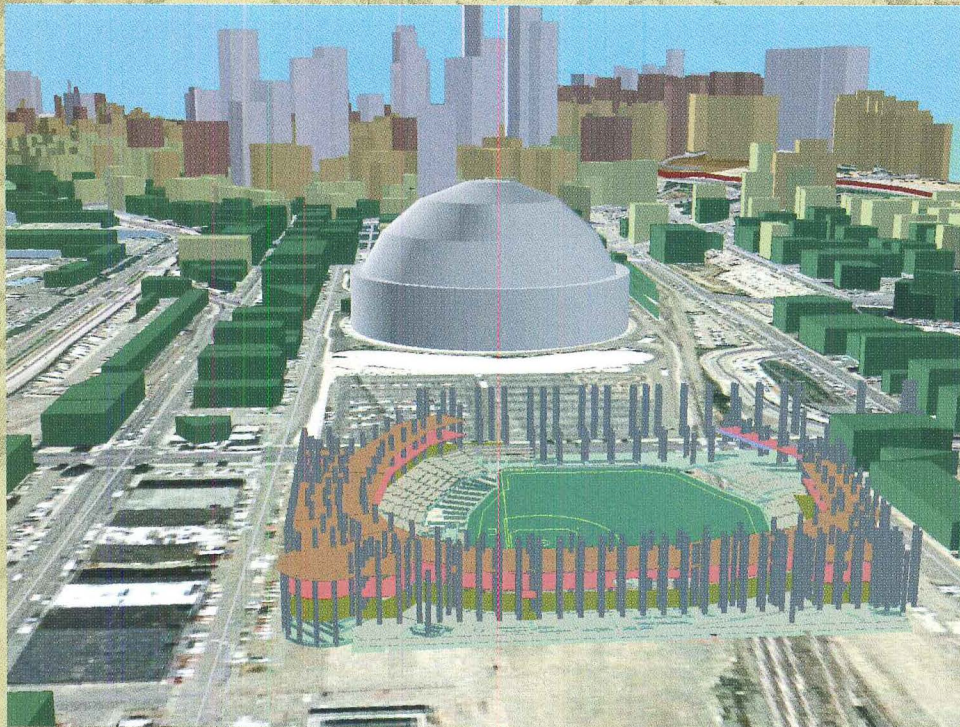
Using the tool, the building's construction could be viewed in both time and space. Project engineers performed simple visual assessments of which construction sequences were taking the most time; made sure that construction tasks wouldn't interfere with each other in terms of timing or availability of materials, so that conflicts could be resolved before they arose; and compared estimated to actual construction progress to determine if changes to the schedule were needed.

The evolving prototype served as a visual model for collaboration and a common basis of understanding by all project participants, Moore said, and improved communication and relationships among contractors and subcontractors. "The system gets people on the same page very quickly," Moore added. By the time the stadium was completed, it was evident that the application, referred to as the 4D Project Management System, had considerable logistic and economic value for architects as well as engineers, contractors, and project underwriters.

Moore pointed out that scheduling software like Primavera and Microsoft Project show time conflicts, not clash detection for ducts, rebars, or other physical objects. But conflicts among the work of different subcontractors can be seen easily in the 4D model. There are limitations to its level of detail, though. "The process of breaking down all the elements in CAD that can be represented spatially does not imply taking data to the level of pipe fittings—[we limited] the information to major structural elements. Otherwise, the system becomes unwieldy," he said. Following the SAFECO project, Moore established Integral GIS to further refine the use of GIS as a construction-management tool.

### Defining architecture's context

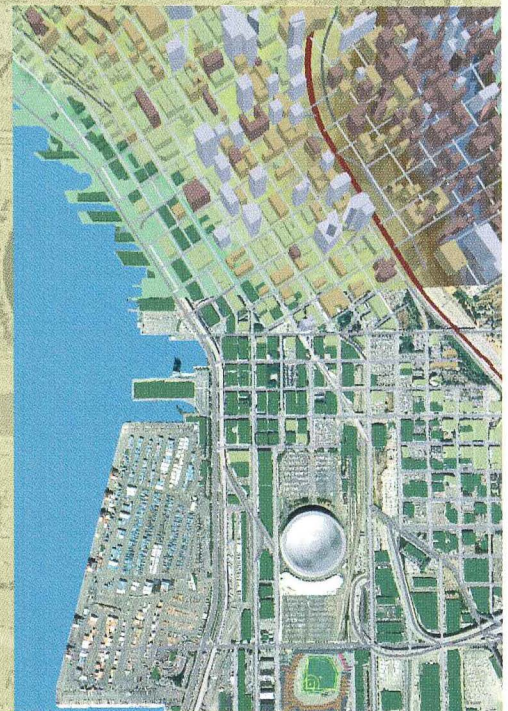
No building or city is designed in a vacuum. Brian McGrath, adjunct professor of architecture at Columbia University, in New York City, and a



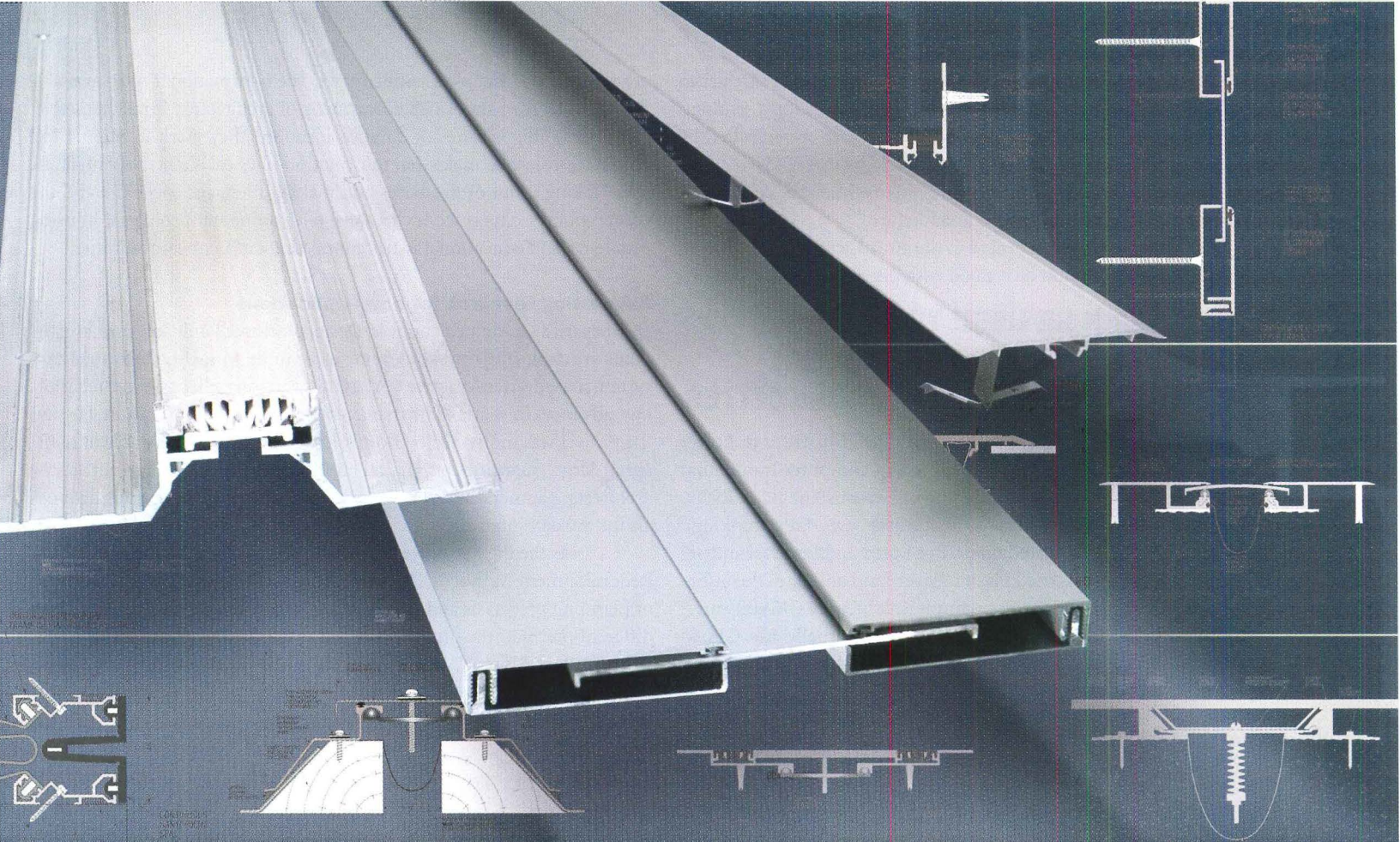
#### SAFECO Field, Seattle

The construction managers for this project developed a special GIS-based 4D model that allowed the team to see the erection sequence of the baseball stadium over time. The system was used

as a communication and collaboration tool that helped contractors coordinate the activities of subcontractors to minimize delays, conflicts, and shortages of material or labor, which reduced the need for change orders.

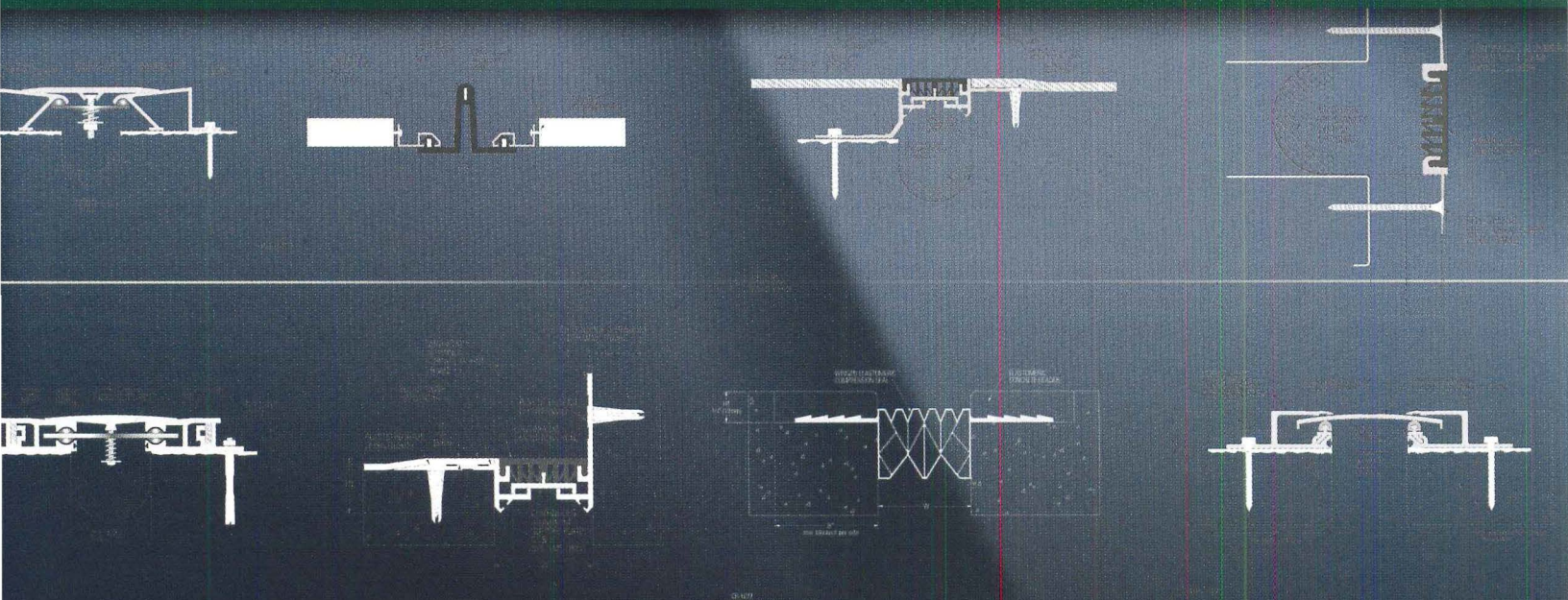






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founding partner of Urban Interface of New York, emphasizes that urban design is multidisciplinary by nature. "It engages sociology, geology, ecology, history—all of these are planning-based and are enriched by databases and information accessed through GIS," he says. "It is in defining the social, historical, political, and environmental context of architecture that GIS has relevance to architecture."

McGrath's views are reflected in the award-winning *Manhattan Timeformations*, an exhibition he created with his partner Mark Watkins

## GIS TOOLS CAN BE USED TO ASSESS PROJECTS AS SMALL AS INDIVIDUAL BUILDINGS AND AS LARGE AS ENTIRE CITIES.

and other collaborators for New York's Skyscraper Museum, in Lower Manhattan ([www.skyscraper.org](http://www.skyscraper.org)). The piece is a computer model that presents a visual history of the development of Lower Manhattan, focusing on high-rise office buildings. "The project uses GIS thinking," McGrath said, "because it's layered maps. But I used architectural and 3D software, and Mark Watkins used Flash to layer [and animate] the information. I would call it GIS technology, but it isn't literally GIS software."

McGrath believes most architects will eventually use GIS to access and analyze data at the beginning of a project, rather than having to

create it and do multiple on-site surveys. The information is often available through a city's or state's GIS department, or architecture firms themselves can become repositories of data for locations they work in often. "The architect's role is to make that information physical and experiential," he says, "taking it out of databases and making it engage social life and the contemporary city as we try to solve environmental problems, housing problems, and educational issues connecting different communities."

### Supporting research for new applications

At Harvard's Graduate School of Design, lecturer Paul Cote and his students are exploring ways to develop a common modeling infrastructure system, based on interactive CAD/GIS functions, client-server technology, advances in spatial data management, and 3D visualization. He says the project was motivated by Boston's need for a system capable of managing large quantities of digital models in 3D—one that will allow architects, planners, and reviewers to visualize how contiguous proposals for the city interrelate.

As the Big Dig project winds up, its oversight agency, the Boston Redevelopment Authority (BRA), will be faced with reviewing hundreds of planning proposals and development models from designers tackling different pieces of the project, much of it in different phases of proposal and approval. "The idea of referencing all of these models to the same



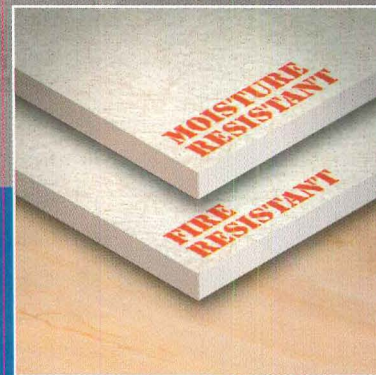
**Master Plan, Glendale, Colorado** CommunityViz, which combines visualization and model-forecasting tools, was used to help this small town (which is completely surrounded by Denver) analyze proposed land-

use, planning, and development schemes, like the two shown. The process included projecting potential retail-tax revenues, parking requirements, traffic implications, housing opportunities, and infrastructure requirements.



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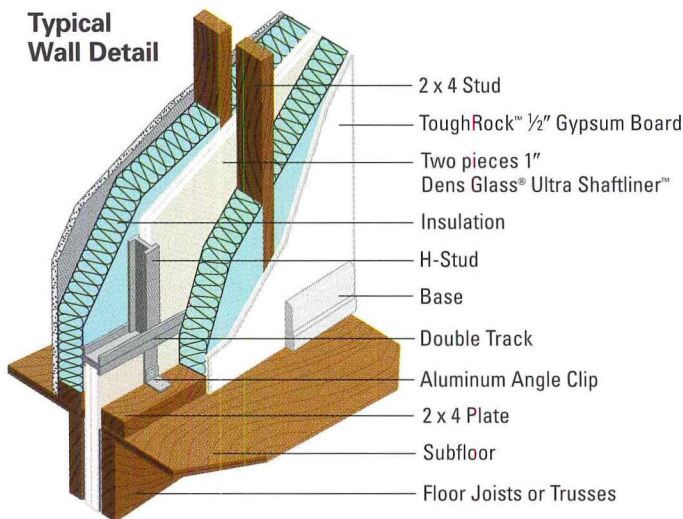




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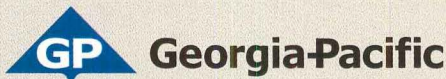
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coordinate system and making them available from [one server] offers the possibility of developing a collaborative modeling infrastructure for this gigantic, multiuser, participant design problem,” says Cote.

The idea is to put all the databases in a project of virtually any size—in this case, the entire Big Dig redevelopment area—into a single, seamless layer. GIS or CAD clients will pull up their data using actual 3D coordinates. Accessing design proposals through GIS facilitates their integration with administrative data layers needed by reviewers, and tapping into a common database through CAD permits management of real 3D representations. The data would be distributed over the city’s wide-area network and accessed through a user-friendly interface that does not require a high degree of technical knowledge or skill. “You’ve got

## “IF OUR AIM IS TO BUILD SUSTAINABLE DESIGNS, THERE’S NO OTHER TOOL THAT CAN GIVE US THAT LIKE GIS.”

everybody working in the same reference system, and accessing a database-driven modeling system that lets multiple users enter and delete information,” Cote says.

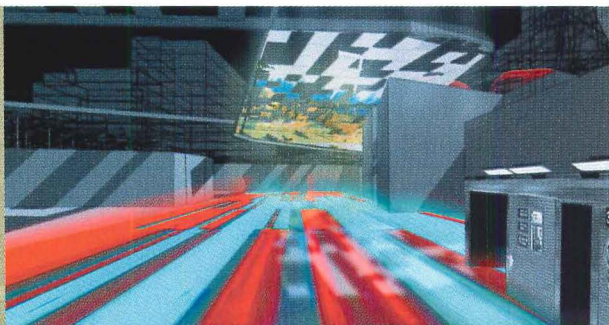
“If everyone builds on the same GIS-based coordinate framework,” he continues, “their models will become part of a managed collection, all with real-world [spatial] coordinates. Design firms working on different scenarios for the Big Dig [could] download the building footprints and contours for their context area and begin the proposal process by [building] massing models to give the BRA an idea of what they are thinking about. Someone at [BRA] who wants to see what developers are considering can pull up these scenarios and see how they relate to adjacent scenarios proposed by other designers.”

One of the objectives of the BRA, Cote says, is to protect the

city’s historic and aesthetic view corridors and to specify the massing of buildings to mask unattractive views, such as parking garages. “Examining how different regulatory parameters affect the visual quality for people on the ground or from different heights requires accurate 3D models of buildings, viewer locations, and terrain,” he says. “Since GIS produces the most systematic analysis of site lines, integrating CAD data in GIS models should support this application in urban environments.”

GIS has become an indispensable tool for informing the social and environmental context for urban design, planning, and architecture. Nearly every phase of the process—building design, environmental analysis, planning, civil engineering, and site development—uses GIS tools and data accessed through these systems. “There is an indelible relationship between GIS, the land-development component of civil engineering, and architecture,” said Andrew Ramm, senior GIS product manager for Autodesk. “A building can be designed, but at the end of the day, it can’t be built unless GIS work has been done beforehand to prepare for that building to exist.” Throughout the design and construction process, the GIS-based context serves as a platform for collaboration among all project participants and provides source data that both informs and is shaped by them.

