



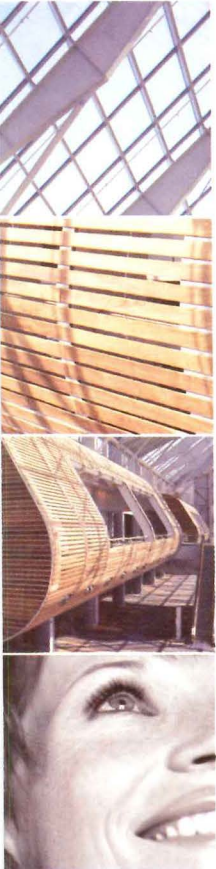
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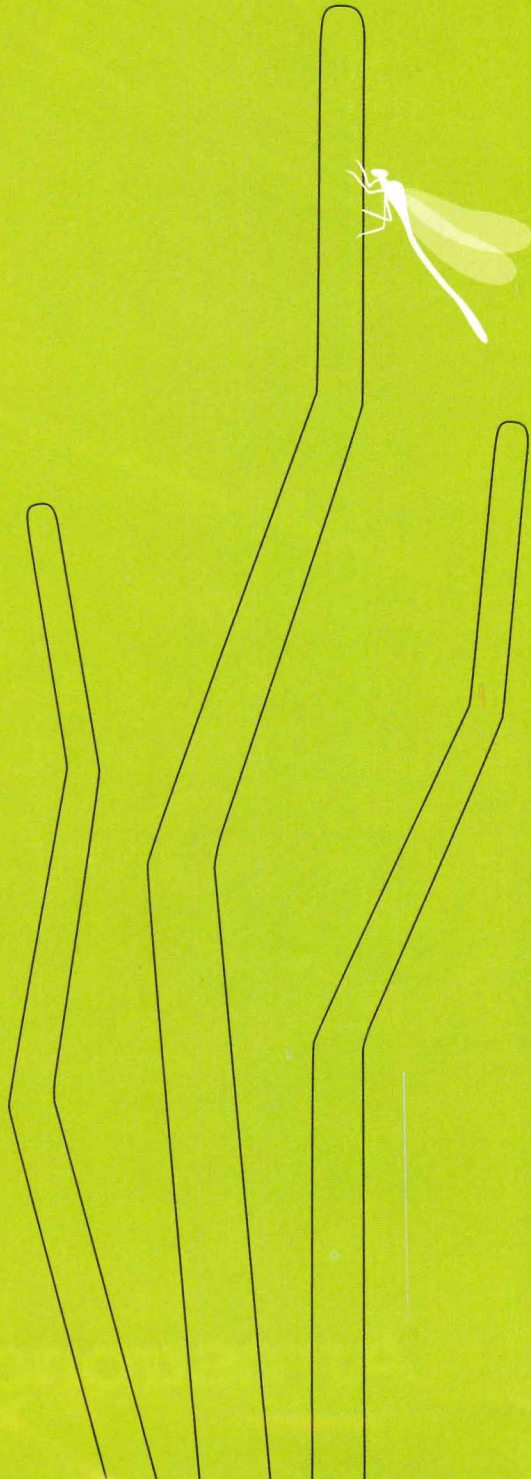
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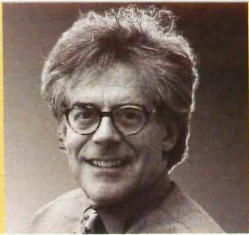
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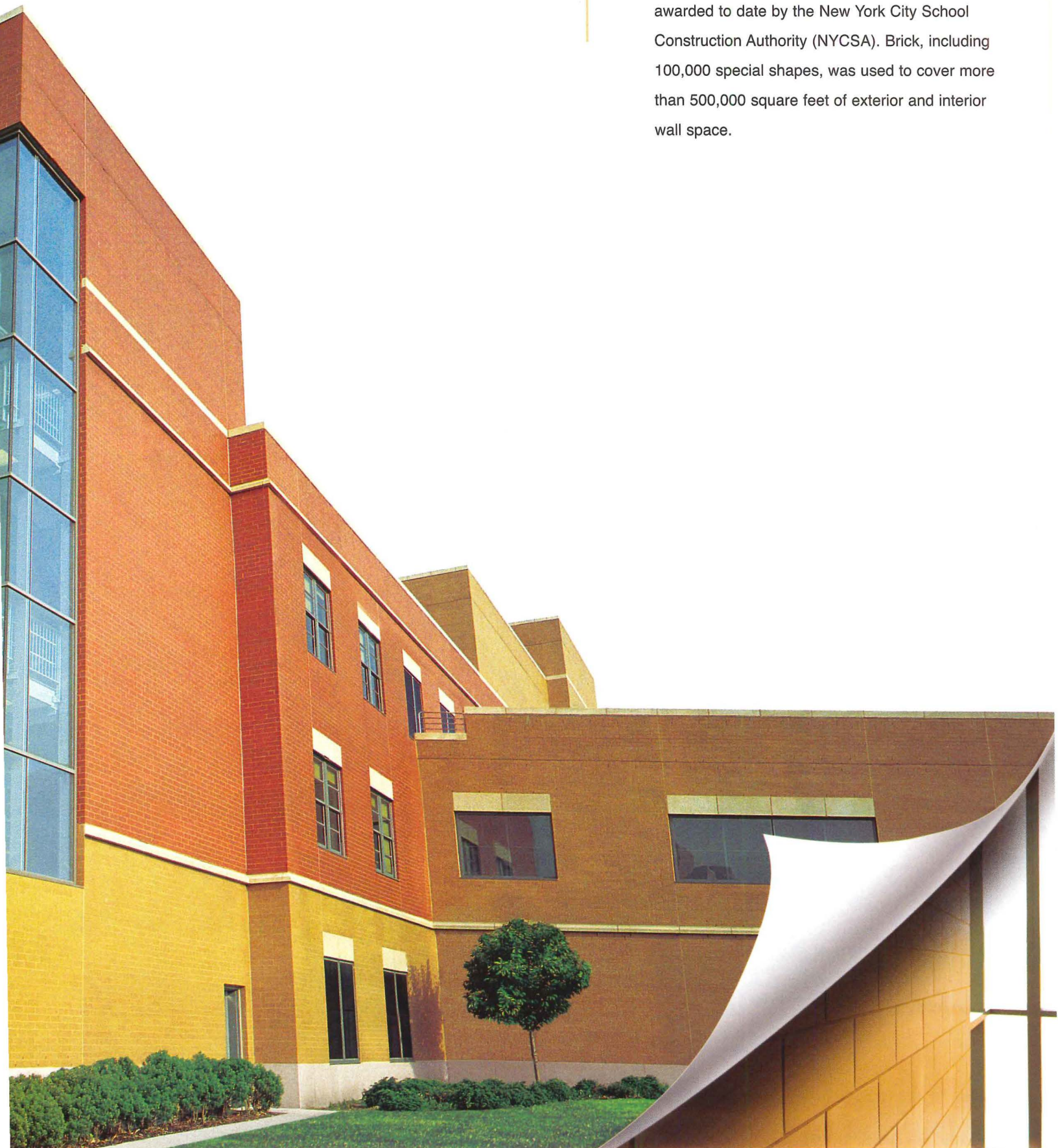
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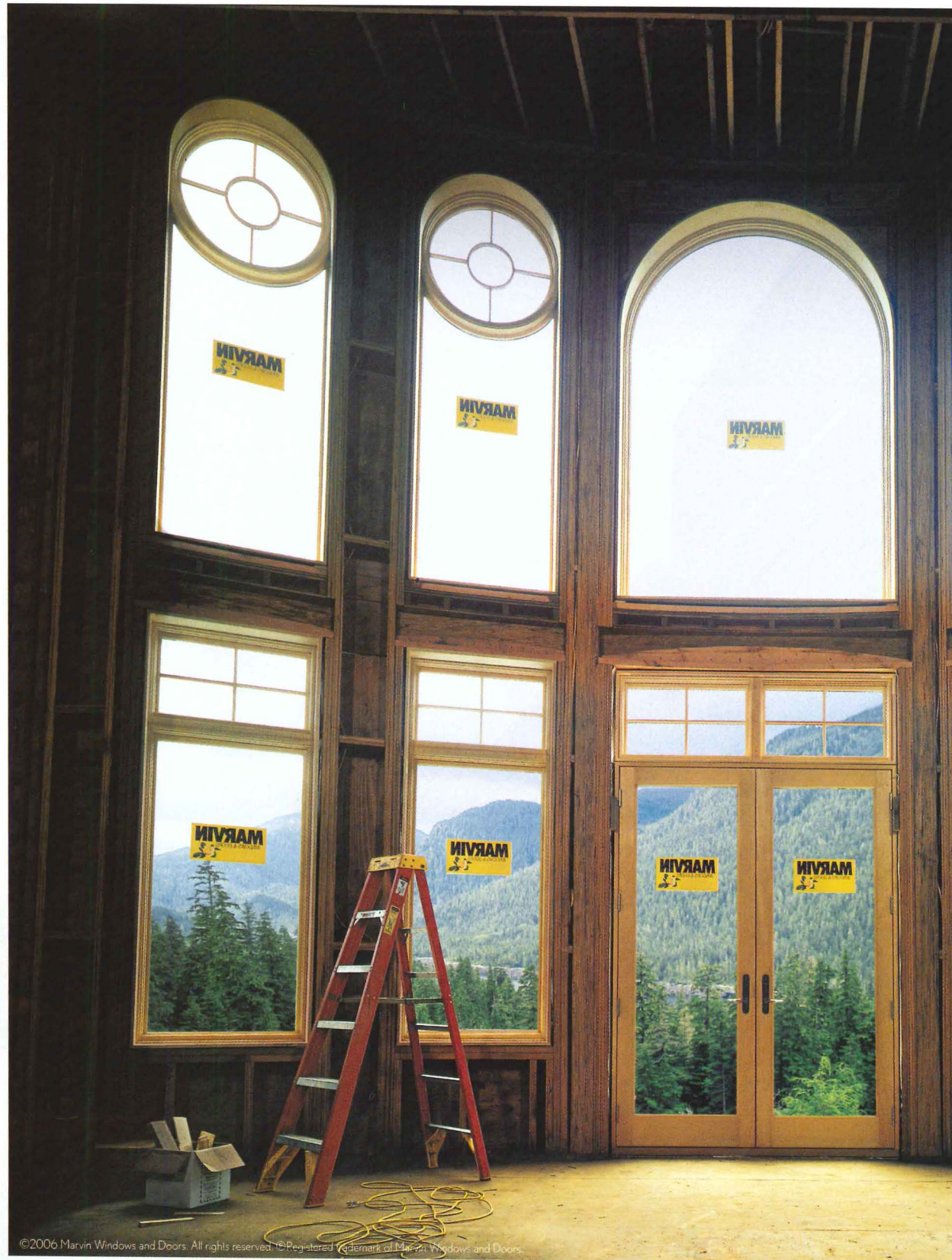


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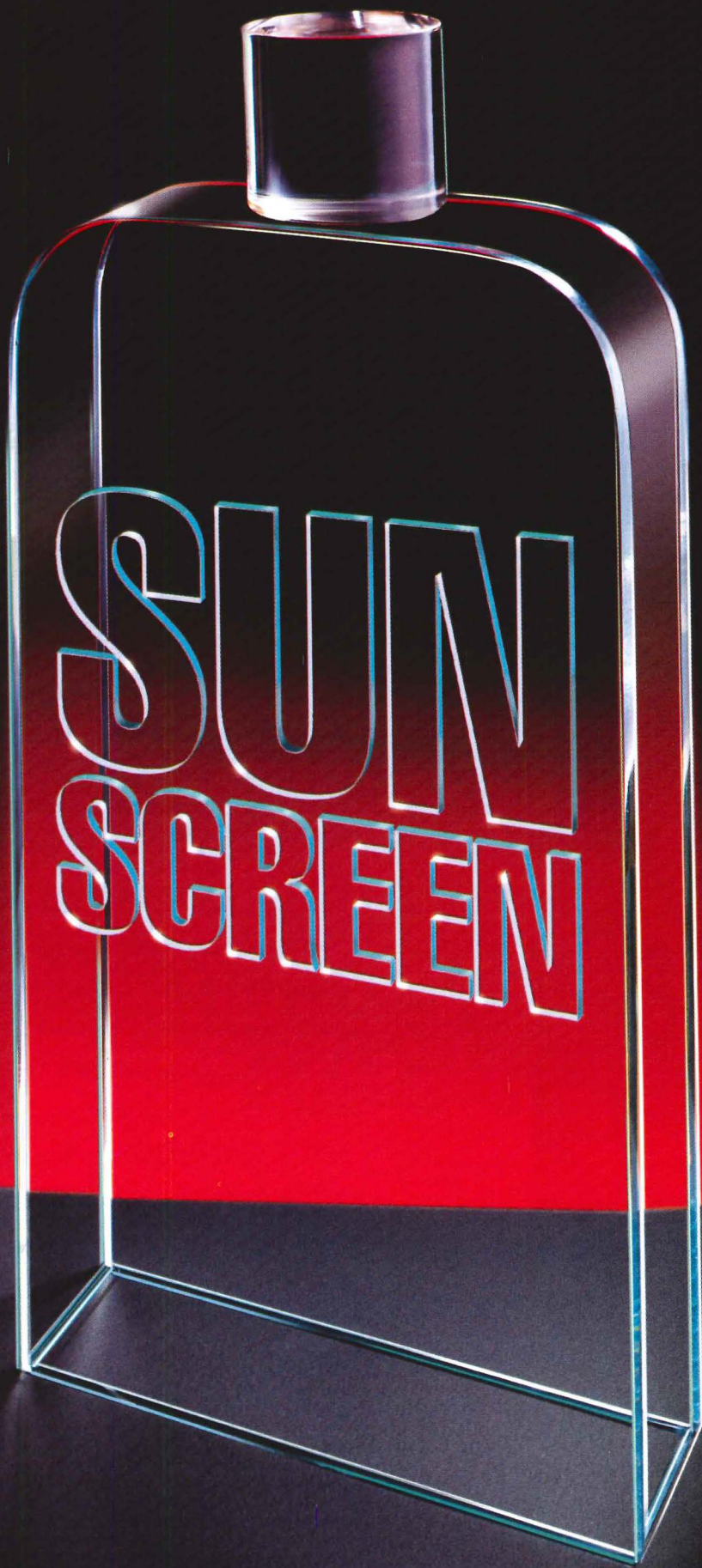
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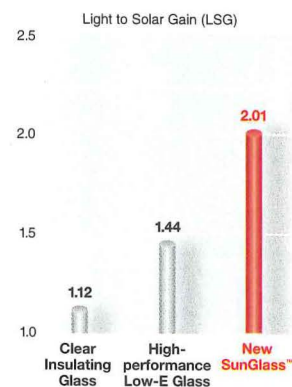
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On the Cover: *Badajoz Congress Center*, by selgascano. Photograph by Roland Halbe.
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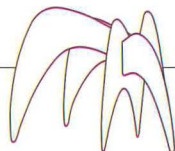
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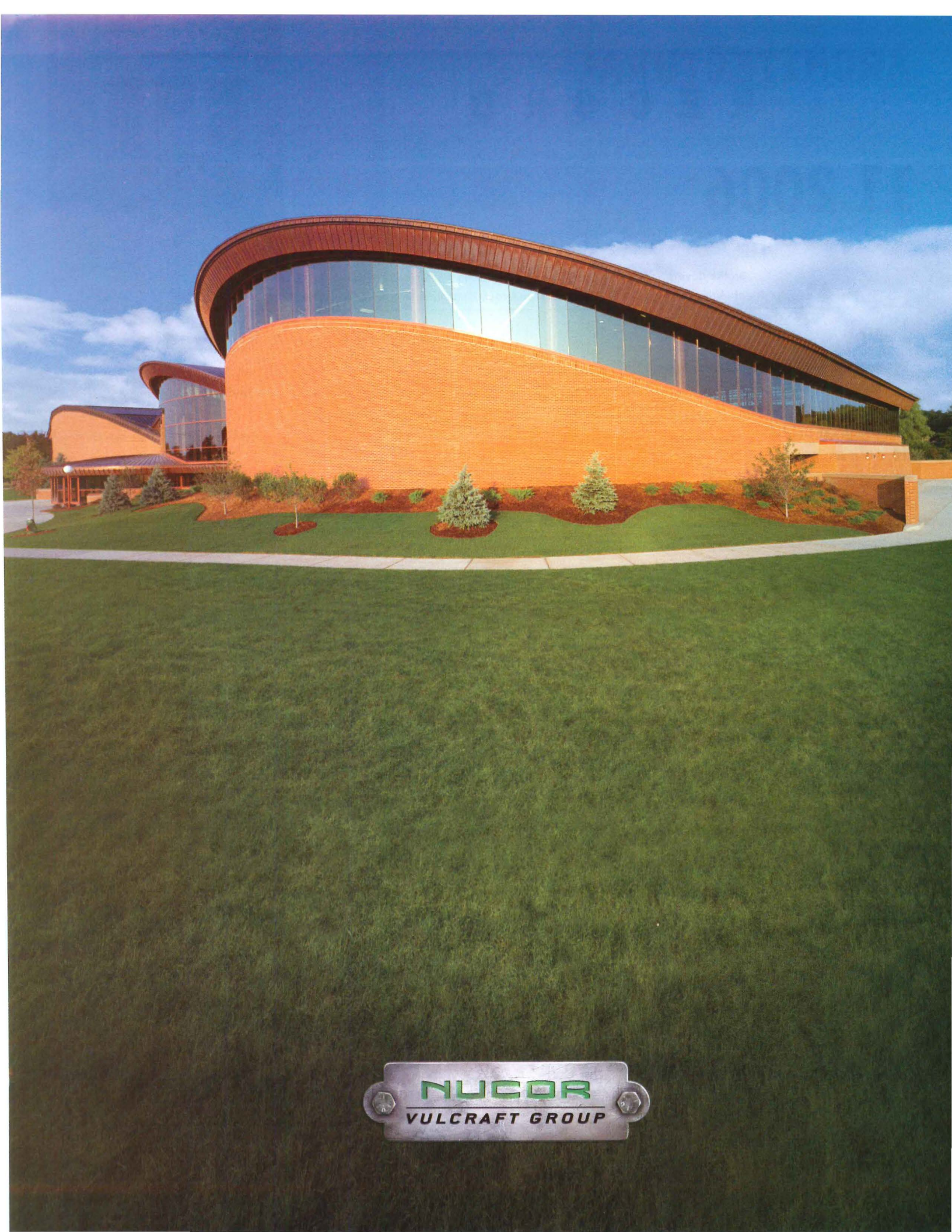
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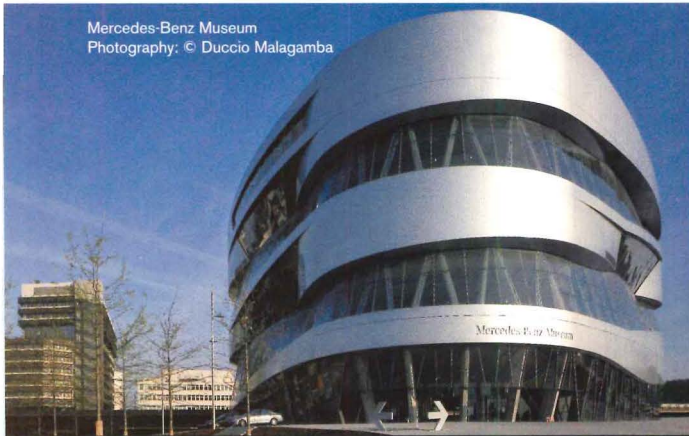


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Mercedes-Benz Museum
Photography: © Duccio Malagamba



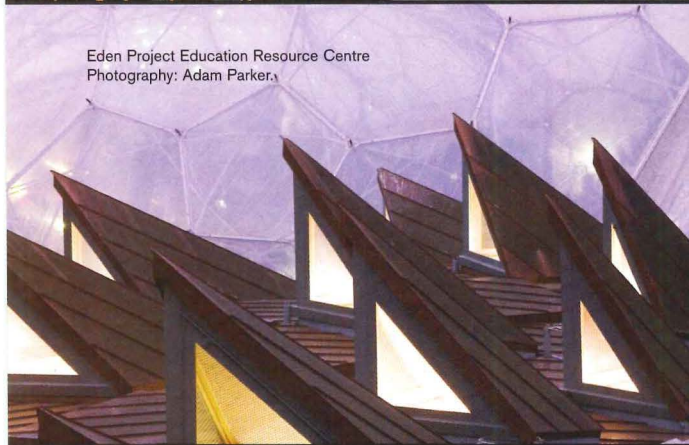
Business Week/Architectural Record Awards

Meet the talented crop of this year's winners and citations for this competition promoting good design as a smart business strategy.

Project Portfolio

Green design, innovative materials, and spiraling forms mark these four cutting-edge projects, from Germany to Spain to the Arizona desert.

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Building Types Studies: Civic Buildings

As the featured 11 projects demonstrate, small learning centers forge intimate connections with unique sites to bring people together in our increasingly self-directed public sphere.

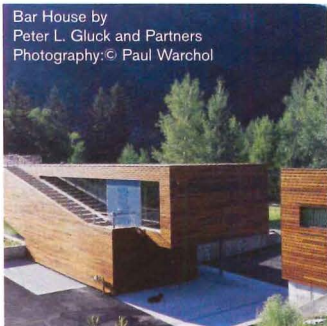
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Residential: House of the Month

Deep in a valley and bounded by a river on one side and a road on the other, this home in the mountains of Colorado was designed to maximize the southern sun exposure and spectacular views of the valley and mountains beyond.

Bar House by
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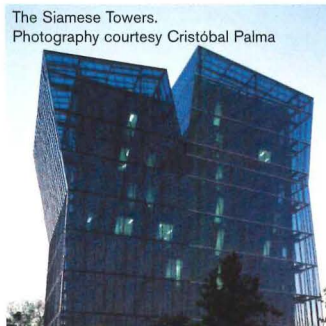


Design Vanguard

In December, we'll reveal 2006's crop of the best and the brightest emerging architects from across the globe. To whet your appetite, Record chose a sampling from across the past six years of Design Vanguard and caught up with them. Find out how they've matured through slide shows and podcasts.

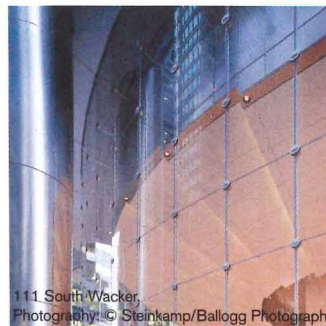


The Siamese Towers.
Photography courtesy Cristóbal Palma



Lighting Section

This month we showcase three recent Award of Excellence winners of the 2006 International Association of Lighting Designers Annual Awards. Though varied in scale and program, the new buildings illustrate how a close collaboration between lighting consultant and architect can enhance the profile and performance of commercial structures.



111 South Wacker.
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Editorial

By Robert Ivy, FAIA

The Denver Art Museum addition represents both fulfillment and vindication for Daniel Libeskind. While the architect witnessed the erosion and diminution of his plans for Ground Zero, he has been able to realize an enriched, lively urban ensemble on the streets of Denver. Simultaneously, the structure builds on motifs first articulated at the Jewish Museum Berlin, reinforcing its experiential qualities and displaying a kind of architectural maturity intertwined with its subject. Finally, this most articulate architect has realized the American project he has promised repeatedly in words and images.

The museum extends the architectural stakes in a nondescript precinct bordering the prospering Mile High City's urban core. Buildings that had struggled individually for decades to establish some kind of relationship are knitted together into a cultural center. Across the street, Michael Graves's 1996 library, framed and vignettted into a series of episodic images of Tuscan tower and drum, never looked better. Literally tied by an elevated pedestrian bridge to Gio Ponti's 1971 castellated tower that housed the museum's collections, the titanium-clad addition, like shards of Kryptonite, reaches for thin air while a massive cantilevered prow looms toward the city with eccentric insistence. (Libeskind has cited the Front Range of the Rockies as his inspiration.) No one will ignore this urban sculpture.

All is not polemical brio. Its more subtle accomplishment lies in its urban fit: Running east-west, the museum forms the northern boundary of a pedestrian promenade. When conventional wisdom might have dictated excavation, a bold decision to cloak two elevations of the above-grade parking garage with condominium housing at once compresses the individual elements into legible density, costs less to execute than burying the cars, and will attract the larger public. Brilliantly, the planner has added the authenticity of human presence with the guaranteed comings and goings of residents across the plaza.

Such programmatic ambition, difficult to achieve in the rough-and-tumble of this or any polis, found supporters throughout the city, including the late Jennifer Moulton, a highly regarded city planner and project champion. Denver native Brit Probst, principal with Libeskind's allied local firm, the Davis Partnership Architects, also cites Denver's political, economic, and arts leadership, which united and stuck behind the plan. His own office and Libeskind's shared personnel in both New York and Denver, and their own intraprofessional collaboration insured a technical finesse and polish that many contemporary projects lack.

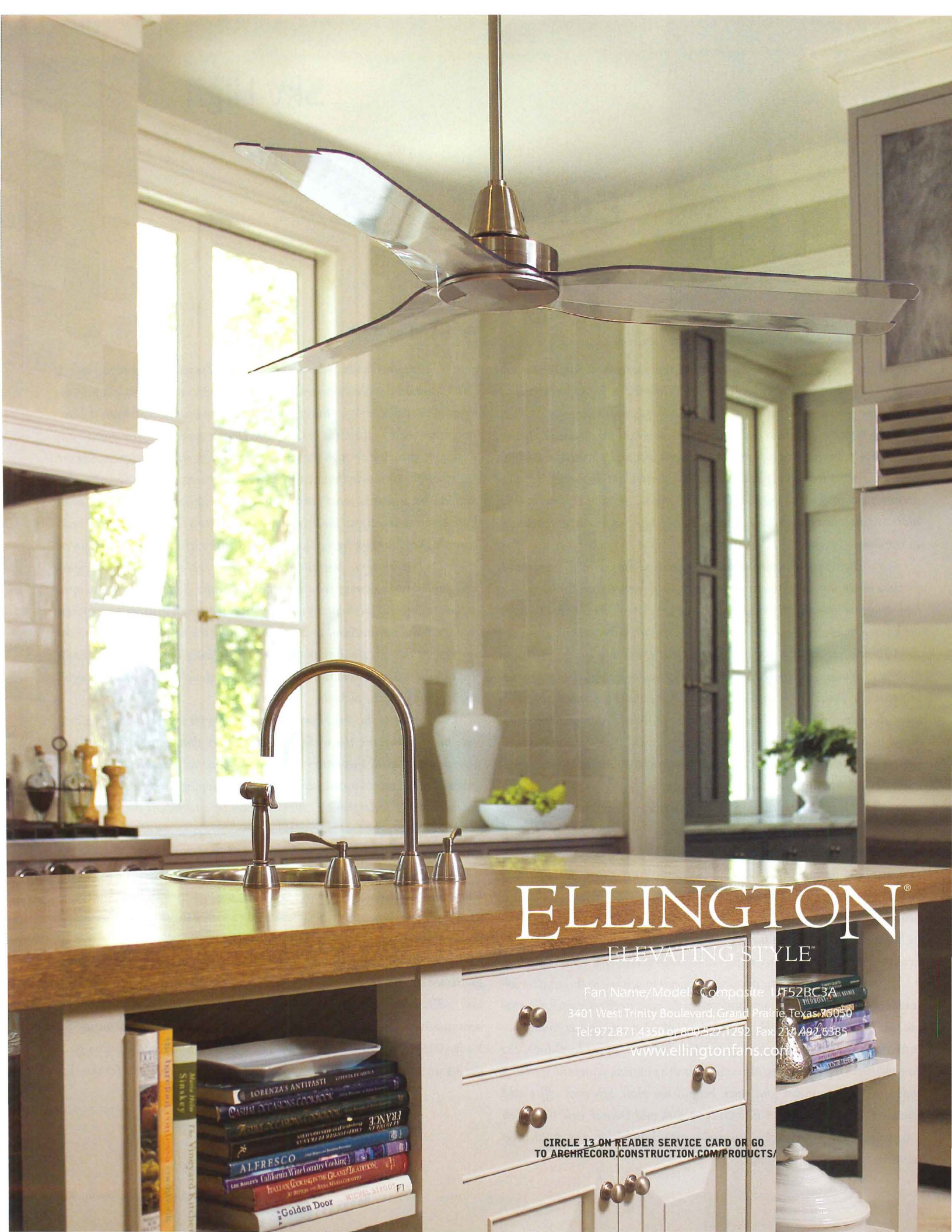
Inside, Libeskind creates a processional sequence that begins quietly in a transitional space that opens upward. As in Berlin, a staircase defines the heart of the experience for the visitor, but whereas historical and social gravitas provided the explicit text in Germany, Denver evokes a lighter mood—call it elation. Traveling through the museum, ascending in order to encounter art, each footfall sets the rhythmic experience. Step by step, level by level, the space unfolds. Walls that hovered outside form tilted interior planes, leaning away from linear stairs toward the light, which rakes across the white surfaces, beckoning higher. Have we seen a stair rendered with such élan in many decades?

Nevertheless, restraint characterizes the spiral. While Wright's Guggenheim Museum offers a vertiginous circular descent around an open atrium, Libeskind modulates the void, never allowing a distracting overview to disturb the equilibrium. In a city marked by the bowl of the sky and the vastness of the surrounding plains, the controlled glimpses through public space of the museum honors the human scale and, unlike every mall in sight, doesn't grab for too much air.

What of the art? How can a building with so few right angles provide the flat surfaces, the walls, the perspectives that frame the views and provide the expected encounters with two-dimensional paintings, or even flat-screened monitors? What objects can fit in the sloping corners? Remarkably, the dedicated galleries provide intimate spaces for establishing the relationship of individual to work and to idea. Where geometry runs out of wall, paintings literally free-float, with little lost.

All is not perfection. Smaller galleries, tucked into the eaves, seem cramped and doll-like. And one might ask how many buildings with such assertive, three-dimensional personalities do we need in our cities? How many museums that outshine their installations? How many shards are too many?

Obvious triggers for raised eyebrows include the architects' willful flourishes, such as the cloud-form patterning of the nearby condominium's curtain walls that will not age well. Yet such arguments pale beside the scope of the accomplishment. As a totality, the Denver Art Museum achieves an urban unity, drawing residents and visitors downtown to experience art through a daring architectural act. In Denver, today's architecture reaches for the sky.

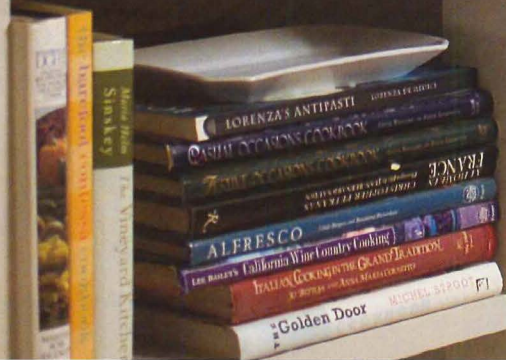


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Letters

Life without style

Thomas Hine's insightful review of lifestyle center developments ["Prêt-à-Cité," October 2006, page 78] correctly identifies the benefits of these retail theme parks as business solutions while reminding us that these are not real cities, despite the artful and clever design efforts. Lifestyle centers are a logical extension of a mind-set that favors living in gated communities, driving to distant secured office complexes in inefficient, oversize vehicles, and vacationing at corporate theme parks. The common element throughout is isolation. The promise of the mediated, manufactured "lifestyle" is freedom from unexpected encounters with potentially unpleasant people (teenagers, panhandlers, drunks, etc.) in exchange for an ersatz imitation of a "real" urban streetscape. Trying to distill the attractive physical design elements from the forces that created the originals is like wanting to enjoy the steak without understanding how feedlots and meatpacking houses operate. The risk is that large numbers of people may draw the conclusion that these fake urban environments are authentic evolutionary creations instead of engineered plastic downtown Disneyland.

—George Hutchinson, AIA
Minneapolis

Classicism continued

Martin Filler's excellent October Critique, "Is Classicism the style that will not die or the habit architects can't kick?" [page 51], illuminates a significant phenomenon: Style revival is a pronounced characteristic of architecture, while it is less apparent in other arts. Despite the importance and relevance of the article, however, Filler does not mention the Renaissance, a glowing example of Classical

revival. Nor does he discuss the prevalence of complex modern building programs that seldom are happily contained within a symmetrical Classical envelope.

—James A. Gresham, FAIA
Tucson

Long live Imperialism

I enjoyed Martin Filler's October Critique on Classicism and found his assessment of the career of Edwin Lutyens to be very well considered. The Viceroy's House is quite possibly, as Filler says, the greatest public building of the 20th century and is a remarkable synthesis of vernacular and high Classical idioms rendered in the superb local materials of red and buff sandstone. Rarely has Imperialism looked so good.

With respect to the work of Lutyens in India, while early work on Chandigarh was under way, Le Corbusier was reported to have said that the problem with Lutyens was that he did the wrong thing so very well.

—Kevin Hanvey,
Vancouver

Here there be monster

I loved reading Sarah Amelar's description of Morphosis's University of Cincinnati Campus Recreation Center: "With the muscular body of an athletics compound, the slit-eyed head of a dorm, the diaphanous wings of a swarm of lecture halls, and the robust belly of a food court, the University of Cincinnati's new Campus Recreation Center is a chimera of a building." [October 2006, page 100.] I haven't stumbled onto a "chimera" since my art history classes many, many moons ago! Thank you for a refreshing piece of writing.

—Peter McCandless
Washington, D.C.

Speaking geometry

ARCHITECTURAL RECORD readers have enjoyed many informative Russell Fortmeyer articles; however, his recent Exhibitions piece, "Bucky and Noguchi are back, informing three New York shows" [September 2006, page 61], leaves much to be desired.

Best of Friends curator and brilliant architect-engineer-planner Shoji Sadao was a major contributor to the successful execution of urban design artifacts by both Fuller and Noguchi at shared New York design studios. Sadao was the environmental systems planning and design "strut" structurally linking these two giant nodes of synergetic creativity that far transcends Modernism and adroitly links us to Futurism.

The artistic, scientific, technological, and philosophical manifestations of these geometric foresights have very strongly influenced avant-garde visionary architects such as AIA Gold Medalists I.M. Pei, Norman Foster, and others, as well documented by ARCHITECTURAL RECORD.

"Buckminsterfullerene," "buckyballs," and "buckytubes" are not accidental atomic and molecular insights, they are the geometric nanotechnology networks of life itself, affording us vast economic ("doing more with less") and environmental ("Design with Nature") opportunities in art and architecture for the benefit of humanity.

Unfortunately, Fortmeyer muddies the pristine Fuller-Sadao-Noguchi waters of invention and clarity of presentation with the utterly ridiculous nonsense about incomparable stylistic exhibitions that disdainfully permeates some of our schools of architecture globally.

For centuries, geometry has been the problem-solving language of architects as planners and designers. With robotics, "tensegrity," and self-assembly looming in

the forefront, Fuller's "synergetic geometry" breakthroughs, tested with counterparts Isamu and Shoji need to be better understood.

—Andrew Charles Yanoviak, AIA
Honolulu

Corrections

A photograph in October's Critique column, "Is Classicism the style that will not die or the habit architects can't kick?" [page 51] was incorrectly identified. The photo is not of Edwin Lutyens's Viceroy's House, but of one of the twin Secretariats by Herbert Baker, located in the same complex of buildings as Viceroy's House. October's Products section [Cevisama Review, page 232] included an incorrect image for Tau Ceramica's Metallica Silver tile. The correct image for Metallica Silver can be found at www.archrecord.com/products/tradeshows/0610_cevisama-1.asp. An October news story about pending renovations to the Louvre museum [page 37] incorrectly reported that Pei Cobb Freed would be responsible for the job. I.M. Pei is independently developing a solution to manage overcrowding. The October news story "Sheldon Silver stalls Moynihan Station proposal" [page 38] suggests that developers Related and Vornado have withheld a wider-ranging redevelopment plan from the Public Authorities Control Board (PACB). In fact, presentations to the PACB are the responsibility of the Empire State Development Corporation. In the October article on the Campus Recreation Center at the University of Cincinnati [page 100], the cladding on the dormitory component is not aluminum, but horizontal, insulated steel composite panels.

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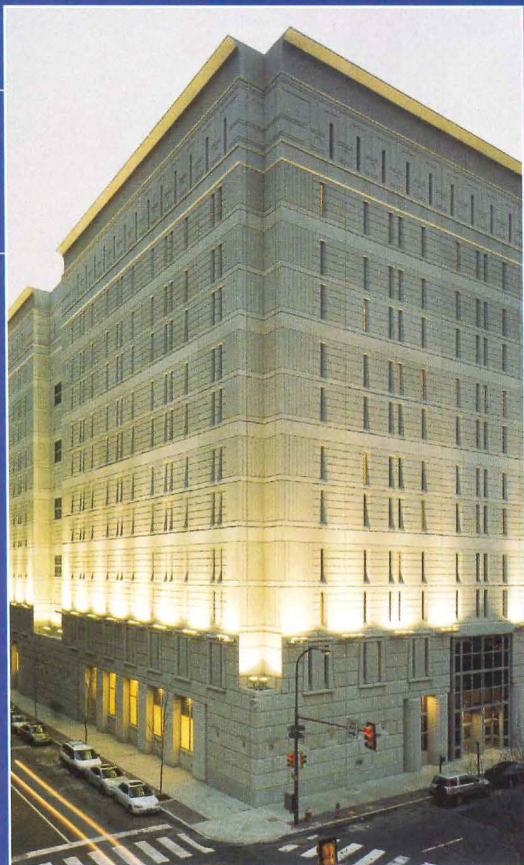


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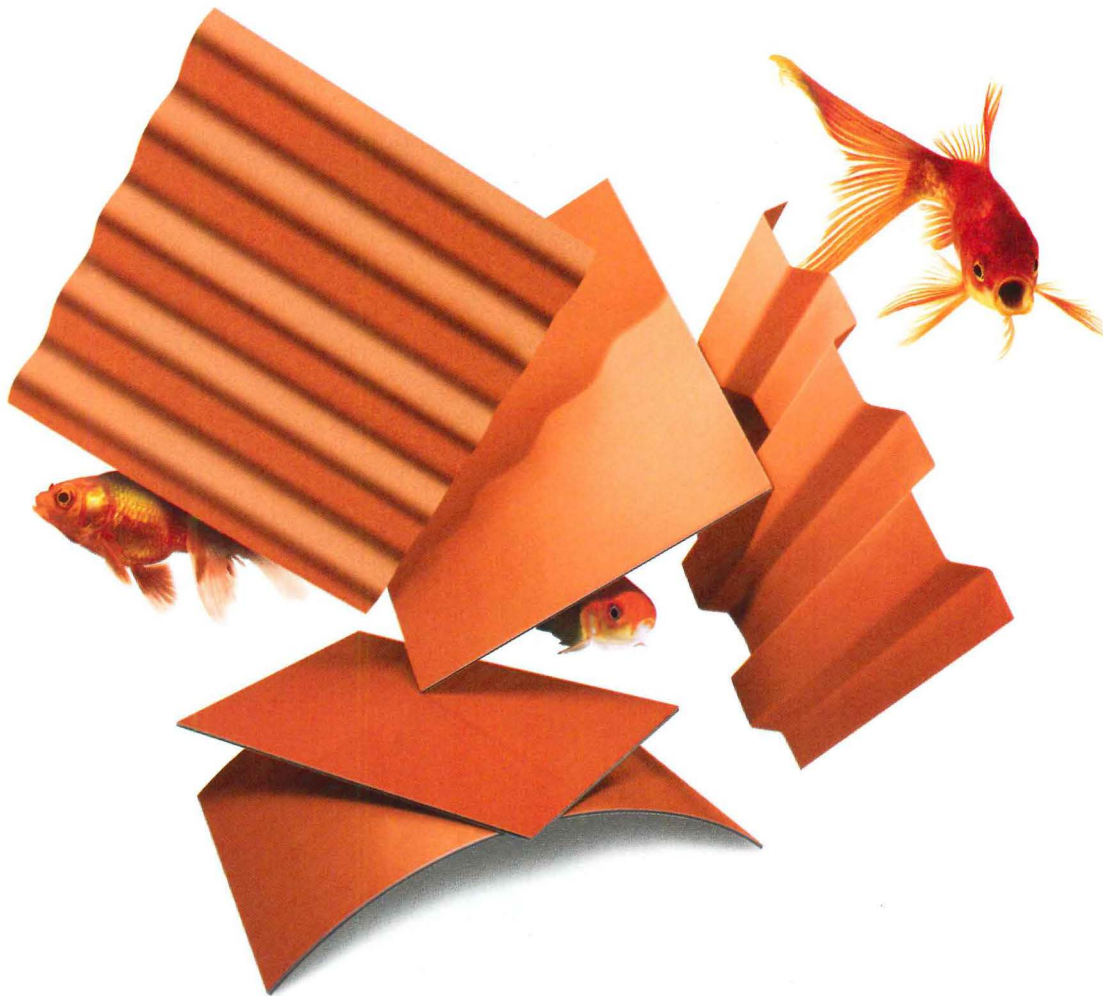
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p.30 Lowe's to sell Katrina Cottages

p.32 Zaragoza sneak peek

p.34 New York school is an object lesson

p.38 MIT dusts off Maki design

Third time's the charm as Koolhaas unveils Cornell design

On September 20, Rem Koolhaas presented OMA's design for Milstein Hall, the newest building for Cornell University's College of Architecture, Art and Planning, in Ithaca, New York.

The plan, described by Koolhaas as a way to "undo the autonomy of the box," is a 43,000-square-foot elongated box plinth that connects different buildings within a 19th-century arts quadrangle. In bridging the campus's Sibley Hall, the Foundry, and Rand Hall, Koolhaas hopes to unify distinct spaces and link the architecture, planning, and art departments.

Designed to be open and flexible, the building features space for

studios, presentation and exhibition areas, an auditorium, and eventually a library. Open, usable space above and below the building will provide ample opportunity for communal gathering. Milstein Hall will extend over University Avenue to provide a gateway experience, and it reaches toward the northern gorge in an effort to connect to the landscape.

A project with a turbulent history, both Steven Holl and Barkow Leibinger Architects were awarded the job but later removed from it. Mohsen Mostafavi became dean of the school in April 2004 and later recruited OMA to design Milstein. Mostafavi was previously chairman of London's



OMA's Milstein Hall, the third design for the project, will link three buildings.

Architecture Association, where both he and Koolhaas studied.

"Even though we are in rural upstate New York, land is very precious here, so it is important to be as precise as possible," Mostafavi says. "Right now we have an architecture department, an art department, and a planning department that are isolated. We want a building that will

tie these things together and generate connectivity."

Initial plans for the \$34 million building began in 1994, when New York City developer and philanthropist Paul Milstein donated \$10 million to the college. The project is nearing the end of schematic phase, and ground breaking is expected in 2007. *John Gendall*

Koenig's Case Study House No. 21 to be sold at auction

Another one goes on the block. Case Study House No. 21, Pierre Koenig's landmark of SoCal Modernist architecture in Los Angeles, will be sold by the auction house Wright in December.

Koenig's No. 21, also known as the Bailey House, is a Minimalist classic consisting of a sublime, open-plan, steel-and-glass structure that Koenig built in the late 1950s for \$20,000. Surrounded by five reflecting pools that cast a continuous dappled light

into the interior, the residence has two bedrooms, a central court, a carport, and a water-cooled roof. Koenig himself oversaw a complete renovation of the house in 1998, after which it was sold for \$1.5 million. The architect observed in a 2003 interview, "All the aspects of the building are so integrated that you can't take one thing out without destroying the whole." The opening bid is set at \$2.5 million.

Other Modernist gems that have been auctioned in past years

include Mies van der Rohe's Farnsworth House, sold by Sotheby's in 2003 for \$7.5 million, and Philip Johnson's Rockefeller Guest House, which garnered \$11.1 million at Christie's in 2000. Auctions lend more rarefied cachet to what is already a precious commodity, and the bidding wars inspired by the setting inevitably lead to higher prices.

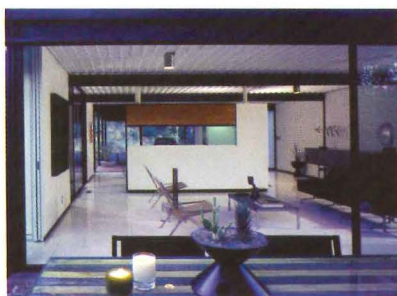
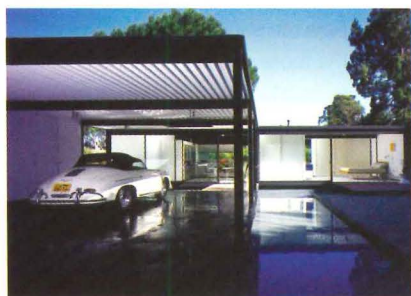
"This is not just a piece of architecture that you can determine the value of based on the local market,"

explains Wright owner Richard Wright. "There is a space between art and architecture where this home and other significant properties lie." Current owner Mark Haddawy seems to have intended nothing less for his residence, having stocked the house with art and design

heirlooms; in what might be described as an expensive rummage sale, these items will be auctioned on the same day as the house.

The Case Study Houses were commissioned by *Arts & Architecture* editor John Entenza to promote new building materials, aesthetics, and technologies, and to showcase well-designed middle-class housing. Other Case Study designers included Charles and Ray Eames, Richard Neutra, and Craig Ellwood.

Wright has enlisted photographer Julius Shulman, renowned for his documentation of the Case Study project, to create a new homage to the residence. Those images, along with an essay by historian James Steele and photographic interpretations created by art-world high-flyers such as Catherine Opie and Grant Mudford, will be available in a limited-edition catalog. *Jeremy Lehrer*



Photographer Julius Shulman revisited No. 21 for the upcoming auction's catalog.

IMAGES: © OMA (TOP); JULIUS SHULMAN FOR WRIGHT AUCTIONS (BOTTOM TWO)

Industrial designer Bill Stumpf, creator of the Aeron chair, dies

Bill Stumpf will forever be associated with the Aeron chair, that totem of the dot.com boom of the 1990s. But no designer was less faddish than Stumpf, who died on August 30 in Rochester, Minnesota, at the age of 70.

Stumpf designed the ergonomic Aeron for Herman Miller in 1994, working with Don Chadwick. Eric Chan of Ecco Design, who worked with Stumpf on several projects, called him “a design giant, a deep thinker, a cultural visionary, and good friend, mentor, and teacher.” In addition to the Aeron, Chan says, “the Ergon and Equa chairs, also the Ethospace office

system, were each breakthrough designs when they were introduced. His impact on the lives of millions of office workers was huge.”

Stumpf was born in St. Louis and was educated at the University of Illinois at Urbana-Champaign. His innovations in ergonomic design began with hard-core knowledge of orthopedic and vascular science, which he gained at the University of Wisconsin in the late 1960s. He went to work for Herman Miller in 1970, then two years later established his own firm, Stumpf, Weber & Associates, in Minneapolis. He produced the Equa chair for Herman

Miller in 1976; some have characterized it as the first modern ergonomic work chair. Ethospace, done with Jack Kelley in 1984, made serious refinements to cubical partitioning systems, which were just starting to become ubiquitous. Ethospace also pioneered wire management at the dawn of the personal computing age. Years ahead of its time, it came out in the year of the first Macintosh computer.

The Aeron chair exemplified Stumpf’s constant return to the basics of a problem: “I work best when humbled,” he once said. The



William Stumpf, 1936–2006.

Aeron became a literal metaphor for the best qualities of network thinking—flexibility, transparency, and adaptability. Those very qualities defined the designer’s singular rigor.

Stumpf won the 2006 National Design Award for product design, presented posthumously by Cooper-Hewitt, National Design Museum. *Phil Patton*

Lowe’s makes Katrina Cottages available for purchase

Katrina Cottages, kit-of-parts houses designed for hurricane-affected residents of the Gulf region, will finally be available to the public. The hardware superstore chain Lowe’s will sell the systems in its Louisiana and Mississippi stores in late fall.

The bungalow-style cottages range in size from 544 square feet to 936 square feet, and can be expanded. Featuring Hardy Plank siding, wood framing, and metal roofing, they were developed as

cheaper, more durable and attractive alternatives to the trailers that FEMA has dispensed throughout the area. The homes resist rot and termites, withstand winds of up to 140 miles an hour, and meet most hurricane codes as well as the International Building Code.

New York-based designer Marianne Cusato first introduced Katrina Cottages at the International Builders’ Show in Orlando in January 2006. She designed two of Lowe’s

first four models, while the others were designed by architect Andres Duany, FAIA, one of the founders of the Congress for the New Urbanism, and by South Carolina designer Eric Moser. The next rollout may include as many as 15 new designs, Cusato says. Dave Steed, general merchandise manager at Lowe’s, says that the company is aiming for a \$45-per-square-foot cost. Prices encompass all building materials, but exclude construction, HVAC, and

code-related foundation materials.

“We can’t just put up barracks, or assembly-line housing,” Cusato says of the need for the regionally inspired cottages. “There has to be something that creates a sense of place. We have to get back the sense of community that was lost.” More than 250,000 homes need to be replaced or repaired in the region.

The Federal Emergency Management Agency and Department of Homeland Security have launched a \$400 million program that will likely help the cottages take hold. The FEMA/DHS pilot supports temporary modular housing and favors “context-sensitive housing.” It should be “better” and “cheaper” than the “current trailer-park method of sheltering disaster victims,” says Tom Wolfe, senior director of federal affairs at the AIA. Wolfe says that many types of temporary housing will be considered for funding, including the cottages.

States have until October 20 to submit their applications for program funds, which will be evaluated by a FEMA-appointed selection committee comprising government representatives and housing experts. How the states propose to release the money—via low-interest loans to developers or grants to residents, for example—will be left to their discretion, Wolfe says. The FEMA/DHS program is based on requirements in H.R. 4939 Emergency Supplemental Appropriations Act. The AIA lobbied heavily in favor of the bill, which became law in June. *Sam Lubell*

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Zaragoza prepares a garden of architectural delights for 2008 World's Fair

The usual cocktail of trendy architecture, spectacle, and a worthy cause is the formula chosen by yet another Spanish city for its economic self-promotion and urban regeneration, as Zaragoza gets ready for the next World's Fair. Situated 190 miles west of Barcelona on the banks of the Ebro, Spain's second-longest river, Zaragoza is capital of the arid inland region of Aragon. That contrast between its climate and ample river lends special relevance to "Water and Sustainable Development," the theme of Expo Zaragoza 2008, popularly baptized as "ZH₂O."

The Expo site comprises 60 acres of former farmland within a meander of the Ebro in which ACXT, the landscape-design arm of Spanish architecture and engineering giant IDOM, has created a series of organically shaped platforms and pavilions. The fairgrounds are set amid a 130-acre Aquatic Park designed by French landscape architect Christine Dalnoky and Barcelona-based architects Iñaki Alday and Margarita Jover. The park includes a botanical garden and a chain of waterways integrated into a natural water purification system.

Expoagua, a public company set up and financed by national, regional, and municipal authorities to build the fair, organized a series of juried competitions to select participating architects. The winners represent a cross section of young and established Spanish architects, as well as some international firms. But only a few broach the fair's theme with real inventiveness.

Standing out among the Expo projects are Zaha Hadid's Bridge

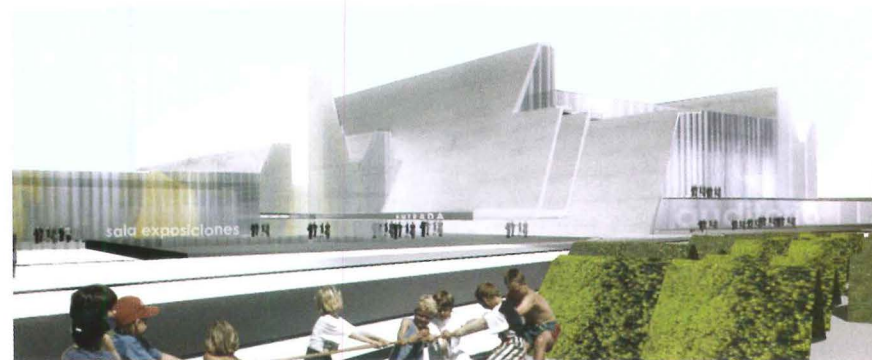
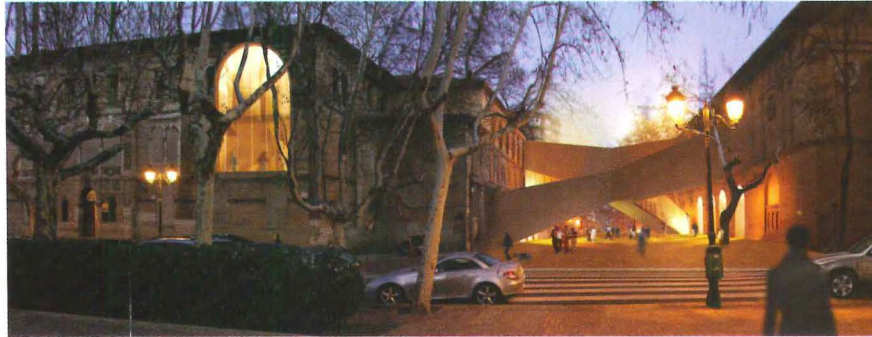
Pavilion, which spans the Ebro [RECORD, September 2005, page 47], a Congress Center by Madrid architects Fuensanta Nieto and Enrique Sobejano, and Francisco Mangado's Spanish Pavilion. The Congress

the surrounding space through evaporation. "Clearings" in this forest will contain glazed exhibition spaces.

Other projects include a 240-foot Water Tower with a teardrop footprint, a vertical exhibition on

Architectural achievements will span beyond the fairground limits. Goya Space, for example, is a modest proposal to revitalize the downtown Museum of Fine Arts and adjacent School of Applied Arts, both built for a 1908 fair. The project is dedicated to Aragon's most famous native, painter Francisco de Goya. The competition attracted Dominique Perrault, Gae Aulenti, Spanish architects Cruz and Ortiz, Jordi Garcés and Fermin Vázquez, and others. Herzog & de Meuron won with a proposal to carve four spaces out of the school volume to represent a Seville church, a Madrid chapel, the country house where Goya's famous "Black Paintings" were found, and Madrid's Royal Academy. While each of the four original sites hold or have held Goya's paintings, the walls of these emblematic "Anchor Rooms" will be finished only in gray brick to match the building facades. They will also contain commissioned artworks related to Goya "to create an uncomfortable dialogue between art and architecture," according to the architects' brief. A double brick staircase between the two buildings will add a new point of entry, too.

Zaragoza mayor Juan Alberto Belloch has won broad citizen support for the fair, and the cooperation of the region's political parties. Aragon president Marcelina Iglesias has called the fair an opportunity for the city to "make a 20-year leap forward." The public budget for fair infrastructure is just over \$1 billion, with additional costs for related improvements to the city's airport, highways, and riverside. After 2008, the precinct will be dedicated to cultural activities and a technology research park. *David Cohn*



Highlights of Expo Zaragoza 2008, from top: Goya Space; Spanish Pavilion; Congress Center.

Center combines a modulated structure, long-span prefabricated beams, and other prefabricated elements for both rapid assembly and a geometrically elegant design. Mangado's pavilion is conceived as a grove of ceramic "tree trunks," which are structurally hung from a thick roof plane penetrated by light wells. The trees rise from a pool and draw water up their trunks via osmosis to cool

water's environmental cycles, and a lookout platform, all designed by architect Enrique de Teresa; six themed exhibition plazas mixing organic forms and water features by the Barcelona team of Enric Batlle and Joan Roig; a fluvial aquarium by Álvaro Planchuelo, a specialist in the type; and the Pavilion of Aragon, designed with a basket-weave skin by the local firm of Olano and Mendo.

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A river runs through it: Ivies' expansion plans to jump natural boundaries

With both their coffers and their campuses bursting at the seams, Ivy League universities are beginning to initiate large-scale expansion campaigns. These schools are graduating from the quadrangle to become multibillion-dollar, master-planned developments that stretch dozens of acres into surrounding neighborhoods.

The board of trustees at the University of Pennsylvania adopted a plan in June for a \$2 billion redevelopment and expansion to last several decades. Authored by Sasaki Associates, the plan capitalizes on the anticipated acquisition of a 24-acre land parcel currently owned by the United States Post Office.

The decision dates to 2004, when new UPenn president Amy Gutmann promised to connect the campus with the city. The Schuylkill River divides its eastern edge from Philadelphia, while a university-owned industrial zone, transportation corridor, and sports fields, wedged between the campus and the river, enhance the sense of isolation.

The Sasaki plan aims to integrate the campus, the newly acquired property, and the industrial wedge into one, and to unite this new whole with the city. Dennis Pieprz, Sasaki president and principal in charge, explains, "The design intends to make the expansion of the campus seamless with the city." This will largely be accomplished with a series of mixed-use facilities, cultural venues, public spaces, and an emphasis on the bridges that connect the two sides of the river.

The UPenn plan bears a resemblance to a plan under way at Harvard, which is preparing to submit a 50-year development scheme that encompasses 200 acres across the Charles River, in the city of Allston. Harvard has had longstanding facilities in Allston, including the Business School and Soldier's Field, as well as acreage it has amassed since 1997. The current master plan will weave these parts together and add an ambitious science and cultural program, open space, and commercial opportunities within the larger parcel.



Sasaki Associates envisions the UPenn expansion to engage the urban fabric.

The scheme also entails relocating Harvard's other professional schools and some undergraduate housing across the river.

Led by Cooper, Robertson, and Partners in collaboration with Gehry Partners and Olin Partnership, the master-plan design team aims not only to merge the campus on both sides of the river, but also to encourage interaction between different schools and departments. Sustainable design is a priority throughout. As part of the Harvard Green Campus Initiative, all new buildings will comply with a yet-to-be-determined LEED standard.

In September, Behnisch

Architekten submitted conceptual designs for a 500,000-square-foot science center. This group of four sustainable buildings will house a number of different science departments, but will focus on accommodating dialogue between those groups. Daly Genik was selected to design a visual arts center in May 2006.

Chris Gordon, Harvard's C.O.O. for the Allston Development Group, says the campus plan is "an interdisciplinary plan where academics can really flourish." The budget is not yet final, but Gordon expects the plan's submission to Allston by the end of 2006. *J.G.*

New high school wears its mission on its sleeve

If one is going to create an architecture-themed high school from scratch, then it follows that the building itself could become a chief teaching tool.

The notion seems romantic, but behold Arquitectonica's muscular High School for Construction Trades, Engineering, and Architecture. Opened this fall on the site of an old brush factory in Ozone Park, Queens, the 150,000-square-foot structure has five simple but educational skins. Each marks a different function: precast concrete clads the auditorium; painted steel is used

for the library and corrugated steel for the construction and carpentry lab; the entrance is glass block; and redbrick is used in the three-story volume containing classrooms, which cantilevers to rest atop an equally cheeky slanted concrete column.



The school's many claddings signify different interior functions.

Essentially, it's a materials study right there on the sidewalk. And it picks up again in the double-height lobby-cum-gallery, where various cladding pierces the front wall to define the program of volumes inside.

From nearly anywhere you stand, the jutting and nesting boxes arranged along the elbow of the L-shaped classroom "bar" is easy to read. "It's like a teaching library of possibilities," firm principal Bernardo Fort-Brescia, FAIA, says.

Using the physical structure this way was important, precisely because the school isn't the first of its kind. The School Construction Authority and architect of record STV wanted the new building to stand out from similar programs in Philadelphia, San Francisco, and Manhattan when they tapped the Miami firm. They measured some astonishment when students began scrutinizing their new environment and giving visitors architectural tours. Fort-Brescia isn't surprised they felt a connection, though, noting, "Schools are generally classic brick with catalog details. This one has edges that are emerging and raw—the restless energy of adolescence." *Kelly Beamon*

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French business district to be upgraded

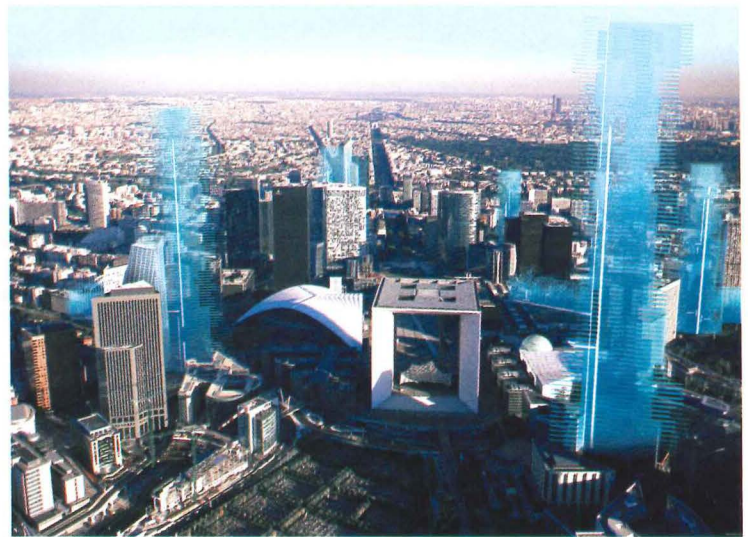
In July, the French government announced major long-term redevelopment plans for the suburban Paris business district La Défense in order to shore up aging buildings and to make the zone more competitive internationally.

Built over a looped network of roads at the end of Paris's historic axis, the urban design of the 395-acre La Défense was inspired by Le Corbusier's concept of towers in a park. The project, named for the Franco-Prussian War monument La Défense de Paris, began in the 1950s alongside postwar economic recovery. Houses, small factories, and farms were first demolished to make way for the Center of New Industries and Technologies (CNIT), the 1958 exhibition hall built by the Federation of Engineering Industries to show off French industrial achievements; the Etablissement Public pour l'Aménagement de La Défense (EPAD) was founded the same year to purchase land for the future district.

Although built in phases afterward, the overall urban design of La Défense has "changed little" says Bernard Bled, director of EPAD, which now manages La Défense. "It is necessary to make it better, more daring, more modern."

Even in its infancy, commentators criticized La Défense for failing to engage the street or to mix uses. The newspaper *Le Figaro* reported, "The walkways at midday are about as quiet as a Sunday afternoon in the country, and at night you could think there's a curfew." The CNIT, however, was celebrated for its 153-foot, thin concrete roof span.

One in six La Défense buildings was built before 1985 and has not been refurbished since. Work will begin with the partial demolition and modernization of 17 high-rise buildings, and includes Kohn Pedersen Fox's redesign of Axa Tower, which, reconstructed to a height of 738 feet, will become the tallest building in France. Other projects include the refurbishment of the Quatre Temps



Massing for new skyscrapers surrounding Grande Arche de La Défense.

shopping complex as well as the overhaul of the interior of CNIT.

Along the front of the CNIT's semicircular glass facade, four terraces will be sunk into the pedestrian *parvis*, or esplanade, that runs up the spine of La Défense. Crossed by footbridges, the planted terraces are designed to reveal the full height of the building, whose base was concealed by the *parvis*.

New skyscraper construction is due to start in 2007. That effort will create at least 3.2 million square feet of floor space over a five-year

period. And 1,400 apartments are due to be completed by 2013, followed by the extension of a fast-transit train line to improve links between the capital, La Défense, and the surrounding region. The project will be financed by the sale of building permits.

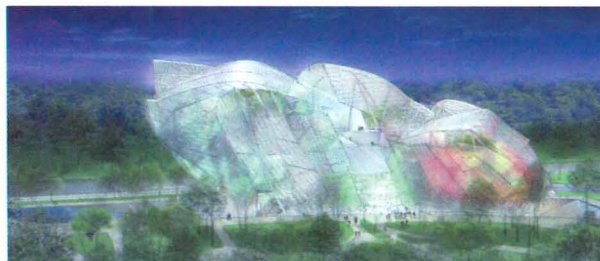
EPAD also announced that it will launch an international architecture competition this year. The winning architectural firm will construct an iconic building, the Tour Signal, which will symbolize the urban renewal of the district. *Robert Such*

LVMH announces private museum designed by Frank Gehry

Frank Gehry, FAIA, is designing an art center in Paris for luxury goods company Louis Vuitton Moët Hennessy. The \$127 million project, the Louis Vuitton Foundation for Creation, will be located in the Bois de Boulogne.

The foundation will "open a dialogue with wider audiences," says company chairman Bernard Arnault, who initiated the project. LVMH already has an art gallery on the top floor of its new store on the Champs Elysées, and has hosted exhibitions at Paris's Pompidou Center, Palais de Tokyo, and Grand Palais. The new building is scheduled to open in late 2009 or early 2010. Modern and

contemporary art, as well as original, site-specific commissioned work, will likely be themed around LVMH products and symbols. The center will also contain spaces for research, documentation, and teaching.



The LVMH museum will billow in Paris's Bois de Boulogne park.

The building will take shape on the site of a former bowling alley next to the Bois de Boulogne's Jardin d'Acclimation, a large children's park.

A model revealed at a press conference showed an asymmetrical, hunched-over structure with a solid core and jaggedly cut-glass skin.

The materials making up this core have not yet been determined, says

LVMH spokesperson Jun Fujiwara. The company's press release describes the building as "a vessel within the trees" that is visually open to its environment.

Suzanne Pagé, formerly director of the Musée d'Art Moderne of the City of Paris, will be the foundation's artistic director.

This will be Gehry's second building in Paris. In 1994, he

designed the American Center in Bercy; it was recently converted into the Cinematheque Française, a film museum and library.

LVMH's plans are anomalous for Paris, where public museums are still the norm. Other private contemporary art museums include the Cartier Foundation, designed by Jean Nouvel, and the Maison Rouge, founded by art collector Antoine de Galbert. Arnault's rival Francois Pinault, founder of luxury brand Pinault-Printemps-Redoute and owner of Christie's auction house, recently scrapped plans to build a contemporary art museum on the Ile Seguin in nearby Boulogne-Billancourt. Citing bureaucratic delays, he moved his museum to the Palazzo Grassi in Venice. *S.L.*

Record News

Developers seek to impress by channeling Monet

Transplant Claude Monet's water lilies to Atlanta? Why not, say two developers. A new gated community named Le Jardin, inspired by the water garden at Monet's estate in Giverny, France, is now under construction on the southern fringe of Atlanta. The brainchild of Brian Jordan and Stephen Macauley, the project has been blessed by the Academie des Beaux-Arts and the Fondation Claude Monet. In fact, Gilbert Vahé, chief gardener of the estate for more than 30 years, will personally oversee the development of two replica water lily ponds.

"The climate is very different," Vahé says. "But we'll have fewer problems than Monet himself had in growing water lilies because [the weather is] far



The picturesque gatehouse of Le Jardin.

more favorable." Vahé adds that the Atlanta replica may be truer to the garden in Monet's time, because tourists have worn down the original.

NCG Architects of Atlanta is designing the French-inspired entry features, gatehouse, and clubhouses, and helping to develop architectural guidelines for the residences. Le Jardin will include 167 luxury houses, priced from \$1.5 to \$6 million, and 800 other residences priced from \$350,000 to \$1.5 million. Community amenities are to include two clubhouses, an athletic park named after Jordan (who plays for the Atlanta Braves), retail shops, and 24-hour concierge service. The 1,100-acre site will also be peppered with large-scale public sculptures commissioned through The Lowe Gallery, by artists such as Richard Hallier, Margarita Checa, and Hans Van de Bovenkamp.

"For me, it was important to create this community where kids can see beautiful sculptures and gardens and learn about them," says Jordan, who is also a children's book author and founder of the youth-oriented nonprofit Brian Jordan Foundation. Macauley calls Le Jardin "sort of the anti-golf community," pointing out that at Le Jardin, funds usually reserved for golf courses will be funneled into artistic projects instead. *Tim McKeough*

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Popular architecture forum launches in New York

Its architecture's version of speed dating. At Pecha Kucha, an event born in Tokyo in 2003 and introduced to New Yorkers in September, architects are allowed 400 seconds to show 20 images of their work. "There's no saying 'back' to the projectionist," explains Klein Dytham Architecture principal Mark Dytham, who began organizing the events with partner Astrid Klein. Indeed, the projectionist changes the slide every 20 seconds, ready or not.

The first Pecha Kucha New York was held, incongruously, in a beer garden in Queens. While competition from a dozen other architecture-related events the same September evening portended a low turnout, more than 500 people, mostly young

professionals, attended. "Zaha Hadid must be speaking to an audience of three people tonight," an ebullient Dytham said.

Sarah Oppenheimer, a conceptual artist, presented a "piece" in which sculptural objects were classified according to the Dewey Decimal System, while landscape architect Kate Orff of New York's SCAPE did a brilliant riff on the tension between answering e-mails and actually working. Other presenters offered more conventional, if speedy, slide shows: Dytham, whose firm is based in Tokyo, showed a narrow house constructed as part of a billboard in that city; New Yorkers Ben Aranda and Chris Lasch showed the 10 Mile Spiral, a traffic interchange-cum-

casino for Las Vegas; Eric Bunge and Mimi Hoang of New York firm nArchitects presented *Wind Shape*, an installation they completed this summer in Lacoste, France.

ShoP Architects' Gregg Pasquarelli announced that he was going to show "illicit images"—ones the clients had never released—that included rejected proposals for the East River Park, a building in Little Italy that brilliantly skirts the historic-district requirement that the facade be made of bricks, and renderings of a new Rector Street Bridge to replace the temporary bridge the firm designed shortly after 9/11. He added that if there were any reporters present, he would "deny the whole thing in the morning." It's exactly that kind of

subversion that defines Pecha Kucha. Dytham says, "We try and get the better-known designers to show something they couldn't normally show at a 'real' lecture. We all know what they do—[so] show us something unexpected."

The tack seemed to appeal to Reed Langhofer, a 26-year-old designer at Perkins Eastman, who said he would attend the next Pecha Kucha, while he shared a pitcher of Hoegaarden with a group of friends from Tulane. "We've had fun, and the presenters seemed to have fun, too," he said, adding that the format meant "we got to see a lot more work than in a normal lecture." Check pecha-kucha.org for news of the next event. *Fred A. Bernstein*

MIT reboots Media Lab project

Mothballed in the aftermath of the dot-com collapse, the expansion of MIT's Media Lab, designed by Fumihiko Maki, has been reconfigured and relaunched. The revised

\$120 million, six-story building is slated for spring 2007.

Unrealized during MIT's recent spate of marquee projects, the Media Center project had to be

Architecture and Planning. "There's a larger mission than serving one entity," she says. During the go-go '90s, the Media Lab, avatar of the so-called new economy's melding

of digital media, advanced design, and marketing, proposed funding the building mostly through corporate donations. As the tech bust proved, Santos explains, "that was not a tenable position." MIT wound up investing in the project along with corporate and private donors.

Maki's Minimalist steel, glass, and aluminum design includes a

double curtain wall and external aluminum screens. The light-filled interior features open floor plans, overlapping spaces, and several large atria. An extensive basement level

was eliminated from the original design, and the building's mechanical systems and other details are being updated, according to Santos.

The new building will connect to the Media Lab's current home, the Wiesner Building, designed by I.M. Pei and completed in 1984. The combined structures will accommodate the Media Lab, the List Visual Arts Center, the architecture and planning department's visual arts program, and the MIT program in comparative media studies, as well as the Okawa Center for Future Children and the LEGO Learning Lab.

That the plans could be dusted off fairly easily attests to the durability of Maki's design, Santos says.

"He does things with extraordinary elegance and clarity, and he's incredibly efficient," adds William Mitchell, professor of architecture and media arts and sciences and former dean of architecture and planning. "He manages to get a lot of program onto a tight urban site." *Ted Smalley Bowen*



Maki's MIT Media Lab design was trimmed back from the 200,000 square feet proposed in 1999.

163,000-square-foot scheme of labs, studios, offices, and meeting spaces is a scaled-back version of Maki's Modernist design from the late 1990s. Ground breaking for the

resold to decision makers as a space that would benefit numerous departments and the campus community, according to Adele Naude Santos, dean of MIT's School of

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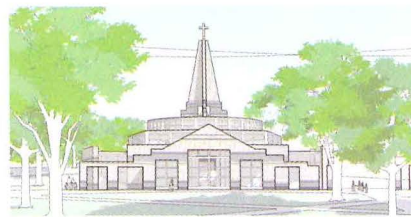
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Record News On the Boards

Episcopal Academy

Talk about closure: When architect Robert Venturi, FAIA, was a senior at Princeton, he chose to design a new chapel for his alma mater, Episcopal Academy, as his thesis. This time, Venturi, Scott-Brown & Associates is designing the chapel for real—as the centerpiece of the college prep school's new 123-acre campus.

The \$212 million project consolidates two sites in the Pennsylvania towns of Merion and Devon onto a former dairy farm in Philadelphia's



western suburbs. In addition to Venturi, Scott-Brown, Hillier Architecture is acting as master architect. Hillier is responsible for coordinating teams as well as the master plan, and is designing the

lower, middle, and upper schools, the science building, and the renovations of three historic buildings. The Gund Partnership is responsible for the campus center, which will include two theaters, dining rooms, a library, and a visual arts center. And Bohlin Cywinski Jackson's athletic complex will include a gymnasium, a three-court field house, 10 squash courts, a fitness center, dance studio, wrestling room, and an indoor competition pool.

The chapel will anchor one end of a great lawn, which slopes gently and opens up to rural views. The other campus buildings flank this green space, forming smaller landscape vignettes. While the designs stress the buildings' and makers' individuality, they also

sport simple rural forms, with sloping metal roofs and an abundance of masonry and local fieldstone. Ground breaking took place September 27, and the new site will open to students in fall 2008. *David Sokol*

West Point library/interactive learning center

Gothic gets a crisp, glassy update at West Point when the Jefferson Hall library and interactive learning center opens in March 2008. The campus's first new central academic building since 1972 was planned and designed by STV architects and engineers in collaboration with Holzman Moss Architects for the U.S. Army Corps of Engineers.

Sitting on the edge of the United States Military Academy parade ground, the six-story, \$70 million building was designed with contextual harmony in mind: Stone cladding was sourced from the same quarry as existing structures; step-back massing is demure; similar design details include a "West Point Arch" and entry sallyports and window surrounds that riff on the local architectural lexicon.

Despite the antiquated appearance, the interior features no monastic nooks and crannies. The 151,000-square-foot building includes media rooms, technology centers, and 10 interactive learning centers, plus storage for 1 million volumes.



And cadets can marvel at the Hudson Valley views framed by a swath of glazing on the northern elevation.

The library has a bronze rating under the SPiRiT program, which is equivalent to LEED certification. *D.S.*



North Carolina Museum of Art expansion

The rooftop of the North Carolina Museum of Art's new 127,000-square-foot extension building will pay tribute to the hills of North Carolina when it opens to the public in spring 2009. Designed by the New York firm Thomas Phifer and Partners, the single-story pavilion will be clad in satin-finished stainless steel that hazily blends into the 164-acre campus, and topped with a rolling roof plane dotted with oculi.

To protect the artworks from incoming daylight, Phifer collaborated with lighting consultants Fisher Marantz Stone and engineers at Ove Arup to create a system that blocks 99 percent of skylight illumination and filters it into a controllable ambi-

ent glow. Ribbons of vaults and coffers will reiterate the form of the exterior rooftop. Periodically, "garden galleries" will provide visitors with visual connections to outdoor sculpture. The building will also include a café, retail store, restrooms, and a coat check, as well as subgrade space designated for back-of-house functions and circulation.

The expansion will also include renovation of the NCMA's existing building, designed by Edward Durell Stone. The 23-year-old facility will connect to the expansion via a new arrival plaza, and its interior will be turned over to spaces for temporary exhibitions, collections management, events, and administration. D.S.

8746 Sunset Boulevard boutique

To create the *Bladerunner*-esque gills and turning, tapered slats of the exterior of 8746 Sunset Boulevard, former Design Vanguard honoree Patterns [RECORD, December 2004, page 124] is having Salt Lake City-based company 3form extrude polycarbonate panels that it will simultaneously dye metallic blue. Some of those panels will then be heat-formed over CNC molds, and all will be attached to a steel frame before being assembled on-site to create a 7,600-square-foot, stylish boutique.



Although the panels' flowing qualities suggest that pricey fashion goods would dwell within it nicely, the building doesn't have a tenant yet. Patterns' design may help get a lease signed. Principals Marcelo Spina and Georgina Hujlich contorted the facade

inward to lend more prominence to a massive corner window. Because the boulevard crests at that point, the window will seem to hover, grabbing shoppers' attention.

The designers twisted an interior fiber-polymer stairway "the other way, which produces reciprocity with the facade," Spina says.

For all the high-tech effects, approximately half of 8746 Sunset is finished in stucco. That's a holdover from the site's former incarnation as a house, the footprint of which the Patterns design entirely reuses. Code requires that half of existing walls remain in place, but as former residents peer into the building's shimmering gills, or observe it glowing at night, they may never remember it was once home. Kluger Architects is architect of record. D.S.

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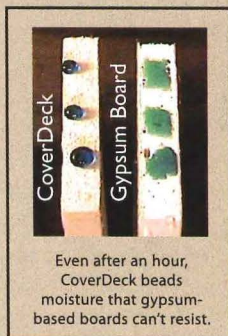
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DEPARTMENTS

Architect, know thyself! And know what to call thyself. This month's Design follows two architects who knew themselves well enough to realize that the most creative place for them was right where they started, in Tucson, a place they closely connect with. Then, in Work, we meet an unlicensed architecture-school graduate and public official in Aspen, Colorado, who was challenged for calling himself an architect. Find out more about these people at archrecord.construction.com/archrecord2/.

Design

Ibarra Rosano Design Architects



For Luis Ibarra and Teresa Rosano, principals of Tucson-based architecture firm Ibarra Rosano Design Architects, every project is a renovation—even if it isn't. "The project grows from the landscape," says Ibarra. "What we're really doing is remodeling the existing space."

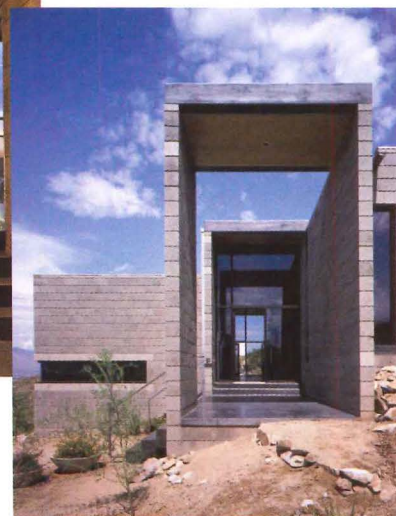
Tucson natives, Ibarra and Rosano feel a fierce connection to the rugged Arizona terrain. The two met in architecture school at the University of Arizona, and although they say their professors encouraged them to move to a more vibrant place, such as New York City or Los Angeles, it was Ibarra's studies and friendship with visiting lecturer Glenn Murcutt that quite literally changed their lives. The Pritzker Prize-winning Australian architect, known for his economical and hands-on approach to design, advised Ibarra always to understand the place for which he was designing. "We know Tucson intimately," says Rosano, "and we love the distinct seasons that most people don't even think it has—the amazing monsoons, the smell before it rains, the raw desert, and the tough and fragile landscape." Ibarra agrees. "We feel a responsibility to stay here and do something positive and beautiful," he says. "Also, it's still uncharted territory."

While the married team and their five-person firm apply modern principles of proportion and scale to their work, they also look to the past and the future for what works for the region. "When we use a material, we like it to stand on its own," says Ibarra. "We rarely use frame construction, but mostly adobe, rammed earth, and block masonry. Sometimes the simplest construction techniques are the best to insulate and make a building



Garcia Residence, Tucson, 2001

This 2,150-square-foot home, of sandblasted, engineered concrete block, steel, birch, and concrete, appears like a natural extension of its rocky desert hillside environment.



Winter Residence, Tucson, 2004

A dark, 1940s brick house was transformed by adding crisp details and light-filled living areas. A fireplace that bisected the main living spaces was removed, and a huge skylight put where its chimney once penetrated the roof. A glass-enclosed shower extends to a private courtyard. Other outdoor features include a pool, fountain, and fireplace.



energy efficient." According to the architects, each building they design needs to perform without hi-tech gadgetry, yet be prepared for future systems. "Even if a client can't afford solar panels or other such systems, we want that future conversion to be possible for them," says Ibarra.

The two lament how, especially in a fragile environment such as Arizona, so many oversize, inefficient homes are built without a second thought. "The crutches that are put in place make it inexpensive and easy to do the wrong thing," says Ibarra. To oppose that state of mind, the two are involved in city planning in Tucson, and are moving their focus from residential projects to more public ones. They were also chosen by the Scottsdale Museum of Contemporary Art to design an installation for the Border Film Project, which is dedicated to simplifying the complexities of immigration. As they expand their scope of work, Ibarra and Rosano say they'll take a collaborative approach. "We want to stay hands-on, but we do feel like we can handle more," says Ibarra, "and we'll always team up with people who know the place." *Ingrid Spencer*

For more photos and projects by Ibarra Rosano Design Architects, go to archrecord.construction.com/archrecord2/.



Downing Residence, Tucson, 2003

The living, dining, and kitchen areas of this 3,500-square-foot home are situated beneath an upward-sweeping roof that helps to maximize views of the city on one side and mountains on the other. A library balcony hangs over a two-story gallery space that overlooks the valley below.