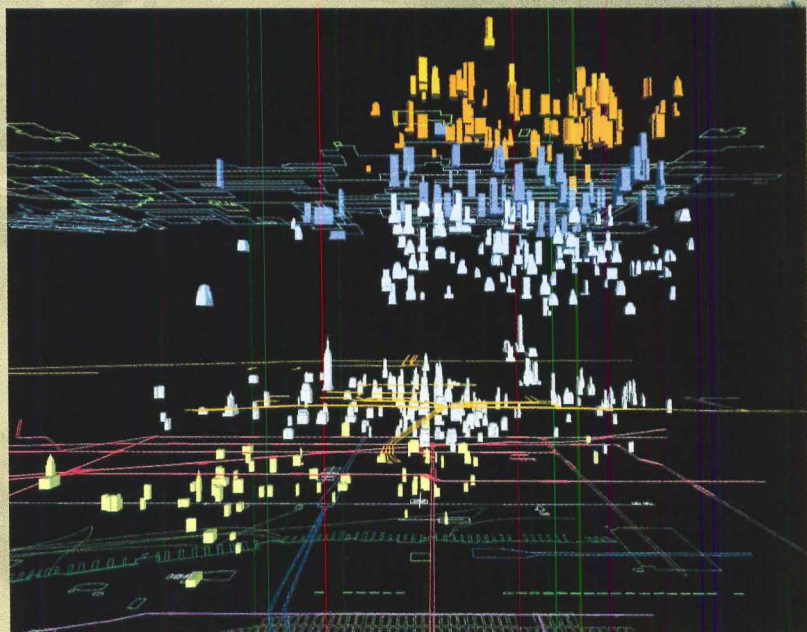
As these case studies illustrate, GIS works at scales as vast as cities and as small as individual buildings—and can also function as a platform for the development of architecture-related applications, such as the 4D Project Management System pioneered by Moore. By “three-dimensionalizing” social and environmental impacts of proposed planning scenarios, it helps visually oriented thinkers like architects recognize patterns and resolve conflicts. As McGrath pointed out, GIS not only informs the social and environmental context for urban design, planning, and architecture—it helps us visualize how we can inhabit space and the planet more intelligently. ■



### New York Visions

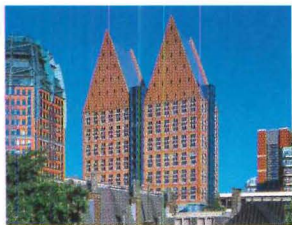
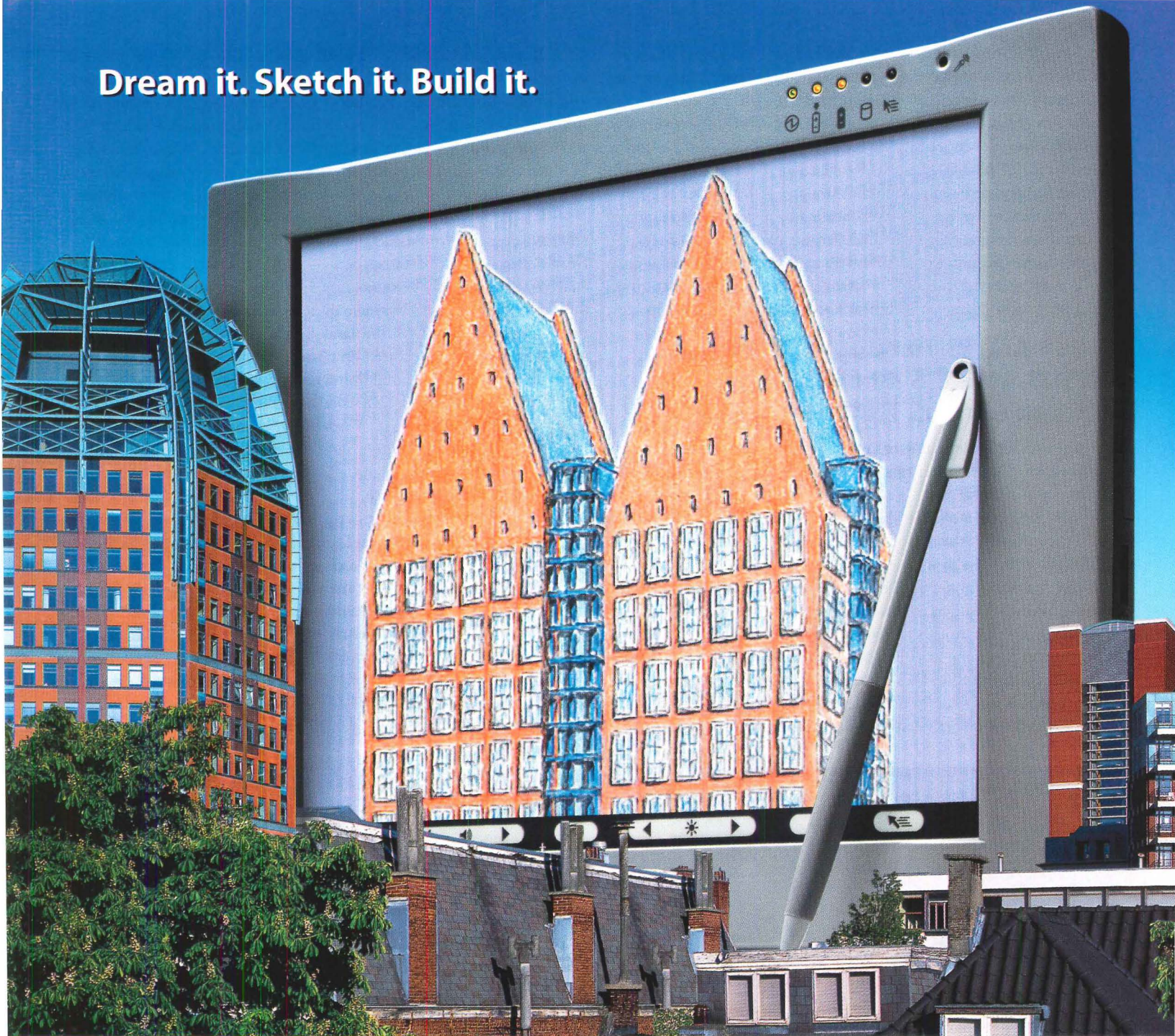
Brian McGrath and Mark Watkins of Urban Interface used GIS-like thinking to develop *Manhattan Timeformations* (right), a digital interactive exhibition that presents a 3D history of the rise of tall buildings in Lower Manhattan, linked to other urban information

such as geologic formations, zoning laws, and real estate cycles (see the show online at [www.skyscraper.org](http://www.skyscraper.org)). A proposal for a new Queens Plaza transportation hub (above), by McGrath and José Luis Echeverría, calls for a plaza where a GIS-based map would be projected.





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## Looking at display devices

By Tomas Hernandez, Jr.

Some readers may remember connecting their \$1,000 Apple II+ to the family color television set because the price of Apple's color monitors was out of sight. Today, you can buy a 17-inch monitor that's faster and sharper than that one was, and whose display is visible under the worst lighting conditions, for less than \$300. You can also choose from a wide array of display devices: CRTs, flat-panel LCDs, or pressure-sensitive tablets that let you draw on-screen. But, how do you decide which monitor is right for you?

### Not just for CAD

AEC professionals who use CAD and image-and-text-based programs need high-resolution monitors that present clean, crisp lines, line weights, and types. They also need to clearly display solid and gradated colors, deep uniform blacks, and clean, white backgrounds. They require 24-bit photo-quality resolution that can be calibrated to match color printing. But the need for these tools is no longer limited to the CAD user; it extends to the designer who reviews and prepares presentations and marketing materials. The typical designer spends an average of eight hours a day viewing a display, making it the single most important piece of hard-

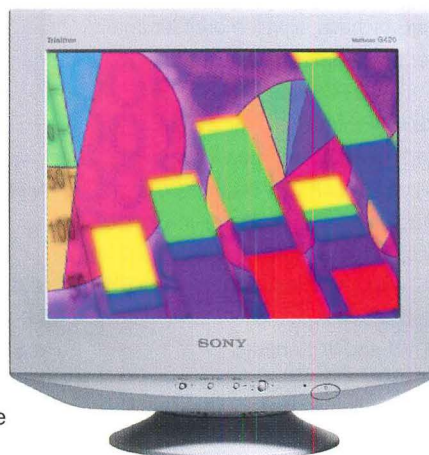
ware used in the trade. A bad display device can be the kiss of death to a designer trying to produce high-quality presentations.

Most firms buy monitors as part of preconfigured workstation packages from manufacturers such as Dell, Gateway, HP, and Compaq. These suppliers offer larger, higher-quality monitors as upgrade options, or they can be purchased from third parties. Although most monitors have multiple pages of specs that describe their capabilities, there are only a few key features to keep in mind when looking for a monitor.

Size is the first criterion. A 17-inch monitor is the minimum size one should consider for design work, but a high-quality 19-inch screen will give more bang for the buck. It has 30 percent more display area and typically costs less than \$500. The most demanding design professionals may need 20- or 21-inch monitors, which cost a little under \$1,000. Units this size tend to be very deep, bulky, and extremely heavy. There are even units as large as 24 inches. Sony's 24-inch CRT monitor, the GDM-FW900, goes for under \$2,000 and offers a 22½-inch viewable area.

### Resolution and refresh rate

Two numbers you'll need to know when buying a monitor are the resolution and the refresh rate. Resolution is the number of pixels spread across the display in the horizontal and vertical directions. The higher the resolution, the more detailed and crisp the information



**Sony's 19-inch Trinitron CRT display, popular for general office work.**

shown on screen. The refresh rate—a concern only for CRTs—is the number of times the screen is redrawn each second. Higher refresh rates mean less flicker on the screen, which translates into less eyestrain. It is possible to live with a refresh rate of 75 Hertz (Hz) for a 17-inch monitor with a resolution of 1,024 by 768 pixels, but for monitors 19 inches and larger, with a resolution of 1,280 by 1,024 or greater, a minimum of 85 Hz is recommended. Some graphics cards can push resolution even higher, but the improvement probably won't be noticeable.

Dot pitch is the physical distance between phosphors on displays. The smaller the dot pitch, the sharper an image will be rendered on-screen. For designers viewing very thin lines

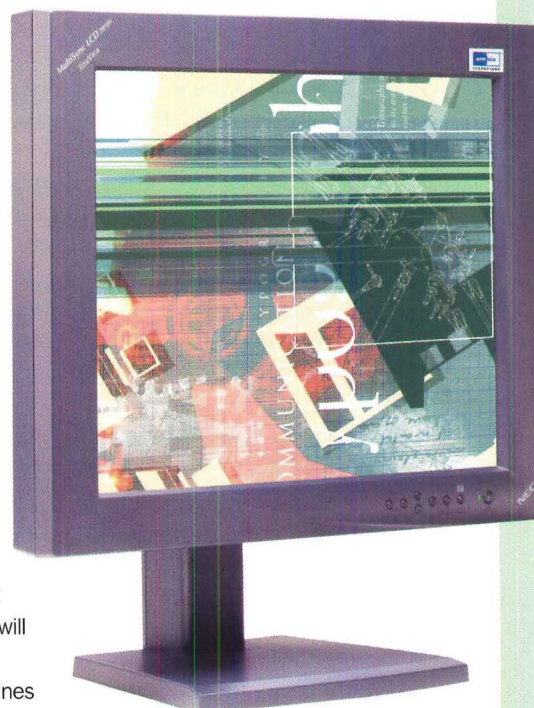
and crisp, 24-bit photography, a dot pitch of 0.25 mm or less should be the bare minimum. Dot pitch is measured slightly differently on wide-body CRTs, flat-screen LCDs, and other display types, so check specs for comparative units of measure.

The newest monitors offer convenient additional ports for devices such as handheld organizers. They also offer speaker and microphone jacks. Some even offer additional jacks to connect more than one computer to a single monitor. Front-panel screen controls for brightness, contrast, and other settings also improve ease of use.

### Enter the flat panels

Just a few years ago, a debate over the advantages of a standard wide-body CRT versus those of a

**NEC MultiSync LCD 2010, a flat-panel display.**



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## Digital Architect

flat-screen LCD would have been a short one. The selection of flat-panel displays was limited, the technology was shaky, and the prices prohibitive. Today, the flat-panel display's main attributes are that it uses significantly less desktop space than a traditional CRT monitor and offers lower power consumption. An LCD can be mounted on a backboard to free an entire work surface. Like CRTs, many LCD displays offer USB ports for printers, scanners, and other peripherals.

Prices on flat-panel displays continue to drop. A 17-inch LCD can be purchased for as little as \$800, while top-of-the-line, 20-inch units can go for as much as \$5,000. An

average-priced high-quality choice is ViewSonic's 19-inch Viewpanel VG 191, which lists for under \$1,200. It comes with proprietary PerfectPortrait software, which lets you change the display to portrait mode, reducing the need to scroll through Web pages or desktop-published documents. Along with a sturdy base, a wall-mount kit and optional USB hub are available.

Dell Computer's 20-inch 2000FP unit sells for \$1,599 and offers the the same viewing area as a 21-inch CRT display. Other features include picture-in-picture capability and analog, digital, S-video, and composite inputs. The latter two inputs allow for direct DVD and VCR inputs.

### Display Devices: The Main Points

#### What to look for

- Will you be using the computer primarily for general office productivity, desktop publishing, CAD, or rendering and high-end animation?
- Are the desks in your office small? Is saving space on desktops a high priority?
- How many peripheral devices, such as handheld organizers or scanners, will be connected to the computer?
- Does your firm pay for electricity consumption? Are you trying to reduce your overhead costs?

#### What to buy

**A 19-inch monitor should be the minimum display size considered for design work.** Smaller screen sizes mean lots of wasted time scrolling through files.

**For traditional CRTs, pick one with a refresh rate of at least 85 Hertz.** Anything lower will cause excessive eyestrain due to the monitor's flickering.

**Choose a flat-panel display if you wish to save desk space and/or energy.** Flat panels can sometimes be wall-mounted to eliminate their desktop presence entirely. They also consume only a third of the energy of CRTs, according to the Environmental Protection Agency.

**Make sure your graphics-adaptor card is up to speed.** Check with vendors to see what suitable high-quality video card will work for the monitor's quality and use.

**Consider purchasing pressure-sensitive LCDs in the future.** Architects are quickly taking to using a stylus for computer input rather than a keyboard and mouse. New software on the market and under development will allow designers to sketch easily right on their screens, just as they do on paper.



Apple's Cinema Display has a wide aspect ratio for working with graphics.

Top-of-the-line choices include NEC's MultiSync 21-inch LCD 2110 flat-panel monitor, which comes in at \$3,799. Like the ViewSonic, this unit comes with drivers and panel-rotation software to switch the display to vertical/portrait mode. Samsung's SyncMaster 240T comes in at a list price of \$4,700.

Apple-brand buyers pay a little more, as usual, with one exception. The list price for Apple's 15-inch LCD is just under \$600; their 17-inch is just under \$1,000. The big surprise is that Apple's 22-inch Cinema Display model is going for a bit less

than you like the screen's appearance. While the space and power savings of the LCD are advantageous, CRTs still offer value, high quality, and proven technology.

If you're remodeling or building a new office and are really ready to spend some money, you may want to look into some of the wireless LCD displays. ViewSonic's Airpanel series has just come on the market, and others will soon follow.

When you're preparing to make financial arrangements to acquire new workstations through financing or leasing, look at the net monthly

## FLAT-PANEL DISPLAYS CONSUME LESS DESKTOP SPACE AND LESS ENERGY, AND THEIR PRICES ARE DROPPING FAST.

than \$2,500. Apple says that it is twice as bright and has twice the sharpness and three times the brightness of an ordinary display. It allows you to see two 8½-by-11-inch pages side by side at full size, making it a natural choice for desktop publishing.

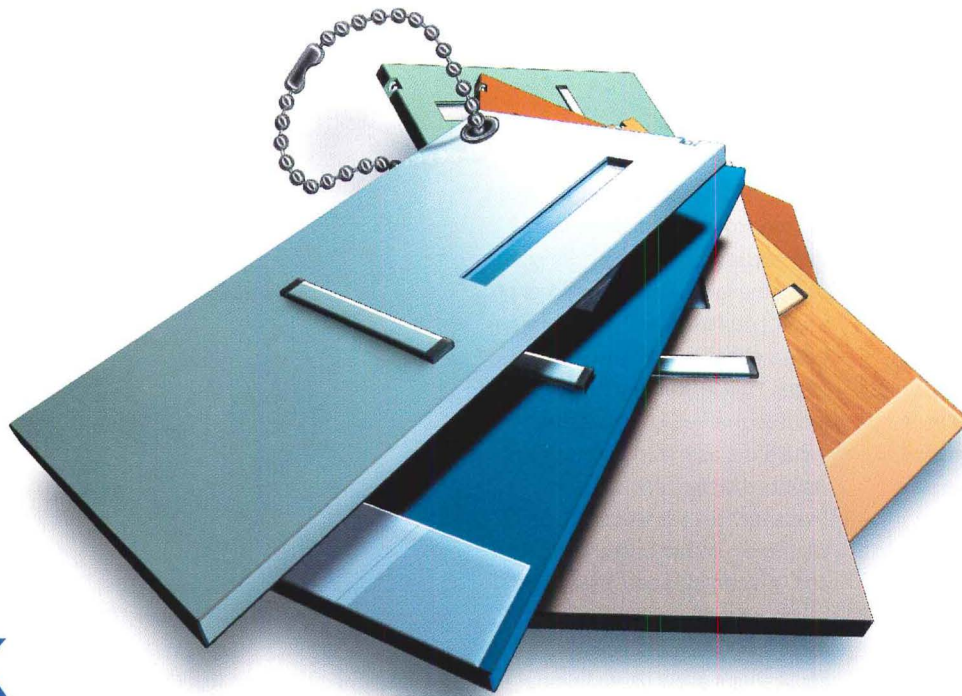
#### Caveat emptor

Prices for flat-panel displays will continue to drop as demand increases. Reviews for current offerings can be found on the Web, but one piece of advice given consistently is that you should see your dream LCD with your own eyes before you buy it—only then can you judge whether

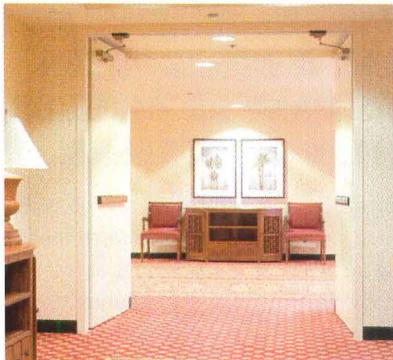
difference between getting CRTs or LCDs. You may find that, on this basis, the price differential between the two is insignificant, particularly if the energy savings offered by LCDs is factored in.

To make the most of your new display, it must be matched with the right graphics-adaptor card. For CAD, photo imaging, and Web surfing, most of the high-quality video adapters from 3dlabs, ATI, and nVidia with 32 megabytes of memory will do the job just fine for under \$250. For high-end video editing, animation, or rendering, look for specialty cards tailored to that work. Check your software documentation





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## Digital Architect

for recommendations on which graphics-adaptor cards work best. If you are considering attaching two monitors to a system, there are graphics cards for that purpose. Manufacturers' Web sites usually have the latest driver upgrades and troubleshooting software. If your software needs support for OpenGL or Microsoft Direct3d, make sure your card supports it.

### Pressure-sensitive tablets

As LCDs become part of the mainstream, a new type of display is emerging that combines LCD display technology with a pressure-sensitive tablet in one unit. Wacom's Cintiq interactive-pen displays combine the best of both worlds into what may mark the beginning of an interactive design

watch the line you were drawing on the monitor instead of the pen, they are still a long way from simulating the look, texture, and feel of a soft graphite pencil rubbing off onto a sheet of yellow tracing paper. Fujitsu, IBM, and Polyvision are also marketing devices that enable the user to do screen-based input and image manipulation. These devices will work with any Windows- or Mac-based computer, and you can also use a standard keyboard and mouse when you need them. As more software applications allow users to input their drawings on-screen, these devices will likely be found as standard software.

Additional features include cordless, pressure-sensitive pens, 360-degree rotating stands, interfaces for both analog and digital systems, USB and serial connections, and the ICC color-management system built-in.

Wacom Cintiq displays come in two sizes. The Cintiq 15x, with a screen size of 15 inches, offers a maximum resolution of 1,024 by 768 pixels for around \$1,900, while its new 18-inch counterpart offers a maximum resolution of 1,280 by 1,024 at a little less than \$3,500. As time goes by, prices will drop.

### The bottom line

At today's prices, a design professional should have a 19-inch or larger CRT monitor on his or her desk—their quality, reliability, and resolution are high, and prices are reasonable. The most costly CRTs tend to offer better quality than their flat-screen brethren. Of course, if desktop space is the issue, you should consider buying an LCD if you can afford one. Prices will continue to drop and their technology continues to improve, so these former barriers won't be a problem in the future. As more pressure-sensitive



Wacom's Cintiq pressure-sensitive LCD is quickly becoming popular.

displays move from the labs into the mainstream, and as more software is released that allows for on-screen input, these interactive, haptic devices will become as commonplace as the CRT is today—particularly for design professionals, who often prefer drawing directly on

screens. Considering the size of typical drawings or rendering and the time it takes to manipulate through a CAD file, the need for this larger screen doesn't seem all that unreasonable. As the price of displays continues to drop, conference rooms and common pinup

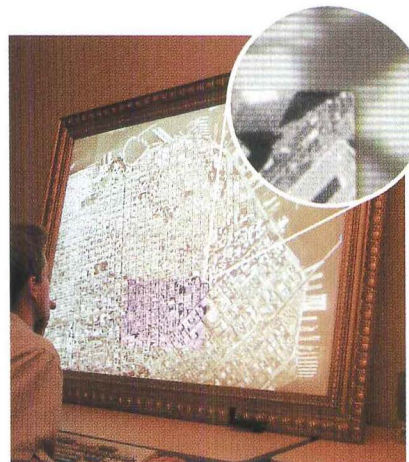
## AS PRICES DROP, A WORKSTATION COULD HAVE AS MANY AS THREE OR FOUR HIGH-RESOLUTION LCD SCREENS.

a surface instead of using a keyboard and mouse.

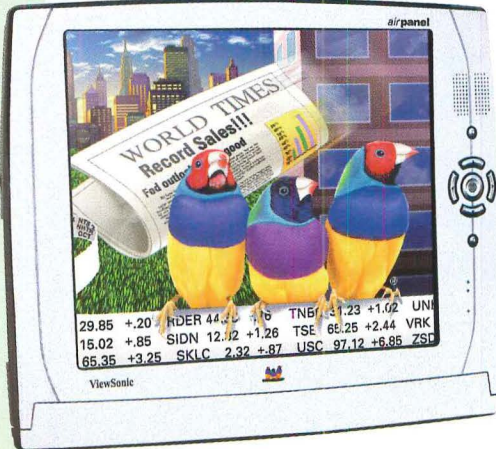
The future will bring us even larger displays. Architects who have been accustomed to relatively small monitors, which require constant zooming and panning so they can work on the small details of large buildings projects, will be able to see their work on huge

areas will also be benefactors of large flat-screen technology. Researchers at the Palo Alto Research Center (formerly Xerox PARC) have been developing something called "focus-plus-context screens," devices that impose a low-resolution, rear-screen-projected image over a high-resolution image produced by a flat-panel monitor. These devices will allow users to see one area of an image in detail, while still allowing them to view it in its overall context. Users say these new screens let them work much more quickly, compared to having to toggle between a large image and its blown-up details.