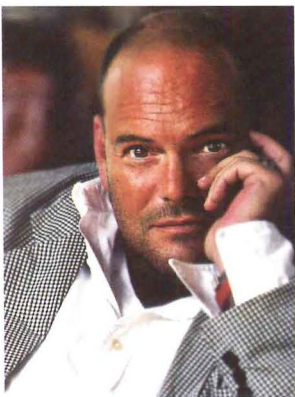


Ibarra Rosano Residence and Studio, Tucson, ongoing

The firm's first foray into design-build, this 2,200-square-foot home with a 650-square-foot studio serves as the firm headquarters and a laboratory for experimenting with new ideas, forms, spaces, and materials.

Work

The word *architect*: A question of title



Architect and Aspen city council member Jack Johnson.

Many unlicensed architecture-school graduates have a difficult time describing their jobs to family, friends, and others outside of the profession. Though classified by the profession as interns, their work is remarkably similar to the kind of work they would be doing if they were licensed. Yet the title of architect is restricted by state licensing boards to refer only to currently licensed practitioners. The challenge is that, to most people outside of the profession, *intern* doesn't resonate as a proper title for a graduate with a professional degree in a respectable full-time job—especially one a few or more years out of school.

Based on a ruling from a recent court case in Colorado, this confusion may be resolved, at least for casual conversations and other noncommercial situations. Jack Johnson, 42, was an architecture graduate running for the Aspen city council. During his campaign, he referred to himself as an architect in various public forums, though he was also careful to explain that he was not a "licensed architect." A political rival filed a complaint with the Colorado Board of Examiners of Architects, and the board issued a formal cease and desist order to Johnson, demanding that he stop referring to himself as an architect or face a \$1,000 fine or six months in jail. Johnson instead sued the board for violating his First Amendment rights,

and the board eventually rescinded its order. However, Johnson pursued the case in order to fully resolve the issue, and in May 2006 the Colorado District Court ruled in his favor.

Specifically, the court held that the board's action was "far more restrictive than it needed to be in order to protect the interests which were the board's charge." When asked why he sued the board rather than simply stop referring to himself as an architect, Johnson said, "The board's position was wrong. The board refused to make a distinction between commercial and noncommercial speech, and I wanted to make it clear that there is such a distinction and that the board does not control noncommercial speech."

Johnson also won his election and now sits on the Aspen City Council. He regularly draws on his architectural education and experience to inform a variety of public policy issues in Aspen, including the redesign of the main road entering the city, and affordable housing in this resort town. "As an architect influencing public policy, I would have expected the board to encourage me rather than to censor me," said Johnson. While Johnson agrees that licensing boards should regulate the use of the title, he also agrees with the court that outside of commercial transactions, unlicensed individuals have an expansive constitutional right to use the word *architect* as they see fit. *Casius Pealer*

For more information about Jack Johnson's case, including his direct contact information for individual questions, visit archrecord.construction.com/archrecord2/.

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Hollowing out the middle: What's lost when a housing enclave is sold

Critique

By Michael Sorkin

Of all the concepts dear to Modernist urbanism, perhaps the most uniformly reviled is the notion of “towers-in-the-park.” This idea, which descends from Le Corbusier’s Radiant City plan (a late spawn of the marriage of rationalism and pastoralism that produced its immediate predecessor, the Garden City), is heavily identified with the failures of urban renewal and public housing, with a deadening, penitential, environment, the very antithesis of the good, diverse, city. The most focused and devastating attack on such planning was surely that of Jane Jacobs, whose advocacy of the rich and variegated ecology of urban neighborhoods like Greenwich Village or Boston’s North End forms the substrate for the way most of us think about successful cities today.

Among the places that came in for Jacobs’s most seething opprobrium were Stuyvesant Town and Peter Cooper Village—adjacent developments covering 18 square blocks on the East Side of Manhattan—which she excoriated for their uniformity and deadly effects on the lively, economically mixed life of the street, her gold standard for urbanity. To be sure, the phalanx of 110, redbrick, minimally detailed slabs, designed by Irwin Clavan and Gilmore Clarke in 1947, do look like a typical—and, at 11,000 units, especially enormous—“project,” and Jacobs’s observations about their lack of

commercial activity remain largely valid. But the well-maintained and very green enclave is beloved by its residents, many of whom have lived there for years. And, in a huge city configured as a mosaic of neighborhoods and districts, its exceptionality, its interruption of the grid, is more than supportable; it is downright pleasant. New York has many such successful enclaves of difference—including Forest Hills, Sunnyside Gardens, and Washington Square Village—that suggest the city can be enlivened by occasional large-scale departures from the short-block default.

Stuyvesant Town and Peter Cooper Village were the vision of Jane Jacobs’s arch-nemesis, Robert Moses, and embody the sweeping, authoritarian way of doing business that allowed him to remake the face of the city like no one before or since. Moses conceived the project in 1943 as a home for veterans returning to a housing-strapped city, and turned to the Metropolitan Life Insurance Company to build it—a classic “public-private partnership.” MetLife was already a major developer of large urban housing, including the Parkchester complex in the Bronx (Clavan and Clarke were on the design team here, too), constructed from 1938 to 1942 for 40,000 residents. Both projects were aimed at middle-class families, and the historian Samuel Zipp has described them as “urban Levittowns.” While this is an apt comparison in terms of their social and formal homogeneity and their ambition to tackle big problems at



Stuyvesant Town and Peter Cooper Village, as seen around 1950 (above), have served as a haven for the middle class, but that role is now in question.

big scales, there is one crucial difference: Parkchester, Stuyvesant, and Peter Cooper were rentals—in a city that regulated rents.

A sweet deal for MetLife

Moses, however, offered MetLife a sweet deal. Not only would the city acquire all the land via eminent domain and throw out the 3,000 poor families living in the “Gas House” neighborhood, it would “de-map” and convey all the streets on the 80-acre site (one tenth the size of Central Park) to MetLife. Moreover, the city agreed to freeze property taxes for 25 years at the value of the expropriated land before development. Finally, it turned a blind eye to MetLife’s exclusionary practices, which banned blacks, unmarried couples, and single parents, until the issue

was forced by protests and legal actions in the ’50s and ’60s. The story was the same at Parkchester, segregated until the city’s Human Rights Commission intervened, leading to its sale in 1968 to Helmsley-Spear, which, in stages, converted the complex to cooperatives.

This last bit of history is in the process of repeating itself. In August, MetLife put Stuyvesant Town and Peter Cooper Village on the block, prompting a frenzy of interest from a range of potential buyers, from real estate companies to investment banks to the usual unidentified financiers from Qatar. While MetLife’s announcement was greeted by the real estate community with salivation and lust, it struck fear into residents of the complexes. Residents have been growing anx-

Contributing editor Michael Sorkin is the director of the urban design program at City College of New York.

ious about the sale of the property for several years, sparked by a \$300 million upgrade undertaken by MetLife that allows the company to raise rents more than it would have, and newly vigorous efforts to get rid of tenants not listed on leases. Anxiety focused on rent: About three quarters of the apartments in the two developments are protected by the city's rent stabilization law, which limits increases to a level fixed annually, presently in the neighborhood of 4 percent. The law covers about a million units in the city and is a defining factor in shaping New York's demographic character and a large part of the reason we still have a middle class. Loss of protection would be a disaster.

Losing controls

Apartments can now be removed from the stabilization regime under two circumstances. When monthly rent passes a threshold of \$2,000—via regular mandated increases or pass-along expenses for “major” improvements—any vacated apartment leaves the system of controls and floats to the market rate. And tenants of apartments with rents over \$2,000 face a means test: Those with incomes in excess of \$175,000 for two consecutive years lose their protection, and their apartments permanently exit regulation. Due to such “natural” processes, 27 percent of the units in Stuyvesant Town/Peter Cooper Village now rent at market rates, which currently top out at \$3,800 to \$5,850 for the biggest units versus \$1,500 to \$1,600 for those still stabilized—two very different “markets.”

Recognizing the immense potential in this difference, bidders surely calculated actuarially, examining the age and income of tenants, the frequency of turnovers, the number of apartments nearing the decontrol threshold, the possibility of further “improvements” to drive up rents, the prospects of enticements or harassment to stimulate

turnover, the number of young couples in small apartments likely to have children and move on, and the vigor of the market in general. The strategy is to get apartments destabilized, converted to condos, and sold to tenants as quickly as possible. The arithmetic looks promising indeed. According to a real estate investor quoted in *Crain's*, “Rent stabilized apartments in New York City are one of the best risk-adjusted real estate investments in the country.” The sales literature put out by CB Richard Ellis, MetLife's marketer, hypes the complex (already festooned with banners advertising “Luxury Apartments”) for its potential to become the “city's most prominent market-rate master community,” and predicts that by 2018 fewer than 30 percent of the units will remain stabilized.

Manhattan—where the middle class is the smallest by percentage in the country and the income gap the largest—may be the extreme case. But in city after city across America, it is more and more difficult for the core of our citizenry—teachers, nurses, fire fighters, service workers, technicians, and cops—to find decent and convenient places to live.

The Census Bureau recently reported a dramatic national rise in the burden of housing costs. In New York, over half of the city's residents pay more than 30 percent of their incomes for housing, and percentages are soaring across suburbs and cities nationwide, with the biggest crunch in Southern California. Recognizing this crisis, the Bloomberg administration has declared its intention to create or preserve 165,000 “affordable” units by 2013 and is pursuing the goal with some success via a variety of subsidy arrangements, including zoning bonuses, tax exemptions, forgiven interest on city loans, and other indirect strategies. But, as the scale of the Stuyvesant Town/Peter Cooper Village sale makes dispiritingly clear, market forces are winning invisible hands down and

the net decline in affordable apartments is only accelerating.

Tenants organized—with labor union and local political backing—to bid on the project themselves, with an offer of \$4.5 billion and a proposal that would have retained 20 percent of the apartments as affordable rentals and sold another 20 percent to tenants at below-market rates. Their case was greatly bolstered by the tremendous public subsidy that supported the project in the first place (although MetLife claims that its 25-year legal obligation has long since expired). It also reinforced the original idea behind the project: the provision of rental apartments for middle-class residents at a time of shortage. However, while there should be no question of tenants' rights to remain in their homes free from fear of displacement by spiking rents or coerced purchase, even a successful bid would, like any other condo conversion, eventually have transformed Stuyvesant Town/Peter Cooper Village into a largely luxury estate. Such a fate would have simply delayed by one cycle the departure of the middle class—and the evisceration of the rental market—and reinforced a vision of the city as a place with a small middle class dependent on some form of affirmative action for its survival.

Who gets subsidized?

Clearly, unfettered, laissez-faire capitalism is not capable of providing decent housing for everyone, nor of making the kinds of locational decisions that conduce the cities of diversity and mix extolled by Jane Jacobs. If the market must be regulated to assure public benefits—as it is, one way or another, in virtually every sector of the economy—the question becomes how and where to apply public intervention. As an idea, subsidy is a constant—benefit and equity are the variables. The suburbs, symbol of the American dream of private property “rights,” were built on the back of gigantic tax-payer subventions in the form of cheap loans from the FHA, the deductibility of mortgage interest, the accelerated

depreciation of commercial developments, and the vast provision of public infrastructure—from sewer lines to Interstates—in arrangements that are, compared to the efficiency of such systems at urban densities—disproportionately expensive. New York offers enormous tax and other benefits to corporate operators—from Goldman Sachs to Barry Diller—to encourage them to build in the city.

As a culture, however, we prefer our subsidies to be diffuse, oblique, disguised as incentives whenever possible, rather than regulations or “handouts.” But the complex of vouchers, tax breaks, zoning bonuses, and infrastructure funding is subsidy all the same and it just isn't doing the job for those who need help the most. Claims that the real problem lies with rent regulation are simply disingenuous. It is time to face up to the magnitude of the housing crisis in the U.S., which includes a squeeze on both middle-class incomes and on immigrants packed illegally four to a room in urban apartments and suburban basements. It is time for government at all levels to intervene massively and directly. There's no shortage of strategies, and they all require subsidy. The question is to whom the subsidies go and for what.

In October, Tishman Speyer Properties and the Blackrock investment bank bought Stuyvesant Town/Peter Cooper Village for \$5.4 billion, the largest real estate deal in U.S. history. The city administration, to the disappointment of many, stayed on the sidelines. “MetLife owns it, and they have the right to sell it,” said Mayor Bloomberg. One of his deputy mayors rejected the tenants' sought-after tax subsidies as an inefficient use of public funds. The day after the sale, the city announced a purportedly more economical plan to build several thousand affordable units across the East River in Queens—a worthy project, but not enough to staunch the loss of New York's affordable housing nor slow the transformation of Manhattan into the world's largest gated community. ■



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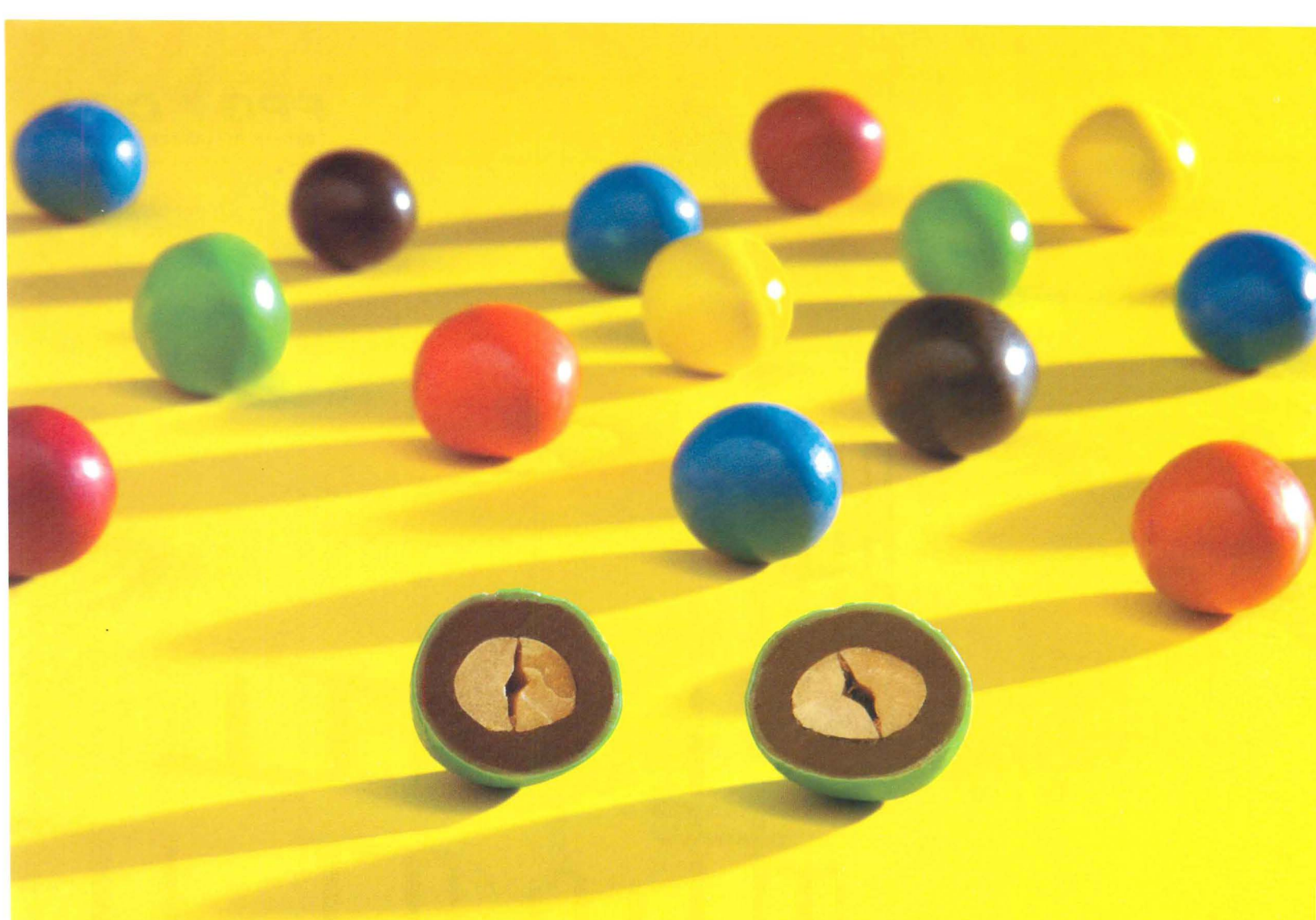
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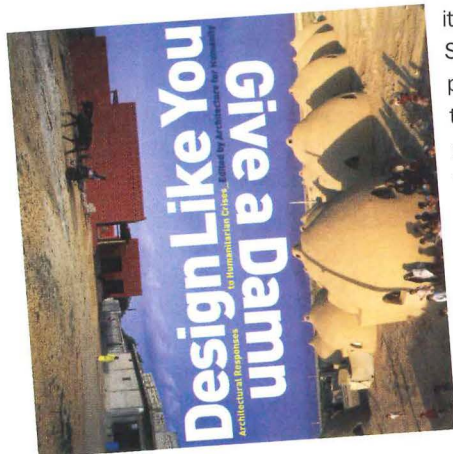


COMMERCIAL

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Beyond buildings: Making an impact on cities and society

Books



Design Like You Give a Damn: Architectural Responses to Humanitarian Crises, edited by *Architecture for Humanity* (Cameron Sinclair and Kate Stohr). New York: Metropolis Books, 2006, 336 pages, \$35.

In the seven years since Architecture for Humanity was founded in response to the housing crisis in Kosovo, the tiny humanitarian design organization has held competitions for transitional housing and mobile health clinics to combat AIDS in Africa, helped prepare a reconstruction plan for a village and build temporary schools in Sri Lanka after the 2004 tsunami, encouraged architects to think creatively about pressing social problems, and accumulated a great deal of knowledge about disaster relief.

Now, architect Cameron Sinclair and journalist Kate Stohr, the husband-and-wife team who ran the organization out of their Manhattan studio apartment for most of its existence (and now run

it from slightly larger digs in Sausalito, California), have published their findings in this appealingly legible, richly illustrated, affordable volume. They make no attempt to gloss over their own inevitable failures. In fact, they use their experience to explain the crucial role that local politics must play in disaster relief. They admit how hard it is to get anything built in the developing world, home to 98 percent of the 211 million people affected by catastrophes.

The authors emphasize the importance and difficulty of working with local planning groups and citizens, drawing on local traditions, using indigenous materials and building techniques, creating replacement housing in situ, and employing the people slated to live in the community and involving them in the act of building.

One of the best features of the book is Stohr's succinct history of temporary and low-cost housing from the San Francisco earthquake of 1906 to the present, including efforts by Le Corbusier, Buckminster Fuller, William Levitt, Hassan Fathy, Fred Cuny, and Samuel Mockbee. Stohr also describes the (mostly out of print) publications that contain these builders' combined wisdom. Although some of the images in the introductory chapters are too small to tell the stories, the characterful photographs describe an amazing collection of domes, umbrella tents, yurts, and huts made of every imagi-

nable (and sometimes unimaginable) material, as well as tidy houses, social centers, schools, water-treatment devices, and sanitation facilities—everything people need for habitation. Even politics is discussed with wit and wisdom, so the reader ends up informed, inspired, and ready to enter the fray.

Jayne Merkel

New Design Cities: Antwerpen, Glasgow, Lisboa, Montreal, Saint-Etienne, Stockholm, Times Square, under the direction of *Marie-Josée Lacroix and with the participation of Francois Barre, Saskia Sassen, John Thackara. Montreal: Commerce Design Montreal, 2006, 328 pages, \$32.*

What actions and events helped position six midsize cities plus Times Square as “design cities?” In search of answers, Commerce Design Montreal, whose annual design contests have greatly improved the appearance of commercial Montreal, conducted a 2004 symposium, the springboard for *New Design Cities*.

The book offers a thumbnail sketch for each city and Times Square, including a brief history; lists of outstanding designers, design strategies, design institutions, and events; and essays by, or interviews with, city officials and design honchos. They address such questions as, How can design quality and talented designers contribute to the competitiveness of cities? How can cities encourage design quality?

How can the development of the design sector be stimulated? Most of the authors agree that it is more important to invest in people than economic projects, that vigorous criticism of urban regeneration is vital, and that the provision of physical spaces goes hand in hand with such initiatives as exhibitions, public art projects, design magazines, lectures, readings, polemics, and so on.

Taking a broader view are theoretical essays by three leading thinkers on cities. Saskia Sassen, the University of Chicago sociologist, addresses the quandaries created when the “meanings and roles of architecture and urban design centered in the older traditions of permanence are irrevocably destabilized by digital networks, acceleration, massive infrastructures for connectivity, and growing estrangement.” John Thackara, director of Doors of Perception, an international design and innovation

NEW DESIGN CITIES
ANTWERPEN
GLASGOW
LISBOA
MONTRÉAL
SAINT-ETIENNE
STOCKHOLM
TIMES SQUARE
NOUVELLES VILLES DE DESIGN

Under the direction of
Marie-Josée Lacroix
with the participation of
Francois Barre
Saskia Sassen
John Thackara

Books

group, notes that despite globalization, most businesses operate in a highly localized geography and that local conditions and trading patterns, skills, and culture are critical success factors. He warns, "We have to be careful about this business of turning all [cities] into perfect little places." Similarly, Francois Barre, founder of Paris's Centre de Creation Industrielle and a past editor of *Architecture d'Aujourd'hui*, counsels against merely "furnishing" the city.

The book is bilingual, sometimes awkwardly so. Translations of French texts on Montreal and Saint-Etienne, France, come only at the back of the book. And you won't know there's an English version of Barre's essay unless you flip to the book's very end, past the authors' bios. The organization (or design) of *New Design Cities* is confusing, but bear with it; the book is worth the trouble. *Andrea Oppenheimer Dean*

Design City Melbourne, by Leon van Schaik, photography by John Gollings. New York: Wiley, 2006, 288 pages, \$70.

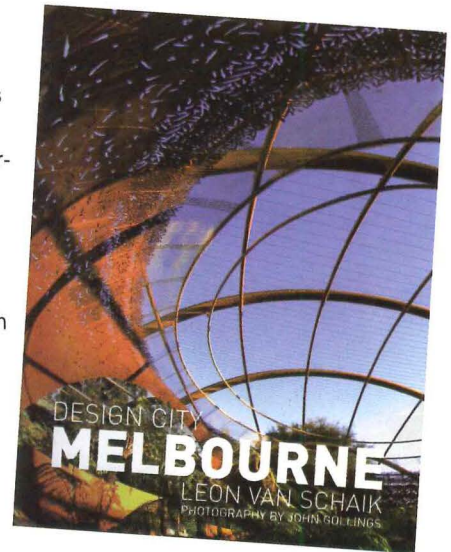
Barcelona in the 1980s; the Dutch "Randstat" (including Amsterdam and Rotterdam) in the '90s; then briefly, Antwerp and Brussels; and in the first decade of the 21st century, so writes Leon van Schaik, Melbourne is the top design city.

That may be an exaggeration. Or perhaps it wasn't when van Schaik was writing his book. Inarguably, Melbourne—prim, Protestant, and largely elderly when van Schaik arrived in 1987 to head the Royal Melbourne Institute of Technology's architecture faculty—is today Australia's most highly educated, youthful, diverse, and liberal city.

In *Design City Melbourne*, van Schaik asks what makes cities reach the top of the design pyramid and

what makes them lose their standing. Hot cities cool, van Schaik argues, when patrons and clients start collecting architectural projects by international celebrities at the expense of cultivating local creativity. "Nothing, despite popular belief, is ever kick-started in the culture through imports," he writes.

Conversely, he tells us, "The story of a design city is the story of when and how it embraces its own ideas and works through them to generate local cultural capital." The author writes that the emergence of Melbourne's minorities (Greeks, Italians, Dutch, Vietnamese, Maltese, Catholics, Jews, and others) allowed the city to forge a radical Australian identity "from what is here, not from nostalgia." His book details how architecture emerged hand in hand with other arts, design, and crafts and with the rise of a local intelligentsia.



The author lists three requirements for quick-starting local culture: committed patrons; architects who adjust international canons to meet their own ambitions; and critics and curators who help practitioners understand the process by which talent becomes mastery and a platform for innovation. Van Schaik, as a dedicated client, booster, and critic of local designers, certainly played an

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Books

important role in his adopted city's transformation, but he could have made the point with less self-congratulation.

His book is a worthy ambassador for Melbourne design. It beautifully showcases the work of more than 20 Melbourne architects—including Peter Corrigan, the dean of Melbourne architects who legitimized and tweaked Australia's suburban forms, and Greg Burgess, whose interest in organic forms has led to distinguished work for indigenous communities. *A.O.D.*

Victor Gruen: From Urban Shop to New City, by Alex Wall.
Barcelona: Actar, 2005, 244 pages, \$46.

Victor Gruen keeps getting rediscovered. Recently, there's been M. Jeffrey Hartwick's 2003 biography, *Mall Maker*; then a feature-length

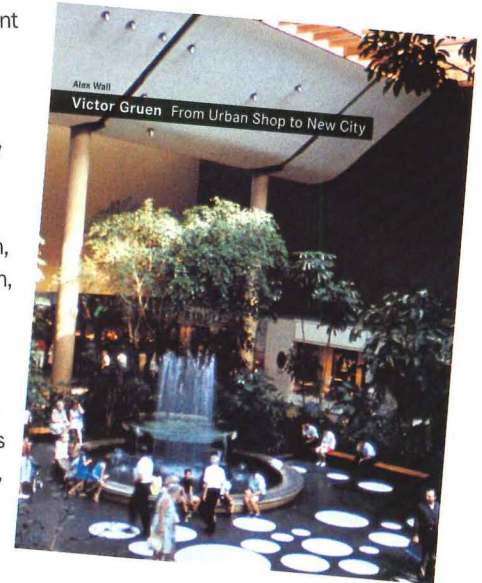
profile in *The New Yorker* in 2004. Now Alex Wall, in *Victor Gruen: From Urban Shop to New City*, gives us a more focused account, and something else too: the case for Gruen's rehabilitation.

From middle-class comfort, Gruen (who was born Grünbaum in 1903) moved early and easily into the artistic milieu of Vienna between the world wars. His first storefront designs showed a facility for Moderne sophistication, brightened by theatrical displays and clever lighting. In 1938, he decamped for the United States just ahead of the Nazi Anschluss. It was on the West Coast that he found his calling: By combining innovative retail techniques with an intuitive grasp of the American automobile suburb, Gruen became the premier architect of the indoor shopping mall, producing 44 prior to his retirement in 1975.

Wall's chief interest is in

Gruen's role as the exponent of a novel type of urban space, a "Cityscape Landscape" (the title of a 1955 Gruen article) of new towns, ring highways, and organized industrial and commercial centers. Gruen, the consummate salesman, aggressively promoted these grand strategies for the renewal of existing urban spaces and the creation of new ones up to his death in 1980. By the end, though, his increasing disenchantment with the kind of suburbanization to which he himself had contributed led Gruen to disown the malls, saying in 1978, "I refuse to pay alimony for those bastard developments."

Wall would like us to understand Gruen's career as one concentrated effort to organize the emerging urban form. Formerly of Rem Koolhaas's Office of Metropolitan Architecture, Wall knows how to wow the reader with



copious photographs, color-coded text, Gruen's own charts and renderings, and a stunning bibliography. The book represents a yeoman effort and leaves the reader with the difficult task of squaring the changeable Victor Gruen with himself and deciding which, if any, of his ideas square with the present urban condition. *Ian Volner*

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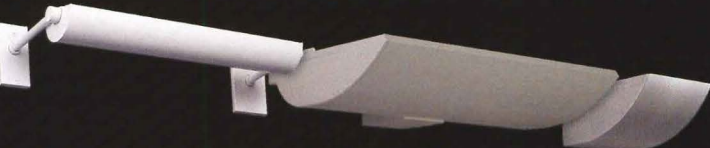
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After the FLOOD:

Building on HIGHER GROUND

An exhibition presenting
proposals for replacement housing
and redevelopment in

New Orleans, Louisiana

in the aftermath of

Hurricane KATRINA

*The official U.S. participation in the 10th International
Architecture Exhibition has been organized by
ARCHITECTURAL RECORD and is presented by the Bureau of
Educational and Cultural Affairs of the U.S. Department of
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On the Ground in Venice: The 10th International Architecture Biennale

Exhibitions

Upon hearing that Richard Burdett, director of the 10th International Venice Architectural Biennale, had announced “Cities, Architecture, and Society” as the theme for 2006, ARCHITECTURAL RECORD decided we had to be there. Working with the Department of Educational and Cultural Affairs of the U.S. Department of State (as we had in 2002 and 2004), RECORD mounted a show for the U.S. Pavilion, entitled, *After the Flood: Building on Higher Ground*. The exhibition, which opened September 10 and is closing November 19, focuses on New Orleans and the Gulf Coast, beset by the largest natural disaster—Hurricane Katrina—this country has ever experienced.

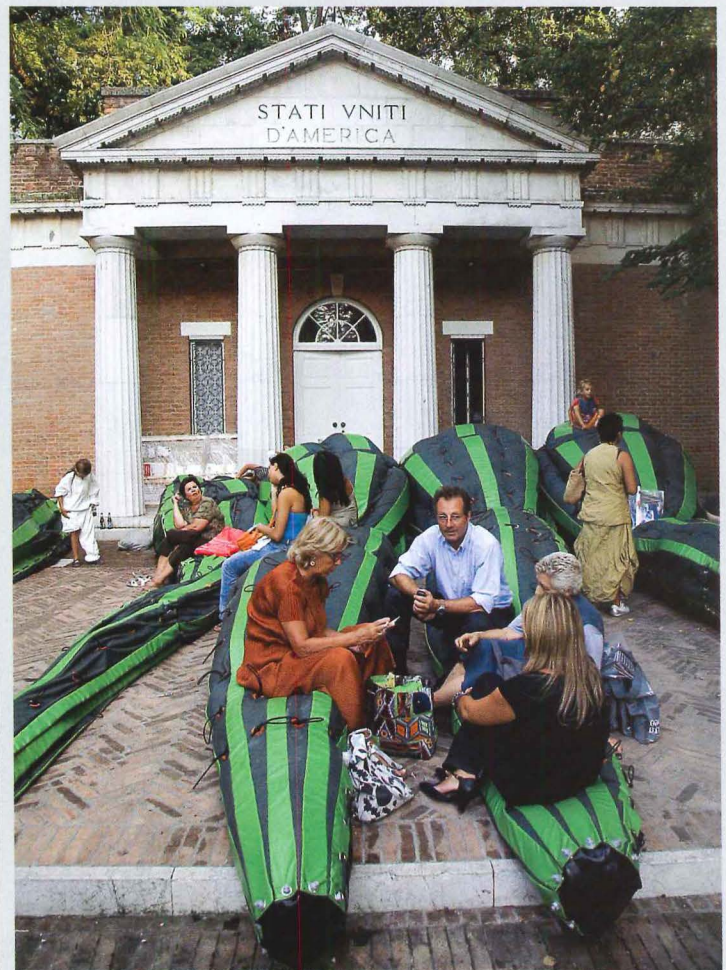
The subject matter seemed a natural: We had already organized an international competition for replacement housing in New Orleans with Tulane University’s School of Architecture in the spring. The 10 winners were featured in our June 2006 issue [page 112] and on our Web site. For the Venice exhibition, we asked the winners—composed of practicing architects and students for multifamily housing, and only students for the innovative single-family houses—to elaborate on their ideas, originally submitted as wall panels. To present the work in a larger context, we called on curator Christian Bruun (aided in the installation design by Jens Holm), plus filmmaker and photographer Neil Alexander and photographer Michael Goodman, and once again, Tulane University, to help flesh out

the show with pertinent material. A choice list of committed architects donated their own money to ensure that the pavilion opened with the proper range of solutions assembled and presented. The American Institute of Architects added a live seminar to the proceedings. Commercial sponsors, particularly AutoDesk, rounded out our list.

If you have not made your way to Italy before the show closes, RECORD has documented it, in print and online, and invites you to take a virtual tour. Ciao. Robert Ivy, FAIA

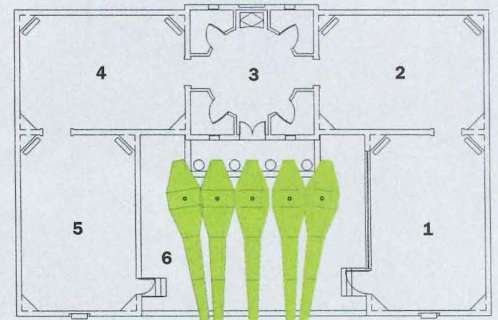
Instead of milling around the way they do in front of other national pavilions, visitors to the exhibition at the United States Pavilion lounge languidly on what seem to be big stuffed zucchini. Since the show, *After the Flood: Building on Higher Ground*, is devoted to proposals for replacement housing in New Orleans after Hurricane Katrina, the lounging summons the spirit of New Orleans, fondly called (before the hurricane) “the Big Easy.” The installation is actually a specially fabricated absorbent Alluvial Sponge Comb designed by Anderson Anderson Architecture of San Francisco as a temporary stop-gap for the breached levees. (See page 62 for details). Here, the fingers of the comb provide a much-needed place to relax during the 10th Architecture Biennale.

Entering the U.S. Pavilion, viewers soon come to understand why nothing is easy in New Orleans anymore. Photographs of the destruction,



Relaxing on the Alluvial Sponge Comb at the U.S. Pavilion in the Giardini di Castello.

1. Context
2. Katrina’s effect
3. Katrina by satellite
4. Multifamily schemes
5. Single family/future
6. Alluvial Sponge Comb



Venice Biennale

accompanied by charts and statistics, show what Hurricane Katrina wrought in August 2005, and help establish the context for the proposed replacement housing.

In the first room of the pavilion, a map of the city stretches from the wall onto the floor. It explains how each New Orleans ward fared in the flood, while noting the population and

racial composition of each community. As is so well known, the poor and black suffered considerably more than other residents, more of whom live on high ground.

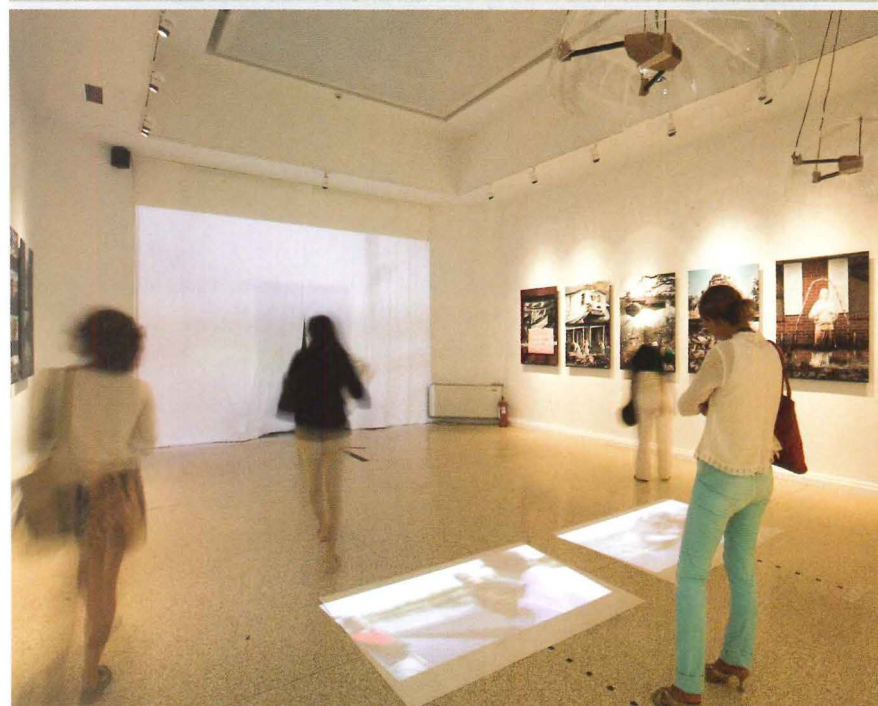
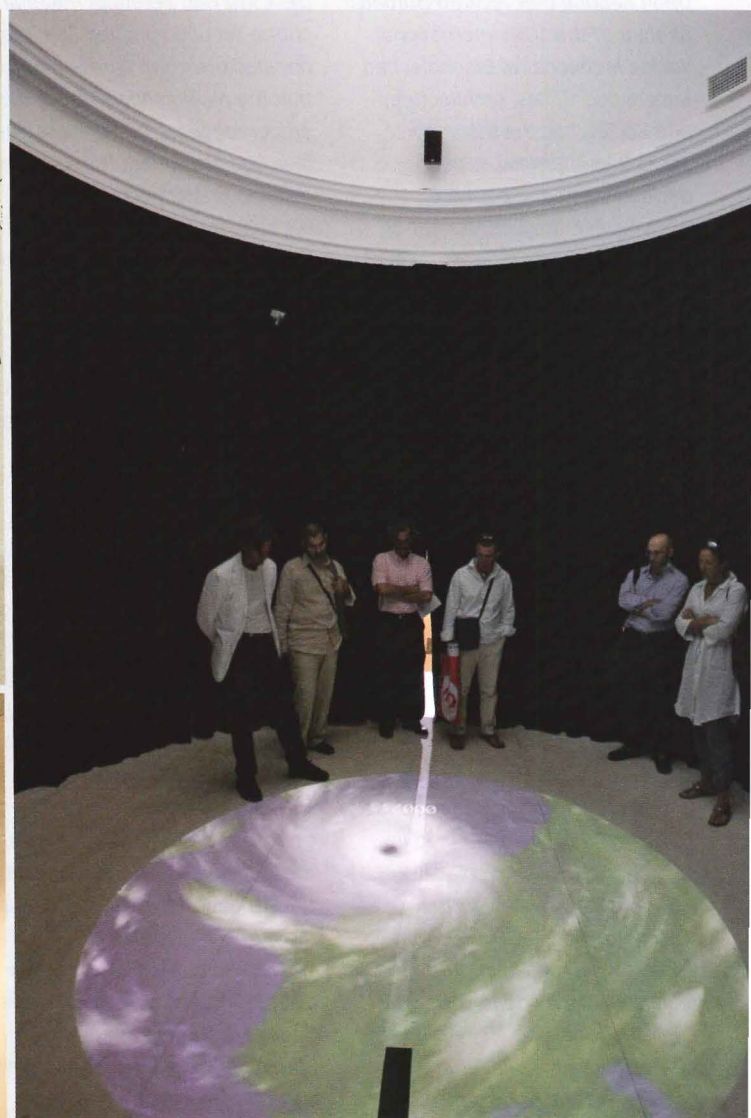
On the opposite wall of this gallery, a chart chronicles the history of New Orleans from its founding in 1718. Registering every hurricane, noting when the levees were built

and repaired, and describing the racial makeup of the city in each period, Bruun and Holm show how disasters have changed the demographics of the city over time.

In the second gallery, Michael Goodman's aerial and close-up photographs and Neil Alexander's film clips and photographs present a vivid and chilling account of Katrina's

destruction—the extent of loss of life, paths of the storm, and accumulated storm damage. Alexander's movie, *An Eye in the Storm*, will be released next year.

The awesome power of the hurricane itself can be sensed by stepping into the circular rotunda in the middle of the pavilion, where film footage from NASA's high-definition



The installation of the U.S. Pavilion, designed by curator Christian Bruun, with the help of Jens Holm, presents the socioeconomic background in the first gallery

(top left). In the second gallery (left), photos and films illustrate Katrina's impact. A NASA satellite film in the rotunda (above) shows the storm moving to its target. In

the fourth gallery (opposite, top) are models and drawings of multifamily housing proposals, while the fifth (opposite, right) shows models of single-family-house proposals.

satellite cameras is projected onto the floor. It follows the path of Katrina so that the visitor can watch it build up between August 25 and August 30 and experience the sense of dread that occurs when one knows in advance what is yet to come.

An architectural response to the destruction in the form of proposals for new types of housing—multifam-

ily and single-family—begin to emerge in the fourth gallery. Here, documentation of the damage is offset by models and drawings for rebuilding by winners of the housing competition organized last spring by ARCHITECTURAL RECORD and Tulane University's School of Architecture, which attracted 544 entries.

For the Venice exhibition,

RECORD asked winners in each category to come up with more complete versions of their earlier schemes. Among the winners in the competition for multifamily housing, which was open to professional architects and students, is a horizontal slab tower with 160 units by Eight Inc., of San Francisco. It updates both Moshe Safdie's Habitat (1967) and Le Corbusier's Unité d'habitation of 1946–52, with both a prefabricated and sustainable emphasis.

Another winner, the San Francisco firm of Anderson Anderson Architecture, designers of the Alluvial Sponge Comb, displays its porously gridded housing scheme, Camel Back Shot Gun Sponge Garden, with plastic acrylic models. The proposals by three other winning firms or teams in the multifamily category, Workshop/apd of New York; Duong Bui, Erkin Özay, and Pars Kibarar, formerly of Harvard; and Justin Laskin and Kathleen Mark, of the University of Virginia, are illustrated by large wall displays.

In the fifth room, five models of the winning entries for the single-family-house competition, which was open only to students, were fabricated especially for the Venice exhibition by the winners themselves. The easy-to-build, elevated houses were designed by Michelle Jellison, of Montana State University; Amin Gilani and Josh Spoer, of the University of Texas, Arlington; Zui Lig Ng, of the University of Houston;

and Mark D. Stankey and John A. Kucharski, of Montana State University. The fifth team, Kidduck Kim and Christian Stayner, both Harvard students, present their proposal for floating emergency modules with a whirring mechanical model where the cubes bob up and down.

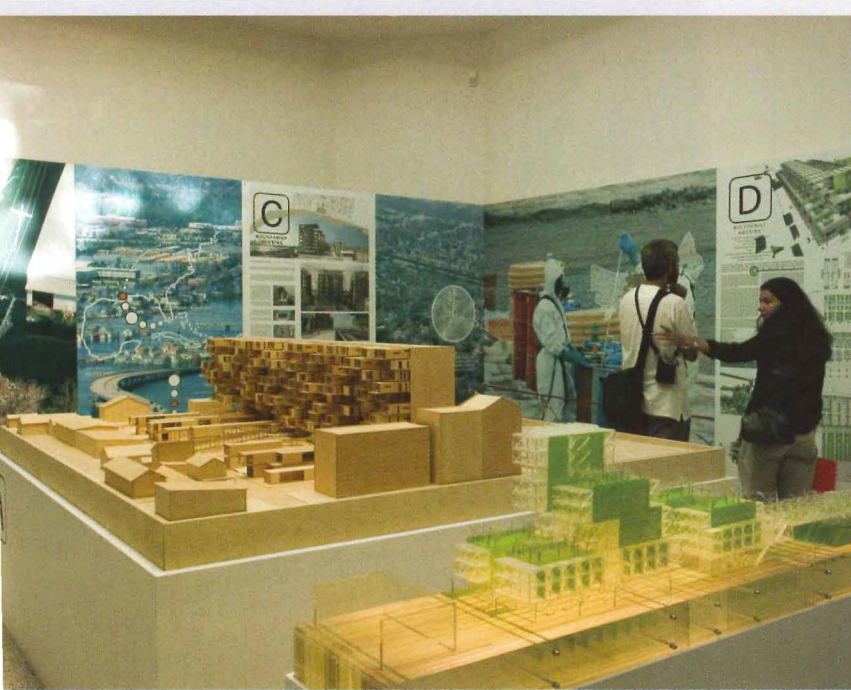
On the other side of the gallery, Ila Berman, associate dean at Tulane, prepared *What Next?*, a graphic presentation covering two walls that illustrates a number of urban-planning and housing initiatives for rebuilding New Orleans.

Besides the drawings, physical models, computer models, and mock-ups of the winners, the pavilion contains a film clip from *Design/e2*, a television series on sustainable architecture, produced by kontentreal and sponsored by AutoDesk. It shows various approaches to the development of ecologically fragile areas, including an interview with engineer Werner Sobek, who discusses his research into sustainability. Another video demonstrates how AutoDesk's Building Information Modeling Software (BIMS) could be used to construct competition housing.

When the 10th Venice Biennale closes on November 19, *After The Flood: Building on Higher Ground* will travel to selected cities in Asia and the Caribbean in 2007 and 2008 under the auspices of the Bureau of Educational and Cultural Affairs of the U.S. Department of State.

Robert Ivy, FAIA, editor in chief of ARCHITECTURAL RECORD, served as commissioner of the U.S. Pavilion for the third time. Suzanne Stephens and Clifford Pearson, deputy editors of the magazine, acted as vice commissioners, as they did in 2004.

After the Flood was produced in cooperation with the Peggy Guggenheim Collection in Venice, Italy, and the U.S. Consulate General in Milan. It is sponsored in part by Autodesk, which also provided building information modeling software to winners of the replacement housing. ■



Soaking Up the Mississippi

By Russell Fortmeyer

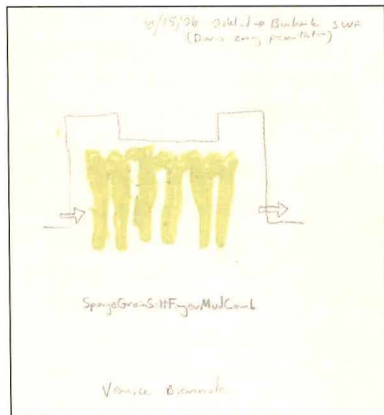
The architects at Anderson Anderson Architecture did not intend to build a levee.

However, the problem of placing the firm's conceptual multi-family scheme for the New Orleans housing competition on the flood-prone banks of the Mississippi River still lingered.

Phoebe Schenker, an architect with San Francisco-based Anderson Anderson, says the firm's solution, the Alluvial Sponge Comb—which buoyantly fills the courtyard of the U.S. Pavilion at the Venice Biennale—resulted from studying the functions of levees and reconstituting them in a less environmentally disruptive way. The manner in which levees slow water's current, accumulate silt, and provide natural habitats for fish inspired the firm to create perforated, tapered, fingerlike fabric instruments that could swell with water and bunch together to form a wall under flood conditions while otherwise remaining drained and out of sight.

"In addition to this function, the parallel fingers allow for permeability to the water's edge," Schenker says, noting that under normal conditions, the comb allows wildlife to pass unencumbered. The firm's housing prototype formally mimics the serial layout of the comb, resulting in a unified design of site and project as a large filtering system for runoff, floodwaters, and wastewater. The opportunities for a building to contribute more to its environment than it consumes constitutes a key tenet of sustainability.

The sponge comb consists of three components: exterior skin, interior bladders, and harnesses. The bladders, made from 20-millimeter frosted PVC (similar to material for disposable diapers), combine within



Anderson Anderson's concept sketch for the Alluvial Sponge Comb.

the harnesses to form the central functioning absorbent element. For the Biennale, the bladders were filled with air within the green vinyl-coated polyester exterior skin, which made the combs attractive lounge furniture for gallery-weary visitors.

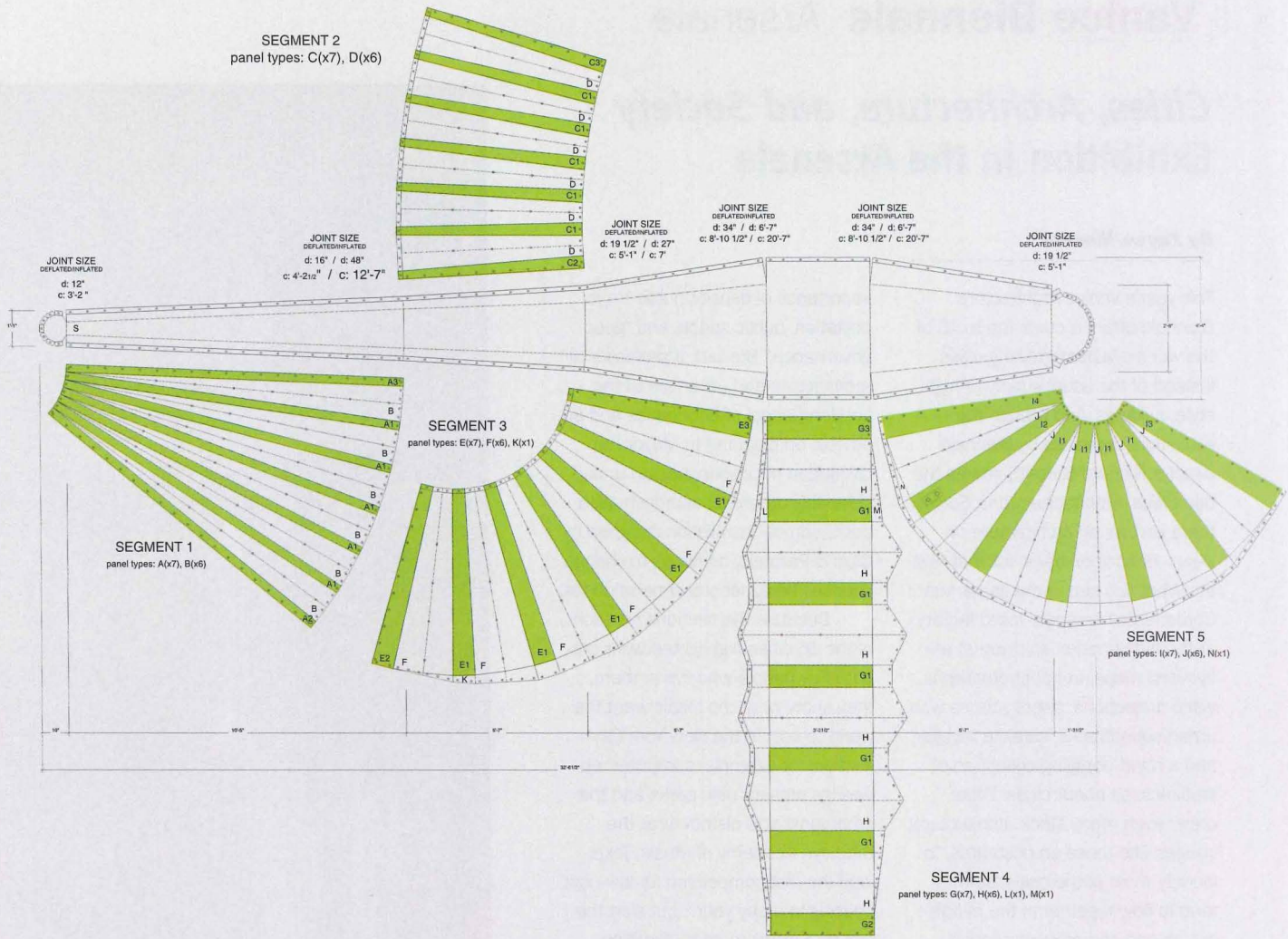
The architects produced the sponge comb in nine weeks, from concept to final construction, before crating it off to Venice. Anderson Anderson worked closely with four subcontractors during the short fabrication process, as it often does with gritty construction details.

For example, the idea for the orange silicone gaskets, which seal the loop knots of the harnesses tying together the bladders and panels of the skin, developed when the architects were devising a detail for grommets. Schenker met the next day with the Bay Rubber Company in Oakland, which explained its fabrication techniques and options, sending her back to the office with fresh samples. "That sort of immediacy is rare in a typical building project," she says. "Projects like the sponge comb allow us to experiment directly with these processes, materials, and fabricators." ■



PHOTOGRAPHY: COURTESY ANDERSON ANDERSON ARCHITECTURE

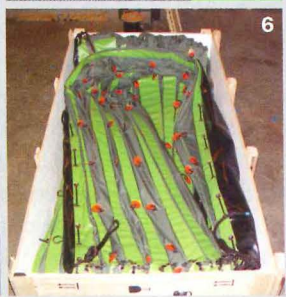
Numerous steps were required to get the Alluvial Sponge Comb, designed by Anderson Anderson Architecture, to the U.S. Pavilion.



(1) Frosted PVC constitutes nine internal bladders. (2) The exterior skin includes gray ballistic nylon pleats made by Seattle Tarp Company. (3) The

combs' pieces were sewn together in Seattle based on an AutoCAD pattern provided by the architects. (4) Harnesses bound the combs' elements.

(5) Shock cord loops tied at each gasket. (6) The assembly was crated for shipping. (7) Students from the University of Florida assisted installation.



Venice Biennale Arsenale

Cities, Architecture, and Society Exhibition in the Arsenale

By Jayne Merkel

This year's Venice Architecture Biennale offers a quick trip to 16 of the world's fastest-growing cities instead of the usual survey of high-style buildings. And though the exhibition, organized by Biennale director Richard Burdett, shares the title *Cities, Architecture, and Society*, there isn't much architecture on view—or society either, for that matter. What you see in the gargantuan Corderie dell'Arsenale (cord factory at the old Venetian shipworks) are flyovers, maps, aerial photographs, video projections, street scenes with urban soundtracks, satellite images, and a mind-boggling collection of statistics, all about cities. There aren't even many stock architectural images, like those on postcards, to identify most of the cities, so they tend to flow together in the mind's eye as one enormous emerging mass of humanity.

And that is part of the point. The show is a wake-up call to architects, an entreaty to put your egos aside, forget the latest trend, and think about what is going on in the world: People are flooding into cities in unprecedented numbers. Half the world's population now lives in them, whereas in 1900 only 10 percent did; the percentage could top 75 by 2050.

All this, of course, is absolutely relevant to architectural practice, because with so many people moving around, a lot needs to be built. But, as the exhibition shows, much of it, particularly housing for the poor, is not being designed by architects, which may be just as well: The most impressive interventions here rely on indigenous traditions.

Burdett's show emphasizes the

importance of density, public transportation, public space, and "good governance." Burdett, a professor of architecture and urbanism at the London School of Economics and an adviser on planning to Mayor Ken Livingstone of London, has an understandably urbanistic approach. With this theatrical installation designed by Cibic & Partners, he hopes to change priorities here, not prescribe solutions.

Because the sections on each of the 16 cities highlighted were prepared by people who live in them, they show what the locals want the world to see. In the New York City section, for example, computer renderings present new parks and the embryonic arts district near the Brooklyn Academy of Music. Texts laud the first competition for low-cost housing in many years, but skirt the fact that many more multimillion-dollar dwelling units are being built in Manhattan than affordable ones.

The most memorable part of the show in the tall, dark, 900-foot-long Corderie is the room that allows viewers to compare the cities by describing them with stalactitelike models of each one's density. Here, you can see at a glance that Cairo and Mumbai (formerly Bombay) are four times as dense as New York. Though the peaks and valleys in the models show degrees of density at a glance, they don't depict the actual architectural or topological heights and lowlands—physical factors creating desirable density.

The problems of density and transportation that Burdett and his colleagues have put on the table may be too complicated for the exhibition format. It is a good thing that the show is accompanied by a massive, 378-page catalog that contains not only a lot of pictures but essays by Burdett, Saskia Sassen, Robert

PHOTOGRAPHY: © GIORGIO ZUCCHIATTI/COURTESY LA BIENNALE DI VENEZIA (THIS PAGE)





In the Arsenale's Corderie, the density of 16 cities is depicted by white stalactite-like models bathed in colored light.

Venice Biennale Arsenale



Bruegmann, Norman Foster, Zaha Hadid, Jacques Herzog, Rem Koolhaas, Denise Scott Brown, Richard Sennett, and other architects and urban thinkers, since there is much too much on the walls to assimilate in several days.

Displays of urban research done by various institutions can be found in the Italian Pavilion of the nearby Giardini di Castello, the gardens where the national pavilions are located. But there, 50 more exhibitions clamor for attention. The bedraggled visitor longs for a single idea or two, clearly presented.

To complicate things further, some information on the labels in the Corderie is at odds with that in the catalog, proving that there are various ways to calculate population, land area, density, and everything else.

One of the most intriguing displays shows rail links and other transportation connections between various cities through electronic maps. Their routes visibly expand to show how they are expected to develop, since connectivity is crucial to the global economy.

Housing, the show makes clear, is the other really pressing issue now. Some of the most encouraging—and architectural—news comes from, of all places, Caracas, where photographs show the sprawling, irregular barrios cobbled together by the poor on a hillside just across a road from the tall, “formal” rows of traditional apartment towers of the middle class. The contrast is striking.

But here, there is progress. Alfredo Brillembourg and Hubert Klumpner, young architects who graduated from Columbia University’s Graduate School of Architecture in New York and prac-

tice in Caracas as Urban Think Tank, have built colorful, curvaceous, elevated pedestrian bridges in the barrios to replace muddy foot paths. And they have designed a multistory prefabricated “Vertical Gym” with the footprint of a basketball court and different recreational facilities on every floor.

The exhibition texts emphasize the important role government plays in planning, but not all well-governed societies build well, and some bad ones build beautifully, as is indicated by an ancillary exhibition of beautiful southern Italian “Stone Cities,” many of which were built during the Fascist years.

Generally, the widely shared wisdom imparted by the show runs absolutely counter to the sprawling, single-family, exurban growth that is still the norm in the United States and being copied in the Third World. One map shows how much more energy Americans consume than people anywhere else, largely because of the automobile. And yet, as *Design/e2*, a public television program on sustainable design at the U.S. Pavilion, points out, New York City is “one of the most efficient ecosystems in the world because its citizens live close together and walk, bicycle, or take public transportation to work.”

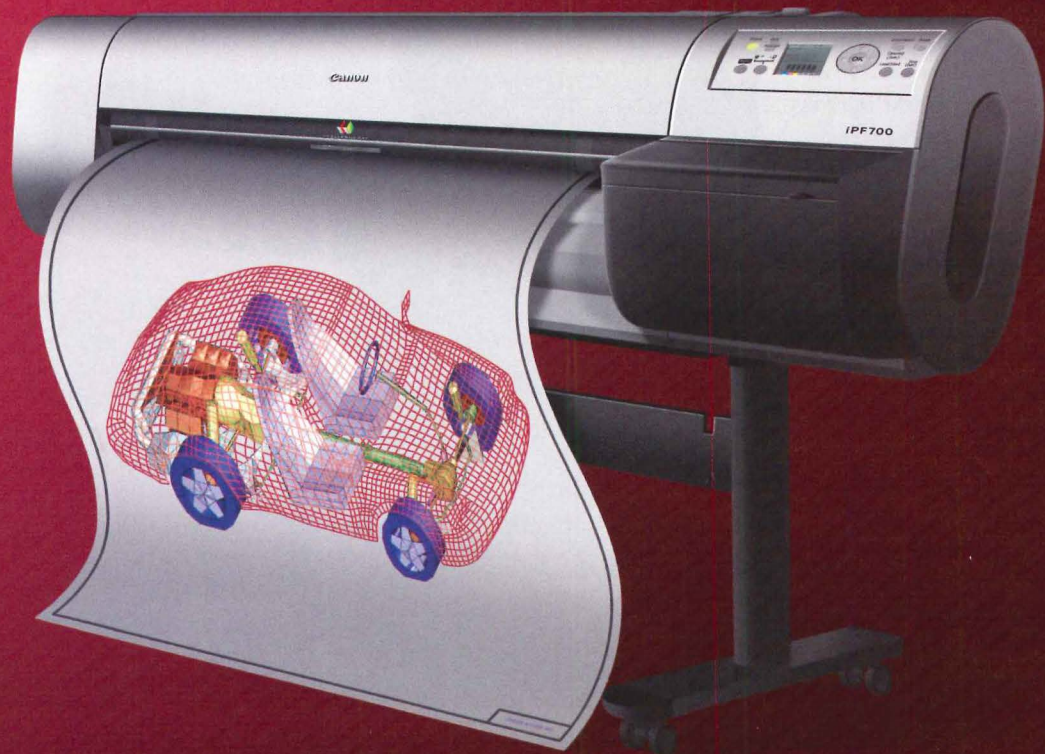
Display after display at the Arsenale suggests that use of the private car must play a much smaller role in transportation. Richard Sennett, commenting on the Biennale, predicted in *Building Design* that if oil supplies evaporate and air-conditioning is rationed, the burgeoning southwestern U.S. cities will shrink even faster than those in the northern U.K. and East Germany.

Both seeing the show at the Architecture Biennale and reading its catalog provide food for thought. If you must choose, go for the book. Ideas about economic equity, energy, and access can only be posed—not digested—in the exhibition format, even if they pinpoint the foremost issues today.



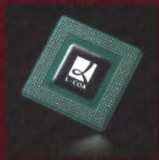
Cibic & Partners designed the Arsenale exhibition (top). In Caracas, a road divides the barrios from high-rises (far left). Urban Think Tank, in Caracas, created a “Vertical Gym” (left).

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Venice Biennale National Pavilions

The 10th Architecture Biennale, with its international audience and world-wide perspective, is the ideal place for a country to show what its most talented architects can do. But this year, when the main exhibition in the Arsenale poses questions about problems rather than offers solutions, few followed through with clearly presented architectural ideas.

Too many of the 50 national pavilions seemed to be trying desperately to be exciting or artistic, instead of clearly informative.

While a few countries, such as China and Japan, attempted to show that native traditions or crafts are not forgotten—many countries tried too hard to entertain visitors.

In the following pages, three critics describe some of the highlights from those national exhibitions. J.M.



Italy

By Helen Castle

At the Italian Pavilion, the largest in the Giardini di Castello, commissioner Pio Baldi and curator Franco Purini invited 13 “international research institutions” to each present their own exhibitions. The choice was well-founded, if weighted to Europe and America.

A studious joint effort of Mexico’s Universidad Iberoamericana, India’s Urban Design Research Institute, and the Università Iuav di Venezia analyses the relationship between urban design and global change in Mexico City, Mumbai, and Venice. Here, for example, satellite photography and a focus on Venice’s industrial hinterland, enables us to see past the historic facade of the tourist city and understand Venice as the greater urban conurbation of Padua and Treviso. Also pertinent is the show organized by the University



of Texas at Austin on the social and political impact of Hurricane Katrina on the Gulf Coast.

The decision to include Office of Metropolitan Architecture’s research arm, AMO, reflects the influence that Rem Koolhaas has had on the entire Biennale, with the SMLXL visual treatment of the main exhibition space. Here, AMO focuses on Dubai and other cities with the same deadpan reportage—maps, photos, and data—the master brought to China. While pure information is fascinating, one aches for aesthetics and architectural solutions.

Less obvious is having two publications act as curators under the

guise of “research institutions.” *Domus* presents the extraordinary Soviet architecture of Pyongyang, the capital of North Korea, rebuilt after aerial bombing in 1952, in the chic style of *Wallpaper**. However, *C-International Photo Magazine’s* show predominates, filling the entire central ground-floor space. Super vivid, high-quality photographic prints are alluring, but one feels the very scale and slickness of this exhibition owes more to the sizable financial commitment of Ivory Press and C.E.O. Elena Foster to its new magazine.

The two most innovative schemes are *Babylon:don* by Nigel Coates’s students at London’s Royal

Bold graphics covered the Italian Pavilion (top). Inside was AMO’s show on cities in the Persian Gulf (above left) and C-International Photo Magazine’s display. (above)

College of Art, with its handcrafted models and its often witty architectural responses to the diverse cultural mix of the city, and the *Venice Super Blog*, a collaboration between The Architecture Foundation of London and New York’s Museum of Modern Art. *Super Blog* effectively captured the spirit of the press weekend, giving immediate voice to the opinions and excesses of the architectural cognoscenti.

Helen Castle is the editor of AD/Architectural Design magazine in London.



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Venice Biennale National Pavilions

Switzerland

By Alexander Gorlin, FAIA

At first, the selection of Bernard Tschumi by commissioner Urs Staub to be the sole exhibitor in the Swiss Pavilion seemed puzzling: He maintains offices in New York City and Paris, and there is no lack of talented “native” Swiss architects. Yet he still has his Swiss passport, so in this time of global flows of finance and architects, it is not completely illogical. Still, it is surprising that Tschumi shares double billing on the sign outside with Switzerland. This is the Tschumi show.

Tschumi filled the pavilion with scattered, low oval volumes sliced at an angle that recall, of all things, the holes in Swiss cheese. Dubbed *Elliptic City: Independent Financial Center of the Americas*, the project is a speculative waterfront residen-



tial development in Santo Domingo in the Dominican Republic. At least that is what it appears to be. It is not entirely clear: operational directions, rules, “concept forms,” and vague circulation diagrams

locate housing, hotels, and shopping on the site. Elliptical plan forms rule the day, although why these shapes and not others are used is, again, not clear. The brilliant display of a noncommitment

Bernard Tschumi’s installation of his plan for Santo Domingo.

to anything specific is rather odd from a country (and an architect) known for precision.

Spain

In contrast to the statistic-based exhibition at the Arsenale, the Spanish Pavilion and its luminous display of steles with backlit photographs of women is a refreshing change. The steles each represent a woman architect, urban planner, or writer who is either living or working in Spain today. The feminine root of the country’s name, *España*, provides the springboard for the theme animating the exhibition—a surprise from a country known for machismo. (And the commissioner and curator is a man, Manuel Blanco.)

As at a science fair, each woman stands in front of her contribution to architecture and the city. On the other side of her image is her project presented with models and drawings. Despite the generally posi-

tive aspect of the display, at times it uneasily recalls luminous tombstones or the ads on a New York City public bus shelter. And of course, the emphasis on the image of the woman is a double-edged sword. After a while, one only notices the

differences in body type and attractiveness among the women. Although the exhibition is meant to present the work of women, the decision to show their images first makes the achievement secondary! Pretty soon, the ambience starts to

spook. The Spanish chick pavilion has this male observer “running with the wolves” for an espresso in the Giardini.

Alexander Gorlin, FAIA, is a practicing architect and writer in New York.



The display devoted to women professionals, in the Spanish Pavilion.

ON STEEL

GETTING STARTED “In 1968, I was lucky enough to get a job at SOM in Chicago. They were just finishing the Hancock, which is an incredible steel structure. Beginning my second week in Chicago, I worked with Bruce Graham and Fazlur Khan, and I really started to understand steel through their teaching. They were incredible people with visions of buildings and structures.”

Lucien Lagrange. Principal. Lucien Lagrange Architects. Born in France, he moved to Montreal in 1959. He interned at Skidmore, Owings & Merrill, tasted Chicago, and couldn't stay away. Now one of the most creative classic designers Chicago has ever seen, he is busy leaving his imprint on the City with Big Shoulders, designing with steel.



DESIGN “You have to understand structure. You have to feel in your body how the structure behaves. You have to think one way about concrete, and then another about steel. There are elements of a structure which are similar; but with tall buildings, you have to understand how – and why – they stand up. You almost have to feel the structure yourself. Once you do that, you'll find that steel behaves very differently than concrete. Steel allows you more flexibility than concrete.”

WORK “You have to get emotional, otherwise a project becomes just a job. You have to have passion for your work.”

VALUE “Efficiency lends value, and steel is highly efficient. Steel offers longer spans than concrete and steel sections have narrower profiles than their concrete equivalents. Therefore, steel lends itself to utilizing the ceiling space to run mechanicals through members, which typically results in higher ceilings. The span capabilities allow us to create setbacks in the building more easily, and these are used for balconies and terraces, which add value to the building.”

COMMITMENT “During the design phase, we changed from a concrete structure to a steel structure. After this decision was made, my client wanted me to resign. I was moving too slow. I said, ‘You cannot fire me. You don't understand the complexity of steel. Later on, if you want to fire me, you can. But I have to finish what I started.’ He didn't fire me. Steel is different. It puts a different layer of complexity on the project that you do not have with concrete. With steel, it's more of a challenge, and you must make a commitment in order to succeed. I understand steel, but how do you really explain it? I was convinced in the end that my client would get a better building because of my belief in steel and my principles.”

CREATIVITY “If you want to be creative, use steel. Steel requires a bit more work from the designer, because you have to put together a ceiling, exterior wall... more pieces come together. When concrete is up, you're almost done. The opportunities for building transparency presented by steel structures are exceptional. This transparency lends an ephemeral quality to the buildings.”

FLEXIBILITY “There's a lot you can create with steel because it's steel. Steel is more straightforward. You can mold concrete, for example. But steel comes in pre-designed pieces, out of the mill. At Erie on the Park, a gentlemen bought two units on top of each other and wanted to connect them. We put a stairway next to the exterior wall. That would have been impossible in concrete. When you design a condo building structured in concrete, you have to deal with interior columns in the units. Because we used steel for Erie on the Park, the advantage was we didn't have any interior columns. We had full design freedom, with clear, open space from the core to the exterior wall.”

TEAMWORK “A creative structural engineer is an integral member of the team when designing with steel. At 175 W. Jackson, we wanted to do something more creative than simply span the space with a large member as we inserted a skylight into an atrium. Our vision was to have the glass appear to float freely above a poetic, light, minimal structure. This could only be done in steel, and our structural engineer helped us realize our vision.”

DETAILS “Designing with steel requires that we pay more attention to details. The integration of the structure with the enclosure, the placement and integration of the glazing, the mechanical coordination – this all requires thoughtful and judicious detailing to execute the building.”

CLIENTS “You have to challenge your clients. That's what designing – especially in steel – allows you to do. Convince the client to do it. They will get excited about getting a better building. They'll make more money. Our clients make money through our designs.”

STEEL “When you start with steel, it's very different. In my mind, when I look at steel, it creates a different emotion. It's exciting because it relates to tall structures, light material. When you think of concrete, you think about shape, heaviness. Intuitively, one usually doesn't relate high-rises with concrete. Steel makes you feel you can build as high as you want because it's light and strong. You can express the structure and it becomes part of your statement. There's so much emotion attached to doing a steel building. It's like a mechanical set...you build up in pieces, and it's exhilarating to follow the forces of the building to the ground. Major buildings – if not the major building of this century – can only be done in steel.”



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Venice Biennale National Pavilions

Japan

By Edwin Heathcote

Usually the best pavilions at a frenetic show are the ones that concentrate their energy into a single point. Most try to do too much and become a fuzzy blur.

The Japanese Pavilion, organized by Terunobu Fujimori, an architectural historian and architect, cleverly eschews the single-point installation. You must first (shoelessly) creep into a small hole in a black, charred wall to reach the rather clichéd Zen calm of the interior. It works. In the silence of the space, you make time to wander through the exhibits of an extraordinarily organic, craft-based tradition (many designed by Fujimori).

A certain sense of unreality pervades in the tree houses and cabins with trunks sprouting as structure, like fairy tales in an idealized childhood. Perhaps the single most irrelevant



In the Japan Pavilion, a woven hut occupies the central space.

pavilion for the Biennale's urban theme, Japan's offers one of its few memorable experiences. Instead of the slick Minimalism or technocratic

expressionism architects slobber over, Fujimori blends entrancing photography and eccentric models carved from log sections. It is a kind

of outsider pavilion with a complete lack of justification, yet a profoundly real sense of architecture and material. Hauntingly memorable.



Austria

The Austrian Pavilion, designed by Josef Hoffmann in 1934, provides a severe, if beautiful, shell for the contents. But even this year's commissioner, architect Wolf Prix of Coop Himmelb(l)au, showed it was hard to fill in an exhibition titled *City=Space Shape Net*. In 1964, Hollein's photo collage of the aircraft carrier beached in a pastoral landscape made some instantly comprehensible points about the city, density, and bulk, and about the Modernist vision of the architectural object in a rural paradise. Yet those points are lost when rendered, as they are currently in the pavilion, in three dimensions. Here, the big boat appears as a schoolboy's dream, a giant toy.

Better is the reconstruction of

Friedrich Kiesler's 1925 installation *Raumstadt (City in Space)*. But this too is neutered through scale and juxtaposition (with incompatible and vaguely incomprehensible small models and photos). The result weakens the original conception of a sculptural spatial modulator by turning it into an anodyne scaffold.

Austria's contemporary architecture is extremely sophisticated and extraordinarily diverse, easily supporting a number of divergent but deeply held convictions, from the organic to stripped Alpine Modernism. The show chooses not to celebrate this rich culture, but rather to revisit, reinterpret, and ultimately undermine the icons of its intellectual and theoretical past.

Edwin Heathcote is the architecture critic of The Financial Times, London.

Friedrich Kiesler's 1925 installation, *Raumstadt*, in the Austrian Pavilion.



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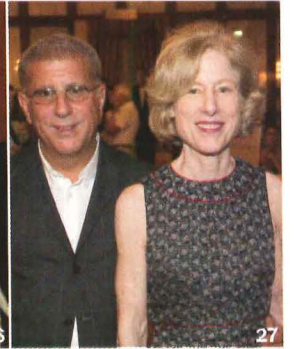
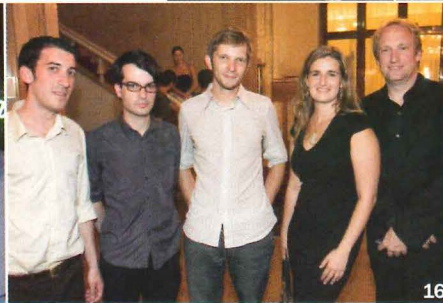
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ARCHITECTURAL RECORD

2006 Venice Architecture Biennale

After all the work organizing, designing, and mounting the exhibition for the U.S. Pavilion, RECORD was ready to party—with receptions at the Hotel Danieli (in honor of Autodesk) and at the Peggy Guggenheim Collection.

1. Phil Bernstein, Karsten Popp, Winka Dubbeldam, Peter Reed.
2. Ray Ryan, David Morton, Diana Lind, Alex Gorlin, Charles Miers, Joseph Rosa. **3.** Philip Rylands. **4.** Frank Barkow, Barry Bergdoll. **5.** Kate Linker, Bernard Tschumi, Nigel Coates.
6. Jayne Merkel. **7.** Reed Kroloff. **8.** Chiara Barbieri, Christian D. Bruun. **9.** Tim Johnson. **10.** Werner Sobek. **11.** Ralph Johnson, Casey Jones. **12.** Sir Richard MacCormack. **13.** Laurie Beckelman, Joseph Rykwert. **14.** Lea Perez, Margaret Helfand.
15. Toshiko Mori. **16.** Christian Stayner, Robert Pietrusko, Stuart Heys, Sarah Herda, Christian Bruun. **17.** Robert Ivy, Suzanne Stephens, Clifford Pearson. **18.** Antje Quiram, Roland Halbe. **19.** Laura Viscusi, Richard Harpham, Barbara Kroll. **20.** Charles Jencks, Lily Jencks, Russell Fortmeyer. **21.** Matthias Sauerbruck, Louisa Hutton. **22.** Peter Anderson. **23.** Leanne Mella. **24.** Karsten Popp, Elisabetta Fagioli. **25.** Rita Sio, Dennis Oshiro, Mark Anderson. **26.** Markus Eiblmayr, Lilli Hollein. **27.** David Meitus, Angela Westwater.





DIVIDE AND CONQUER

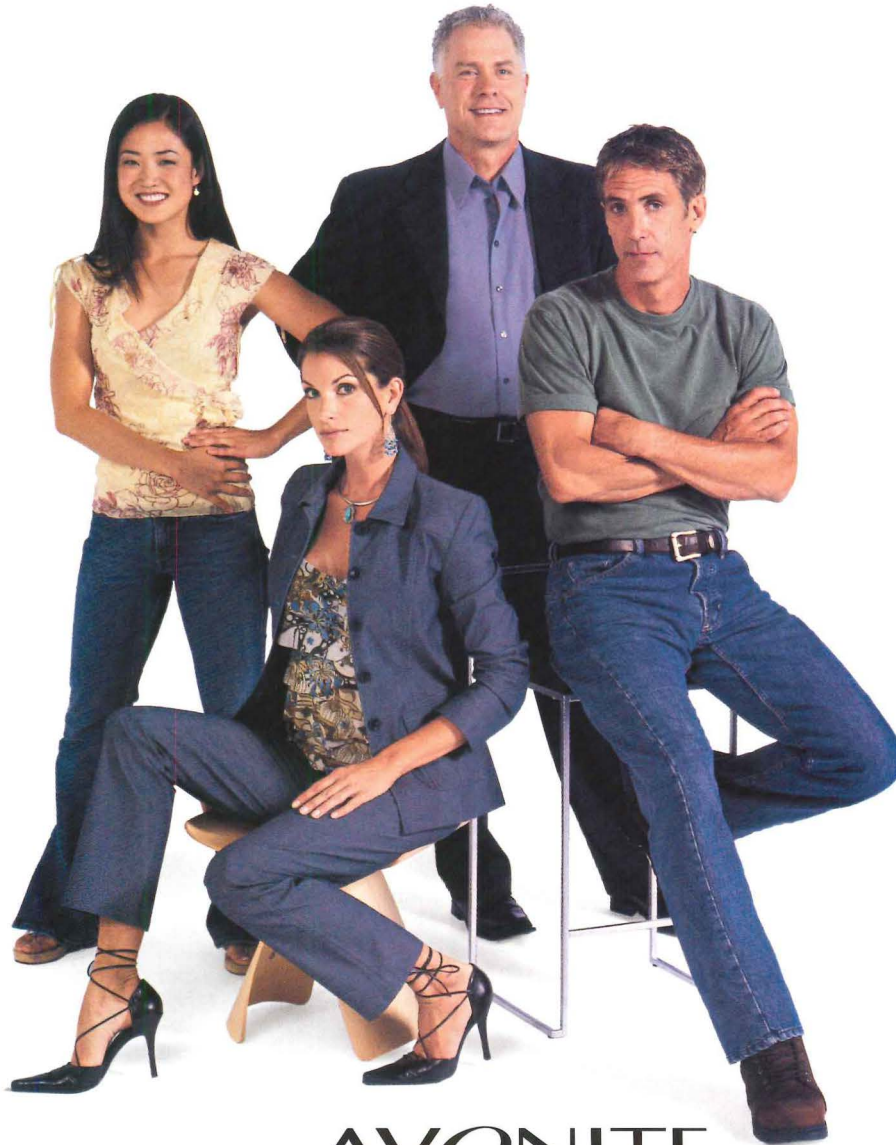
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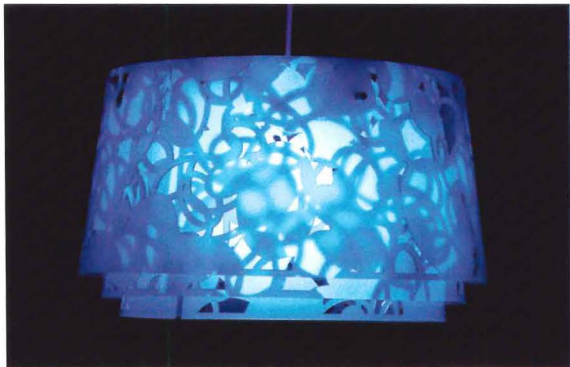
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Product View



By Rita Catinella Orrell

For more than 70 years, Louis Poulsen has pushed the boundary between art objects and functional lights, and its latest U.S. introductions from an international roster of designers continues that legacy. Enigma, a direct/indirect pendant by Tokyo-based Shoichi Uchiyama, provides glare-free lighting with graduated matte acrylic shades. Hair-thin aircraft cables give the shades

the illusion of floating, while the light source is completely hidden within an aluminum cone. Volcano, by London-based David Morgan Associates, is made with a vacuum-formed clear polycarbonate shade. Light emanates from the center of the 1½-foot-high floor light, striking the reflector and spreading along the bottom portion of the luminaire. Danish designer Louis Campbell tried to replicate the way sun shines through leaves with the Collage pendant, constructed of three pieces of laser-cut, glossy extruded acrylic. Louis Poulsen Lighting, Ft. Lauderdale, Fla. www.louispoulsen.com **CIRCLE 200**

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Clockwise from right: The Enigma 825 model features seven shades that reflect light from a hidden source. Volcano is encased in a conical, clear polycarbonate shade. Collage, shown here in Heavenly Blue, projects shadows on itself.

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By Clifford A. Pearson

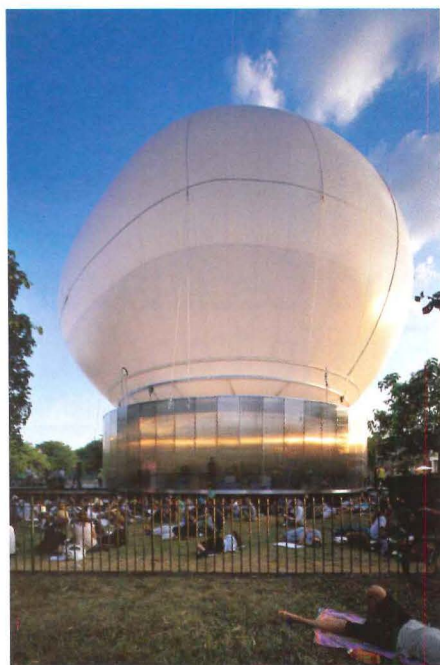
Call it an architectural soufflé, a lighter-than-air confection that amuses without provoking any deep thoughts. This year's Serpentine Gallery Pavilion, designed by Rem Koolhaas and Arup's Cecil Balmond, hovers above the gallery's 1934 redbrick home (right) and the leafy setting of London's Kensington Gardens, recalling a 1960s-era doodle come to life.

But the inflatable buildings and walking cities that architects such as Cedric Price and Archigram conjured in Swinging London four decades ago presented more anarchistic and rebellious statements than the tame, milky white balloon that Koolhaas and Balmond have tethered to a translucent polycarbonate base. Instead of in-your-face attitude, the 2006 Serpentine pavilion offers a tasteful version of fun. Instead of paisleys and a riot of images, it gives us a monochromatic ensemble of geometric forms.

The sixth in a line of temporary structures commissioned by the Serpentine, the pavilion serves as a café and meeting space and houses a four-sided frieze by artist Thomas Demand that hangs above the polycarbonate base.

Rem and Cecil lay a Cosmic Egg in London





A Thomas Demand frieze hangs above a base of polycarbonate sheeting and solid polycarbonate mullions (above). The balloon (left) is a PVC membrane filled with helium.