This technology experimentation could one day be of great benefit to the design profession. Wouldn't a 36-by-48-inch display look great on your desk? ■



Palo Alto Research Center's new display lets you see both up close and in context.



ViewSonic's wireless Airpanel 100.

tool. You can use a stylus directly on the Cintiq's screen as a drawing device, much like using a stylus on a Palm or PC-compatible handheld organizer. The Cintiq is a popular choice among architects who are using Autodesk's new Architectural Studio software [RECORD, March 2002, page 177], a tool for early-stage design documentation that can combine electronically produced hand sketches with photos and hardline CAD drawings. While these devices are a great improvement over the first digitizing tablets, which required that you



# INTERIORS

## A pressroom, assembly plant, and hayloft: old spaces revamped as inviting offices



The lower floors of the Chicago Tribune Tower were renovated to house an Internet division. Sandblasted-

glass panels enclosing the café allow shadowy profiles of occupants to be seen from the adjacent reception area.

Media professionals build interactive Web sites where printer's ink once flowed. Marketers promote magazines by phone in the footprint of assembly lines that turned out farm tools a generation ago. And meteorologists disseminate data about weather trends via desktop computers from a wood-framed perch in a former 200-year-old barn. As the styles and functions of work in the 21st century continue to change, so do the forms required of today's office interiors. This month, a portfolio of three new offices illustrates the finesse and ingenuity with which architects are adapting existing interior spaces for new uses.

In Chicago, the landmark Tribune Tower has yielded more versatility than its Gothic Revival facade might augur. The skyscraper's subterranean levels once housed massive printing presses, then the cornerstone of the company's newspaper empire. When printing operations were transferred off-site 20 years ago, the hemmed-in manufacturing floors seemed unsuitable for occupancy by media staff. Architects Perkins & Will, collaborating with The McClier Corporation, liberated the interior plan from its horizontal thrust. Through deft engineering, an open-plan office complex with an atriumlike ambience now operates as an interconnected web of new-media workers.

Preservationists in Boston were wary of the conversion of a landmark Beacon Hill carriage house into an office for the American Meteorological Society. While respecting the integrity of the historic shell, Anmahian Winton Architects has sidestepped stylistic historicism to construct a thoroughly modern interior whose every surface displays finely detailed craftsmanship.

Farther afield, in Vermillion, South Dakota, the architectural envelope seemed almost beside the point. Unremarkable yet economically viable, the concrete-block shed was a container in which Randy Brown Architects could build a series of curving office enclosures and subvert the modern open-plan grid.

All three projects retain pieces of their past lives: tracks for rolling newsprint in Chicago, the patina of barn doors in Boston, and assembly-line hoists in Vermillion. Employees and visitors connect to the work at hand, while sensing the imprint of history and time. The architecture adapts, rather than erases. *William Weathersby, Jr.*

**196 Tribune Interactive, Chicago**

*Perkins & Will;  
The McClier Corporation*

**203 American Meteorological Society, Boston**

*Anmahian Winton Architects*

**208 Quality Telemarketing, Vermillion, South Dakota**

*Randy Brown Architects*

**215 Interior products**







# Perkins & Will liberates an outmoded pressroom for Tribune Interactive

By Rosemarie Buchanan

**W**ith its gargoyles, Gothic filigree, and flying buttresses, the 1922 Chicago Tribune Tower is an urban landmark that has come to symbolize the acclaimed newspaper and the city itself. Deep within the bowels of this most iconic of 20th-century skyscrapers, an ingenious adaptive-use renovation recently bridged the chasm between the old-school print world and the digital age. Where behemoth printing presses once spun one-ton rolls of newsprint throughout the night, employees of Tribune Interactive, the company's Internet division, now create and manage Web content within a Modernist landscape of steel and glass. Architect Perkins & Will has carved light-filled loft spaces from subterranean manufacturing floors, transforming a graveyard of industrial production into a new-economy workplace incised on the cutting edge.

Designed by John Mead Howells and Raymond Hood, the Tribune Tower was born of the seminal architectural competition held to design the newspaper's headquarters upon its 75th anniversary. While the range and sophistication of entries that did not win is legendary—among them submissions by Walter Gropius, Adolf Loos, and Eliel Saarinen—the tower itself has sometimes been derided for carrying the gothicizing of the skyscraper to an extreme. The 34-story building continues to house the editorial staff of the flagship newspaper on upper floors, but the printing operation

was relocated to an off-site plant in 1982. Stripped of its presses, the 93,000-square-foot catacomb held only orphaned archives for years.

In 1999, the Tribune Company decided to convert the abandoned facility into a "digital pressroom" for its consolidated new-media divisions. At the time, Tribune Interactive's 200 employees were scattered

*Rosemarie Buchanan is a Chicago-based freelance writer and editor. She frequently writes about architecture and interior design.*

**Project:** Tribune Interactive, Chicago  
**Architect:** Perkins & Will—Ralph Johnson, AIA, James Prendergast, AIA, principals; Frank Pettinati, AIA, project manager; William Berger, project architect; Jason Rosenblatt, architect

**Architect/engineer (shell and core):** The McClier Corporation—Deborah Hill, vice president/interiors;

Gary Stern, project architect; Bernardo Remo, Ronnie Mendez, Bob Dahlman, William Bowman, Phil Spagnolo, Riz Nicolas, project team

**Electrical engineer:** Tom Byrne & Associates—Tom Byrne, principal

**Code consultant:** Rolf Jensen & Associates—Les Strull

**General contractor:** Pepper Construction

The structural columns of the 1922 Chicago Tribune Tower were left exposed in the original basement-level pressrooms (inset). The heavy concrete framework is now juxtaposed with towers of glass in the Interactive office.

PHOTOGRAPHY: © ROBERT SHIMER/HEDRICH BLESSING





Fronted by cantilevered balconies, the glass-enclosed conference rooms are stacked in towers surrounded by open-plan offices (left). A street-level loading dock was replaced with a two-story bank of windows to infuse the below-grade floors with daylight.

among nine floors of the tower. Anxious to attract and retain a talented workforce in the competitive market, Tribune management charged the architects with designing a space that would be a dot-com showplace. The \$22 million project also encompassed adding a new entry to the lower floors, and designing adjacent fitness and conference/training facilities.

Employees and guests reach the Interactive enclave from a street-level lobby next to the tower's main entrance, descending by either an elevator or the new staircase. Travertine panels, inscribed with a quote from Albert Camus about freedom of the press, were relocated to envelop the stairwell. At the base of the stairs, the wall treatment shifts from travertine to painted surfaces, cuing the transition to a less formal space. Preserved beneath a layer of epoxy on the floor, steel rails that once transported rolls of newsprint from a loading dock now serve as wayfinding "tracks" and a pentimento of the past.

Working within the framework of structural concrete columns, the architects have opened the floorplates to create a series of three-story-high glass towers punctuating a 32-foot-high main corridor dubbed "Main Street." Asymmetrically arranged on three levels, the surrounding open-plan workspaces accommodate 280 employees.

Acid-washed concrete columns and floors contrast with the lightness of the triple-stacked, glass-enclosed conference rooms, which



UPPER LEVEL

- |                      |                      |
|----------------------|----------------------|
| 1. Reception         | 5. Conference room   |
| 2. Café              | 6. Greenhouse        |
| 3. Waiting area      | 7. Conference center |
| 4. Open-plan offices | 8. Fitness center    |





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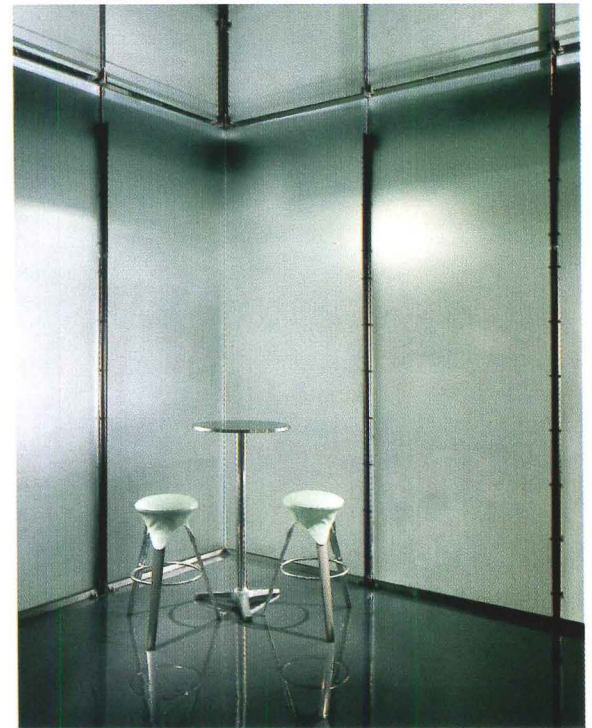
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each feature a balcony that can be accessed for private cell-phone conversations. Suspended in front of the conference rooms, a canted wall of frosted-glass panels also functions as a projection screen.

"The glass is a metaphor for the egalitarian nature of new-economy business," says Jim Prendergast, AIA, Perkins & Will project director. "Enclosed spaces within the glass towers were purposefully designated as conference rooms. There are no individual offices or ivory towers."

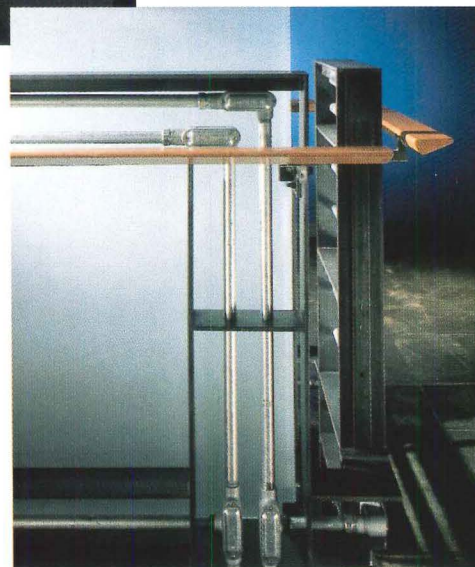
A two-story bank of windows replaced the former pressroom loading dock to wash the lower levels with daylight. The glass walls of the

## THE PRINTING PRESSES TELEGRAPHED THE ORIGINAL FUNCTION OF THE SPACE; TODAY'S DATA CONDUITS ARE MASKED.

conference room towers transmit this light, while extensive electric lighting overcomes the feeling of working below grade.

The old presses made the function of this space obvious by their sheer size and noise; today, technical infrastructure is hidden. Phone and data fiberoptics are incorporated into balcony railings, while whiteboards for writing notes mask air ducts. Employees can connect their phones to any jack and still have calls forwarded to their own extension.

Besides providing a sleek, functional environment for Internet employees, the space has also lured the powers-that-be down from the top of the tower: The Tribune Company's board now meets in the basement. ■



Bright orange lounge chairs set upon black square insets in the carpet designate areas for conversing within the cavernous space (above left). Framed glass wall panels in the café (above right) recall the glass panels of the conference-room towers. Aesthetics wed to infrastructure is expressed in the railing (detail, left), whose components house phone and computer fiberoptics.

### Sources:

**Acoustic ceiling:** USG

**Glass:** Pilkington; Cesar; Viracon

**Carpet:** Collins & Aikman; Monterey; Constantine

**Workstations, task chairs, conference tables:** Herman Miller

**Conference chairs:** Vitra

**Lounge chairs:** Kielhauer; Knoll

**Lighting:** Electronic Theater Controls; Focal Point; Juno; Louis Poulsen

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





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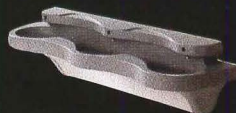
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# Like a ship in a bottle, Anmahian Winton's **AMS** interior is crafted of detailed forms inside a Beacon Hill barn

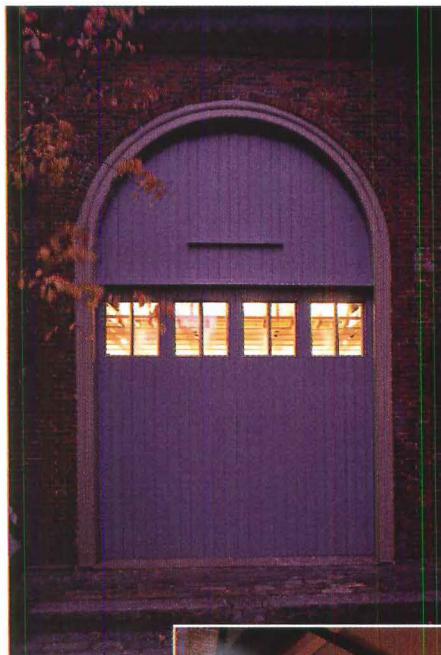
By Deborah Snoonian, P.E.

**B**oston is a city steeped in architectural tradition, where preservation of the provincial overrides advancement of the modern. The successful adaptation of a venerable Beacon Hill barn as a compact office proves that two points of view can coexist beautifully. With a healthy respect for the centuries-old brick shell, Anmahian Winton Architects has inserted dynamic interior forms as precise and finely detailed as a handcrafted cabinet. Engineering dexterity and the exploration of spare materials transcend period-piece predictability.

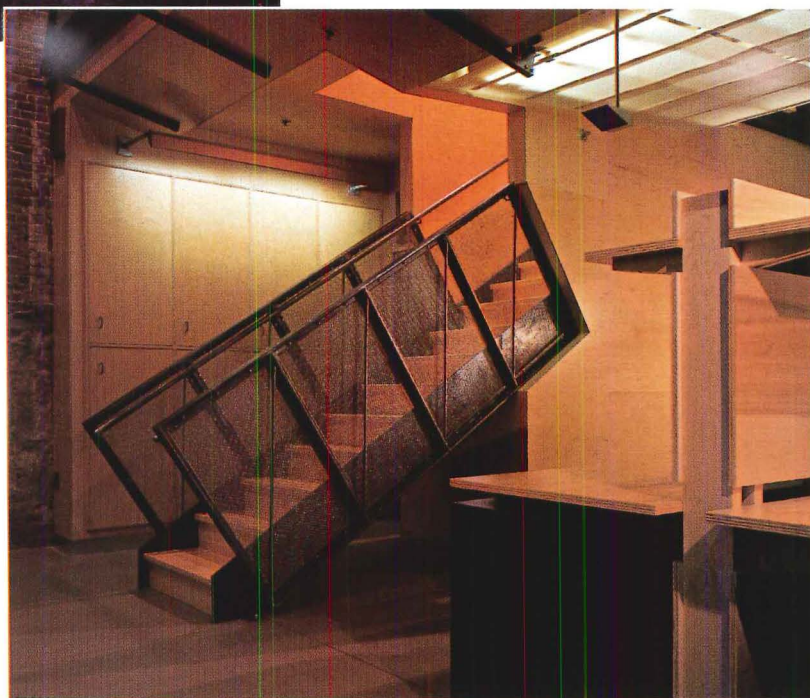
The American Meteorological Society (AMS), which commissioned the renovation, was founded in 1919 to develop and disseminate information relating to the atmospheric sciences. Since 1958, the society has been headquartered at 45 Beacon Street, a stone's throw from the State House and the Boston Common. Its 1806 Georgian-style mansion, designed by Charles Bulfinch for Boston's third mayor, Harrison Gray Otis, includes a carriage house in the rear, one of the few surviving Bulfinch barns in the neighborhood. The barn was used for storage and staff meetings until AMS decided to adapt it as new offices for 13 editors who had been producing journals from cramped quarters in the mansion. Anmahian Winton Architects of Cambridge was enlisted to reinvent the barn.

The program was simple, yet the challenges formidable: to ensure that the editors would have enough space within the footprint; improve the building's insulation and HVAC; and "imbue the space with an authenticity relevant to its time that complements the direct architectural language of the barn's making and use," says architect Alex Anmahian, AIA.

The structure is a brawny, utilitarian rectangle of brick walls topped by a timber roof supported by thick square beams and rafters. The shell was not altered, save for adding perimeter steel beams for lateral stability, insulating the roof to preserve the heavy timber, and removing horse stalls that the architects tried to keep but ultimately couldn't. The original doors for the carriage entry were in disrepair, so the firm had them rebuilt to original dimensions using 200-year-old wood salvaged from the hayloft structure. Now a striking detail in the south wall, the inoperable doors were insulated to lower HVAC requirements.



Although they are no longer operable, the reconstructed carriage entry doors (above) insulate a major portion of the south wall. The height and detailing of the steel railings (right) recall the barn's former horse stalls.



A new mezzanine echoes the original hayloft, which was dismantled in 1966. Tucked snugly beneath the wooden rafters, it hovers over the main floor. The platform is supported by steel beams that appear to skewer it, placed where original wood beams once rested. Its single-loaded circulation corridor is located along the barn's center axis, connecting the objectlike volume to the larger space. The mezzanine also provides indirect lighting and a sense of enclosure to the main level.

The first floor is an integral-pigment concrete slab in a warm brown hue that recalls the dirt floor of yore. Subterranean ducts, a radiant slab, and high-velocity air for the mezzanine were used to save space. Ductwork is concealed in closets and cabinetry near the mezzanine stair.

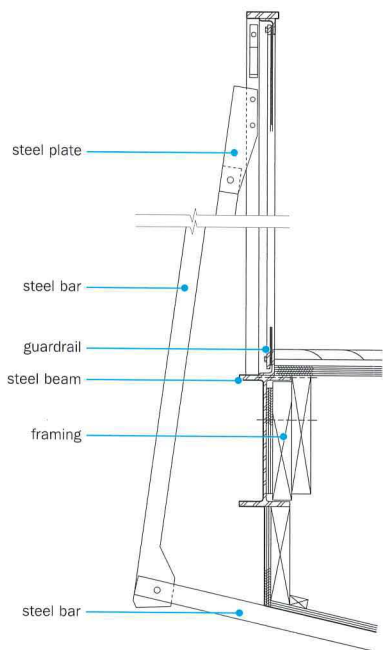
**Project:** American Meteorological Society, Boston  
**Architect:** Anmahian Winton Architects—Alex Anmahian, Nick Winton, partners in charge; Rachel Herwaldt, Aaron Stavert, project team; Munira Fleyfel, model builder  
**Engineer:** Gregorian Engineers

(structural)  
**Consultants:** Cavanaugh Tocci Associates (acoustical); Lam Partners (lighting); Atlantic Heating and Air Conditioning (HVAC); Ben Steverman Electric (electrical)  
**General contractor:** M.F. Reynolds

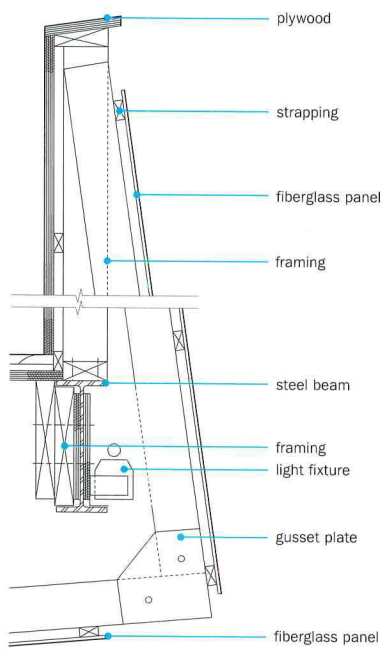








DETAIL AT MEZZANINE NORTH, LOOKING EAST



DETAIL AT MEZZANINE SOUTH, LOOKING EAST

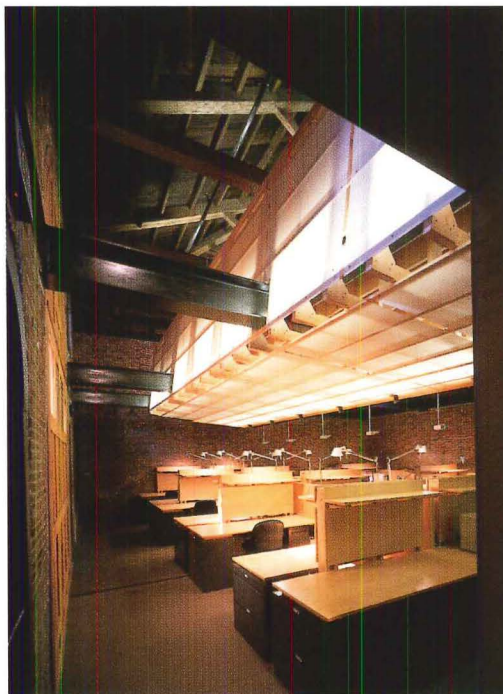
Seen from the first floor, the loft (above in photo opposite) is a cozy hideaway among the old wooden rafters. Its railing is held in place by simple, graceful steel brackets (detail drawings above). Lights affixed to the underside of the mezzanine (right), diffused by fiberglass panels, cast a warm glow on the custom-built desks below.