(The popular program of summer pavilions is the brainchild of Julia Peyton-Jones, the Serpentine's director, and has featured designs by Zaha Hadid, Daniel Libeskind, Toyo Ito, Oscar Niemeyer, and Alvaro Siza with Eduardo Souto de Moura.) On calm days, this year's 262,500-cubic-foot balloon, which has a PVC membrane filled with helium and pressurized air, can float above its translucent base to allow air and light inside. When winds pick up or rain starts, it returns to its mooring. Koolhaas calls it a "nonpavilion," and Balmond refers to it as "the Cosmic Egg," due to its irregular ovoid shape.

Inside the pavilion, visitors can move blocky seats into impromptu arrangements and kibitz while sipping cappuccinos. In addition to designing the building, Koolhaas helped develop the series of talks, forums, and film screenings that would fill it during the summer. On two days, he and Hans Ulrich Obrist, a Serpentine curator, held court for 16 hours, conducting interview marathons with architects, artists, filmmakers, writers, theorists, and various other Friends of Rem. According to Koolhaas, the programs inside the pavilion are as important as the architecture. The emphasis on freewheeling talk and long hours of hanging out recall the "happenings" of the 1960s, when the overriding idea was more important than specific details. What better metaphor could there be for all that hot air than a pavilion shaped like a balloon? ■

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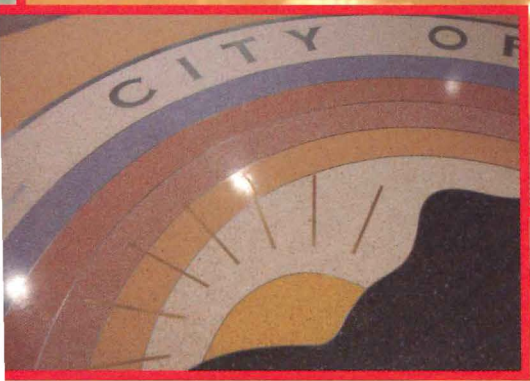
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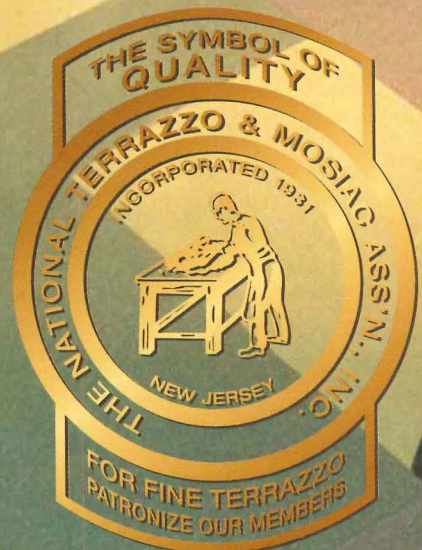
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FEATURE

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STUDIOS Architecture

By John Gendall

This year, for the ninth time, ARCHITECTURAL RECORD has teamed up with its sister publication *BusinessWeek* to honor successful collaborations between architects and clients. Selected by a jury for their success in understanding and enhancing their client's business goals, the eight winners and six finalists come from a competitive pool of entries submitted from around the globe.

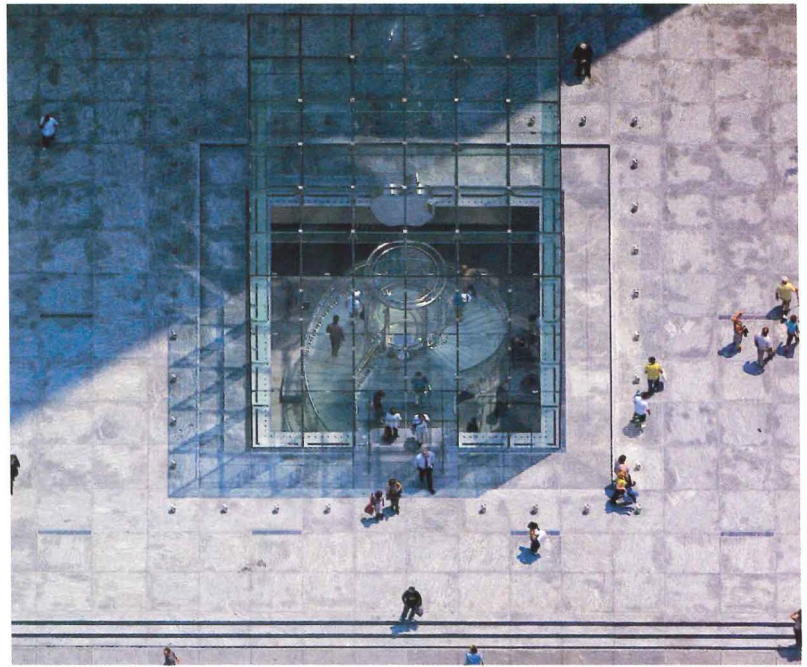
Hailing from seven U.S. states, as well as Canada, Mexico, the U.K., and Germany, the winners represent a broad range not only geographically, but also in program, scale, budget, and style. In one project, a 20th-century candy factory is transformed into a light-filled biomedical research lab that increases employee interaction. In another, a streamlined glass cube transforms an underused plaza in New York City into a company's most successful retail outlet. But despite their differences, what unites all of these projects is their clear demonstration of architecture's capacity to be artistically compelling while equipping the client for growth and success.

APPLE STORE FIFTH AVENUE Bohlin Cywinski Jackson

Modern architecture has long been preoccupied with creating nothingness. Bohlin Cywinski Jackson has come a step closer to attaining that impossible goal with a glass pavilion over the new 5th Avenue Apple Store in Manhattan. Despite its Minimal form and ethereal materials, it has spawned a retail juggernaut.

The store transforms an underused, sunken plaza in front of the 50-story General Motors Building at 5th Avenue and 59th Street into vibrant space. By submerging the store under the plaza, the architects were able to crown it with a 32-foot cube that occupies only 8 percent of the plaza and leaves the rest for public use.

Anything below-grade is famously difficult as retail space because it depends on luring fickle shoppers away from the street.



Project: Apple Store Fifth Avenue, New York, N.Y.

Key players: Bohlin Cywinski Jackson (architect)

Client: Apple

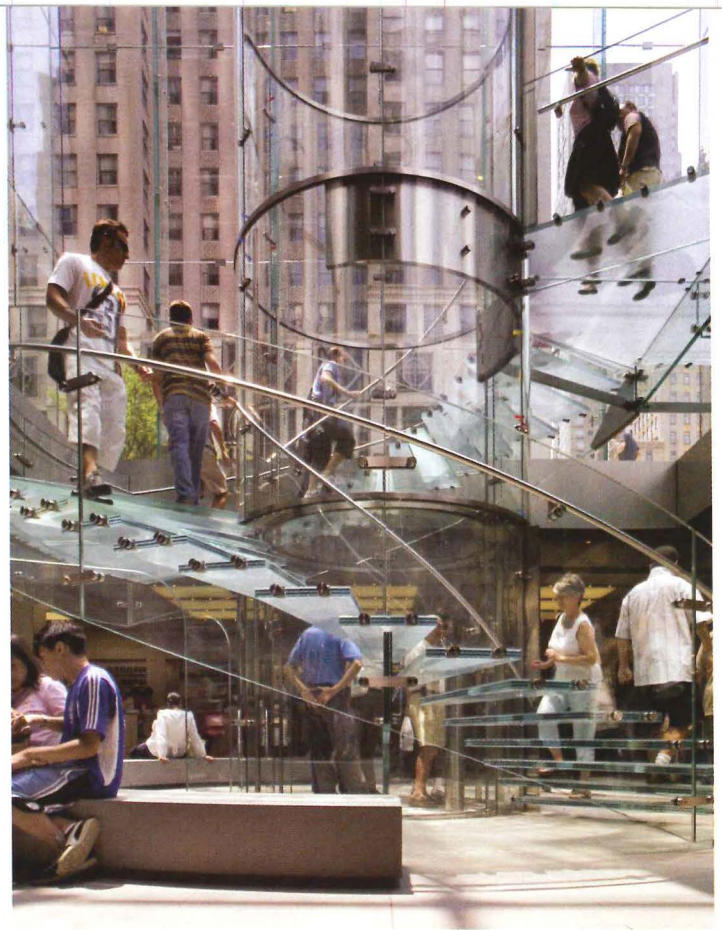


Ron Johnson, Apple's senior vice president of retail, understood the challenge but believed that "if we get the design right, we can get people to go down." Not only does the Apple Store get people underground, it has become a 24/7 shopping sensation and the highest-volume retail outlet for the company.

Free of structural steel, the cube relies on a system of taut glass skin, glass beams, and stainless-steel fittings to float over the retail space. The architects carefully scaled and positioned the glass pavilion to flood the entire space with daylight so shoppers never feel they are underground.

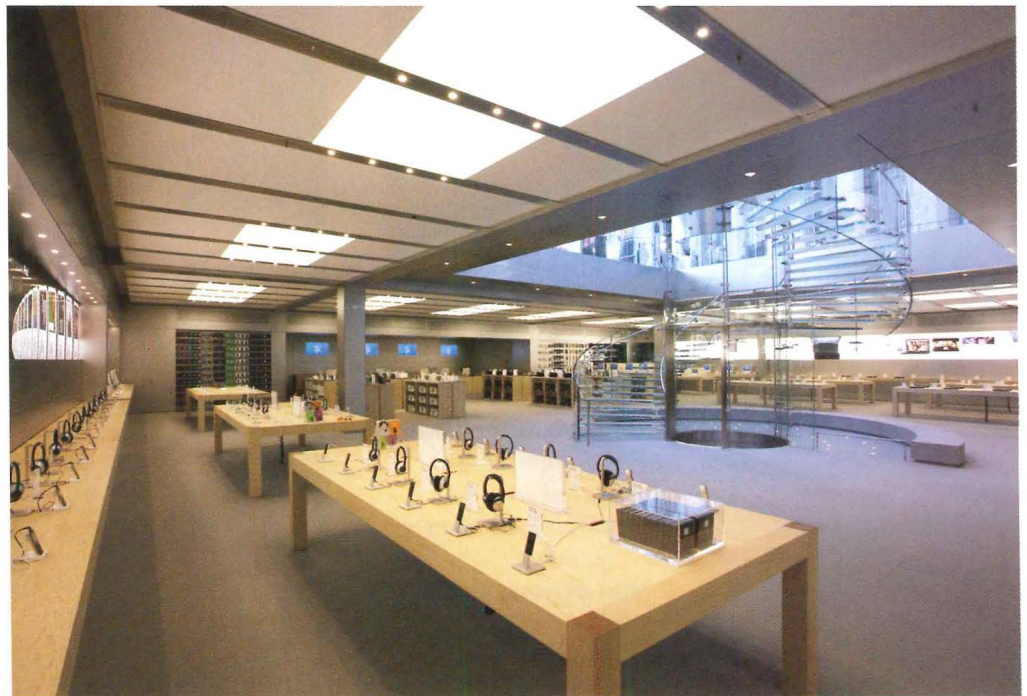
A member of the BW/AR jury praised the Apple Store as a "preeminent example of the power of architecture on business, and how the public understands and experiences a brand."

Peter Bohlin of Bohlin Cywinski Jackson explains that "with today's technology, the store is as pure as it can be." Even though it is hardly there, it has become an instant icon and an overwhelming business success.





A glass staircase spirals around a cylindrical glass elevator to connect the store below with the plaza above. A “plaza beneath a plaza,” the store is Apple’s highest-volume retail space. Its transparent materiality and open design serve as an invitation to customers with diverse backgrounds and interests.



NISSAN DESIGN AMERICA Luce et Studio

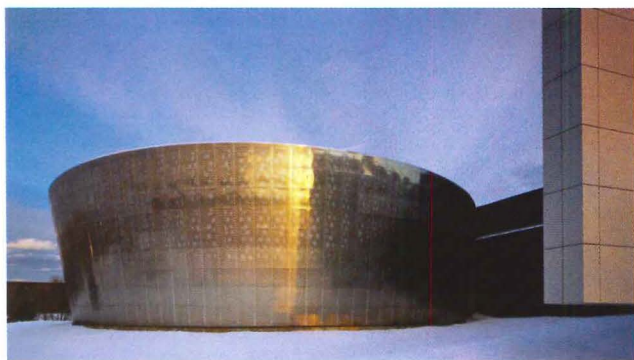
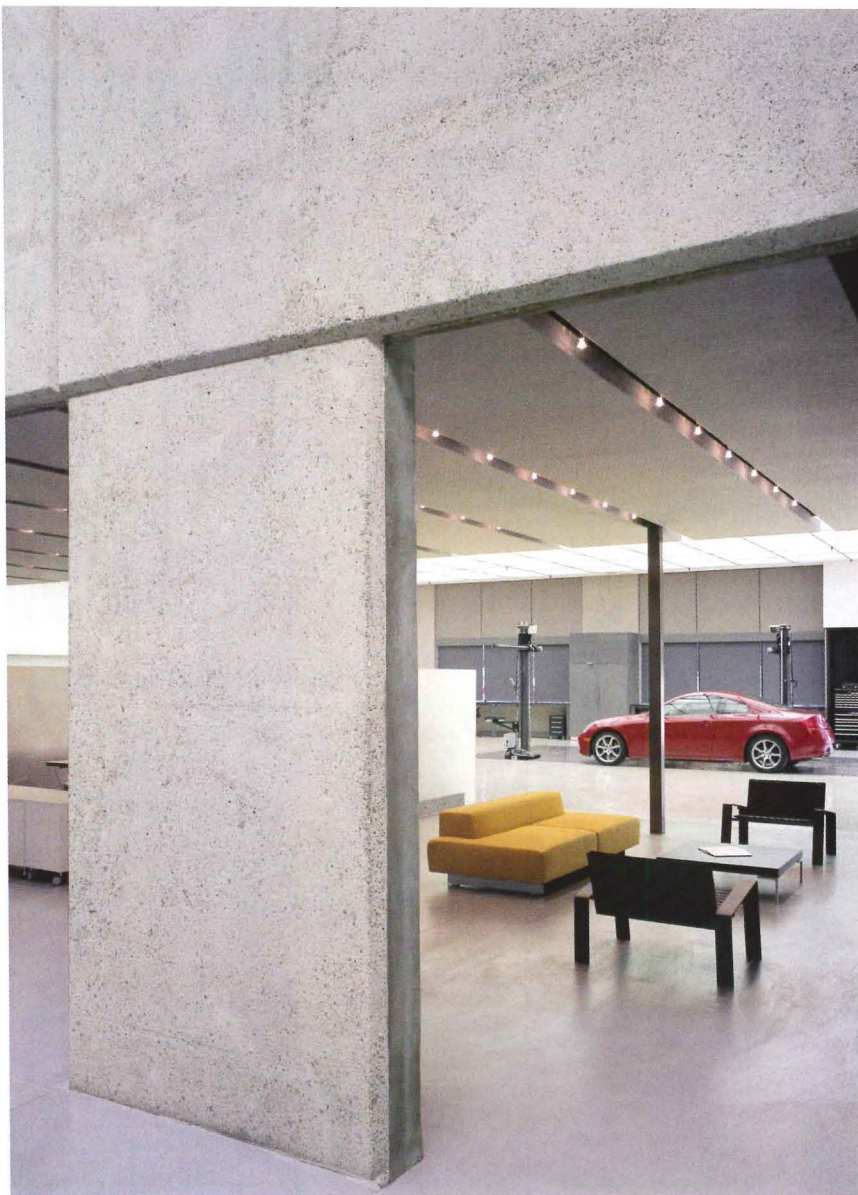
Because of the tight competition in its industry, automotive design facilities need privacy and security. This can result in buildings with what Jennifer Luce of Luce et Studio calls “antiseptic architecture.”

For its design studio in La Jolla, California, and its styling studio in Detroit, Michigan, Luce designed facilities whose architecture not only reflects the car company’s high level of design, but also features an openness that encourages communication between designers without compromising privacy.

The expansion and interior renovation in California included inserting large window and door openings onto the courtyard walls that had formerly separated the conceptual design from contour and engineering. Luce also added an “exploratory studio” to link the different design studios and to encourage interaction during the design process.

And in Detroit, Luce similarly merged two programs traditionally kept distinct: engineering and styling. A loggia open to everyone connects each of the studios. An aluminum portal articulates the threshold between this communal space and the private modeling studio. An outdoor viewing courtyard—“the egg”—is the final venue for the critique of the car designer’s models. Typically relegated to nondescript warehouses or yards, Nissan now reviews designs in an area that demonstrates the same attention to detail as the cars that it produces.

The BW/AR jury noted that the facilities “maintain a design studio feeling with the capacity to build large mock-ups—a variety of design environments with both indoor and outdoor areas.”



Project: Nissan Design America, La Jolla, Calif., and Farmington Hills, Mich. [RECORD, December 2005, page 78]

Key players: Luce et Studio (architect)

Client: Nissan Design America



Combining a variety of design environments, the new facilities for Nissan Design America encourage interaction among and between designers and engineers. A courtyard now opens to connect spaces that were once separated.



PHOTOGRAPHY © PAUL RIVERA (THIS PAGE), ART GRAY (OPPOSITE)

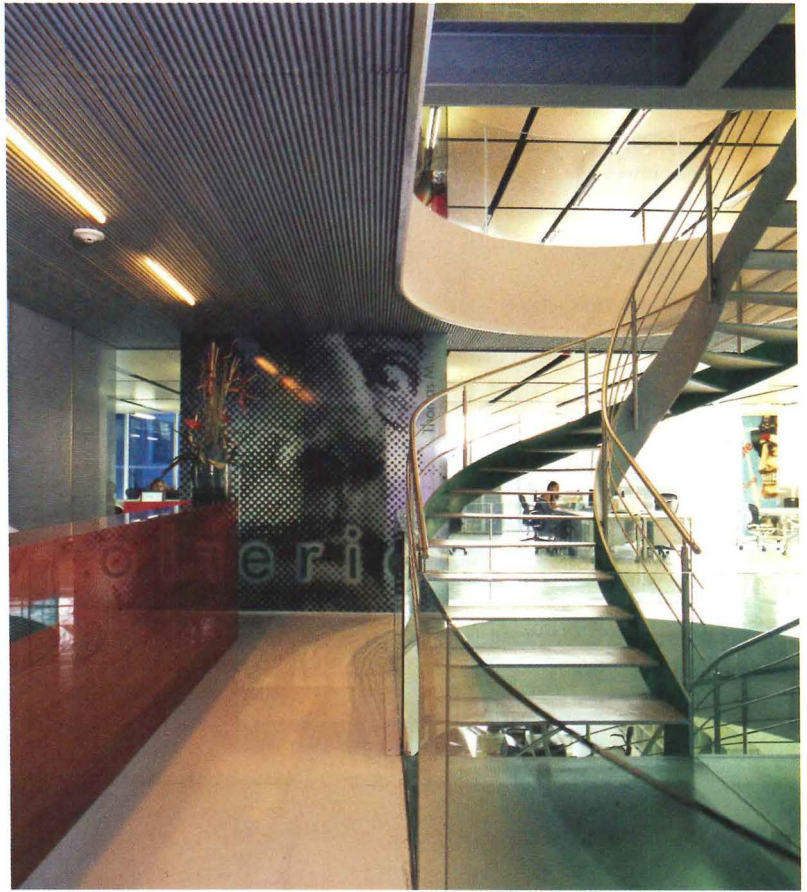
ADVERTISING AGENCY TERÁN/TBWA THE IDEA FACTORY Garduño Arquitectos

As part of the multinational advertising agency TBWA, Mexico City–based Terán/TBWA needed a space that would provide it with a unique identity within a larger organization. But image wasn't everything; its new home also needed to encourage creativity, collaboration, and flexibility.

In the advertising industry, where clients and projects quickly change, flexibility is a paramount concern. This became plainly evident during the short, four-month design phase, when Terán's project base turned over several times. The 160-person agency saw its needs for office space change constantly.

To accommodate this need, and to maximize interaction among employees—even those on different floors of the three-story space—Garduño Arquitectos called for open floor plans and everything in the building to be movable. Nearly all objects have wheels, including desks, chairs, office equipment, and filing cabinets. Designed as boxes unattached to floors or walls, even meeting rooms can be wheeled to modify the floor layout.

One of the few objects fixed firmly in place is a vertical axis composed of monitors encased in wood and stacked one atop the



Project: Advertising Agency Terán/TBWA, The Idea Factory, Mexico D.F., Mexico

Key players: Garduño Arquitectos (architect); Alen Constructions and Enrique Alvarez (general contractor); Aguilar Engineer and Salvador Engineer (structural engineer); RCL Roberto Campoy (electrical engineer)

Client: Terán/TBWA



Garduño Arquitectos proposed the contemporary factory as a model for the space. The agency now calls its new home "The Idea Factory."



other. This feature, known as the “totem,” reaches vertically through a central opening and visually unifies all the floors. Each monitor can be moved independently and can be programmed for different displays depending on the circumstance.

Underscoring the collaborative effort between architect and client, Garduño asked the ad agency to design the graphics used in the building. The result is a highly individualized space that stimulates creativity. Terán/TBWA general director José Alberto Terán explained, “Architecture is key for us. It sends a message to the clients we have and the ones we want to work with. We are a brand and this is our packaging.”



The staircase encourages interaction among employees, while graphics are the outcome of a collaboration between architect and client.



TERRENCE DONNELLY CENTRE FOR CELLULAR AND BIOMOLECULAR RESEARCH

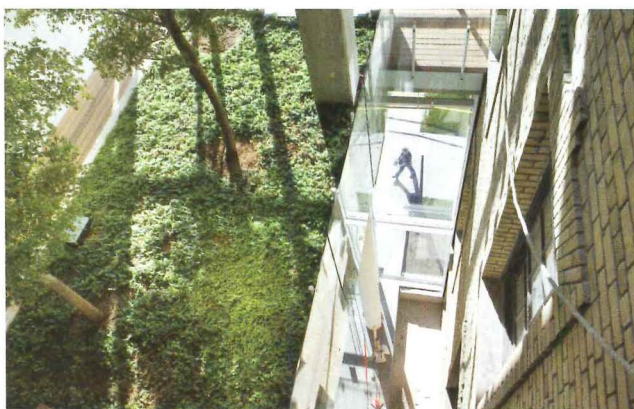
architectsAlliance and Behnisch
Architekten

Wedged into a tight urban context, the Terrence Donnelly Centre for Cellular and Biomolecular Research (TDCCBR) at the University of Toronto responds sensitively to the historic buildings around it, and to the programmatic demands of its occupants.

The team of architectsAlliance and Behnisch Architekten equipped the building with many common spaces, knowing these would let researchers exchange ideas in casual settings. On the main public floor, a naturally ventilated winter garden serves staff, students, and visitors. On upper floors, lounges and a series of open stairs encourage interaction among the building's users. A juror noted that "this facility provides abundant employee amenities, including a garden and open space, even with considerable site limitations."

In an effort to fit a building not only taller than but in material contrast to its brick neighbors, the architects divided its vertical massing in two, with an intermediate mechanical floor providing this articulation. The Donnelly Centre literally attaches itself to the buildings that flank it, which provides an architectural analogy to the spirit of collaboration that it is intended to promote.

TDCCBR also responds to its ecological context. Laboratory floor plates are narrow to provide natural daylight and ventilation. Elevations are not only visually striking, but also work as high-performance curtain walls with double skins that reduce heat loss/gain.



Project: *Terrence Donnelly Centre for Cellular and Biomolecular Research, Toronto [RECORD, July 2006, page 128]*

Key players: *architectsAlliance and Behnisch Architekten (architect); Vanbots Construction Corporation (builder)*

Client: *Univ. of Toronto*



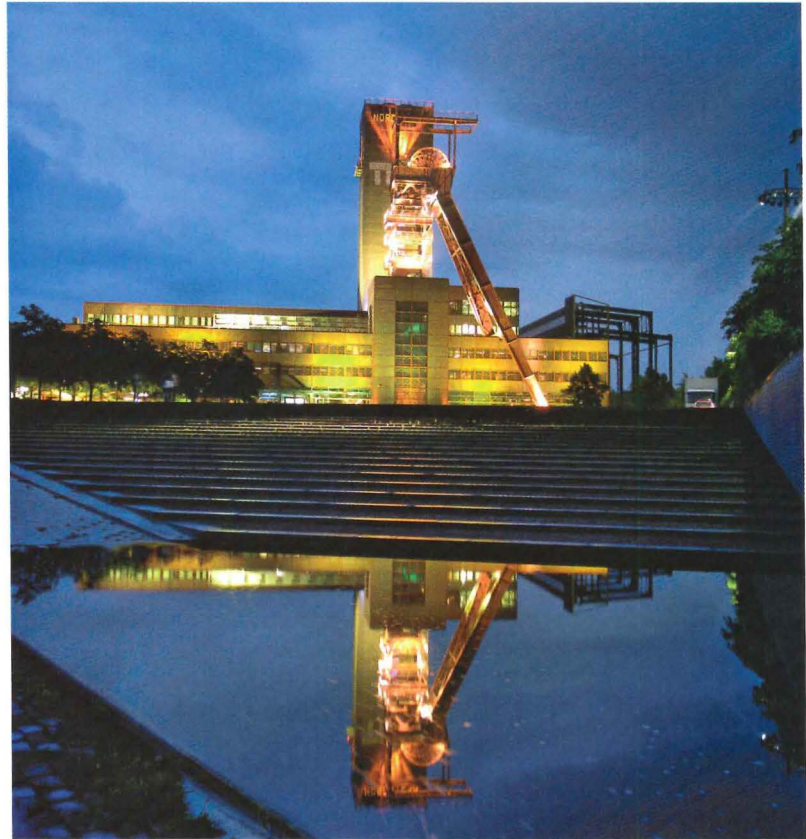


One of the leading research centers in Canada, the building now resides on what was once a closed street used for parking and building services.

TREUHANDSTELLE AT NORDSTERN Architect Team THS/PASD

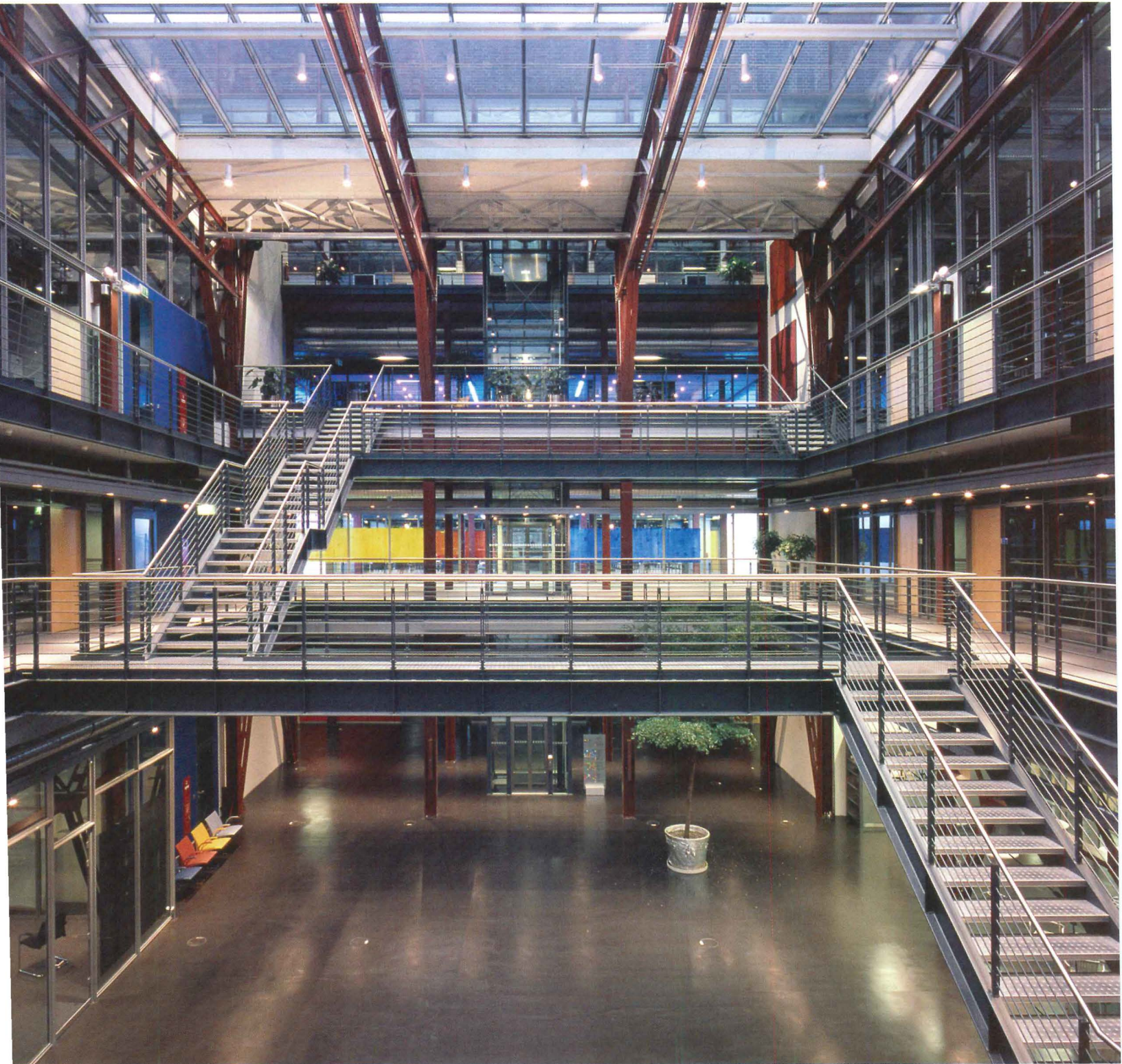
The new offices for TreuHandStelle (THS) at Nordstern represents “an extraordinary commitment to take something that was basically an obsolete toxic waste dump and turn it into a corporate headquarters and a beautiful place to work,” says a member of the BW/AR jury. As such, it incorporates new features, such as a large, four-story atrium, dining facilities, and a park, as well as restored old elements, such as the shafts and winding tower of a 19th-century mine.

Founded in 1920 to provide housing for miners in Germany's industrial Ruhr region, THS diversified into a number of different fields when the mining industry began shrinking in the 1960s. This transition led to major corporate growth and the need for a bigger headquarters. Instead of building a completely new home office,



Project: Nordstern,
Administrative Building of
TreuHandStelle,
Gelsenkirchen, Germany
Key players: Architect
Team THS/PASD (architect)
Client: TreuHandStelle

Linked by a great hall,
the new offices are
open and interactive.
Much of the original
structure remains,
but it now has large
windows flooding the
building with light.



THS and its architects decided to retain a link to its mining heritage by adapting and reusing Nordstern—a decommissioned Ruhr valley coal mine.

Renovation work included cleaning the industrial waste, replacing corroded steel, inserting ribbon windows into an otherwise solid facade, and restoring the mining shafts and winding tower that had been designated for preservation. The new windows and open spaces of the building prompted a juror to note that “it is clean and filled with light but maintains the grittiness.”

Though the mines are inactive, they fell under the watch of the National Mining Authority, and still emitted methane. The architects implemented a system to safely drain this hazardous gas and put it to use as energy for the building’s operation.

The surrounding landscape features stunning river valley vistas and a lawn for recreation, which has become popular not only with employees, but also with the larger community.





The architects adapted the original industrial spaces of Nordstern into large, open, flexible offices. Old and new coexist in the adaptive reuse of this coal-mine facility.

GENZYME CENTER Behnisch Architects and Behnisch Architekten

With its visionary sustainable design coupled with elegant aesthetics, this LEED Platinum–certified building stands as a model of architecture that is a steward both to its occupants and to the environment.

As it undertook this project, Genzyme committed itself to providing a healthy work environment for its employees. Sustainable features include a ventilated double skin that blocks heat gain/loss, a green roof, and natural light for 75 percent of the work spaces. An atrium provides natural light and ventilation, but it also offers open, communal space with gardens, cafés, and open staircases. The client estimates that the building's operating costs are 42 percent less than a conventional office building.

A member of the jury praised the building, noting that a “spec lab is already an innovative idea; add to that an incredibly rich working environment. Daylight and a highly sophisticated use of sustainable design generates a rich collaborative environment, encouraging transparency among the different parts of the company.”

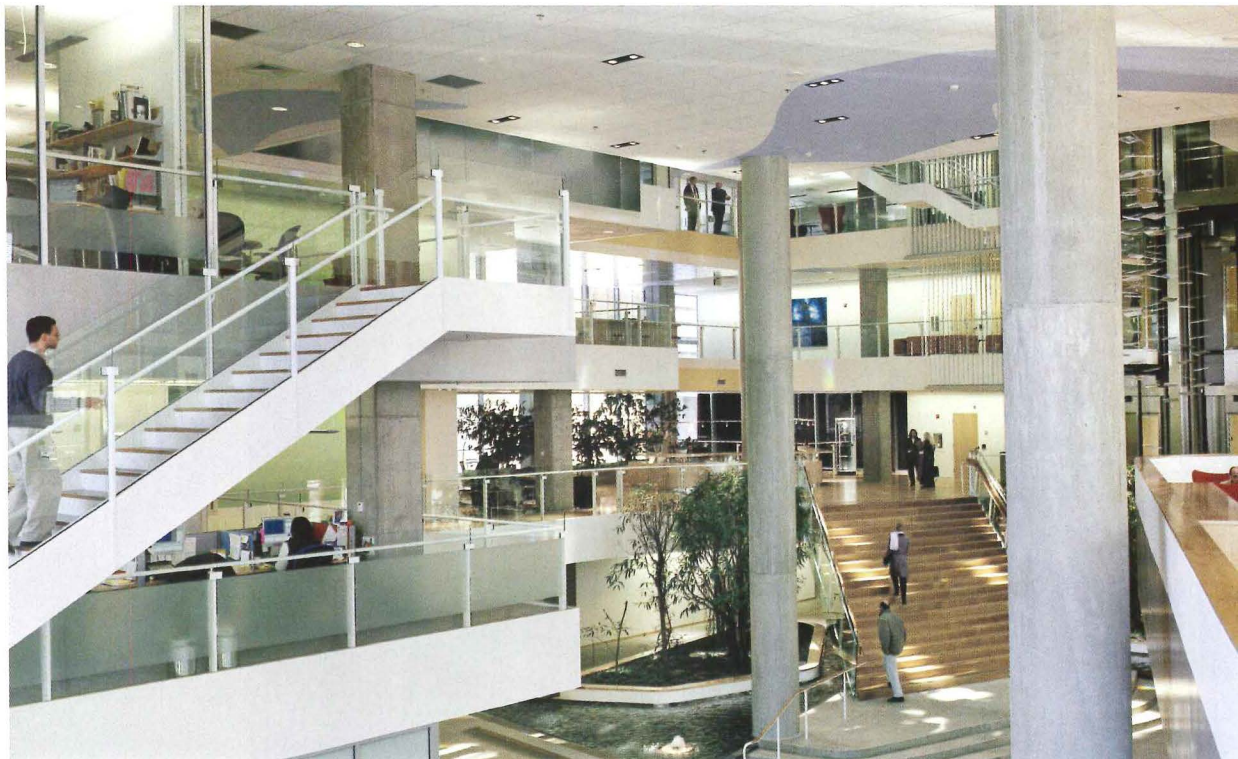
Supporting the notion that good design can indeed be good business, 58 percent of Genzyme Center's employees reported that they were more productive in this building than they had been in the company's former headquarters.



Project: *Genzyme Center, Cambridge, Mass.*
[RECORD, July 2004, page 102]

Key players: *Behnisch Architects (architect and general planner); Behnisch Architekten (design architects, building and interior); Buro Happold (environmental consultancy, and structural and m/e/p engineer)*

Client: *Genzyme*





A grand atrium provides natural light and ventilation, along with communal spaces. Water features, gardens, and a large, hanging-chandelier sculpture animate the space.



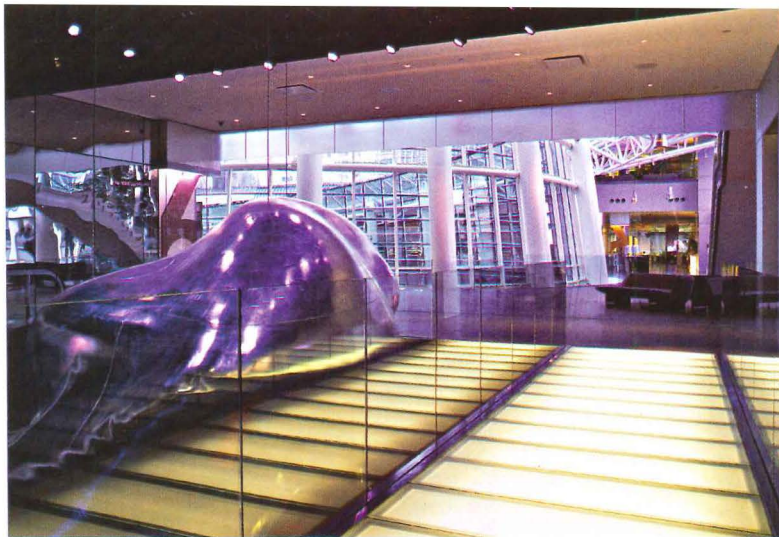
BLOOMBERG HEADQUARTERS STUDIOS Architecture

The success of the Bloomberg company can be attributed in part to its willingness to break rules. In designing the financial company's new headquarters, STUDIOS Architecture took a page from its client's book and broke a few rules itself. The result is what a juror called "interior spaces that generate tremendous productivity and creativity, fostering collaboration and communication."

Eschewing the anonymous entry-and-exit sequence via banks of elevators found in most office buildings, STUDIOS designed a process whereby employees enter through a single ground-floor security point, but then go to a sixth-floor reception area. Here, employees can grab complimentary drinks and snacks before heading to their work floor by stair or elevator.

All of the 3,800 employees—including top executives—sit at open-plan workbenches. To compensate for the elimination of private offices, the architects doubled the number of conference rooms. These are enclosed by glass to maintain the sense of transparency valued by the company.

Disseminating information is at the core of what Bloomberg does, and this is reflected in its headquarters. The architects used graphics throughout the building to deliver a steady stream of information. These LED displays include information like market data and news, and reports on employee events and achievements. As a foil to the flow of digital information, large-scale art objects enliven communal space.



Project: Bloomberg Headquarters, New York City [RECORD, March 2006, page 138]

Key players: STUDIOS Architecture (interiors)

Client: Bloomberg LP





Bloomberg occupies a number of floors at 731 Lexington Avenue, a 55-story building and BW/AR finalist this year. The offices express the identity of the financial-information company, whose founder is now mayor of its hometown.



NOVARTIS INSTITUTES FOR BIOMEDICAL RESEARCH

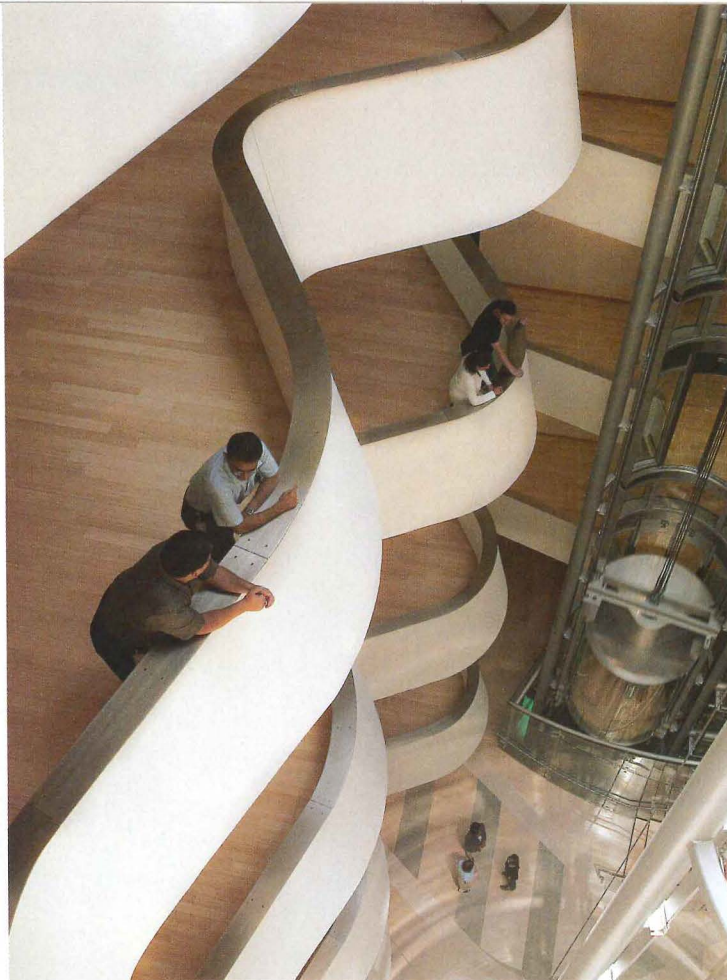
The Stubbins Associates

Convinced that interaction and collaboration are vital to the science of drug discovery, Novartis wanted a space that would promote what company executives call the "sociology of science." So when it decided to move its research headquarters from Basel, Switzerland, to Cambridge, Massachusetts, the international pharmaceutical giant set about making its building support that goal.

Stubbins Associates proposed a solution that was as unconventional as the challenge was bold: to transform a Necco candy factory built in 1927 into a high-tech research facility. An attractive site close to other science companies and MIT, along with large windows and open spaces, made the building amenable to reuse as an innovative workplace.

But to turn the candy factory into a cutting-edge research facility, the architects needed to make major alterations. To maximize openness and interaction, they created a central atrium that spans all six floors of the building.

Wherever possible, Stubbins removed walls to open the space. When partitions were needed, the firm used glass walls to avoid compromising visual connectivity.



Project: Novartis Institutes for BioMedical Research

Key players: The Stubbins Associates (architect); John Moriarty & Associates (construction manager)

Client: Novartis Institutes for BioMedical Research



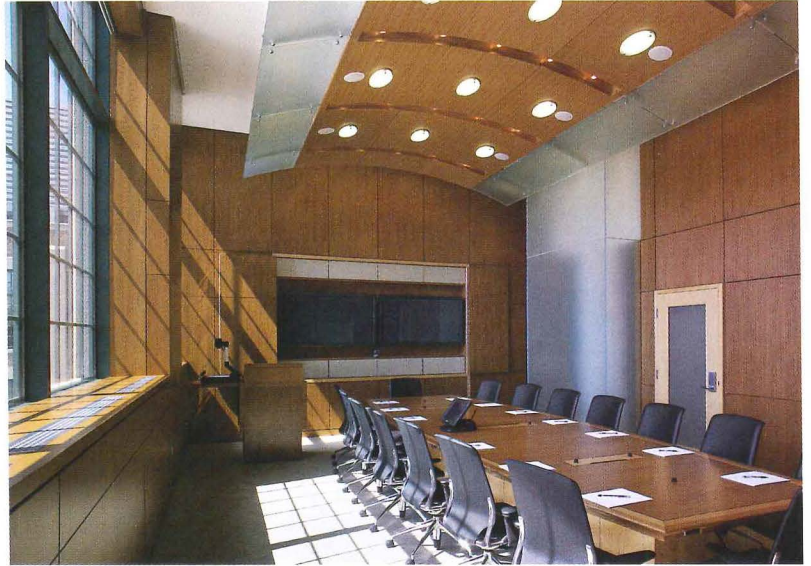
A curvilinear staircase winds through the atrium next to glass elevators. These features provide a sense of movement and activity.



With only 18 months from original commission to occupation, the schedule was unforgiving. Stubbins associate principal Audrey O'Hagan said that because of the short time line, "this project was not just design innovation—it was process innovation as well," adding that "all decisions had to be made simultaneously." In designing a 500,000-square-foot building in such a short time, the architects had to make design decisions at the same time as budget, scheduling, and construction decisions. And they had to work in close conjunction with the builder, who would implement decisions immediately.

A jury member noted that "in an industry that competes heavily with its peers for talent, the building's design makes Novartis a very attractive place to work by bringing daylight deep into the offices, and by making it open and interactive."

Statistics agree with that assessment. Novartis reports that throughout the company, it retains one of every four people it recruits. At Cambridge, it retains one of every two, demonstrating the business potential of good design.



Break areas and cafés located off the atrium provide opportunities for interaction. Large windows give this open space abundant daylight.



SARASOTA HERALD-TRIBUNE MEDIA HEADQUARTERS

Arquitectonica

To facilitate the hurried communication between editors, reporters, and other employees, newspapers like to occupy offices with large floor plates. But such spaces often result in banal and sprawling office blocks. The Sarasota Herald-Tribune Media Headquarters designed by Arquitectonica demonstrates that large-floor offices can have great visual appeal.

After outgrowing its former home where departments were isolated from each other, the newspaper needed a more open work environment. So Arquitectonica designed a 70,000-square-foot headquarters where all of the editorial functions happen on one floor, and all business operations on another. A smaller ground floor serves as the main entry with space for exhibitions. By elevating two large floors above a small entry level, the architects created a dynamic form in which the building seems to be floating above ground. It also accommodates parking on grade, underneath the overhanging upper floors.

A folded roof hovers over the building, breaking up its horizontality and enlivening the expansive third-floor newsroom by reflecting light differently throughout the day. Its generous overhangs provide shaded space on the ground and on third-floor terraces.



Project: Sarasota Herald-Tribune Media Headquarters, Sarasota, Fla.

Key players: Arquitectonica (architect); Turner (construction manager)

Client: The New York Times, Inc., parent of the Sarasota-Herald Tribune



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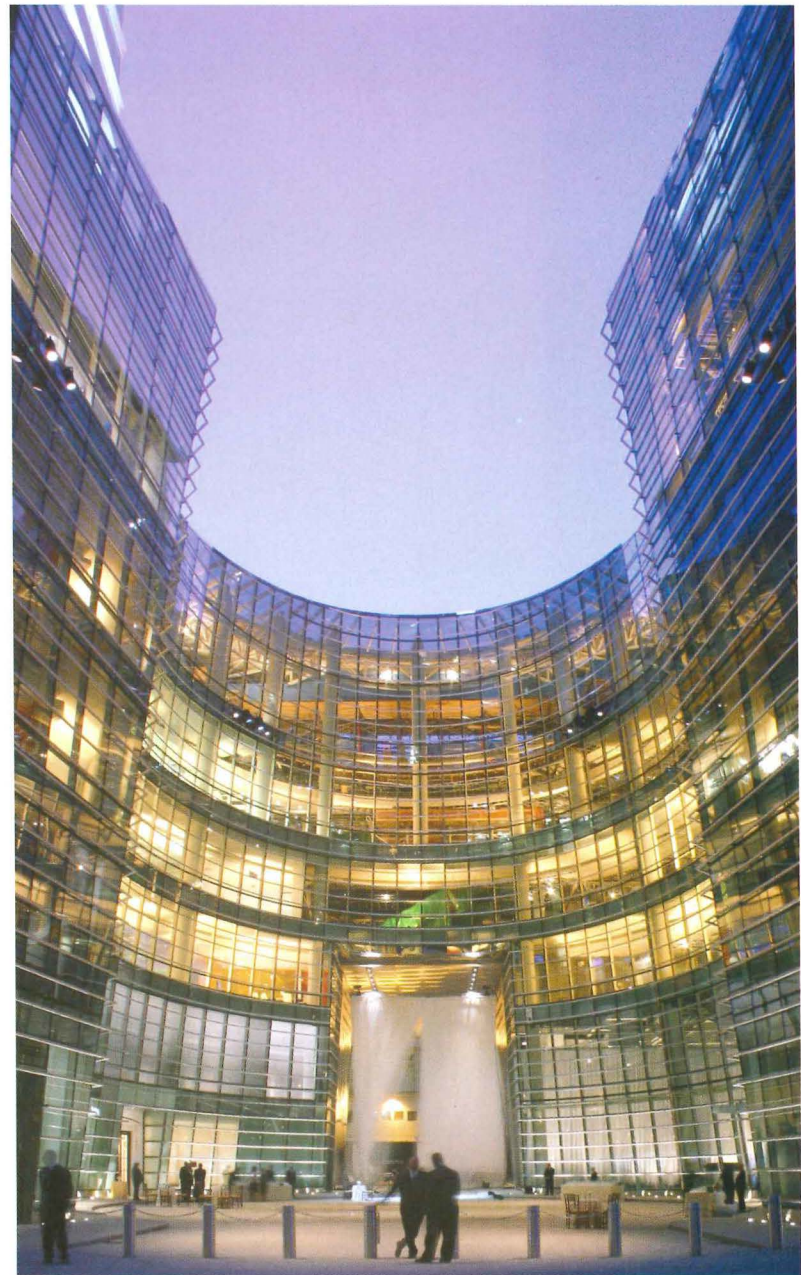
731 LEXINGTON AVENUE

Pelli Clarke Pelli Architects

Occupying an entire city block between 58th and 59th Streets on Manhattan's East Side, 731 Lexington is a hybrid structure that accommodates manifold uses. These include the world headquarters of the financial and media information company Bloomberg LP, luxury condominiums, and retail, and the new location of Le Cirque restaurant. Designed by Pelli Clarke Pelli, this building manages to articulate each of these uses, while maintaining a unified identity.

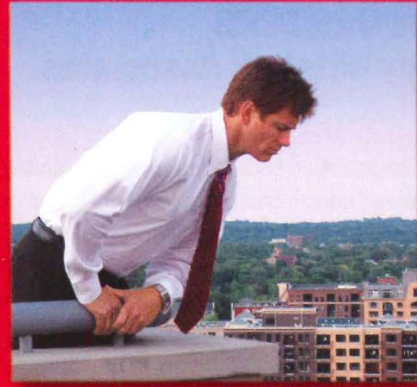
Composed of a 10-story office block and a 55-story tower with offices on the lower floors and residential units on top, the two buildings connect at the center of the city block to form an elliptical courtyard. Acting as a bridge between the two buildings and as the reception area for Bloomberg, this curving structure creates a voided space above the courtyard. Opening to 58th and 59th Streets, this space maximizes grade-level uses free from the distractions of the busy streets outside. The residences and the restaurant use this entry plaza as well.

Here, views of the tower above, visible up to the top, reveal a translucent glass lantern that glows with variable white light. This skyline-scale feature signals a building whose form unites many disparate functions.



Project: 731 Lexington Avenue, New York City
Key players: Pelli Clarke Pelli Architects (architect)
Client: Vornado Realty Trust





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ALBERICI CORPORATION HEADQUARTERS Mackey Mitchell Associates

When its headquarters became crowded and outdated, St. Louis, Missouri-based construction services firm Alberici decided it needed a new home with a sweeping, open plan that would encourage teamwork. The solution to its problem came by way of the adaptive reuse of a metal-goods manufacturing and distribution facility on a 14-acre brownfield site.

Mackey Mitchell Associates oversaw the transition of the manufacturing shed into a Class A LEED Platinum-certified office building. Seeing the old structure's tripartite plan, the design team decided to remove its middle roof deck to create a long courtyard with a building on one side for offices and a building on the opposite side for parking. Organized around three large atria, the new headquarters features abundant daylight and ventilation, with a minimal number of interior boundaries. Ninety percent of its occupants have direct views to the outdoors.

A sawtooth addition to the building's southwest facade mitigates low sunset exposure and breaks up the building's massing. The overall result is a highly sustainable structure that gives the company much-needed space but does not impose the ecological impact that typically comes with expansion.



Project: Alberici Corporation Headquarters, Overland, Mo.
Key players: Mackey Mitchell Associates (architect); Alberici Constructors (general contractor)
Client: Alberici Corporation



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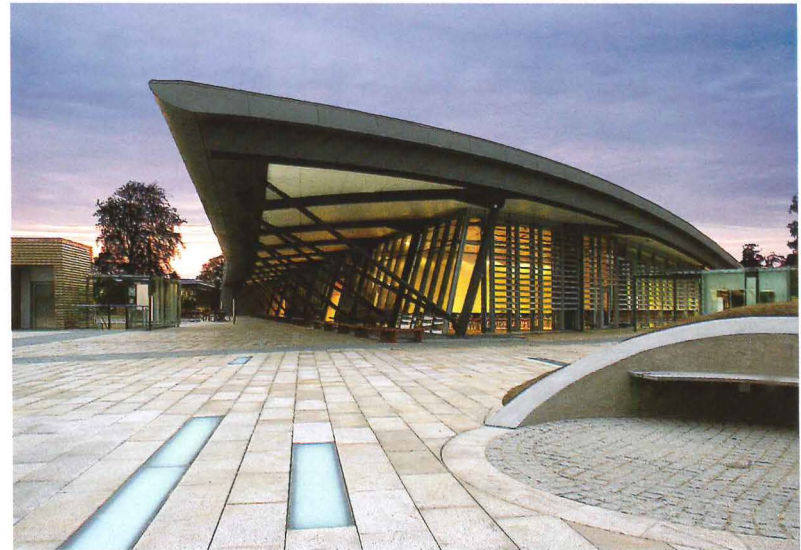
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THE WELLCOME TRUST SANGER INSTITUTE CAMPUS EXPANSION NBBJ

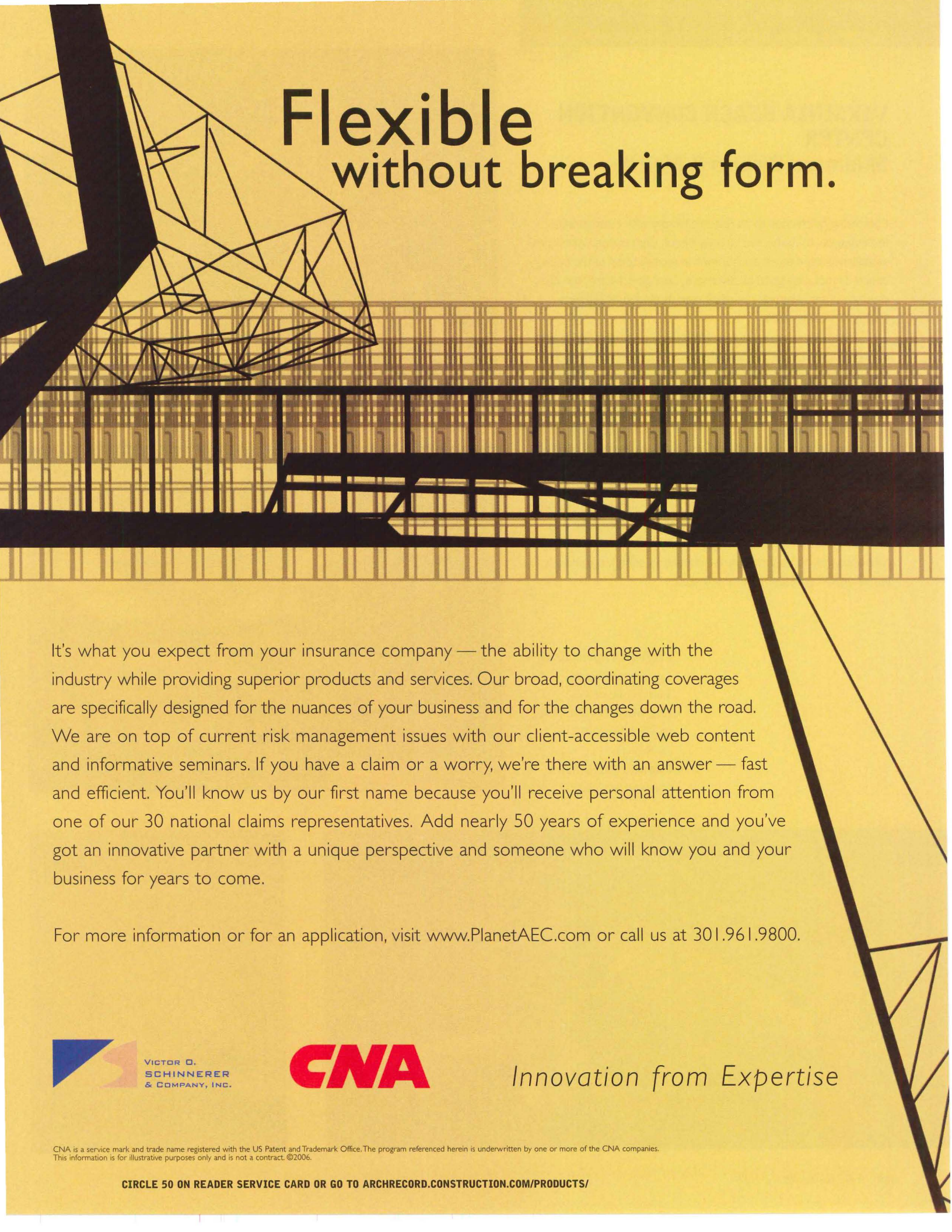
To accommodate an expansion of its biomedical research program, The Wellcome Trust Sanger Institute hired architects NBBJ to design an 184,000-square-foot expansion of its campus in Cambridgeshire, England. The client used the project as an opportunity to reevaluate its program, and to generate greater collaboration among its employees.

NBBJ conceived a campus that would promote such interaction by grouping research offices together to create an open plan with long rows of lab benches. Teams can now interact and share resources more freely. The architects placed them around a central square so that circulation between buildings now happens in this shared open space. They moved amenities such as sports facilities and dining areas out of individual laboratory buildings and into separate structures across the plaza to encourage employees to walk around the campus and not stay in just one area.

Buildings at the campus edge are tucked partially below grade, and landscape corridors run through the campus to preserve views of the rural Cambridgeshire landscape. The project's sensitivity to the pastoral setting belies the energy of the institute's research. Its director, Allan Bradley, explained that "the new facilities will enhance our efforts to provide real benefits for researchers as well as nonscientists worldwide."



Project: *The Wellcome Trust Sanger Institute Campus Expansion, Hinxton, Cambridgeshire, U.K.*
Key players: *NBBJ (architect), Mace (construction manager)*
Client: *The Wellcome Trust Sanger Institute*



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VIRGINIA BEACH CONVENTION CENTER

Skidmore, Owings & Merrill

Combining references to its region's history with cutting-edge technological features, the Virginia Beach Convention Center has established itself as an anchor for the revitalization of the city's beach district. Designed by Skidmore, Owings & Merrill, the convention center supports the city's plan to redefine itself as a year-round destination.

Consisting of enormous exhibition halls and a custom lighting system with a palette of more than 17 million colors, the space is highly flexible to accommodate a vast array of groups. A 180-foot-long video display—the largest of its type in the U.S.—allows for further modulation of space, and has attracted art and video events.

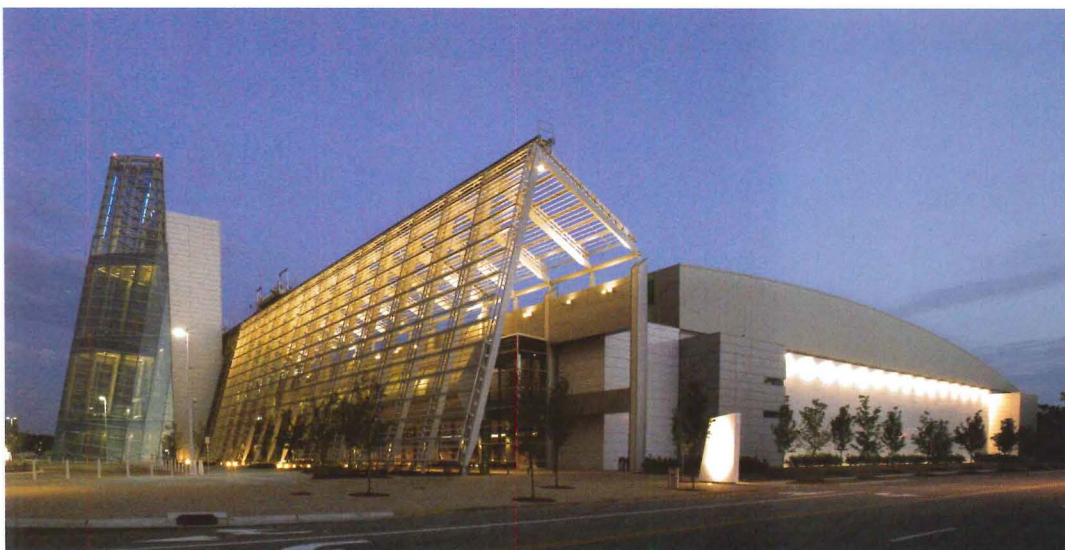
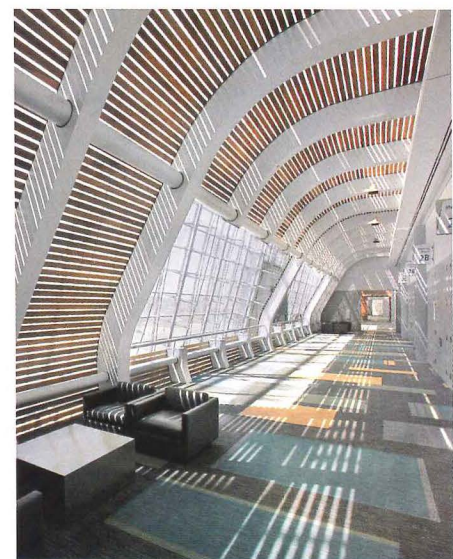
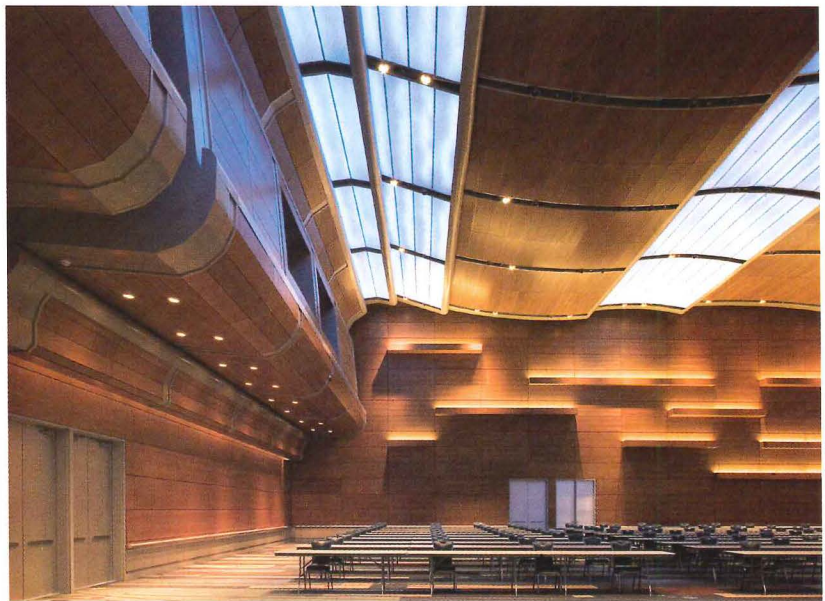
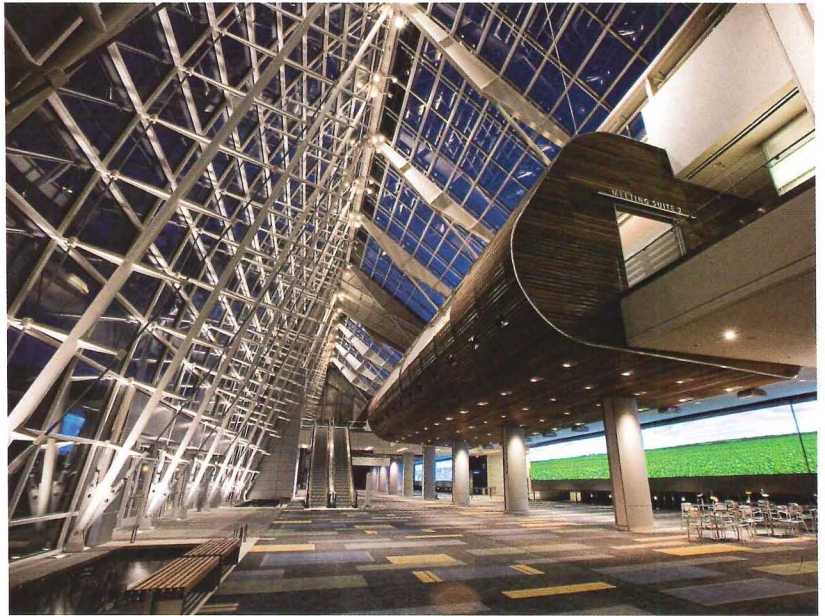
Integrating wood into the otherwise glass-and-steel construction gives the center a warm tone, and provides a reference to the maritime materials that characterize the area.

The building has served as a stimulus for further development in the area, including a mixed-use "City Center" complete with hotel and entertainment offerings. As a further testament to the economic growth spurred by the convention center, a transit system is now in development for the area.

Project: *Virginia Beach Convention Center, Virginia Beach, Va.*

Key players: *Skidmore, Owings & Merrill (architect)*

Client: *Virginia Beach Convention Center*





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Benjamin Moore
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CALIFORNIA DEPARTMENT OF HEALTH SERVICES STUDIOS Architecture

Bringing together 850 employees who were formerly housed in five different buildings, this office building for the California Department of Health Services is intended to be the new public face for the department.

Aware that the offices had historically been physically isolated, STUDIOS Architecture created a single facility to generate organizational unity. Designed as an interactive community, all offices are open and linked by a central atrium.

Because of its involvement with epidemic management and combating bioterrorism, the Department of Health Services requires tight security at all of its buildings. With this facility in Richmond, STUDIOS designed a building that is at once secure and welcoming. The entry courtyard signals the building's openness, and the central atrium reinforces this notion, and acts as a multipurpose communal space for employees.

Underscoring its commitment to health, the new building boasts many sustainable features, evidenced by its high assessment in California's "Energy Efficiency and Sustainable Building Measures" program.



Project: California Department of Health Services, Laboratory Campus Phase III, Richmond, Calif.

Key players: STUDIOS Architecture (architect)

Client: State of California

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The Curve comes back

By Suzanne Stephens

So, it's not really a comeback, since the curve never really left architecture. But it does seem the curved line or surface appears and reappears in Modern architecture as a minor motif, while the orthogonal grid always maintains its hegemony. To be sure, in the early modern days of the late 19th century, the curve—in the form of a sinuous line—dominated the Art Nouveau movement. The curve cropped up in streamlined architecture and design of the 1930s, but orthogonally minded architects doubted its Modernist rigor. Then in the mid-20th century, the curve—as a concave and convex surface—gained an enormous foothold in the imagination of architects and engineers, spurred by advances in poured-in-place concrete construction. Even though Le Corbusier startled the architectural world with his nonrationalist Notre Dame du Haut at Ronchamp of 1955, the concrete buildings of Pier Luigi Nervi, Felix Candela, Oscar Niemeyer, along with Frank Lloyd Wright, Eero Saarinen, and Jorn Utzon, were to vividly define the fluidly muscular structural expressionism of the postwar period.

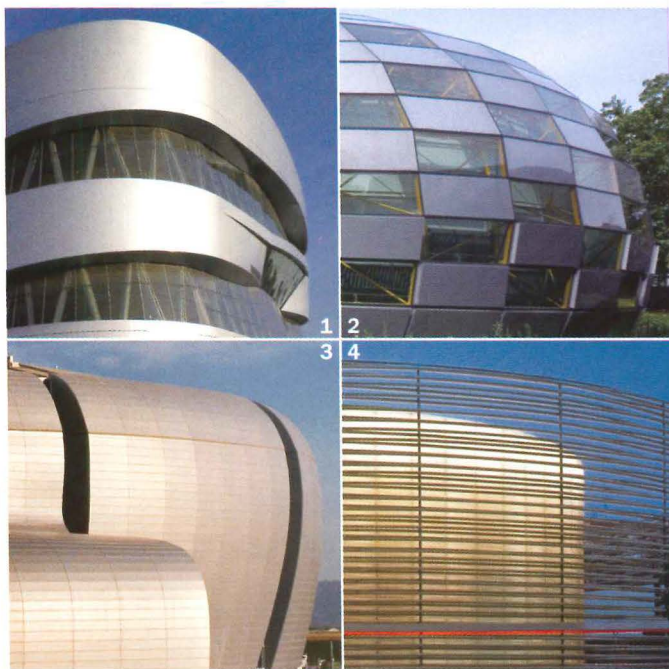
Nevertheless, in subsequent years, Modern architects still found the curve to be suspect, owing its theatrical roots in the Baroque or its decorative lineage from the age of the Rococo. The revival of that historicist background during the 1980s Postmodern period seemed to cater too much to a commodity culture. Even if William Hogarth had postulated in 1753, in his treatise, *Analysis of Beauty*, that the serpentine line—more attenuated than the Rococo curlicue—was basic to aesthetic experience, Modern architects still viewed its use as indulging in the cheaply gained effect.

But in the past two decades, the computer (and certain theoretical investigations) helped dismantle this lingering prejudice. As architect Greg Lynn demonstrated in essays and books in the 1990s, digital design would allow designers and fabricators to work

with the curve volumetrically: Inside and outside of buildings flow together as a continuous surface and form that shape space in a dynamic continuum. Lynn's investigations into animation software [RECORD, December 1999, page 104], and his writing about programs such as those based on nonuniform rational B-spline curves (NURBS), described in his book *Animate Form* (1999), inspired others. Architect and educator Alicia Imperiale observed in 2000, "There seems to be an uncanny link between the desire to make smooth, continuous space and the way a NURBS system works."

During this period of digital ferment, philosophers such as Gilles Deleuze provided theoretical inspiration to architects by treating the baroque impulse with a new intellectual vigor, allying it to explorations of spatial depth, continuity, and infinity.

Since the late 1990s, buildings based on non-Euclidean geometry have been realized in steel, titanium, aluminum, concrete, and even brick. Through the application of computer programs, lasercutters, CNC milling, and robotics—and with the collaboration of inventive structural engineers—architects no longer need to rely on materials of a regulated, economically produced size. The architecture shown on the following pages elegantly illustrates the curve's newly won status achieved by such investigations.



1. Mercedes-Benz Museum. 2. Free University Library.
3. University of Phoenix Stadium. 4. Badajoz Congress Center.

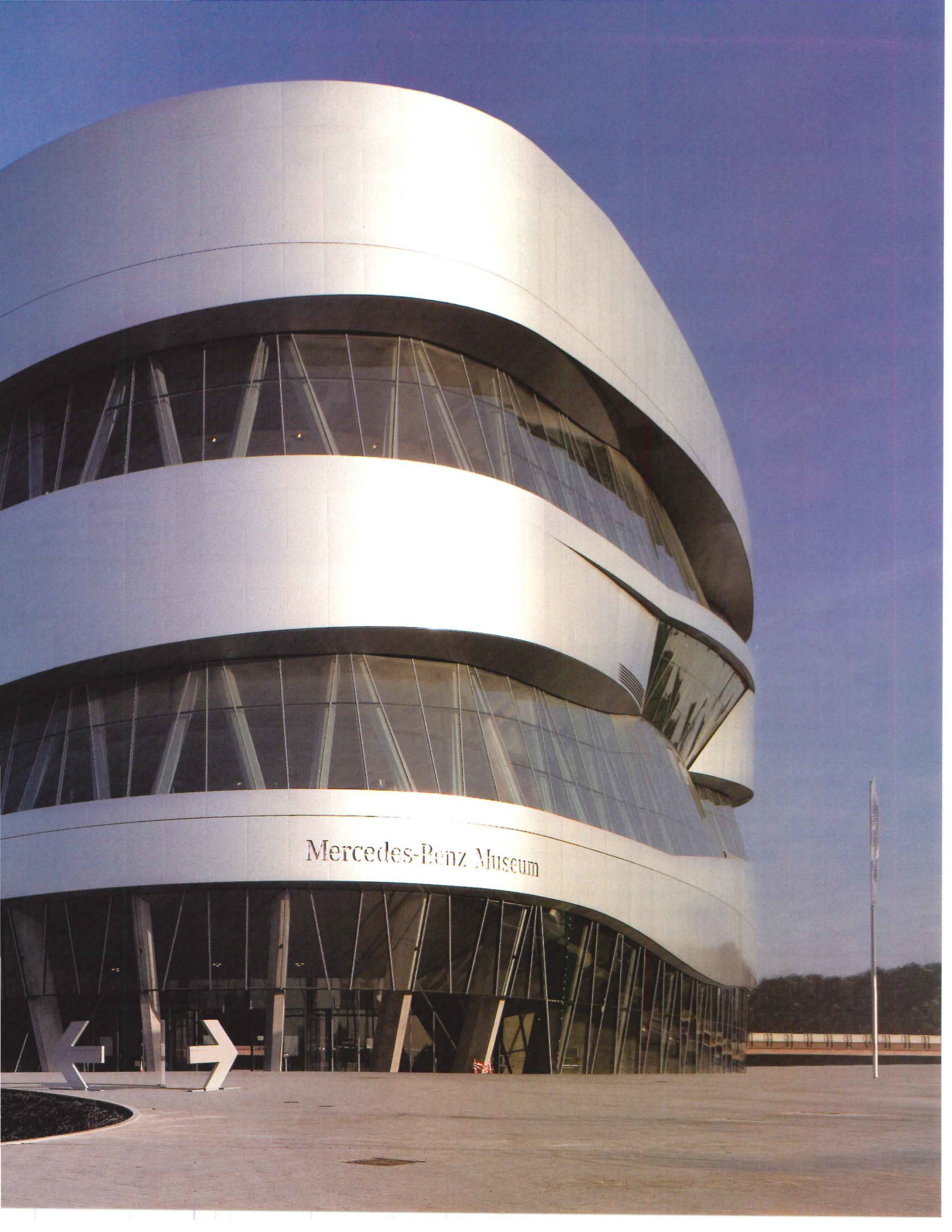
PHOTOGRAPHY: © DUCCIO MALAGAMBA (1); REINHARD GÖRNER (2); ROLAND HALBE (3, 4)

UN Studio cross-fertilizes a three-leaf-clover plan with a double-helix circulation for the **MERCEDES-BENZ MUSEUM** in Stuttgart

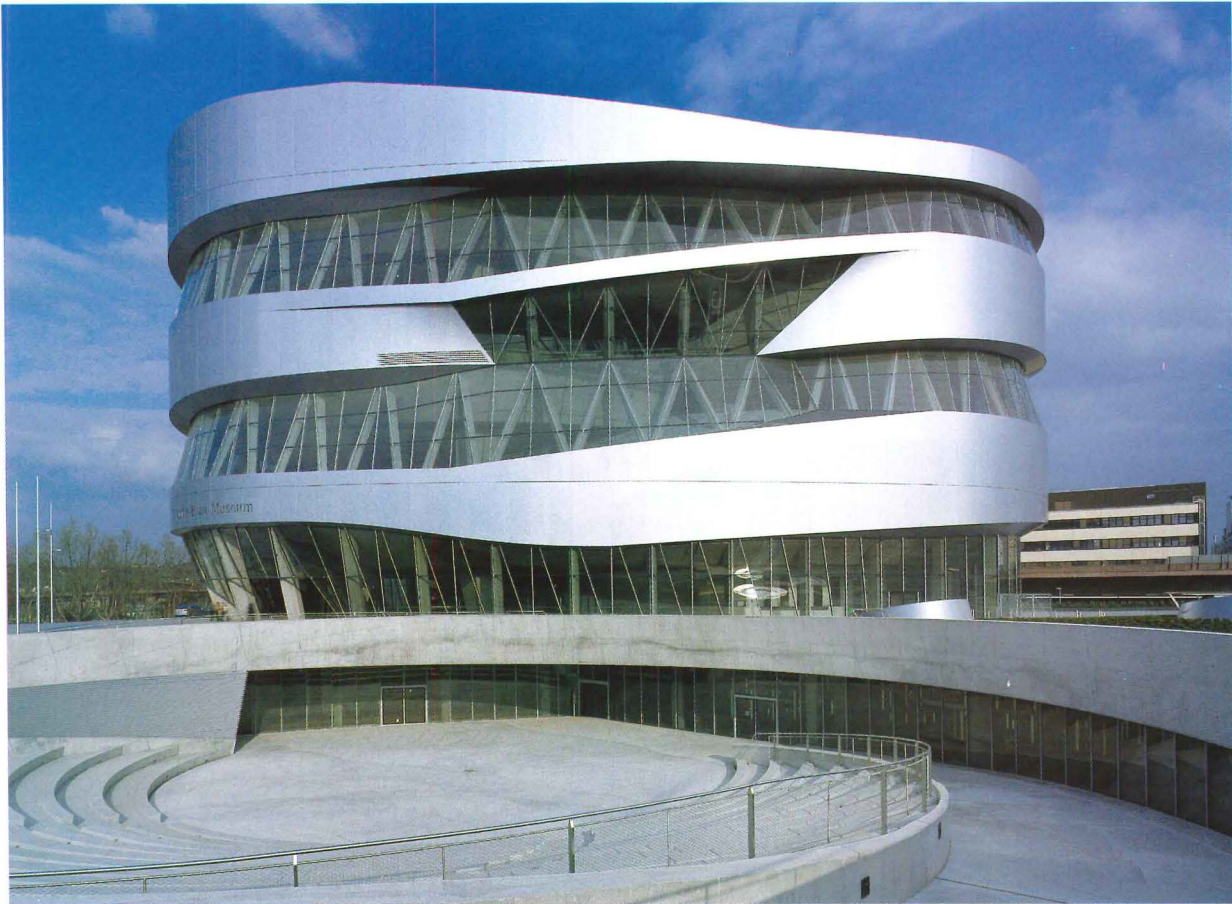
PROJECTS

The museum occupies a 37,674-square-foot site at the just-opened Mercedes-Benz World. Nearby is the main plant for DaimlerChrysler, the parent company in Stuttgart-Untertürkheim, on the city's outskirts.





Mercedes-Benz Museum



The museum sits on a podium punctuated by an outdoor amphitheater (left). Placed across a major highway from DaimlerChrysler's plant (below), the podium also includes a new car-sales center (rear of photo, bottom).

By Suzanne Stephens

Frank Lloyd Wright probably would have given his porkpie hat to get the commission to design the Mercedes-Benz Museum in Stuttgart—if he had lived so long. And he might have been impressed (even if grudgingly so) to see how a young Dutch firm, UN Studio, evolved a stunning spiral-ramped, reinforced-concrete building for the auto company. Granted, Wright generated his own historic concrete-ramp structure for displaying art with his Solomon R. Guggenheim Museum in Manhattan in 1959. There he realized a spiral-ramp parti he had also developed for cars—in the form of parking structures dating back to 1924–25. But Wright's only chance to adapt that parti for the display of automobiles came with his 1955 Jaguar showroom at 430 Park Avenue in New York City. Now, belonging to Mercedes-Benz, it contains only a smidgen of his original idea.

Going beyond Wright, the nine-story Mercedes museum—designed by Ben van Berkel, an architect, working with his partner, Caroline Bos, trained as an art historian, and their Amsterdam-based office—is composed of two spiraling ramps in the form of a double helix that mimics DNA's genetic strands. With clear spans of 100 feet that can display high-tonnage trucks and cars, the wide ramps loop, incline, merge, and meld as interchangeable surfaces, so that floors become walls, and

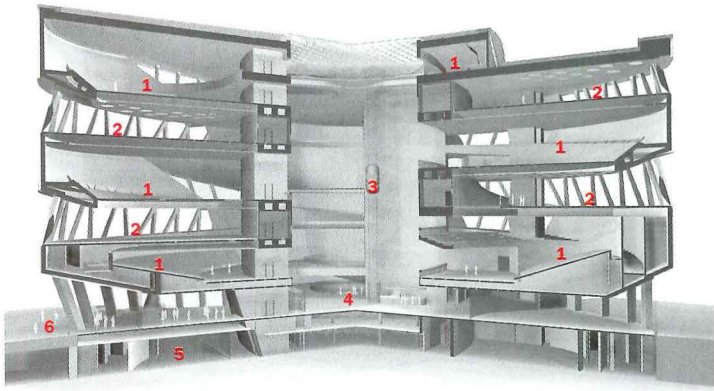


Project: Mercedes-Benz Museum, Stuttgart-Untertürkheim, Germany
Architect (design): UN Studio—Ben van Berkel, Caroline Bos, principals
Architect (production): UN Studio with Wenzel + Wenzel

Owner/builder: DaimlerChrysler Immobilien
Exhibition design: HG Merz
Engineers: Werner Sobek (structural)
Consultants: Arnold Walz (geometry); Arup (infrastructure)

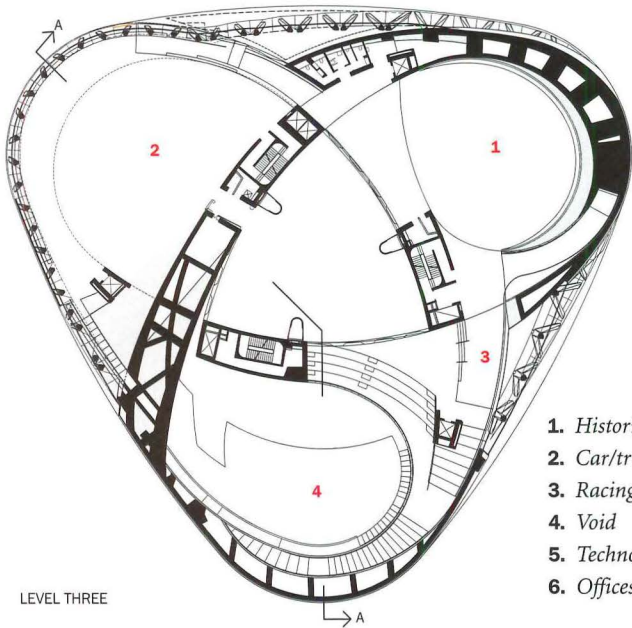


The nine-story reinforced-concrete museum is clad in aluminum panels. Glazed bands of trapezoidal panes, silk-screened to reduce solar heat gain, indicate areas devoted to the Mercedes collection of cars and vehicles. Angled columns behind vertical mullions carry loads transferred from the core and support the undulating outer facade.