The mezzanine (above) adds nearly 500 square feet of floor space. Steel beams shore up the brick walls, which were 5 inches off square. Custom furnishings (above and below) are crafted to create a handsome interior of balanced proportions.



Shoehorning ready-made furniture into the barn would have violated the proportions and character of the shell, Anmahian says. Instead, the client allowed the firm to design custom workstations, bookshelves, cabinetry, and metalwork—once the team proved it was cost-competitive with the use of commercial products. Textural, off-the-shelf materials—maple veneer plywood, steel, and fiberglass—provide a lively contrast to the barn’s rough-hewn surfaces.

Anmahian is a self-admitted “details guy,” and the success of this restoration, like building a ship in a bottle, relies on both a masterful execution of the program and close attention to its particulars. The detailing and craftsmanship are uncomplicated and outstanding throughout: the rough/shiny patina of the mill-finished handrails, the perfectly honed angles of the wood desks, and the exposed connections in which every bolt is sheared to the same exact length. “We wanted to achieve a refined rusticity, using a contemporary language in materials and assembly,” Anmahian says.

Preservationists were concerned that renovating the carriage house would destroy its character. Instead, a graceful, muscular interior amplifies the presence of this stately structure, a happy marriage of seeming opposites. And for the client, it’s a magnificent place to sit and think about the weather. ■

**Sources**  
**Doors, cabinetry, woodwork, furniture fabrication:** *Freeman Carder Corporation*  
**Hardware:** *Schlage; Stanley; Ackles Steel & Iron*  
**Concrete floor slab:** *L.M. Scofield*  
**Fiberglass panels:** *American Acrylic*

**Lighting:** *Artemide; Belfer; Birchwood; Elliptipar*

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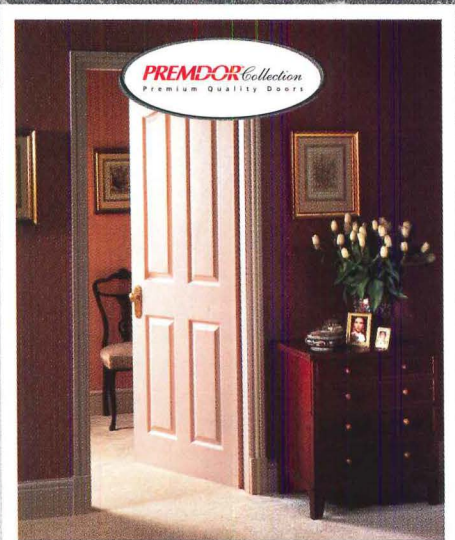
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Backlit panels and curving walls awash with color form a new interior office landscape for college-age telemarketers within the austere shell of the former assembly plant.





# Randy Brown reinvents a tool-manufacturing plant to engage young employees at Quality Telemarketing

By William Weathersby, Jr.

The word *telemarketing* may bring to mind the aggravations of inconvenient phone calls, interrupted dinners, unsolicited chattiness, and all the accrued minutes of your life you'll never get back. But take a moment to consider the employees toiling on the other end of the line. Performing repetitive tasks and bracing against frequent rejection, telemarketers often work in spartan spaces lacking any amenities. Translation: thankless job.

At a new office in Vermillion, South Dakota, Quality Telemarketing (QT) president Mike Albers sought an environment that would attract and stimulate a part-time workforce of students from the University of South Dakota campus nearby. QT is based in Omaha, Nebraska, and its clients include publishing houses, computer hardware and software resellers, and fund-raising arms of nonprofit organizations. Because many of the company's telemarketing contracts are seasonal, Albers opened this satellite office to tap into the labor pool of college students who could work shifts of 2 to 4 hours during the school year.

"The client wanted an office close to campus that could be a fun place to work," says Omaha-based architect Randy Brown, AIA, who had previously designed other offices for QT. "The goal was to create a dynamic spatial landscape of forms and experiences that would relieve the monotony of working the phones. The space also needed to be flexible to accommodate the fluctuations in staffing."

Working within a modest budget, the design team adapted a former tool-assembly plant as the new telemarketing center. The 10,000-square-foot shed, constructed of concrete blocks topped with a steel roof, had sat vacant in an industrial part of town but was only a five-minute walk from campus. Its concrete floors, exposed roof joists, assembly-line hoists, and other industrial remnants were retained as part of the new office design. "We left most of the original shell exposed, concentrating the budget on interior architectural elements," Brown says.

Managers and administrative staff are housed within enclosed offices grouped inside a curving monolithic form at the plan's center. The central structure sits between the conference rooms and operator cubicles at the rear of the space and the entry lobby in front.

Employing a palette of basic materials, such as drywall, two-by-four studs, and polycarbonate panels, the architects created a serpentine

*Contributing editor William Weathersby, Jr., is a writer based in Westport, Conn. He edits the quarterly Lighting and Interiors sections for RECORD.*

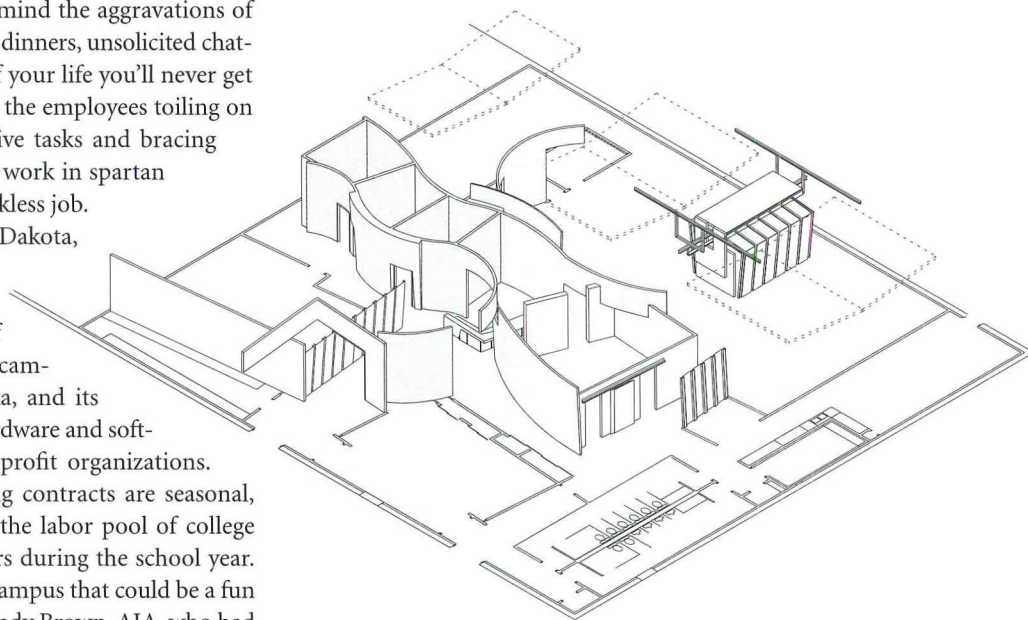
**Project:** Quality Telemarketing, Vermillion, South Dakota

**Client:** Mike Albers

**Architect:** Randy Brown Architects—Randy Brown, AIA, principal; Steve

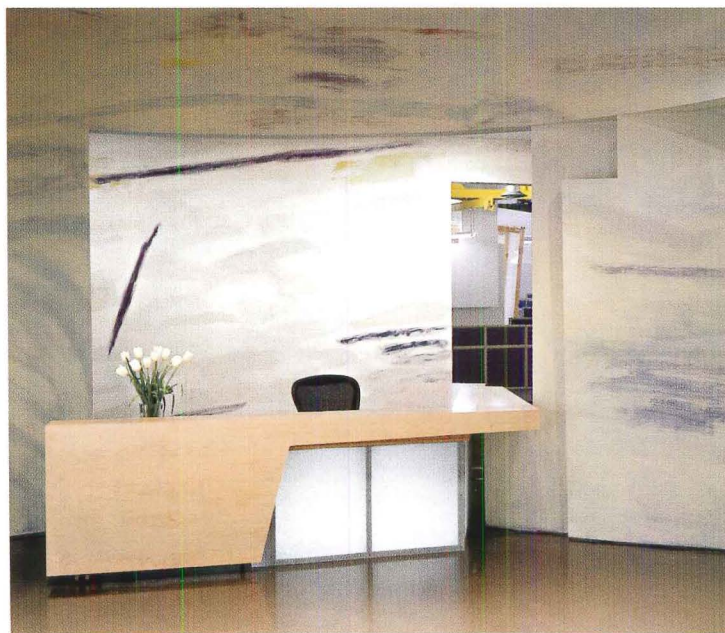
Mielke, Matt Stoffel, Nate Gieselman, Kate Saroka, Katy Atherton, project team

**Contractor:** Wuerfl Company



Managers' offices are enclosed within a curving central form that separates the main work spaces from the

training rooms and lobby (above). Fine arts professor Jeff Freeman painted the walls (below).





Remnants of the tool-manufacturing process, such as the yellow ceiling tracks and hoists, were incorporated into the new office design (right). Fluorescent pendants, once used to downlight the assembly line, were retained but rehung upside down to provide ambient uplight above the work cubicles for phone operators (right and below).



pathway of enclosures. Forming few right angles, the walls shift and turn, pierced by apertures to allow glimpses into adjoining spaces.

Brown commissioned University of South Dakota fine arts professor Jeff Freeman to paint the walls with abstract washes of color, enhancing the central structure as a focal point and sculptural presence. An asymmetrical reception desk, constructed of maple and backlit polycarbonate panels, anchors the enclosed office sector. Concrete floors pave circulation routes, with carpet absorbing sound in private offices and the telemarketing areas.

To keep staffers from feeling like part of a skeleton crew when phone stations are not occupied to capacity, the open-plan telemarketers' cubicles were divided into three sectors separated by conference rooms. During the heavy-traffic season from August to December, 84 phone operators can command all three sections. From January through April, two flanks of cubicles on either side of the main conference room hold 60 workers. In the summer, 30 employees are concentrated in one cubicle section closest to the main conference room.

Operators work within low-profile modular units upholstered with blue and purple fabric. Overhead, three canted ceiling panels of acoustical-tile were suspended with aircraft cable to deflect noise and to create a more intimate scale. Reworking the existing lighting fixtures, Brown rehung the fluorescent pendants—which once downlit the assembly line—upside down to create ambient uplight.

“The marketing teams gather in the main conference room to



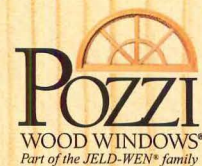
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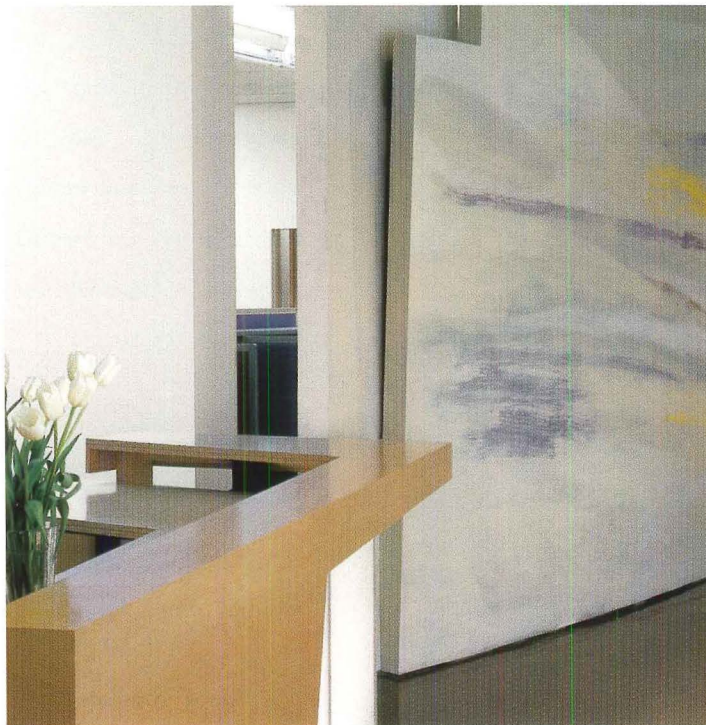
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The conference room's canted walls are polycarbonate panels set within a frame of pine studs (left). The cabled canopy leaves HVAC ducts exposed. There are few right angles and many apertures for peering into adjacent rooms (below left).



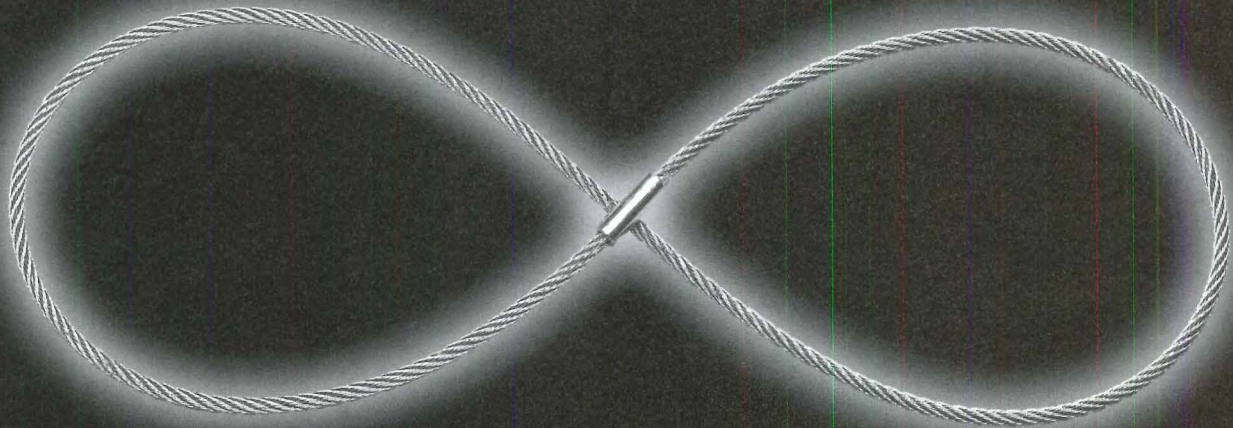
write scripts, brainstorm, and review goals," Brown says. "It has a slightly more formal look but maintains a connection to the open-plan space through its partially open enclosure." On two sides, canted walls angled by 7 degrees are formed by polycarbonate panels framed by two-by-four pine studs. The canopy overhead, tied with steel cables, is left open in the center to allow views of the building's ceiling and HVAC elements. A slot notched in the top of one end wall allows a fluorescent pendant to continue its run from the operator area into the conference space. Likewise, a section of the factory's original ceiling-mounted hoist traverses the room. A conference table designed by Brown features a glass top resting on a brushed-steel base and is surrounded by sporty steel chairs. Elsewhere in the office, classic reproduction lounge chairs based on designs by Eames and Le Corbusier add punctuation marks of high style. ■

**Sources**

- Paint:** *Shaw Vogel*
- Carpet:** *Shaw Carpets*
- Seating:** *Cassina; Herman Miller*
- Workstations:** *Interior Concepts*
- Hardware:** *Blum*
- Skylights:** *Kawneer*
- Lighting:** *Halo; Juno; Metalux*

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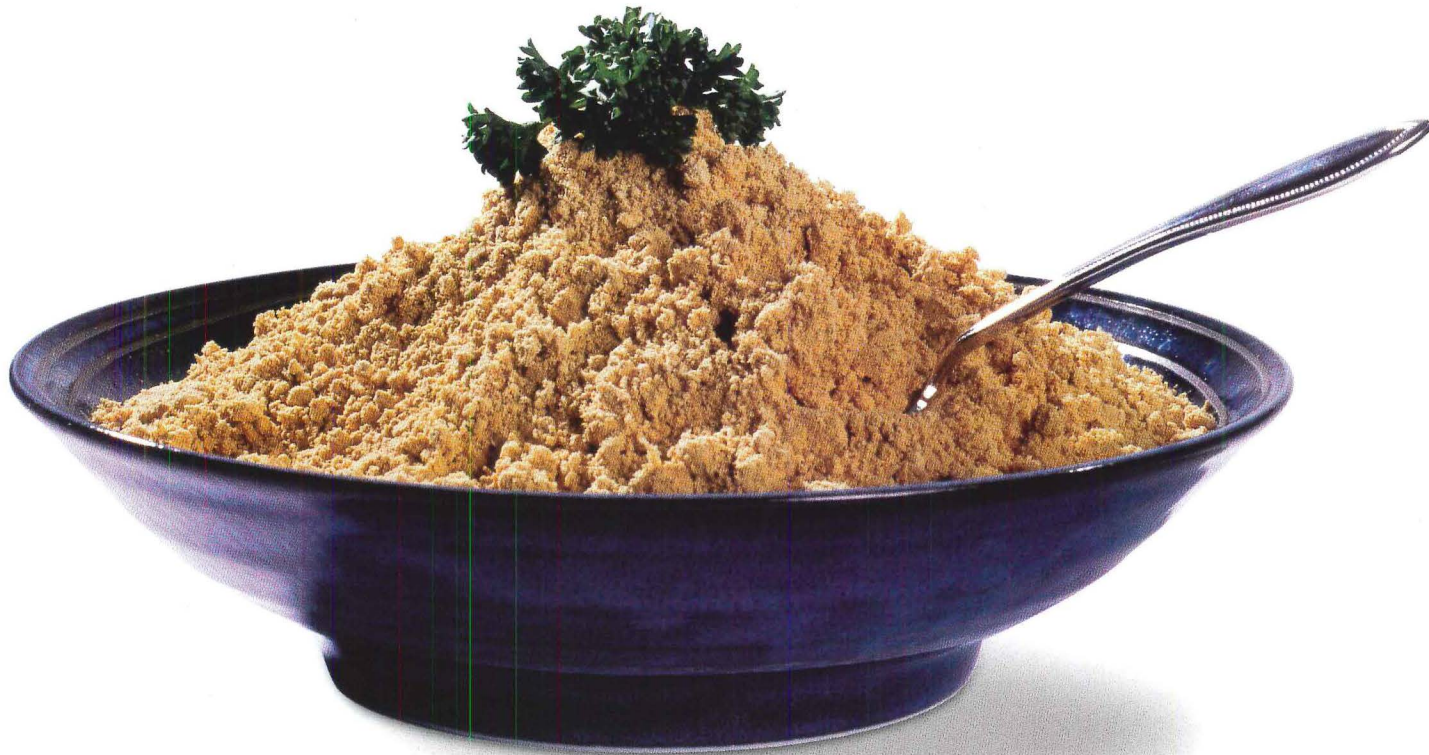
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# Interiors Products

## Commercial Carpets



### ◀ Smooth as silk

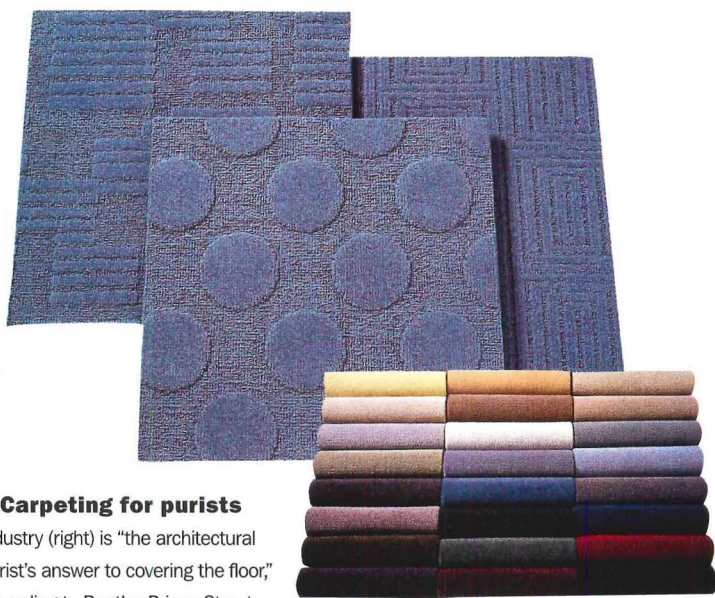
Tussah has a random multitone striped effect that creates the look of banded wild silk. Tussah is available in 18" and 36" tiles in a color line consisting of 14 neutral and natural shades. Colors such as green slate, ore, lichen, and black walnut reflect the style's organic influences and coordinate with the most widely used corporate finishes. 800/248-2878. C&A Floorcoverings, Dalton, Ga. **CIRCLE 200**

### ▶ Mature audiences

Based on interviews with designers and end users that specialize in senior housing, J&J Commercial developed its newest collection of products, Living Solutions. Focused on the functional needs of older adults, Living Solutions is a collection of six commercial constructions and textures



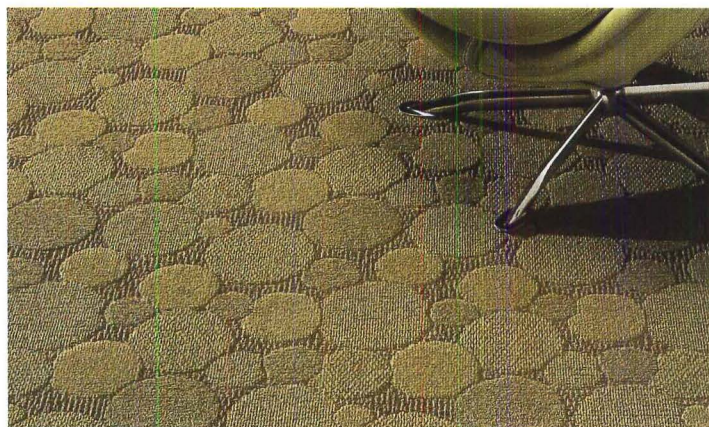
with a residentially inspired color palette of ten colorways. Each product is available in 12' and 9' widths. 800/241-4586. J&J Commercial, Dalton, Ga. **CIRCLE 202**



### ▲ Carpeting for purists

Industry (right) is "the architectural purist's answer to covering the floor," according to Bentley Prince Street.