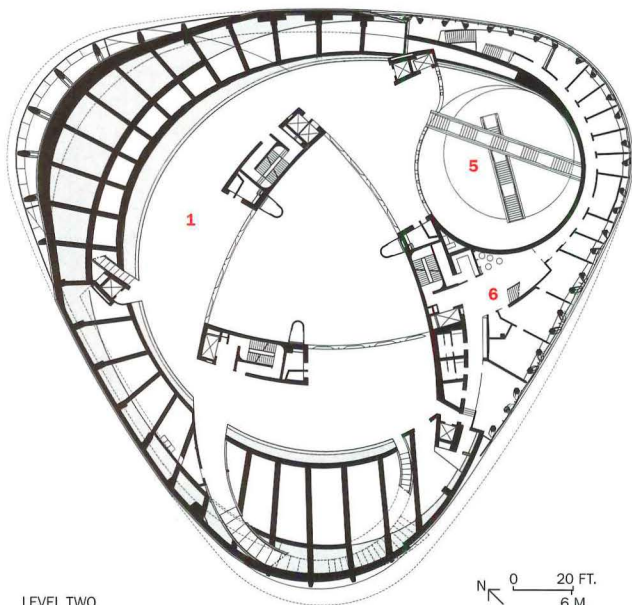
SECTION A-A

- | | |
|-------------------------|-----------------|
| 1. Historical displays | 4. Atrium lobby |
| 2. Car/truck collection | 5. Passage |
| 3. Elevator | 6. Entrance |

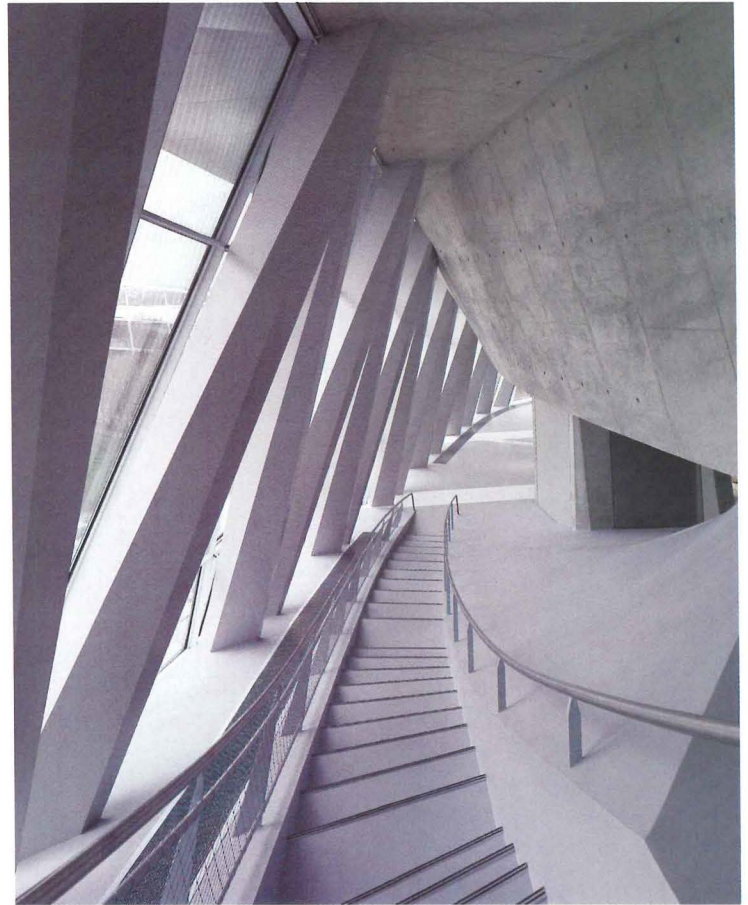
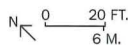


LEVEL THREE

- | |
|-------------------------|
| 1. Historical displays |
| 2. Car/truck collection |
| 3. Racing tribune |
| 4. Void |
| 5. Technology display |
| 6. Offices |



LEVEL TWO



walls become ceilings. In this regard, the museum also demonstrates an affinity to van Berkel's own design for the Möbius House, built in 1998 in Het Gooi, the Netherlands. Although the glass-and-concrete house was angular, not curved, van Berkel bent and folded its planes much like those of the Möbius strip, the famous single-surface topological model. There is more in this architectural gene pool: In addition to developing a design evolving out of the Möbius strip, the double-helix structure, and Wright's museum and parking spirals, we could argue that van Berkel and his team are continuing an important investigation into curved-surface concrete that others besides Wright (e.g., Jorn Utzon, Eero Saarinen, and Pier Luigi Nervi) had pursued so memorably in the mid-20th century.

Many technical developments have emerged in the years between Wright's experiments and the competition-winning scheme for the newly opened Mercedes-Benz Museum. These advances enabled the UN Studio team, which included both engineer Werner Sobek and a computer consultant on geometry, Arnold Walz, to develop a 270,000-square-foot, reinforced-concrete structure far more complex than the Guggenheim, and seven times larger. (See page 195 for details.)

In Germany, the Mercedes museum occupies a 37,674-square-foot site in an automotive enclave called Mercedes-Benz World near the parent company DaimlerChrysler's Stuttgart-Untertürkheim plant. Next door is the new Mercedes-Benz Center, a square, three-story building pierced by skylights, where the sleek, elegant cars are sold. A 330-foot-long passage under a concrete podium, lined with shops and a restaurant, links the center to the museum.

In developing the museum scheme, UN Studio worked with exhibition designer HG Merz, who, with the owner, devised a program

The poured-concrete atrium is slightly mottled in places where the curing process has not been completed. Visitors ride up to the top of the museum via elevator capsules (this page), where they choose between two paths to descend. The route linking the Collection displays (opposite) looks out on the surrounding environment.



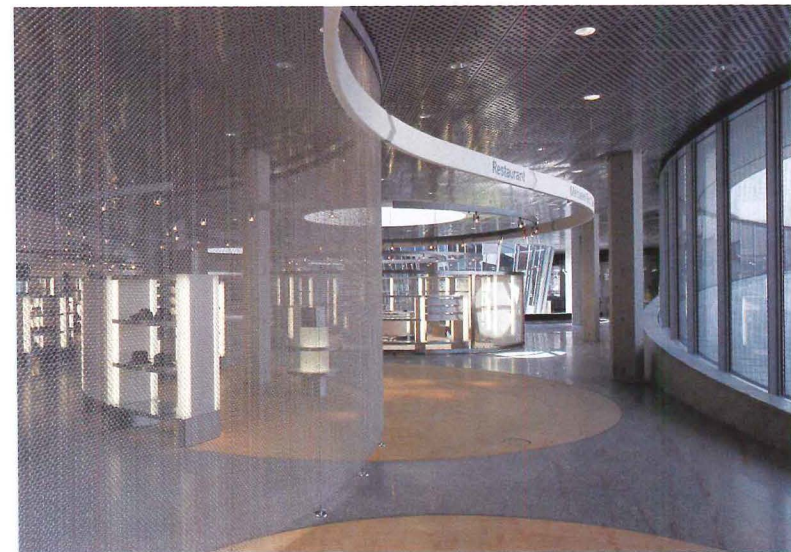


From different vantage points on the ramps spiraling around the 156-foot-high central atrium, the museum visitor can see various examples of the display.



One display, devoted to record-breaking cars, shows them affixed to a vertical wall plane (above), a continuation of a steep bank curve in the adjoining exhibition area. Within this area, experimental cars, positioned on pedestals, can be viewed from the adjacent café. At the top of the atrium (right), a two-layered steel-mesh ceiling under the glass roof gives the space an appropriately futuristic ambience.





The vehicles in the Collection section of the exhibition can be changed according to curatorial wishes and occupy one-story spaces

with views of the outdoors (top). The shops in the passage under the podium were designed by Concrete Architectural Associates.

that organized the museum display according to two distinct themes. The first, dubbed “Legend,” comprises the 120-year history of significant Mercedes-Benz designs. The second, “Collection,” is a changing display of a range of Mercedes cars and trucks, including the famous “Popemobile,” an MB Landaulet, made for Pope Paul VI in 1965.

In order to integrate these two exhibition trajectories, UN Studio wedded the double helix to a trefoil plan formed by three overlapping circles. By carving out the center of the trefoil to create a triangular atrium defined by three concrete shafts, the architects could improve on Wright’s circulation solution. Visitors take elevator capsules up the outsides of the shafts to the top (ninth) level, much the way they once did in Wright’s Guggenheim Museum in New York, before the new 1992 addition. But now they choose which two paths to follow on a downward slope, instead of Wright’s single one. Visitors can change routes along the way, since the Legend, or historical, path frequently intersects with the Collection one. To distinguish the display along the routes, the team designed the history sections to occupy artificially lighted, two-story-high areas, while the one-story-high Collection rooms offer panoramic views of the surrounding environment through curved-glass walls.

As the visitor wanders down on an oblique angle through the museum, he or she will notice that the vantage points for both the exhibited vehicles and the architecture seem to expand and contract. As van Berkel explains, the building is meant to unfold and surprise the museumgoer. The spatial effect could give a grid-addicted visitor a



The installation for the 120-year history of Mercedes vehicles was designed by HG Merz for windowless, two-story-high spaces.

disconcerting feeling (“where am I in this helix?”). But at least you know where you’re headed—down to the entrance—even if you’re not sure you saw everything.

The structural solution for this aluminum-clad museum was made possible with architectural and engineering advances that Wright and Nervi could only dream about. As Sobek says, “Because of the double curves of reinforced concrete, exposed on both sides, this is one of the most complicated concrete buildings I’ve worked on.” The three vertical

ENGINEER WERNER SOBEK SAYS, “THIS IS ONE OF THE MOST COMPLICATED CONCRETE BUILDINGS I’VE WORKED ON.”

concrete shafts in the atrium clearly support the concrete ramps and concrete and steel floor plates. These floor plates are carried by concrete box girders called “twists,” which extend to the facade. These hefty twists transfer some of their load to steel tetrapodal (four-legged) columns, which look like inverted V-shaped elements positioned just behind the curved glass perimeter wall.

It is not surprising that Mercedes does not advertise the price, which is rumored to be \$192 million. Clearly it was worth it to the client, in terms of providing a memorable building-as-logo for the carmaker. (Interestingly, the trefoil plan recalls the age-old tripartite Mercedes Benz hood ornament.) After all, this is a country where car manufacturers

believe strongly in marrying car design with architecture in the public mind. Already rival company BMW has erected a building by Zaha Hadid at its plant in Leipzig [RECORD, August 2005, page 82], and its BMW World plans to open a car sales and event center by CoopHimmelb(1)au next year in Munich.

This particular museum assumes a certain significance, not only because of the inventiveness of its structure and design, but because UN Studio has taken earlier architectural experiments to another plateau. Yet it reveals its architectural history without becoming mired in it—challenging Wright’s own museum, not copying it. As a museum, however, it succeeds largely because it displays vehicles—hefty, sculptural objects—rather than art against a swirling concrete background. The peculiarity of the type—a museum for high-quality cars—and the financial commitment of the client allowed this advancement in modern architecture to be realized. So, paradoxically, it is somewhat one-off, even as it represents a step in the evolution of the spiral-ramp parti. ■

Sources

ETFE foil membrane: *Covertex*

Resin-based flooring: *Bolidt (Bolicat 50)*

Terrazzo floors (shops): *R. Bayer*

Metal ceiling (shops): *Gema/Armstrong*

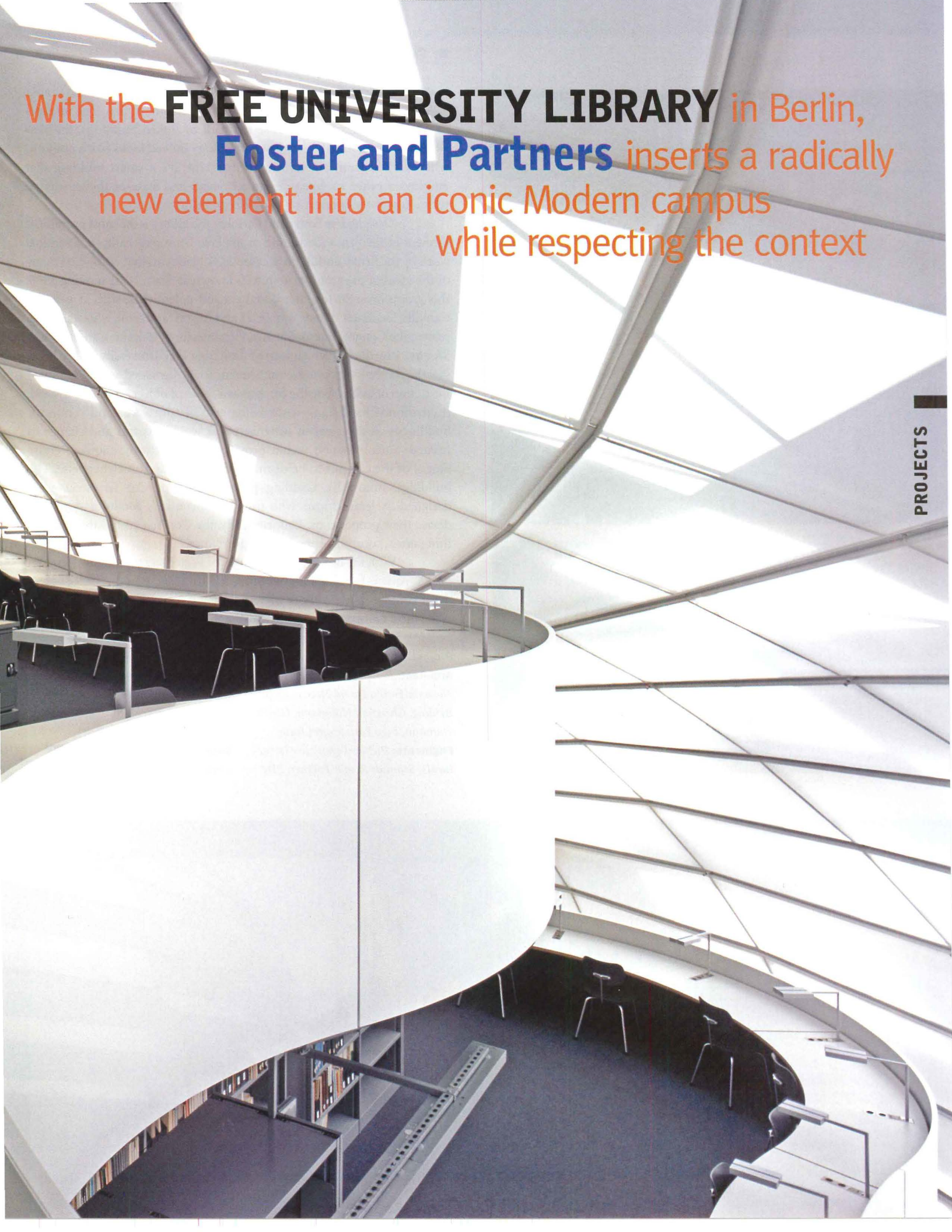
For more information on this project, go to Projects at archrecord.construction.com.



Foster and Partners wrapped the library in a double-skin structure whose inner membrane is made of clear and translucent panels of glass-fiber fabric. This inner skin diffuses day-

light to make it easier for people to read from computer screens while at the same time allowing occasional views outside to the surrounding courtyard and the older buildings.

With the **FREE UNIVERSITY LIBRARY** in Berlin,
Foster and Partners inserts a radically
new element into an iconic Modern campus
while respecting the context



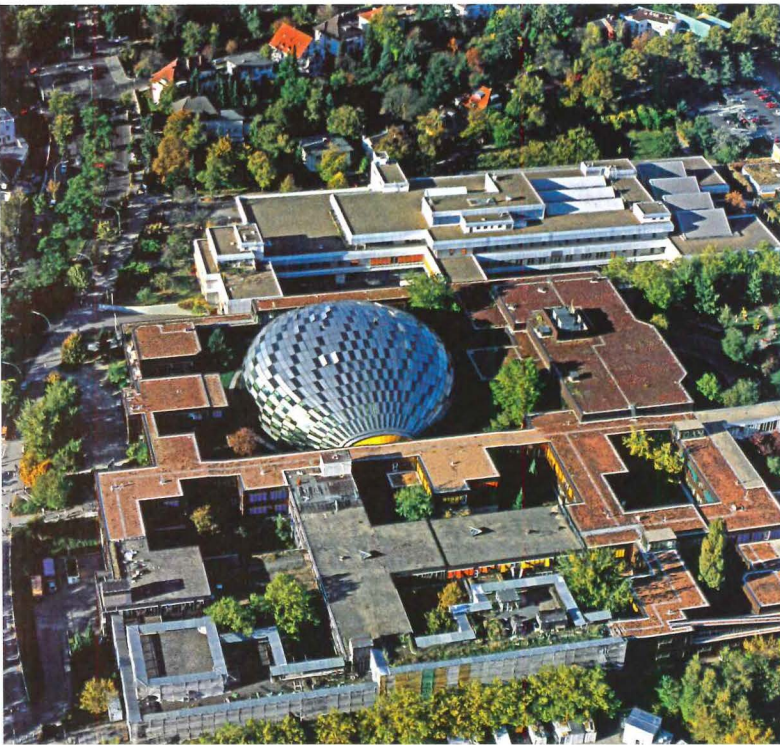
By Clifford A. Pearson

Students at Berlin Free University have nicknamed it “the Brain,” an apt reference both to its function and its plan. The intellectual nexus of a dense network of linked buildings, the new library of the faculty of philology indeed looks like a cranium when viewed from above. More important, it’s a smart building that employs a range of green design strategies and state-of-the-art digital technologies for connecting people with information.

Designed by Foster and Partners, the library is the most prominent element in the firm’s renovation of the Free University campus, a seminal work by the firm Candilis, Josic, Woods, Schiedhelm that embodied many of the ideas of the group of architects known as Team 10. Beginning 1956, this group brought together designers and polemicists, such as Georges Candilis, Shadrach Woods, and Peter and Alison Smithson, who wanted to reform the Congrès Internationaux d’Architecture Moderne. Candilis, Josic, Woods, Schiedhelm, which started designing Free University in 1963 and saw the project’s first phase completed in 1973, dismissed as old-fashioned the notion of assembling the campus as a series of object buildings. Instead, it envisioned its design—a sprawling grid of courtyards and connector buildings—as a system of urbanism that would expand and change as needed. Such a system would provide flexible growth, allowing entire blocks of the campus to be dismantled and put up somewhere else. The buildings’ innovative cladding panels, made of Cor-Ten steel, were designed by Jean Prouvé, who used Le Corbusier’s Modulor system to devise their proportions. Unfortunately, the Cor-Ten rusted through the thin panels, compromising their performance.

With the library, the challenge for Foster was to somehow insert a 68,000-square-foot building within Candilis, Josic, Woods, Schiedhelm’s dense campus fabric without overwhelming it. “We asked ourselves, ‘What is the most compact form for enclosing the space?’” recalls David Nelson,

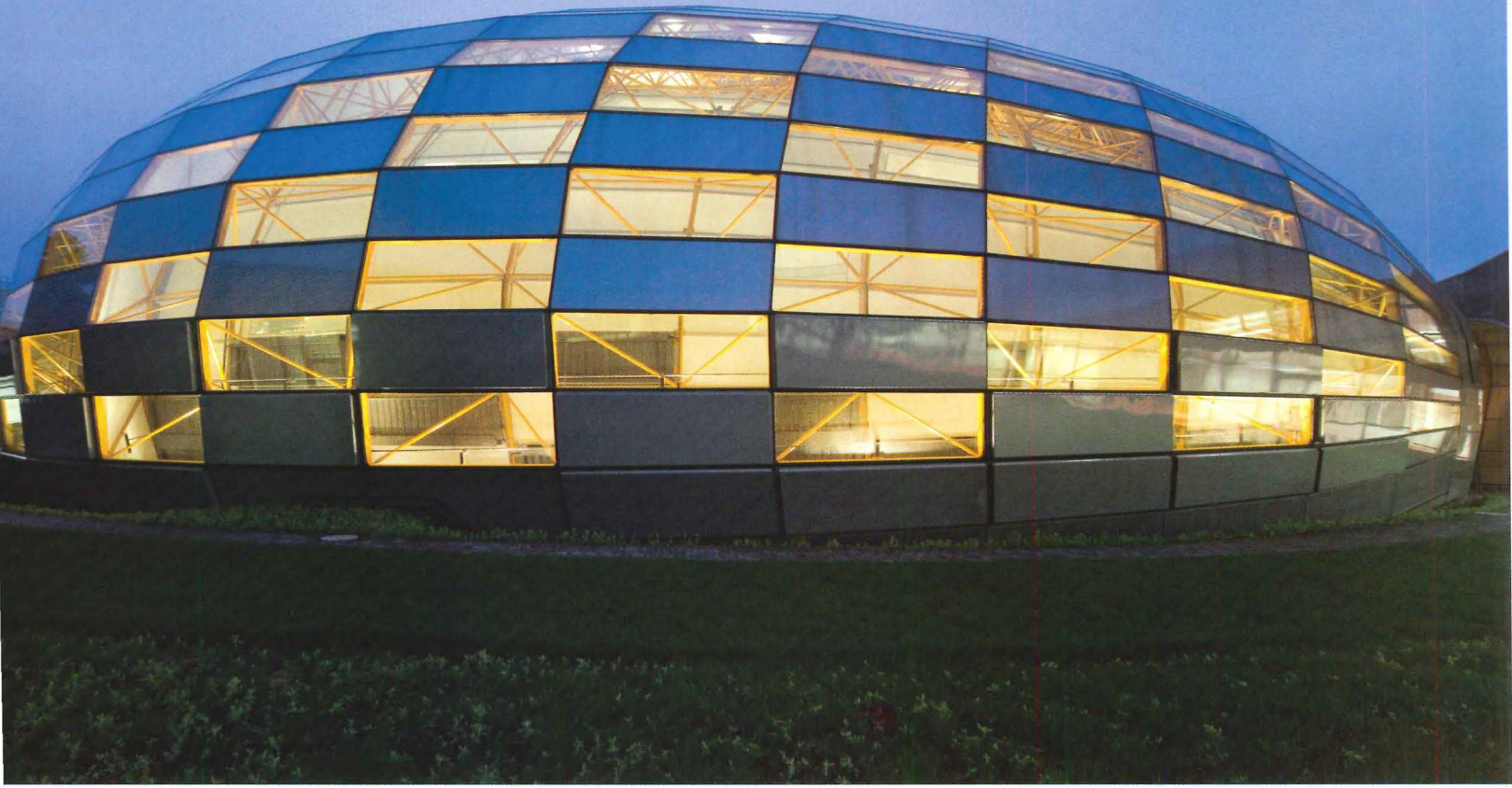
Project: Free University Library, Berlin
Architect: Foster and Partners—
Norman Foster, David Nelson, Stefan Behling, Christian Hallmann, Ulrich Hamann, Ingo Pott, project team
Engineers: Pichler Ingenieure (structural); Schmidt Reuter Partner, PIN Ingenieure (mechanical, electrical); IFFT Karlotto Schott (facade)
Consultants: Kappes Scholtz (planning, library); Büro Langkau Arnsberg (building physicist)
General contractors: MERO-TSK (shell); Glass Ingenieurbau Leipzigig (core)



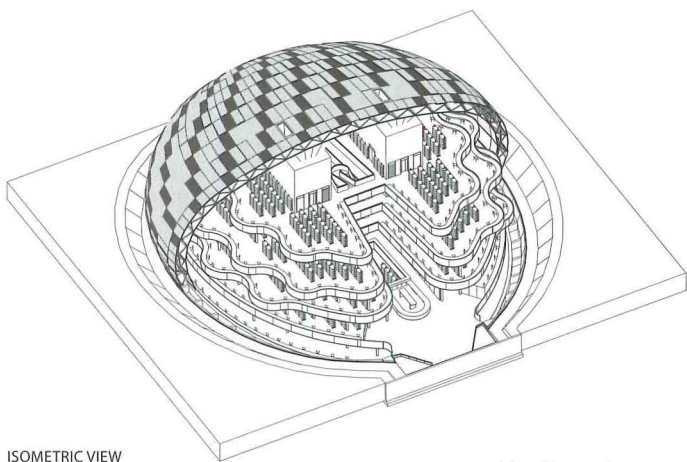
The building's two skins are wrapped around a steel-frame structure that the architects painted yellow to highlight the space between the twin layers and to allude to the bold primary colors used in the interior finishes of the existing university. Completed in September 2005, the library cost \$23.6 million to build.



The 68,000-square-foot library (below) occupies a site carved out of the university's dense fabric of courtyards and connector buildings (opposite, top).



Transparent glass panels on the outer skin were arranged so they track the movement of the sun, while aluminum panels can open to allow the building to “breathe.” The double-skin design enables the building to rely on natural ventilation for 60 percent of the year and reduces energy consumption by 35 percent.



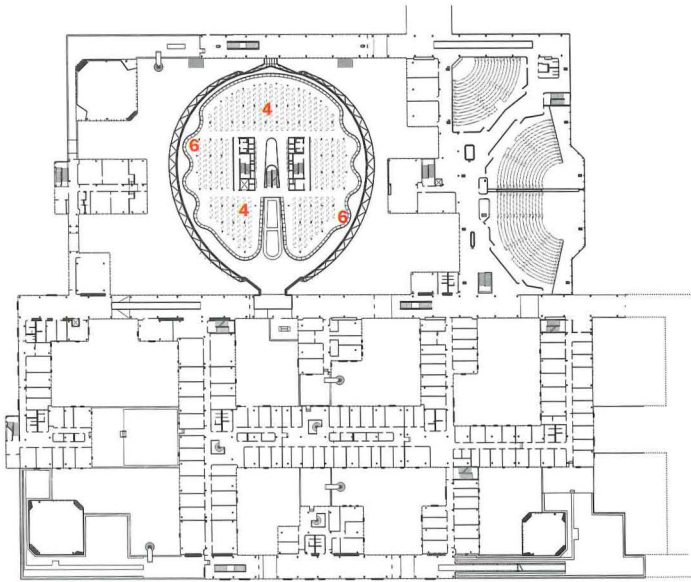
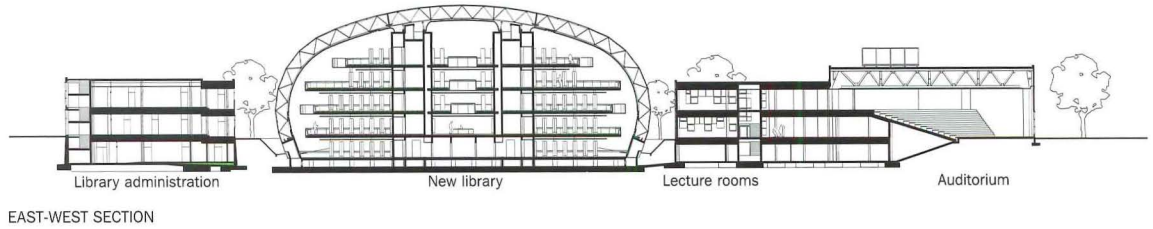
ISOMETRIC VIEW

The library is connected to the rest of the university at two ends by bright yellow arches (top), but only one is in use now.

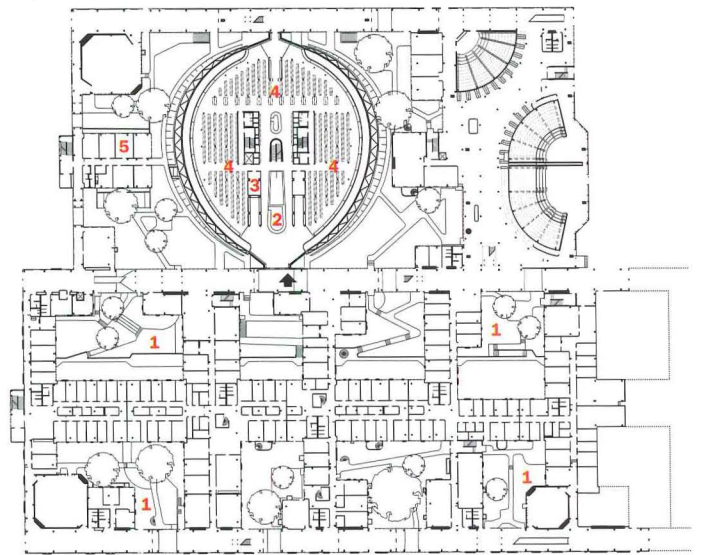
the senior partner in charge of the project for Foster. Pursuing such a strategy, the architects developed a curving building envelope oval in plan and blimplike in its long elevation. To make room for the new building, which houses 700,000 books and consolidates 11 departmental libraries that had been scattered throughout the campus, the architects combined six courtyards by taking down the buildings separating them.

Nelson says his team never thought of the library as a brain, a metaphor that students came up with only after the building opened in 2005. Instead of cerebral imagery, the architects explored ways to make the interior space as conducive to learning as possible. "We felt that daylight was what the students would want," explains Nelson. "Giving them natural light and views to the courtyard, we could help the students feel connected to the university and the outdoors." But too much daylight would damage books and create glare for people staring at computer screens. So the architects investigated translucent wrappings for the library space that would spread diffused light everywhere. In the end, they devised a double skin with an outer shell of aluminum and glazed panels and an inner membrane made of translucent and clear glass-fiber fabric. The transparent glazed panels on the outer layer follow the course of the sun, while the aluminum panels open and close to allow the building to breathe. Alluding to the original

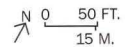
1. Philological Institutes (existing)
2. Circulation desk
3. Meeting
4. Book stacks
5. Library administration
6. Reading counter



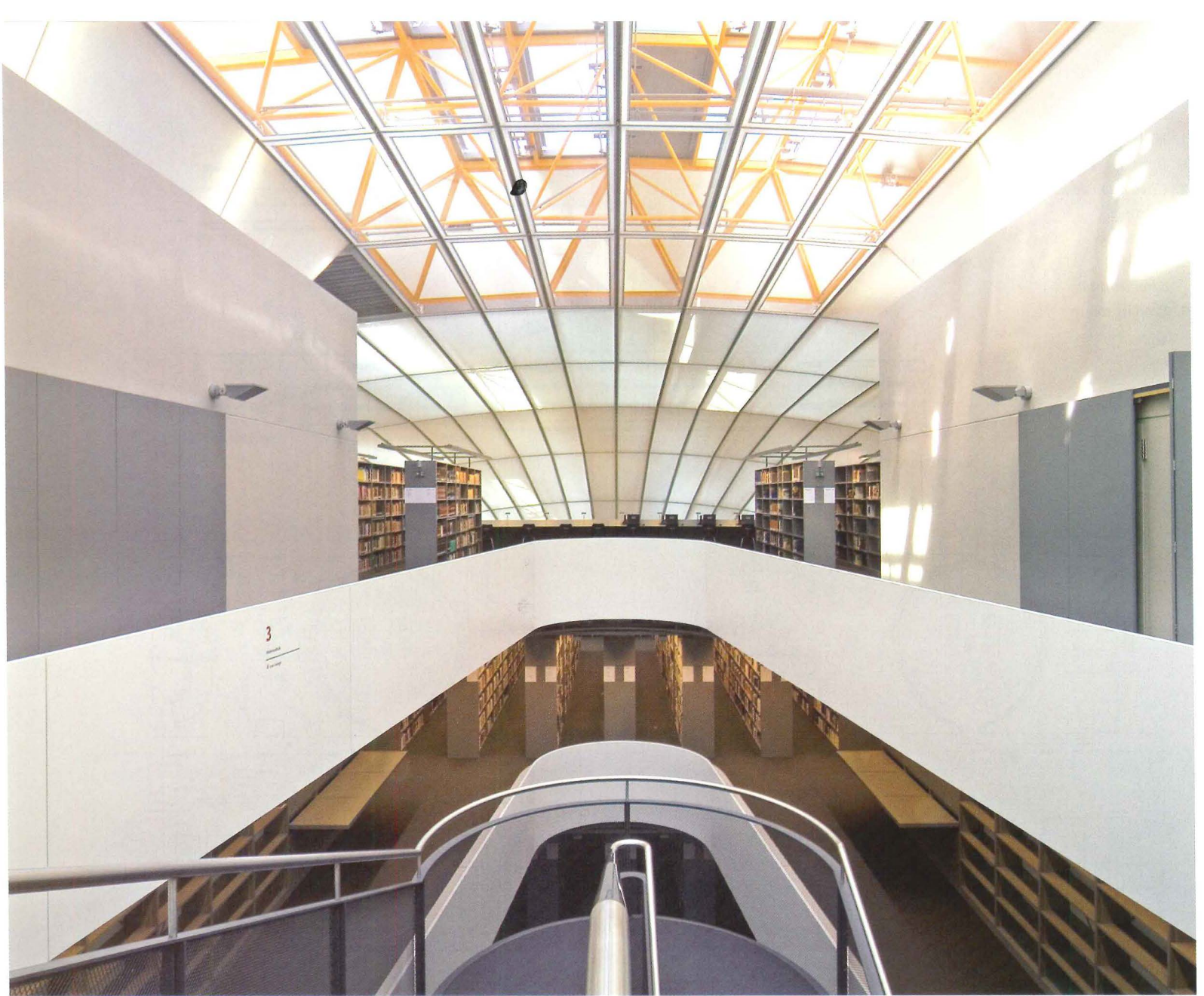
LEVEL TWO



LEVEL ONE



Inside the library, the twin concrete cores and floors (left) act as passive thermal-storage units to reduce swings in temperature. Pipes in the floors deliver warm or cold water, depending on the season, to further condition internal air, which passes through an undercroft, then circulates throughout the building.



buildings' use of bold colors, Nelson painted the roof's radial steel members bright yellow, which also helps express the structure and highlights the gap between the building's two skins.

Underneath the light-infused dome, the architects designed a heavy, concrete structure for the floor slabs and twin circulation cores. While the dome's double skin serves as a thermal buffer and breathes, the concrete structure below moderates swings in temperature thanks to pipes embedded in it that carry hot water in winter and chilled water in summer. The building also draws fresh and recycled air through an undercroft where it is warmed or cooled depending on the need. According to the architects, the library can be kept comfortable entirely by natural ventilation for 60 percent of the year and uses only sunlight during most daytime hours. As a result, the building consumes 35 percent less energy than a comparable building, states Nelson.

To reduce its profile against its neighbors, which rise just two stories above ground, Nelson and his team limited the library's height to 63 feet, keeping the floor-to-ceiling heights to just 10 feet and putting book stacks in the center, where the structure is tallest. By placing books in the center of each floor, away from daylight, the architects were able to put

A central stair (opposite, top) serves as the primary form of vertical circulation in the five-story building. By alternating the curved edges of the reading terraces (right), the architects created some double-height spaces, while providing 636 positions for people to sit along the continuous desks (opposite, bottom).



people around the perimeter, closer to views outside. And by scalloping the edge of each floor so that concave and convex bays alternate at each level, they increased the number of reading stations and opened up double-height spaces for people seated on the terraces. The library also employs a sophisticated network of digital technologies that allows students to copy pages from books at scanners around the building and print them or e-mail them to their own computers.

As for Foster's work renovating existing parts of the university, the firm reskinned the buildings with bronze panels that maintain the Modular system used in the originals and that will deepen in color as they age so they will resemble the old Cor-Ten. "Our intent was to restore the spirit of the original while bringing it up to today's standards," states Nelson. The firm also replaced extensive amounts of asbestos, adjusted interior layouts within the philological institutes to reflect the current faculty structure, refurbished existing light fixtures, and replaced old carpeting with duplicates made by the original manufacturer. Nelson's team reused some of the structural elements from parts of the building taken down, fulfilling the original architects' intention of creating a building system flexible enough to accommodate change over time.

By inserting a round building within an emphatically rectilinear, matlike context, Foster and Partners risked sticking out like a "carbuncle on the face of a much-loved and elegant friend" (as Prince Charles once said of a different project). But the library comes across as one of those wonderful surprises you might find just beyond a lively piazza in some Tuscan hill town. On the outside, it helps animate the enlarged courtyard around it, while many of the older courtyards remain dreary affairs. Inside, it turns out to be both a comfortable and engaging place to study—it's bilateral symmetry and steady, diffuse light pleasing to the left side of our brains, and its curvaceous plan exciting to the right side. ■

Sources

Aluminum-skin panels: MERO

Glass-fiber membrane: Clauss Markisen Projekt

Carpeting: Anker-Teppichboden

Desk light: Kotzolt-Leuchten (Stretchlite)

Wall washers: ERCO Leuchten

Lounge chairs: Patrick Norguent for Minimum Einrichten

Desk chairs: Egon Eiermann for Wilde+Spieth

For more information on this project, go to Projects at

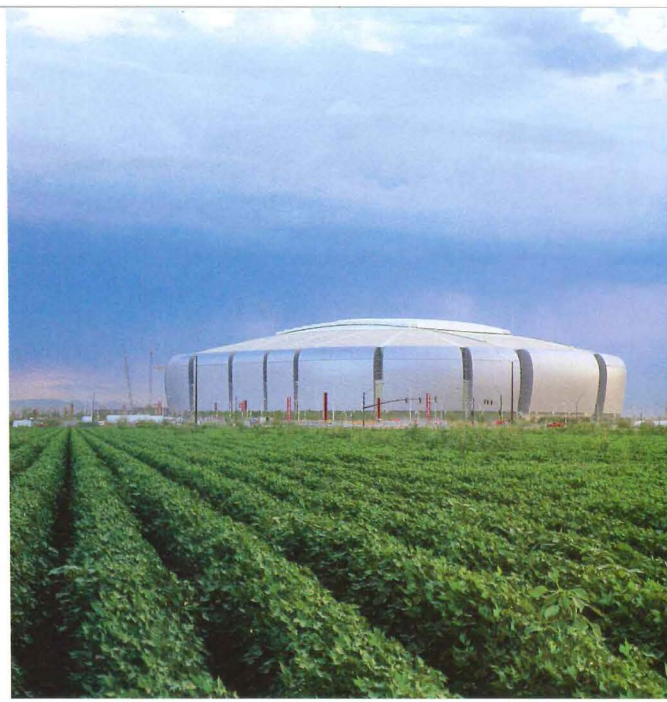
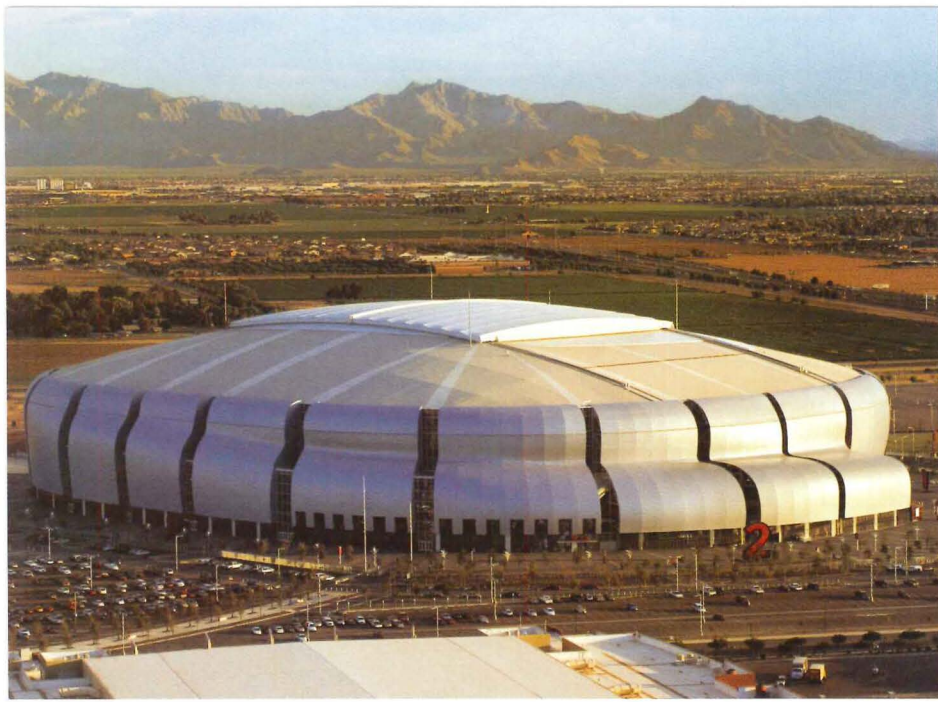
archrecord.construction.com.

The shape of the stadium was inspired by the segmented and rounded form of a barrel cactus, and Native American symbols such as the coiled snake and the Mandala.



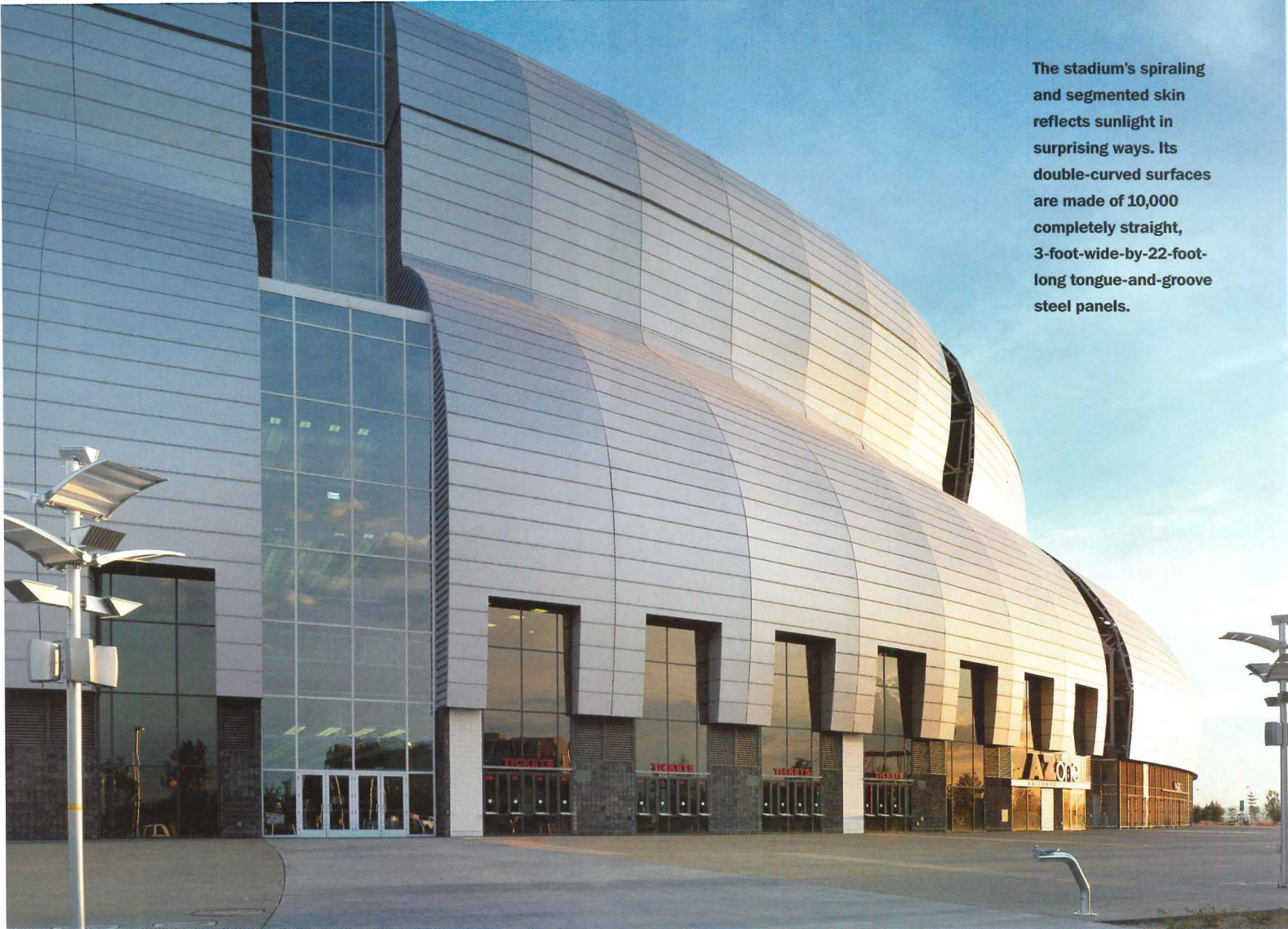
In the Valley of the Sun, **Eisenman Architects**
and **HOK Sport** create a shimmering
desert nest for the **ARIZONA CARDINALS**
and their flock of fans





The stadium is chameleonlike, taking on different characters at different times of day. At dusk, it seems to glow from within (below). Developers are building housing, retail complexes, and sports venues on the still largely agricultural land surrounding the building (above two).





The stadium's spiraling and segmented skin reflects sunlight in surprising ways. Its double-curved surfaces are made of 10,000 completely straight, 3-foot-wide-by-22-foot-long tongue-and-groove steel panels.

By Joann Gonchar, AIA

In the otherwise parched landscape of the so-called Valley of the Sun, the shimmering new stadium for the National Football League's Arizona Cardinals rises from the incongruously lush farmlands immediately surrounding it like a strange but pleasing apparition. Chameleonlike, the building's double-curved steel cladding reflects light differently throughout the day. At night, the stadium seems to phosphoresce, glowing from within through its 21 glazed slots, or "canyons."

The form, spiraling and segmented, was inspired by barrel cacti indigenous to the Arizona desert, and Native American symbols, such as the coiled snake and the Mandala, says design architect Peter Eisenman, FAIA, who has been an avid football fan since his undergraduate days, when he was a cheerleader at Cornell. But, in addition to an exterior that is surprisingly bold for a U.S. professional sports facility, the \$450 million stadium has several attention-grabbing high-tech features. The natural turf field, contained in a gigantic "cake tray," can be rolled out of the building through an opening beyond the south end zone. The arrangement ensures sufficient sunlight for the grass, and also provides a suitable floor surface for events like concerts and conventions. It is the first of its kind in North America.

The other impressive moving part is the retractable roof [RECORD, July 2006, page 257]. Since the Cardinals' move from St. Louis in 1988, the team had played under the brutal sun in an open-air stadium in Tempe,

Arizona, where it was plagued by poor attendance, especially at early season games. But now, spectators can watch the game in shaded air-conditioned comfort. In cooler weather, operable twin panels, which meet at the 50 yard line, part to create a 240-by-360-foot roof opening in about 12 minutes. Tickets for this season, its first in the new stadium, sold out in May.

The building is more than a shiny wrapper and mechanized components. The largely translucent roof and its pair of supporting 700-foot-long Brunel trusses evoke 19th-century train sheds. If it were not for television broadcast requirements, sunlight penetrating the Teflon-coated fiberglass fabric would provide sufficient lighting for daytime games.

Although fans have enthusiastically embraced the stadium, pub-

Project: University of Phoenix Stadium, Glendale, Arizona

Owners: Arizona Cardinals; Arizona Sports and Tourism Authority

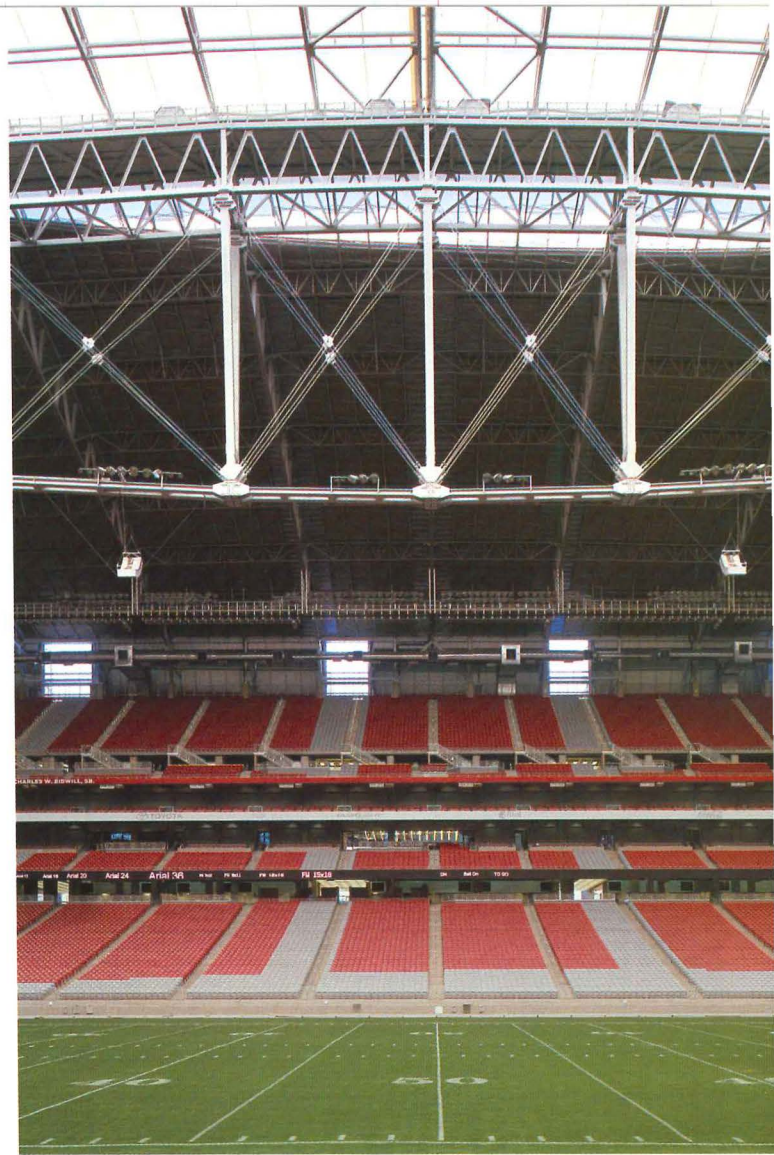
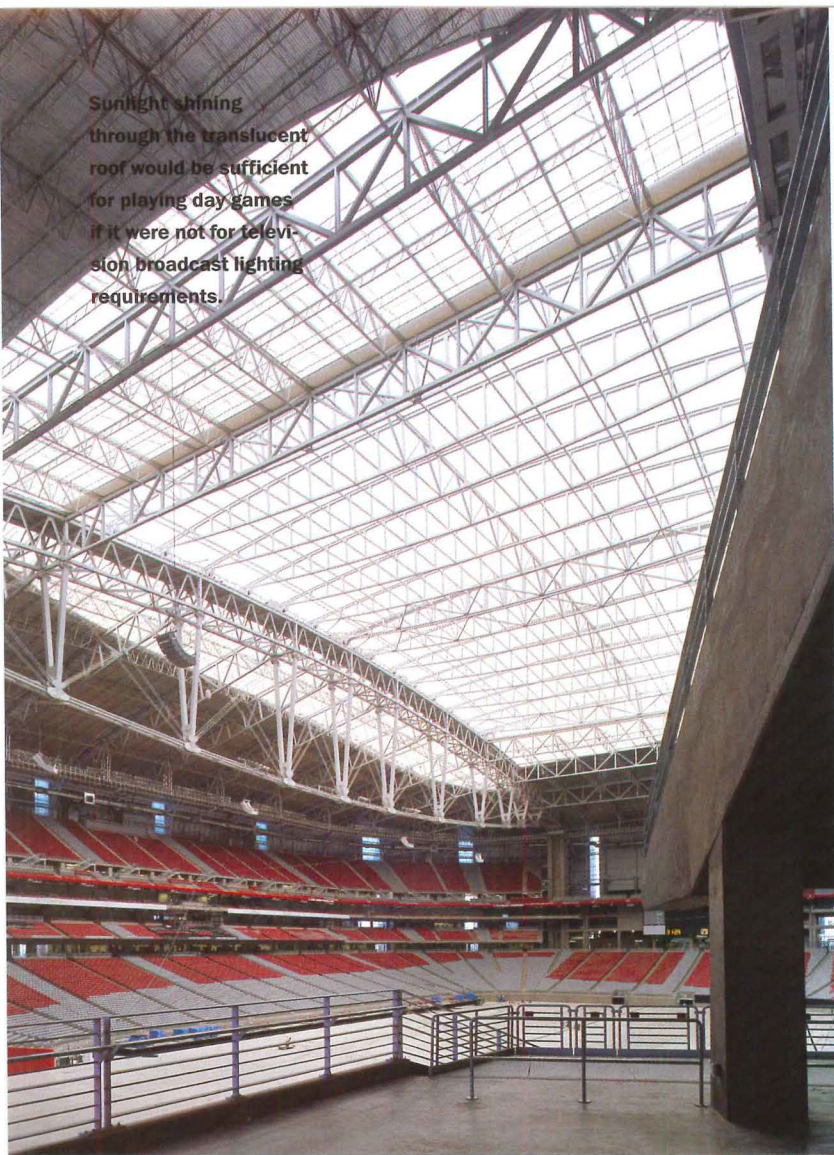
Architects: Eisenman Architects (design architect)—Peter Eisenman, FAIA, design principal; Richard Rosson, AIA, project architect; Marta Caldeira, Pablo Lorenzo-Eiroa, project designers; HOK Sport (facility

architect)—Dennis Wellner, AIA, principal in charge; Jeff Spear, AIA, project designer; Jack Boyle, AIA, project manager

Graphics and suite interiors: Pentagram Design; Entro Communications

Engineers: Walter P Moore (structural, roof); TLCP (structural, concrete frame); M-E Engineers (m/e/p)

Sunlight shining through the translucent roof would be sufficient for playing day games if it were not for television broadcast lighting requirements.



lic support for the project was not always strong. After defeat of an earlier referendum, Maricopa county voters narrowly passed a measure financing the stadium in November 2000. The deal provided \$267 million from a hotel occupancy tax and a car rental surcharge. The Cardinals, primary tenant and landowner, contributed \$150 million and were responsible for cost overruns. In return, the team receives game day revenue and naming rights, which it sold to the University of Phoenix in late September.

Even after voter approval, the project suffered legal challenges and setbacks, including a late 2001 rejection of a site near Tempe's Sky Harbor Airport by the Federal Aviation Administration because of security concerns in the wake of 9/11. Construction began on the current Glendale site, in a largely agricultural but rapidly developing area about 10 miles northwest of downtown Phoenix, in April 2003.

Access to the action on the field drove the configuration of the four reinforced-concrete concourses—one each for upper and lower seating bowls, and two in between serving suites and other “premium seating.” These concourses and the many concessions are not closed off in a traditional stadium vomitory. Although the game is not visible from all vantages, fans can, at minimum, see and hear the response of the crowd.

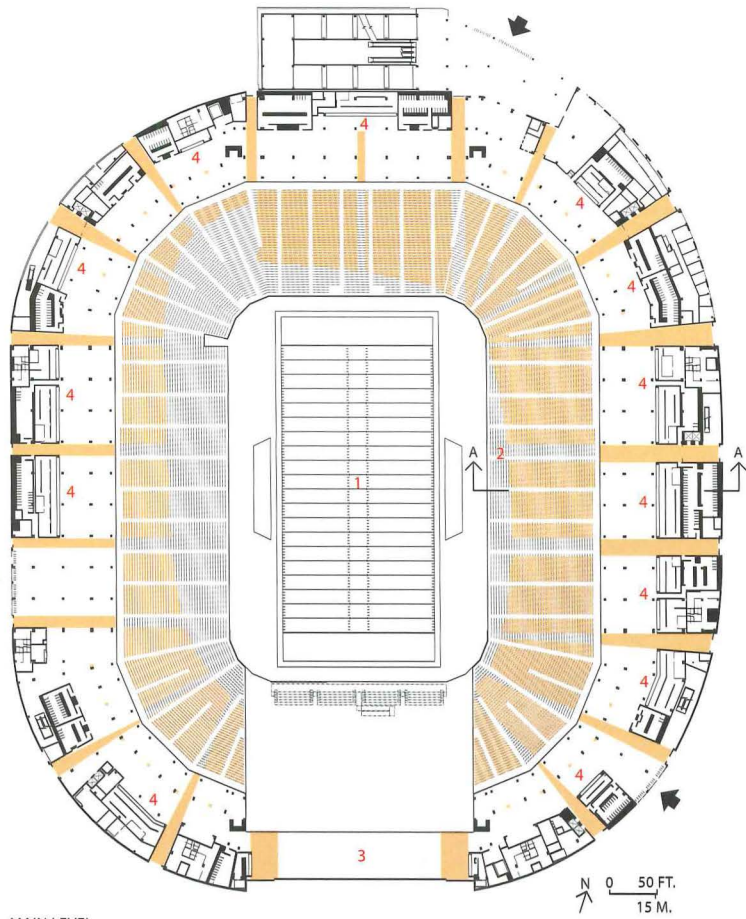
With 63,000 seats, and the potential to add 10,000 more for events like the Fiesta and Super Bowls, circulation was a chief planning issue. To make vertical circulation as efficient, contractors used excavation soil to build up the site around the stadium, allowing the field to be depressed 36

feet below grade and the main concourse. About 40 percent of the spectators descend after entering to seats in the lower bowl. “This tempers the need for stairs and ramps,” says Dennis Wellner, AIA, principal in charge of the project for HOK Sport, the stadium's facility architect.

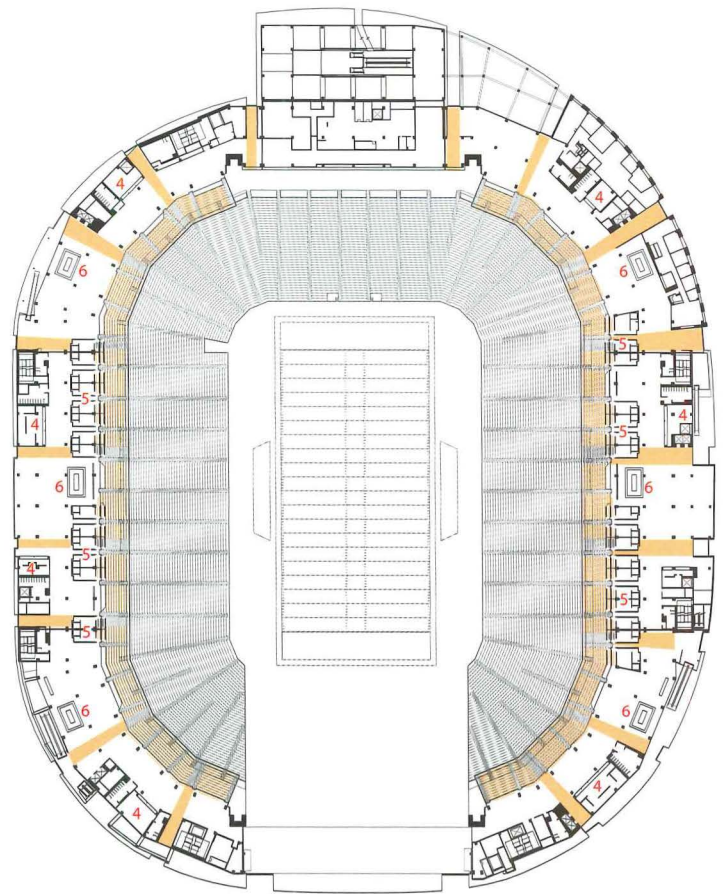
Fans that do need to ascend use escalators or ramps inserted in the zone between the steel skin and the concrete stadium. The most spectacular of these spaces is at the building's north end, where the snake begins its coil around the cactus. Light filters through the canyons and the steel-bent structure that carries the load of the building envelope to the concrete frame. Eisenman refers to the quality of this space as “Piranesian,” not because it is filled with the chains and torture devices of the 18th-century Italian artist's *carceri*, but because it has an affinity for the more benign, yet still exciting, qualities of the prison prints, such as their multilevel organization and contrast between light and dark.

Eisenman has used the canyons as a device to tie inside and out. They allow daylight into the vertical circulation spaces and concourses and offer views of the surrounding valley. He has marked the location of these slots with red, raylike stripes on the concourse floors. And in a playfully subversive move, he has extended the pattern to the seating bowl and combined it with the motif of the snake coil, but in the reverse of the direction the reptile wraps around the exterior. “I did everything I could to challenge the building's symmetry,” says Eisenman.

This reverse coil is carried through to the roof, making a halo of



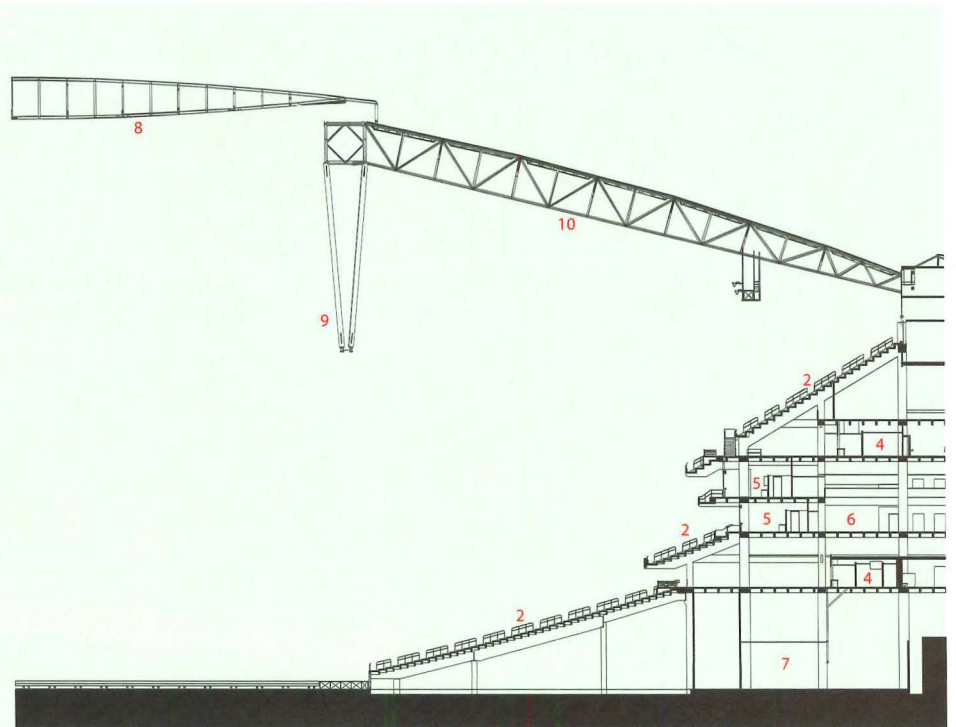
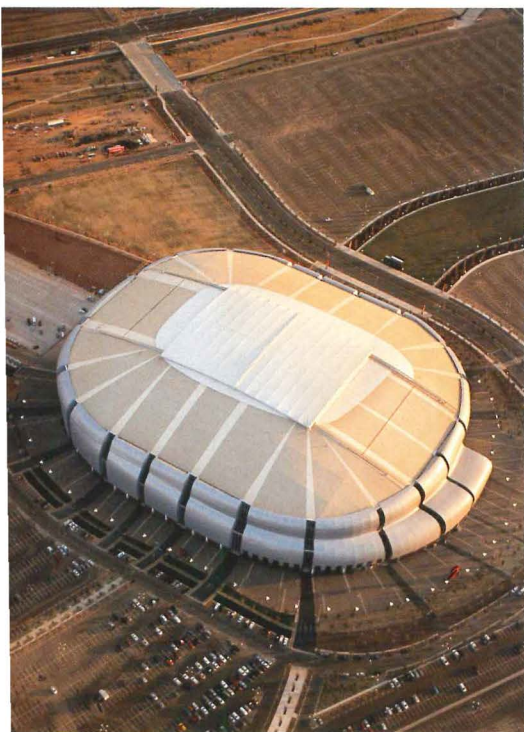
MAIN LEVEL



CLUB LEVEL

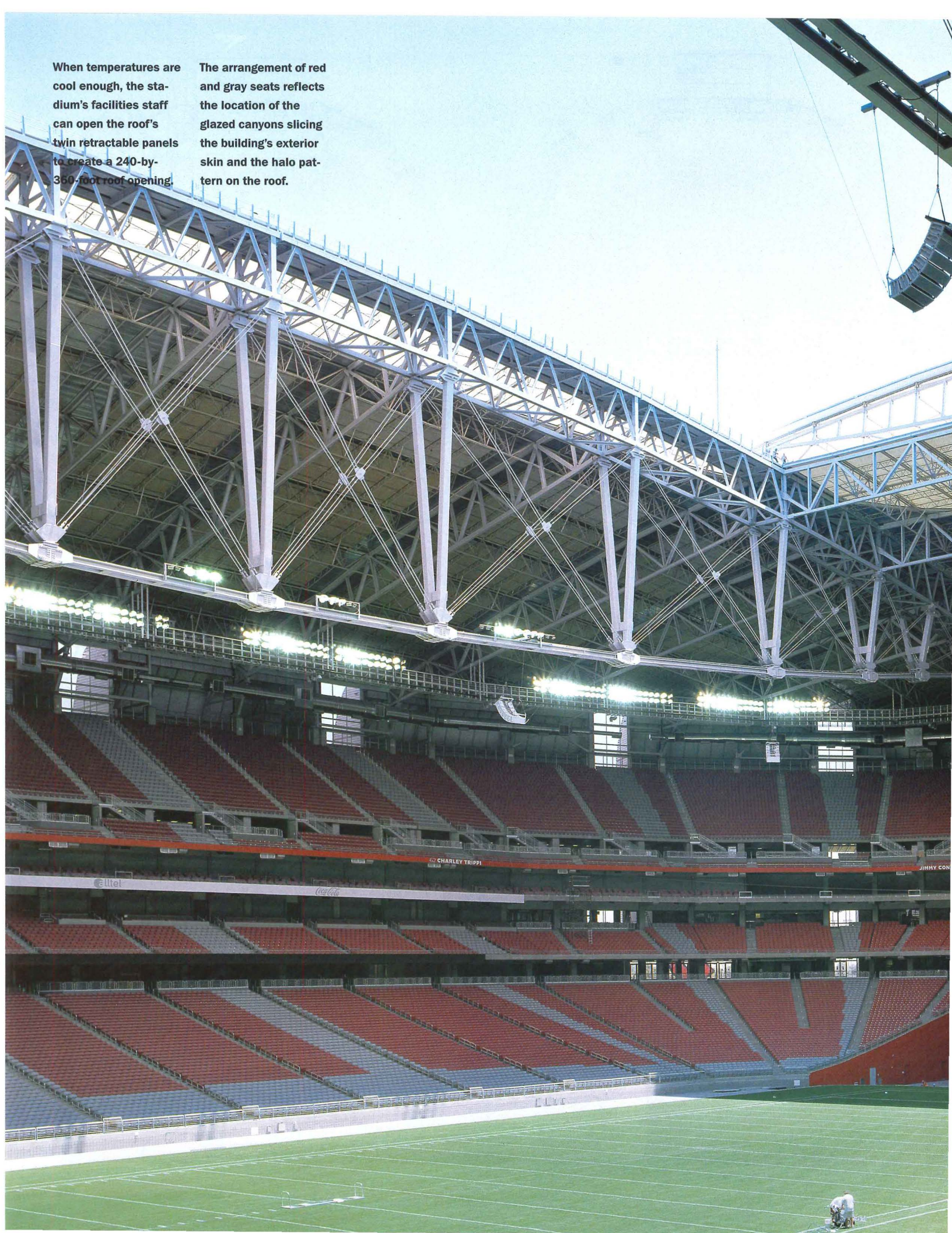
The field rolls under a main concourse bridge to a dedicated space just outside the stadium's southern end.

- 1. Playing field
- 2. Seating
- 3. Concourse bridge
- 4. Concessions
- 5. Suites
- 6. Club lounge
- 7. Main commissary
- 8. Operable roof
- 9. Brunel truss
- 10. Fixed roof



When temperatures are cool enough, the stadium's facilities staff can open the roof's twin retractable panels to create a 240-by-360-foot roof opening.

The arrangement of red and gray seats reflects the location of the glazed canyons slicing the building's exterior skin and the halo pattern on the roof.







The 88 suites (left) ring the second and third concourse levels. Each holds between 16 and 20 spectators. The cork floors and cardinal-red upholstered seating diverge from the walnut-and-brass suite interiors typical of other sport venues.

translucent fabric around the retractable panels. The canyons are also extended to the roof, but are articulated on the exterior as two different colors of opaque single-ply roofing. In early renderings, these rays were depicted as translucent material. Their reduction to a surface expression, visible only from the outside and from far away, was an unfortunate concession to the realities of budgets and structure. But despite the inevitable compromises, the building is still a powerful presence—one that fulfills the team's mandate for a "modern and forward looking" stadium, says Michael Bidwill, the team's vice president and general counsel.

Even Wellner, whose firm's much-lauded Camden Yards in Baltimore began the trend toward ballparks that evoke the days of Babe Ruth, says the Cardinals Stadium may create opportunities for more expressive U.S. sports facilities. "My hope is that more architectural freedom will come out of projects like this." ■

Sources

Structural concrete: Kiewit Western

Structural steel: Schuff Steel

Exterior metal panels: Crown
Corr/Centria

Roof and field mechanization:
Uni-Systems

Fabric roof: Taiyo Birdair

Playing field: Valley Crest

General contractor: Hunt
Construction Group

For more information on this project, go to Projects at

archrecord.construction.com.



The architect refers to the vertical circulation spaces inserted in the zone between the steel-panel cladding and the stadium's concrete structure as "Piranesian" (this page and opposite).





The congress center stands within the walls of an 18th-century bastion, built to defend Badajoz's border position. The new structure recreates, in translucent plastics, the concentric volumes of the bullring formerly on this site.

Within the fortifications of a remote
Spanish city, **selgascano** inscribes
the **BADAJOS CONGRESS CENTER** into the
footprint of a once-bloody bullring



Although Spanish architects are well acquainted with the intricacies of introducing contemporary buildings into historic urban fabric, the site for the new Congress Center in Badajoz posed unprecedented difficulties. Here, in the provincial capital of Spain's relatively poor, rural, and isolated Extremadura region, an 1857 bullring once stood. The arena (demolished in the 1980s) had risen within the walls of a five-sided 18th-century bastion, erected to defend the city's strategic position near the Portuguese border. In the two intervening centuries, urban expansion had embedded those elaborate fortifications.

The painful history associated with the bullring complicated the formal challenge posed by the project's open-competition brief. In August 1936, Badajoz was the site of one of the Spanish Civil War's first major battles and, in this arena, Franco's forces executed hundreds of Republican prisoners. Many in the city still hesitate to dwell on that traumatic past, exhibiting a reluctance shared by the leaders of the region's current Socialist government, this project's clients. While repudiating Franco's dictatorship, they skittishly avoid mention of the killings in publicity about the congress center, preferring to emphasize its benefits on the local economy, culture, and tourism. Others, however, including opposition leaders of the United Left party, protested its construction, calling for a memorial on the site.

With a scheme that skillfully navigates the conflicts of memory, denial, and the demands of progress, Madrid architects José Selgas and Lucía Cano won the competition—their first important commission. Their firm, selgascano, has since won competitions for congress centers in Placencia, also in Extremadura, and the Spanish coastal city of Cartagena, and is building public housing in Madrid. At Badajoz, they carefully inscribed an innovative structure within the outlines of the original bullring, establishing a fresh and dynamic urban presence that pays homage to the past and the future. The approach, recalls Selgas, came from the realization that “what we were looking for was right before our eyes.” The challenge became how to “do as little as possible” in order to keep the character of the site legible.

David Cohn is RECORD's Madrid-based correspondent.

Rendered in translucent plastics, the scheme recreates the concentric volumes of the former bullring: A cylindrical lattice of fiberglass-reinforced polyester-resin tubes encircles a drum clad in translucent Plexiglas tubes over clear glass panes. The inner drum, containing the auditorium, takes its footprint from the former *albero*, or ring of sand, where bullfights once took place, while a roofless circulation path between the layered cylinders occupies the street-level zone of the former grandstands. As Selgas says, this relationship reverses the bullring's disposition of spectators versus open space. Much of the 180,000-square-foot congress center lies underground, including its lobby, which visitors reach from the entry plaza via a stair descending beneath the red underside of a curving, cantilevered canopy. The 1,000-seat main auditorium, rising from this lower level to fill the inner drum, can accommodate opera, theater, orchestral music, and conferences. The architects have tucked secondary spaces—a flexible 400-seat auditorium, a café, meeting rooms, and a rehearsal hall for the resident Orchestra of Extremadura—into the surrounding bastion, accessed from the ring of outdoor circulation.

“We used two families of materials: those proper to the bastion, like concrete and packed earth, and lightweight ones proper to the void,” Selgas explains. In his view, the project's low budget of \$25 million, dictated by the region's poverty, provided the freedom to experiment with money-saving plastics. Light and ephemeral in appearance—like a circus tent or fair attraction—the structure distinguishes clearly between old and new.

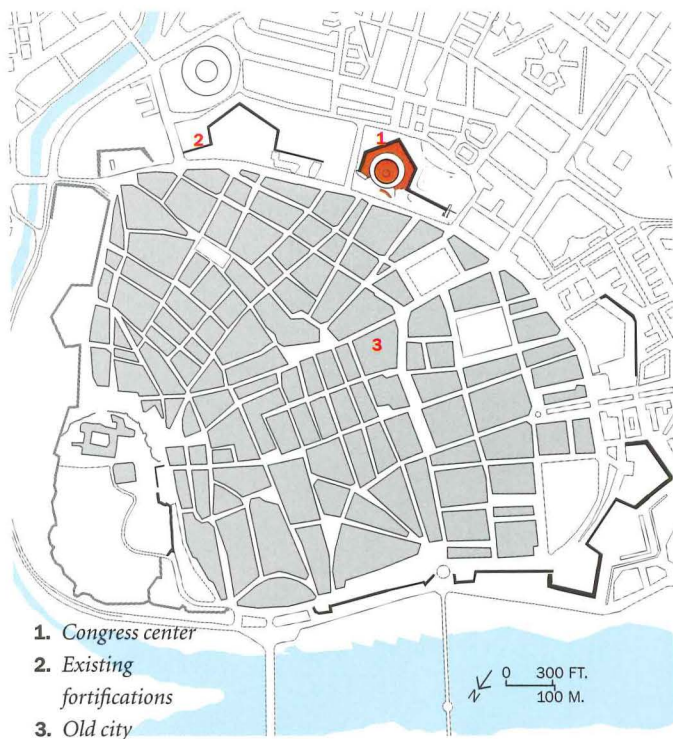
The lobby adds to that festive effect with multicolored fluorescent lighting and deep-red flooring (made from cork), contrasting dark, eggplant-colored plaster ceilings, and white walls. Illuminating these vibrant surfaces, daylight enters through a long, curving trench skylight and from the stairs to the outdoor circulation ring. On the auditorium's mezzanines,

Project: Congress Center, Badajoz, Spain JG Asociados (installations); Pedelta (polyester structure)
Architect: selgascano—José Selgas, Lucía Cano, principals **Acoustic consultant:** Higini Arau
Engineers: Fehcor (structural); **General contractor:** Joca-Placonsa



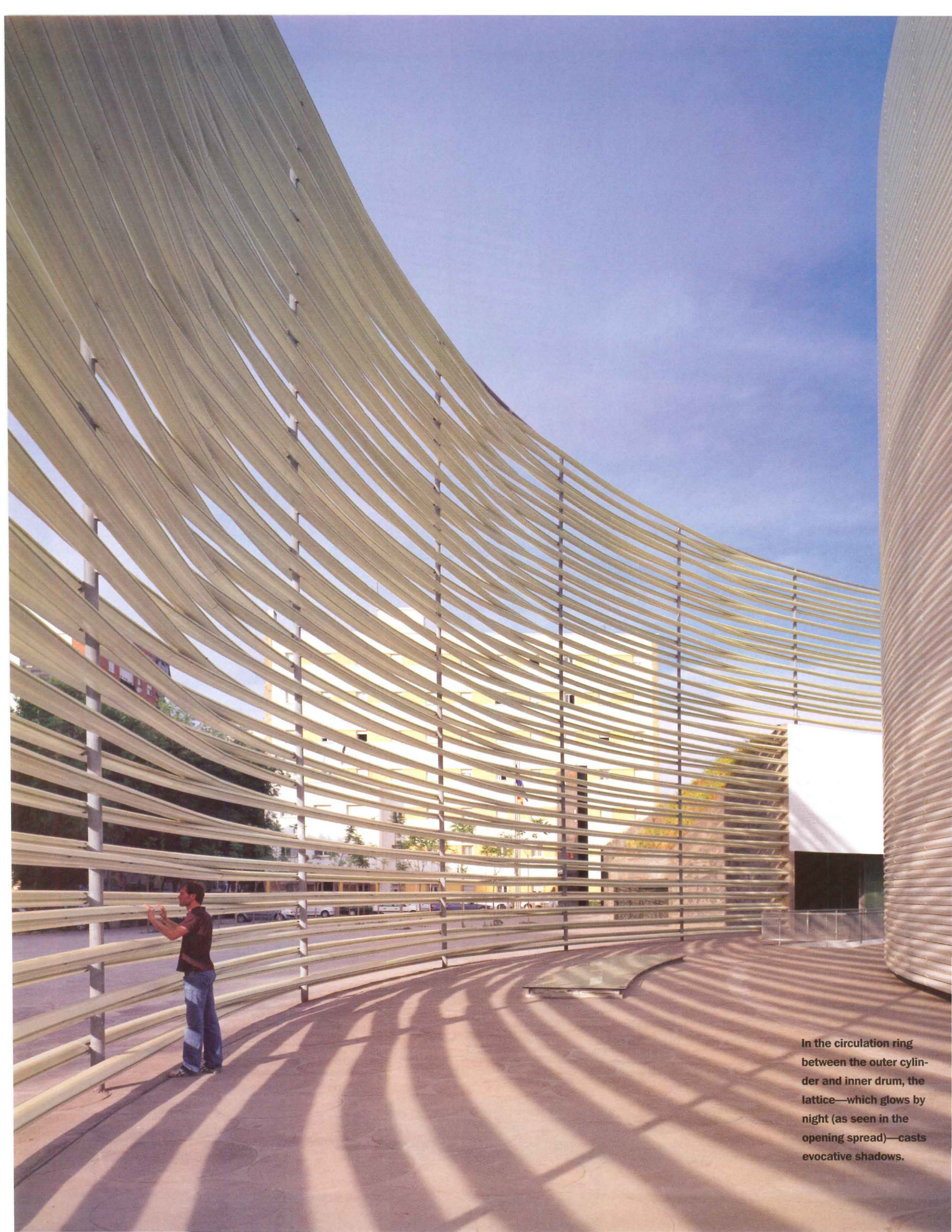


A curving, 96-foot-long cantilevered canopy (above) hovers over the stair descending from street level to the auditorium lobby. The canopy's red underside recalls a bullfighter's cape (above and below right). The structure's cylindrical lattice of polyester-resin tubes encircles a drum clad in Plexiglas tubes over glass panes (opposite).



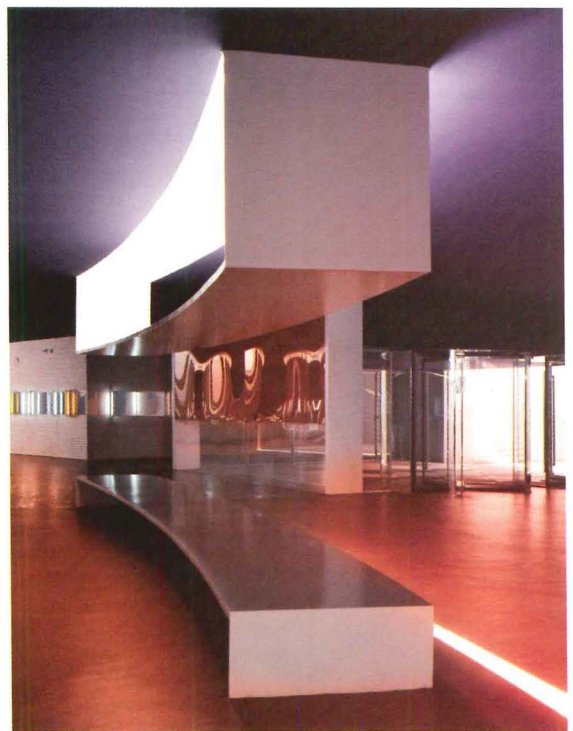
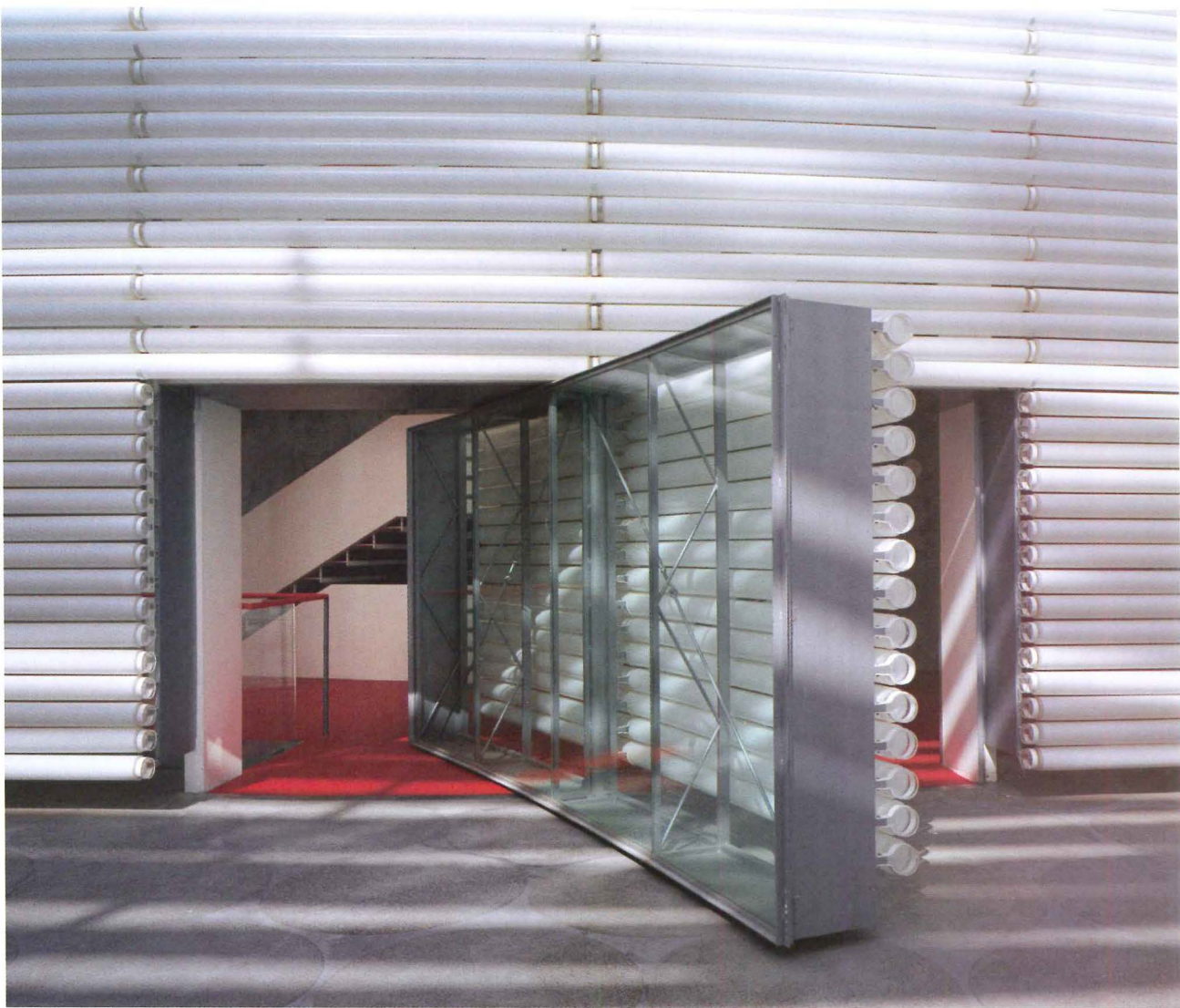
1. Congress center
2. Existing fortifications
3. Old city

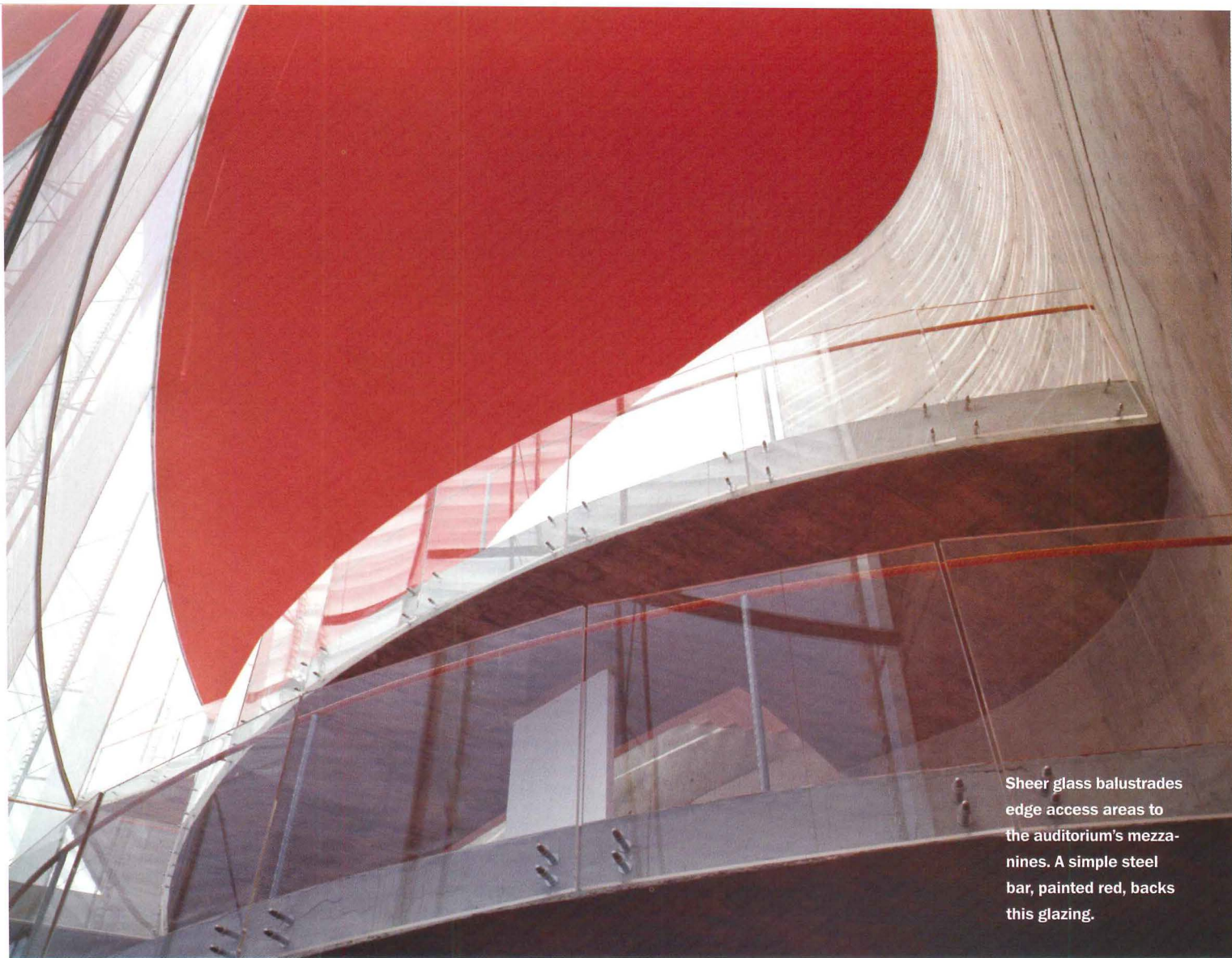




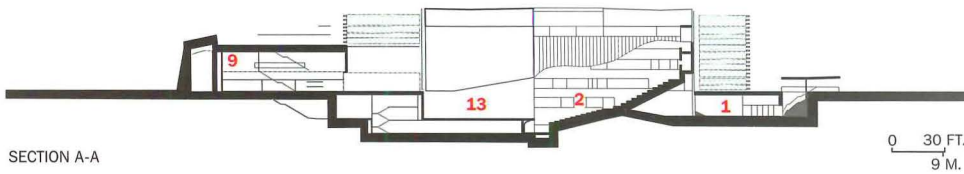
In the circulation ring between the outer cylinder and inner drum, the lattice—which glows by night (as seen in the opening spread)—casts evocative shadows.

A pivoting exit from one of the auditorium's upper mezzanines (right) opens onto the outdoor circulation ring, revealing the wall's layers of glass and Plexiglas with thin vertical trusses as supports. The lobby (below left) has casual seating, sculpted into the red floor and lit by recessed fluorescent tubes. Here, the auditorium's underbelly, of board-formed concrete, appears overhead. A curving bench (below right) echoes the 30-foot-long arc of a light diffuser beneath the lobby skylight.





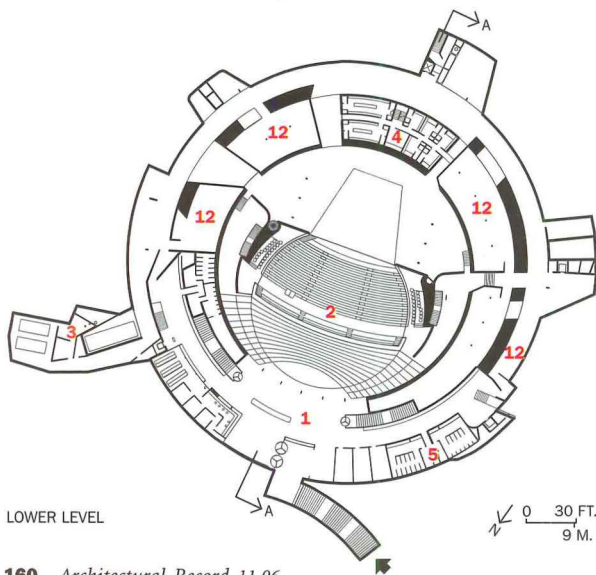
Sheer glass balustrades edge access areas to the auditorium's mezzanines. A simple steel bar, painted red, backs this glazing.



SECTION A-A

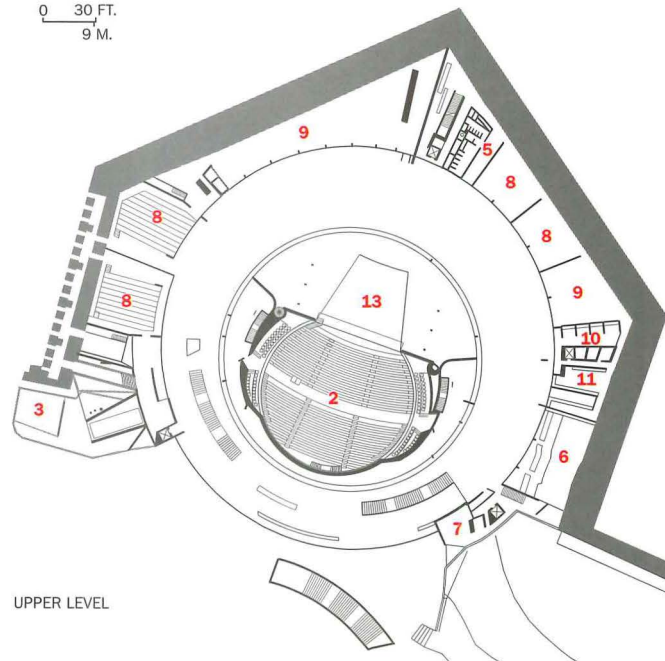
0 30 FT.
9 M.

1. Lobby
2. Auditorium
3. Service entry
4. Dressing rooms
5. Bathrooms
6. Café
7. Box office
8. Secondary hall
9. Exhibitions
10. Storage
11. Kitchen
12. Mechanical
13. Stage



LOWER LEVEL

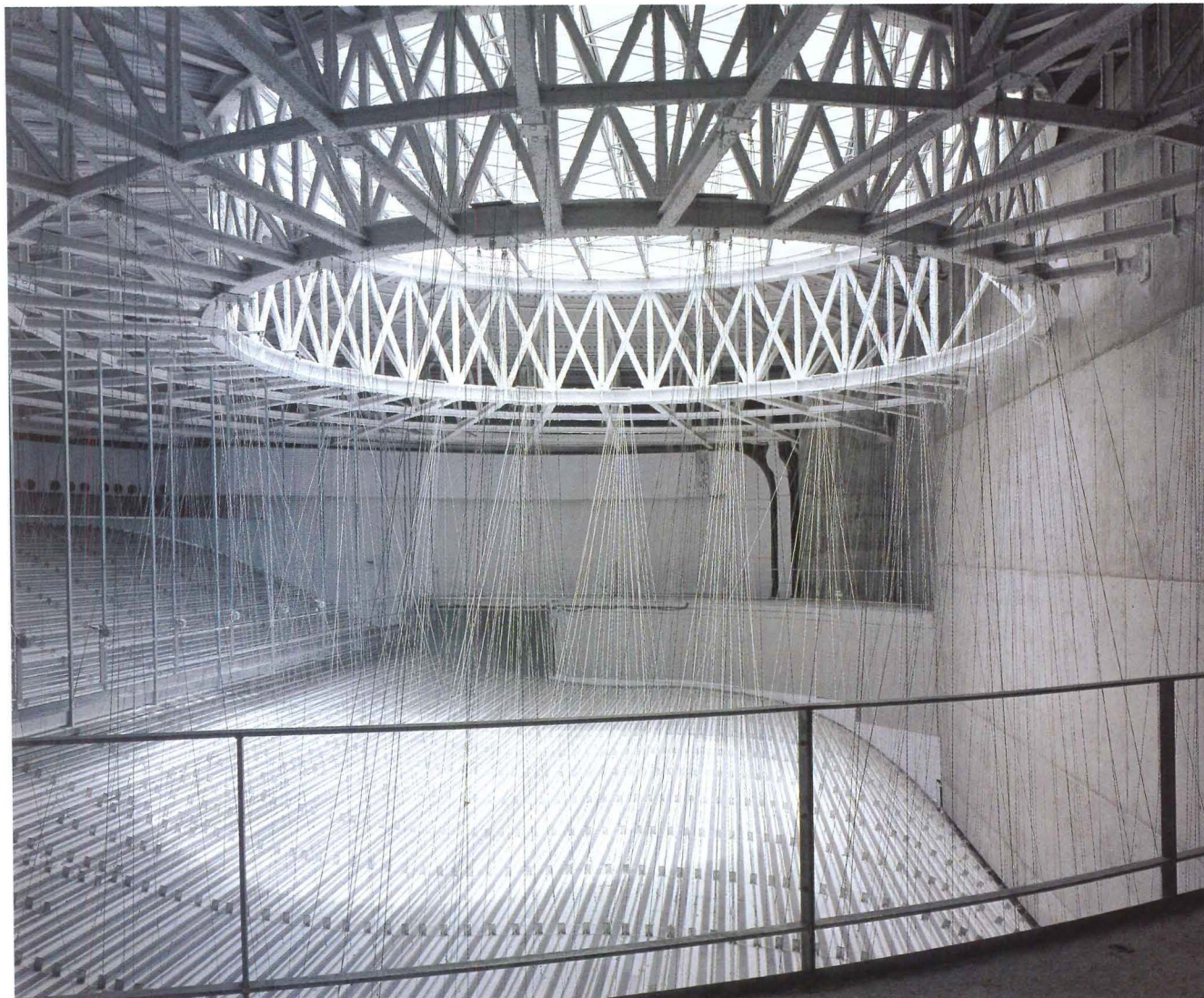
0 30 FT.
9 M.



UPPER LEVEL



Stairs, lit through the drum's translucent skin, link the auditorium's mezzanines. The deep-red flooring, manufactured in Holland, incorporates Spanish cork.



The auditorium rises to a glazed oculus (this page and opposite) that will include a shade for blocking out daylight. The suspended ceiling, with alternating slats of wood and translucent polycarbonate, was devised to enhance acoustics while retaining luminosity. The ceiling hangs from a magnificent array of tensile wires, visible from some of the upper balconies.

the same red flooring, glowing beneath the sun's rays and electric light at the drum's glazed perimeter, echoes the entry canopy's jazzy crimson underside.

The auditorium, by contrast, offers cool tones, with blue upholstered seats and walls of translucent polycarbonate strips, backlit by fluorescent tubes. This spectacular circular space rises to a glazed oculus, 40 feet in diameter, with a suspended acoustic ceiling of alternating slats of wood and transparent polycarbonate, combining visual transparency with acoustic reflectivity. (A horizontal *toldo*, or curtain, yet to be installed, will black out daylight.) This riff on the Pantheon's oculus harks back to Selgas's residency at the Spanish Academy in Rome in the 1990s, when Cano was working in Madrid for her father, the noted architect Julio Cano Lasso.

The hall's circular form and glowing polycarbonate walls presented acoustic challenges. Consultant Higin Arau, who has played a key role in defining the sound quality of many of Spain's new performance spaces, gave the suspended ceiling parallel folded planes, he says, "to transform harmful reflections from the walls and balconies at the back of the hall," eliminating uneven focal points of sound. He studied the dynamic elasticity, density, and buffering qualities of the Plexiglas walls, adjusting the thickness to match high-quality wood in response to low frequencies.

The architects hung the ceiling from a magnificent contraption of tensile, splayed wires—recalling a suspension bridge or the inside of a piano—which remains visible from sections of the upper balconies. Alternating flanges of polycarbonate and steel stiffen the mechanism, while

keeping the sheer luminosity uncompromised. Throughout the building, Selgas and Cano's inventive systems allowed them to mount plastic materials while retaining translucency, as in the auditorium, where backlit wall panels project on thin stainless-steel tubes from the stud frames. For the drum's exterior, they heat-molded the Plexiglas tubes to create curves and mounted them discretely with steel bracket rings on light vertical steel trusses, separating the tubes from the cylinder's glass inner walls. The resulting continuous surface remains uninterrupted by structural members.

The architects skillfully developed the formal implications of the circle, dramatically deploying form, materials, color, and light to underscore its nonorthogonal geometry. Particularly dashing are the curving cantilevers, including the 96-foot-long entry canopy. The building's abstract planes of color evoke the formal logic of early Modernism, from De Stijl to Le Corbusier, while the bold red recalls the bullfighter's cape, the blood shed in this arena, and the blinding, late-day sunlight in the ring. In subtle ways, a shadow of the tragic memory emerges—at least, for those choosing to sense it—within this sparkling, local cultural mecca's festive spirit. But so far, no one has offered a more forthright acknowledgement of Badajoz's past. ■

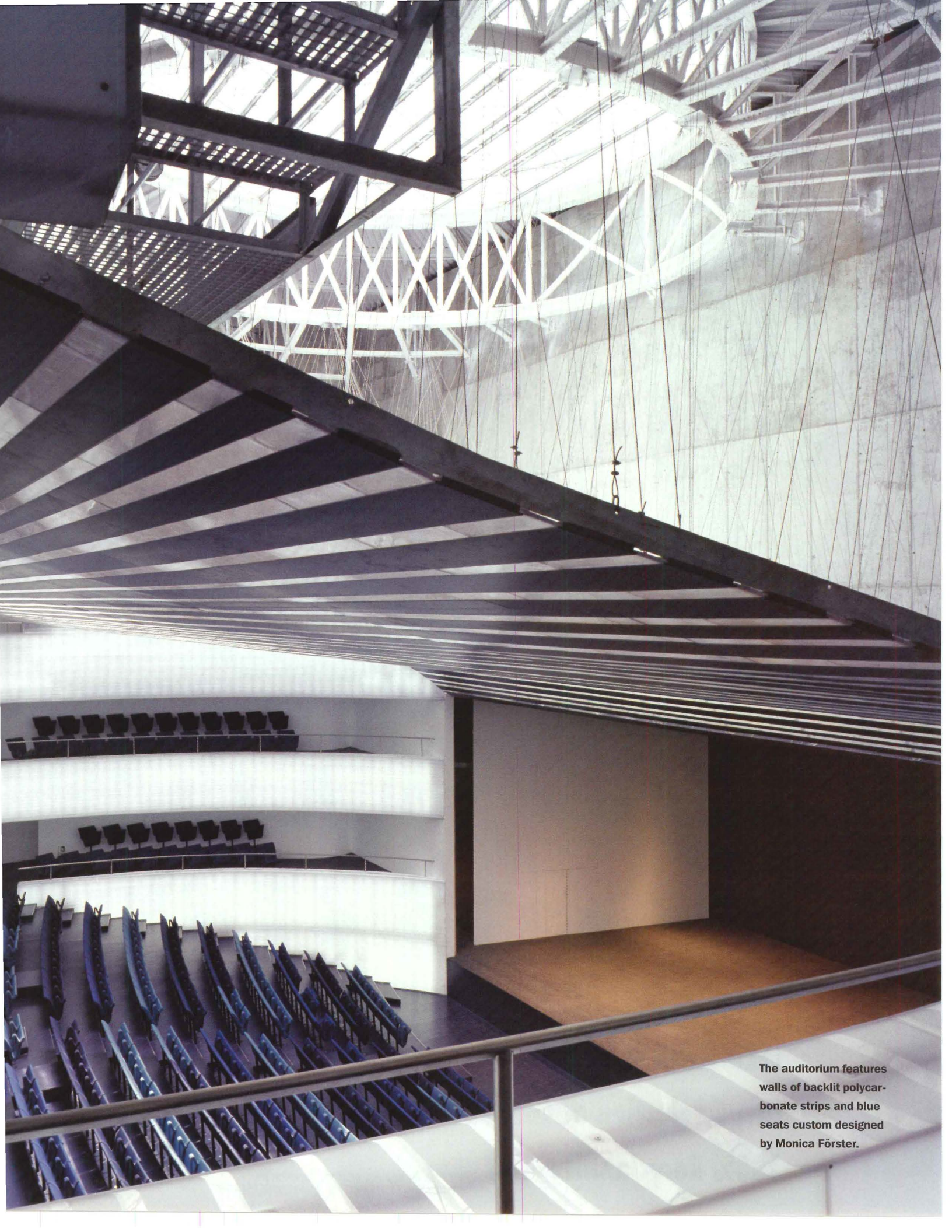
Sources

Floor covering: *Forbo; Mondo*

Walls: *Degussa; Fiberline*

Plumbing fixtures: *Duravit; Roca*

For more information on this project, go to [Projects at archrecord.construction.com](http://Projects.archrecord.construction.com).



The auditorium features walls of backlit polycarbonate strips and blue seats custom designed by Monica Förster.

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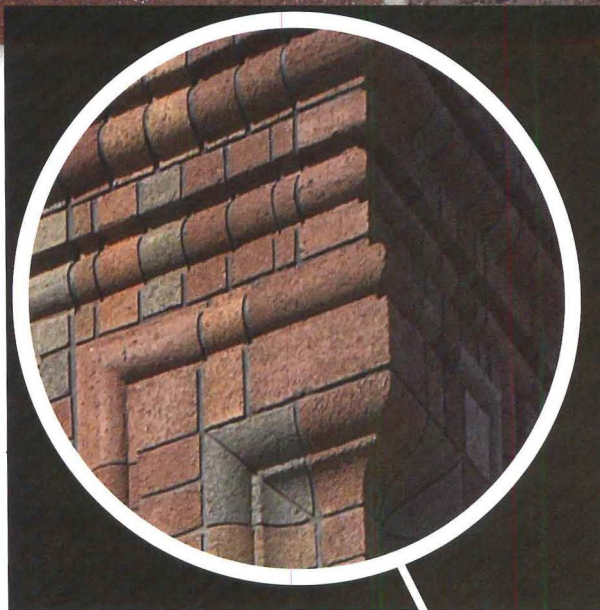
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CIVIC BUILDINGS

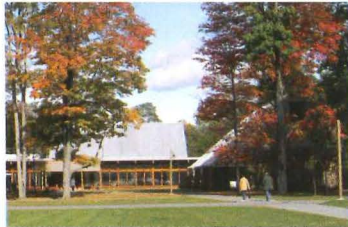
Acting Locally

Small learning centers forge intimate connections with unique sites to bring people together in our increasingly self-directed public sphere.



PRAIRIE RIDGE ECOSTATION FOR WILDLIFE & LEARNING
Raleigh, North Carolina

Frank Harmon creates an airy outdoor classroom whose simple design lets the surrounding landscape's gentle beauty speak for itself.



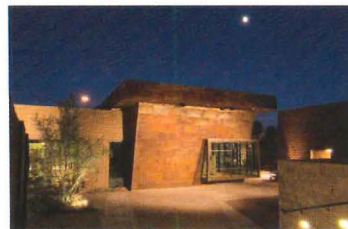
HENRY A. WALLACE VISITOR AND EDUCATION CENTER
Hyde Park, New York

R.M. Kliment & Frances Halsband Architects add an inviting gateway center to the Franklin D. Roosevelt Presidential Library and Museum.



WARREN SKAAREN ENVIRONMENTAL LEARNING CENTER
Round Mountain, Texas

Robert Jackson & Michael McElhane Architects help protect Westcave Preserve, a nature sanctuary, with a green-minded building.



OLD LAS VEGAS MORMON FORT VISITOR CENTER
Las Vegas, Nevada

Assemblage Studio looks beyond Sin City's casino culture and instead draws on its pioneer roots to design a museum dedicated to the region's history.

By James Murdock

Self-directed communities are thriving on the Internet, evidenced by the success of MySpace.com and other social networking sites. Critics worry that this virtual landscape discourages face-to-face interactions, deepening divisions in our already fractured public sphere. But for every trend, it seems, there is a countertrend. Museums, libraries, and other educational centers are drawing impressive crowds.

Thinking about civic architecture generally calls to mind grand encyclopedic museums, or imposing courthouses and town halls. Big projects remain a staple—if anything, some government structures have ballooned even larger due to security concerns—but sheer size is not a prerequisite for these buildings. As the four small cultural and learning centers profiled in the following pages show, sometimes the most effective public institutions operate with a highly local focus that is reflected in their design.

The Prairie Ridge Ecostation for Wildlife & Learning, in Raleigh, North Carolina, designed by Frank Harmon, is a simple yet stunning outdoor classroom. Essentially a 1,400-square-foot screened porch, it enables visitors to learn firsthand about a patch of surviving grassland in the suburbs. The Warren Skaaren Environmental Learning Center at Westcave Preserve, a 45-minute drive southwest of Austin, Texas, provides visitors with a similar opportunity to learn about a sensitive canyon oasis in Texas's arid Hill Country. Robert Jackson & Michael McElhane Architects created an unobtrusive structure whose design demonstrates how green technologies work.

With their smart use of fenestration, R.M. Kliment & Frances Halsband Architects establish a strong connection between the new Henry A. Wallace Visitor and Education Center and the historic Franklin D. Roosevelt Presidential Library and Museum, in Hyde Park, New York. And in Las Vegas, Assemblage Studio looked beyond the Strip's glitzy casinos and drew inspiration from a surviving relic of the city's rugged pioneer heritage to design a compact history museum at the Old Las Vegas Mormon Fort Visitor Center.

The education and cultural centers in this Building Types Study provide intimate, site-specific spaces where people come together to learn about their immediate surroundings as well as the world beyond. To borrow a phrase from the environmental movement, these civic buildings think globally but act locally—the perfect complement to an Internet age. ■

For more information on these projects, go to Building Types Study at archrecord.construction.com.

One: PRAIRIE RIDGE ECOSTATION FOR WILDLIFE & LEARNING

Raleigh, North Carolina

Frank Harmon Architect designs a tree-houselike observation perch for students of the natural world.

By Sarah Amelar

Architect: Frank Harmon
Architect—Frank Harmon, principal in charge; Sara Glee Queen, project manager; Matt Luck, design team
Client: North Carolina Museum of Natural Sciences
Consultants: Tim Martin (*structural*); Isaac Panzarella (*m/e/p*); Consider Design (*m/e/p*); David Swanson (*landscape*); Buildsense (*general contractor*)

Size: 1,400 square feet
Cost: \$300,000
Completion date: October 2004

Sources

Structural system: Paralam by Trusjoist McMillan
Masonry: Adams Products
Windows: Pella
Locksets: Schlage; Baldwin
Hinges: Stanley
Closers: Norton
Pulls: Schlage; Baldwin
Wall stops: Rockwood
Exterior lights: Rab Electric
Controls: Sensorswitch
Dual-flush toilet: Caroma
Rainwater collection system: Braewater; Shawn Hatley
Gutters: Classic Gutters

For more information on this project, go to Building Types Study at archrecord.construction.com.

“Spending my childhood along a stream at the edge of a city shaped my life,” says architect Frank Harmon, FAIA, of his boyhood in North Carolina. “In those early years, I collected more than 1,000 bird nests,” he recalls. “If I hadn’t become an architect, I would surely have become a naturalist.”

So when the Museum of Natural Sciences, in Raleigh, North Carolina, approached him to create a place where students of all ages could immerse themselves in the natural realm and learn about sustainable living, the fit felt unusually right.

Program

The client initially asked Harmon to help envision an off-site learning center and write a federal grant proposal to finance it. Later, with funds in hand, the museum engaged him to design the 1,400-square-foot “Outdoor Classroom” for its newly founded Prairie Ridge Ecostation for Wildlife & Learning—a 38-acre field site, 1.5 miles from the museum’s main building, in downtown Raleigh.

The brief was relatively simple, calling for a screened-in observation deck/classroom with prime views of the site, a small director’s office, and restrooms. (For a later phase, Harmon’s firm has designed, but not yet built, a sod-roofed dormitory, where students from across the state will be able to stay overnight.)

Since 2004, Prairie Ridge has become a nature preserve, gradually bringing back purple martins, cater-

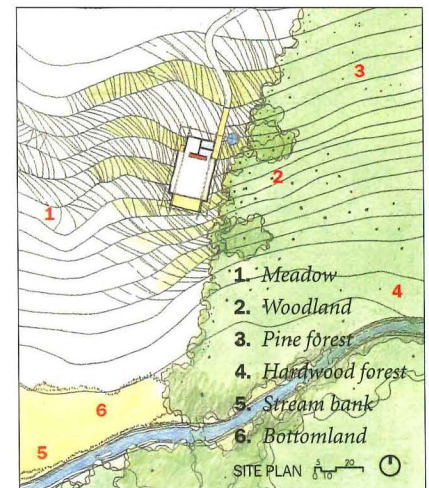
pillars and butterflies, soaring hawks and vultures, thickets of beauty berries, and trails that engulf visitors amid tall, wind-blown grasses. But the site didn’t always look this way.

Until a few years ago, this state-owned land—which, surprisingly, abuts a National Guard headquarters and interstate highway—provided cow pastures for North Carolina University’s agriculture school. The museum also had a foothold here: a repository, built in the 1990s to house a preserved specimen of every type of insect and animal found in North Carolina.

As encroaching roads prompted the teaching farm to relocate, the surrounding state acreage eventually became poised, parcel by parcel, for private development. Before it was too late, the museum’s leaders stepped in to reclaim a swath of North Carolina’s long-lost prairies.

Solution

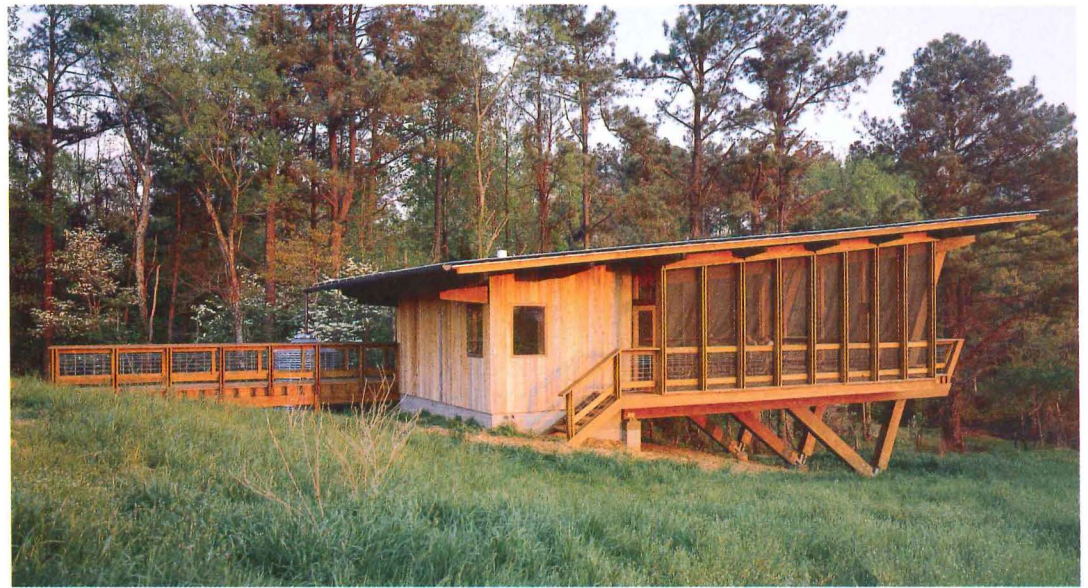
Though the region’s densely forested, rolling hills may seem the antithesis of a prairie, Native American tribes and bison once roamed a savannah here. To restore the Piedmont Prairie, ecostation director Mary Ann Brittain has engaged volunteers to uproot nonindigenous plants and replace them with native species, reintroduc-



ing certain flowers, for example, to attract the insects favored by particular birds—all conscious measures to restore and enrich the biodiversity.

As Harmon realized, his building needed to be a teaching tool: a structure that would not only respond to this landscape, but also embody lessons about sustainability. Siting, orientation, forms, materials, and construction methods were all essential considerations. He positioned the Outdoor Classroom on a gentle slope

The structure sits lightly on the terrain, allowing the land to flow beneath it. The entry bridge extends past the cistern's galvanized-steel tank. The most opaque section of the building, its north end, houses two lavatories and a small office. Screened on three sides, the classroom catches southwesterly breezes. The deep south-facing overhang maximizes sun exposure in winter and shade in summer.

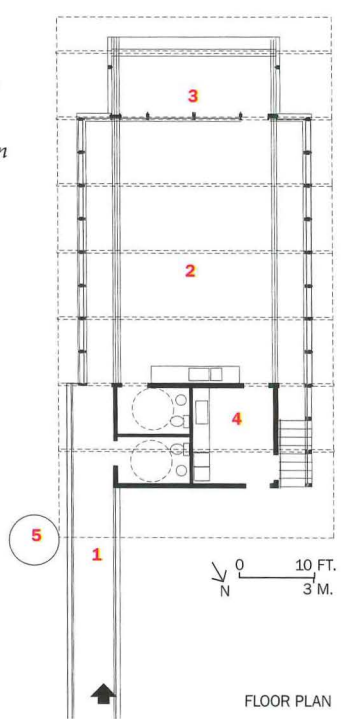
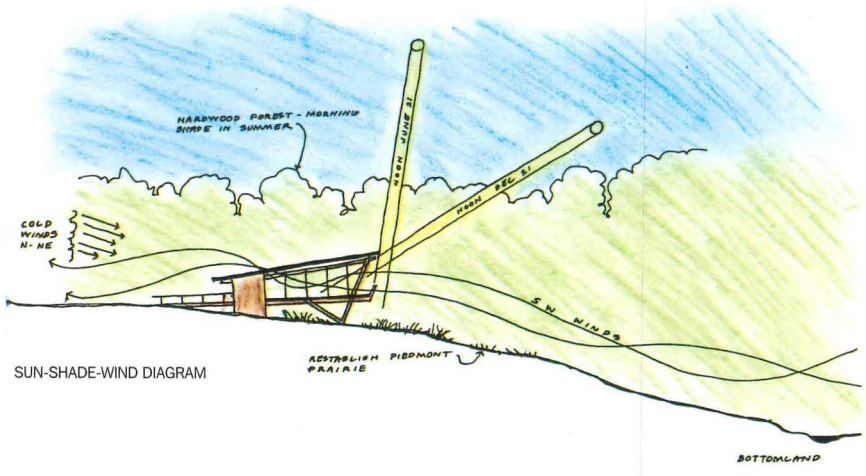




The classroom opens onto an open-air deck (above). To Harmon's delight, the deep eaves have already provided a

welcome niche for a phoebe nest. His team calibrated the overhang for seasonal sun angles (below).

1. Entry bridge
2. Classroom
3. Viewing balcony
4. Office
5. Rainwater cistern



to yield a range of views: bottomland, pine forest, meadow, hardwood forest, woodland fringe, and stream bank. As Brittain points out, "Edge conditions are the most biologically rich."

Perched like a tree house, the \$300,000 structure sits lightly on the terrain, letting the land flow beneath it. Balanced visually, the roof's upward pitch mirrors the hill's downward slope. Much of the building rests on three triangular heavy-timber frames on a concrete pad.

The structural lumber, indigenous southern yellow pine, is parallel strand, a composite (made of scrap pieces) favored for its strength, rot-resistance, and renewable attributes, diminishing the impact on old-growth forests. All siding and interior panels are of Atlantic white cedar from the Carolina swamps. With this entire wood-frame building dimensioned to reduce waste, the roof's plywood sheets, for instance, required no cutting. And to avoid erosion, the team disturbed as little earth as possible.

Screened in on three sides, the classroom catches southwesterly breezes all year. Its deep south-facing overhang maximizes sun exposure in winter and shade in summer.

Nearly everything about this rustic, unpretentious building appears in full view—joints, lumber members, and for the bathroom, a cistern with a pipe from the roof gutter—all forming part of the overall composition. Soon, photovoltaic panels, set in a field, will take Prairie Ridge off the grid.

Commentary

Just as the new building will season over time, gradually turning silvery gray, the whole ecostation basks in a constant state of flux. The interstate still appears in the vistas from this bucolic perch, but sycamore trees will eventually form a visual buffer. The Outdoor Classroom provides a remarkably comfortable space, like a ship's deck projecting into the landscape. "One of my missions," says Harmon, "is to get people out of their air-conditioned cocoons." As Prairie Ridge's immediate popularity suggests, he has already helped draw people out to peer into cocoons in the wild. ■



The entryway (left) evokes a suspended rope bridge in the forest. The heavy-gauge steel mesh beneath the rails is recycled "hog slats," common on pig farms. The mild climate keeps the classroom comfortable, even in winter and late afternoon (below).



Two: HENRY A. WALLACE VISITOR AND EDUCATION CENTER

Hyde Park, New York

R.M. Kliment & Frances Halsband create an airy gateway center that invites visitors to explore the historic FDR Presidential Library.

By James Murdock

Architect: R.M. Kliment & Frances Halsband Architects

Client: U.S. National Archives and Records Administration

Consultants: Matrix New World Engineering (civil); Robert Silman Associates (structural); AltieriSeborWieber Consulting Engineers (m/e/p); Andropogon Associates (landscape); Brandston Partnership (lighting); Shen Milsom & Wilke (a/v); Heery International (construction manager); Chermayeff & Geismar Associates (exhibits); Kroll Schiff & Associates (security); Studio Pacifica (accessibility); James R. Gainfort Consulting Architects (building environment); Clough Harbour & Associates (traffic); Jeanne Giordano (retail)

Size: 50,000 square feet

Cost: \$14 million

Completion date: November 2003

Sources

Masonry: Sucato Builders

Copper roofing: C. Verone Roofing

Windows and doors: Reilly WoodWorks

Skylights: Fiore Skylights

Glazing: Technical Glass Products

Hardware: Dorma; Stanley

Acoustical panels: Decoustics;

United Steel Products

Fixed seating: Irwin

Lighting: Lightolier; LSI; BEGA

For more information on this project, go to Building Types Study at archrecord.construction.com.

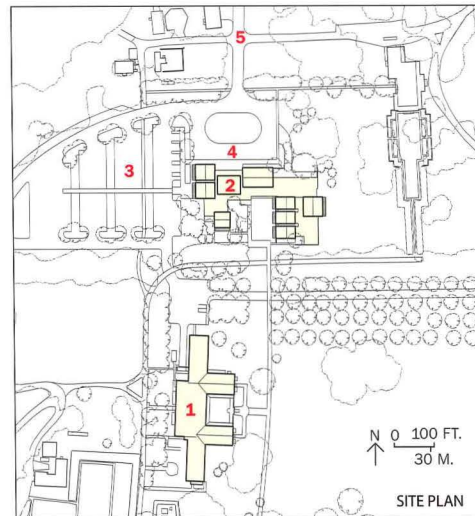
Of our presidents, Thomas Jefferson was not alone in having something of the architect in him. Franklin D. Roosevelt sketched the basic design for his presidential library in 1938, a Dutch Colonial-style building on the grounds of his family estate in Hyde Park, New York. His notes indicate that he wanted its fieldstone walls to express endurance and determination. These are important qualities to convey during times of global conflict, and they also befit an archive, but they can preclude hospitality.

More than just archives, presidential libraries fill a civic role: They serve as pilgrimage sites for the politically faithful and often house education centers and conference facilities. Though it was the first such institution, the FDR Presidential Library and Museum serves all these functions. In addition to the researchers who access its 17 million pages of documents, more than 125,000 people visit annually to see the exhibits, such as Roosevelt's touring car and the study from which he broadcast several fireside chats.

Program

The FDR library, which is run by the National Archives and Records Administration, forms part of a larger historic site, owned by the National Park Service, that includes the Roosevelt family home as well as the

Based in New York, James Murdock writes about architecture and real estate.



The Wallace Center, with its handsome main entry (above), serves as a gateway, greeting visitors to the FDR library complex.

1. FDR library
2. Visitor center
3. Main parking
4. Tour-group entry
5. New driveway

president and Mrs. Roosevelt's grave sites. Visitors used to access the 290-acre property via a 1940s-era driveway that led to a ticket booth in an unsheltered parking lot.

In addition to replacing this outmoded, rather undignified entry, the clients wanted a new interpretive space where they could present historical background on Roosevelt and his era. Also, the library's directors sought larger offices for themselves

and a dedicated conference center.

Roosevelt envisioned his library as the cornerstone of a larger campus—it had already been expanded once, in the 1960s, based on sketches he made before his death—but when its directors contemplated adding the Henry A. Wallace Visitor and Education Center, in the mid-1990s, the Park Service insisted that any new construction interfere as little as possible with the historic site.

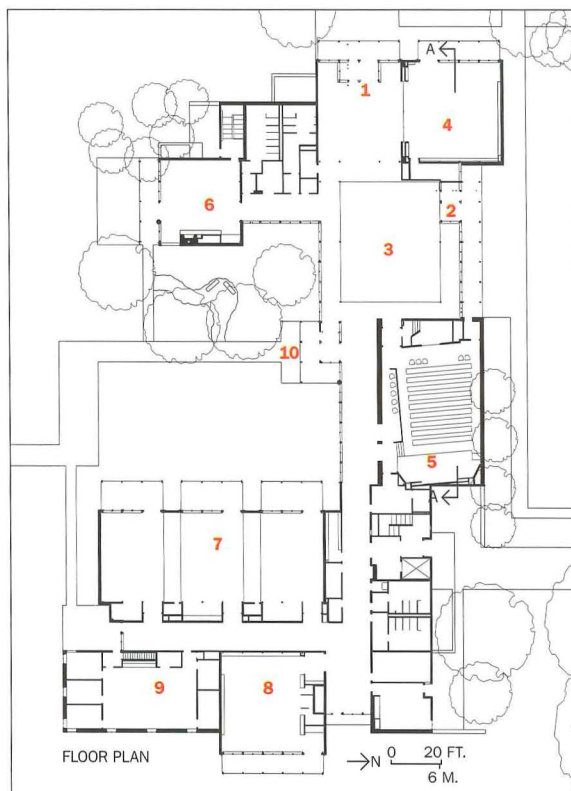
Entering the Roosevelt site from the north, via a newly constructed driveway, visitors first encounter an entrance intended for large tour groups (right). An inner courtyard faces south toward the FDR library (below). Although some walls are clad in field-stone—a nod to Roosevelt—steel posts and beams compose the building's primary structural system.





A tile mosaic, embedded in the orientation lobby's floor, depicts a 1940s-era map of the site (above). This central room features glass curtain walls that flood the space with daylight and allow views of the FDR library beyond.

1. Main entry
2. Tour-group entry
3. Orientation lobby
4. Gift shop
5. Auditorium
6. Café
7. Multipurpose room
8. Conference room
9. Administrative offices
10. Exit to FDR Library



Solution

Manhattan-based R.M. Kliment & Frances Halsband Architects got the commission after the Park Service had vetoed an earlier scheme by another firm. But just as construction documents were to be submitted for the planned building on the site of the parking lot and ticket booth, the Park Service discovered that this spot had once been the Roosevelt family's vegetable garden.

For their second attempt, Kliment and Halsband located the 50,000-square-foot visitor's center roughly 100 yards north on land that was formerly part of a neighboring estate. They designed a village of small buildings with steep gabled roofs, organized into a squared-off C shape that opens toward the library. Paying homage to Roosevelt, they clad these structures in locally quarried fieldstone and added porches along most facades.

Visitors enter the Wallace Center through its main doorway on the western elevation, or through a separate tour-group entry to the north. Passing by a gift shop and a café, they arrive at the orientation lobby, a pavilionlike structure whose glass curtain walls allow unobstructed views of the site. Embedded in the floor is a tile mosaic depicting a 1940s-era map of the region. To the south, doors lead to the courtyard and library beyond; to the east is an auditorium as well as a glazed corridor that connects to a wing containing offices and the conference center.

All of the Wallace Center's public spaces are located on grade, making them fully wheelchair accessible. And, although it's uncertified, the building qualifies for a LEED Silver rating—largely thanks to its ample use of daylight. Most rooms feature at least one glass curtain wall; and even though porches extend along many elevations, the architects chose to shelter them with a transparent roof system comprising two layers of glass that sandwich a fine metal mesh, allowing plenty of light indoors.

Commentary

Robert Kliment and Frances Halsband employ just enough of

Roosevelt's design vocabulary to blend their building seamlessly into its context. But where the historic library feels dark and cramped, the new Wallace Center is open and airy—a perfect foil for the older building. It's also an excellent gateway. The building's generous fenestration and long porches draw the eye outward, orienting visitors and inviting them to explore the landscape beyond.

Most important, perhaps, the Wallace Center reinforces this institution's original intent. As Roosevelt said at the site's opening ceremony in 1941, presidential libraries are deeply democratic institutions: Embodying the ideals of open government, they allow the general public to inspect a chief executive's papers and question his decisions. Particularly in an age of increasing security provisions, it is critical that these civic buildings convey such openness. Kliment and Halsband, acutely aware of this, couldn't have done it better. ■

Most roof supports are exposed, as in the entry (below left), and in the 5,000-square-foot meeting room (below right), giving the spaces an airy quality. Porches feature translucent roofs (right).



Three: WARREN SKAAREN ENVIRONMENTAL CENTER

Round Mountain, Texas

Robert Jackson and Michael McElhaney tread lightly on the fragile Westcave Preserve with a center featuring environmental-science exhibits.

By Ingrid Spencer

Architect: Robert Jackson & Michael McElhaney Architects
Clients: Westcave Preserve Corporation; Lower Colorado River Authority
Consultants: Architectural Engineers Collaborative (structural); Johnson Consulting Engineers (m/e/p); Jill Nokes Landscape Design (landscape); Meridian Energy Systems (solar exhibit); Drew Patterson Studios (outdoor exhibit panels); Tejas Engineering (wetlands design); D.L. Bandy Constructors (general contractor)

Size: 3,030 square feet

Cost: \$1.2 million

Completion date: March 2003

Sources

Stone: San Jacinto Materials

Metal roofing: MBCI

Windows: Columbia Commercial Building Products

Doors: Nana Wall Systems

Terrazzo floors: Venice Art Terrazzo

Composting toilet: Clivus Multrum

Rainwater-collection system: Amiad Filtration Systems; Atlantic Ultraviolet

For more information on this project, go to Building Types Study at archrecord.construction.com.

"We started out with a chair under a tree," says John Ahrns, manager of the Westcave Preserve, a 30-acre nature sanctuary located 50 miles southwest of Austin, Texas. Today, 33 years after Ahrns arrived, that chair has grown into the Warren Skaaren Environmental Learning Center, a 3,030-square-foot classroom designed by Austin-based architects Robert Jackson, AIA, and Michael McElhaney, AIA. The center integrates green building technologies and exhibits that illustrate and demystify natural science.

Program

After decades of visitor traffic, Jackson explains, the Westcave Preserve "was being loved to death." In a canyon at the heart of the property, hikers inadvertently trampled delicate plants and polluted a grotto at the base of a 40-foot waterfall. The Westcave Preserve Corporation approached the architects to design a building for the canyon's trailhead. With the goal of reducing human impact on the site, the group wanted both an educational facility to serve the 10,000 school children who visit Westcave annually as well as a headquarters for the preserve's managers. The architects saw an opportunity to highlight conservation by using sustainable materials that blend unobtrusively with the landscape.



Solution

Choosing an exact location for the new center proved challenging. While the canyon itself is lush, the surrounding area is rocky and rugged, leaving few places capable of accommodating a single-story structure with grade-level entrances. Only one site worked, but it meant creating a narrow building whose longest sides face east and west—not the typical orientation for green design. But as Jackson observes, "You can't always go by the rules. What is most important is to listen to the site. Had we oriented the building the other way, it would have been 8 feet off the ground. We needed to make the indoors and outdoors a continuous learning space."

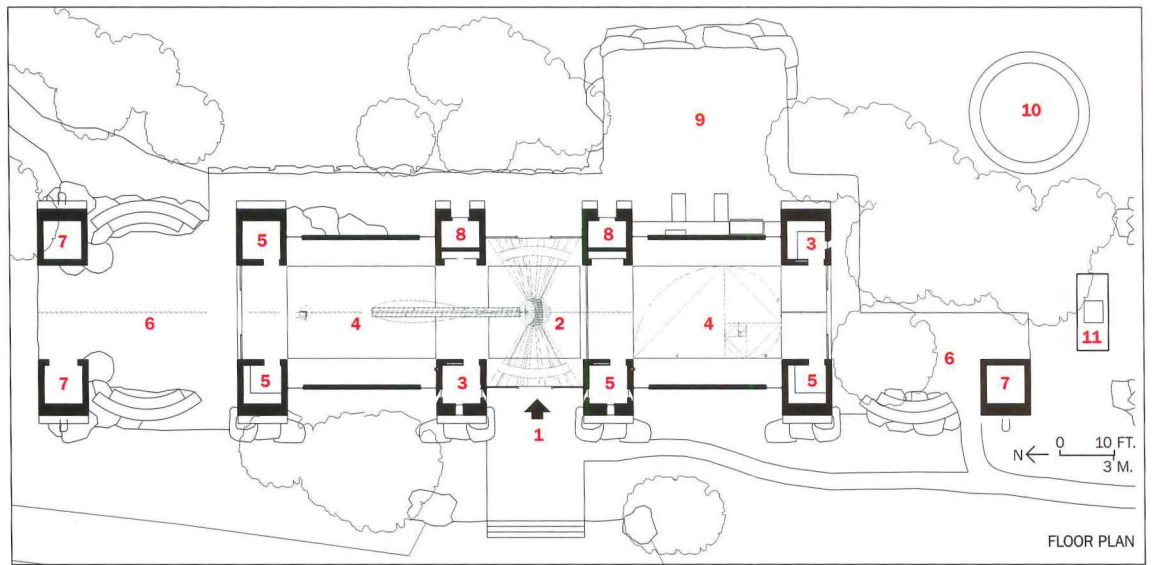
Locally quarried Glenrose stone blocks, peppered with fossils and iron tinctures, form the building's walls.

Clerestory windows create the illusion that the roof hovers above the walls (above). Deep overhangs shelter 2,000 square feet of porch space, as at the southeast corner (opposite).

The architects selected a finish of uncoated cement-lime stucco, backed by recycled-content cellulose insulation. A curved, metal standing-seam roof seems to hover above the building due to a band of clerestory windows beneath it that admits light into the building. Eight-foot overhangs shelter 2,000 square feet of extra outdoor classroom space.

A freestanding, 1,700-watt photovoltaic panel near the south elevation generates a substantial amount of energy—more, sometimes, than the building needs to operate—and it functions as one of the learning center's educational

1. Main entry
2. Orientation room with "sky map"
3. Office
4. Classroom
5. Storage
6. Covered porch
7. Water-collection cistern
8. Mechanical
9. Terrace
10. Wildlife cistern
11. Photovoltaic panel





A stone pier at the southwest corner contains one of the center's three rainwater-collection cisterns (above).

Unfinished tongue-and-groove pine boards clad the underside of the curved, metal standing-seam roof (below).



tools. Kids enjoy watching numbers on the data readouts as Westcave's guides demonstrate how the unit sends power back to the electricity grid. Additional green elements include a ground-source, water-chilled heat pump; three rainwater-collecting cisterns; high-efficiency uplighting; and composting toilets (housed in a separate structure).

Like the photovoltaic system, most of the center's educational exhibits stem from and are integrated into its design. A "sky map" embedded in the terrazzo floor of the main orientation room illustrates Earth's relationship to the sun. Modeled after a 300-year-old observatory at the Santa Maria degli Angeli basilica in Rome, this exhibit employs a glazed aperture in the ceiling that allows a ray of sunlight to shine on a

narrow metal plate notched with the days of the year. As the sunbeam moves across the plate, its angle gradually shifts each day and marks the passing of seasons.

Commentary

Blending easily with the rugged landscape, the elegantly constructed Warren Skaaren Environmental Learning Center serves as a low-profile gateway to the splendor of Westcave Preserve. A winner of the AIA-COTE Top Ten Green Projects in 2006, it demonstrates how regional materials, simple forms, and sustainable technologies can help connect the dots between people and their environment. This "wilderness classroom" seems to have sprung naturally from its site—an effect easier to envision than to achieve. ■

Interior window-wall systems allow daylight to penetrate through the entire building, reducing the need for artificial lighting (below). Educational exhibits

are integrated into the building's finishes. Metal panels embedded in the fieldstone floor are etched with the Fibonacci Series, known as nature's numbers.



Four: OLD LAS VEGAS MORMON FORT VISITOR CENTER

Las Vegas, Nevada

Assemblage Studio draws on a pioneer heritage to infuse a small museum with subtle exuberance.

By David Sokol

Architect: *Assemblage Studio*—Eric Strain, AIA, principal in charge; Andrew Gregory, Clemente Circoria, Adrian Jones; Douglas Schneider
Clients: Nevada Public Works Board; Nevada Division of State Parks
Consultants: Mendenhall Smith (structural); TJK Consulting Engineers (electrical); Petty Engineering (m/p); MLA and Assemblage Studio (landscape); Consortium West (exhibition designer); MGM Construction (general contractor)

Size: 5,000 square feet

Cost: \$1.6 million

Completion date: May 2005

Sources

Masonry: Hanlon Brothers Masonry

Metal paneling: Noorda

Elastomeric roofing: Clarks Quality Roofing

Windows and glazing: Mollerup Glass

Doors and hardware: The Hallgren Company

Cabinets and hardware: Hurco

Lighting and controls: Electrend

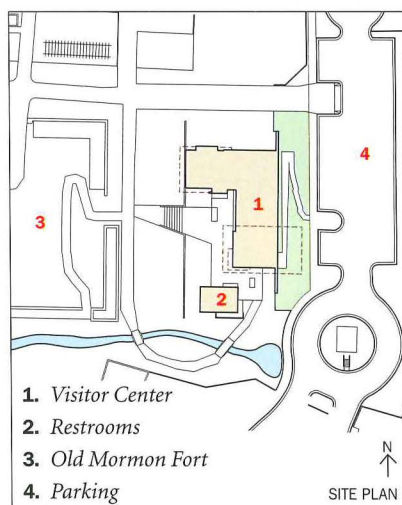
For more information on this project, go to Building Types Study at archrecord.construction.com.

The Old Las Vegas Mormon Fort Visitor Center lies just a few miles north along Las Vegas Boulevard from the Strip, but that's where the commonalities end. This museum, devoted to the region's history, measures a mere 5,000 square feet. Except for a few historic neon signs on exhibit, it displays none of the ostentation of casino culture—instead possessing a quieter, handmade sensibility. "It's a definite contrast to glitz and glamour," says Eric Strain, AIA, principal of Assemblage Studio.

Program

Located in Vegas's sleepy cultural corridor, which includes the Antoine Predock–designed Las Vegas Library just across the street, the visitor center sits shoehorned between its namesake and a parking lot. In 1855, Mormon missionaries erected a 150-foot-square adobe fort nearby on a slight plateau above a creek. Only its southeast wall remains.

Assemblage was little more than a year old when Nevada's Division of State Parks and Public Works Board issued an RFQ for the visitor center in 1999, part of a larger master plan to excavate the fort and restore it. As Strain recalls, "All I had to show for my qualifications was my thesis project"—a proposal, coincidentally, he made in 1990 for a museum on the same site. The state appreciated his grasp of historical relevance and took a chance on commissioning him. In



addition to designing 2,500 square feet of exhibition space for interpreting the fort and local history, the program included a gift shop, a library, a video screening room, and a large area for school children to congregate.

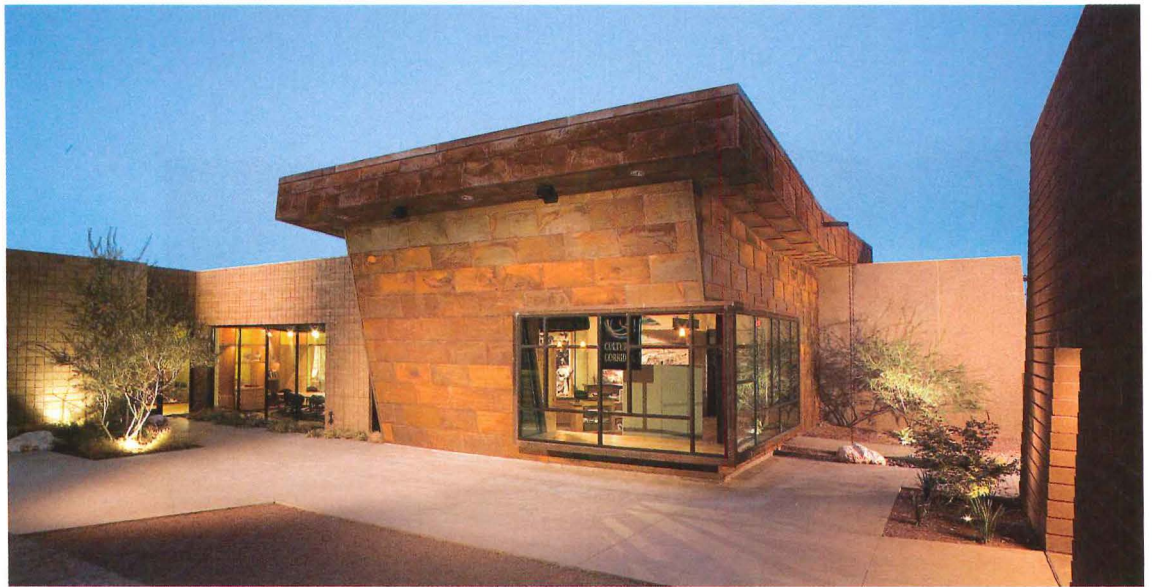
Solution

Assemblage drew inspiration from the fort and the pioneer heritage it represents. Outside the visitor center's main, eastern elevation, a pathway switches back through rows of ornamental grass like a handcart trail. This



PHOTOGRAPHY: © DAVE BASSETT

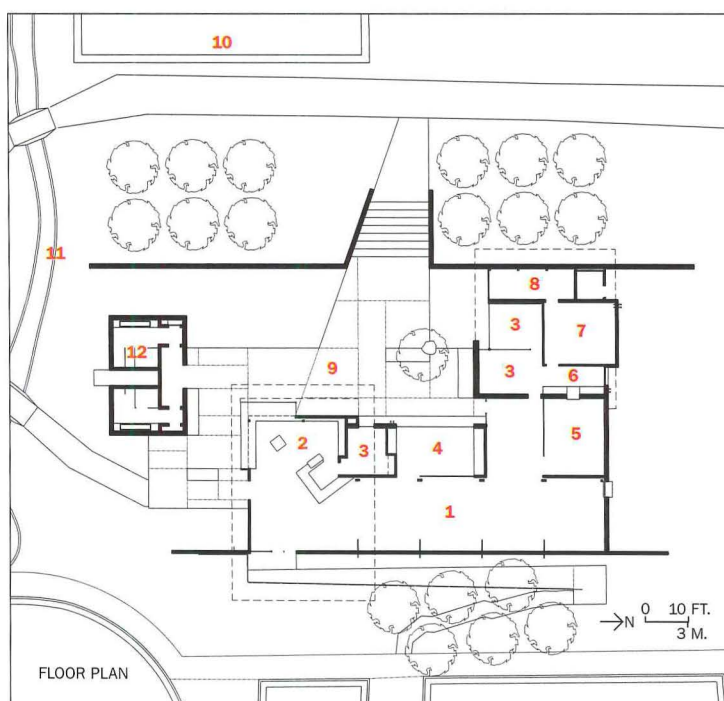
Capping the entrance volume (below), a butterfly-shaped roof, clad in rusted steel panels, echoes the shape of a nearby mountain pass. An inner courtyard (right) faces the Old Mormon Fort. CMU blocks and poured-in-place concrete compose the building's walls; pine timber beams support the roof. pine timber beams support the roof.





Perforated steel walls enclose the mechanical room, allowing a swamp cooler to pump a refreshing breeze into an outdoor courtyard and stair that double as classroom space (above). An inner set of rooms, containing administrative offices and a library, feature bright green walls (left). Galleries run parallel and culminate in a temporary exhibition space.

1. Exhibition space
2. Gift shop
3. Office
4. Library
5. Media room
6. Work room
7. Storage
8. Mechanical
9. Courtyard
10. Old Mormon Fort
11. Creek
12. Restrooms



trek ends at an entrance volume, a chunky wedge of acid-rusted steel that holds up a butterfly roof.

The entrance wall extends beyond the main building's L-shaped footprint, hinting that it is perhaps following a preexisting protective barrier. Restrooms occupy a separate structure just south of the entry, guarding it like a bastion. Inside the main building, a reception desk and gift shop greet visitors. An enclosed volume, painted a luminescent green, stretches away from the entry and contains offices as well as the library. Galleries span the length of this enclosure and, turning the corner, end in a temporary exhibition space with an exit to the courtyard, where a stair leads to the historic fort beyond.

The project's \$1.6 million budget precluded constructing a large indoor lecture hall, so Assemblage instead widened the stair to create an outdoor amphitheater. The designers cleverly ran return air from the air-conditioning system into a swamp cooler that pumps a refreshing breeze into the court.

Commentary

When Assemblage completed its plan for this project in 2001, the design represented a departure for Strain, who had gained local notoriety for using vibrant colors that pay homage to the Mexican architect Luis Barragán. While the bright green interior wall is characteristic of Strain, this building's exuberance stems more subtly from its eclectic material palette, which includes sandblasted glass and pine timbers. Strain also seems to have drawn inspiration from Predock's library—evidenced by the chunky entrance, which aspires to the monumentality of its neighbor.

Rising construction costs forced Assemblage to omit additional elements, such as a "lookout platform" above the restrooms. Strain says it can be easily built in the future. It would be a welcome addition. For now, smallness might be this project's biggest liability. Collapsing the pioneer narrative into such a tiny container feels unresolved without the counterpoint that only open spaces, like an observation deck, can provide. ■

A man in a light-colored, short-sleeved button-down shirt and dark trousers is walking a beagle dog on a leash in a large, green grassy field. The background consists of dense green trees under a blue sky with some clouds. The man is smiling and looking down at the dog. The dog is walking towards the right of the frame.

2:00 pm: After a number of late nights, Roscoe deserves a little one-on-one time.

8:00 pm: You finish your design at home, with your best friend resting happily at your feet.

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Loblolly House: In Stock and Ready to Ship

KIERANTIMBERLAKE ASSOCIATES FABRICATES THE LOBLOLLY HOUSE IN A WAREHOUSE, SETTING UP A NEW SUPPLY CHAIN AND ESTABLISHING A BASE TO REVOLUTIONIZE THE FIRM'S FUTURE PRODUCTION

By Russell Fortmeyer

Of all the names to give a house, only an architect would settle on the knotty word *loblolly*. Never mind that the house's spectacular site spills onto the wide-open Chesapeake Bay, with a rough cyclopean wall of coastal riprap keeping the water averted; the architects were instead inspired by the pine trees blanketing the grounds, which have the fortune of possessing an unforgettably boisterous vernacular name.

An unlikelier setting—Taylor's Island, Maryland—for an experiment in prefabricated housing perhaps could not be found, but the glorious site for Philadelphia-based KieranTimberlake Associates' Loblolly House is intended to serve just this purpose. Although years in planning, at press time the three-bedroom, two-bath, 2,200-square-foot house lacked only a few finishes and final landscaping after an on-site construction period of less than a month.

"We didn't know fully what we were going to get into with this project," says Steve Kieran, FAIA. "But we knew we wanted this to be a complete realization of a way to build more like the automotive or aviation industry." Kieran, along with James Timberlake, FAIA, laid out a fundamental philosophy of architecture production in their 2003 book, *Refabricating Architecture* (published by McGraw-Hill), which focused on building supply chains, prefabrication processes, and rediscovering the role of the architect as a master builder capable of singularly overseeing all



KieranTimberlake's Loblolly House mimics the surrounding pine trees in its raised structure.

aspects of design and construction. Both architects view Loblolly, designed as a second home for Kieran's family, as an opportunity to test the theories of the book without needing to convince a client to pay the bill.

Refabricating history

Failed prefabricated, or modular, housing projects pepper the history of modern architecture. Although early Modern architects embraced the spirit of the mechanized world, the buildings they designed mostly reflected the spirit of the age (think of the mechanized surface aesthetic of early European Modernism) more than they physically provided its solutions. In the realm of residential design, Buckminster Fuller's 1927 Dymaxion House—the first and perhaps reigning champion of humbling attempts at universal prefabrication—remains a touchstone for architects anxious to incorporate the streamlined production techniques and one-size-fits-all mentality of manufacturing into a building industry that has remained relatively unchanged in the past hundred years. Writing in *Arts Magazine* in October 1963, Reyner Banham called the Dymaxion a "radically new environment for domestic living" that parlayed Fuller's penchant for technological "hot-rodding" into a design concept the world needed: an energy-efficient, mass-producible modular house suitable for any site. Among the other few successes, Carl Strandlund's 1947 Lustron House—prefab steel homes with exterior porcelain-enamel-coated panel cladding—achieved some acceptance, with nearly 2,500 built prior to the developer's 1950 bankruptcy. While other stunted projects come to mind—Albert Frey's 1930 Aluminaire House or Matti Suuronen's wacky, bubblelike 1968 Futuro Houses—interest in Modern prefab residences waned until a resurgence in the 1990s spurred in part by the public's rediscovery of Midcentury Modern design, digital and technical advances in mass-fabrication techniques, and the promotional effects of

CONTINUING EDUCATION

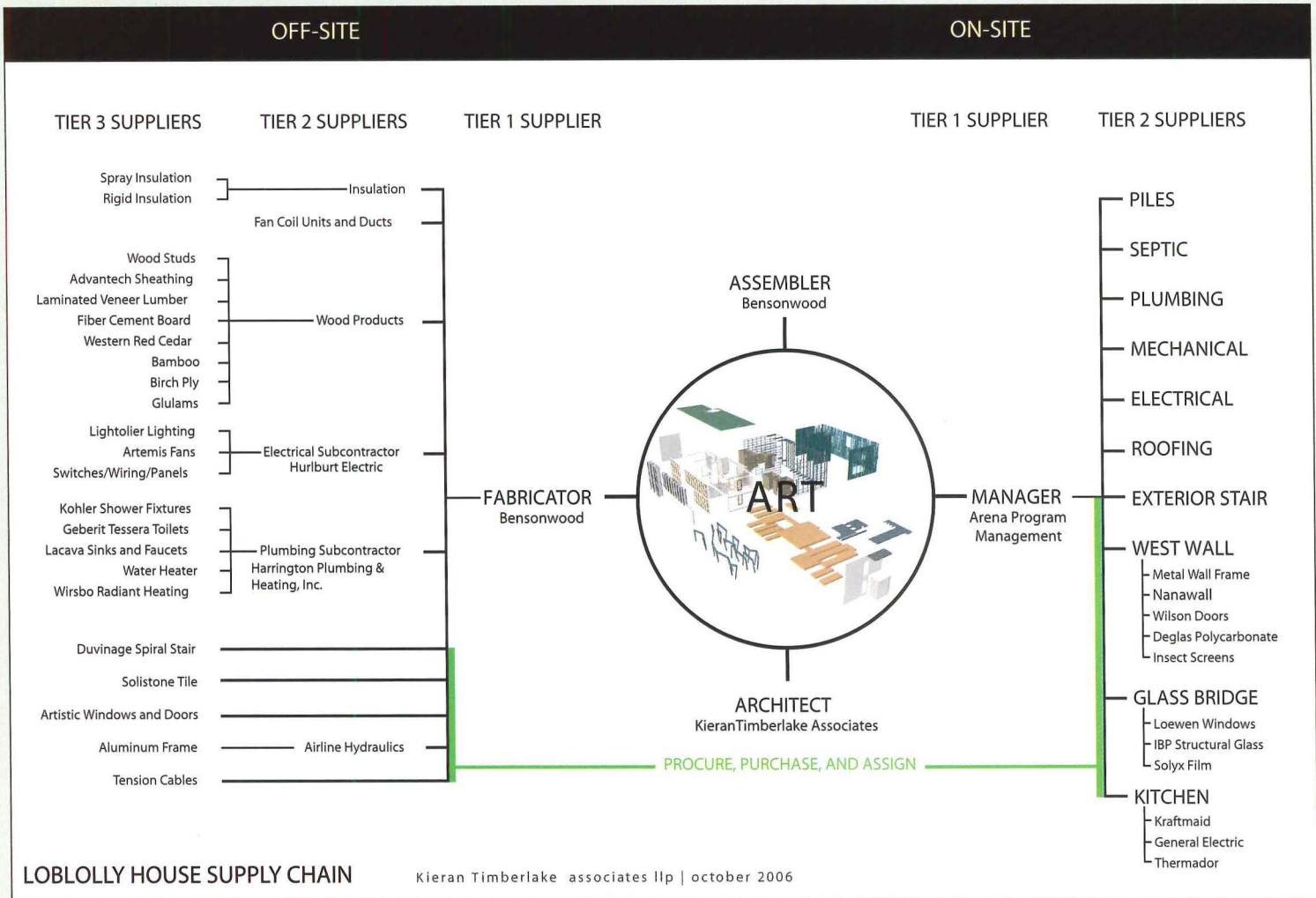
Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/AIA Continuing Education article. To receive credit, turn to page 192 and follow the instructions. Other opportunities to receive Continuing Education credits in this issue can be found in the sponsored sections beginning on page 203.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. Discuss approaches to prefabricated housing.
2. Describe the component approach to house building.
3. Compare component process building to standard house building.

For this story and more continuing education, as well as links to sources, white papers, and products, go to archrecord.construction.com.



KieranTimberlake, along with its fabricator Bensonwood and construction manager Arena Program Management, developed a multitiered supply chain to plan how materials would integrate into the final on-site assembly diagram. For the architects, this effort represented the foundation for a true prefab process.

consumer publishing, most notably the cheerleading *Dwell* magazine.

In his essay, “The Great Gizmo,” in the September 1965 issue of *Industrial Design*, Banham neatly summarized the progressive objectives of American industrial initiative embodied in prefab: “They do not require high skill at the point of application, they leave craftsmanship behind at the factory.” While nearly all Modern prefab houses—particularly those so recently in consumer vogue—share this ambition of realizing standardized components, wide application and adaptability, and quick assembly, few designs have achieved extensive implementation. Experiments in mass-customization of housing by the federal government, such as George Romney’s 1970s programs as director of the Housing and Urban Development agency, fell apart when funding evaporated. The grand exception to these trials, of course, clogs highways from coast-to-coast: flat-bed, truck-mounted, factory-built “traditional” homes designed to meet the hauling requirements of the Interstate Highway System. Lately, these units have achieved a certain dreaded notoriety as so-called “Katrina houses.”

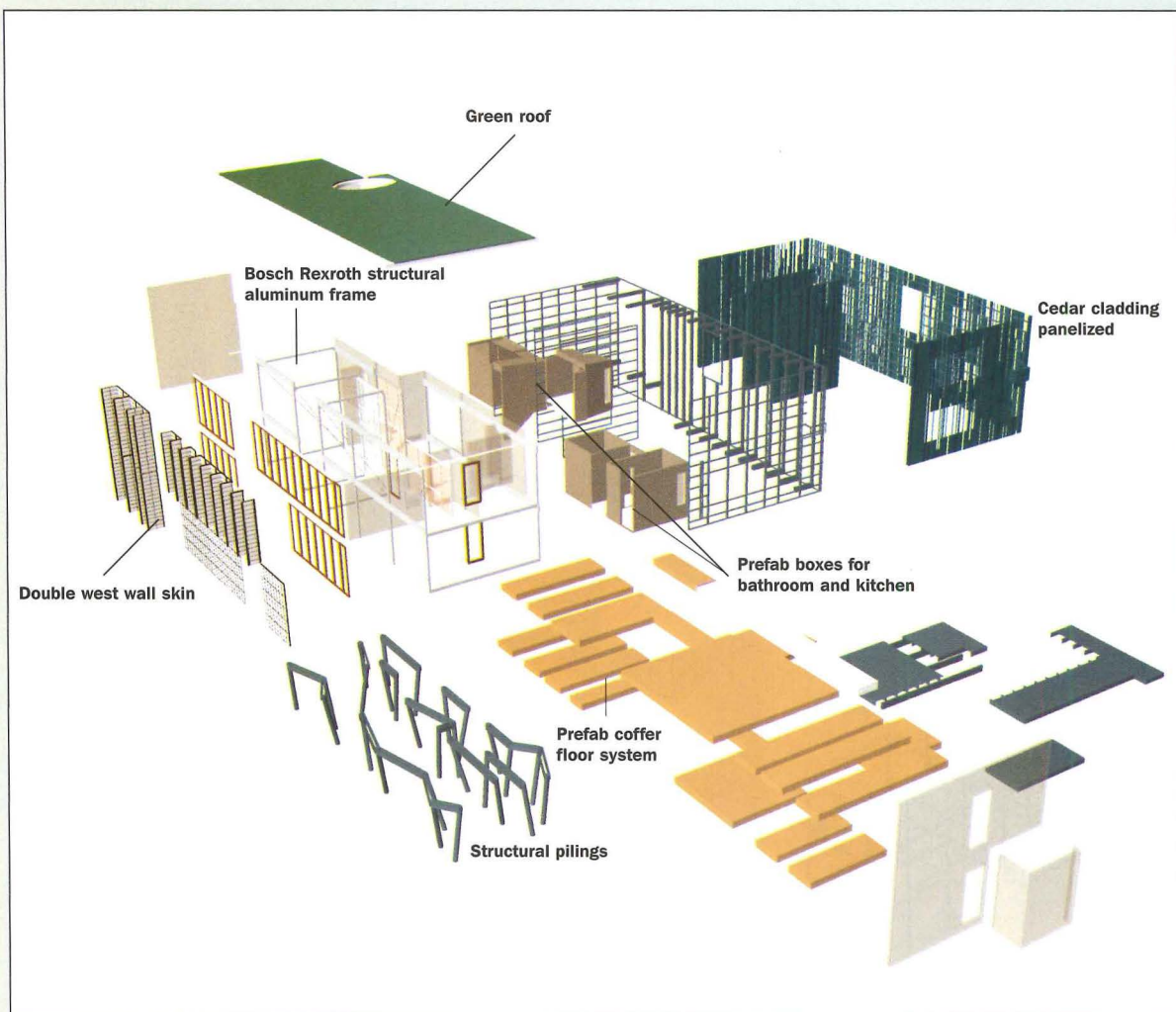
From the outset, KieranTimberlake Associates (KTA) resisted such conventions. Instead, it was intent to realize a hybrid version of prefab with flexibility in its design to permit a variety of floor plates and programs, even perhaps to eventually find use in commercial and multi-

family housing projects. It’s not a new house the architects were after, but rather a new production process for architecture or, as they argue in the book, a transformation of the architect into something akin to a process engineer. “There is no incentive to change,” Timberlake says. “But, like the car industry, architecture and design will eventually develop a product that works anywhere in the world. At least, it’s good to dream that way.”

Not your father’s prefab

KTA’s Loblolly departs most wholly from past prefab models through its innovative component-based design, in which KTA minimized the number of parts. “We want materials we can take apart like used auto parts, as opposed to ending up with rubble,” Kieran says. Unlike many houses, even those built with sustainability in mind, Loblolly’s components, or elements, as the architects call them, could be unbolted and reconfigured at another site for a different house or, as the architects like to demonstrate in their public lectures, sold off in pieces on eBay.

Both Kieran and Timberlake credit the advances made in digital parametric modeling for enabling the project to move forward. Created in AutoDesk’s Revit, one of the most widely used building-information-modeling (BIM) programs, Kieran says the software provides a previously unattainable level of certainty. “We had a new depth of control and a new depth of specificity, geometric certainty, and three-dimensionality, where we could just order materials directly without going through a shop drawing process,” Kieran says. He is still somewhat amazed that he could sidestep one of the more time-consuming, paper-wasting jobs of the contemporary



Steve Kieran says the entire Loblolly House fit on two tractor trailers for delivery to the site. The architects reformulated typical house design into larger elements that combine a variety of CSI building materials into simple units, such as floor cartridges, that could be easily installed in the field.

architect. This precision in design entitled the architects to divide the house into a series of major elements: uniform “cartridges” for floors and walls; a standard, off-the-shelf aluminum structure; uniform exterior rain screen cedar panels; and factory-built bathroom and kitchen modules.

These elements fuse, in design and specification form, the Construction Standards Institute (CSI) divisions architects and consultants typically use. Kieran and Timberlake both feel the CSI divisions limit the possibilities for the integration of building components. “CSI doesn’t disappear, the products still exist,” Kieran says. “They just aren’t isolated any longer, they’re integrated.” But for this to work, the architects needed to establish a new framework for how each conventional material would then be combined into the unconventional elements used in on-site assembly, while also identifying the party responsible for the work—be that the on-site contractor or the prefab assembler.

The supply chain gang

Drawing directly from its book, KTA set about early in the process creating a supply chain of materials and products that could feed the assembly line of elements that would constitute the house. Timberlake considers this the most difficult aspect of the firm’s attempt at true prefabrication because, he notes, the “construction industry is so fragmented, with no control of the supply chain and new suppliers starting up every day.”

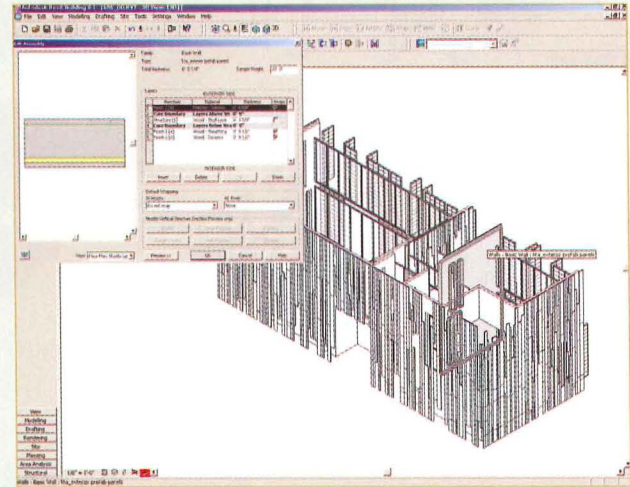
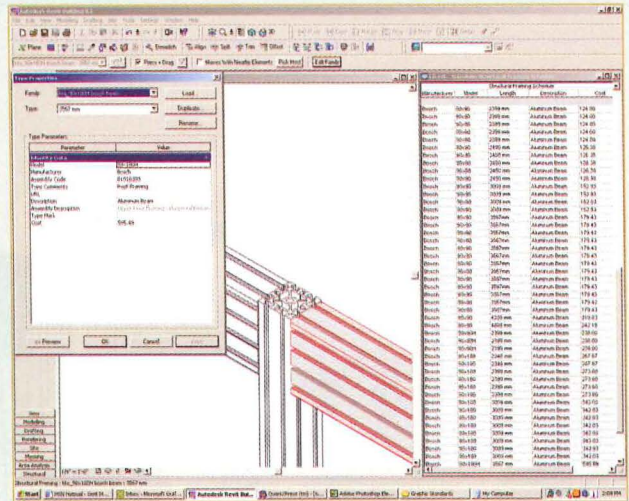
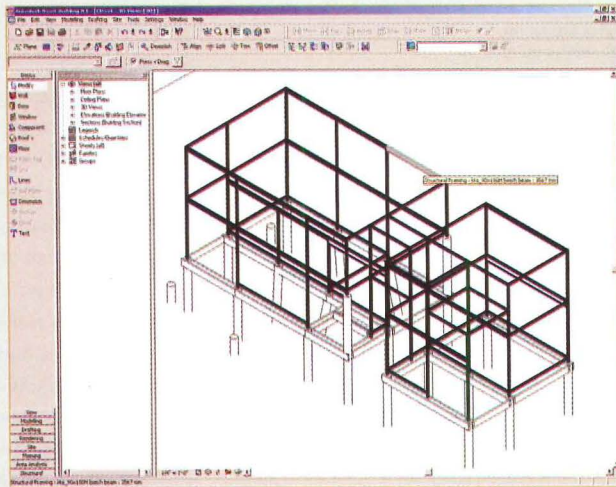
The architects divided the chain between three tiers of suppliers and a final assembler, much in the way automotive companies outsource major components of each car with final assembly at factories throughout

the world. In the case of the Loblolly House, Bensonwood—a New Hampshire-based timber-frame-house company—acted as both a supplier and the final assembler. Bensonwood recently completed a quasi-prefab house as part of the Massachusetts Institute of Technology’s Open Prototype Initiative, which streamlines a design-build approach for high-quality custom houses with quick construction schedules. Bensonwood, as well as a construction manager, Arena Program Management, collaborated with KTA to devise the specifics of the supply chain for Loblolly.

Marilia Rodrigues, a project architect for KTA, helped develop the supply chain, which then fed her work on the virtual model within the Revit software program. Before it became ubiquitous, KTA adopted parametric modeling into its practice after finding inspiration from a 2002 trip the architects took to Boeing’s facilities in Everett, Washington. This led to initial development of the Loblolly House on an early version of Revit. KTA’s conversion to BIM hasn’t been easy; as Timberlake says, “Having learned to draft with a T-square, the hardest part is learning how to work through the fingers and palms of others.” Still, both Timberlake and Kieran feel so strongly about the need to evolve their practice, they require BIM to some degree on all projects.

Toward the beginning of the project, the team settled on an extruded aluminum frame structure manufactured by Bosch Rexroth and typically used in factory and temporary structure applications. Knowing the exact specifications of the structure enabled Rodrigues to build a true virtual model with a design tolerance of only a few millimeters, an impossible feat with conventional materials like wood or steel. “With the model,

The architects developed a comprehensive building information model (BIM) using the Revit software program. The model enabled them to precisely order the aluminum frame (below and right), as well as embed supply-chain information regarding other materials, such as the exterior cedar siding (below right).



we see the house as existing," Rodrigues says, which then allowed KTA to order finish items and casework directly. "It's amazing how much our industry relies on that final field measurement, which we didn't need."