The broadloom installation will appear as a distinct plane defined by color, without distractions of texture or pattern. The monolithic tile, with the grouted-edge detail, imposes an architectural grid on the floor plane. Designed by Suzanne Tick Inc., the Amazing, Scream, and Wow broadloom collection (above left) features circle, random geometric, and Greek Key motifs. 800/423-4709. Bentley Prince Street, City of Industry, Calif. **CIRCLE 204**



### ▲ Going around in circles?

Atlas Carpet Mills' newest release includes Bubbles, Dots, and Swirls, three coordinating animated patterns. Bubbles (shown), a textural overlay of circular motifs, and Dots, a pattern of small dots juxtaposed over a textural field, are supported by Swirls, a subtle background texture. Bubbles and Dots are offered in a palette of 25 colors; Swirls has five additional colors. All three patterns feature a high-density, interloop construction, DuPont Antron Legacy nylon, and can be custom colored for a minimum of 45 feet. 800/367-8188. Atlas Carpet Mills, Los Angeles. **CIRCLE 201**



### ▲ Groovy textures

The Modern Collection includes Square Layers (squares that appear to float one above the other) and Spheres (left, featuring circles randomly placed inside and outside of a grid). The Metafloor II Collection (above) expands upon the hybrid flooring category with three new patterns and a more flexible backing. 800/523-5647. Lees Carpets, Greensboro, N.C. **CIRCLE 203**



### ◀ Enviable tile

Shaw Contract has launched Green with Envy, a modular carpet collection that features the Eco Solution Q<sup>R</sup> yarn and EcoWorx backing. This "Eco-sandwich" offers recycled content and 100 percent recyclability. The 10 patterns use the floor as a palette and the tile as a design element. The carpeting's pattern construction ensures durability at low weights, reducing waste. 800/257-7429. Shaw Industries, Dalton, Ga. **CIRCLE 205**



# Interiors Products

## Commercial Carpets

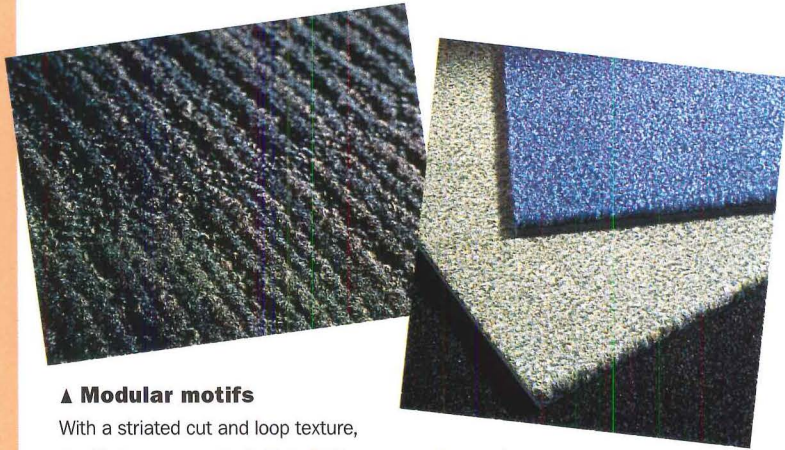
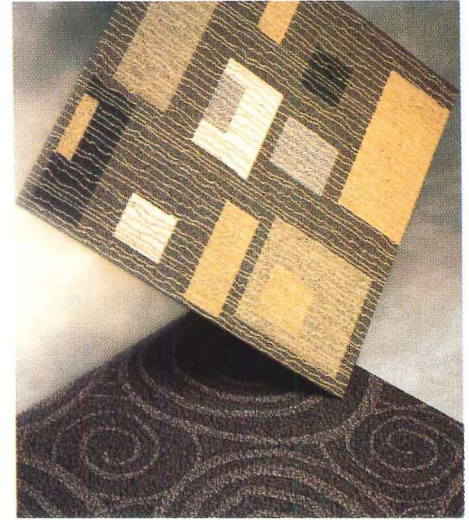
### ► Scotland yarns

Inverness, Elgin, and Knightswood are three new coordinating tufted broadloom products from Monterey Carpets. Made from skein-dyed, DuPont XTI continuous filament nylon, the patterns are suited for high-end corporate, hospitality, or retail interiors. Inverness and Elgin offer tip-sheared architectural styling, while Knightswood features an all-loop texture that emulates a fine woven carpet. 800/678-4640. Monterey Carpets, Santa Ana, Calif. **CIRCLE 206**



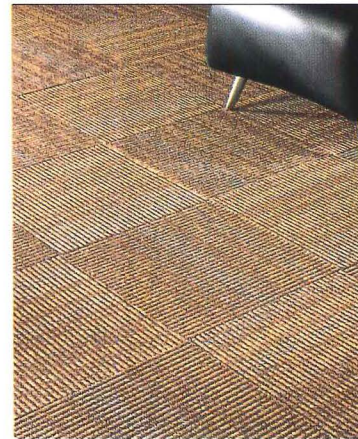
### ► Have it your way

Milliken Carpet has assembled custom designs in a 36" modular carpet collection called Image Series Four. The patterns were created in collaboration with designers working with Milliken design studios around the world. Designer Staci Romano of OZ Architecture in Boulder, Colo., collaborated with Milliken to design #121 (top) for Agilent Technologies' headquarters in Loveland, Colo. Design #122 was created by Milliken's Liberty Worth and modified by Heidi Spletzer of Sizeland Evans Interior Design, Calgary, Canada, for Telus Communications' Calgary and Toronto offices. 800/241-4826. Milliken Carpet, La Grange, Ga. **CIRCLE 207**



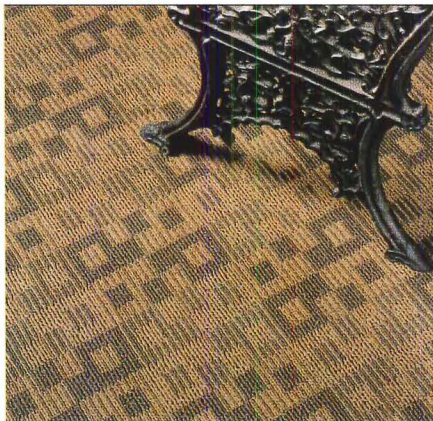
### ▲ Modular motifs

With a striated cut and loop texture, Equilibrium carpet tile (left) is 19½" square and uses the GlasBac backing system, consisting of two layers of thermoplastic vinyl composite material, reinforced with fiberglass for stability and performance. Velluto (right) is a new, low-profile cut pile offering, which, like Equilibrium, utilizes Struttura solution-dyed fiber from Aquafil, Interface's new partner in high-recycled-content nylon polymer. 800/336-0225. Interface Flooring Systems, LaGrange, Ga. **CIRCLE 208**



### ◀ Rhythmic colorways

Mannington Commercial recently won the Silver Award in the annual DuPont Antron Product Innovation Award competition, for Visual Jazz, a multicolored tweed modular carpet that is offered in eight colorways, each containing 24 colors. Crafted out of DuPont Antron Legacy nylon, this durable loop performs well in high-traffic corporate environments. 800/241-2262. Mannington Commercial, Calhoun, Ga. **CIRCLE 209**



positive colorations—distinguishes Urban Legend, the newest patterned carpet from Durkan Commercial. Urban Legend utilizes Solutia's Ultron VIP skein-dyed nylon for maximum chroma and performance. The carpet is designed to coordinate with other Durkan Commercial pattern introductions, which include Mass Transit and Lunar Landing. All three

### ▲ Legendary pattern

A pattern of blocks and squares—the images alternating in measured sequences between negative and

new patterns are available in 14 colorways. 800/554-6637. Durkan Commercial, Kennesaw, Ga. **CIRCLE 210**



### ▲ Think on top of the box

Constructed of 100 percent DuPont Antron Legacy nylon, Boxes, the newest offering from Beaulieu Commercial, features a simple, geometric pattern with a two-dimensional look. Boxes' fashion-inspired 17 colorways coupled with the performance characteristics of Antron nylon makes it suitable for the corporate and retail market sectors. 800/451-1250. Beaulieu Commercial, Adairsville, Ga. **CIRCLE 211**





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# New Products

From a signature handcrafted lounge chair in the lobby of an office to the tablet armchairs scattered throughout a conference room for mobile laptop users, **office furnishings** have a variety of forms and functions. Whether the pieces are storage units, task chairs, or multipurpose tables, office furnishings **need to collaborate** with each other as effortlessly as with the end user. *Rita F. Catinella*

## Largest collection of Danish crafted furniture now available in U.S.

Brayton International, a Steelcase Company, announces a new partnership with PP Møbler and the Hans J. Wegner estate that allows Brayton to offer the largest collection of Hans J. Wegner designs

available for sale in the United States. A family-owned company founded in 1953 in Allerød, Denmark, PP Møbler has skilled cabinetmakers construct all its furniture by hand. Offering more than 20 Hans J. Wegner models,

the collection includes side chairs, tables, a rocking chair, lounge chairs, and a tray table in four wood finishes, three leather colors, and five textile options. The Folding Chair shown here was originally designed in 1949; the dates of the original pieces range from 1945–1990.



Also new from Brayton is Lazlo (left), the company's newest Walter Knoll design. The piece features a headrest pillow that neatly fits between the back cushion and the back of the sofa, giving the occupant neck and head support. Lazlo is available in one-, two-, and three-seat versions in addition to a small or large ottoman. The two- and three-seat versions feature loose cushions

and a headrest pillow. The legs are available in aluminum or wood in 22 standard finishes. Brayton will also be offering expanded options for the company's Enea metal stacking chair. The latest iteration will be available in a plastic or belt-leather seat and back. 800/627-6770. Brayton International, High Point, N.C. **CIRCLE 212**



## New U.S. headquarters for Swiss furniture

USM Modular Furniture, the Swiss manufacturer of modular furniture, has opened its new flagship showroom and U.S. headquarters in a renovated historic, cast-iron building in New York City's SoHo district. The design, headed by Thomas McKay, principal of New York-based MSM Architects, is being completed in two phases: The final renovation is

slated for completion in 2003. The building, 28-30 Greene Street, was designed by J.F. Duckworth and built in 1872. Characterized by a Second Empire facade and a dramatic mansard roof, it had fallen into disrepair due to age and years of neglect. USM's newest product introduction for the U.S. market, eleven22 (shown), is featured

throughout the new space. Eleven22 is a self-contained, fully integrated vertical work solution. The aluminum base frame integrates height-adjustable and folding work surfaces and various lighting, cabling, storage, paneling, and shelving options. 800/4-Haller. USM U. Schaerer Sons, New York City. **CIRCLE 213**



## Chair keeps it simple with 18 parts

The #19 chair from Allsteel earned its name from the 18 primary components in its construction (the user is part #19). "The problem with so many chairs on the market today," says Allsteel president Stan Askren, "is that although they are ergonomically beneficial ... the mechanisms and technology are overly complex.

As a result, the most sophisticated chairs often go unadjusted." In development for two years, #19 features the Tria seat cushion (a combination of foam, TechnoGel, and a micro-porous textile) and Plexus lumbar support, which relies on a calibrated tension system. 563/262-4800. Allsteel, Muscatine, Iowa. **CIRCLE 214**



## New Products



### ▲ Space-saving solutions

Sequence (left) is a lateral-track storage system from Traversa that can be reconfigured or relocated. The cabinets feature decorative end tiles in a variety of styles and finishes. Another new storage solution for the office is available from Spacesaver (right). A waist-high TouchPad Release is now offered by the company as an alternative to the mechanical foot pedal on Rotary Storage units. The code-access keypad release is ADA-friendly and offers all the current TouchPad security features. 877/410-0035. Traversa, Fort Atkinson, Wis. **CIRCLE 215**; 800/492-3434. Spacesaver, Fort Atkinson, Wis. **CIRCLE 216**



### ▲ Giddyap

Humanscale is now in full production of its Freedom Saddle seat, designed by Niels Diffrient. The Saddle is available in a full range of textiles, including an antimicrobial fabric for health-care, lab, and clean-room applications. The triangular shape of the cushion allows users to sit normally or straddle the seat. 800/400-0625. Humanscale, New York City. **CIRCLE 217**

### ▼ Take a look

Haworth introduces Look, a new seating family designed by Rob Leonetti. The Look collection includes mid-back-task, high-back-executive, side, and lounge chairs. Shown here, the four-legged lounge chair features a steel-tube frame with fully upholstered back, seat, and softly curved arms.

Choose from silver or black finishes, and with or without casters. 616/393-3000. Haworth, Holland, Mich. **CIRCLE 218**



### ▼ Get going

KI's Torsion on the Go! tablet armchair is a mobile, nesting chair with an over-size tablet ideal for use with laptops. The flex-back chair was developed to address movable seating requirements for teaming, training, and informal conferencing. KI's newest multipurpose tables are DataLink and Trek. DataLink features a gently tapered foot and eight edge profiles. Trek is offered in a range of standard laminates, with legs in an X, T, or TT design, and 30 base finishes. 800/424-2432. KI, Green Bay, Wis.

**CIRCLE 219**



### ▲ Modus operandi

Metropolitan Furniture introduces m/o, a modular case-goods system for project work in the private office. Work surfaces include perimeter tops, extensions, mobile desks, and pedestal desks.

Integrated wireways manage cables below the work surface, and convenient power and data/voice outlets at the desktop connect people to technology. Storage components include modular pedestals, overhead storage units, free-standing storage cabinets, and project walls. 510/567-5200. Metropolitan Furniture, Oakland, Calif. **CIRCLE 220**



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## New Products



### ▲ Building blocks

Award-winning designer Richard Holbrook wanted to design a new line of office furniture that would combine contract-level quality with the accessibility of

off-the-shelf furniture. The result is the DNA modular furniture line, which includes mobile and wall-mounted desks, storage systems, tables, work chairs, screens, and accessories. DNA is a partnership between Teknion and Holbrook, who has had more than 10 years experience with Herman Miller. Along with the new line, Holbrook also devised the Web-enabled software called dna Assistant to enable company managers to set parameters, such as

price, product type, or color, and then invite others to configure their own work spaces around these predetermined limits. 626/683-8048. DNA, Pasadena, Calif. **CIRCLE 221**

### ▼ Fabric additions

The Eames Aluminum Group of seating is now available from Herman Miller with the Cygnus mesh material. Similar to the Aeron chair's Pellicle fabric in its aeration and translucent qualities, Cygnus features "elastomeric" properties to distribute the user's weight evenly across the seat and back. Also new to Miller are 21 fabric pattern additions, representing the latest from textile-design-firm partners Jhane Barnes Textiles, Luna Textiles, and Maharam. 616/654-3000. Herman Miller, Zeeland, Mich. **CIRCLE 222**



### ◀ Wall for one and all

The Landscape collection is defined by an aluminum screen wall that allows work spaces to expand or contract as needs change. The screen wall's structure allows work surfaces, storage components, accessories, and lighting to attach at any point and for power and data to be easily installed and later reconfigured. 507/533-4235. Halcon, Stewartville, Minn. **CIRCLE 223**

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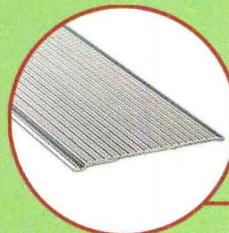
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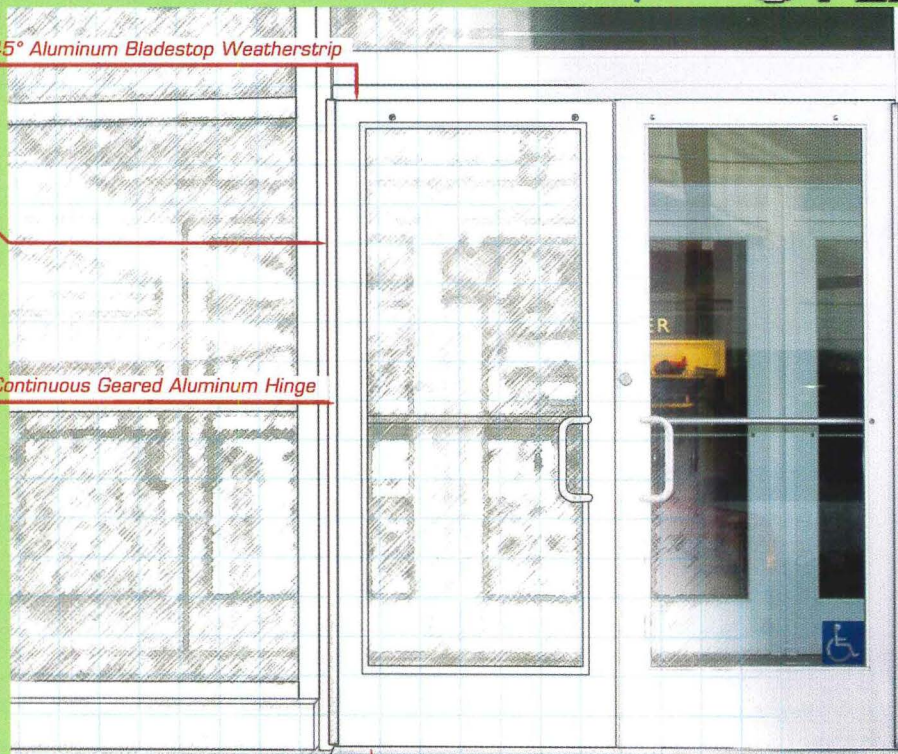
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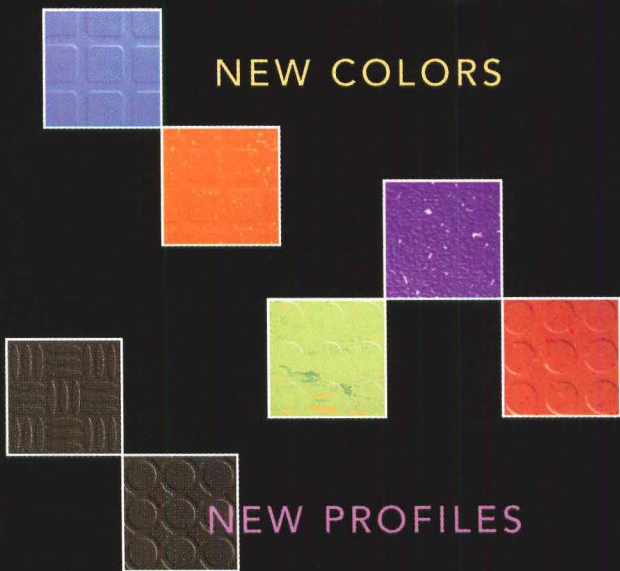
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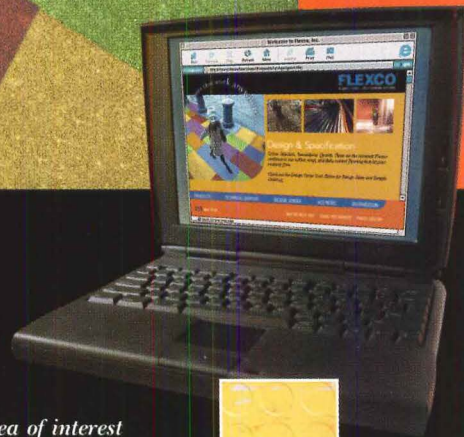
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## New Products

### ▼ Kick it around the office

Turnstone has added several new features to the Kick systems furniture line, including more user functions and new data and power access. Kick Phase II products include Data Duct, Downspout, and Utility Bar—new ways to route data cables atop panels and provide data and power outlets the user can position anywhere along the panel. The line also offers a 120-degree panel-configuration option and easy-access storage with a translucent, flexible cover. 800/333-9939, ext. 11. Turnstone Office Furniture, Grand Rapids, Mich. **CIRCLE 224**



### ▲ A chair of one's own

The ergonomic Ready chair from Dauphin features a transparent net backrest and several amenities to make the chair one's own: The hand-grip on the backrest can include a nameplate to personalize the chair, the backrest hanger holds a jacket, and the foldaway pocket stores personal belongings. 800/631-1186. Dauphin, Boonton, N.J. **CIRCLE 225**

### ▼ Flex to success

The Flex stackable chair provides both a pivoting back as well as a flexing seat. The patented Flexion seat passively adjusts as the user leans forward, minimizing stress points under the legs. Designed by Zoey Chu, Flex features elliptical tubular-steel legs and a perforated back. 800/563-3502. Allseating, Mississauga, Canada.