Bosch never intended its frame system for architectural use, so KTA developed a collection of five connectors that would meet the structural requirements of a three-story house with its requisite dead, live, and wind loads. While the connectors were expensive to develop (KTA is pursuing patents for its designs), the frame system's reliable measured precision of a 1-millimeter tolerance and the fact the frame could be constructed on-site in a few days won the architects' favor. Even with advanced techniques in computer-enabled steel fabrication, only aluminum, with its silicon-based alloy blend, can achieve this precision without the need for shimming in the field—more than offsetting any cost differences. Additionally, the frame system's grooved channels connect to cartridges, windows, and sliding doors through the use of T-blocks (2,100 in all), which screw the house together.

KTA embedded supply-chain information in the Revit model, so a click on any framing element or finish material displays, such as dimensions, material, and supplier—effectively combining design and specifications into one digital locus. The architects converted the model into AutoCAD, which allowed Bensonwood to convert it into its fabrication software, CadWorks.

"It's elementary, my dear" architecture

The Bosch frame sits on pilings that were put in place over three days in February 2006 during initial site work. According to Chip Arena, the con-

struction manager, the site needed extensive stabilization, since it's almost a marshland in consistency. Soggy grass notwithstanding, the exposed waterfront site explains why the Loblolly House stands on pilotis, though Kieran says hurricane-style flooding is extremely rare on the island. Arena oversaw site utility work, as well as construction of the timber frame connecting the pilings as a base for the Bosch system.

The site, a fragile ecosystem and one of the best places in the country to see bald eagles, benefited from the fact that little area for storage of materials or for staging was required, as elements arrived on-site in a just-in-time-for-assembly manner. The project's swift construction schedule began in late September; on October 4, for example, during a site visit by Kieran, assemblers from Bensonwood unloaded and, with a small crane, placed the roof on the house in nearly 20 minutes. (Kieran intends to plant a sedum green roof in the spring.)

The roof and floors consist of 19 cartridges, which were the main elements fabricated in New Hampshire by Bensonwood and by far the most complex technological innovation of the house. KTA segmented the cartridges into two types: smart, containing radiant heating pipes, electrical distribution and outlets, cooling microducts, and insulation; and dumb, containing only insulation. Both types of cartridges basically consist of standard sheets of plywood (to ease construction and maintain the modular nature of the elements) sandwiched together with conventional wood two-by-fours. The cartridge design also allows access areas for future maintenance.

The smart cartridges, used exclusively for the floor, have utility "whips" that tie into a main supply channel on each of the two occupied



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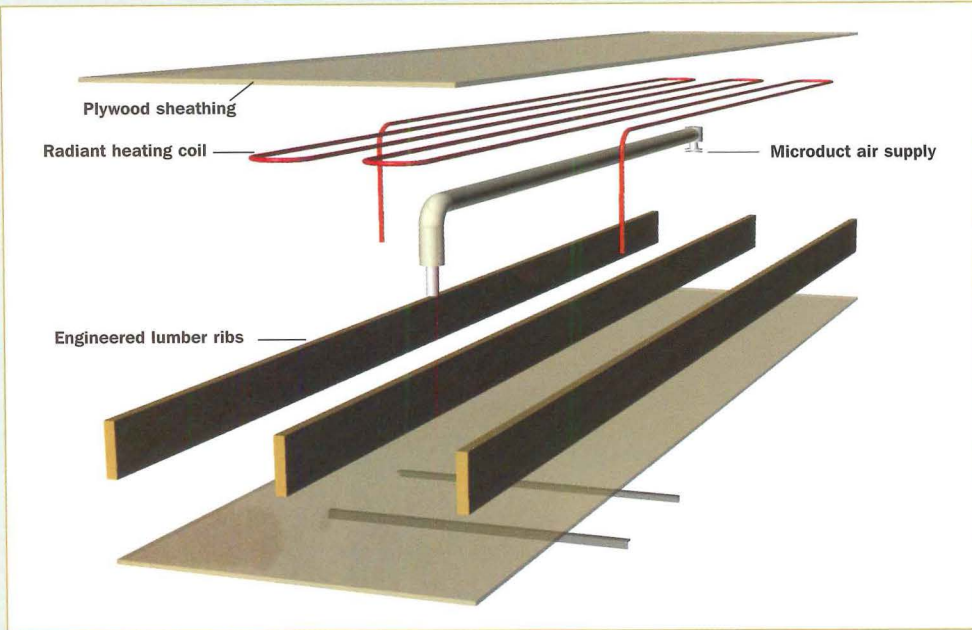
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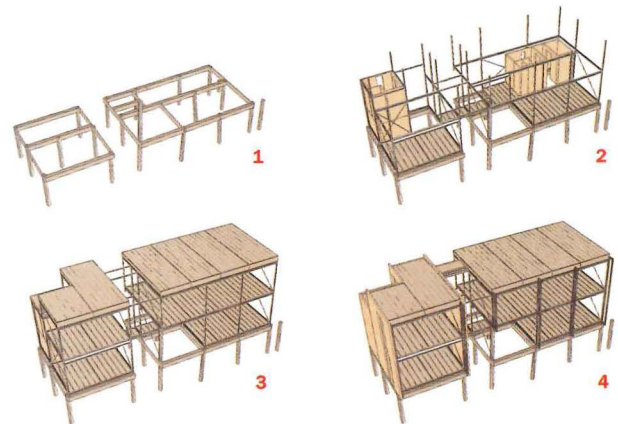
Each smart cartridge (left) for the floor contains building systems that terminate at connectors, which then tie into main service channels on each floor and back to mechanical-room blocks, where the systems “quick-couple” into supply units. Cartridges, as well as blocks, were fabricated in a New Hampshire facility (below left and middle). The extruded aluminum frame (below right), has a precise tolerance of only 1 millimeter.



floors of the house, eventually connecting to mechanical rooms on either end. The mechanical-room blocks, as well as the bathrooms and kitchen, arrived on-site fully framed and nearly finished, moved by crane into place to await final connection. Dumb cartridges make up the exterior walls and hang so the aluminum frame remains on the interior to prevent exposure to moisture. Cement board attached to the exterior face of the cartridges seals the house, while a varied pattern of cedar boards agglomerated into units clip onto the frame, acting as a rain screen and aesthetically nodding to nearby loblolly pines. On-site contractors will fill in gaps from the prefab process, such as putting down the green-dyed bamboo flooring in the main living areas and ceramic tile in the bathrooms. (Bensonwood declined to do both finish items in its shop because of shipping concerns.)

Bensonwood, best known for producing and erecting residential timber frames, but not the houses themselves, retooled its assembly line to fabricate the cartridges and the modules. Hans Porchitz, Bensonwood’s project manager, says once he and his colleague’s understood KTA’s ambition, as well as the details of how every component would interconnect, production of each element went from raw wood stock to finished material with a click of a button as the CadWorks model directly fed the company’s computer numerical control, or CNC, machines. Bensonwood’s fabricators, as well as subcontractors, like electricians and plumbers (a first for the company), then assembled the materials into the elements for final delivery.

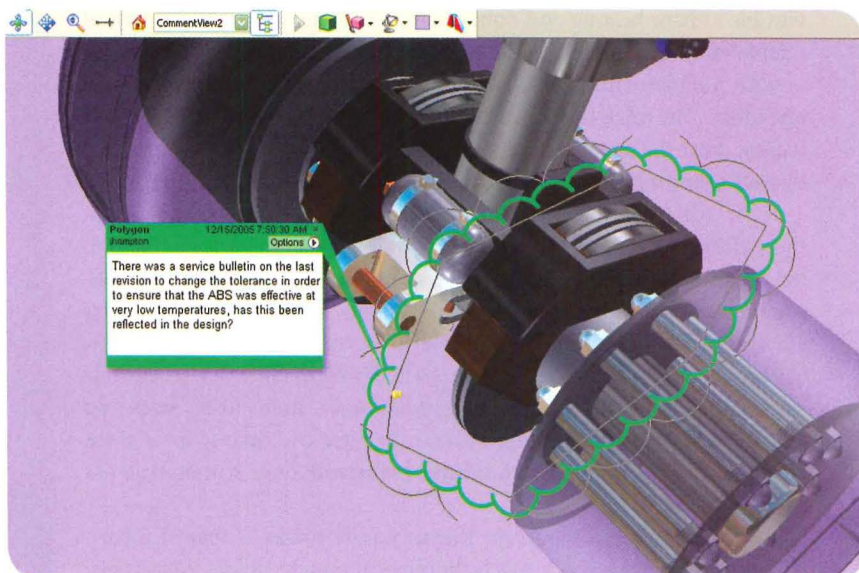
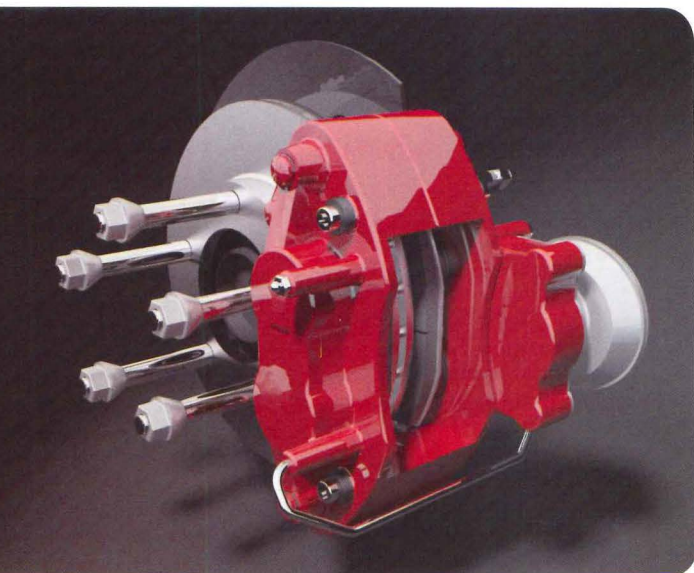
1. Wooden base frame and pilings in place
2. Aluminum frame, first floor, and utility modules added
3. All floor cartridges in place
4. The house as it appeared October 4



Putting it together

For Bensonwood, the pinch points of the project occurred at the connections of the frame, elements, and systems. “There was no standard, nothing in the book you could use,” Porchitz says. “That’s really something missing in the construction industry as a whole.” Each element, from the aluminum frame to a cartridge to a module, received a bar code (tracked within the Revit model) so that on-site assemblers knew exactly where to install them.

Aside from the aluminum frame connectors, the house uses an innovative system of electrical plug connectors that qualify under codes as junction boxes. This “quick-coupled” system allowed each cartridge’s whip to plug into a main electrical channel that could then be plugged directly



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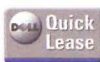
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into the house's electrical panel, making field connections foolproof. Flexible radiant heating and domestic water tubing connects at a wall of manifolds in each mechanical room; heating is thermostat-controlled based on each room's environmental needs, but the manifolds also enable manual operation. The microducts, which Kieran says he included at his family's request, since the marshlands can get sticky hot in the dead of summer, also tie back to the mechanical rooms to small air-handling units.

Although the house incorporates heating and cooling systems, the architects designed the entire west wall to open in various stages to the outside, in order to, as Kieran says, tune the house to shifting environmental conditions. A NanaWall system of glass doors provides environmental isolation, while an exterior-mounted, overlying aircraft-hangar-type door system acts as a separate bifold shading device, entirely electrically operated. The house's appearance—three closed sides and one entirely open—encourages Kieran to refer to Loblolly as a “duck blind,” one of the ubiquitous hunting accommodations scattered across Taylor's Island.

The other comparison Kieran fondly makes is that of a barn raising, but few barns pack this technological punch. Unlike the garbage heap of unsuccessful prefab experiments of recent decades, which, in Kieran's words, failed to understand the need for predictable, standardized components and connections, the BIM model of Loblolly has proved effective in pulling a theoretical prototype together. “As soon as you get materials out in the field and they don't fit, you're into handwork, and then you might as well have done the whole thing by hand,” Kieran muses. “That problem is gone.” ■



Loblolly House, pictured above on October 4, was completed last month.



AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- ◆ Read the article “Loblolly House: In Stock and Ready to Ship” using the learning objectives provided.
- ◆ Complete the questions below, then fill in your answers (page 269).
- ◆ Fill out and submit the AIA/CES education reporting form (page 269) or download the form at archrecord.construction.com to receive one AIA learning unit.

QUESTIONS

1. Loblolly is different from past prefab houses in which way?
 - a. architectural style
 - b. componentized design
 - c. spaciousness
 - d. cost
2. Revit building-information-modeling software eliminated which process?
 - a. shop drawings
 - b. inspections
 - c. foundation pouring
 - d. construction bidding
3. At Loblolly, the architects needed to establish a new framework for how each conventional material in the house would do which?
 - a. be put into CSI divisions
 - b. be integrated into elements
 - c. be coded for assembly
 - d. be estimated for labor costs
4. What aspect does KTA consider to be the most difficult part of prefabrication?
 - a. construction workers
 - b. weather conditions
 - c. supply chain
 - d. local codes
5. The advantage of using an extruded aluminum frame is which?
 - a. it is stronger than wood or steel
 - b. it is more attractive than wood or steel
 - c. it is more cost-effective than wood or steel
 - d. it has tighter tolerances than wood or steel
6. Supply-chain information is incorporated into which software?
 - a. Revit
 - b. AutoCAD
 - c. CadWorks
 - d. all of the above
7. In the Loblolly House, the exterior walls consist of which?
 - a. dumb cartridges
 - b. smart cartridges
 - c. aluminum frame
 - d. bamboo
8. Both smart and dumb cartridges consist of standard sheets of plywood and which?
 - a. metal studs
 - b. wood studs
 - c. plastic channels
 - d. aluminum channels
9. The electrical plug connectors that can be plugged directly into the house's electrical panel make field connections which?
 - a. costly
 - b. labor intensive
 - c. foolproof
 - d. difficult
10. The advantages of the KTA-developed system include all except which?
 - a. the house is cheaper to build
 - b. the house needs little area for staging materials
 - c. the house is quicker to assemble
 - d. the house uses fewer field laborers

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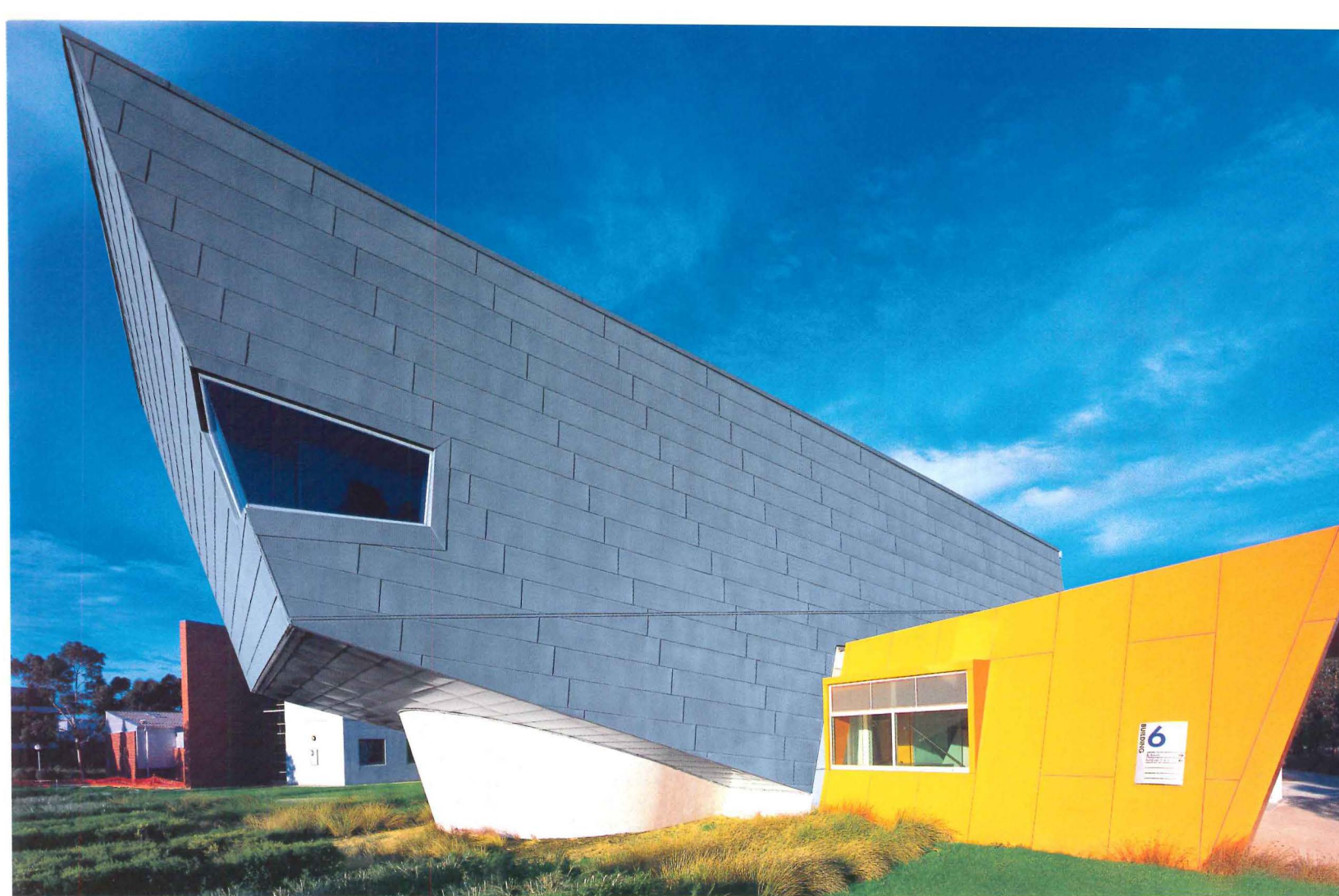
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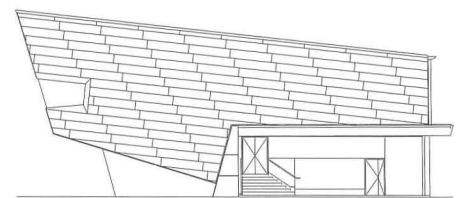


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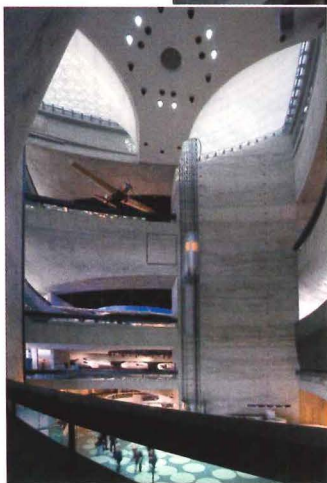


Zoomy Mercedes-Benz Museum ties curvy structure with complex spatial configuration

At Stuttgart's recently opened Mercedes-Benz Museum, UN Studio has created an almost unfathomably complex circulation route. The building borrows the top-down organization of Frank Lloyd Wright's Guggenheim Museum in New York. But unlike the single-ramp configuration of the earlier spiraling museum, at Mercedes-Benz two ramps intertwine and lead visitors through exhibition spaces arranged propeller-like around a triangular atrium.

One of the two paths takes visitors through a series of five single-story rooms devoted to the car and truck collection. The other route outlines the company's history in a series of seven double-story rooms (see section, page 130). Each stacked trefoil-shaped floor unit is rotated 120 degrees from the one below it and contains two exhibition areas with floor elevations that differ by about 3 feet.

This twisted (literally) spatial arrangement is integrated with the building's equally complex poured-in-place concrete structure. The material is almost completely exposed inside the building because it is the ideal backdrop for the exhibits, explains the architect. "The car becomes much



Although the exterior is clad in aluminum panels (above), the poured-in-place concrete structure of the Mercedes-Benz Museum is almost completely exposed inside the building (left).

shinier in the context of the concrete," says Ben van Berkel, UN Studio co-founder.

The exhibition-area floors, which are made primarily of concrete but have steel construction at their centers to reduce weight, are supported by the circulation ramps and elements the architect has dubbed the "twists." These curved box girders transfer the loads between the three vertical circulation cores that rise in the atrium

and a series of four-legged steel columns at the building facade. The twists are square in section where they meet the core, but become deformed and sloped as they extend toward the building facade.

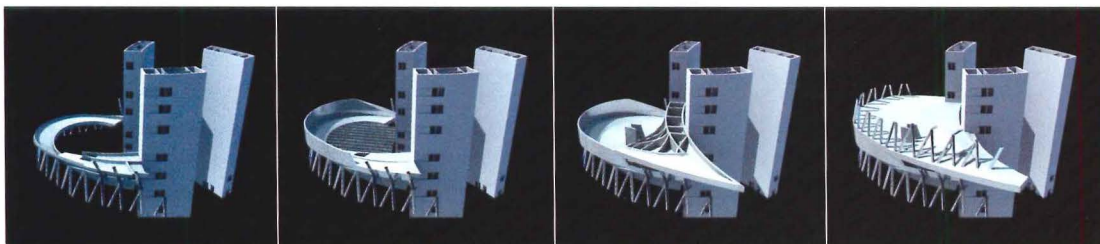
The twists, and the building as a whole, are so sculptural that it is often difficult to distinguish one architectural element from the other. "The ceiling slowly transforms into the wall, which transforms into the floor," says van Berkel.

The configuration of the 270,000-square-foot museum makes possible column-free spaces

with clear spans of almost 100 feet and allows for the display of vehicles as large and as heavy as fire trucks and buses. "The span is similar to a highway bridge with the load of a highway bridge" says Werner Sobek, the project's structural engineer. This point was of particular importance to the client because the building the museum previously occupied did not have bearing capacity suitable for the presentation of commercial vehicles.

Ductwork and other services are integrated directly into the curved twist elements, which contain voids large enough for maintenance-staff access. These mechanical spaces are like "another building woven inside the museum," says Sobek.

Before construction began, the project team built a full-scale mock-up of one of the twists. Contractors used the mock-up to learn how to form the double-curved surfaces. The process also helped determine the ideal concrete formula and how best



The museum's structural elements include the vertical cores, ramps, "twists," and four-legged steel columns.

Tech Briefs

to achieve a homogeneous surface where two formwork components joined, according to Jochen Köhler, a project manager for Peri GmbH, the museum's formwork subcontractor.

The challenge of realizing the daunting project was magnified by the client's requirement that the building be completed by May 2006, in time for the deluge of soccer fans that would converge on Stuttgart for the World Cup. With about eight months for preparation of construction documents, and two years for execution, "It was one of the speediest projects we ever worked on," says van Berkel.

In order to complete the museum on such a tight schedule, the design and construction team relied on a building information model shared by all project participants and managed by the consultant Arnold Walz and UN Studio. The ability to read and create three-dimensional drawings was one of the contractor selection

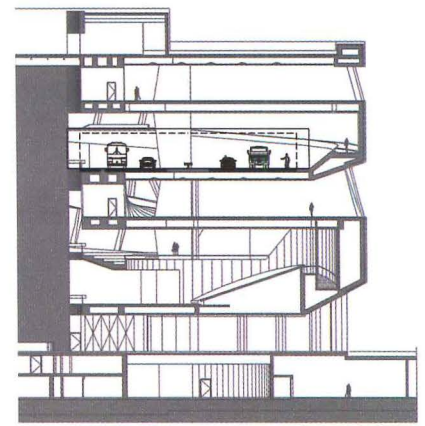


criteria, according to the architect.

The data contained in the 3D "mother" model was especially useful to the concrete work. The steel

reinforcement encased inside the building's many compound curves, for example, could not be described in two dimensions. "The length would be wrong due to the 'map of the world problem,'" says Sobek, referring to the distortion that occurs when the spherical shape of the Earth is flattened into 2D.

Spatial coordinates from the model were also used to precisely place the individual formwork elements on the construction site with a global positioning system. "For this



The structural configuration of the museum provides column-free exhibition areas spanning almost 100 feet and capable of supporting objects as heavy as buses and trucks (directly above). To test the concrete mix and determine how to achieve a homogenous surface where two formwork elements meet, the construction team built a full-scale mock-up of a twist segment (above left). The formwork for the underside of a twist, with ties located, is installed on the building site (left).

kind of building it was the only possible way to bring our elements into position," says Köhler.

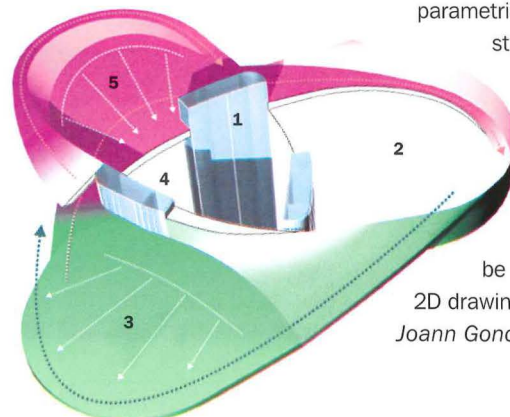
Although it was crucial to the project's success, the team did not rely solely on the model. "There were parts you had to do in 3D and there were parts you could do in 2D," says Köhler. Peri used traditional shop drawings to describe pieces of the building that did not contain compound curves and were made with typical formwork components. Köhler says it was most efficient to have the majority of team members "work in their 2D standard way and have a few additional experts that have knowledge and experience in 3D work."

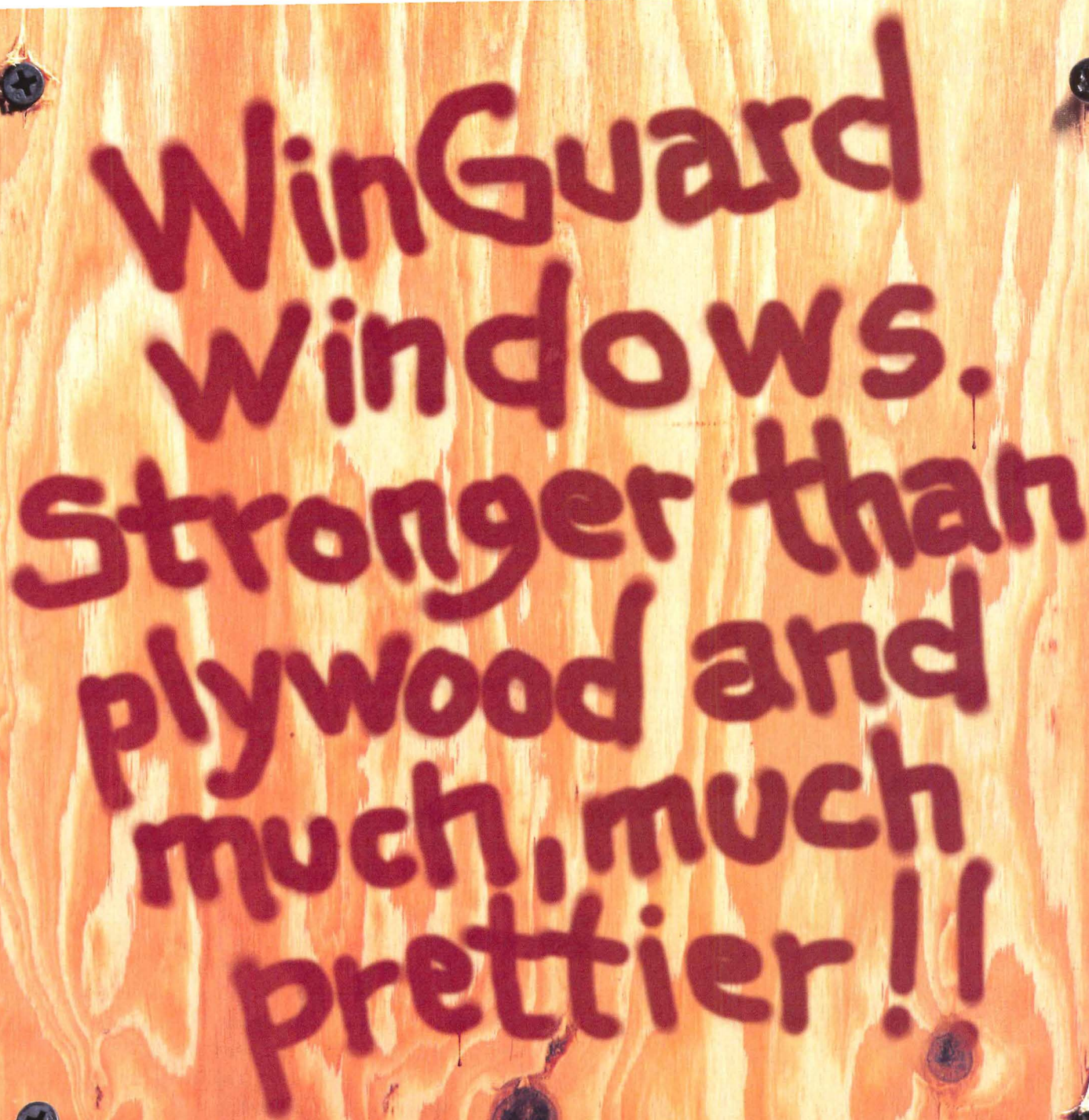
Van Berkel says that bringing the project to fruition required both traditional 2D drawings and the parametric model, because "construction is not yet as advanced as the car industry" in its use of building information modeling. But, he predicts, the day when a project will be executed without any 2D drawings "is not so far away." Joann Gonchar



The museum consists of stacked trefoil-shaped elements, each with two propeller-shaped spaces—one for vehicles and the other for historical displays.

1. Vertical core
2. Void
3. Car/truck collection
4. Atrium
5. Historical displays





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Architect on the project was Valerio, Dewalt, Train Associates, Inc., Chicago. General contractor was Pepper Construction, Chicago.

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Roofing Contractor: Sullivan Roofing, Inc.
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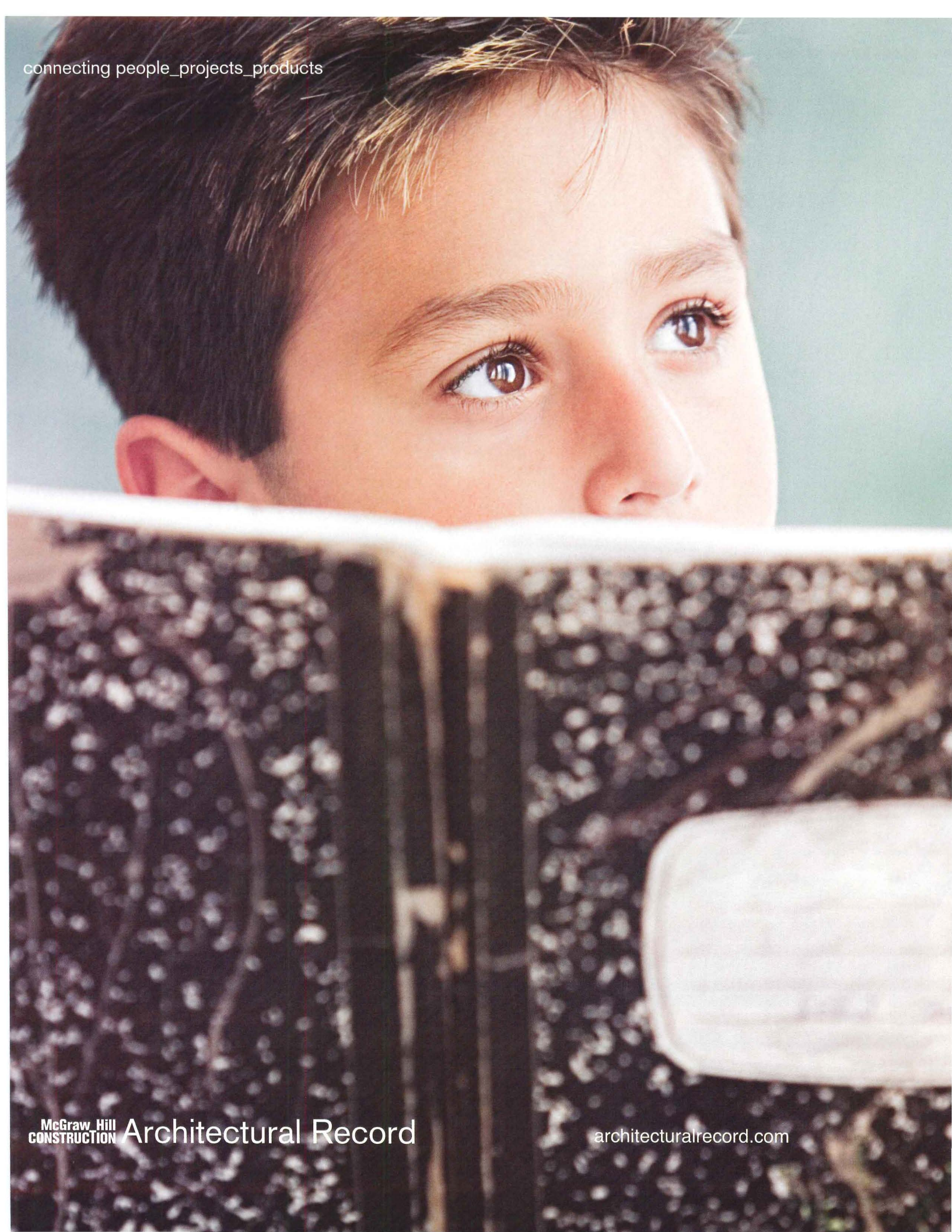
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CONTINUING EDUCATION
Section: November 2006

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205-209 American Hardwoods Enhance Healthy, Healing Spaces
Meeting the exacting requirements of aesthetics, sustainability, durability
Provided by The Hardwood Council

LEARNING OBJECTIVES:

- Discuss the latest research on the use of natural materials in healing environments
- Identify the performance characteristics and qualities of American hardwoods in healthy spaces
- Evaluate the occupant-centered design considerations in specifying hardwoods
- Analyze considerations for hardwood care and non-toxic cleaning in health care settings



211-215 Western Red Cedar Shakes and Shingles: A Sustainable, Versatile Roofing Choice
Durable and weather-resistant, cedar roofs blend natural aesthetics with performance
Provided by The Cedar Shake and Shingle Bureau
By Lynne Christensen, MBA, CAE

LEARNING OBJECTIVES:

- Explain the benefits and characteristics of cedar shakes and shingles
- Understand why cedar shakes and shingles are fire retardant and hurricane resistant
- Identify wildfire mitigation strategies
- Discuss the criteria for maintaining a long-lasting cedar roof



217-221 Green Building: Essential Design Strategies For a Sustainable Future
Leveraging Environmentally Efficient, Economic Solutions with Solar Insulating Glass, Ceiling Recycling Programs, and Water Conservation
By Barbara A. Nadel, FAIA

LEARNING OBJECTIVES:

- Evaluate how to reduce environmental impact and building energy costs through sustainable design
- Identify performance characteristics of solar insulating glass
- Analyze the sustainability benefits of a recycling program for mineral fiber ceiling tiles
- Explain why water conservation is important to the environment
- Implement water conservation strategies with water efficient plumbing fixtures and valves, including high efficiency toilets, dual flush toilets, waterless urinals, and electronic faucets



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American Hardwoods Enhance Healthy, Healing Spaces

Meeting the exacting requirements of aesthetics, sustainability, durability

Provided By: The Hardwood Council

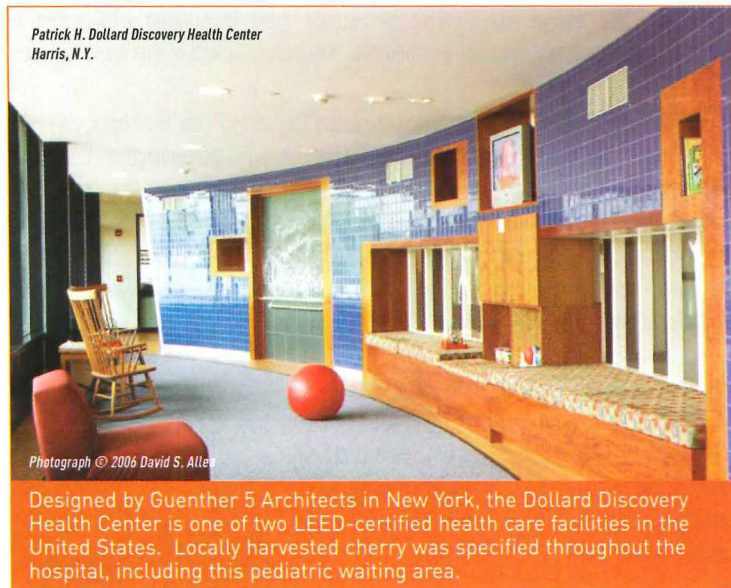
Hardwood floors, cabinets, furniture and trim have brought warmth and beauty to the built environment for centuries. With more than 20 species offering aesthetics, durability and ease of maintenance, American hardwoods are an important component of green, occupant-centered design and architecture. They are specified and used effectively in buildings where sustainability, life-cycle costing and enhancing occupants' health and well-being are design priorities.

Health care settings in particular, from retirement and assisted living facilities to acute care hospitals, are turning to hardwoods to "warm up" their interiors. Thanks to low-volatile organic compound (VOC) wood finishes and non-toxic cleaning products, hardwoods are used in public and patient areas to create a stress-reducing, home-like environment that promotes healing while standing up to the health care sector's rigorous requirements for durability, indoor environmental quality and infection control.

American hardwoods not only meet health care's unique challenges, they also are part of the green building movement gathering steam in commercial, institutional and residential settings. They contribute to project cost-effectiveness and sustainability, environmental quality and user satisfaction—all while bringing a sense of hospitality and visual richness to the built environment.

American Hardwoods Defined

Hardwoods are deciduous trees that have broad leaves, produce a fruit or nut and generally go dormant in the winter. American forests grow hundreds of varieties of hardwood trees



Patrick H. Dollard Discovery Health Center
Harris, N.Y.

Photograph © 2006 David S. Allen

Designed by Guenther 5 Architects in New York, the Dollard Discovery Health Center is one of two LEED-certified health care facilities in the United States. Locally harvested cherry was specified throughout the hospital, including this pediatric waiting area.

that thrive in this country's temperate climates. In fact, the U.S. has the world's most diverse temperate hardwood forests, with more variety in such hardwood species as oak, ash, alder, maple, cherry, hickory and poplar. The most prevalent hardwood species in the U.S. is oak: together, red and white oak represent 52 percent of all hardwood trees growing in the U.S. forests.

As temperate species, American hardwoods have growing seasons that produce the growth rings that result in the varied grain patterns when sawn. In contrast, tropical species' appearance is more uniform and patternless precisely because they do not have distinct growing seasons.

Research and Environmental Design

An emerging body of research and observation is showing that natural materials are more than substitutes for toxic building materials: They are important in achieving occupant health and well-being, stress reduction, healing and increased productivity.

In a 1984 study, Roger Ulrich, Ph.D., Professor of Architecture and Landscape Architecture at Texas A&M University, showed that patients recovering from gall bladder surgery recovered more quickly and required less pain medication if their hospital room window had a view of trees rather than a brick wall—findings with clear cost-related implications. Some 20 years later, the Center for Health Design in Concord, California, published a watershed report written by Ulrich and others. It summarizes the findings of more than 600 studies that link design decisions to clinical outcomes. Research is substantiating that patients in home-like, reduced-stress health care environments require less medication or experience shorter hospital stays, thereby reducing costs. Natural materials including native hardwoods are an important part of these settings.

Patients in home-like, reduced-stress health care settings may require less medication or experience shorter hospital stays.

"It's been proven that nature really lowers your anxiety level," says Ana Maregatti, IIDA,

CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **American Hardwoods Enhance Healthy, Healing Spaces**. To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit, answer the questions on page 209, then follow the reporting instructions on page 224 or go to the Continuing Education section on archrecord.construction.com and follow the reporting instructions.

LEARNING OBJECTIVES

After reading this article, you will be able to:

- Discuss the latest research on the use of natural materials in healing environments
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- Analyze considerations for hardwood care and non-toxic cleaning in health care settings

President, Maregatti Interiors, Indianapolis, Indiana. "Ninety percent of people will say they feel best somewhere outdoors. It could be in the mountains, by a creek or the ocean. So how do we bring the outdoors inside to create a healing environment with the natural materials? We're not only talking wood, but we also bring a lot of natural stone, slate floors, or glass to show some transparency in the space to make it more nurturing and inviting."

Throughout the design and building community there is growing enthusiasm for incorporating nature into the built environment. Key underpinnings of this trend include:

Biophilia: Popularized by Harvard biologist Edward O. Wilson in his 1984 book, *Biophilia: The Human Bond with Other Species*, biophilia is defined as "the connections that human beings subconsciously seek with the rest of life." As translated into the built environment, biophilia signifies such design features as use of local, natural materials; natural ventilation and opportunities to have contact with nature both physically and visually.

The Planetree Principles: In 2003, Susan B. Frampton, Laura Gilpin and Patrick A. Charmel published the Planetree principles for patient-centered health care in their book: *Putting Patients First, Designing and Practicing Patient-Centered Care* (Jossey-Bass).

The Planetree model aims to transform health care settings from high-tech and sterile to warm, comfortable, nurturing, stress-reducing and people-centered. In the Planetree approach, design can help to create a healing environment and is an integral part of the patient's experience of health care.

When it comes to non-toxic and natural materials, the authors note: "The use of different textures is also important to minimizing the institutional feel of a hospital. Our homes are filled with a variety of rich textures and the presence of different tactile elements can remind patients of home." They add that designers and architects can achieve that objective by using, among other things, wood furnishings and cabinetry throughout health care facilities.

Evidence-based design: A natural corollary to evidence-based medicine, evidence-based design (EBD) uses research and project experience to develop appropriate individual design solutions. In health care design, testimony is accumulating that natural materials, daylight and views of nature appear to affect healing outcomes in measurable ways.

"The whole field of evidence-based design is a new and emerging area," says Jocelyn Stroupe, IIDA, AAHID, Director of Healthcare Interiors and Principal, OWP/P Architects, Chicago, Illinois. "There's just so much more awareness right now from our health care clients and they like to do anything possible to help their patients heal faster and enable their staff to deal with the work-related stress."

Anjali Joseph, Director of Research at the Center for Health Design says, "In hospitals, many studies have shown that people do prefer natural environments over urban environments, and many studies have also shown that people prefer views with nature." She adds the center is working on ways to help architects who are conducting, or interpreting the type of primary research that is the hallmark of evidence-based design.

Leading architects are bringing nature indoors via hardwoods and other natural materials to the benefit of patients, their families and even staff. While occupant-centered and evidenced-based design are becoming accepted practice in health care, the knowledge is pertinent to any building used for living, working, playing or learning. Architects who ignore this growing body of knowledge may be missing a point of competitive advantage.

"The hardwood gives them an impression of something that is less institutional looking."

According to Katrina Barnett, AIA, of Radelet-McCarthy in Pittsburgh, Pennsylvania, her firm not only used hardwoods in the public spaces of several Pittsburgh hospitals, but also in patient care areas, "to make the patients feel more comfortable. The hardwood, a natural material, gives them an impression of something that is less institutional looking; it adds some warmth to the space."

Scott McFadden, Vice President and Director of Design at Maregatti Interiors, echoes that sentiment, saying that when his firm has used hardwoods, "We were trying to create an environment that felt very home-like and very friendly and we were trying to use materials that people would be comfortable with, products they maybe even have in their own home. Natural materials like wood and stone really do seem to help people feel more comfortable and heal as if they are in a more home-like environment."

In her health care designs, Ana Maregatti says she is "trying to evoke confidence, trust and comfort. We know that confidence goes with longevity and the materials we're selecting have to have longevity. That's why we're going to use natural materials like wood: it's been since the beginning of life. It's a material that gives you something you can count on."



Designed by BNIM Architects of Houston, the building houses Missouri's Department of Natural Resources, and features paneling of regionally harvested ash.

Design Considerations

A hardwood product's durability, sustainability, life-cycle costing, environmental certification potential and aesthetics are all important design considerations.

Durability

Pro basketball is played on maple floors; freight trains run on oak rail ties; American hardwoods are durable under intense usage. However, some hardwoods are stronger than others and not all species are equally suited for all applications. The toughest commercially available American hardwood is hickory, and it is five times denser than aspen, one of the "softer" hardwoods which is not used for flooring. In descending order of durability on the Janka hardness scale, hickory, hard maple, red and white oak, birch, ash, walnut and cherry are the woods generally used for flooring and they all offer more than sufficient durability in active settings. The other American hardwood species work well in furniture, cabinetry, trim and architectural detailing.

In the 120,000-square-foot Lewis and Clark State Office Building for the Missouri Department of Natural Resources, Houston-based Berkebile, Nelson, Immenschuh and McDowell (BNIM) Architects specified locally harvested oak as a durable, sustainable flooring material for high-traffic areas such as the four-story atrium lobby and elevator areas. "We used solid white and red oak for flooring in the common areas," explains Kimberly Hickson, AIA, Principal and Manager of BNIM's Houston, Texas, office. "With any wood, if we are specifying it for flooring, we are looking at it for its durability."

In March, 2005, the Lewis and Clark building achieved LEED-Platinum status, one of only 14 other buildings in the U.S. that met the LEED-NC Platinum requirement of a minimum of 52 out of a possible 69 points.

American cherry was chosen for durability at the Hansen Center at Mary Margaret Community Center, Batesville, Indiana. "Primarily we used cherry because we needed it to function well, to hold up well, in a place that can be pretty abusive and we wanted to get the warmth of the richness of the color and the grain," says McFadden of Ana Maregatti Interiors. Cherry also was used for the bump rails that protect hospital walls from damage from equipment and medicine carts and patient guernies.

Sustainability

While many tropical hardwoods rank high on the Janka hardness scale, density is one criterion among several to be considered when specifying hardwood products. Architects concerned with product sustainability should also consider whether the wood is harvested legally and responsibly. The first steps are to determine whether the species is on any CITES (Convention on International Trade in Endangered Species) lists, and whether the supplier participates in a certification system.

Beyond that, Jim Bower, Ph.D. of Dovetail Partners, Inc. notes the International Tropical Timber Organization stated in July, 2006 that only about 5 percent of the tropical forests covered by a recent extensive study are sustainably managed.

In contrast, he says questions about the sustainability of U.S. tree species are more easily answered because, "We would find current and trend data regarding net annual growth and removals for that tree species, as well as information about volume by age and size class and by forest ownership category. There also would be reasonable certainty that harvesting was done in accordance with municipal, county, state and federal forest management guidelines and regulations." He elaborates in an August, 2006 report titled, *Have Tropical Woods in your Product Line? How to Know If They Were Harvested Legally, Responsibly.* (www.dovetailinc.org).

"When we specify wood, for sustainability reasons we make sure to use what we call 'regional native species.'"

While it's widely recognized that natural materials enrich the built environment, some architects may hesitate to specify American hardwoods out of concern for their sustainability. However, every year, U.S. hardwood forests grow far more hardwood than is harvested. The U.S. Forest Service states that the hardwood volume in American forests increases by 10.2 billion cubic feet yearly, while annual removals total only 6 billion cubic feet. Consequently, the volume of American hardwoods is 90 percent larger than it was 50 years ago.

Across the U.S. hardwood-growing areas, climate and soil vary, favoring different species. Hard maple, for example, grows in the northern states, but not in the Mississippi Delta. Choosing from regionally native species adds to a design's sustainability.

BNIM's Hickson notes that native species were specified for the LEED Platinum Lewis and Clark Building. "Oak is readily available in the Midwest so it was a perfect match for our needs," she says. "The red and white oak used for the flooring applications was harvested from a sustainably managed forest in Missouri."

Only about 5 percent of the tropical forests covered by a recent extensive study are sustainably managed.

Peter Syrett, AIA, Principal, Guenther 5 Architects, New York, New York, also believes in using materials native to the region. He specified cherry for the 28,000-square-foot Patrick H. Dollard Discovery Health Center in upstate New York, one of only two U.S. LEED-certified health care facilities, and New York's first medical facility to implement green building standards that meet state Department of Health requirements. "The Northeast has the greatest variety of hardwood trees in the entire country," says Syrett, explaining Guenther 5's decision to use cherry as the featured hardwood in the project. "When we specify wood, for sustainability reasons we make sure to use what we call 'regional native species.' We chose to work with cherry for this reason, but also because it is a beautiful wood that worked very well with the rest of the palette."

Syrett focused the use of hardwood in patient recovery rooms, administrative offices and detailed accents throughout the facility in applications including paneling, millwork and cabinetry. "While most of the hardwood used was veneer, all edging and trim was crafted from solid stock," says Syrett. "After three years, there have been no care or maintenance issues with the cherry wood products used in the facility."

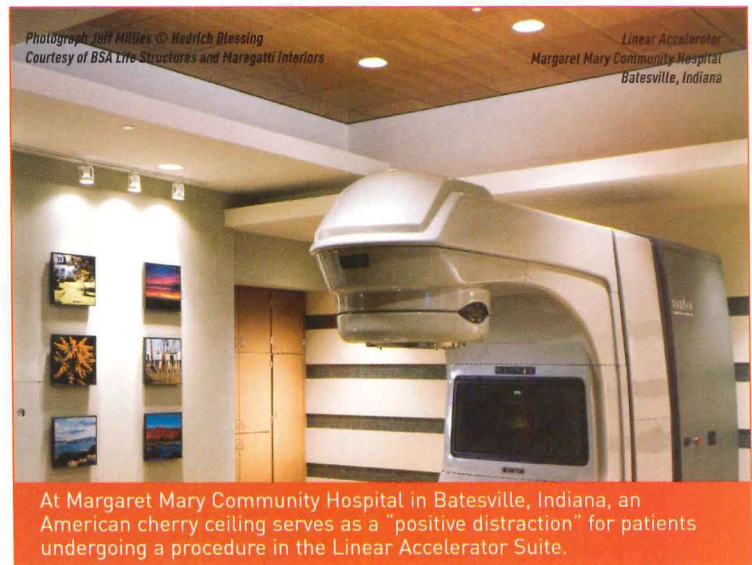
Life-Cycle Cost

When it comes to choosing interior surface materials, health care facilities often have opted for synthetic products because of their durability, ease of maintenance and "sanitary look." But these materials may contain harmful polyvinyl chloride and volatile organic compounds (VOC).

What's more, architects have begun to challenge the notion that synthetic materials are less expensive than natural products. Sue Tartaglio, Interior Designer, Burt Hill, Butler, Pennsylvania, has developed a life-cycle cost comparison of a dozen frequently used synthetic and natural flooring products, based on manufacturers' published maintenance data/life-cycle costs, and conversations with manufacturers' representatives. The matrix shows that in facilities with a lifetime use of more than 15 years, hardwood flooring, while it may have higher upfront costs, has life-cycle costs that are significantly lower.

The daily maintenance on these floors is really greatly reduced. Frequently, it's a matter of sweeping or damp mopping them to remove surface soil. And with their smooth surfaces, hardwood floors don't harbor animal dander, fleas, dust, mites, pollen or other allergens—the reason that doctors often recommend them for patients with allergies and respiratory problems.

"Over the long run, acrylic impregnated hardwoods, in fact, have one of the lowest life-cycle costs," says Tartaglio, referring to pre-finished hardwood floor products in which acrylic has been forced into the wood pores, creating an extremely hard surface.



At Margaret Mary Community Hospital in Batesville, Indiana, an American cherry ceiling serves as a "positive distraction" for patients undergoing a procedure in the Linear Accelerator Suite.

In the comparison, average installed costs per square foot range from \$1,400 for vinyl comp tile to \$12,000 for bamboo and hardwood, with linoleum, cork, rubber, sheet vinyl, carpet and ceramic tile falling in between. Since the comparison considers useable product life, replacement, cleaning and labor cost over 15 years, products with some of the lowest initial costs wind up having among the highest total life-cycle costs. In fact, hardwood, rubber and bamboo flooring have the lowest total cost at 15 years among the 12 flooring materials compared.

Of the more than 1,200 species of fast-growing grasses known as bamboo, the Moso bamboo species is considered optimal for use in flooring, with a few caveats: the bamboo should be properly aged and only the middle section of each stalk should be used in order to deliver the proper strength and moisture content. In addition, architects should ask bamboo flooring suppliers whether the bamboo plantations use pesticides and chemical fertilizers, and what type of resin is used to bond the grass stalks in the flooring manufacturing process.

Green Certification

While environmental certification and sustainability are not necessarily synonymous, many architects and clients opt to pursue ratings through LEED, GreenGlobes™ and the Green Guide for Health Care™.

Currently, LEED standards extend credits only to hardwoods certified by the Forest Stewardship Council (FSC). However, there is extremely limited availability of FSC-certified hardwoods because more than three-quarters of U.S. hardwood forests are in private ownership. This fragmented ownership among millions of different individuals and families has posed an obstacle in enrolling hardwood forests in the fee-based, third-party FSC certification program established in the 1990s.



Tias and Surya Little Residence
Santa Fe, New Mexico

Photographs © 2006 Laurie E. Dickson Photography

Maple floors and other hardwoods are integral to the healthy home environment created for Tias and Surya Little, two internationally renowned Yoga instructors, by Paula Baker-Laporte, AIA.

Even for architects and clients eager to achieve LEED certification, budget constraints are an important consideration. When pursuing a LEED credit in one area becomes too costly, architects can recoup points in another category. With the Lewis and Clark office building, both architect and client agreed that the cost to procure FSC-certified ash and oak would be too great. Forgoing the LEED-NC materials certification point, the design team made a conscious effort to instead pursue the regional sourcing credit (MR 5.1). This credit requires a minimum of 20 percent of building materials that are manufactured within 500 miles of the project.

"FSC certification is an extra expense that we just didn't have room for in the budget. This client came to BNIM wanting the greenest building possible with the money they had. Cost was a major factor in the decisions we made," notes Hickson.

Obtaining Environmental Credits for Hardwoods

American hardwood products can contribute to a building's green rating under sections of three leading certification systems.

LEED

The LEED (Leadership in Energy and Environmental Design) Green Building Rating System® is a voluntary, consensus-based national standard for developing high-performance, sustainable buildings.

- MR5.1 – Regional materials: 20% manufactured regionally
- MR5.2 – Regional materials: 50% extracted regionally
- MR7 – certified wood

Green Globes™

The Green Globes™ system is a green management tool for integrating environmentally friendly design into commercial buildings.

- E.1 Materials with low environmental impact
- E.2 Minimized consumption and depletion of material resources
- G.2.9 Materials specified low-VOC emitting and third-party environmentally certified

Green Guide for Health Care™, the healthcare sector's first quantifiable sustainable design toolkit, largely mirrors the LEED credit structure.

- MR 5.1-5.2 – Regional Materials
- MR 7 – Certified Wood

Trend Toward Pre-Finished

In health care settings, the trend is toward use of pre-finished hardwood flooring, millwork and casework products. Reasons include improved quality control, cost-effectiveness and indoor air quality.

When it comes to indoor air quality in residential settings, Paula Baker-Laporte, AIA, Principal and Owner of Baker-Laporte and Associates, Santa Fe, New Mexico, stipulates that two groups of people must be considered when designing a healthy home: those who are chemically sensitive and those who aren't, but desire a healthful space.

"For people who are very chemically sensitive, I recommend a factory U.V. floor finish so that they don't have to refinish in their home. Pre-finished materials are off-gassed under controlled conditions and the client receives an inert product," elaborates Baker-Laporte. "In the case of healthy people without chemical sensitivities, there are many low- or zero-VOC finishes that work within the parameters of healthy design." ■

CLICK FOR ADDITIONAL SUPPLEMENTAL READING

The article continues online at <http://www.archrecord.com/resources/conteduc/archives/0611hardwood-1.asp>

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LEARNING OBJECTIVES

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- Analyze considerations for hardwood care and non-toxic cleaning in health care settings

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self-report form on page 171. Follow the reporting instructions, answer the test questions, and submit the form. Or use the Continuing Education self-report form on *Record's* web site—archrecord.construction.com—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

1. The most prevalent hardwood species in the U.S. is:
 - a. ash
 - b. pine
 - c. oak
 - d. cherry
2. American hardwoods have distinctive characteristics that result in one-of-a-kind applications. In contrast to American hardwoods, tropical species:
 - a. have an appearance that is more uniform and patternless
 - b. have similarly varied grain patterns
 - c. are less durable
 - d. have more growth rings
3. The Planetree model for health care design:
 - a. recommends building antiseptic-looking facilities
 - b. suggests the use of wood furnishings to give hospitals a more home-like feel
 - c. assigns points for green and sustainable building practices
 - d. develops designs that save money and increase health care provider convenience
4. American hardwoods are considered sustainable because:
 - a. U.S. hardwood forests grow far more wood than is harvested every year
 - b. Use of hardwoods are encouraged by LEED
 - c. Natural materials enrich the built environment
 - d. Climate and soil favor different species
5. Compared to other flooring materials, hardwood floors have:
 - a. high life-cycle costs
 - b. one of the lowest life-cycle costs
 - c. higher life-cycle costs than synthetic flooring products
 - d. lower upfront costs
6. Using regionally sourced hardwoods in a health care project
 - a. can help control material costs
 - b. is a sustainable design strategy
 - c. can earn LEED credit
 - d. all of the above
7. For hardwood products in health care settings, it is recommended to:
 - a. apply waterborne finish onsite
 - b. field-apply linseed oil
 - c. finish offsite at the manufacturer
 - d. use wax made from natural products
8. Used predominantly in ultra high-use commercial settings, they provide an extremely hard, durable barrier to dirt, moisture and wear:
 - a. surface finished floors
 - b. acrylic impregnated floors
 - c. stains
 - d. wax coatings
9. In flat- or plain-sawn hardwood boards, growth rings are parallel to the board's surface and create:
 - a. a vertical and uniform grain pattern
 - b. accentuated vertical or "straight" grain patterns
 - c. narrow boards
 - d. distinctive flame-shaped, arch or cathedral grain pattern
10. One aspect of keeping hardwood floors clean is to:
 - a. dust frequently with a micro fiber mop
 - b. use hot, soapy water
 - c. sponge down with disinfectant
 - d. use a wax buffer system



The Hardwood Council serves architects, designers and builders by providing useful information about American hardwoods in sustainable design and building. As an independent, nonprofit organization, the Council advances better understanding of hardwood flooring, furniture, cabinetry and millwork, without bias toward specific products or manufacturers.

The Council's Web site, www.hardwoodcouncil.com, offers basic information about dozens of American hardwood species, background on sustainable forestry, and overviews of sustainable specifying, design, installation and finishing practices.

For more information about the Hardwood Council, and American hardwoods, please visit www.hardwoodcouncil.com or contact us at:
The Hardwood Council, 400 Penn Center Boulevard, Suite 530, Pittsburgh, PA 15235



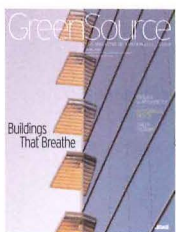
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Western Red Cedar Shakes and Shingles: A Sustainable, Versatile Roofing Choice

Durable and weather resistant, cedar roofs blend natural aesthetics with performance

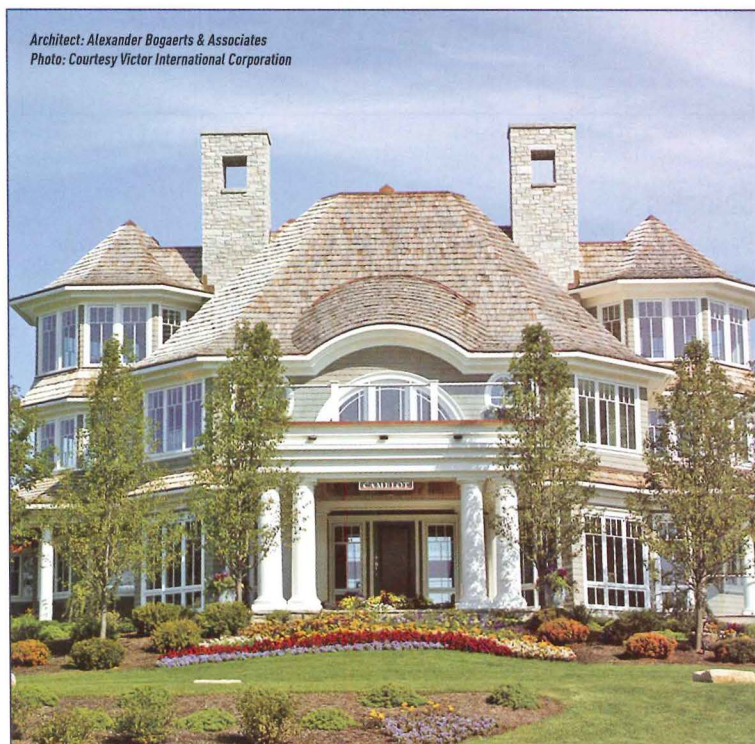
Provided By: *The Cedar Shake and Shingle Bureau*

By *Lynne Christensen, MBA, CAE*

Western Red Cedar, a wood commonly found on the North American West Coast, is a popular source of manufactured cedar shakes and shingles. With its warm, aesthetic appearance, Western Red Cedar (*Thuja plicata*) has long been used for roofing and sidewalls, because of its durability and weather-resistance, and good thermal insulating properties. This even-grained wood ranges in color from light blond to deep chocolate brown, and weathers gracefully to shades of gray.

Manufactured primarily in British Columbia, Canada, and Washington State, Western Red Cedar shakes and shingles combine a traditional look with reliable performance, and provide an environmentally sound option for roofing, siding, and building exteriors.

Cedar is an extremely versatile product that offers many design choices for residential, commercial, and institutional structures, including single and multi-family homes, office buildings, retail, churches, band shells, hotels, and historic buildings. A rustic mountain cabin or California bungalow, for example, would benefit from the handsplit and resawn shake look. A Victorian or Cape Cod style home with a tailored appearance might use a shingle or tapersawn shake roof. Regardless of the style or application, cedar shakes and shingles should be specified and installed correctly. This article will discuss the qualities of cedar shakes and shingles, and characteristics that are important when designing and specifying them for roofing and siding applications.



Architect: *Alexander Bogaerts & Associates*
Photo: *Courtesy Victor International Corporation*

CONTINUING EDUCATION



Use the learning objectives below to focus your study as you read **Western Red Cedar Shakes and Shingles: A Sustainable, Versatile Roofing Choice**. To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit, answer the questions on page 215, then follow the reporting instructions on page 225 or go to the Continuing Education section on archrecord.construction.com and follow the reporting instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

- Explain the benefits and characteristics of cedar shakes and shingles
- Understand why cedar shakes and shingles are fire retardant and hurricane resistant
- Identify wildfire mitigation strategies
- Discuss the criteria for maintaining a long-lasting cedar roof

Shakes and Shingles are Different

Shakes and shingles are two distinct product types. Cedar shakes used for roofing are available in two distinct kinds: handsplit and resawn OR tapersawn; shakes are either tapered or constant in thickness, depending upon product type. Cedar shingles are sawn on both sides, tapered, and may be used for both roofing and siding. As they age, cedar shakes and shingles generally turn from reddish brown in color to gray.

Shakes

Handsplit and resawn shakes are split faced, exposed with a naturally rustic appearance, and sawn on the back. The most common sizes are 18 inch and 24 inch nominal lengths. Butt thicknesses range from 3/8 inch to over 2 inches.

Tapersawn shakes are sawn on both sides for a semi-textured look with a stronger shadow line than shingles. The most common are 18 inch and 24 inch nominal lengths. Butt thicknesses range from 5/8 inch to 1 1/2 inch.

Courtesy of Cedar Shake and Shingle Bureau



Shingles

Shingles are sawn on both sides for a tailored appearance. They are available in several sizes: 16 inches or Fivex; 18 inches or Perfection; and 24 inches or Royal nominal lengths. The butt thickness is gauged using a stack of shingles to meet the proper measurement. Rebutted and rejointed (R&R) sidewall shingles are remanufactured on all four sides to ensure square butts and parallel edges for a superior appearance. Faces can be also obtained in sanded or machine profiles. Fancy butt shingles are available in a variety of designs and are useful in creating a variety of sidewall pattern designs.

Courtesy of Cedar Shake and Shingle Bureau



Prefinished Rebutted and Rejointed Sidewall Shingles

Prefinished sidewall shingles make a wise, low maintenance sidewall system. Specifying prefinished shingles depends upon project needs. Three basic types of prefinish systems are available: preprimed, prestained, and opaque. Coatings and finishes are classified as film forming or penetrating. Paint and solid body stains are film forming. Penetrating stains penetrate wood. Latex stains are classified as film forming although some formulations are showing better penetration characteristics. Latex stains are evolving.

Custom colors as well as product and coating manufacturers' warranties are available.

- **Preprimed:** Kiln dried, rebuted and rejointed shingles should be coated on all surfaces with an alkyd oil, stain blocking primer at the manufacturer's recommended spread rates. Latex stain blocking primers are evolving.
- **Prestained:** Penetrating stains have been traditionally oil or alkyd oil-based. New latex formulations are being developed which show better penetration characteristics than older latex formulations. Pre-staining coats the shingle on all surfaces. Penetrating stains are available in clear, lightly pigmented and semi-transparent. Alkyd oil refers to a type of durable synthetic resin or coating.
- **Opaque:** Opaque color finishes are applied to the shingle after an alkyd oil stain-blocking primer has been applied to all surfaces of the shingle. Two or three coat systems are available. Factory finish equipment generally uses different formulations than over-the-counter solid body stains and paints. The factory finish topcoats are referred to as a finish coat.

If adding a coating at the job site, the base coat should contain a stain-blocking primer. The primer is to be applied to all surfaces of the shingle after the shingle has achieved equilibrium (12-14 percent and less moisture content in most of North America). Applying a coating on wood which is green (above the equilibrium point) will result in premature coating failure.

All forest products, including Western Red Cedar, contain extractives (tannins). Extractives are either water borne or solvent borne. Western Red Cedar contains water borne extractives. Extractive bleeding (stains) on the surface of Western Red Cedar occurs when extractives are dissolved and leached from the Western Red Cedar by water. The water then moves to the finished/coated surface, evaporates and leaves the extractive discoloration which may be dark red or reddish-brown in appearance. Extractive bleeding is easily prevented when the proper primer and topcoats are applied using the coating manufacturer's recommended spread rates, time of application (i.e., not too cold/hot or in direct sunlight). Environment and moisture content level should be considered during the proper application phase.

Wildfire mitigation should include residential fire prevention strategies for building design, construction materials, and plant selection.

Wood should not be left to weather prior to applying a coating; exposure to the weather causes photodegradation of the top layer of the wood. The color changes as a result from the decomposition of extractives at the surface. The sunlight will decompose the lignin (the natural "glue" which holds wood fiber together) leading to a poorer adhesive bond when a film forming coating product is used. Photodegradation is the chemical transformation of a compound into smaller compounds caused by the absorption of ultraviolet, visible, or infrared radiation (light).

Proper preparation of the shingles and application of a good quality coating or finish are key to good coating performance and life.

Pressure Impregnated Treated Products

Both Premium and Number One Grade products are available with pressure impregnated fire retardant or preservative treatment. Both treatments are not available in the same product. This type of treatment is not a topical spray-on and will not leach out after a rainstorm. Pressure impregnated treated products are identified by the treatment label attached to the bundle strapping.



Architect: Gary Tabasinske, AIA
Photo: Chris Eden

Pressure Impregnated Fire Retardant Treated Cedar Shakes and Shingles

In areas prone to wildfires, pressure impregnated fire retardant treated cedar shakes and shingles are a wise choice. Through pressure injection at the factory, a special fire retardant treatment is forced into the cells of the wood. Kiln drying solidifies the formula and locks in the fire protection. For roofs, there are Class A, Class B, Class C, and unrated roofing systems. Cedar shake and shingle roofs exist in all these classifications. These classes are the same for all roofing materials, including asphalt, metal and concrete tile.

- Class A is appropriate for institutional applications, such as hospitals and correctional facilities. This classification uses a Class B fire retardant treated product along with a rated fire retardant fiberglass cap sheet underlay. A Class A roofing system is effective against severe fire exposures. Under such exposures, roof coverings are:
 - Not readily flammable
 - Afford a fairly high degree of fire protection to the roof deck
 - Do not slip from position
 - Pose no flying brand hazard
- Class B is often used in apartment buildings, condominiums, commercial buildings, and dwellings in wildland interface areas. Class B fire retardant treatment is effective against moderate fire exposures. Under such exposures, roof coverings of this class are not readily flammable, afford a moderate degree of fire protection to the roof deck, do not slip from position and pose no flying-brand hazard.
- Class C is typically used for single-family residences and duplexes, where fire retardant roofing is desired. This is a product that is effective against light fire exposures. Under such exposures, roof coverings of this class are not readily flammable, afford a measurable degree of fire protection to the roof deck, do not slip from position and pose no flying-brand hazard.

U.S. building codes require that fire retardant treated wood roofing products are subjected to rigorous fire retardancy tests. The Spread of Flame test is performed to measure the spread of flame over a deck and the Intermittent Flame, Burning Brand and Flying Brand tests are completed before and after both accelerated weathering and long term weathering of one, two, three, five, and ten years.

Wildfire mitigation should include residential fire prevention strategies for building design, construction materials, and plant selection. Vegetation management practices, including sensible landscape choices, brush setbacks, firebreaks and forest debris clearing, are critical to preventing and minimizing firestorm damage. Local building officials have specific information regarding jurisdictional regulations and these should be included in project specifications.

Pressure Impregnated Preservative Treated Cedar Shakes and Shingles

For long material life span in areas of high humidity, pressure impregnated preservative treated cedar shakes or shingles may be specified. This product will help prevent moss and mildew build up.

Product Grading

The Cedar Shake and Shingle Bureau (CSSB), an industry organization, created and updates the industry's grading rules, known as CSSB-97. These CSSB-97 grading rules are incorporated into the U.S. national building codes International Building Code and International Residential Code, as published by the International Code Council. These are the standard reference guides for commercial and residential projects and have been adopted by most states.

The CSSB maintains a quality control program for grading and inspections. Trained professionals perform random, unannounced inspections of member manufacturers' sites. These inspections ensure that grading rules are applied for product consistency. The CSSB's Cedar Quality Auditor operates separately from the inspectors, also performs unannounced mill visits, and provides a second set of eyes on the quality control procedures at manufacturers' locations.

The Importance of the Label

Product labels are inserted under each bundle strap and contain the following information: brand name, product grade, product type, independent, third party quality control agency, mill name and contact information, product dimensions, building code compliance numbers, product performance tests the material has passed, UPC code, summary application instructions (usually on reverse), and coverage chart showing bundles per 100 square feet and recommended exposure. Cedar shake and shingle bundles are measured in squares, the amount required to cover 100 square feet.

Labels that state "inspected by in-house inspectors" do not have an outside party inspecting the product, meaning that a company employee has inspected his/her own product.

Design and specification documents should call for cedar shakes and shingles in terms that are more specific than "blue label cedar shingles." There are dozens of blue labeled uninspected products that have labels similar to those used by third party inspected mills. Quality levels on uninspected products are not monitored and these products are not accepted by building code officials.

Grain

The terms edge grain, vertical grain, and flat grain are used when comparing products and grades. Edge grain and vertical grain refer to annual growth rings for a 45 to 90 degree

angle with the product surface. Flat grain refers to product that has annual growth rings that form less than a 45 degree angle with the product surface. Both top grades for shakes (Premium Grade) and shingles (Number One Grade) do not allow any flat grain in the bundle. Up to 20 percent flat grain only is permitted in each Number One Grade shake bundle.

Top quality, edge or vertical grain cedar roofing and siding materials are available in a variety of product types. Lower grades of products allow a mixture of edge and flat grain, knots, and other imperfections. Lower grades are acceptable for some projects; however, this should be verified against installation exposure requirements and local building codes.

Product Qualities and Characteristics

Cedar offers a full range of product benefits. It has high insulation value, which reduces energy consumption throughout the year. Many types of cedar shakes and shingles have been tested and proved to be resistant to wind, impact and fire.

Fire Resistance

Class A, B, and C pressure impregnated fire retardant treated roofing systems are available with cedar shakes and shingles. (See earlier section on pressure impregnated fire retardant treated products).

Wind Resistance

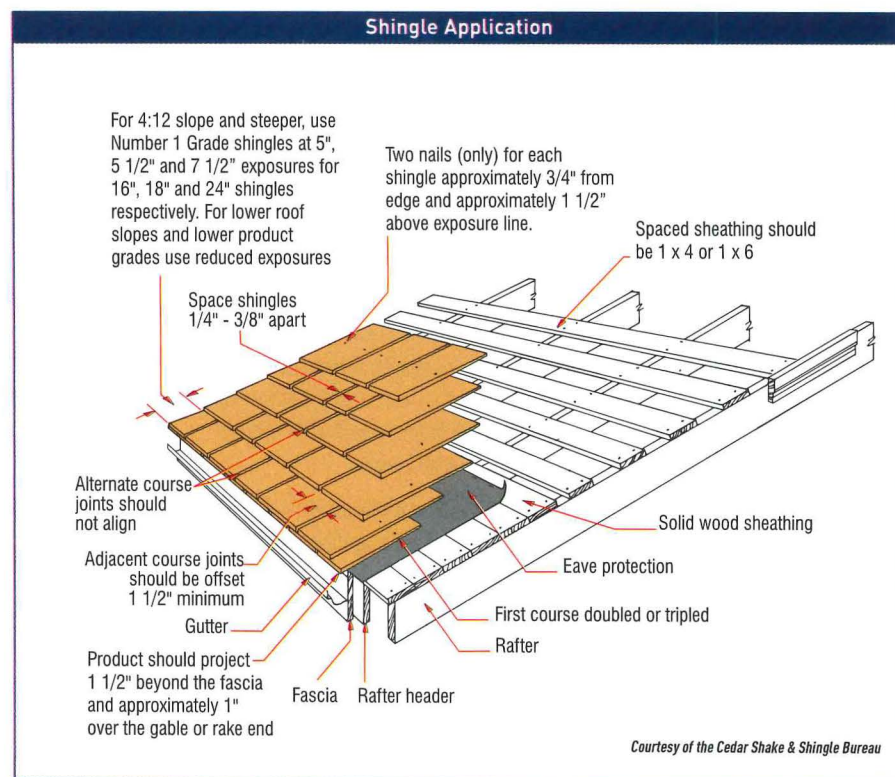
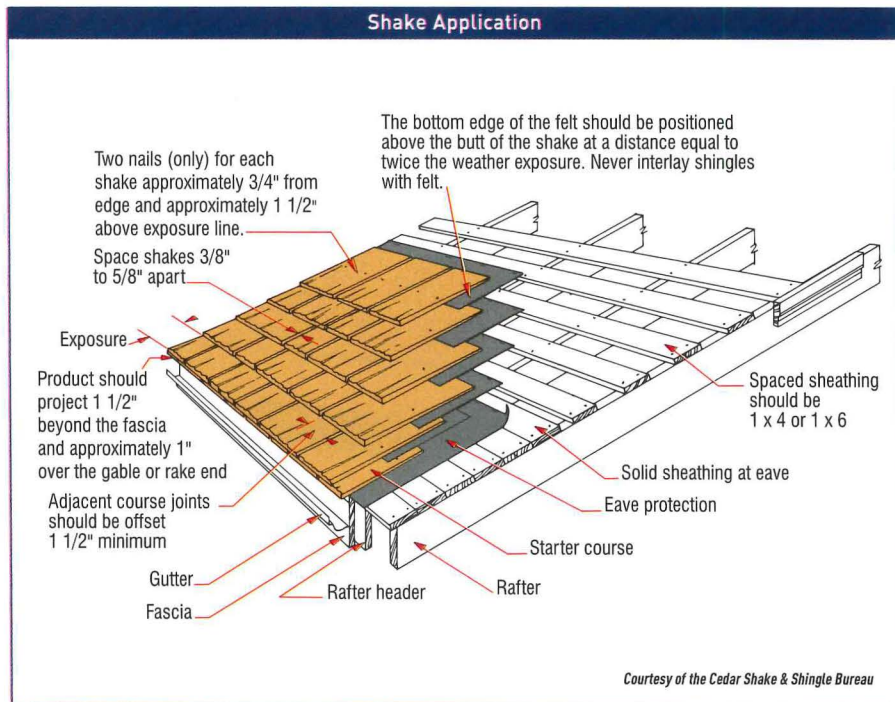
Cedar shakes and shingles offer outstanding hurricane-force wind resistance, as proven through UL-1897 uplift resistance testing using parameters for a test model home located in Dade County, Florida, the highest U.S. standard for wind resistance requirements. These test results are applicable to CSSB member product only:

- Shakes and shingles have been subjected to the UL 1897 fourth edition "Uplift tests for roof covering systems" with exemplary results. The classification for uplift resistance is expressed in pounds per square foot. The test method subjects a minimum 10 by 10 ft. test sample to various short term (1 minute interval) static pressures which represent the uplift forces imposed on roofing systems securely to a specified roof deck when exposed to high velocity winds. In other words, it tests how well shakes and shingles hold up when subjected to high winds. It measures the degree to which the roofing material is uplifted from the roof deck.

A subsequent report by a Florida Registered Professional Engineer converted the PSF numbers into miles per hour using the analytical method for wind design of roof cladding set forth in Section 6 of ASCE 7-98 (American Society of Engineers).

It should be noted that these calculations were conducted for a specific house in the Dade County area of Florida. When converting from PSF to MPH using ASCE 7-98, results will vary depending on many factors including building height, location, roof slope, environment, etc. Be advised that all design parameters, assumptions

and limitations of use set forth in the Florida engineer's report are necessary components of further interpretation. These test results exceed Dade County, Florida wind resistance requirements testing protocol PA 100-95. CSSB member products are accepted by Dade County, Florida as an accepted roofing material. ■



CLICK FOR ADDITIONAL SUPPLEMENTAL READING

The article continues online at <http://www.archrecord.com/resources/conteduc/archives/0611cedar-1.asp>

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LEARNING OBJECTIVES

After reading this article, you should be able to:

- Explain the benefits and characteristics of cedar shakes and shingles
- Understand why cedar shakes and shingles are fire retardant and hurricane resistant
- Identify wildfire mitigation strategies
- Discuss the criteria for maintaining a long-lasting cedar roof

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self-report form on page 171. Follow the reporting instructions, answer the test questions, and submit the form. Or use the Continuing Education self-report form on *Record's* web site—archrecord.construction.com—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

1. Which product is split faced, exposed with a naturally rustic appearance, and sawn on back?
 - a. Tapersawn shake
 - b. Shingle
 - c. Handsplit and resawn shake
 - d. Machine grooved shingle
2. Which statement is not true about tapersawn shakes?
 - a. They are sawn on both sides for a semi-textured look
 - b. Butt thicknesses range from 5/8 inch to 1 1/2 inch
 - c. They are only available in 16 inch lengths, or a Fivex
 - d. They create a stronger shadow line than shingles
3. Which of the following is not a characteristic of a cedar roof?
 - a. Needs frequent full replacement
 - b. Highly resilient in earthquakes
 - c. High insulation value
 - d. Resistant to wind, impact, and fire
4. Three types of prefinished sidewall shingles are:
 - a. Preprimed, postprimed, dormer style
 - b. Prestained, field primed, gable enders
 - c. Shellac, waterproofed, alkyd oil primed
 - d. Preprimed, prestained, and opaque
5. Which process is used to make cedar shakes and shingles fire retardant?
 - a. Topical spray on
 - b. Painted on
 - c. Hose misting
 - d. Pressure impregnated treated
6. True or False: Pressure impregnated preservative treated cedar shakes and shingles will prevent moss and mildew build up.
 - a. True
 - b. False
7. When comparing products and grades, what describes grain types of cedar shakes and shingles?
 - a. Vertical, edge, flat
 - b. Irregulars, 15 percent, premium
 - c. Number One, Fivex, Royals
 - d. Class A, Class B, Class C
8. Which is not an acceptable fastener type for cedar shakes and shingles?
 - a. Aluminum nails
 - b. Electrogalvanized nails
 - c. Stainless steel (type 304 or 316) hot dipped zinc coated
 - d. Other fasteners as approved by local building codes
9. Which is not a mitigation factor when designing structures in areas prone to wildfires?
 - a. The freeze thaw cycle
 - b. Vegetation management practices
 - c. Forest debris clearing
 - d. The Flying Brand test
10. Staggered butt design is achieved by:
 - a. Lengthening the exposure on no more than 20 percent of shingles
 - b. Using different length shingles for a product mix
 - c. Shortening the exposure to less than the greater maximum exposure
 - d. Mixing flat grain and edge grain products



www.cedarbureau.org

The Cedar Shake and Shingle Bureau (CSSB) was founded in 1915 and is the industry's trade association representing over 375 members. It offers AIA continuing education seminars, free technical advice and literature, as well as field representation.