**CIRCLE 226**



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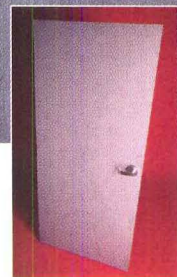
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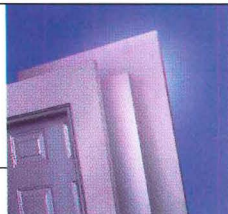
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## THE CHALLENGE

The New Jerusalem Baptist Church was always envisioned with a precast exterior finish. Conventional precast — with its weight, difficult installation issues and cost — would not work within the project's tight budget. After several other options were considered and rejected for the 10-story nearly 30,000-square-foot structure, Slenderwall was brought to the table.

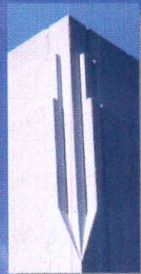
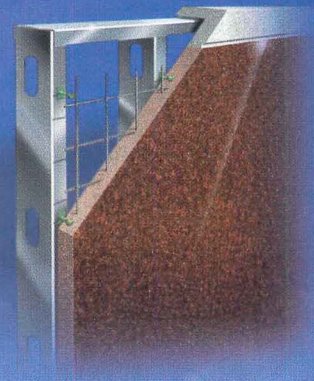
## THE CHOICE

Architect Gary P. Santos states, "Slenderwall just makes sense — the perfect choice for the project. Slenderwall is the only product that can cost-effectively clad the building, provide the desired finish, and overcome all of the obstacles." The versatility of the panel design process enables intricate cutouts for the stained glass and detailed cornices, and the "brilliant white" granite-like exterior finish is dazzling. Santos concludes: "Slenderwall is permanent, easy to install, and keeps costs down — something we can't get with any other product."

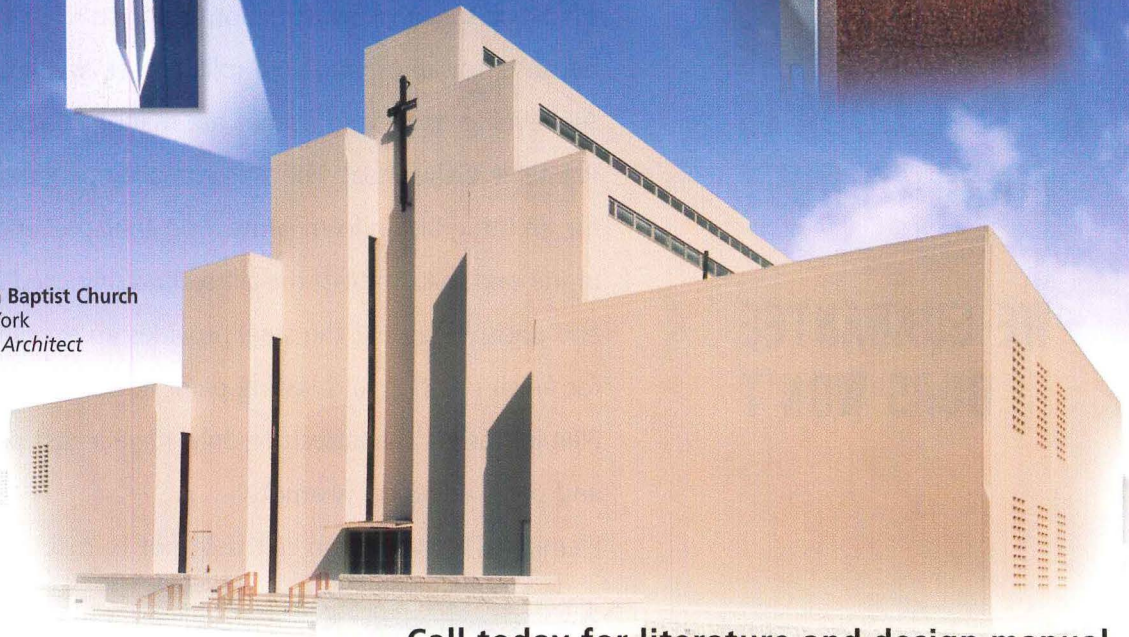
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New Jerusalem Baptist Church  
Queens, New York  
Gary P. Santos, Architect



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## Product Briefs



### ▲ Managed red cedar

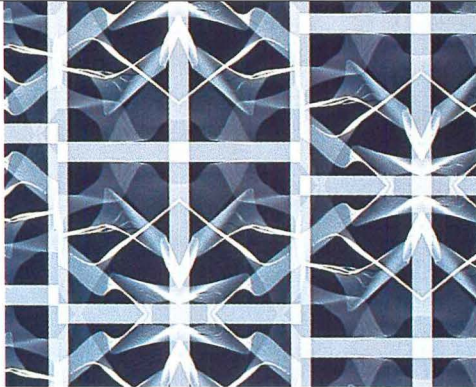
Weyerhaeuser has introduced Cedarone, a line of western red cedar products and related services available

across North America. Managed from the forest floor to the marketplace, western red cedar products do not require chemical preservatives and are a renewable resource. Four popular grade categories are available: Premium Clear, Performance Clear, Premium Knotty, and Performance Knotty. Weyerhaeuser claims to be the world's largest

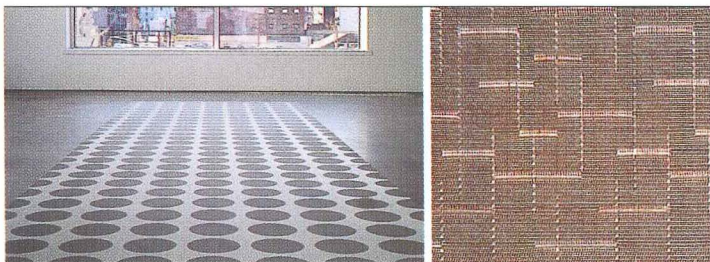
manufacturer and distributor of western red cedar. 866/233-2766. Weyerhaeuser, Federal Way, Wash. **CIRCLE 227**

### ► Computerized coverings

Wolf-Gordon's newest guest designer for their commercial wall-covering line is Karim Rashid. Rashid conceived the Digital Nature collection to explore new ways to reference patterning found in nature. He



digitally generated the designs and manipulated them to resemble a variety of plant, animal, landscape, and even human structures. The five patterns in Digital Nature are being produced as a total of 61 items in all different colorways. Signature Rashid colorways include chartreuse, cyan, magenta, and silver. 800/347-0550. Wolf-Gordon, Long Island City, N.Y. **CIRCLE 229**



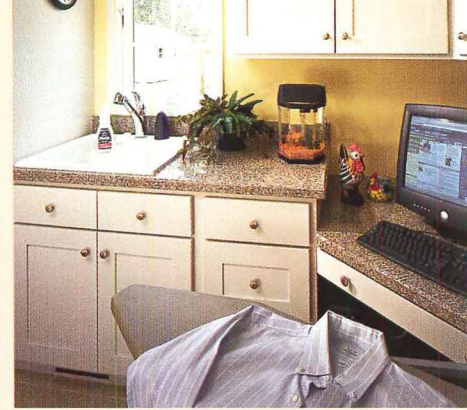
### ▲ Vinyl style

The newest incarnation of the Plynyl collection from Chilewich includes three patterns—dots, dashes, and squares—in five muted metallics. Originally developed last year with architect Joe Sultan, Plynyl features a woven vinyl textile bonded to cushioned polyurethane that provides durability and an array of textures and new patterns. Plynyl is available in wall-to-wall, tiles, and mats for both residential and commercial use. 212/679-9204. Chilewich, New York City. **CIRCLE 230**

## Product of the Month The Family Studio

At the K/BIS show held last April in Chicago, Whirlpool introduced a new concept in home design that combines Whirlpool products with a multifunctional space for families. According to research by Whirlpool, the average family does

8 to 10 loads of laundry each week, adding up to hundreds of hours a year. Whirlpool worked with designers and builders to create a concept room that would include items such as a washer and dryer, an island or large table for folding clothes, extra cabinets and shelves for storage, track lighting, an ironing station, and a drying cabinet for air-dry washables. The concept would also include a space for a computer and/or television. Whirlpool offers products



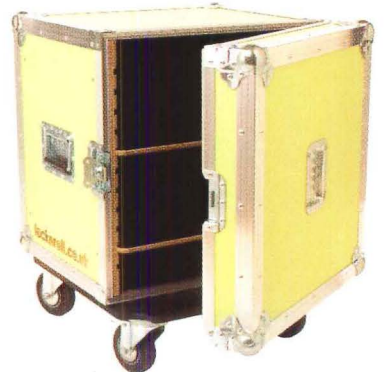
such as the DryAire Drying Cabinet, SinkSpa Jetted Sink, Impress ironing station, Duet washer and dryer, and the Personal Valet Clothes Vitalizing System. All the appliances can be encased in custom cabinetry. 800/253-1301. Whirlpool Corporation, Benton Harbor, Mich.

**CIRCLE 228**



### ◀ With the band

The Locknroll furniture collection recalls the sturdy cases "roadies" use to pack up equipment during a tour. Designed by Manitou Design of London and made in Germany, the pieces feature computer-cut components, birch plywood sourced from renewable forests, and a palette of Italian laminates. Shown here are the Fleetwood chest of drawers and the Joplin shelving unit suited to home entertainment applications. All pieces are distributed worldwide directly from Germany. 44/207/771-8374. Manitou Design, London. **CIRCLE 231**





## Product Briefs



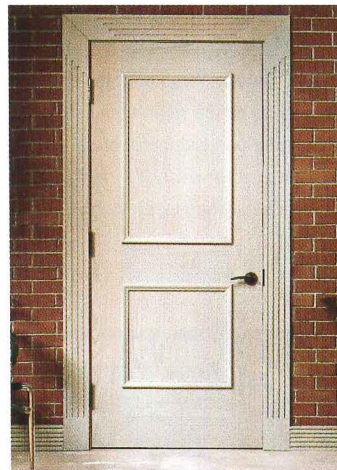
### ► Conservatories and garden windows

Renaissance Conservatories' Garden Window, shown

above left, features a large center window with Victorian Arch accents and two operable casement windows with Prairie Style lites. There is a choice of glass or wood shelves, plus an optional countertop extension that provides work space behind the kitchen sink. The Revival Series, above right, includes 15 authentic period conservatory designs. These shapes are a starting point that can then be customized as needed. Finishing details include more than 40 window and 20 door design options. 800/882-4657. Renaissance Conservatories, Leola, Pa. **CIRCLE 232**

### ► Welcome to this century

The Century tile collection from Amtico is available in 12 colors for the commercial market. A hard-wearing textured finish complementing a subtle iridescence makes Century appropriate for high-traffic areas such as restaurants, retail stores, and hotels. Century is available in 12" x 12" and 18" x 18" square tiles. 800/370-7324. Amtico International, New York City. **CIRCLE 233**

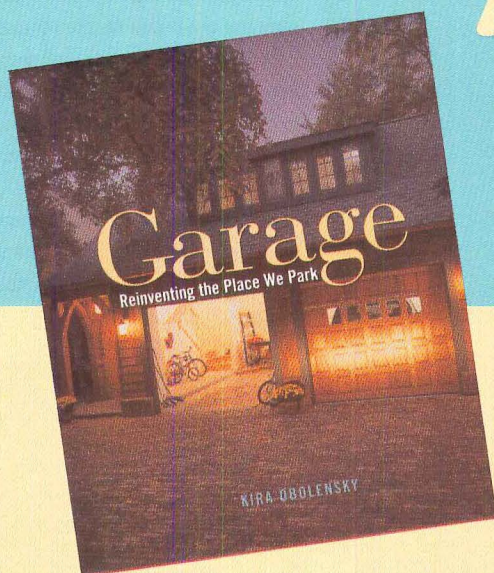


### ◀ Forest Council approved

Marshfield DoorSystems (formerly the door division of Weyerhaeuser) introduces their Environmental Class wood doors, the first on the market with a Forest Stewardship Council environmental certification. Suited for use in offices, schools, hospitals, government facilities, and other commercial applications, the doors are available for nonrated as well as 20-minute rated applications with either neutral pressure or positive pressure fire-labels. A variety of finishes are available. 800/869-3667. Marshfield DoorSystems, Marshfield, Wis. **CIRCLE 234**

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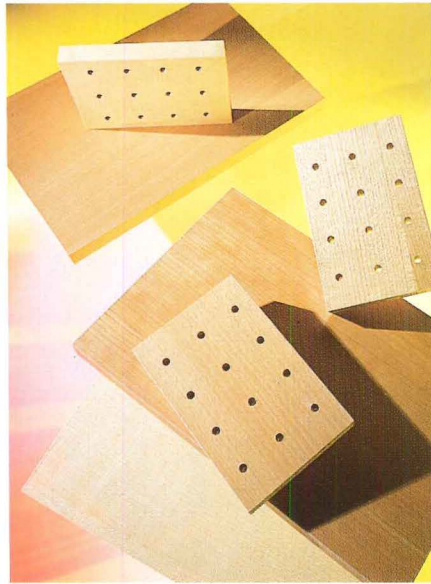
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## Product Briefs

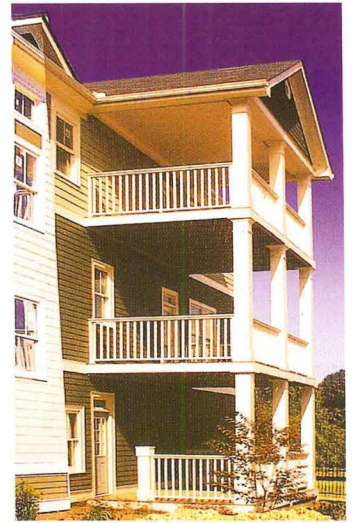
### ► Hiding the grid, naturally

Armstrong's Vector grid-hiding edge detail is now available with the look of wood. Woodworks Vector ceilings are offered in three standard veneers—beech, cherry, and white maple—in either perforated or unperforated panels. The panels are designed for use in high-visibility areas where the look of wood is desired, such as signature spaces in corporate, hospitality, and retail environments. The panels utilize the patented Vector edge detail to produce a 1/4" reveal that minimizes the visible grid. Vector ceilings also ensure more damage-free applications, because the panels feature upward installation and downward accessibility. This increases the durability of the ceiling by reducing the possibility of damage to the panels caused by hanger wires and other obstructions in the plenum. 888/CEILINGS. Armstrong World Industries, Lancaster, Pa. **CIRCLE 235**



### ▼ Metallic or pearlescent

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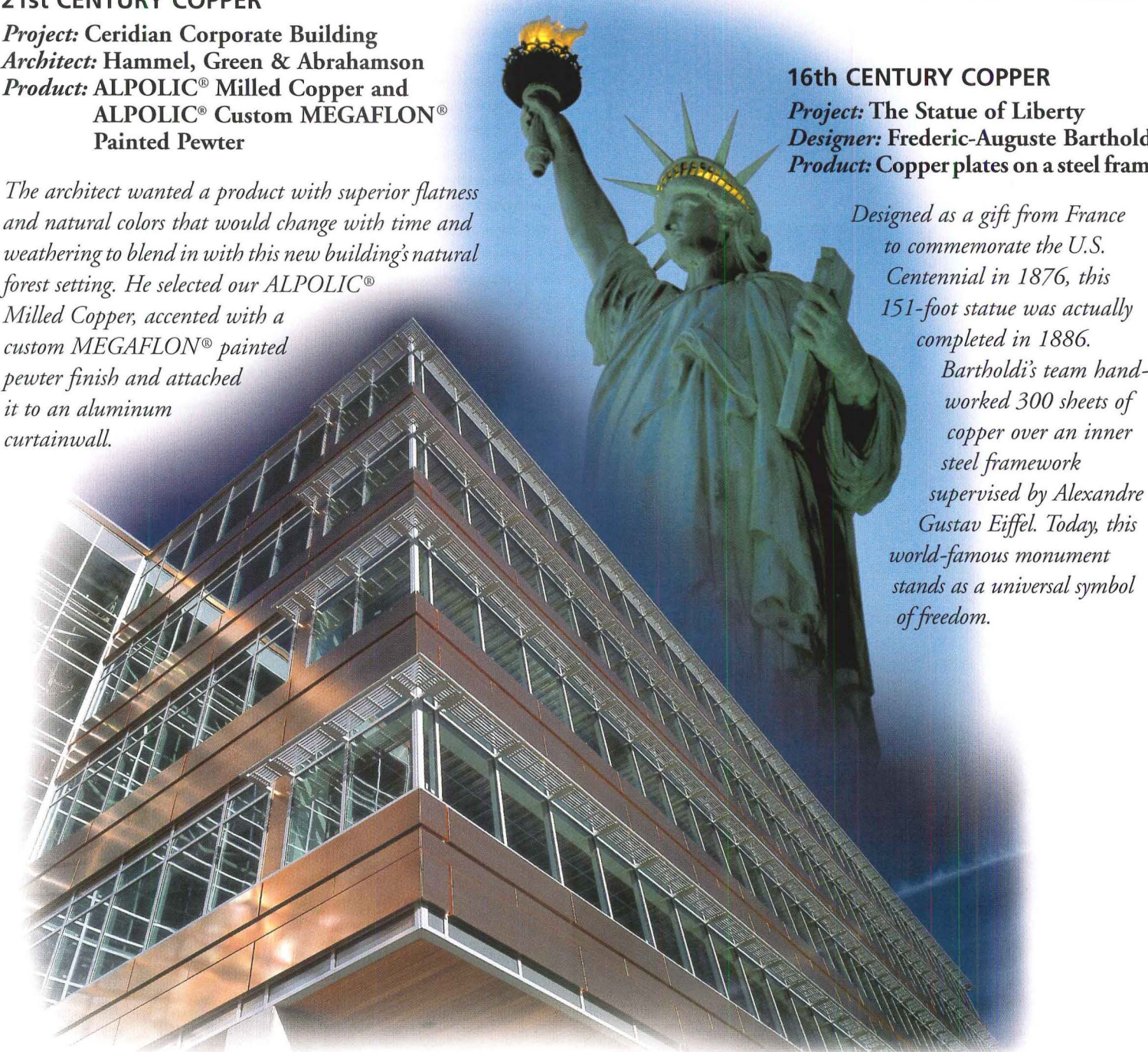
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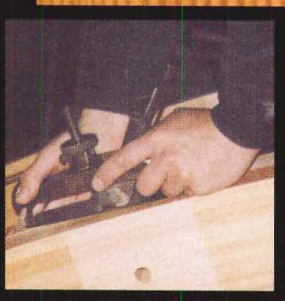
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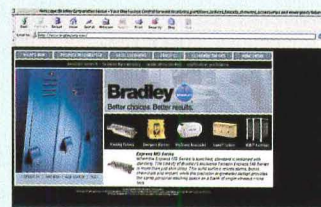
*Fireplace Design Solutions* is a new interactive CD-ROM tool that allows users to design, visualize, and estimate new or remodeled fireplaces. 800/255-1727. Cultured Stone, Napa, Calif. CIRCLE 239

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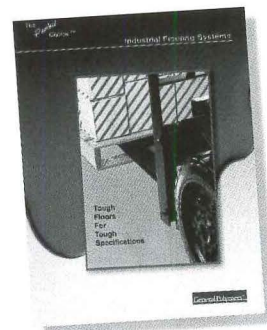
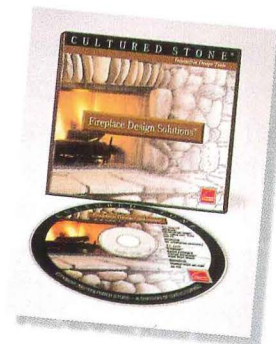
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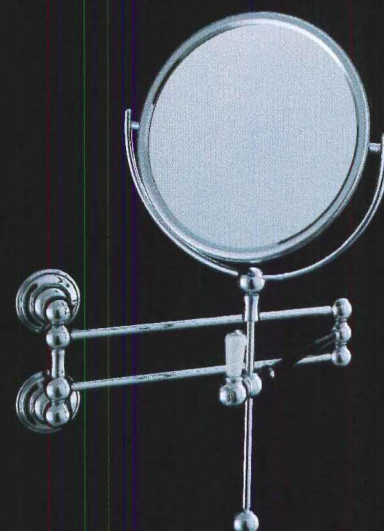
A new four-color brochure describes the full line of General Polymers industrial flooring products and systems. The brochure provides color charts and details for systems that both restore floors and protect them. 800/543-7694. General Polymers, Cincinnati. CIRCLE 241



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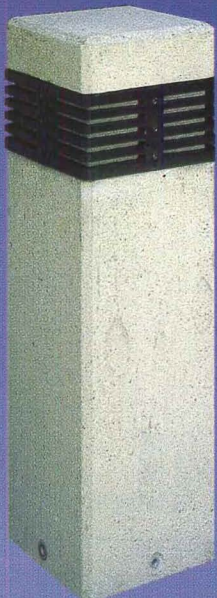
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Style Solutions has introduced their comprehensive new Moulding Showcase kit for architects and designers. The boxed kit features eight samples of Florentine molding from Style Solutions, each with a different real metal Metallon finish. 800/446-3040. Style Solutions, Archbold, Ohio. **CIRCLE 242**

### Vinyl wall coverings catalog

A new catalog introduces Pawling Corporation's Standard Products line of PRO•TEK impact-resistant vinyl wall coverings for institutional, health-care, commercial, and residential environments. The catalog sections include information on applications, suitable thickness of wall coverings for installations, selection guidelines, required product accessories, and a color-selection guide of the available 50 standard colors. 800/431-3456. Pawling, Wassaic, N.Y. **CIRCLE 243**

### Exterior-lighting brochure

A new brochure highlights the major features of the Intrigue Series of exterior architectural lighting fixtures from Phoenix Products Company. 414/431-2353. Phoenix Products, Milwaukee. **CIRCLE 244**

### Linear-lighting brochure

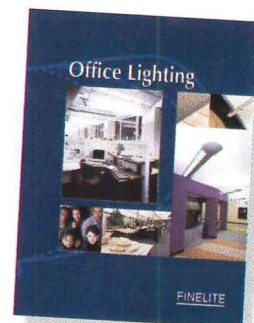
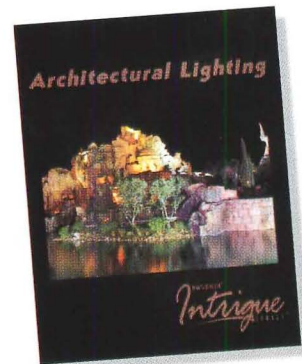
Finelite claims that its new brochure is the first to sell the concept of linear lighting, rather than merely selling a specific product. In the brochure, Finelite demonstrates why linear lighting should be used and how the costs are comparable to commonly used recessed products. 510/441-1100. Finelite, Union City, Calif. **CIRCLE 245**

### Space-saving binder

Spacesaver Corporation's new Storage Design Resource binder includes a complete product portfolio as well as reference tools such as design and educational resources, ADA requirements, CSI specifications, and floor loading data. 800/492-3434. Spacesaver, Fort Atkinson, Wis. **CIRCLE 246**

### Firestopping video

Protection Knowledge Concepts has introduced a four-tape video series dealing with "The Basics of Firestop Systems." The instructional program is designed to provide fundamental knowledge about firestopping through penetrations. 888/831-4RJA. Protection Knowledge Concepts, Chicago. **CIRCLE 247**



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Program title: **Urban Infrastructure: The "Out of Sight, Out of Mind" Mentality is an outmoded Concept (06/02, page 151)**

06YEDITK

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Furtado, John Hill; Engineers, Spain, 2002; AIA Twenty-Five Year Award nominee; architect; Serri Jackson and Associates; photographers: Florian Pflanz, Jürgen Jansen, Mandy Platt, and Jodi Tusa

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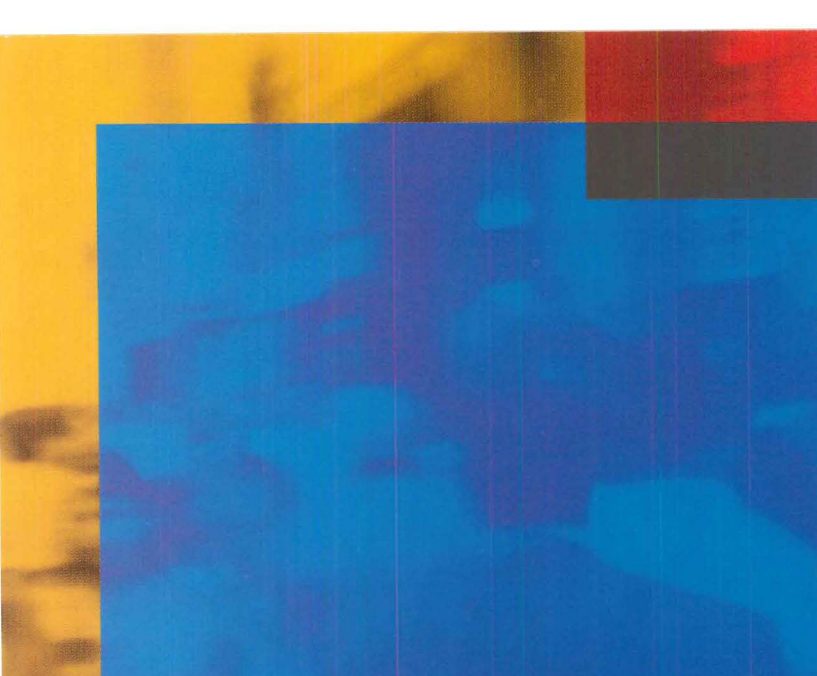
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Some architects who responded to our survey weighed in heavily on the artistic side of the equation, but they are not without an awareness of how costly it can be to spend time perfecting a design. Randy Brown, AIA, spoke to us about an idea he originally encountered in Dana Cuff's well-known book, *Architecture: The Story of Practice*. He says, "Architects go through a continual discovery process, always trying to make the design better. But, there comes a point where you spend more time than is profitable to perfect a project—'design' keeps telling you to spend more time; 'profitability' tells you to stop—they have a dialectical relationship; they pull at each other. For every hour you cross that line you lose money."

Recent Pritzker Prize winner Glenn Murcutt works alone (RECORD, May 2002, page 39). Quoted in *The Sydney Morning Herald*, he said that smaller projects can produce more exceptional new work than larger ones. "Architecture takes time," he says. "It's not a flash-in-the-pan thing at all. Smaller works give you a chance to break the ground, scratching around to get beneath the surface of things. They are a platform for experimentation where the regulations are not so powerful that they force you into maximizing the floor space, which is such a selfish sort of architecture."

Architects face a quandary that contractors do not—they cannot say precisely when the design process is complete. Gilles Depardon, of Ogawa Depardon Architects, says it is a condition of the profession: "We lavish more time and care on our jobs than we can bill for." Others, like Joe Valerio, FAIA, of Chicago firm Valerio Dewalt Train, with 33 on staff, see that firm inefficiencies cause these problems: "The biggest threat to our profit is that unbillable hours get dumped on a project. When work slows down, projects get loaded up with staff, so they can be kept busy until something new breaks."

Still others say that insufficient time for design is a result of pressure from clients, who treat architectural services as a commodity. Many find the high cost of overhead, including insurance, marketing, and technology, adds prohibitive costs to the design process. Architects have a variety of ways of coping with this critical question very much at the heart of the profession. Some firms implement stringent controls on billable hours, others trim overhead, while others resign themselves to operating within narrow profit margins. One well-known architect in New York laments that he wishes his firm could become "a nonprofit," feeling he cannot devote sufficient care to design if he has to worry about profit. An article in the *The New York Times Magazine* on May 5, 2002, cited a doctor who wishes to treat patients on a "care as needed" basis, instead of

### **SMALL, MEDIUM, LARGE** (continued from page 82)

of 410, much of the firm's overall management is handled by the younger principals, freeing the senior principals to focus on projects. At the Smith Group, in Detroit, with 936 employees and eight offices, president and C.E.O. Carl Roehling, FAIA, found that "each regional office tended to evolve to its own unique culture due to the fact that each operated independently, until all were merged in the late 1990s."

Obviously, which organizational structure works best for a firm will vary. Whatever structure is chosen, we concur with the authors of *How Firms Succeed* that it should allow employees to "build critical bonds of support, loyalty, and a sense of confident mutual reliability."

### **The design-and-profitability equation**

Almost every book on architectural business says that successful practices are built upon design quality. While this idea is noble, from a financial standpoint it is somewhat simplistic. Few disagree that architects frequently don't excel as business managers. Add to this that architecture is a creative, quality-driven, problem-solving practice.

This results in an expensive design process. Many

firms have talked to us about the difficulty of doing good design and staying profitable. Some small firms resemble old-fashioned ateliers, which operate like artisans' workshops. The process they use to solve problems is difficult to quantify: Quality counts more than any other single thing, and interns and principals spend endless hours perfecting their buildings.

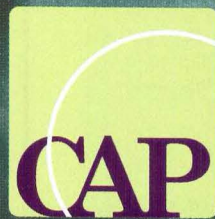
While larger firms structure themselves so they can emulate the way small firms function, they tend to keep tighter controls on how much time is spent on design. Why is this more true in large firms than small ones? Large firms tend to establish a "corporate" style of management. Costs are carefully tracked, because clients demand fiscal accountability. Minimizing design time has enabled some firms to become fantastically profitable, although the practice may not win design awards.

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providing limited care, which he is forced to do under the managed-care system. The situation for doctors and architects is analogous and remains a challenge: Since professional services, like treating patients and designing buildings, are not commodities, they cannot be costed out in the same way that manufactured products are. To effectively respond to the design-versus-profitability equation, our profession must continue to educate its clients to the realization that even in an age of standardized computer-generated drawings, most architects still design buildings one at a time. In August, we will conclude our series with observations on the new generation of talented architects, the role of technology, and the future of architectural practice. ■



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Program title: **Daylighting: Many Designers are Still in the Dark, Architectural Record (06/02, page 161)**

06YSP0NR

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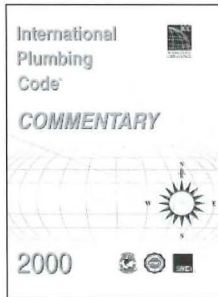
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Program title: **Understanding Acoustics in Architectural Design, Architectural Record (06/02, page 167)**

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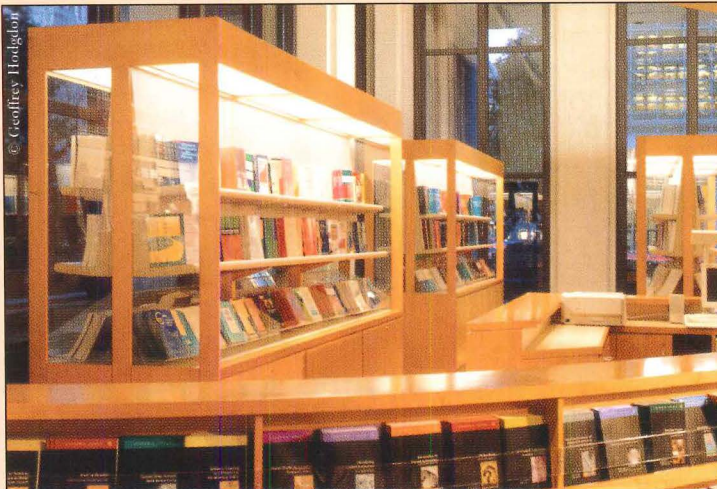
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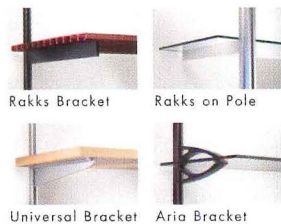
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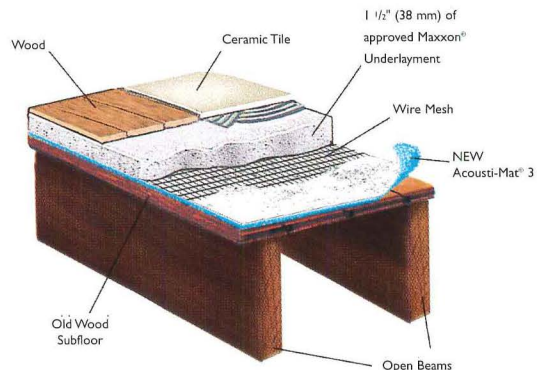


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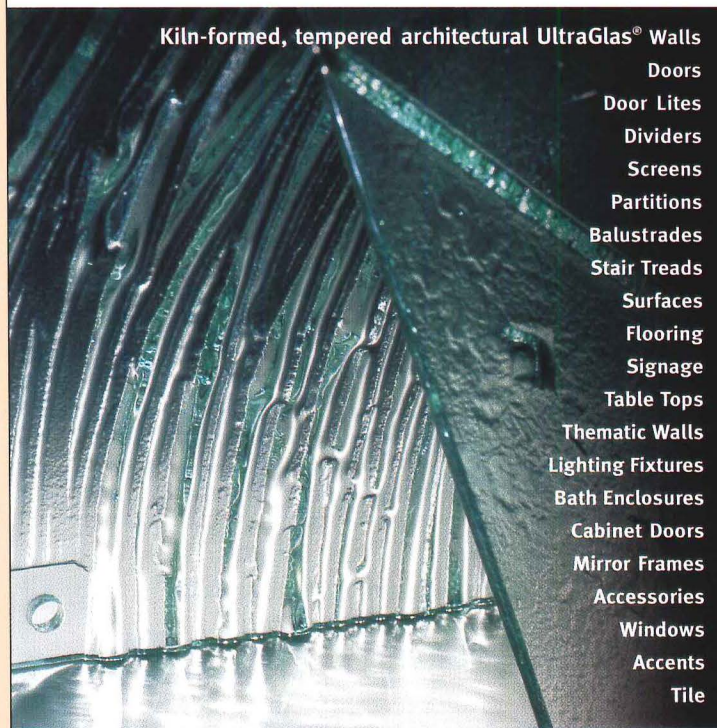


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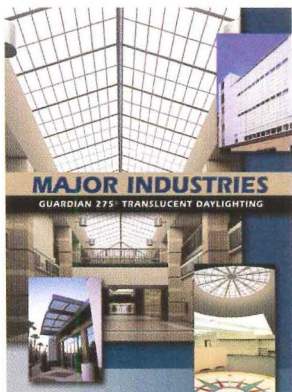


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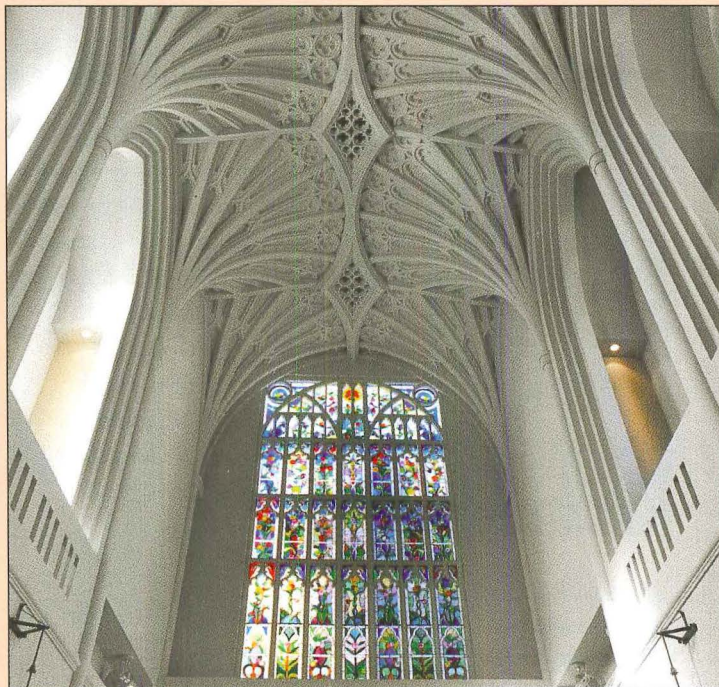
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**Visplay Shuttle  
Mobile  
Information  
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Visplay Shuttle from Marlite is a freestanding mobile information and stand-up sales unit. A lockable roll out cabinet is designed to hold a computer, monitor, printer and paper files. Integrated lighting and graphics make it possible to personalize the system. It is ideal for information desks, demonstration and sales kiosks. Visplay Shuttle can be used in showrooms, exhibits, financial sales, retail, or any place where information is exchanged. For more information, contact Marlite at 330-343-6621 or [info@marlite.com](mailto:info@marlite.com)

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The National Wheel-O-Vator Co., Inc. is an accepted industry leader in the manufacturing of quality, handcrafted, and elegant residential elevators. The cars are uniquely designed and beautifully styled to suit any taste. The walls and ceilings are available in finishes of cherry, maple, oak, birch, mahogany and more. Each Destiny residential elevator is skillfully handcrafted to blend well with any home decor. The Destiny can be fitted with many styles of accordion or scissors car gates. There are choices of brass and stainless steel car operating and hall call fixtures. National Wheel-O-Vator's product line also includes commercial elevators, vertical platform lifts, and inclined platform lifts. Visit the company's website at [www.wheelovator.com](http://www.wheelovator.com). More information on the manufacturer in Sweet's 2000 General Building & Renovation File section 14200/NAT, and on Sweet's CD and sweets.com



[www.wheelovator.com](http://www.wheelovator.com)

**National Wheel-O-Vator**

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**SMART Board 3000i**



The *Rear Projection* SMART Board™ 3000i is an interactive whiteboard that turns your computer into a powerful presentation and collaboration tool. With it, users can control applications directly from the Board's large, touch-sensitive surface and save notes written over top of applications to a computer. For more information, visit [www.smarttech.com/products](http://www.smarttech.com/products)

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**Industrial Acoustics Co.**

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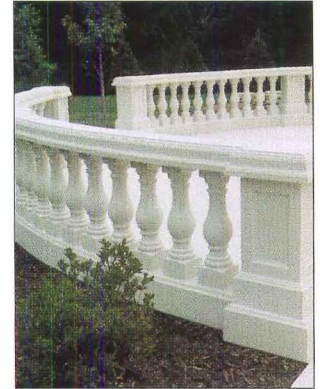


FAAC is the world's largest specialized manufacturer of hydraulic operators for swing, slide and barrier gate systems. The Model 400 heavy-duty hydraulic swing gate operator is UL 325 compliant and designed for applications needing maximum versatility, such as subdivisions and apartments. Its power and reliability also make it ideal for large, ornate gates. Call 1-800-221-8278 for full color brochure or visit [www.faac-usa.com](http://www.faac-usa.com).

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**Balustrades and Columns**

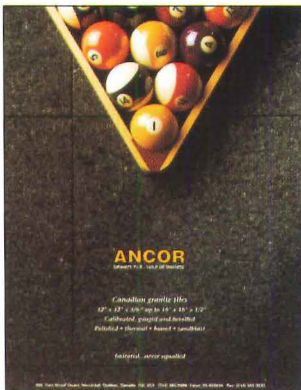


Beautifully hand crafted from cast stone, polymer marble composite, synthetic stone or polyurethane, our low maintenance balustrade systems are engineered to reduce weight yet maintain their substantial feel. Balustrade systems are available in radius designs and can meet any code requirement or project application. Also available are columns in fiberglass, poly/marble composite, GFRG and wood. 800-963-3060, [www.meltonclassics.com](http://www.meltonclassics.com).

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**Anchor Granite Tile**

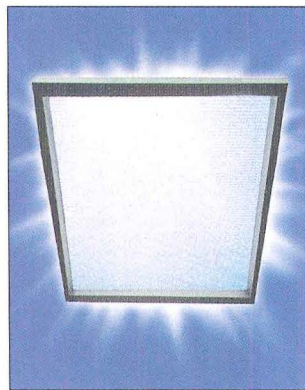


Anchor produces over fifty No. American and Imported granites in a full range of colors and finishes for residential, commercial and institutional use. Standard format is 12 x 12 x 3/8"; other sizes up to 18 x 18 x 1/2" available. Honed finish tile is particularly suitable for high traffic commercial areas, 435 Port Royal West, Montreal, Quebec, H3L2C3, Canada. Ph: 514-385-9366, Fax: 514-382-3533.

**Anchor Granite**

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**Insulated Translucence in Glass**

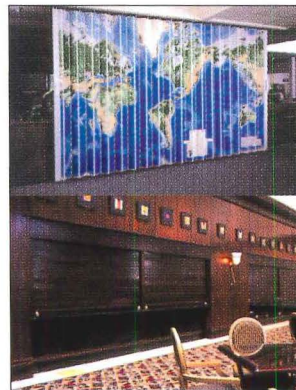


Quality buildings can now have all the benefits of insulated translucent glazing PLUS the timeless beauty & durability that comes only from glass. Unlike plastic solutions, SOLERA™ insulated translucent glazing units deliver over 70% light transmittance plus U values of .25 to .14. Curtain wall, sloped, skylights....glass to architectural spec. Call 902-794-2899 or visit [www.advancedglazings.com](http://www.advancedglazings.com)

**Advanced Glazings Ltd.**

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**Monumental Iron Works™**

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**Stair treads with Landing**

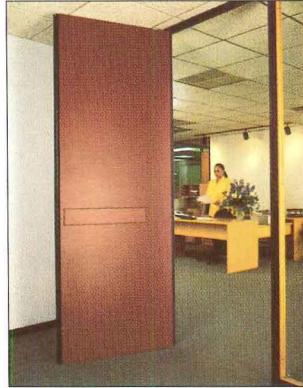


High quality pre-cast concrete Stair treads and Landings have a place in high-rise buildings, apartment buildings, university dormitories, parking structures and commercial buildings. Available in a variety of colors and finishes, designs comply with ADA and may be mounted on steel or wood. Call toll free 1-800-572-9029 for our free CD. Visit our Website: [www.stepstoneinc.com](http://www.stepstoneinc.com).

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**Applications**



The new flush exit device is designed for use on TOTAL DOORS in single, pairs and double egress pairs. Ideal for corridor & elevator lobby applications in all commercial facilities. The exit device allows continuous, uninterrupted sightlines in corridors when doors are pocketed in the open position. Its quiet operation is ideal anywhere noisy hardware is a problem. TOTAL DOORS can be retrofitted into existing door frames, saving time & expense.