CIRCLE 69 ON READER SERVICE CARD OR GO TO ARCHRECORD.CONSTRUCTION.COM/PRODUCTS/

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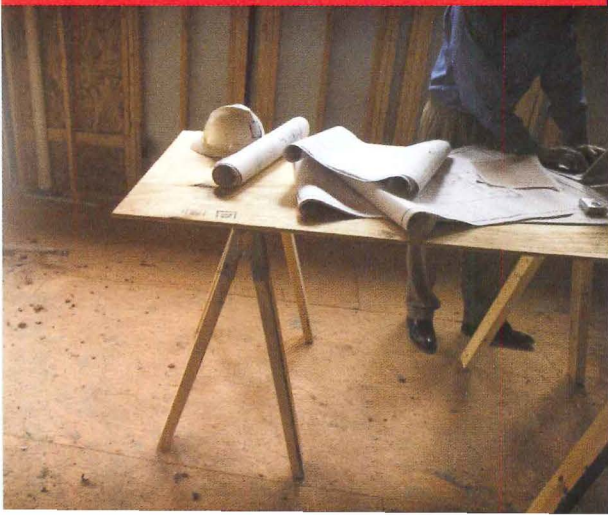
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Green Building: Essential Design Strategies for a Sustainable Future

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Use the learning objectives below to focus your study as you read **Green Building: Essential Design Strategies for a Sustainable Future**. To earn one AIA/CES Learning Unit, including one hour of health, safety, welfare credit, answer the questions on page 191, then follow the reporting instructions on page 191 or go to the Continuing Education section on archrecord.construction.com and follow the reporting instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

- Evaluate how to reduce environmental impact and building energy costs through sustainable design
- Identify performance characteristics of solar insulating glass
- Analyze the sustainability benefits of a recycling program for mineral fiber ceiling tiles
- Explain why water conservation is important to the environment
- Implement water conservation strategies with water efficient plumbing fixtures and valves, including high efficiency toilets, dual flush toilets, waterless urinals, and electronic faucets

Green Building: Essential Design Strategies For a Sustainable Future

Leveraging Environmentally Efficient, Economic Solutions with Solar Insulating Glass, Ceiling Recycling Programs, and Water Conservation

"This is an opportunity for bipartisanship, an opportunity to find our better selves, and in rising to meet this challenge, create a better brighter future – a future worthy of the generations who come after us and who have a right to be able to depend on us."

- Former Vice President Al Gore, policy address on Solving the Climate Crisis, New York University School of Law, September 18, 2006

By: Barbara A. Nadel, FAIA

Buildings have an average lifespan ranging from 50 to 100 years. Recent studies indicate that buildings are the biggest source of energy use and greenhouse gas emissions, which in turn impact the world's climate changes. Most architects know that buildings can be designed to operate with far less energy than many U.S. buildings are currently consuming. Design professionals and the building industry are developing innovative approaches to improve energy efficiency and reduce annual operating costs to building owners through advanced technology and a variety of sustainable design practices.

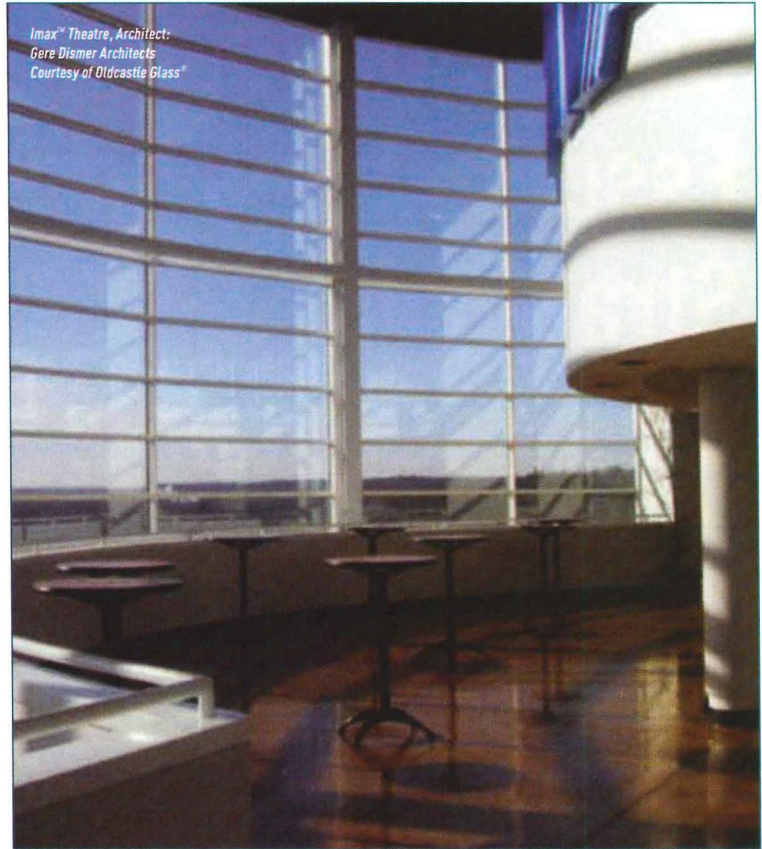
"Benefits such as energy, water and operational cost savings, improved air quality, and increased productivity are drawing more attention to green building issues. Congressional leaders are discussing how to best support sustainability initiatives through legislation," says Don Horn, AIA, LEED-AP, Director, Sustainable Design Program, Office of Applied Science, U.S. General Services Administration Public Buildings Service, Seattle, Washington.

Architects are well positioned to educate the public, facility managers, building owners, and elected officials about the clear economic benefits of sustainable design. Environmental design best practices and goals are achieved through attention to proper siting, building form, glass properties and location, material selection, heating, cooling, ventilation, day-lighting, and increasingly, water conservation through efficient plumbing fixtures.

Conservation of natural resources is an imperative for the socially responsible architect. Addressing sustainability requires that we redefine boundaries of traditional practice.

Benefits such as energy, water and operational cost savings, improved air quality, and increased productivity are drawing more attention to green building issues.

"Conservation of natural resources is an imperative for the socially responsible architect. Addressing sustainability requires that we



redefine boundaries of traditional practice. The idea of an isolated building on a site is no longer acceptable. Buildings belong to a larger community and must begin to support and sustain our environment," observes Harry Warren, AIA, Design Principal, Cannon Design, Grand Island, New York.

This article will explore avenues for increasing sustainability in building design through use of solar insulating glass, recycling programs for mineral fiber ceiling panels, and water conservation strategies with efficient fixtures. Case studies from public agencies and private sector practitioners will illustrate how these principles are being applied in civic facilities, universities, nonprofit organizations, and the hospitality industry.

Solar Insulating Glass

Architectural glass is a highly visible building envelope design component, especially for commercial and public facilities. As sustainability and energy costs take on greater importance for building owners, environmental performance ranks high among the many design and specification criteria used by architects when reviewing architectural glass options.

Solar insulating glass delivers several significant advantages, such as reducing glare, increasing thermal control and environmental comfort for building occupants, and generating savings on heating, ventilation and air conditioning (HVAC) equipment, as well as long term annual operational costs.

Characteristics of Insulating Glass

Insulating glass units are hermetically sealed combinations of two or more lites of glass separated by a dry airspace. They improve thermal performance, significantly reducing heat and air conditioning costs, and reduce interior condensation in cold climates. Insulating glass units are used in almost all exterior building applications, including fixed and operable windows, storefronts and curtain walls, sloped and overhead glazing and skylights, and in vision and spandrel (nonvision) locations.

Depending on the glass type used, insulating glass units can be designed for light and solar control, sound control, and ultraviolet screening (to reduce fading of materials and fabrics), hurricane, earthquake, and blast resistance, security, bullet resistance, and decorative applications. Insulating glass units are fabricated according to project specification. They can be constructed using a large variety of glass products to achieve desired aesthetic appearance, meet design criteria, building codes, and improve thermal control and building performance. Glass options include clear, low iron, Low-E, standard or high performance (spectrally selective) tints, reflective, silk-screened, spandrel, laminated, decorative, and wired glass. The glass lites of an insulating glass unit can be annealed, heat strengthened, tempered or laminated.

Standard one-inch insulating glass units generally consist of two lites of 1/4-inch glass and a nominal 1/2-inch air space. Custom insulating glass unit designs can be made in several glass thicknesses. Maximum sizes for insulating glass units are determined by several considerations including thickness, weight, aspect ratio, application, and load requirements.

Many insulating glass units are independently tested and certified according to North American standards for quality and performance, and pass the highest level (Class CBA) of the ASTM E773/E774 specification.

The tests are validated by the Insulating Glass Certification Council (IGCC), which sponsors the certification program in the U.S.

Low-E Coatings

By combining low-emittance (Low-E) coatings, standard and high performance tinted glasses, reflective coatings, silk-screened patterns, and laminated glass products, a variety of insulating glass configurations are available to meet a range of performance and aesthetic requirements. They can be designed to reduce heat loss and solar heat gain entering the building, with a minimal reduction of visible light transmittance.

Soft coatings are applied to the glass as a sputter coat, and are easy to scratch. Hard coatings are applied on a float glass by the manufacturer, and the process is embedded in the end product. Coatings applied at the factory to tempered glass and baked in produce post-temperable high performance coated glass. Most of these coatings perform as well as hard coats.

"Post-temperable Low-E coating technology has dramatically matured over the past few years, affording unprecedented solar control performance benefits. It is now possible for an insulating glass unit to block 70 to 75 percent of the solar heat while passing 50 to 65 percent of the visible light. By utilizing advanced solar control insulating glass in buildings, architects can achieve impressive energy savings without compromising on aesthetics or design," says Daipayan Bhattacharya, Vice President of Business Development and Technology, Oldcastle Glass®, Inc., Santa Monica, California.

Low-emittance coatings are microscopically thin, virtually invisible, metal or metallic oxide layers deposited on a window or skylight glazing surface primarily to reduce the U-factor by suppressing heat flow. The principal mechanism of heat transfer in multilayer glazing is thermal radiation from warm surfaces to cooler surfaces. Coating a glass surface with a low-emittance material reflects a significant

amount of this radiant heat, thus lowering the total heat flow through the window. Low-E coatings are transparent to visible light, and opaque to infrared radiation. Different types of Low-E coatings have been designed to allow high solar gain, moderate solar gain, or low solar gain.

In the summer, Low-E glass filters long-wave solar radiation, reducing solar heat gain as a result of the sun's direct rays. During the winter, Low-E glass lets in warm, short wave rays, and helps block the warm air inside, rather than allowing it to escape through the pane, so less heating is needed to maintain a comfortable environment. In addition to energy savings, Low-E reduces the amount of transmitted ultraviolet light, which can damage carpets, fabrics, and drapes.

The Light to Solar Gain (LSG) ratio is a common glass performance characteristic that measures potential environmental impact and performance and is used to compare glass products. LSG considers the percentage of visible light a glass transmits and the solar heat gain through the glass relative to the incident solar radiation.

An analysis indicates the value of some solar insulating glass products outperform high-performance solar control Low-E glass. The higher the LSG value, the better the glass performs at transmitting daylight and reducing heat gain from the sun. When three types of glass were tested for LSG, solar insulating glass showed an LSG value of 2.01, compared to high-performance Low-E glass at 1.44, and clear insulating glass at 1.12.

Colleges and Universities: Energy Management

The Minnesota State Colleges and Universities (MnSCU), representing 26 million square feet and one third of all the state's building square footage, is advancing energy efficiency on campuses through design and construction. "We are pursuing 'Benchmark, Monitor, Train, and Change' to get facility managers to seek areas where efficiency can be improved," says Sally Grans, AIA, System Director, Facilities Planning and Programming, Minnesota State Colleges and Universities, St. Paul, Minnesota.

Energy efficient practices being implemented include lowering overall campus temperatures, reducing temperature during unoccupied hours and in areas not used (by zoning); saving energy through Energy Star® programs, such as purchasing computers with sensors that trigger automatic shutdown when not in use; reducing energy using technology in plumbing, electrical (such as occupancy sensors), and HVAC systems; and operational equipment adjustments and routine maintenance (such as steam traps, filters, and pumps).

Public-private partnerships also play a role in setting an energy efficiency agenda for public buildings. "MnSCU is part of a group working with a private energy consultant and examining the alternative fuel sources needed to offset new buildings in a climate-neutral setting. We hope to bring forward to the 2007 legislative session language that will reduce the greenhouse gases in the proposed bonding bill," Grans adds.

Recycling Ceilings Preserves Natural Resources

The life cycle of a building and its related processes and byproducts are important components of the Leadership in Energy and Environmental Design (LEED®) green building rating system, sponsored by the U.S. Green Building Council (USGBC). The LEED®

SunGlass®
Courtesy of Oldcastle Glass®



The Light to Solar Gain (LSG) value far outperforms solar control Low-E glass. The higher the LSG value, the better the glass performs at transmitting daylight and reducing heat gain from the sun.

rating system is a nationally accepted benchmark for design, construction, and operation of high performance green buildings.

Recycling ceiling panels is an environmentally sound approach to reusing natural materials that illustrates how innovative products can contribute to protecting the environment, by preserving natural resources and reducing the environmental footprint. Industry experts estimate that more than 30 million square feet of ceilings have been recycled since 1999.

Cradle-to-Cradle Cycles

Within the building industry, some manufacturers have implemented recycling programs that support cradle-to-cradle cycles, whose materials are perpetually circulated in closed loops. Maintaining materials in closed loops maximizes material value without damaging ecosystems. In contrast, cradle-to-grave products are dumped in landfills at the end of their useful lives. William McDonough, FAIA, of McDonough Braungart Design Chemistry, Charlottesville, Virginia, developed this approach to create products and systems that contribute to economic, social, and environmental prosperity.

Ceiling manufacturers have developed innovative approaches and products to advancing sustainability through a multi-phased, closed-loop process. The net result of such programs encourages industry innovation and reduces the environmental impact of building materials.

- **Design** of new ceilings includes renewable raw materials, reuse of post-consumer and post-industrial waste materials.
- **Manufacturing** recycles in-process scrap and process water, so that minimal water is discharged. When multiple manufacturing locations are available, transportation costs and environmental impact are reduced.
- **Installation** time can be decreased with minimal packing material. Packaging materials can contain 30 to 40 percent recycled content.
- **Indoor Environmental Quality** is enhanced when sustainable ceiling products are used, resulting in low emissions. Other potential advantages include acoustical performance, reduced glare, and lower energy costs.
- **Maintenance** is minimal because of easy replacement. Sustainable tiles are washable, soil resistant, and can inhibit or retard mold and mildew on the ceiling surface.
- **Reclaiming** old tiles for a recycling program is done by the manufacturer, who covers the costs.
- **Recycling** programs are national in scope, and can cover all ceilings and suspension systems, use recovered material to make new ceilings, and less virgin materials.

"An effective ceiling recycling program is designed to reduce the impact on the environment by redirecting used ceiling tiles from landfills back to the manufacturer, thereby creating a closed-loop process and offering a valuable end to what typically would have been thrown away," says Anita Snader, Associate Marketing Manager, Environmental Programs, Armstrong Ceiling Systems, Lancaster, Pennsylvania.

Disposing of old mineral fiber ceilings through a recycling program has several benefits. Owners can avoid landfill fees, dumpster, handling and transportation costs, if ceiling tiles are picked up by designated contractors. During demolition, removing old ceilings for recycling provides an early view of potential problems, structural issues, and abatement needs, and an orderly ceiling removal eliminates confusion and space limitations. Recycling makes less of a landfill impact, preserves natural and energy resources, and saves raw materials. Recycling old ceilings may be as fast as dumping them, with little adverse impact on demolition schedules.

Sustainable Ceiling Products

Some mineral fiber ceilings, suspension systems, and recycling programs can help achieve sustainable goals, especially when applied to LEED® ratings and credits in new construction (NC), existing buildings (EB) and commercial interiors (CI), in the energy and materials categories.

To optimize energy performance, high light reflectance ceilings provide more workplace luminance with fewer luminaires, and they meet the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) standard by the required 20 percent for new buildings and 10 percent for renovations.

Mineral fiber ceilings offer several benefits under the Materials and Resources LEED® category:

- **Construction Waste Management:** A closed-loop recycling program reclaims and reuses old mineral fiber ceilings from renovation projects.
- **Recycled Content:** Ceilings that contain high levels of recycled content, either post-industrial waste or post-consumer products, fall into this category. The amount of recycled content varies by product; however, the range includes mineral fiber (22 to 82 percent), fiberglass (40 percent), wood (45 percent), metal (25 percent), and suspension systems (25 percent).
- **Local/Regional Materials:** Multiple plant locations reduce the environmental impact of transportation from manufacturing facilities to building projects.
- **Rapidly Renewable Materials:** Mineral fiber ceilings contain cornstarch, a rapidly renewable material. Some ceiling tiles reuse post-consumer and post-industrial waste. Among the materials often used for recycled ceiling products are cornstarch, mineral wool (from a steel industry by-product), recycled paper (such as newspapers and telephone books), perlite (a naturally mined material, and recycled ceilings (from renovation projects).

Bamboo: Innovative Use of a Renewable Material

Vertically grained bamboo ceiling panels feature the inherent characteristics of natural bamboo to help create a warm ambiance and a memorable design statement. As a rapidly renewable resource, bamboo panels are sustainable, and can contribute to LEED® credits under the Materials and Resources category.

The natural look of bamboo ceilings is suitable for retail, hospitality, healthcare, higher education, office environments, lobbies, entrances, and conference rooms. Some bamboo ceiling products offer narrow reveals that minimize the grid, creating a more monolithic appearance than with other suspended ceilings. Perforated and unperforated options are available, with perforated ceilings providing acoustical control when used with an acoustical infill pad.

Minnesota's Sustainable Design Guide

The State of Minnesota's Sustainable Design Guide (www.msds.guide.umn.edu) educates architects, building owners, occupants, educators, students, and the public, and describes many environmental goals for state projects. "These Guidelines and the new State of Minnesota Buildings, Benchmarks, and Beyond are a constant reference for us, as illustrated in our DNR Windom Consolidated Headquarters, which was a pilot project discussed on the website," says Edward J. Kodet, FAIA, Principal, Kodet Architectural Group, Minneapolis, Minnesota.

"We routinely use sustainable materials in our educational facilities, including those from recycled materials, with low environmental impact, and those requiring minimal environmental costs to manufacture. We maintain a log of materials and their response to environmental impact," Kodet says.

As a rapidly renewable resource, bamboo panels are sustainable.

CLICK FOR ADDITIONAL REQUIRED READING

The article continues online at <http://www.archrecord.com/resources/conteduc/archives/0611green-1.asp>
To receive AIA/CES credit, you are required to read this additional text. The quiz questions below include information from this online reading.

AIA/ARCHITECTURAL RECORD
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LEARNING OBJECTIVES

After reading this article, you should be able to:

- Evaluate how to reduce environmental impact and building energy costs through sustainable design
- Identify performance characteristics of solar insulating glass
- Analyze the sustainability benefits of a recycling program for mineral fiber ceiling tiles
- Explain why water conservation is important to the environment
- Implement water conservation strategies with water efficient plumbing fixtures and valves, including high efficiency toilets, dual flush toilets, waterless urinals, and electronic faucets

INSTRUCTIONS

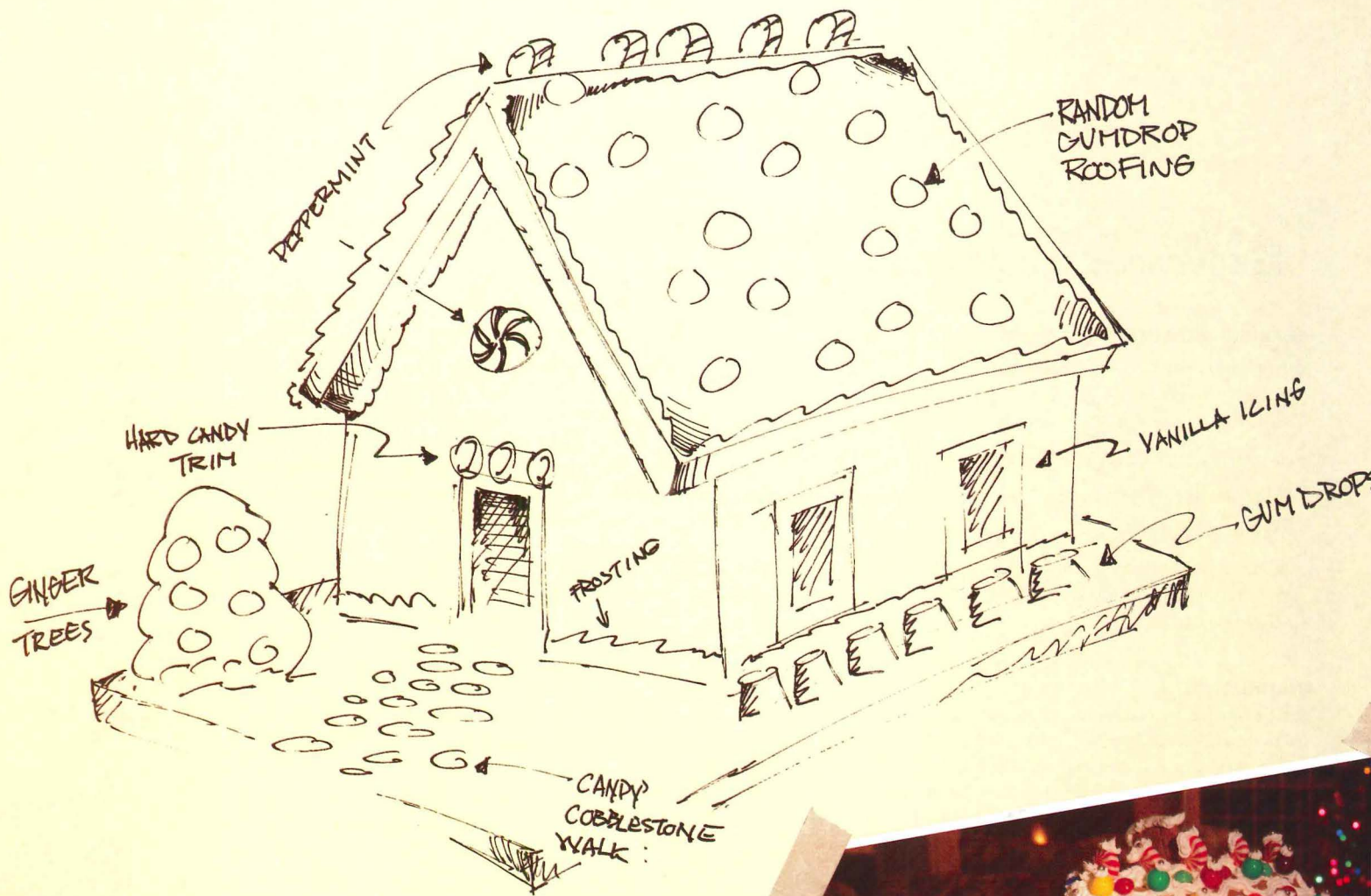
Refer to the learning objectives above. Complete the questions below. Go to the self-report form on page XX. Follow the reporting instructions, answer the test questions, and submit the form. Or use the Continuing Education self-report form on Record's web site—archrecord.construction.com—to receive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

QUESTIONS

1. Which statement describes the characteristics of solar insulating glass?
 - a. Small hairline cracks can form under severe cold conditions
 - b. It expands under prolonged high temperatures
 - c. It reduces glare, increases thermal control and environmental comfort for building occupants
 - d. Special window film is applied to the glass to reduce condensation in cold weather
2. What is the commonly used term that describes characteristics measuring environmental impact and glass performance?
 - a. Solar Heat and Radiation Gain Coefficient
 - b. Light to Solar Gain Ratio
 - c. Visible Solar Light Transmittal Factor
 - d. Infrared Radiation Exponent
3. Which term describes materials that are perpetually circulated in closed loops?
 - a. Cradle-to-grave cycle
 - b. Cradle-to-cradle cycle
 - c. Industrial recycling
 - d. Reclamation of industrial waste
4. Bamboo ceilings do not provide acoustical control due to their sound transmission ratings.
 - a. True
 - b. False
5. Which does not describe advantages of disposing of old mineral fiber ceilings through a recycling program?
 - a. During demolition, removing old ceilings provides an early view of potential problems
 - b. Owners can avoid dumpster fees, handling and transportation costs
 - c. Recycling always requires long lead schedules for designated pick-ups
 - d. Creates less of a landfill impact
6. What materials are most commonly used for recycled ceiling products?
 - a. Mineral wool, vermiculite, cedar wood chips
 - b. Baking soda, soy byproducts, vermiculite
 - c. Crushed glass, telephone books, calcium sulfite
 - d. Cornstarch, newspaper, perlite
7. Federal water energy mandates require which standard for toilet fixtures?
 - a. 1.6 maximum gallons per flush
 - b. 3.6 liters per flushometer
 - c. 1.28 minimum gallons per flush
 - d. 1.3 maximum gallons per flushometer
8. Which of the following is true for hardwired and battery operated faucets and flushometers?
 - a. Battery operated products are driven by solar power
 - b. Hardwired and battery operated fixtures have the same first costs
 - c. Hardwired flushometers and faucets are best suited for new construction
 - d. Batteries are generally changed on average every 5 years, based on 10,000 activations per month.
9. Which statement does not describe a High Efficiency Toilet?
 - a. Flushes at 1.28 gallons per flush or less
 - b. Offers two low water use flush settings
 - c. Uses a minimum of 20 percent less water than a standard toilet
 - d. Is a non-field adjustable fixture
10. Which of the following is true about water efficient fixtures?
 - a. Dual flush toilets offer a low water use flush setting of between .8 to 1.6 gallons per flush
 - b. Dual flush toilets save water by offering two settings, for manual and automatic
 - c. Waterless urinals use cartridges that are replaced after about 10,000 uses
 - d. A pressure assisted toilet uses a flushometer to create a siphonic flushing action

Barbara A. Nadel, FAIA, principal of Barbara Nadel Architect, in New York City, frequently writes about design and technology. She is the author and editor-in-chief of *Building Security: Handbook for Architectural Planning and Design* (McGraw-Hill, 2004).

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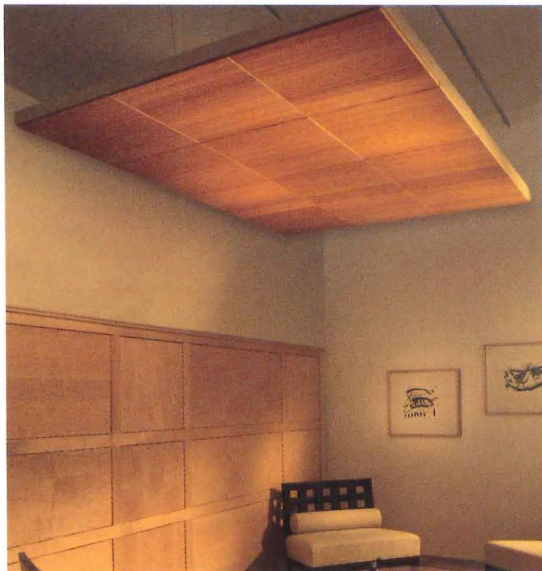
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Green Building: Essential Design Strategies For a Sustainable Future
PRODUCT REVIEW



Armstrong Ceiling Systems

NATURAL, EXOTIC LOOK OF BAMBOO NOW AVAILABLE IN NEW WOODWORKS® CEILINGS FROM ARMSTRONG

Sustainable, Environmentally Friendly Panels Can Also Help Contribute to LEED® Credits

The natural, exotic look of bamboo is now available in the WoodWorks® family of ceilings from Armstrong.

The new vertically grained WoodWorks Bamboo ceiling panels feature all the inherent characteristics of natural bamboo to help warm a space and create a memorable design statement. And, because bamboo is a rapidly renewable resource, the sustainable, environmentally friendly panels can also help contribute to LEED® credits (MRC6).

Measuring 2'x 2' in size, WoodWorks Bamboo ceiling panels are offered in two distinctive colors: Patina, a standard option, and Native, a premium option. Both are well-suited for use in a variety of applications ranging from retail, hospitality, healthcare, higher education and office environments to lobbies, entryways and conference rooms.

Bamboo Panels Available with Vector™ Edge

In addition, Bamboo panels are available in two edge details: tegular and Vector. The patented Vector edge produces a sleek 1/4" reveal that minimizes the grid, creating an upscale visual that is more monolithic in appearance than ordinary suspended ceilings.

The panels are also available perforated and unperforated. The perforated option provides acoustical control when used with an acoustical infill pad. The panels can be installed in a variety of standard suspension systems.

Real Wood Veneer Options Added to WoodWorks Ceiling Family

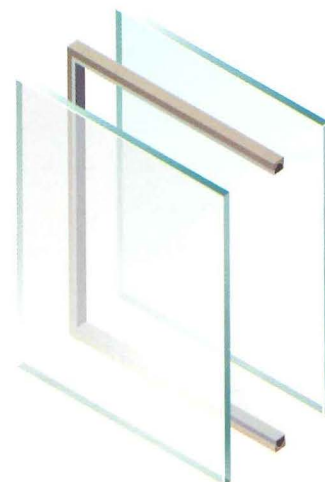
The company has also added darker, real wood veneer options to its WoodWorks family of ceilings with the additions of Natural Variations Dark Cherry and Constants Walnut. Designers can now choose from nine veneers and 32 standard wood ceiling options.

For additional information on new WoodWorks Bamboo ceilings, call 1-877-ARMSTRONG, (1-877-276-7876), or visit armstrong.com/woodworks.

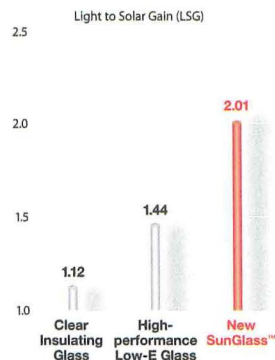
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OPTIMA PLUS® ERF SERIES FAUCET DEPLOYS PATENTED RF TECHNOLOGY

Sloan Valve Company's new Optima Plus® ERF Series sensor-operated faucet uses patented RF technology. The wireless connectivity of the ERF-885 faucet makes installation easy in both new and retrofit applications while eliminating vandalism to wiring.

The ERF-885 reduces false detection by combining both passive infrared and active infrared technologies. The unit ships complete with spout, sensor, control module, mounting hardware, and either a 4" or 8" trim plate. Audible signals emitted by the low-frequency, low-power RF faucet provide installation guidance and diagnostic cues such as a low-battery alert. Expected battery life is six years.

Sloan's ERF-885 faucet complements the company's growing line of water-saving, electronic plumbing fixtures.

Sloan Valve Company, the world's leading manufacturer of water-conserving plumbing systems, is celebrating its 100-year anniversary in 2006. Headquartered in Franklin Park, Illinois, the company manufactures plumbing products and accessories for commercial, industrial, and institutional markets worldwide.

For more information on Sloan's ERF-885 faucet, contact Sloan Valve Company at 10500 Seymour Avenue, Franklin Park, IL 60131. Telephone 800-9-VALVE-9 (800-982-5839, ext. 5609), fax 800-501-3989 or visit www.sloanvalve.com.

CIRCLE 114

Program title: **"American Hardwoods Enhance Healthy, Healing Spaces," (11/06, page 205)**

116SPONA

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Program title: **"Green Building: Essential Design Strategies For a Sustainable Future," (11/06, page 217)**

116SPONC

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Program title: "Western Red Cedar Shakes and Shingles: A Sustainable, Versatile Roofing Choice," (11/06, page 211)

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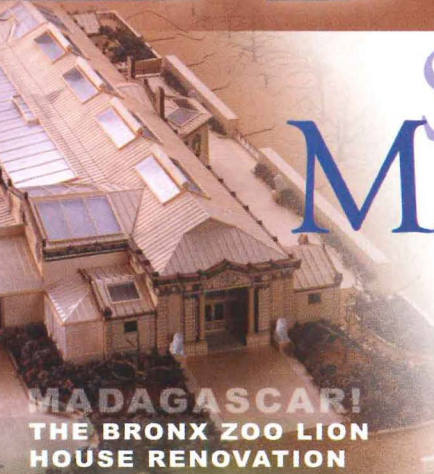


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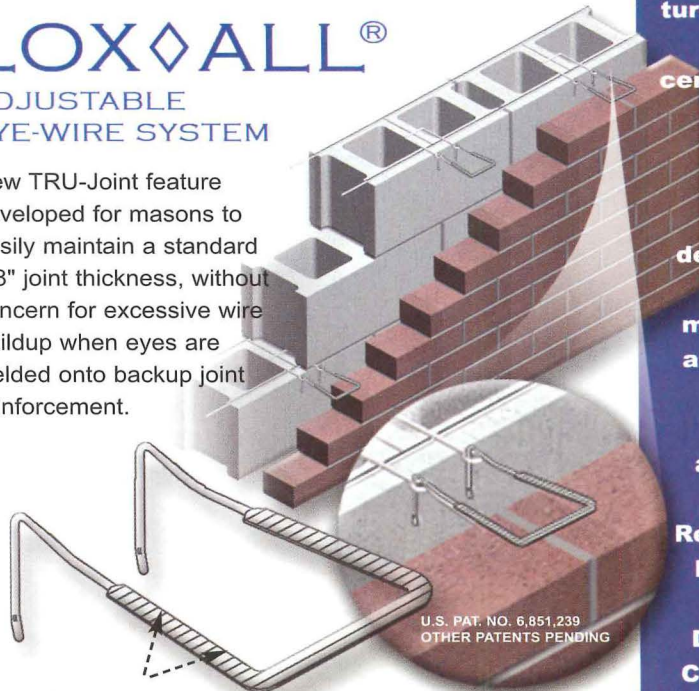
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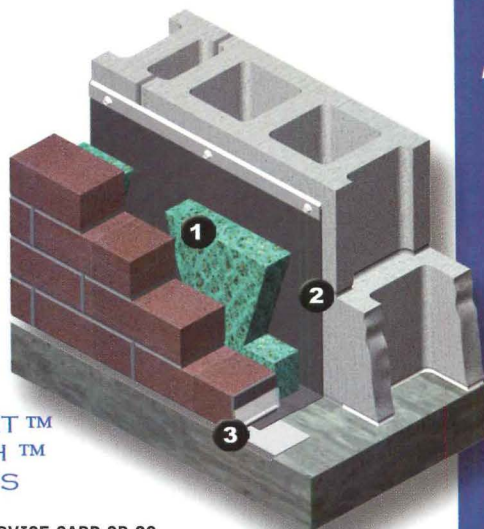
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Hohmann and Barnard, Inc. is proud to be part of the Wildlife Conservation Society's Bronx Zoo Lion House Renovation. These Hohmann and Barnard featured products are specified for the historic structure and contributed toward requirements for LEED certification. The Bronx Zoo Lion House conversion to its new Madagascar! Exhibit seamlessly integrates contemporary design and green technologies into the historic elements of this building. The adaptive-reuse project will house a new exhibit hall, multi-purpose space and animal holding areas. The Lion House/Madagascar! Renovation will be the First LEED Gold NYC Landmark and is part of the NYC Department of Design and Construction's Sustainable Design Pilot Program.

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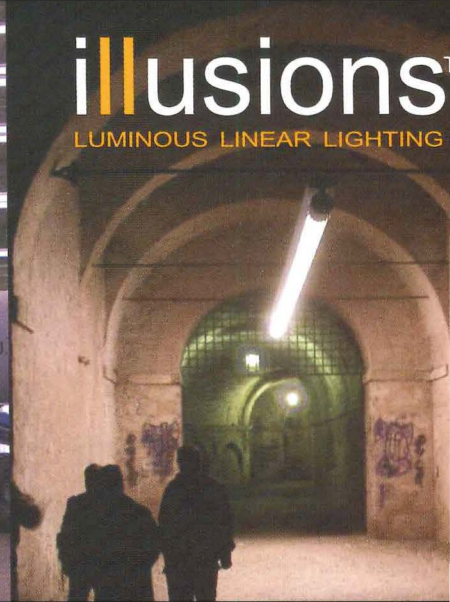
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Lighting

Three award-winning projects display seamless collaborations between architects and lighting designers

BRIEFS

Festival of Lights USA, a symposium fashioned after the Festival of Lights in Lyon, France, rolls into the historic Olde Town district of Conyers, Georgia, November 8 through 11. Designed to expand the specifier's knowledge of **light and color in outdoor environments**, the civic event features professional lectures, exhibits, and temporary lighting displays. Attendees receive either 15 Professional Development hours (PDH), AIA Learning Units (LU), or NCQLP Lighting Education Units (LEU) upon completion of the workshops, with sessions led by Arup Lighting's Rogier Van der Heide and Michael Rohde, a Berlin-based lighting director of L-Plan. Highlighting the festival, sponsored by Acuity Brands Lighting, **12 teams of lighting designers will illuminate buildings** and public areas throughout the town. The displays will be open for public viewing during the final two days of the program. Read more about it at www.festivaloflightsusa.com.

As part of its centennial celebrations, the

Illuminating Engineering Society of New York (IESNY) is partnering with Parsons The New School for Design's department of architecture, interior design, and lighting to produce a foldout **nightseeing map**, which will showcase standout civic design projects in New York City. The map, available in 2007, will be an illuminated "walking tour," with planned distribution to the general public through press and tourist bureaus. Lighting designer Leni Schwendinger and urban designer Brian McGrath, the project's directors, will offer a **glimpse into the cultural stories**, legacies, and idiosyncrasies of the nocturnal New York cityscape through its illumination. Existing projects (landmark, infrastructure, facade, landscape); pending projects (on-the-boards images and drawings); and imaginary projects ("what if" concepts by Parsons students) will be part of the mix. For more map project details, visit www.iesny.org.

Now architects can earn more education credits by studying lighting. The International Association of Lighting Designers (IALD) was recently approved as a registered provider for the AIA's Continuing Education Systems (CES) Registered Provider Program. As a registered preferred provider, the IALD will present targeted continuing education programs to AIA members. Plans are under way to register existing education programs as well as develop new ones. Meanwhile, the deadline for submitting entries to the IALD 24th Annual Awards for architectural lighting design is November 15. For information and rules, go to www.iald.org. W.W.

This month we showcase three recent winners of the 2006 International Association of Lighting Designers Annual Awards. Each of the U.S. projects received the highest honor, the Award of Excellence. Though varied in scale and program, the new buildings illustrate how a close collaboration between lighting consultant and



architect can enhance the profile and performance of commercial and civic structures.

In the Highland Crest neighborhood of Topeka, Kansas, Derek Porter Studio gives a mini-storage facility maximum impact with low-budget lighting. Going in-depth at a much larger site, we return to Pittsburgh's convention center [RECORD, May 2004, page 154] to learn how LAM Partners teamed with Rafael Viñoly to wash exhibition halls with diffuse fluorescents and daylight (above). We also swing down Chicago's South Wacker Drive to encounter a new office-tower lobby enhanced by Cosentini Lighting Design. Welcome to the winner's circle. *William Weathersby, Jr.*

CONTENTS

230 FLEX Storage Systems, Topeka, Kansas

Derek Porter Studio

236 111 South Wacker, Chicago

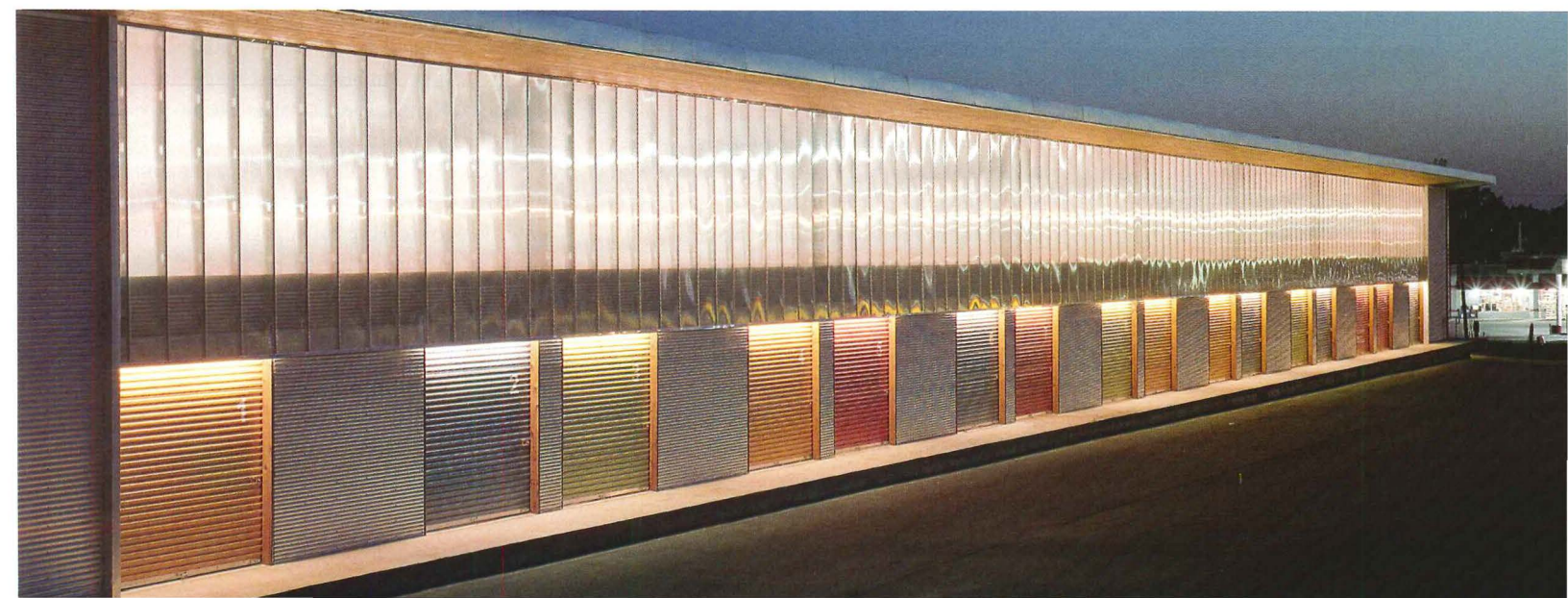
Cosentini Lighting Design

240 David L. Lawrence Convention Center, Pittsburgh

LAM Partners

244 Lighting Products

Brightly painted garage doors are illuminated by surface-mounted fluorescents integrated within FLEX's facade (top and bottom).



Derek Porter Studio elevates the image of FLEX, a mini-storage center, with simple, indirect lighting

By William Weathersby, Jr.

Since the closing of the Forbes Air Base more than 20 years ago, the Highland Crest neighborhood of Topeka, Kansas, has been in steady, socioeconomic decline. Although the neighborhood improvement association recently fought and won to keep a public school open, few businesses or civic entities have stepped into the void to create new magnets for community development. But in an unlikely turn of events, perhaps the most mundane of vernacular urban structures—the mini-storage shed—has helped mend the community's frayed edge and image. FLEX Storage Systems, designed by the Kansas City–based architecture firm *el dorado*, creatively combines standard building materials and simple forms to raise the profile of this humble commercial building type. Efficient, engaging lighting by Derek Porter Studio helps transform the urban landscape from blighted to blithe.

Constructing a building beyond the utilitarian blandness of a typical mini-storage facility was a key goal in the mind's eye of client Diane Alpert of Botwin Family Partners. Having inherited a dilapidated strip mall of shops on the 4-acre site, she commissioned a feasibility study to assess future commercial development. When the study found that area construction costs and market lease rates would not support upgraded retail outlets, the alternative economic model became a self-storage facility, supported by rezoning and a low-interest loan from the Topeka City Council.

"The design team was asked to create a building that would elevate the anonymous profile of a typical place for parking your belongings," says principal lighting designer Derek Porter. "The concept was an illuminated building that would outwardly serve as a symbol of renewal and engage the surrounding streets."

The 24,000-square-foot facility contains 180 conventional and 120 climate-controlled bays for commercial and personal storage. Led by principal Josh Shelton, the architects designed an aluminum-clad shed structure topped by a sloping roof that steps down the terraced site. Translucent, polycarbonate panels serve as clerestories, while the exterior of each garagelike door is painted a different bright color to create graphic punch.

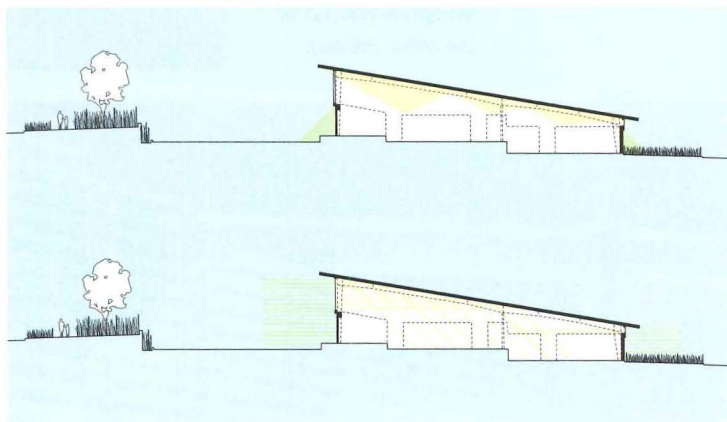
"Both indoors and out, the placement of lighting fixtures was the linchpin of the design," Porter says. "We wanted the lighting to serve multiple purposes while revealing subtle relationships between architectural elements." And to keep in line with the modest construction and maintenance budgets, Porter specified the same 4-foot-long T8 fluorescent lamp model that could be housed in three fixture types.

Surface-mounted fluorescents integrated within the building facade illuminate the colorful exterior garage doors. The luminaires are wet-location-rated and fitted with cold-weather ballasts and vandal-

resistant polycarbonate lenses. Each fixture is set in a niche above a 9-foot-wide garage door to simultaneously illuminate the facade, loading dock, and car parking lot. When the door is raised, the same fixture illuminates the inside of the storage unit. "The polycarbonate clerestory drops down to function as a valance for the fixture," Porter points out. This creates a seamless look, but also cuts down on vandalism, since the luminaires are shielded. And thanks to this fabrication, customers do not stand beneath overhead exterior downlights that would create harsh shadows hindering movement at night.

Inside, daylight pours through the polycarbonate clerestories and bounces off the sloped ceiling. Interior storage bins and corridors

Two sections show the use of electric light (top) and daylight (bottom) to illuminate FLEX Storage Systems. Clerestories on the north and south facades admit daylight. Indirect fluorescents illuminate the interior's sloping-shed roof.



are indirectly illuminated with continuous rows of two-lamp fluorescent strips mounted on the top of storage cubicle walls. This concealed location shields the direct view of lamps and reduces the likelihood of damage from clients moving goods through the corridors and bins. The luminaires are zoned in rows running parallel to the clerestories and controlled by managers at wall-box switches in the office area, depending upon daylight conditions. Rather than drywall, the ceilings of the storage units are composed of reinforced nylon netting to allow light to permeate the interiors.

The sales area, the only space equipped with exposed luminaires, features suspended fluorescent strips set in an X pattern. "The installation provides general illumination with a more expressive visual gesture," Porter says.

Project: FLEX Storage Systems, Topeka, Kansas
Lighting designer: Derek Porter, Studio—Derek Porter, principal designer; Katrina All, Katie Green, project team
Architect: *el dorado*—Josh Shelton,

principal architect; Doug Hurt, Brady Neely, project team
Engineer: Stephen P. Masland (m/e/p, structural)
Consultant: Off the Grid (landscape)
General contractor: Kelley Construction

Fluorescent strip lights mounted atop the storage walls indirectly light the interior bays and hallway (right). Suspended, exposed fluorescents add a sculptural flourish in the office (below).



Throughout the facility, all mechanical and electrical systems were carefully coordinated with the architect and located away from the illuminated ceiling to reduce visual clutter. The layering of daylight and fluorescent illumination minimizes energy consumption and maintenance while meeting personal security and pragmatic performance requirements for clients at all hours of the day in the 24-hour facility.

Making good on her word to make FLEX more of a community partner than merely a commercial tenant, owner Albert has sponsored special events tied to the complex. An inaugural art exhibition titled *Moving In Moving Out*, also supported by the architects, showcased site-specific installations by regional contemporary artists. Displayed within

KEEPING FLUORESCENT LIGHTING TO ONE LAMP TYPE AND THREE FIXTURE STYLES CUT DOWN ON MAINTENANCE COSTS.

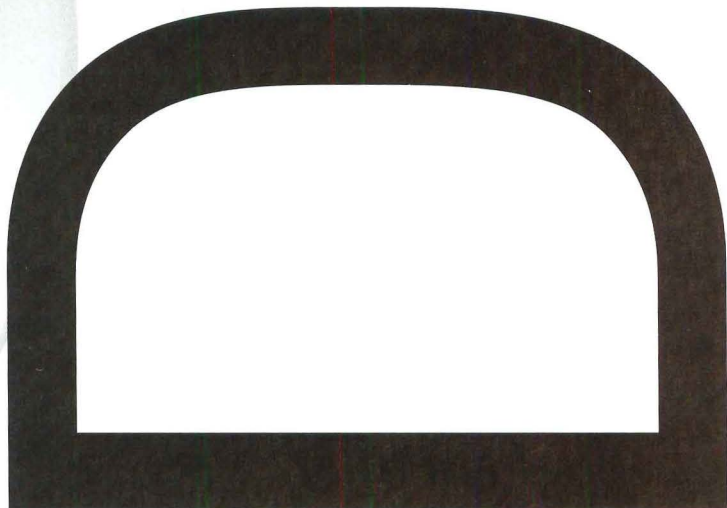
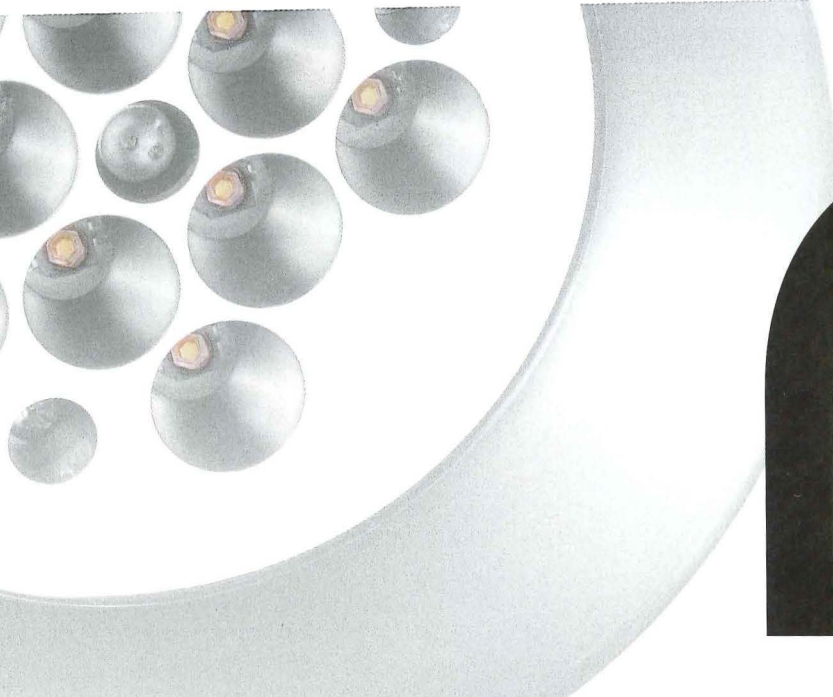
vacant storage units, the office area, and corridors, the works focused on the themes of storage, reuse, community history, and local identity. Part of FLEX's mandate and design, Porter notes, is to adapt should the community's needs someday sidestep storage. "The lighting solution was specific to the required storage functions and the building's compositional rhythms while also streamlined enough to adjust to other programs," he says.

Beyond its pleasing facade and interiors threaded with light, FLEX gives another environmental boost to Highland Crest: The grounds were planted with native prairie grasses and wildflowers researched by a local botanist. Neighbors and students now watch the birds and insects attracted to the site, with U-Hauls seeming almost out of place. ■

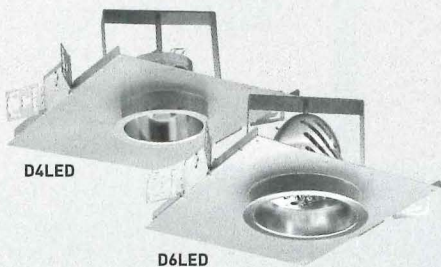
Sources

Fluorescent fixtures: *H.E. Williams*
Polycarbonate glazing: *Polygal*

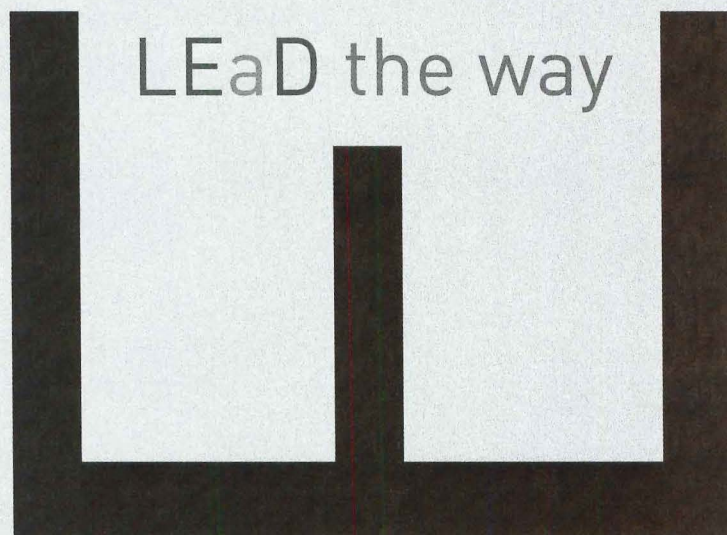
For more information on this project, go to Lighting at archrecord.construction.com.



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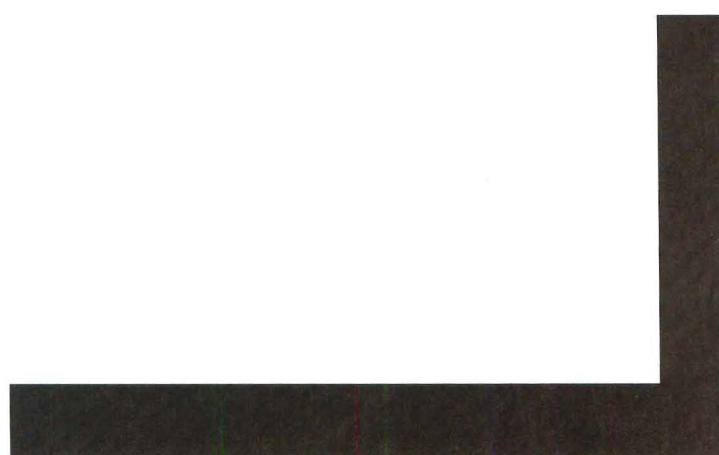
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The radial patterns of the ceiling and floor inspired the integration of lighting elements. The nonreflective glazing allows passersby a glimpse inside.



Cosentini Lighting Design bathes the base of Chicago's 111 SOUTH WACKER office tower with subtle light

By Leanne French

For the street-level identity of a new 52-story office tower at the corner of 111 South Wacker Drive in downtown Chicago, architect Goettsch Partners (formerly Lohan Caprile Goettsch) and its client, real estate developer The John Buck Company, envisioned an open lobby with a tour-de-force, translucent design. This concept translated into a curved, cable-supported glass facade that allows passersby to see into the lobby, which is framed by 50-foot-tall core walls clad in white Italian marble. Columns placed 80 feet apart visually open the space and draw the eye to radial patterns repeated from the stone flooring to a stepped ceiling that cleverly turns the underside of a parking garage ramp into a sculptural element. Illumination by Cosentini Lighting Design is seamlessly integrated into the architecture to enhance the lobby's visual presence throughout the day, from early morning to after hours when the city sleeps.

The design team and developer began the 111 South Wacker project after completing another office high-rise, the UBS Tower, a block away on North Wacker Drive. This latest building comprises 1.4 million square feet, with each floor designed to be entirely free of interior columns. The structure's center core accommodates a 50-foot lease span east and west of the core, and a 60-foot span to the north and south. The layout maximizes exterior views of the city skyline and interior daylighting.

At street level, the building appears open and spacious, yet the footprint of the upper floors occupies almost the entire site. The design team accomplished this by diagonally transferring the 40-foot column spacing as it passes through the parking garage levels to 80-foot column spacing at grade. The column transfer is visually expressed on the facade of the parking levels.

For the lobby, principal design architect James Goettsch and principal lighting designer Stephen Margulies concentrated on the illumination of the white Carrara marble-clad core elements, which are contrasted by a wall of red Rossa Verona enclosing the lobby on two sides. "Everything really works off of the intensity and effect of the white surfaces," says Margulies. "The architect's concept was to simulate a skylight

that would approximate daylight and bathe the interior planes." Affirms Goettsch partner Steven Nilles, "It was crucial to light the core uniformly. That is hard to do with walls that are that high."

Instead of opting for a luminous glass ceiling, which raised maintenance concerns, Margulies suggested indirect fluorescent lighting as a solution. Dimmable T5 strip lights are concealed within aluminum profiles in a small, open, extruded-grid system, allowing light to bounce off of the Sheetrock ceiling above. "We were able to produce huge amounts of light, conceal the light fixtures, and create a system that is very easy to maintain because of the open grid," Margulies explains.

During the day, the core walls are bathed in a cool, diffuse "northern" light. At night, tungsten accent fixtures suspended within the grid transition to a more dramatic ambience. The lobby lighting, controlled via a preset dimming system, sequences through four scenes from cool "simulated daylight" to warm tungsten light for early evening and nighttime. A "sleep scene" gives the lobby's core a subtle glow until morning.

The pattern of the stepped ceiling design was a case of form following function. The lobby had to accommodate a ramp for a parking garage that ascended from levels four through nine. "We came up with a straightforward solution to a complicated problem by spiraling the ramp around the core and concealing it," says Nilles. "The geometry dictated by the circular two-way ramp influenced every aspect of the design of the lobby. It helped to create a visual theme at the base of the building."

Dimmable fluorescent strip lights, integrated into architectural coves on the underside of the ramp, reinforce the radial patterning. To main-

tain continuity for illumination washing the floor, additional tungsten downlights are concealed at the edges of the ramp.

Lighting also contributed to the sustainability of the building, which earned a LEED core-and-shell Gold rating from the U.S. Green



The base of the office tower engages the streetscape with diffuse lobby illumination.

Project: 111 South Wacker, Chicago
Lighting designer: Cosentini Lighting Design—Stephen Margulies, principal; Fernando Soler, designer
Architect: Goettsch Partners—James Goettsch, FAIA, design partner;

Steven Nilles, AIA, partner in charge; Joseph Cliggot, AIA, senior project architect; Vince Caporale, E. Aaron Greven, AIA, Ming-Chih Lai, AIA, Ryan Moody, Martin Salas, Scott Seyer, AIA, Joseph Shultz, design team

Leanne French is a freelance writer based in New York City. She is a frequent contributor to the RECORD lighting and interiors sections.



The ceiling's stepped, radial pattern follows the arc of a parking garage ramp on the floors above the lobby (left). At the core, dimmable T5 fluorescents are set in an open grid to reflect off the ceiling plane (below).

Building Council. Another green stamp of approval comes from trees in the lobby lit with metal-halide track lights set in radial ceiling slots, which promote plant growth. "We had a specific foot-candle criteria that the landscape architect wanted to achieve," says Margulies. "Even though we

A PRESET DIMMING SYSTEM CREATES VARIED SCENES WHILE SAVING ENERGY.

are stimulating growth with electric lighting, the trees are on turntables so they can rotate to the windows to benefit from daylight."

Trees bring the outside into the lobby, while granite interior flooring and exterior paving extends the visual reach of the radial patterning to the curb. The cable-supported, nonreflective glazing is engineered without a base so the building enclosure appears as a thin skin.

By creatively harnessing standard lighting techniques to the driving force of the lobby's architectural detailing, the design team has provided a welcoming arrival point for the office complex. "The lobby and corner site is actually small and wedged between two buildings, but that's the last thing you think of when your eye focuses into the core," Nilles says. "It's like an orchestral event; an enormous amount of planning and engineering went into the design of the space, but when you succeed, that effort disappears." ■

Sources

Interior ambient lighting: *Bartco*

Lighting; LSI

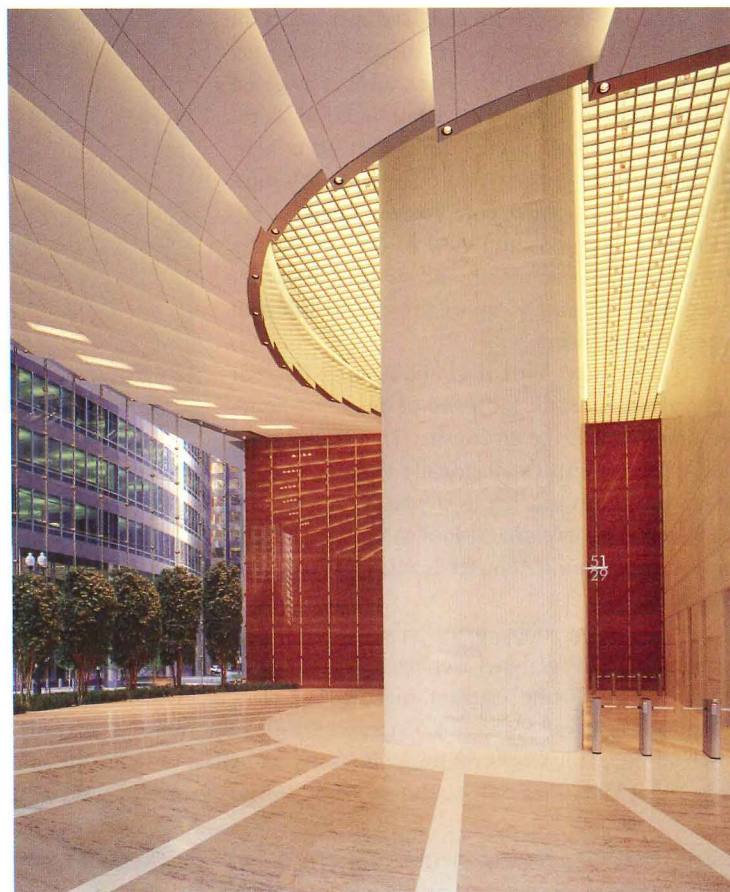
Downlights: *Kurt Versen*

Lighting controls: *Lutron*

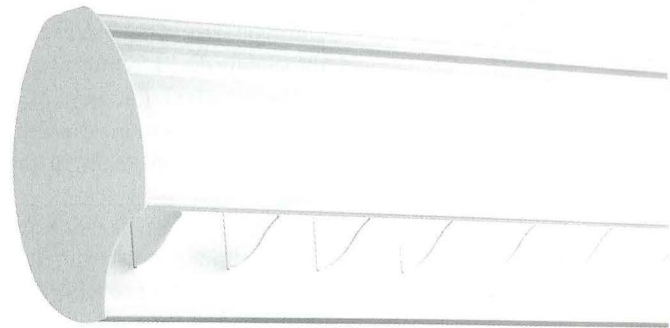
Glazing: *Viracon; Schott*

For more information on this project, go to Lighting at

archrecord.construction.com.

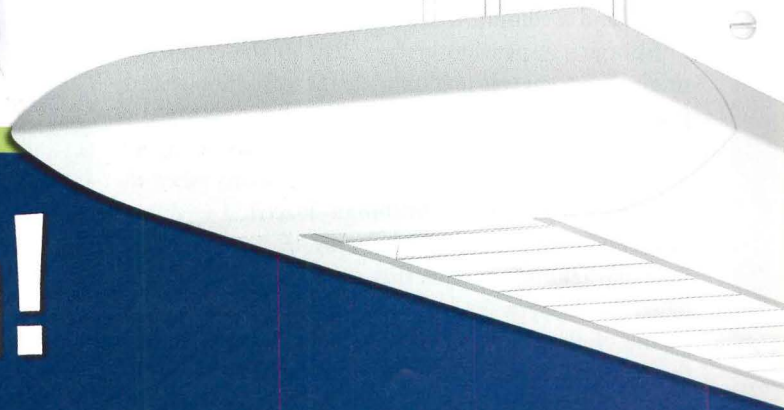


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LAM Partners illuminates the sweeping forms of Rafael Viñoly's **CONVENTION CENTER** in Pittsburgh

By Leanne French

Anyone who has ever walked the exhibition halls of a traditional convention center is familiar with the slightly dazed feeling of time standing still. The standard function of a “black box” convention space, after all, is to make exhibited products look the same whether it’s eight in the morning or six in the evening.

“It’s like a sensory deprivation tank,” laughs Keith Yancey, senior associate of Cambridge, Massachusetts-based LAM Partners, the lighting firm that collaborated with Rafael Viñoly Architects on redefining the trade-show experience at the David L. Lawrence Convention Center in Pittsburgh.

Viñoly’s structure took a pioneering sustainable approach, making the 1.45-million-square-foot space the first LEED Gold-certified green convention center and the world’s largest certified green building. Beyond its environmental profile, the architectural presence of the convention center, located on the Allegheny River, is transcendent, with a sweeping roof, tall masts, and a column-free tensile structure inspired by Pittsburgh’s suspension bridges. Part of the architect’s original concept was to illuminate the exhibition spaces primarily with daylight.

LAM Partners was working with the architect on the Boston convention center when it was asked to join the design team in Pittsburgh. Electrical engineer Burt Hill Kosar Rittelman had already developed preliminary daylighting concepts that were tested and refined based on analysis by Lawrence Berkeley Labs. LAM Partners followed through by designing a comprehensive luminous environment encompassing the green aspects of the project.

Using a physical model, sundial, tilt table, and digital video camera, the lighting team tested how the architectural design would perform in various daylight conditions. The team considered factors such as sky-light configurations, shading devices, glazing types, and sky conditions through various seasons. “We had to test many possible conditions,”



Yancey says, “because sunlight pouring into the exhibition floor for a car or home show might be great, while computer equipment exhibitors wouldn’t want direct sunlight.”

The solution for controlling daylight was a solar-dimming system, which offers three types of shading for admitting or altering available sunlight: no shade, diffusing, and blackout. During the intermediate or diffusing stage, opaque shades can be overlapped incrementally to throttle down the amount of daylight until full blackout is achieved for exhibition purposes.

When adding electric lighting to the daylight component, LAM Partners took its cues from Viñoly’s structure. “We wanted to celebrate the volume of the space,” Yancey says. “The architecture called out for a linear lighting solution. To hang big pods of glaring light fixtures would have ruined the flow of the sweeping rooflines.”

Project: David L. Lawrence Convention Center, Pittsburgh

Lighting designer: LAM Partners—Keith Yancey, AIA, principal designer; Paul Zaferiou, designer

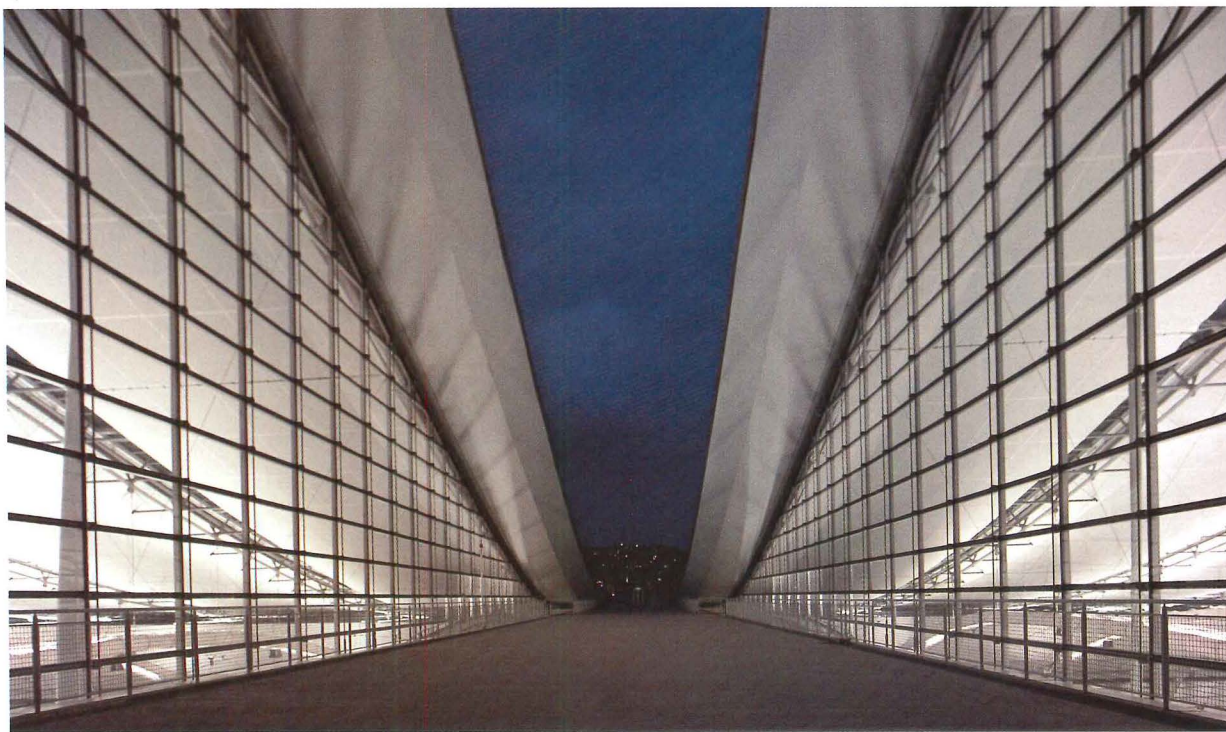
Architect: Rafael Viñoly Architects—

Rafael Viñoly, FAIA, principal architect; Jay Bargmann, AIA, project director; David Rolland, AIA, project manager

Electrical engineer: Burt Hill Kosar Rittelman Associates



Rather than being flooded with exterior lighting, the convention center glows from within to stand out on the Pittsburgh skyline (this page and opposite, top). Integrated lines of fluorescent fixtures downlight the exhibition-hall floor while uplighting the tensile roof structure (opposite, bottom). A shading system of sails and panels adjusts daylighting levels.



Meeting rooms feature compact fluorescent downlights and wall washers that balance brightness during the day and provide visual depth at night (top). Gathering spaces facing the river and the city are equipped with lines of low-brightness fluorescent downlights, controlled by photocells that respond to changing daylight. The public rooftop pedestrian bridge leading to the riverfront terrace borrows controlled, reflected light from the convention center's interiors (left).

While most large exhibition halls are traditionally illuminated with industrial metal-halide sources, Yancey says that would have been out of character for the architecture and difficult to blend with daylight. Instead, T5HO fluorescent lamps downlight exhibits and uplight the ceiling structure. Instant-start fluorescent capability allowed the lighting

PHOTOCELL CONTROLS ADJUST THE MIX OF DAYLIGHT AND ELECTRIC LIGHT.

team to devise a multiswitch system tied to photocell controls that respond to changing daylight. Lighting hardware is integrated into fabric ducts that act as large-scale luminaires.

Aiding the building's sustainable mission, the fluorescent design expends fewer watts, requires less frequent relamping, and uses 60 percent less mercury than a metal-halide array. Sustainability is carried through with the exterior lighting, where wall-mounted, cutoff fixtures

and low-brightness recessed downlights illuminate public spaces and streets. PAR metal-halide sources illuminate giant cable anchors inside and outside the building. Reflected light from interior downlighting and wall washing is supplemented by small, custom step lights to illuminate a rooftop pedestrian bridge and terrace that offer stunning views of the city and river. Since its debut, the convention center's glowing nighttime presence has already become a symbol of architectural innovation and environmental responsibility within Pittsburgh's cityscape. ■

Sources

Interior ambient lighting: Corelite; Neoray

Downlights: Portfolio

Pendants: Neoray

Exterior lighting: LSI; Kim Lighting; SPI Lighting; Designplan; Lumière

Lighting controls: Leviton

Glazing, skylights: PPG Industries; LinEl Signature

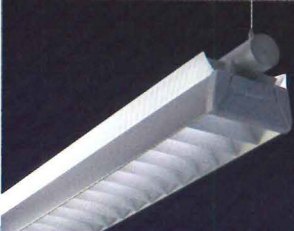
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D'Amour Center for Cancer Care, Springfield, MA

Lighting Design: Enrique Rojas, IALD

Architect: Steffian Bradley Architects

Photography: ©Robert Benson Photography

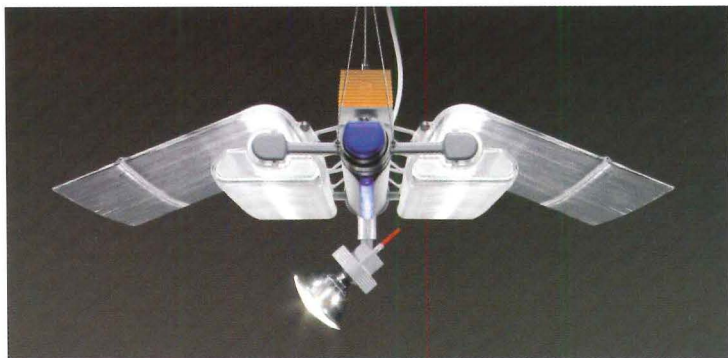
Lumière Coronado 710 in application

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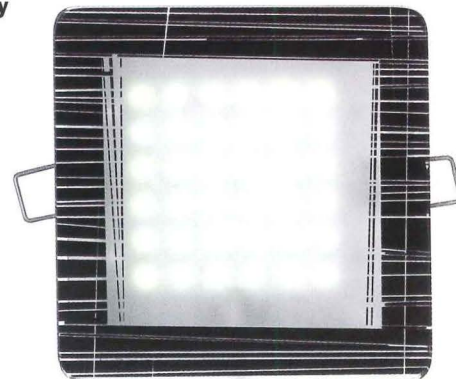


▲ Creature from the deep

Milan-based Reggiani has teamed up with Richard Rogers Partnership to create the Maantis linear pendant. Intended for high-end offices, Maantis was inspired by the iridescent glow of deep-sea creatures and incorporates T5, spot, and LED lighting. Translucent prismatic polycarbonate ribs diffuse, reflect, and refract light, minimizing glare. LEDs running along the lower spine act as zonal indicators and provide optional low-level lighting. The fixture will be available in the U.S. in the first quarter of 2007. Reggiani Lighting USA, Wallkill, N.Y. www.reggiani.net **CIRCLE 201**

► Shallow, in a good way

Introduced at this year's Light+Building fair in Frankfurt, Germany, Nimbus ultra-flat SMD (surface-mounted device) LED semiconductor diodes are cool to the touch and offer a low installation depth. A patented ultra-thin plate in a special alloy cools the SMD LED illuminant, which can operate for up to 50,000 hours. The ceiling-mounted Printline SMD LED (above) features an overall height of 1". The front is made of matte acrylic glass with a back-printed louver profile in two designs. Hamburg's new Chamber of Commerce by Behnisch Architects has been equipped with SMD LEDs on all five floors. Nimbus, Stuttgart. www.nimbus-design.com **CIRCLE 202**



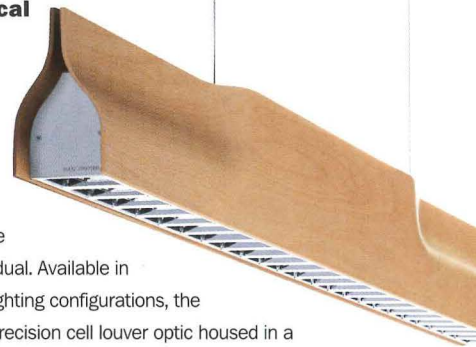
◀ LED downlights

A line of LED recessed light fixtures in a choice of 4" and 6" apertures has been added to Prescolite's Architektur family of downlights. Each downlight consists of a patent-pending light engine/reflector assembly (an assembly of LEDs, heat sinks, circuit boards, and option components designed to deliver light) and the housing. An array of parabolic

reflectors within the light engine has been designed to eliminate brightness while delivering light in a uniform optical distribution. The new D4LED and D6LED downlights are listed for wet location under covered ceilings and offer a full range of reflector finishes and colors. Prescolite, Spartanburg, S.C. www.prescolite.com **CIRCLE 203**

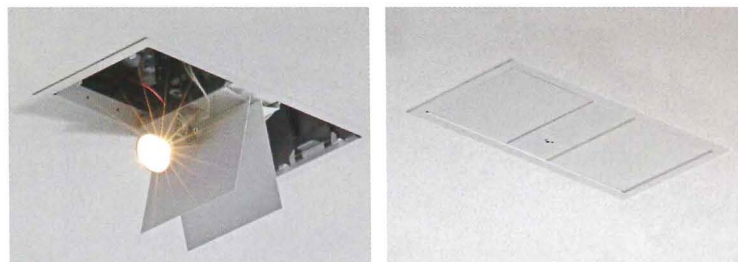
► Organically technological

Zumtobel Staff may have shortened its name to Zumtobel, but the company continues to expand its product line. The introductions this year focus on the theme of "Humanergy Balance"—the balance between the environment, energy, and the individual. Available in indirect, direct, and indirect-direct lighting configurations, the Evio pendant luminaire features a precision cell louver optic housed in a slimline flowing shape clad in glowing hardwood (right) or in Eternit, a noncombustible, pressed-synthetic-fiber composite with a concrete appearance. Zumtobel Lighting, Highland, N.Y. www.zumtobel.us **CIRCLE 204**



◀ LED night light

Lighting manufacturer inter-lux will now exclusively offer the Wagner Premium Class of solar-powered LED outdoor lighting in North America. The line includes 17 weatherproof models produced in a material palette including high-grade stainless steel and FSC-certified teak wood. The New Port path light (left) is 35½" high and features a monocrystalline solar panel, three white LEDs, and two rechargeable batteries. inter-lux, Columbia, Md. www.inter-lux.com/wagner **CIRCLE 205**



▲ There when it's needed, hidden when it's not

Recessed, retractable, and self-contained, Velaré concealed emergency lighting hides away during normal lighting conditions and only reveals itself upon the loss of power. Trim and door panels are finished in a durable, white textured power paint, but the fixture can be customized and painted to match any surface, wall, or ceiling. Two fully adjustable MR16 halogen lamps deliver up to 140 feet of center-to-center spacing. Self-diagnostics are standard on every unit, including an advanced microprocessor, which automatically performs monthly self-tests. Lithonia Lighting, Conyers, Ga. www.lithonia.com/Velaré **CIRCLE 206**



Designing for a Sustainable Future...

AAL's Indirect product line added a sibling, the 'Straight Fixed Head'. The Dark Sky Friendly luminaire produces soft, glare-free illumination making it a perfect match for applications where mood is just as important as illumination. The 'Straight Fixed Head' model is available for post and wall mount configurations and can be styled with a round or square upper reflector to compliment architectural themes. The Indirect product family utilizes energy efficient lamp sources up to 150 watts and Egress (emergency) options are available to enhance public safety.

For product information, log onto:
www.aal.net/indirect_sfh.html

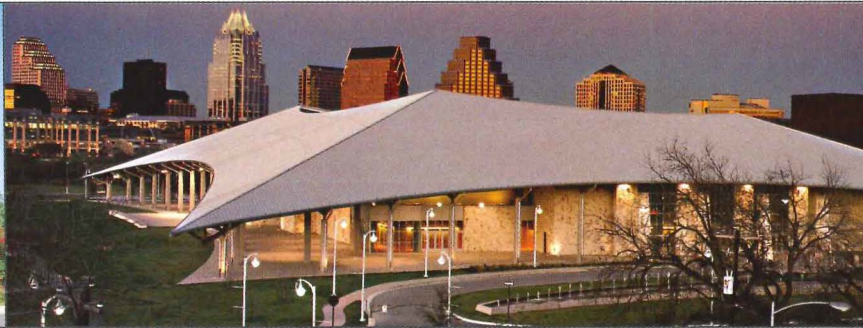
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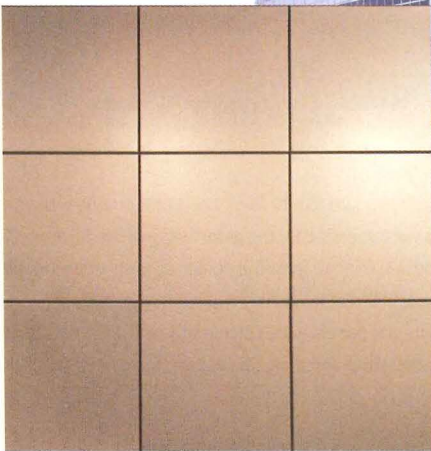
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Products

Metal Siding & Roofing

Our roundup this month includes the latest metal systems that **protect and enhance roofs and walls**. Hurricane- and/or wind-resistance, reflectivity, and energy efficiency remain important issues for this category, which includes products made of **metal composites, zinc, steel, and aluminum**. *Rita Catinella Orrell*



Metal-composite wall-panel system gives the illusion of multipanel design

The Formawall Graphix Series is an insulated metal-composite wall-panel system that creates the effect of a multipanel installation with a single panel. Graphix Series panels are available in custom widths from 10" to 40" in ½" increments. The 2"- and 3"-thick panels can be specified with a maximum of 12 segments per panel.

The multipanel effect is cre-

ated by adding segmented joints that mimic panel joints. These segmented joints can be placed at almost any location along the panel, which is available in lengths of up to 20'. The panels can be installed horizontally or vertically and the segmented joints can be spaced at a minimum of 12" apart.

The system is available in standard 22/26 gage G-90 galva-

nized-steel face and liner with CFC-free foam core. The panel's joists are Centria's patented, vented, and dry-sealed rainscreen, pressure-equalized joinery. As it is a complete wall system, Graphix does not require additional wall components, such as batt insulation, exterior sheathing, or building wrap. Centria, Moon Township, Pa.

www.centria.com **CIRCLE 207**

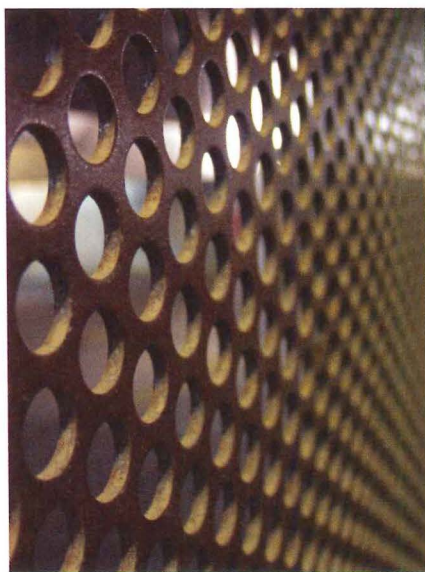
The appearance of 28 individual panels is created here from only five Graphix Series panels (top left). It takes three panels to create the look of a grid of nine panels (bottom left). This building rendering of an application of Graphix panels (above) belies the actual number of panels that would need to be specified for the project.