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The new Quick-Spec from InterEdge Technologies offers a fast, finger-tip reference to a complete range of fire & safety rated products. For in-depth product information & options, manufacturing video & CSI specifications just slip out the CD & go. It's a must for those who don't have time to wade through the office library or search the web for clear fire & safety glazing solutions. Fax: 415-289-0326, email: [interedgems@aol.com](mailto:interedgems@aol.com); [www.firesafe-glass.com](http://www.firesafe-glass.com).

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**System M2**

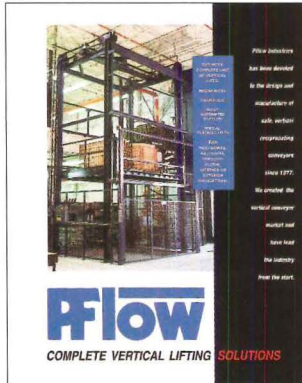


As innovators of washroom plumbing design, Neo-Metro Collection's System M2 is the solution that merges creative design with ease of installation. Only one plumbing connection is required for multiple basin arrangements, in a variety of modern basin styles and options. System M2 is the ideal washing system for modern office spaces, restaurants and hospitality venues. Call (800) 591-9050 or visit [www.neo-metro.com](http://www.neo-metro.com).

**Neo-Metro® Collection**

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**TGP Offers European-Style Fireframes®**

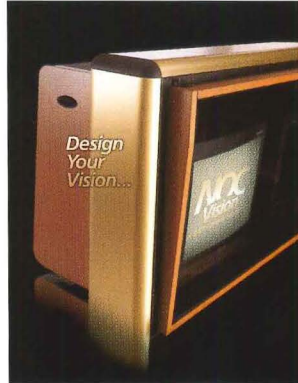


Technical Glass Products, now also offers Fireframes® by Forster. The line of fire-rated doors and frames provides a dramatically different profile than traditional hollow metal steel doors and framing. They allow extremely large expanses of glass, and are particularly well-suited to commercial applications where aesthetics are important. For complete information on all their fire-rated products, call 888-397-FIRE (3473) or visit [www.fireglass.com](http://www.fireglass.com).

**Technical Glass Products**

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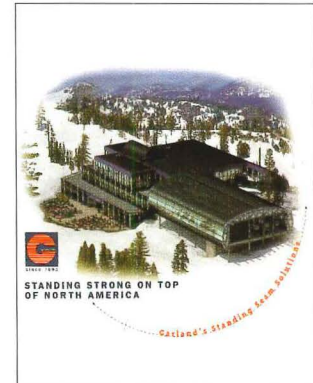


Design flair, flexibility and comfort with the SMC® NOC Vision™. The modular construction, numerous configuration possibilities, multiple tiers, company color accents as well as the many other unique features offered compliment your work environment perfectly. Find out more about the SMC® NOC Vision™ at [www.smplus.com](http://www.smplus.com) or call 1-800-SMC-PLUS.

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Design flexibility, resistance to high wind pressures, weather tight and boldly attractive all describe Garland's exciting line of high performance standing seam roof systems. The Garland Company, inc. is an ISO 9001 certified company offering high-performance systems that meet today's roofing requirements. nationwide roof evaluations, moisture testing, inspections & maintenance programs available. 3800 E. 91st Street, Cleveland, OH 44105 800.741.3157

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Tension Structures**

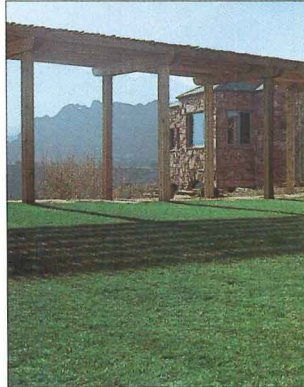


Eide Industries, Inc. is a 65 year old custom manufacturer offering nationwide sales and installation service. Products include: Awnings, Tension Structures, Canopies and hundreds of other custom-made metal and fabric products. Services include: Engineering Calculations, Permit Pulling, Shop Drawings, Project Management and Installation. [www.eideindustries.com](http://www.eideindustries.com) Phone: 800-422-6827 Fax:562-924-2233.

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**Keep It "All" Beautiful**

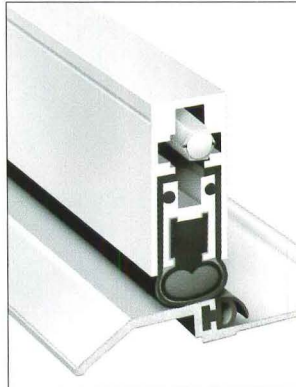


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**Automatic Door Bottoms...  
Designed & Built to Last**

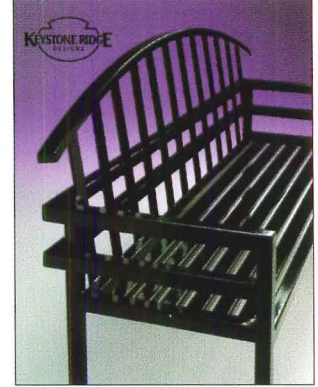


Tested through 5 million cycles, they are engineered for easy, precise installation, with a minimum of parts subject to wear. Quality construction to renowned ZERO standard makes these gaskets the choice for superior performance & unequaled service life. Double neoprene seals & a patented spring action, automatically drop & retract in a scissor like motion as door is operated. 800-635-5335 or 718-585-3230; FAX 800-851-0000 [www.zerointernational.com](http://www.zerointernational.com)

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of Distinction**

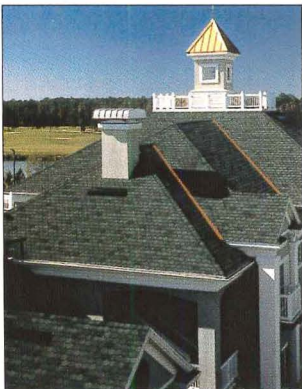


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**Keystone Ridge Designs**

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**Carriage House Shingle™**

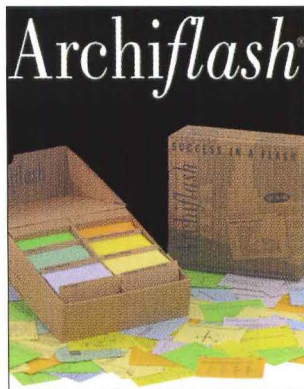


Utilizes CertainTeed's exclusive Super Shingle® construction with two full-size base shingles, resulting in virtually four layers of shingle protection and 8-inch exposure when applied. This super-heavy-weight fiber glass shingle (355 lb. per square) also features a unique chamfered cut for scalloped appearance. UL Class A; lifetime limited, transferable warranty; algae-resistant UL Certified to meet ASTM D 3462.

**CertainTeed Corporation**

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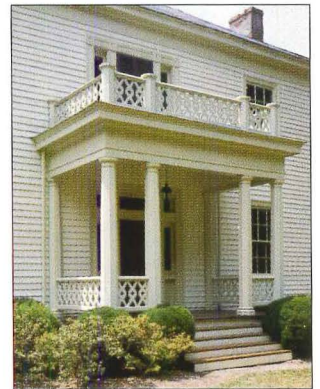


It's Xtreme 100% recycled resilient rubber flooring from Dodge-Regupol. Take your pick from 38 enviro-friendly eye-poppers. And we can custom cut logos or custom blend colors. Color it special with ECOSURFACES! Call toll free 1-877-ECO-SURF (326-7873) or log on to [www.regupol.com](http://www.regupol.com).

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[www.columns.com](http://www.columns.com)**



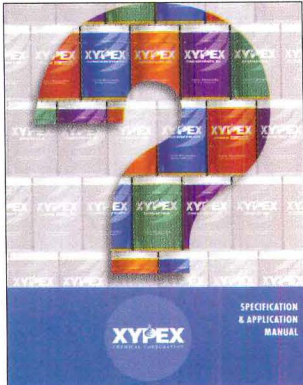
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Applied as a slurry coating Xypex is a chemical treatment that waterproofs by penetrating the concrete with a crystalline formation that "plugs" the pores of the structure preventing water seepage. Xypex is ideal for use on the "inside" of wet underground structures. Call toll free 1-800-961-4477 or visit our web site at [www.xypex.com](http://www.xypex.com)

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for Unlimited Installations**

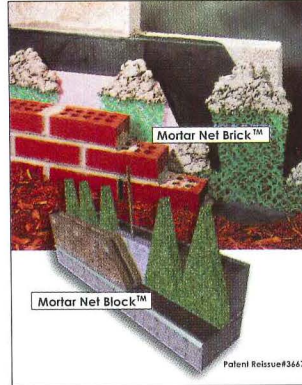


Heat-N-Glo introduces model PIER-TRC, a three-sided direct vent fireplace that can be terminated vertically or horizontally to accommodate nearly any application. The PIER-TRC is perfect as a room divider, bar, end of counter or a wide variety of creative installation possibilities. As with all Heat-N-Glo fireplaces, the PIER-TRC can be operated by remote control for the ultimate in convenience. Call 888-427-3973.

**Heat-N-Glo**

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**Mortar Dropping  
Collection Device**

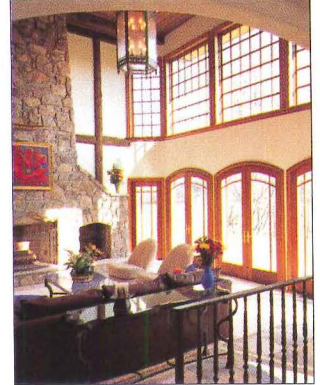


Mortar Net invented the mortar dropping collection device for brick masonry cavity construction and single wythe concrete masonry units (CMU). By breaking up mortar droppings, Mortar Net for brick and Mortar Net Block prevents mortar debris from forming a barrier against water flow to the weep holes thereby eliminating moisture damage to masonry walls. For more information call 800-664-6638 or [www.mortarnet.com](http://www.mortarnet.com).

**Mortar Net**

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**Weather Shield Legacy Series  
Windows & Doors**

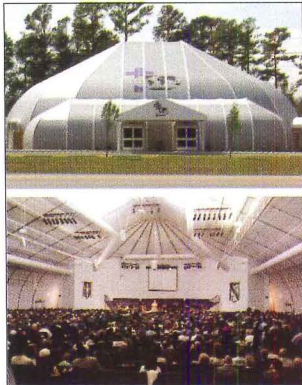


Engineered with unique features and built for unparalleled performance, the Weather Shield Legacy Series is simply one of the best window and door lines available for custom and luxury homes. Available in tilt double-hung, casement, awning and direct-set windows and French doors. The premium windows feature elegant wood interiors in a variety of wood species from Weather Shield's Custom Wood Interiors Collection™.

**Weather Shield Windows & Doors**

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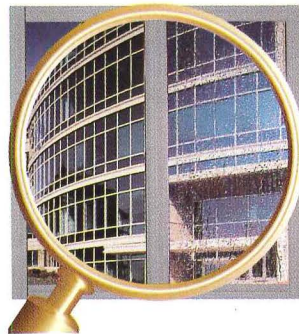


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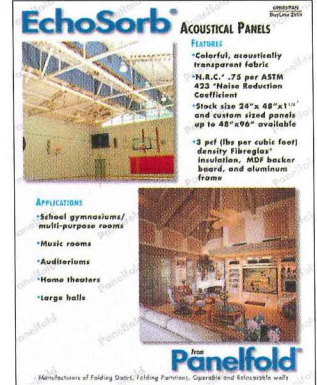


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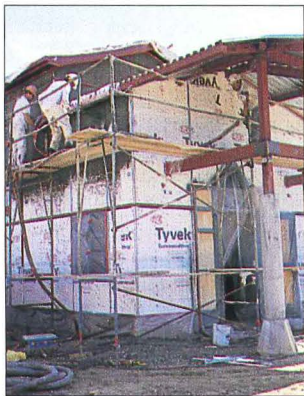
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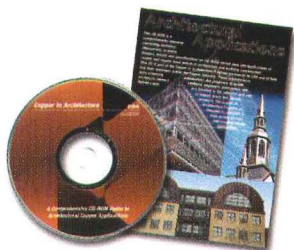


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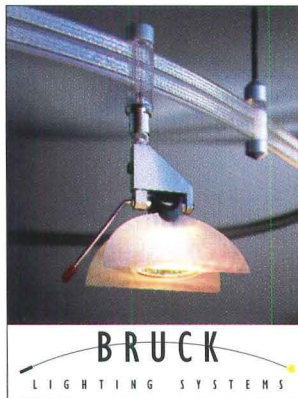


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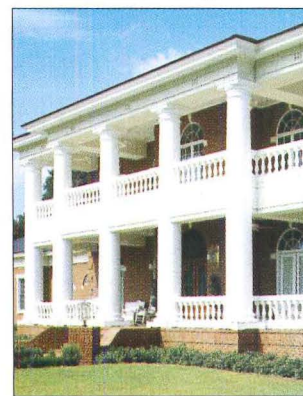


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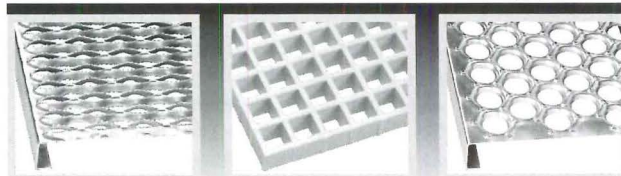
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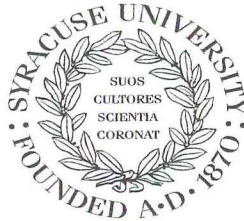
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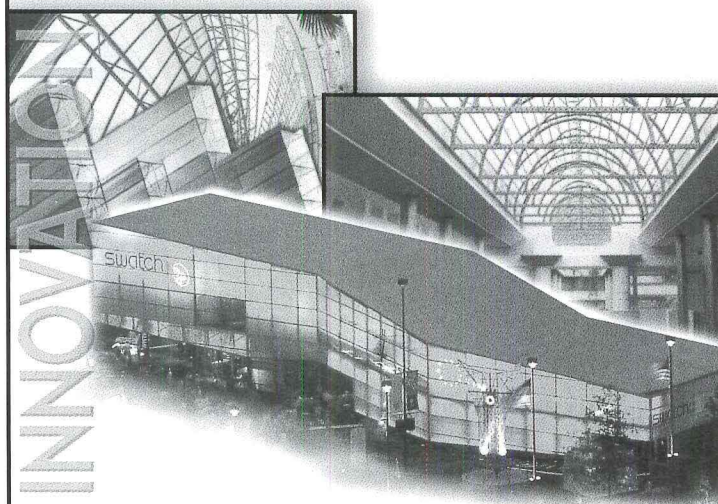


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## Maxine Griffith: Fixing what ails Philadelphia

**Interviewed by Ingrid Whitehead**

*When the Philadelphia City Planning Commission's executive director, Maxine Griffith, was serving in the Clinton administration as HUD's assistant deputy secretary, somebody once said that she was "either a spokesperson for the new paradigm or she just can't keep a job." It may be a bit of both. Since receiving her master's degree in architecture from UC Berkeley, Griffith has had a steady stream of planning, design, and development jobs that have made her an important mover and shaper of U.S. cities and regions, such as Oakland, California; New York City; New Jersey; and Washington, D.C. In her current position, Griffith is meeting the challenges of reinventing a troubled Philadelphia head-on.*

**Q:** *What is the current planning challenge facing Philadelphia?* Philadelphia is the nation's fifth-largest city, and one of its oldest. The city is now faced with demolishing and rebuilding some 30,000 decrepit buildings, as well as clearing some 30,000 vacant lots. Couple that with the sometimes complex ownership structures these areas have, and you have a major problem. Our previous mayor, Edward Rendell, was also dedicated to a revitalization effort, one that was concentrated downtown. His accomplishments are clear—downtown Philadelphia is beautiful, livable, and getting better all the time. Now we have to concentrate on the surrounding blighted areas, which are often clustered together. Luckily, Mayor [John] Street is dedicated to taking this on, and in the past two years we've accomplished a lot. The plan that's in place is called the Neighborhood Transformation Initiative (NTI). Mayor Street is very much involved in making this initiative a success. In fact, he began his administration by getting 20,000 abandoned cars off the streets. No small task. *How much money is the city willing to put into the effort of demolishing and rebuilding?* We have approximately \$290 million to accomplish this. It's a problem that has been building for the past 50 years. We'll just accomplish this one building at a time, integrating new transportation initiatives along with the redevelopment. Two years into the program, we've cleared 4,000 vacant lots and demolished many decrepit buildings.

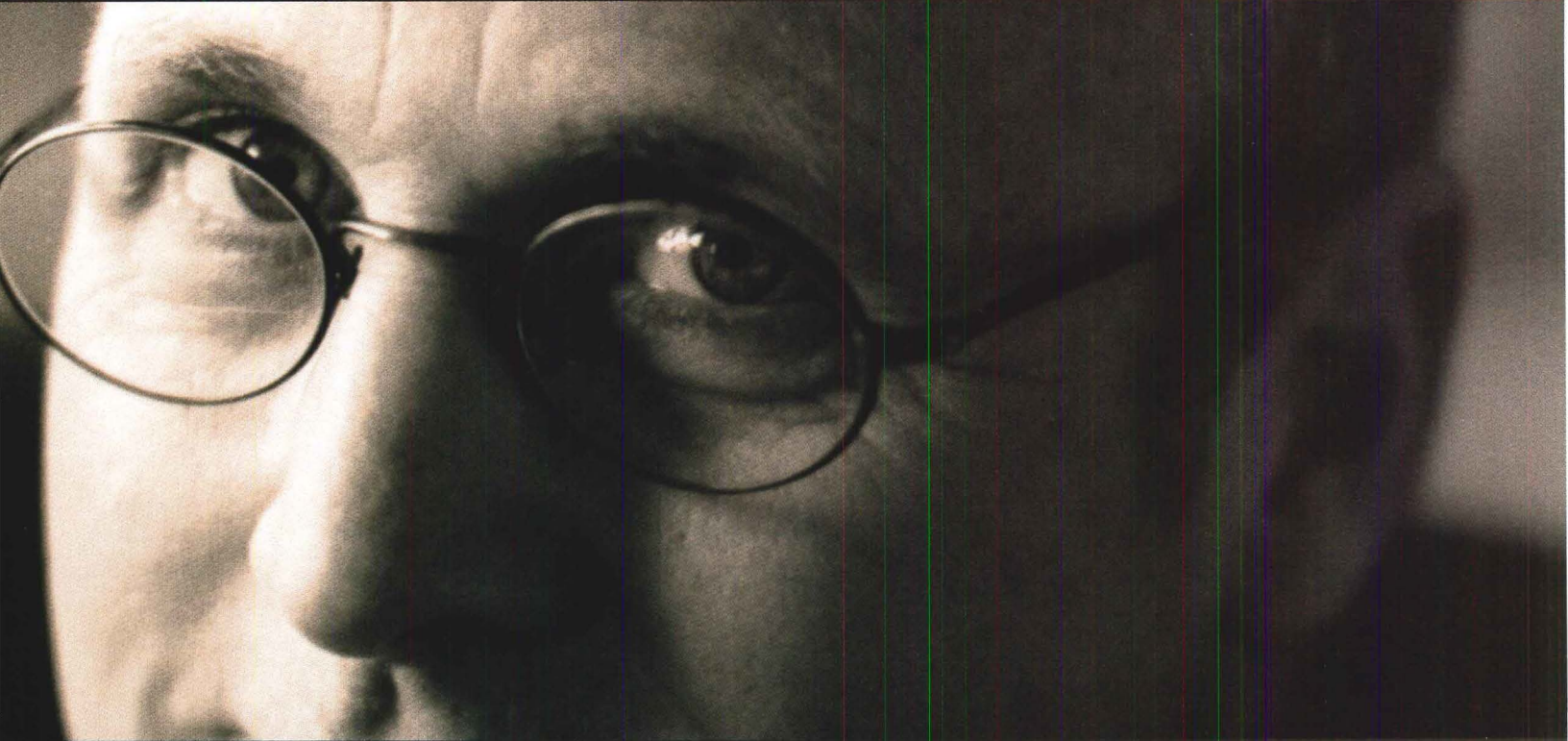
*How can architects get involved?* My department is committed to having architects become very much a part of the transformation effort. Right now, the urban design unit has a call to architects and universities to help us plan. We'll supply maps, neighborhood information, census reports, and various technical information. We're hoping firms might choose to do something like "adopt a neighborhood" and then give us recommendations on a particular area—including parks and open-space planning. We'll accept submissions from the professional design and planning community to help us plan accordingly. We need universities and the professional design community to see this situation as an opportunity to really help us make a world-class city out of Philadelphia.

**Photograph by Euclides Santiago**

*For more information about the invitation to participate in Philadelphia's redevelopment efforts (deadline for submissions is February 2003), go to [www.philaplanning.org](http://www.philaplanning.org), or call Maureen Kelly at 215/683-4618.*



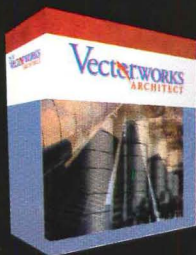
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