Products Metal Siding & Roofing



▲ Hurricane-tough panel system

By adding a thin layer of Kevlar fabric to Reynobond's polyethylene core, Alcoa has created the only light, flexible, aluminum-composite panel that can withstand hurricane-propelled debris and similar types of impact without the use of backer materials. The panel has passed rigorous simulated-hurricane-impact tests and is designed to withstand wind-borne debris and hurricane wind speeds up to 130 mph, such as in a Category 3 hurricane. Alcoa, Eastman, Ga. www.reynobondwithkevlar.com **CIRCLE 208**



◀ Aging technique

Architectural Weathered Steel is a custom-made, preweathered surface from Zahner. Produced exclusively on copper-bearing steel surfaces, the proprietary technique produces an insoluble surface coating that reduces runoff staining on adjacent surfaces. Suitable for interior and exterior surfaces, the technique creates a rich texture in a spectrum of color, from deep reddish browns to orange-brown tones. A. Zahner, Kansas City, Mo. www.azahner.com **CIRCLE 210**

► Cedar-look aluminum roof

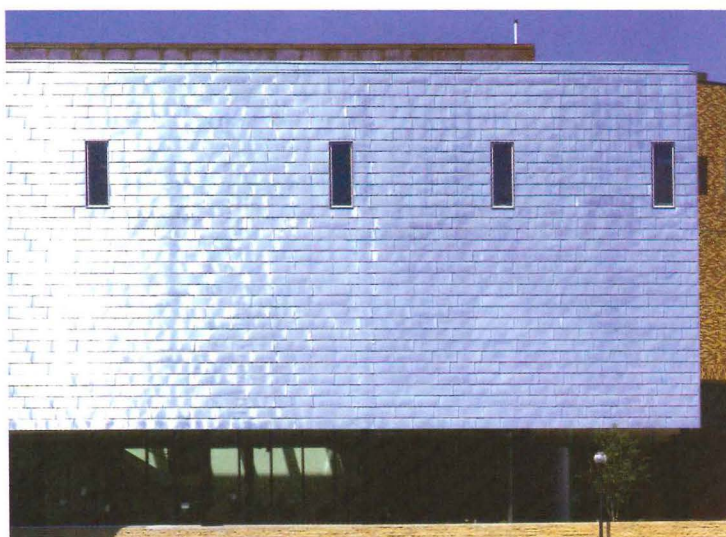
The Perfection Country Manor Shake offers the textural appearance of authentic hand-split cedar shakes with the strength, durability, and energy efficiency of modern aluminum roofing. Each roofing panel is crafted into eight individual simulated shakes of varying height, width, and thickness to duplicate the random overlap appearance and 3D properties of real cedar shakes. The line is available in an earth-toned palette of 10 shades. Classic Metal Roofing Systems, Piqua, Ohio. www.classicroof.com **CIRCLE 212**



◀ One cool roof

Met-Tile has become an Energy-Star partner for its metal-tile panel roofing system that combines the look of tile with the performance of metal. The updated steel roofing line features a Super Series 4800 Super Cool architectural coating system in 10 colors. The coatings have solar reflectivity values ranging from 26 to 67 percent, which meets and in some cases exceeds Energy Star requirements. Met-Tile, Ontario, Canada. www.met-tile.com/coolroof.htm

CIRCLE 209



▲ River of zinc

More than 14,000 square feet of Rheinzink titanium zinc wall panels from Una-Clad/Firestone were specified for the gallery wing of the \$7 million Rochester Art Center facility in Rochester, Minneapolis. The center consists of two architectural forms, one encased in zinc and the other in copper, joined by an enclosed three-story glass atrium. The shimmering zinc panels were selected to play off the surface of the neighboring Zumbro River. Rheinzink America, Cambridge, Mass. www.rheinzink.com **CIRCLE 211**

► Geometric stainless-steel finishes

Contrarian Metal Resources has introduced four new imported stainless-steel finishes: Austenite 55, Camouflage, Micro Checker, and Origara. Suitable for use in high-traffic areas like elevators and entryways, Austenite 55 (right) reflects light in various ways, depending on the light source and angle of view within its mosaiclike texture. Camouflage has a "camo"-shaped pattern, Micro-Checker has a tread-plate appearance, while Origara features a grid of contrasting squares. Contrarian Metal Resources, Cranberry Township, Pa. www.metalresources.net **CIRCLE 213**



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Product Briefs



▲ Panels inspired by design icons

Inspired by a range of design movements, places, and even people, the relief panels in the Iconic Panels line are created of formed laminate over a caved wood core. The panels can be sawn, nailed, screwed, glued, or simply mounted on walls with the manufacturer's special Panel Cleats system. Seapod (above, in Walnut) is a retro design borrowed from the biomorphic playfulness of textiles and wall coverings of the 1950s and '60s. B&N Industries, Burlingame, Calif. www.bnind.com **CIRCLE 214**



◀ Sexy stool hugs you close

The Onda stool is the latest design by Stua founder Jesus Gasca. The stool's seat follows the contours of the sitter and provides lumbar support by hugging the person's lower back. The seat also features a soft rubber skin that allows for color and textural contrasts with the shell. Suitable for both indoor and outdoor use, Onda has a stainless-steel frame and comes in bar-counter (29" seat height) and kitchen-counter (26" seat height) versions. Onda is available in the U.S. through Design Within Reach (www.dwr.com). Stua, San Sebastian, Spain. www.stua.com **CIRCLE 216**

► Real wood laminate

Formica's Veneer Premium Wood Surfacing Collection includes 30 new engineered wood veneers that combine fine wood grain and a polyurethane finish. All are derived from sustainable forestry practices and produced using fast-growth species, including poplar, obeche, basswood, and bamboo (right). Five collections, including Modern, Traditional, Metropolitan, New Classic, and Exotic Veneers, make up the group. Formica, Cincinnati. www.formica.com **CIRCLE 217**



▼ Completing the thermal family

Kawneer celebrated its 100-year anniversary this year by unveiling an expanded exhibition booth at the AIA show and introducing new products, including the AA3900 Thermal Sliding Door and the AA900 ISOWEB window, completing Kawneer's family of high-performance products. Designed specifically for climates subject to temperature extremes, both products feature an ISOWEB polyamide thermal break that provides low thermal transmittance and high condensation resistance while eliminating dry shrinkage. This design also allows for a two-color finish option not possible with traditional thermal barriers. Kawneer, Norcross, Ga.

www.kawneer.com **CIRCLE 215**


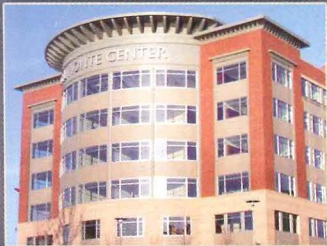


▲ Sunscreen helps cool off the hot Texas summer

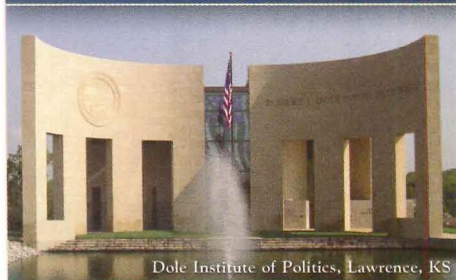
For the new global headquarters for engineering and construction company Fluor, in Irving, Texas, Alcan Composites USA created custom sunscreen louvers of Alucobond aluminum-composite material. The energy-saving louvers were designed, fabricated, and delivered for installation faster than a competing premanufactured sunscreen, and contributed to the project's submission for certification by the USGBC's LEED rating system. The sunscreen louvers were designed to reduce the building heat load and shade the glass-lined dining area and an entry space lined with images documenting the firm's history. Alcan Composites USA, St. Louis, Mo. www.alcancompositesusa.com **CIRCLE 218**

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Product Briefs

► The latest china pattern

Specialty chemical manufacturer Degussa has created a flexible ceramic wall covering for interior applications. CCFlex is durable enough for hospitals, schools, and offices, yet lightweight enough to be used in airplanes, trains, and ships. The breathable, strippable finish can be custom-colored and patterned, and is antimicrobial and waterproof, as well as fire-, impact-, and soil-resistant. It is also heavy-metal-, plasticizer-, and stabilizer-free, meaning it has no phthalates linked with endocrine disruption. Degussa, Parsippany, N.J. www.degussa.com **CIRCLE 219**

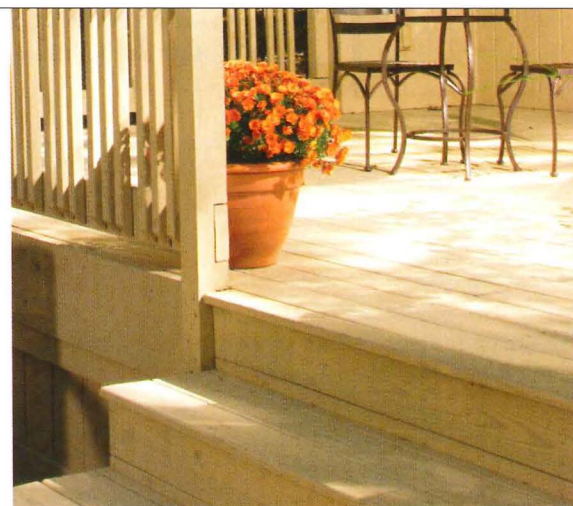


◀ Wood ceiling tiles

Bioline Solid Finish tiles, available in cherry, beech, and maple real-wood veneers, are composed of 70 percent recycled, postindustrial material; feature coordinated core color and veneer (no edge banding required); and have a self-centering revealed edge. They are Class-1 fire-rated and offered in a variety of perforations and custom cutouts. Also Class-1 rated, Bioline Organic Texture tiles are available in light, medium, dark, and custom wood shades, and are composed of 80 percent recycled, postindustrial material. Illbruck Acoustic, Minneapolis. www.illbruck-acoustic.com/wood **CIRCLE 220**

► Finishing up outside

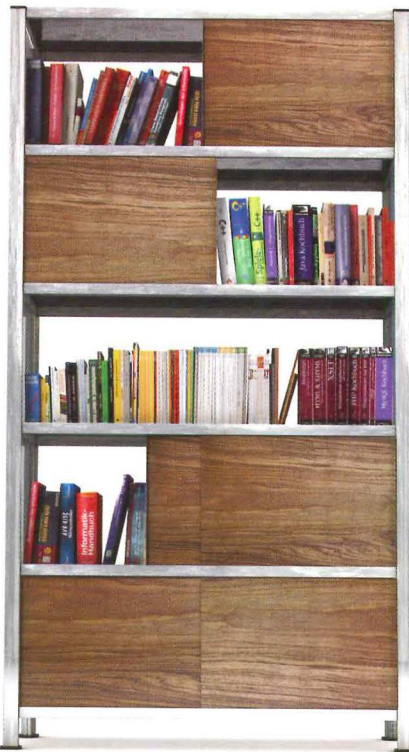
The Benjamin Moore Exterior Stain Collection includes a full selection of VOC-compliant finishes varying in opacity from clear to solid color for facades, decks, and wood furniture. Finish options include clear, transparent, semitransparent, semisolid, and solid color stains. Benjamin Moore has also created a line of Prep Products appropriate for every type of wood no matter its condition, including either new or worn, plagued by mildew or mold, or tannin-leached types, such as redwood or cedar. Benjamin Moore & Co., Montvale, N.J. www.benjaminmoore.com **CIRCLE 221**



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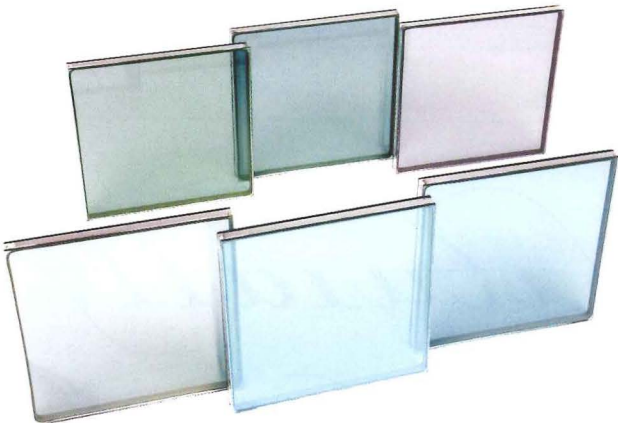
► **Adding some Swiss style to the mix**

Loadbearing, a U.S./Swiss company based in New York City, was launched at ICFF last May. Intending to fill a void in the marketplace for the simple, Modern furniture common in Switzerland, Loadbearing has introduced two furniture lines designed by Zurich-based Mathias Frei. Available in several heights and configurations, MShelving customizable storage system allows specifiers to create individual looks from a range of interchangeable colored-steel and wood-veneer sliding doors and panels. The MShelving bookshelf, shown here with walnut veneer doors, measures 41.7" wide x 78.7" high x 15.8" deep. Sharing the same material palette as MShelving is the Tilt table system for home or office, which transforms from a dining table to a coffee table, and stacks neatly for storage. Loadbearing, New York City. www.loadbearing.com **CIRCLE 222**



◀ **Cool new glass**

Solarban z50 glass, the latest addition to PPG's line of Solarban solar control Low-E glasses, features a cool steel-blue-gray appearance, minimal exterior reflectance, and comfortably bright levels of visible light. When combined with popular tints from the PPG Oceans of Color collection of spectrally selective tinted glasses (left), Solarban z50 glass dramatically expands the aesthetic and performance options available to architects. PPG Industries, Pittsburgh. www.ppgideascape.com **CIRCLE 223**



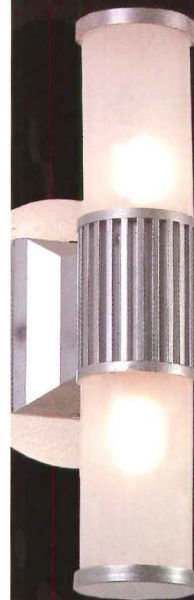
► **Kitchen conversation piece**

The stainless-steel Menhir island hood, from Zephyr's Elica Collection, was designed by Zephyr artist-in-residence David Lewis. Lewis found inspiration for the hood's shape from the upright stones, called menhirs, found at prehistoric sites like Stonehenge. Crafted in Italy, the 22" fluted hood features a powerful 600 cfm blower, recessed halogen lighting, and a "Control Ball" interface that provides complete access to all functions: pushing the ball to the left controls the fan; pushing it to the right controls the lighting. The unit comes with a cone-shaped remote control, also designed by Lewis. Zephyr Ventilation, San Francisco. www.zephyronline.com **CIRCLE 224**



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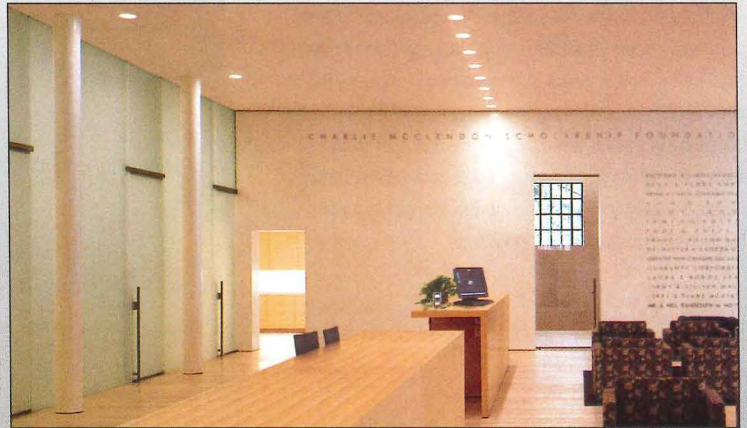
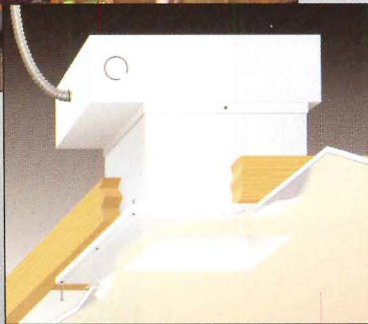
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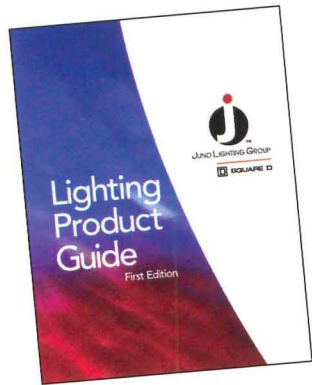
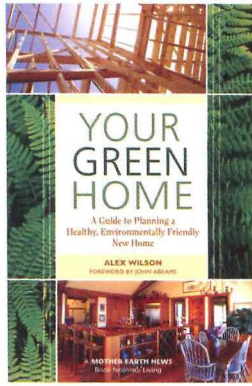
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Product Resource: Literature

Residential green building

Your Green Home is the latest book by Alex Wilson, founder and president of BuildingGreen. [Wilson and BuildingGreen are contributors to McGraw-Hill's *GreenSource* magazine.] The 256-page book provides homeowners with a range of options for designing and building a green home, covering topics such as water conservation, landscaping, energy efficiency, and building materials. BuildingGreen, Brattleboro, Vt. www.buildinggreen.com **CIRCLE 222**

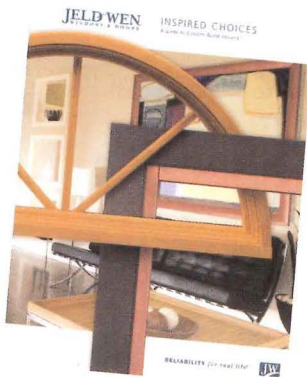


Inclusive lighting guide

Juno Lighting has published its first *Lighting Product Guide*, a single source of detailed information on the company's nine product brands. The 912-page guide features all of the products within the Juno, Indy, Alfa, AccuLite, ModuLight, Aculux, NaviLite, DanaLite, and Elate brands. It offers product descriptions, photos, available accessories, and any special ratings, such as Energy Star. Juno Lighting, Des Plaines, Ill. www.junolightinggroup.com **CIRCLE 223**

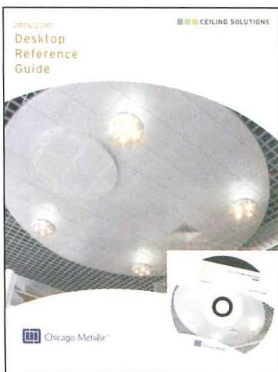
Wood window inspirations

Jeld-Wen Inspired Choices—A Guide to Custom Wood Options offers inspiration for homeowners and architects who want their custom wood windows to reflect a personal touch. Examples include window designs based on a wedding ring, a sketch of a cathedral window, and a cherished family piano. Jeld-Wen, Klamath Falls, Oregon. www.jeld-wen.com **CIRCLE 224**



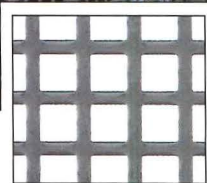
Desktop ceiling guide

Chicago Metallic's comprehensive *Desktop Reference Guide* is intended to be a definitive source for the company's ceiling systems. The guide features pictures, drawings, and specification information for Chicago Metallic metal ceilings, ceiling panels, and grid suspension systems. The guide also comes in a digital version, on an accompanying CD. Chicago Metallic, Chicago. www.chicagometallic.com **CIRCLE 225**



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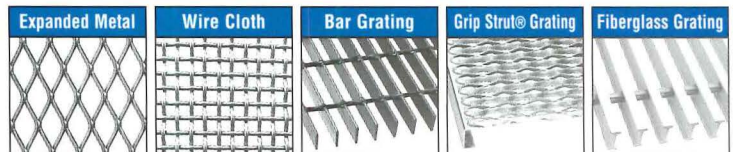
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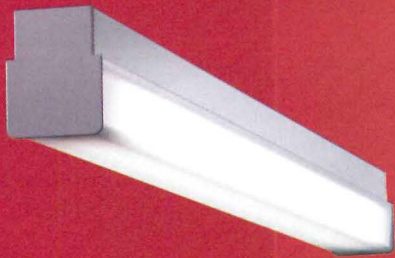
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Product Resource: On the Web

www.hurricaneconstruction.net

The Hurricane Construction Network is an online center devoted entirely to educating builders and code officials. It offers a forum and a state-by-state directory to locate news and resources relating to hurricane-resistant construction. The site is a good resource for this timely topic, though the individual state pages could use some beefing up.



www.gardenarchitects.com

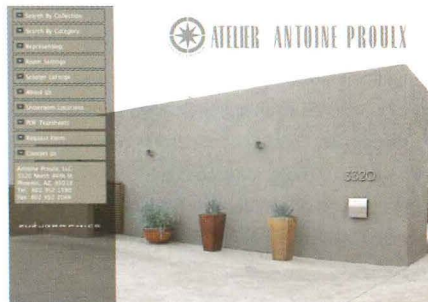


www.gardenarchitects.com

Set up as a retail site, this online showroom for contemporary furnishings for gardens, parks, and other outdoor spaces allows specifiers to order planters, bollards, outdoor seating, and more, from renowned manufacturers such as Emeco, Richard Schultz Furniture, and Komplot.

www.steelcase.com

Steelcase's site was recently named to *BtoB* magazine's top 10 great Web sites that excel in communicating with customers and prospects. Criteria for selection included ease of navigation, user-friendliness, and a design that embodies the corporate brand—all of which it offers.



www.antoineproulx.com

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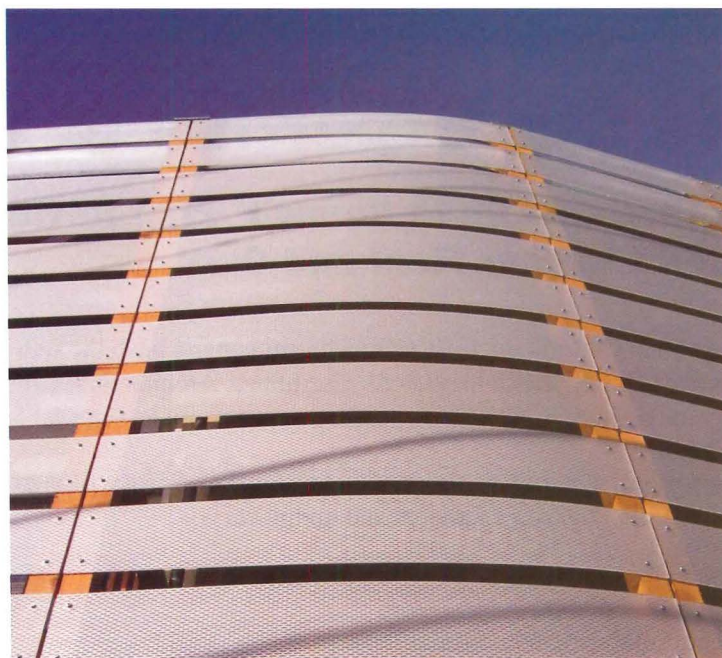
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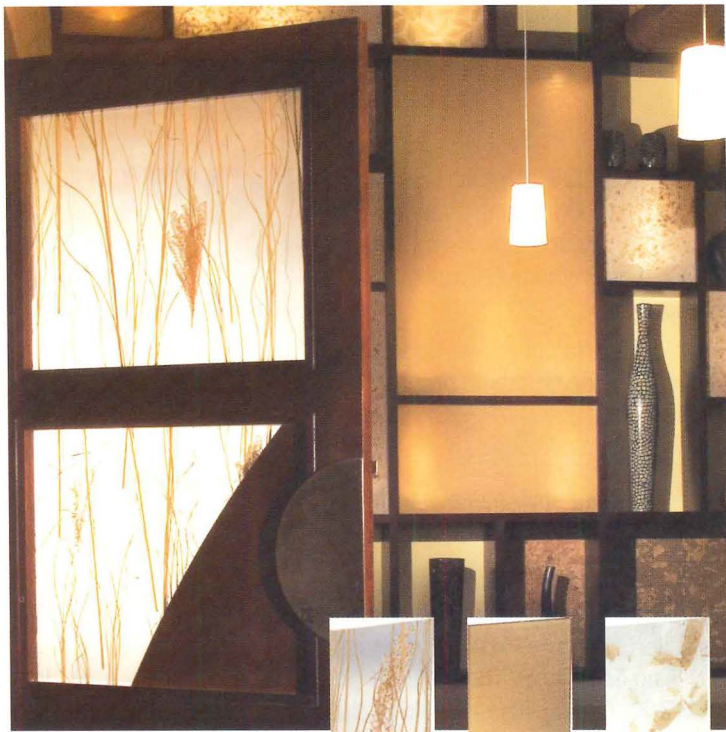


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Dates & Events

New and Upcoming Exhibitions

Hostile Terrain: Reflections on Romania's Industrial Landscape Baltimore

November 1–December 22, 2006

An exhibition by photographer Paul Burke reveals how the transformation of Romania's social and political structure is reflected in the physical structures that make up its landscape. On view at the AIA Baltimore Gallery. Call 410/625-2585 or visit www.aiabalt.com.

Smith-Miller + Hawkinson Architects New York City

November 9–December 1, 2006

This exhibition is held through Parson's Department of Architecture, Interior Design, and Lighting. Call 212/229-8955 or visit www.parsons.edu/architecture.

Modernism in American Silver: 20th-Century Design Miami Beach, Fla.

November 10, 2006–March 25, 2007

This show charts the stylistic design history of modern American production silver while exploring the economic and cultural factors that influenced silver design, manufacture, and marketing across more than seven decades. At the Wolfsonian-FIU. Call 305/535-1001 or visit www.wolfsonian.org.

CA BOOM Design and Architecture Tour Los Angeles

November 11, 2006

This year's final fall tour will include Mt. Washington and Echo Park. Tours are led by the actual designers and architects. The architects and designers will provide insights on the project, share information on their client's needs, their design process, some of the execution challenges and their solutions, and answer questions. Call 310/394-8600 or visit www.caboomshow.com.

Walking Tours of Downtown D.C. Washington, D.C.

November 11, 2006

Martin Moeller, senior vice president and curator at the National Building Museum, will lead two different walking tours of downtown D.C., focusing on buildings featured in the new edition of the *AIA*

Guide to the Architecture of Washington, D.C., which Moeller wrote under the auspices of the Washington chapter of the American Institute of Architects. Call 202/272-2448 or visit www.nbm.org.

Toward Substantial Surfaces Los Angeles

November 13–December 15, 2006

This exhibition of student work documents the

research, design scenarios, and models produced for the 2006 spring Advanced Topics Studio led by Heather Roberge in the UCLA Department of Architecture and Urban Design. At Perloff Gallery, UCLA. Call 310/267-4704 or visit www.aud.ucla.edu.

OMA in Beijing: **China Central Television Headquarters** by Ole Scheeren and Rem Koolhaas



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Dates & Events

New York City

November 15, 2006–February 26, 2007

Scheduled to open for the Beijing Olympics in 2008, the complex comprises three buildings and a media park situated on a 20-hectare site east of Beijing's Forbidden City. The international partnership Office for Metropolitan Architecture (OMA) won the competition for its design in 2002, and the project broke ground in 2004, with OMA partner Ole Scheeren leading its design and execution from Beijing. The exhibition explores the project through an array of graphics, renderings, and explanatory texts, as well as large- and small-scale models. A selection of architectural drawings from New York's Museum of Modern Art collection will situate the project as one of the most visionary built works in the history of modern architecture. At MoMA. Call 212/708-9400 or visit www.moma.org.

Architects Fired Washington, D.C.

Opens November 17, 2006

Some of D.C.'s most innovative and celebrated architects turn their design sensibilities to the medium of clay. This exhibition is on view at Cross Mackenzie Ceramic Arts. Call 202/333-7970 or visit www.crossmackenzieceramicarts.com.

Seamless

New York City

November 27–December 15, 2006

An exhibition of exclusive works by world-renowned architect Zaha Hadid. At Phillips de Pury and Company's Chelsea headquarters. Call 212/940-1200 or visit www.phillipsdepur.com.

The 2006 National Design Triennial: Design Life Now

New York City

December 8, 2006–July 29, 2007

Inaugurated in 2000, the Triennial seeks out and presents the most innovative American designs from the prior three years in a variety of fields, including product design, architecture, furniture, film, graphics, new technologies, animation, science, medicine, and fashion. On view throughout the museum campus will be the work of 87 designers and firms, ranging from established design leaders such as Apple Computer, architect Santiago Calatrava, and Nike to emerging designers like Joshua Davis, Jason Miller, and David Wiseman. At the Smithsonian's Cooper-Hewitt, National Design Museum. Call 212/849-8400 or visit www.ndm.si.edu.

Ongoing Exhibitions

Learning from North Lawndale Chicago

Through November 18, 2006

Though only one of Chicago's many neighborhoods, North Lawndale presents a microcosm of historical, cultural, and architectural significance. Along with a gallery of stately greystone homes, elegant parks, synagogues, and churches, North Lawndale was home to such luminaries as Golda Meir, Benny Goodman, Dinah Washington, and Dr. Martin Luther King, Jr. Famed Route 66 travels through it, and it was also the birthplace of the blues music known as the "West Side Sound." This exhibition shows not only the significance of North Lawndale's heritage but also explores how a neighborhood contributes to the life of a city and how, though a neighborhood may change, by reinventing itself it can continue to grow and thrive. At CAF's ArchiCenter. Call 312-922-3432 or visit www.architecture.org.

10th International Architecture Exhibition of the Venice Biennale Venice

Through November 19, 2006

In its 10th year, this international exhibition is directed by Richard Burdett and dedicated to cities, architecture, and society. Two collateral sections will complement the theme of the international exhibition: *Cities of Stone*, curated by Claudio D'Amato Guerrieri, and *City-Port*, curated by Rinio Bruttomesso. Fifty countries will be represented. Call 39 041 5218711 or visit www.labiennale.org.

Chicago Architecture Foundation River Cruise

Through November 19, 2006

An interesting way to get a close look at all the new high-rise construction talking place along the Chicago River with trained volunteer docents. The cruises start at the southeast corner/lower level of the Michigan Avenue Bridge at Wacker Drive, just below the Hyatt Regency. For more information, visit www.architecture.org.

The Loop: Designs for a Vertical City Chicago

Through November 25, 2006

Every stage in the birth of the Chicago skyscraper, from the earliest sketches through the final drawings to the drafting linens and blueprints, can be viewed in this exhibition from the

historic archives of D.H. Burnham and Company. Unbuilt designs for the city's tallest early office buildings demonstrate the unparalleled creativity of the firm, the world's largest at the dawn of the age of skyscrapers. At ArchiTech Gallery. Call 312/475-1290 or visit www.architechgallery.com.

**Investigating Where We Live
Washington, D.C.**

Through November 26, 2006

Participants in the museum's summer outreach program, "Investigating Where We Live," both designed this exhibition and filled the gallery with their unique work, including photographs, drawings, collages, poems, stories, and narratives. This year, middle, junior, and senior high school students from the Washington metropolitan area explored three neighborhoods in the southeast quadrant of the city: Capitol Heights, Hillside, and Uniontown. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

**Projects 83: Monika Sosnowska
New York City**

Through November 27, 2006

Projects 83 introduces the work of Monika Sosnowska, an artist living in Warsaw, Poland. Sosnowska creates architecturally structured installations that dramatically transform a viewer's perception and experience of a space. She makes her works in response to a given setting, and this installation has been conceived specifically for the Museum of Modern Art. At MoMA. Call 212/708-9400 or visit www.moma.org.

**P.A.N. (Progressive Architecture
Network)**

New York City

Through December 2, 2006

Curated by Winka Dubbeldam with Helene Furjan, this exhibition features the work of five young international architecture offices, whose attitudes toward the discipline are similar. The exhibition will contain models, as well as drawings and photographs, exemplifying the work of each office. At the Frederieke Taylor Gallery. Call 646/230-0992 or visit www.frederieketailorgallery.com.

**Glass: Material Matters
Los Angeles**

Through December 10, 2006

One of the first exhibitions of contemporary glass to explore the artistic use of glass in a diverse range of decorative objects, sculpture, conceptual

art, and architecture. At the Los Angeles County Museum of Art. Call 323/857-6522 or visit www.lacma.org.

**RoTo Architects: Prairie View
Los Angeles**

Through December 17, 2006

The exhibition of RoTo Architects' Architecture and Art Building of the Texas Prairie View A&M University features large-scale photographs of the building, a mural-size silk photo print, a large Plexiglas model stand fabricated to house numerous sketch models, and a video documenting the construction and project completion in early 2006. At the Southern California Institute of Architecture (SCI-Arc). Call 213/613-2200 or visit www.sciarc.edu.

**Carlos Garaicoa
Toronto**

Through December 31, 2006

From a futuristic city made of rice-paper lamps to photographs capturing Havana's deteriorating cityscape, this exhibition features 15 recent works by one of Latin America's most high profile artists, contemporary Cuban artist Carlos Garaicoa. At the Royal Ontario Museum. Call 416/586-8000 or visit www.rom.on.ca.

**Structure: The Los Angeles Series
Los Angeles**

November 5, 2006–January 5, 2007

An exhibition of national-award-winning artist Ted VanCleave. A selection of 16 of his new photographic images captures Los Angeles in a bold and colorful way that extends beyond representation to become brilliant, almost surreal abstraction. These highly stylized photographs juxtapose vibrant color and the geometry of L.A.'s architectural landscape. At ChopChop Salon/Gallery. Visit www.tedvancleave.com.

**Lectures, Conferences, and
Symposia**

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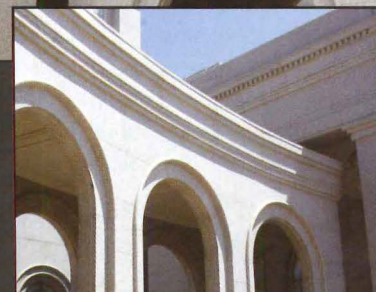
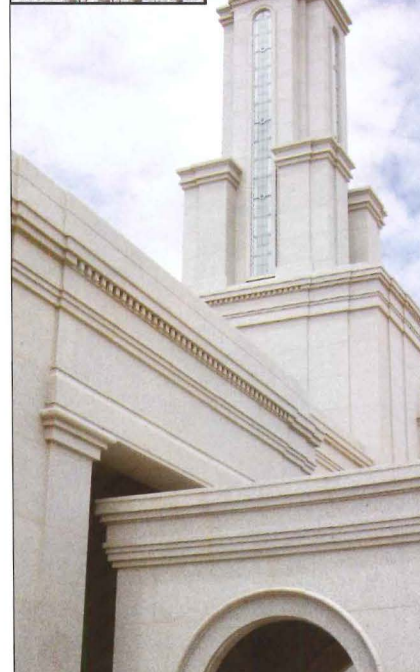
Los Angeles

*November 1, 8, 15, 29, and December 6,
2006*

The program includes lectures by Zbigniew Oksiuta; MADA s.p.a.m.'s Qingyun Ma; Fuad K. Malkawi; and Brendan MacFarlane, as well as a discussion on "Schindler Redux" moderated by SCI-Arc director Eric Owen Moss. At Southern

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Dates & Events

California Institute of Architecture (SCI-Arc). Call 213/613-2200 or visit www.sciarc.edu.

Lecture: Materials and Design for a Sustainable Interior Washington, D.C.

November 1, 2006

Join in a discussion about the latest trends and technologies for your home. Dr. James Seferis, a member of the National Materials Advisory Board of the National Research Council, will explain how materials from the interior of jets can be used in your home. Then interior designer Sharlyn Underwood, will demonstrate how green design can be tangible to everyone regardless of their current knowledge on the subject. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Increasing Your Home's Value and Performance Washington, D.C.

November 2, 2006

Consumers recognize that upgrading kitchens and baths, and building new space, adds value to a home. But remodeling is also a perfect opportunity to add performance and health improvements that will lower energy bills. Darin Hughes, high-performance-building expert and senior vice president at Green Homes America, will describe how to incorporate smart choices into remodeling to achieve greater value, comfort, and energy cost savings. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Lecture: Edward Eigen New York City

November 2, 2006

Edward Eigen's lecture, "Conjuring Comfort: Robert-Houdin's Electric House and other Modern Illusions" is offered through Parsons The New School for Design's department of Architecture, Interior Design, and Lighting. For more information, call 212/229-8955 or visit www.parsons.edu/architecture.

Lecture: The Art of Christian Menn's Bridge Engineering: Spanning from Switzerland to America Washington, D.C.

November 6, 2006

Dr. Eugen Bruhwiler of the Swiss Federal Institute of Technology in Zurich will discuss the work of Professor Christian Menn, examining projects

such as the Bunker Hill Bridge in Boston, the Washington Road Pedestrian Bridge in Princeton, New Jersey, and the Peace Bridge in Buffalo. At the Embassy of Switzerland. Call the National Building Museum for further information, 202/272-2448 or visit www.nbm.org.

Lecture: Mark Mack Los Angeles

November 6, 2006

A faculty member in the UCLA Department of Architecture and Urban Design since 1993, Mark Mack established MACK Architect(s) in 1984. His current projects include museums and institutional buildings in the United States, hospitality and mixed-use complexes in the Middle East, and housing projects in Austria and Korea. At UCLA Perloff Hall. Call 310/267-4704 or visit www.aud.ucla.edu.

Lecture: Ted Cullinan Vancouver, B.C.

November 7, 2006

Ted Cullinan of Edward Cullinan Architects will speak as part of the 2006-2007 lecture series produced by the Vancouver League for Studies in Architecture and the Environment. At C300 Theatre. Call 604/683-8588 or visit www.lecturesonarchitecture.net or www.edwardcullinanarchitects.com.

Upstate: Public-Private Syracuse, N.Y.

November 8, 2006

A symposium at the Warehouse, Syracuse University, School of Architecture. Call 315/443-8238 or visit www.soa.syr.edu.

Lecture: Alvar Aalto: Finnish Architecture & Design Washington, D.C.

November 8, 2006

Markku Lahti, director of the Alvar Aalto Museum and Foundation, will discuss Aalto's distinguished career, including his Finnish and American buildings and the signature vase that bears his name. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Lecture: The Music of the Eye: Highlights from the Royal Institute of British Architects Washington, D.C.

November 9, 2006

The Drawings Collection of the Royal Institute of

British Architects is one of the world's greatest collections of architectural drawings and related materials, from those by Andrea Palladio to Norman Foster. Charles Hind, who is assistant director of special collections and H.J. Heinz curator of drawings at the RIBA British Architectural Library Drawings and Archives Collection, will discuss a selection of its treasures and consider recently acquired masterpieces. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

**2nd Annual Eleanore Petterson Lecture:
Architect Phyllis Lambert
New York City**

November 9, 2006

Dedicated to the voices of women in architecture, the annual lecture in honor of Cooper Union alumna Eleanore Petterson will be presented by architect Phyllis Lambert. Lambert first made architectural history as the director of planning of the Seagram Building in New York (1954-58). Lambert's lecture is entitled "The Social, Ethical, Aesthetic, Cultural, and Financial Significance of 'Wasted' Space: the Seagram Building, 1954-58." At the Cooper Union, The Great Hall. Call 212/353-4220 or visit www.cooper.edu.

**Lecture: Wolf D. Prix
New York City**

November 10, 2006

Wolf D. Prix of Coop Himmelb(l)au will discuss new and current projects, which are also on view in an exhibition at the Austrian Cultural Forum. At the Donnell Library Center. Call 212/753-1722 or visit www.archleague.org.

**Lecture: Jesse Reiser
Los Angeles**

November 13, 2006

Jesse Reiser is an assistant professor at the Princeton University School of Architecture and a partner in the firm Reiser + Umemoto in New York City. At UCLA Perloff Hall. Call 310/267-4704 or visit www.aud.ucla.edu.

**Lecture: Thom Mayne
New York City**

November 14, 2006

Thom Mayne will lecture as part of the Architectural League's fall 2006 program, featuring eminent architects, engineers, and designers. At the Great Hall, Cooper Union. Call 212/753-1722 or visit www.archleague.org.

**2006 LaGuardia Award Dinner
New York City**

November 15, 2006

The Fiorello H. LaGuardia Award recognizes individuals who, through their contributions, exemplify the compassion, courage, and determination of the city's legendary mayor. Proceeds from the evening provide support for over 130 academic scholarships at the university. Senator Hillary Rodham Clinton will deliver a keynote address in tribute to John Tishman, chairman and C.E.O. of Tishman Realty & Construction, and vice chair of the board of trustees of The New School. New School president Bob Kerrey will host the evening. At the Mandarin Oriental New York. Call 212/229-5662 x3568/3570 or visit www.newschool.edu/majorevents/laguardia.

**National Award for Smart Growth
Achievement
Washington, D.C.**

November 15, 2006

Across the country, communities are using a variety of innovative development tools to build neighborhoods that provide safe and decent places to live and work, protect natural and historic places, and offer balanced transportation systems and choices. At the fifth annual ceremony for the National Award for Smart Growth Achievement, the U.S. Environmental Protection Agency will honor up to five communities that are setting the bar in smart growth. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

**Greenovation: An Expo for the Home
Washington, D.C.**

November 18, 2006

Greenovation will help equip visitors to make their home renovation projects environmentally friendly, stylish, and cost-effective. At more than 30 display booths, visitors can interact with experts, watch demonstrations, sample green products, and collect information on green home renovation. Five 45-minute seminars led by nationally recognized experts like Dean Hill, ASLA, Jennifer Roberts, LEED, Jim Sargent, GMB, CGG, Victoria Schomer, ASID, and Annette Stelmack, ASID, will be offered on a drop-in basis. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

**Lecture: Bruce Nichol
Los Angeles**

November 20, 2006

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workshops

Dream Green Kitchens

Jennifer Roberts

Creating a Healthy Home

Victoria Schomer

Stylish and Sustainable Interiors

Annette Stelmack

Redesigning a Landscape for Sustainability

Dean Hill

Saving Some Green by Going Green

Betsy Pettit

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Dates & Events

Bruce Nichol is a founding partner of Front Inc., based in New York City. The firm is a collaborative of architects and engineers expert in the provision of facade engineering design and consulting services. At UCLA Perloff Hall. Call 310/267-4704 or visit www.aud.ucla.edu.

Lewis B. and Dorothy Cullman Education and Research Building Opening New York City

November 28, 2006

The opening of the Lewis B. and Dorothy Cullman Education and Research Building on November 28, 2006, marks the completion of the Museum of Modern Art's expansion and renovation project. Designed by Yoshio Taniguchi, the Education and Research Building will be among the world's top research centers on Modern and contemporary art, housing three curatorial study centers—Architecture and Design, Painting and Sculpture, and Film and Media—as well as the Library and Museum Archives. At MoMA. Call 212/708-9400 or visit www.moma.org.

Lecture: Xaveer De Geyter Vancouver, B.C.

November 28, 2006

Xaveer De Geyter of Xaveer De Geyter Architects Brussels, Belgium, will be a speaker in the 2006–2007 lecture series produced by the Vancouver League for Studies in Architecture and the Environment. At C300 Theatre. Call 604/683-8588, visit www.lecturesonarchitecture.net, or www.xdga.be.

Eric R. Multhauf Lunchtime Lectures Chicago

Wednesdays, through November 29, 2006

These free lectures include David Mann on “The Restoration of Louis Sullivan’s Ganz Hall at the Auditorium Building”; Tim Wittman on “Sullivan and the Synthesis of Nature and the Machine”; Suzanne Morgan on “The Transformation of Synagogues to Baptist Churches in Chicago”; Lee Bey on “The Politics of Architecture/The Architecture of Politics”; Ben Helphand on “Building the Bloomingdale Trail”; Meredith Mack on “Renzo Piano’s Modern Wing at the Art Institute of Chicago”; Neal Samors on “Chicago in the Sixties: Remembering a Time of Change”; and Mary Brush on “Klein and Hoffman: Recent Work.” At CAF’s ArchiCenter. Call 312/922-3432 or visit www.architecture.org.

Lecture: Michael Rock

New York City

November 30, 2006

Michael Rock will lecture as part of the Architectural League’s fall 2006 program, featuring eminent architects, engineers, and designers. At the Great Hall, Cooper Union. Call 212/753-1722 or visit www.archleague.org.

Lecture: Jorge Silvetti New York City

December 5, 2006

Jorge Silvetti will lecture as part of the Architectural League’s fall 2006 program of lectures by eminent architects, engineers, and designers. At the Great Hall, Cooper Union. Call 212/753-1722 or visit www.archleague.org.

Design Miami Miami

December 7–10, 2006

The international design forum brings together influential dealers, designers, collectors, curators, and critics in a week-long show presented concurrently with the Art Basel fair in Basel, Switzerland. At The Moore Building in the Miami Design District. Call 305/572-0866 or visit www.designmiami.com.

ADA: Accessibility Provisions for Multifamily Residential Projects Los Angeles

December 8, 2006

Presented by Isam Hasenin, chief building official for the City of San Diego, this seminar will focus on an update on state accessibility provisions; the latest federal and state accessibility provisions covering multifamily projects; special site accessibility challenges; the application of parking provisions; elevator requirements; many practical examples and case studies, and more. At AIA Los Angeles. Visit www.aialosangeles.org.

Construction of the World’s Longest Tunnel Washington, D.C.

December 12, 2006

Ambros Zraggen, deputy director of communications at AlpTransit Gotthard, a subsidiary of Swiss Federal Railways, will discuss the project AlpTransit. In particular, he will focus on the progress of the Gotthard Base Tunnel, a flat rail link for future travel through the Alps and, at 34 miles, the world’s longest tunnel. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

**Lecture: Eccentricity:
Intriguing Characters in Washington's
Architectural History
Washington, D.C.**

December 14, 2006

In researching and writing the new edition of the *AIA Guide to the Architecture of Washington, D.C.* (Johns Hopkins University Press), Martin Moeller, senior vice president and curator at the National Building Museum, became fascinated by the many colorful characters, "including architects, clients, residents, and politicians," who helped shape the face of the nation's capital. In this lecture, he will talk about the intriguing people closely associated with noteworthy Washington buildings. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

**10th Conference of the International
Association for the Study of Traditional
Environments (IASTE)
Bangkok, Thailand**

December 15-18, 2006

"Hyper Traditions" is the theme of this year's conference. It will explore how globalization and new information technologies have contributed to the de-territorialization of tradition, challenging the idea of tradition as an authentic expression of a geographically specific, culturally homogeneous, and coherent group of people. At Thammasat University. Call 510/642-6801 or visit www.arch.ced.berkeley.edu/research/iaste.

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Competitions

2007 Palladio Awards

Deadline: November 15, 2006

Submissions are now being accepted for the 2007 Palladio Awards. The sixth annual competition will recognize outstanding work in traditional design for commercial, institutional, and residential projects. The Palladio Awards program is

coproduced by *Traditional Building* and *Period Homes* magazines. For additional information, visit www.palladioawards.com.

**2007 AIA Housing Awards: Call for
Entries**

Registration deadline: November 17, 2006

Submission deadline: December 15, 2006

The AIA Housing Awards recognize the best in housing design in the following categories: One and Two Family Custom Residences—custom and remodeled homes for specific clients; One and Two Family Production Homes—homes built for the speculative market; Multifamily Housing—both high- and low-density projects for public and private clients will be considered; and Special Housing—housing that meets the unique needs of other specialized housing types such as single room occupancy residences (SROs), independent living for the disabled, residential rehabilitation programs, domestic violence shelters, and other special housing. Call 202/626-7586 or visit www.aia.org/awp_housing.

**The 2006-07 Kenneth F. Brown Asia
Pacific Culture and Architecture Design
Award**

Registration deadline: December 10, 2006

Submission deadline: January 31, 2007

The program recognizes outstanding examples of contemporary architecture in the Asia Pacific region. For further information, call 808/956-3515 or visit www.arch.hawaii.edu.

**International Design Competition for a
Cultural Center in Nicosia, Cyprus**

Credential submission deadline: December 11, 2006

Design Proposal submission deadline: March 5, 2007

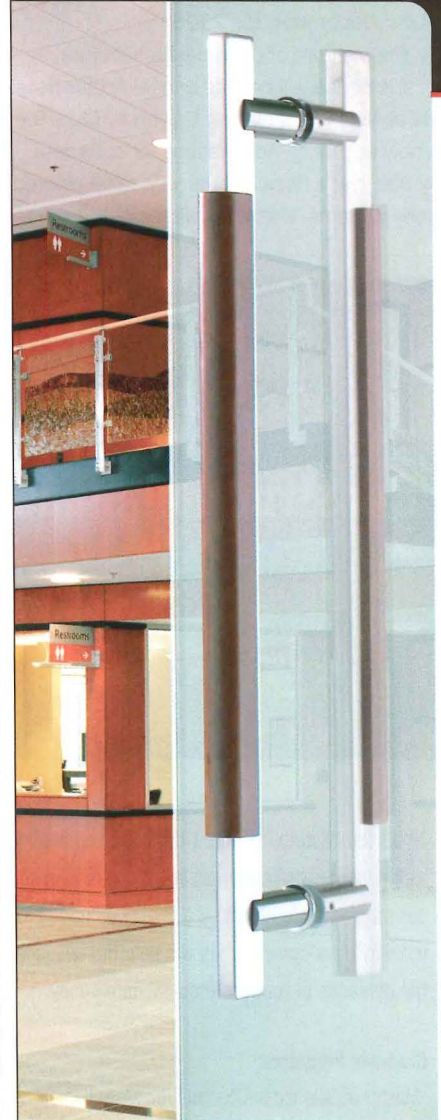
The Cultural Center will provide a focal point for the island's performing arts, showcasing national and international performances of music, dance, opera, musical theater, and the spoken word. The competition is open to all qualified architects. For further information, visit www.ccf.org.cy.

**Bezalel Academy of Arts and Design,
Jerusalem—International Architecture
Competition**

Registration: December 11, 2006–January 11, 2007

Architects from around the world are invited to participate in the Bezalel Academy International Architecture competition to design the new

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Dates & Events

campus in the center of Jerusalem. For more information, visit www.bezalel-competition.org.il.

2007 Arthur Ross Awards for Excellence in the Classical Tradition

Deadline: December 15, 2006

In May, the Institute of Classical Architecture Classical America will hold its annual Arthur Ross Awards at New York's historic University Club. The ICA is now accepting nominations for consideration by this year's Ross Awards jury, to be chaired by Bunny Williams. Visit www.classicist.org.

2007 Rudy Bruner Award

Application deadline: December 18, 2006

The Rudy Bruner Award for Urban Excellence seeks to discover special places that have solved urban problems with creative solutions. For more information, call 617/492-8401 or visit www.brunerfoundation.org.

2007 International Bamboo Building Design Competition

Registration deadline: December 31, 2006

Submission deadline: January 15, 2007

Bamboo Technologies of Maui has launched the first International Design Competition for Structural Bamboo Buildings. Some of the winning entries will be chosen for manufacture by the world's premier builder of international-building-code-approved bamboo homes. The competition is open to architects, builders, designers, and students anywhere in the world. Visit www.bamboocompetition.com.

Living Steel International Architecture Competition

Deadline for application: January 12, 2007

Architectural firms of all sizes, scope, and geographic locations are encouraged to apply for this competition, which was launched to develop innovative approaches to meet sustainable housing needs, addressing the economic, environmental, and social aspirations of a growing world population. Three winning entries will be chosen by an independent jury composed of internationally respected architects Glenn Murcutt, Charles Correa, Andrew Ogorzalek, Jaime Lerner, James Berry, and Nicholas de Monchaux. For more information, visit www.livingsteel.org.

2007 SEG Design Awards Program

Deadline: January 31, 2007

The Society for Environmental Graphic Design (SEG) annual design competition honors the best in environmental graphic design. Projects include themed environments, way-finding and signage, place-making projects, mapping, public art, identity programs, architectural graphics, exhibits, and retail. For more information, visit www.segd.org.

2007 Aurora Awards

Deadline: March 9, 2007

Builders and architects who have demonstrated excellence and creativity when designing hurricane-resistant structures are invited to submit proposals to this design competition recognizing projects in the southeastern United States. Solutia, a manufacturer of polyvinyl butyral (PVB) interlayers for impact-resistant glass, is sponsoring a new category in the competition: The Safe & Secure Award will recognize builders, designers, architects, and other home-building professionals who incorporate—and meet or exceed code requirements for—impact-resistant windows and doors for safety, and who use other design elements that minimize the effects of hurricanes and other disasters on residential structures. Visit www.theauroras.com.

E-mail event and competition information two months in advance to elisabeth_broome@mcgraw-hill.com.

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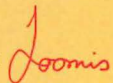
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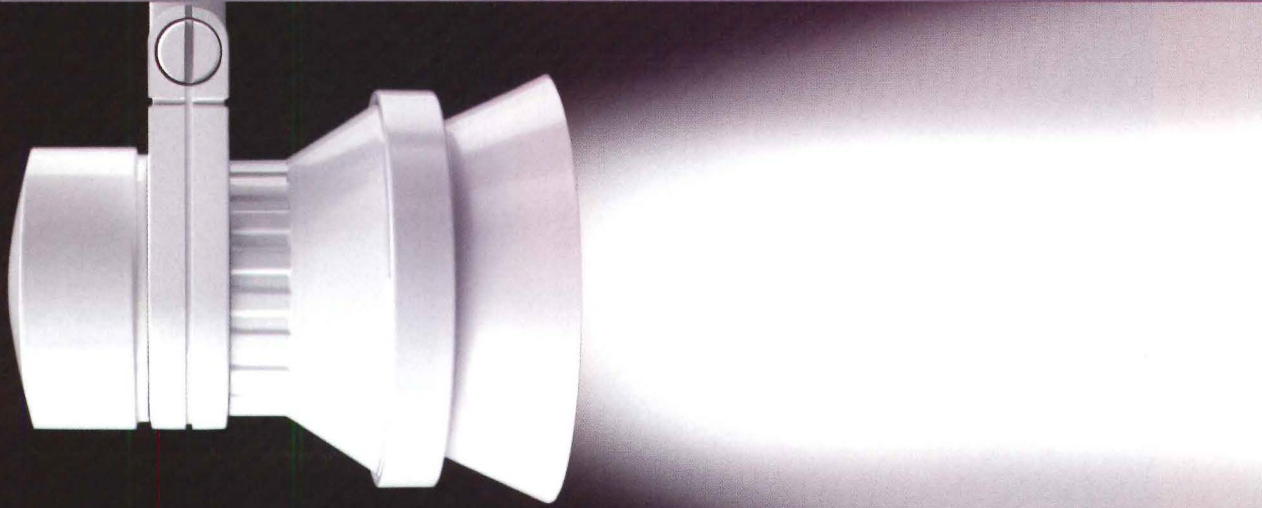
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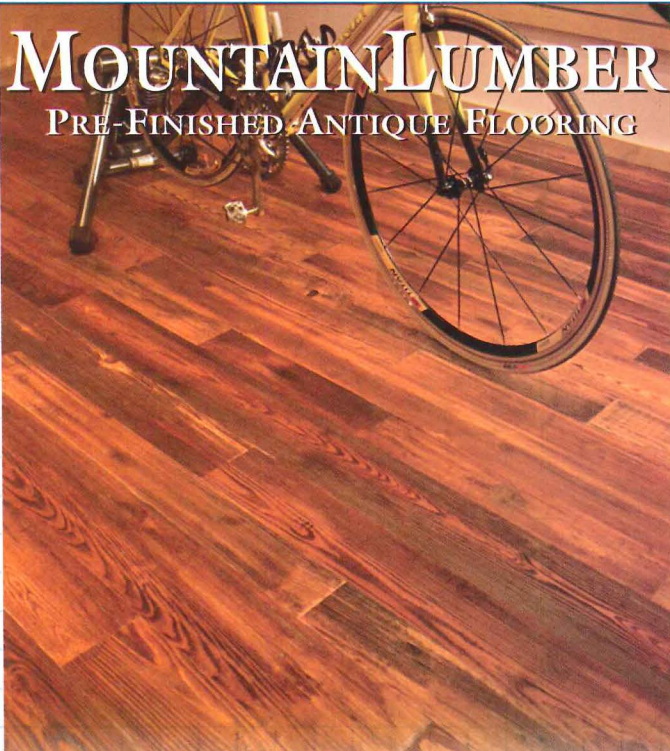
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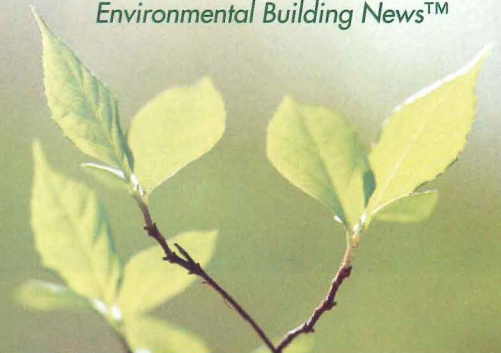
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Program title: "Loblolly House: In Stock and Ready to Ship," Architectural Record (11/06, page 185).

116EDIT1

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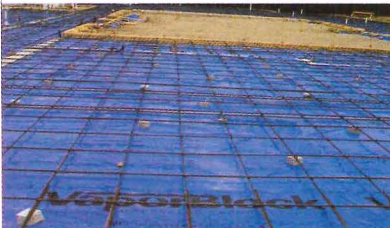
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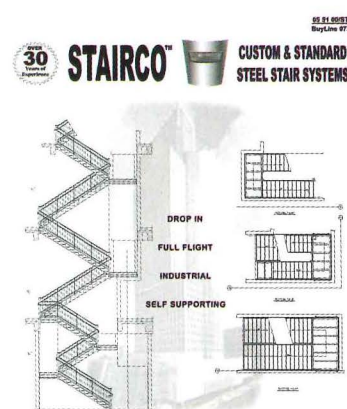
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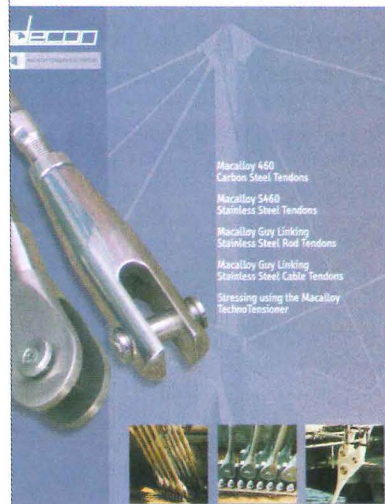
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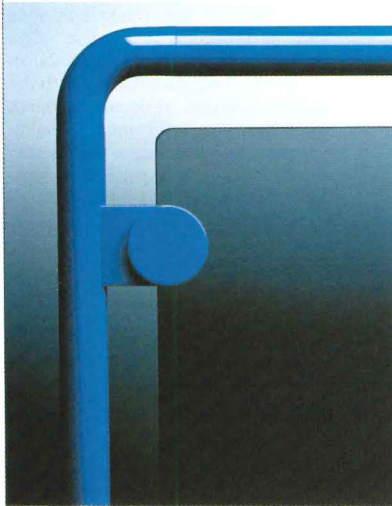
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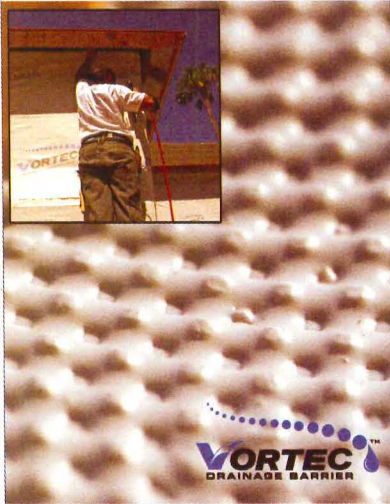
MapeSpan is a laminated composite glazing panel that combines a heat strengthened glass with ceramic frit on the #2 surface, an insulating core, and a finished interior. Laminated wall panels can be glazed in a monolithic unit from a single source which eliminates costly field labor. Specialty panels to meet fire and sound codes are also available. Interior finishes included porcelain on aluminum, Kynar, anodized and baked enamel. Consult their web site for design information or contact the factory at the number below.

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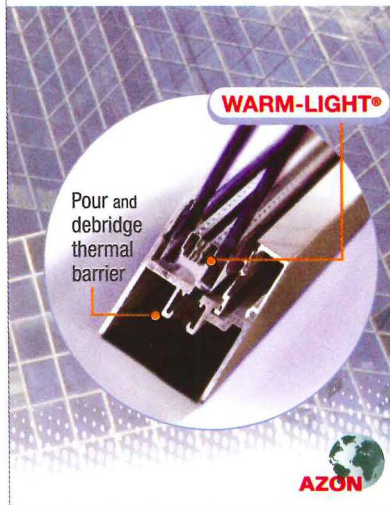
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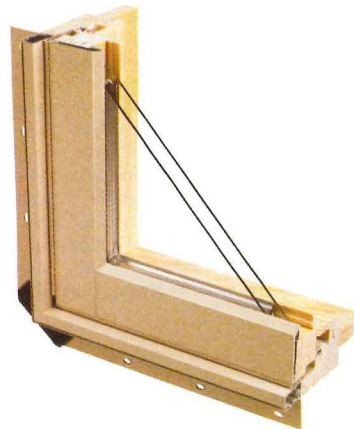
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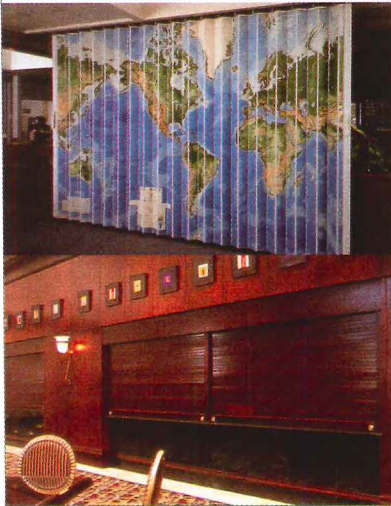
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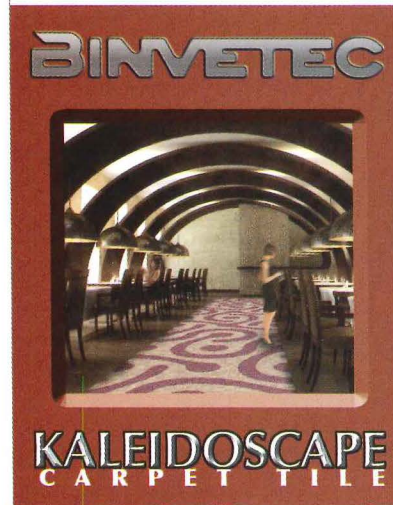
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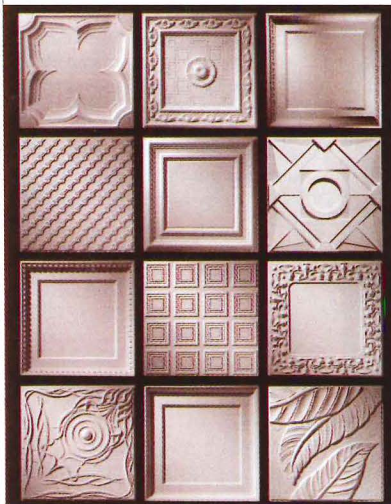
Kaleidoscope Carpet Tile with TractionBac non-adhesive installation system is the only modular floor covering solution that can create a wholly non-repetitive and free-flowing pattern from a single tile design. They can also be arranged in groups to create myriad patterns. Available in nine color combinations, they can be used to create entire wall-to-wall floor coverings, runners, or assembled together to make six-tile area rugs (6-ft. by 9-ft.).

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| Circle Reader Service #178

Ornamental Plaster Ceiling Tiles

Above View Mfg., By Tiles, Inc.



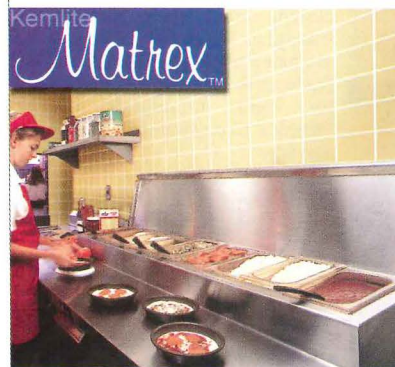
Above View ornamental plaster ceiling tiles are fabricated from a non-toxic, non-combustible, proprietary composition. They drop into any standard 15/16-in. T-Bar grid system. There are more than 50 standard designs, custom design work, and 1,300 custom colors and faux finishes available upon request.

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Porcelain Wall Tiles

Viva Ceramica



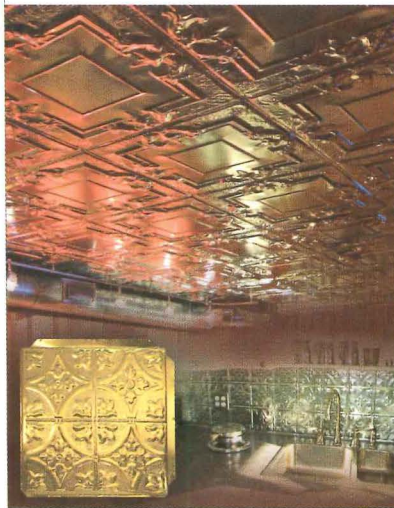
Even though Viva Ceramica had introduced Central Station at Cersaie 2005 as a color through porcelain floor tile series, it was easy to convert it to a wall covering. It's just so adaptable with its suggestions of metal and its decorative squares and circles in crackle glaze. And both the big diameter and the 30 cm square are ideal for minimalist mosaic decors in bathrooms or on walls in public areas.

www.cerviva.it

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Authentic Tin Products

The American Tin Ceiling Co.



One of the largest manufacturers of authentic tin ceilings panels, offering over 30 of the finest embossment patterns and over 50 high quality powder coat finishes. Exclusive distributors of the innovative SnapLock™ and 3D Dropin tin ceiling panels. Eight designers provide free phone consultation six days a week. Orders shipped direct worldwide. Fax number 941-359-8776

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www.americantinceilings.com

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Architectural Sun Control

ASCA, Inc.



ASCA, Inc. provides an infinite assortment of efficient and cost effective sun shading solutions. While functionally reducing heat gains upwards to 80%, ASCA's sun control systems provide a striking architectural statement. Custom or traditional, intelligent heat and light control is now afforded to every designer through ASCA's creative component design and versatility of manufacturing techniques. Fax number 603-433-6700 Email info@asca-design.com

866-ASCA-USA
www.asca-design.com

| Circle Reader Service #184

Reduce Impact Noise

The Noble Company



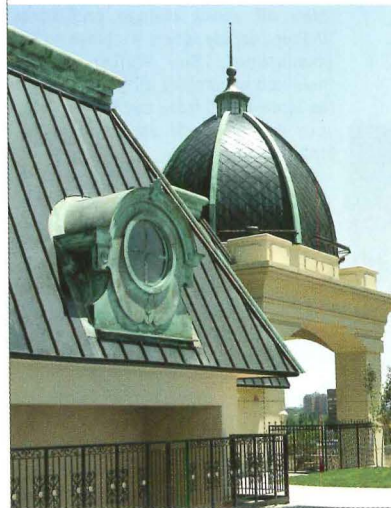
NobleSeal® SIS is a sheet membrane that reduces the impact noise produced by hard surface flooring (like tile and hardwood floors). SIS is only 3/64-in.-thick so it minimizes problems with transitions and the need to alter door and cabinet heights. It is effective at reducing noise (IIC=62; STC=59). SIS can be installed over all common substrates, even gypsum concrete and radiant heating systems. SIS can also protect thin-set tile from cracking and provide waterproofing. Visit their web site. Email richard@noblecompany.com

800-878-5788
www.noblecompany.com

| Circle Reader Service #182

Architectural Sheetmetal Products

CopperCraft



CopperCraft manufactures a complete line of high-quality architectural sheetmetal products including ornamental dormers, roof vents, roof drainage products, conductor heads, steeples, cupolas, and spires, as well as items which are custom built to your specifications. Design, engineering, testing, and fabrication methods that meet stringent structural and performance standards make the difference. You get unsurpassed quality, delivery, and custom service including a nationwide network of representatives.

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www.mailboxes.info

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Aurora by Richards-Wilcox



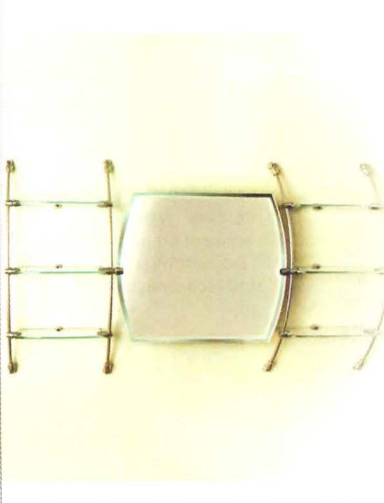
Aurora® Times-2 Step-Up, Step-Down™: It's a simple concept, two tall "steps" on the upside, two small steps on the "downside" to give you plenty of compact multimedia storage and filing. The task area is great for printers, fax machines, copiers, phones, mail meters and more. Units come as a bank of four in letter or legal sizes in an eco-friendly finish in 26 beautiful colors. Order a variety of different heights and accessories.

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| Circle Reader Service #189

Vanity Shelves

Gyford Productions



Gyford's new Eclipse Vanity Shelves complement the "Archer" and "Eclipse" shelf units in a compact and versatile new design. Made from stock, satin finished aluminum components, Eclipse Vanity Shelves flank a bevel-cut mirror in this example but the sizes and options are endless.

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Silver Certification for Solar Shading System

MechoShade Systems



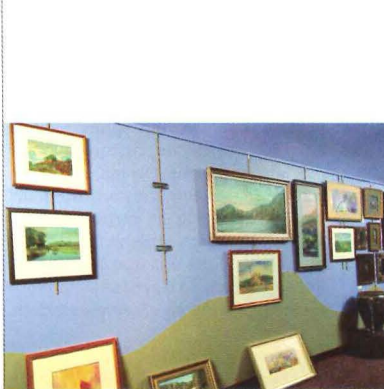
Mecho@/5 with EcoVeil™ is the first complete solar shading system to receive Silver Certification from MBDC. With this certification, MechoShade Systems has set a new industry standard for high quality and eco-friendly technology. For more information on Mecho@/5 with EcoVeil™ visit www.mechoshade.com or call 718-729-2020.

718-729-2020
www.mechoshade.com

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www.modernoutdoor.com

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Balanced design that is light and airy. Moving sculpture... The San Francisco ceiling fan is a GOOD DESIGN Award winner by Mark Gajewski. Whisper quiet, powerful, reliable and beautifully made. Also available without a light kit. Lifetime warranty. Buy great fan and lighting designs on G-Squared Art's website or call Monday through Friday from 7am to 5pm PST.

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SELUX Corporation



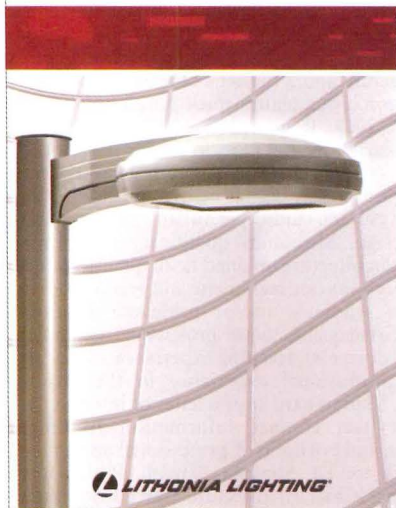
Integration of the light column form with the se'lux patented MTR refractor technology. MTR refractors incorporate the light-bending properties of the prism resulting in comfortable, glare-free illumination. Three distinct column styles are available in a variety of materials and finishes, and are supplied in standard heights of 12-, 14-, and 16-ft. Lamping consists of one to four T-8 fluorescent lamps, with H.I.D. possible. This fixture is ideal for high traffic pedestrian areas such as sidewalks, building courtyards, malls, airports, parks, etc. Fax number 845-691-6749

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www.selux.com/usa

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Architectural Outdoor Illumination

Lithonia Lighting



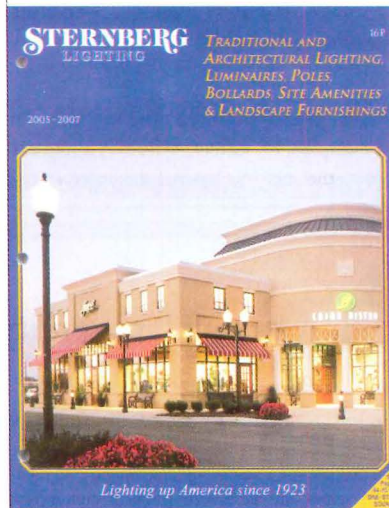
Unique, sleek, and expressive in unexpected ways, the OMERO™ Architectural Outdoor family of Area, Wall Mounted and Bollard luminaires from Lithonia Lighting takes outdoor lighting to the forefront. The distinctive designs, signature accents and uncompromising performance of the OMERO™ complement any environment. With versatile mounting options, multiple performance optics and an entire family of cohesively designed products, the OMERO™ family provides you with another choice from Lithonia Lighting.

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Activated Mode Normal Mode



605-542-4444
www.concealite.com

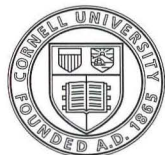
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POSITIONS AVAILABLE

An Internationally recognized architectural firm in New York is seeking motivated professionals to assist in the following positions:

- 1. Spec Writer** - Minimum of 7 to 10 years experience in Construction Specification Writing, with background in testing and mockups. Construction specification Institute Certification is preferred.
- 2. Office Standard Implementer** - Minimum of 7 to 10 years experience with autocad, AIA layer standards, xref, AutoCad 2006 and Revit. Must be able to work with people to control, maintain and develop office standards
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- 4. Presentation Manager/Senior Rendering Specialist** - Position includes but not limited to, coordinate the generation of high end computer rendered perspectives and to oversee the production of all presentation material. Candidate should have strong graphic skills and should have sophisticated knowledge of all software packages integral to the rendering and presentation fields, including 3DsMax, Rhino, Photoshop, Illustrator, InDesign, Autocad, etc.
- 5. New Business Proposals and Marketing Manager** - Position includes managing the firms new business proposals and marketing efforts. Experience and knowledge of this field is required.
- 6. Business Development and Public Relations Manager** - Position includes managing the firms business development and public relations effort. Experience and knowledge of the field is a must.

If qualified and interested, please indicate position title, forward resume and work samples to: bsns_office@yahoo.com



Cornell University

The Department of Architecture in the College of Architecture, Art, and Planning at Cornell University invites applications for one or more positions in each of the following areas: (1) environmental systems; and (2) design within the area of digital and emerging technologies. Appointments may be filled for fixed terms, typically one semester to three years, or as tenure track or tenured positions, depending on the qualifications and interests of the candidates.

*** Environmental Systems**

Desirable qualifications include a strong record in teaching environmental systems; evidence of significant research and/or scholarship; graduate and/or professional degrees in architecture and environmental systems; and an interest in integrating environmental technologies and design practice.

Applications should be sent to Environmental Systems Search, Department of Architecture, 143 E. Sibley Hall, Cornell University, Ithaca, NY 14853, and should include the following items: (a) letter of application including a brief statement outlining teaching and research/scholarship objectives; (b) curriculum vitae; and (c) contact information (phone, mail, email) for three referees.

*** Design within the Area of Digital and Emerging Technologies**

Desirable qualifications include a strong record in teaching architectural design; graduate and/or professional degrees in architecture and related fields; and evidence of significant research related to design and contemporary practice in one or more of the following areas: fabrication/production, visualization, networking/communication, and interactive environments.

Applications should be sent to Digital Design Search, Department of Architecture, 143 E. Sibley Hall, Cornell University, Ithaca, NY 14853, and should include the following items: (a) letter of application including a brief statement outlining teaching and research/scholarship objectives; (b) curriculum vitae; (c) contact information (phone, mail, email) for three referees; and (d) portfolio.

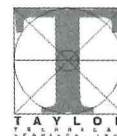
Applications for both positions will be considered beginning November 15, 2006. Appointments are expected to begin Fall 2007.

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BALL STATE UNIVERSITY - MUNCIE, INDIANA
 The College of Architecture and Planning houses programs in architecture, landscape architecture, urban planning, and historic preservation. The Department invites candidates interested in helping to shape and implement its new 4 + 2 curriculum. This master's of architecture program is built on interdisciplinary reflective practice and a set of course clusters that offer students concentrations in sustainability, urban design, landscape architecture, historic preservation and making/digital fabrication. Also, the Department offers a post-professional master's of architecture and a master's of science in historic preservation. Four tenure-track positions available August 17, 2007. Responsibilities: teach in and conduct scholarly investigations in one or more of the following curricular areas - environmental systems, sustainable systems, digital media and fabrication, social and cultural landscapes, urban and community based design. Minimum qualifications: terminal degree in architecture or allied field; qualification to teach at both the undergraduate and graduate levels; record of scholarly and/or professional/creative work. Preferred qualifications: professional registration; advanced degree(s); teaching experience and/or significant professional experience in the area of expertise. Send in hard copy a letter of interest, curriculum vitae, contact information for three references, and portfolio of professional and/or student work to: Dr. Stephen Kendall, Professor of Architecture, Chair, Architecture Search Committee, Department of Architecture, Ball State University, Muncie, IN 47306. Tel: 765.285.1900; Email: skendall@bsu.edu Additional supporting materials will be requested as needed. Review of applications will begin mid January, 2007, and will continue until the positions are filled. (www.bsu.edu/architecture) Ball State University is an equal opportunity, affirmative action employer and is strongly and actively committed to diversity within its community.

JOB CAPTAIN (ATLANTA OPENING)

Assist the project architect in the development of project goals, schedules, and construction drawings for high-rise residential, commercial, hospitality and mixed-use projects; assist in site development, plan layout design, and materials selection; and coordinate engineering consultants, vendors and/or client interface throughout the project. Resume with portfolio, referencing job code JC1006 to: D. Horton, Smallwood, Reynolds, Stewart, Stewart & Assoc., Inc., 3565 Piedmont Rd., Suite 303, Atlanta, GA 30305.

ARCHITECTURAL DESIGNER

The Jerde Partnership, Inc. in Venice, CA, conduct site analysis and architectural design. Master degree required. Mail resume: Personnel Director, 913 Ocean Front Walk, Venice, CA 90291 or e-mail: careers@jerde.com

UNIVERSITY OF OREGON / Department of Architecture

The Department of Architecture at the University of Oregon seeks thoughtful, skillful, and innovative faculty members for anticipated tenure-track positions at the rank of assistant or associate professor. Successful applicants must be able to demonstrate the promise of effective and inspiring teaching in design studios in architecture or interior architecture programs, and specific subject-area courses. They should also be able to develop innovative work in research and practice that will further the department's strengths.

Architectural Design + Theory and Practice

The department is seeking one or two excellent design studio faculty members with additional interests/expertise in teaching subject-area courses in areas including but not limited to: theory and criticism, sustainability, housing, building construction and fabrication, and traditional and digital media.

Architectural Design + Structures or Construction Technology

The department is seeking candidates who address the synthesis of structure, construction and architecture in their teaching, research and/or creative work and have a strong interest in helping students learn to integrate building technology principles into architectural design. This position involves teaching required courses in the structures and construction curriculum and architectural design studios at the graduate and undergraduate levels.

Interior Design + Theory and Practice

The Interior Architecture program in the Department of Architecture is seeking an experienced designer who can be an effective and inspiring teacher in the design studio. The applicant will also be expected provide expertise in one or more areas within the subject area curriculum that includes but not limited to: interior design theory, design media (digital and traditional) construction materials, detailing and documents, color theory, and furniture design.

Visiting Fellowship in Architectural Design

The department is seeking post-graduate and/or professional candidates with an interest in developing a career in teaching. The teaching fellowship offers the opportunity to gain experience in studio instruction and to develop an area of subject course specialization. Expectations include teaching design studios; teaching or co-teaching approved subject area courses, for a total of five courses on a three-term nine-month appointment.

Distinguished Visiting Professorships (three one-term positions)

Frederick Charles Baker Chair in Architectural Design. The Baker Chair is an endowed chair with a special focus on the study of light and lighting as a phenomenon in architectural design.

Pietro Belluschi Distinguished Visiting Professor in Architectural Design. Belluschi professors are prominent architects and architectural educators who will bring true distinction and unique opportunities to the University of Oregon.

Margo Grant Walsh Professorship in Interior Architecture. This professorship supports a prominent visiting designer, architect, or educator to teach, lecture, and counsel future generations of design students.

Qualifications

All applicants must hold appropriate advanced degrees and demonstrate the potential for achievement in teaching, research, practice.

Application process

Complete descriptions of the individual positions and specific application requirements for each are available on our web site: <http://architecture.uoregon.edu/people>; or you may contact Nancy McNaught, Office Manager, Faculty Search Committee, Department of Architecture, University of Oregon, Eugene, Oregon 97403-1206. Telephone: 541/346-1435; e-mail: mcnaught@uoregon.edu. Review of applications will begin January 16, 2007 and continue until the best candidates are identified.

The University of Oregon is an equal opportunity, affirmative action institution committed to cultural diversity and compliance with the Americans with Disabilities Act. We invite candidates with a commitment to working effectively with students, faculty, and staff from diverse backgrounds.

PROJECT INTERNS (ATLANTA OPENINGS)
CAD document preparation for schematic design, design development and construction documents and code research. Require architectural degree plus experience. Send resume with portfolio, referencing job code PI11006 to: D. Horton, Smallwood, Reynolds, Stewart, Stewart & Assoc., Inc., 3565 Piedmont Rd., Suite 303, Atlanta, GA 30305.

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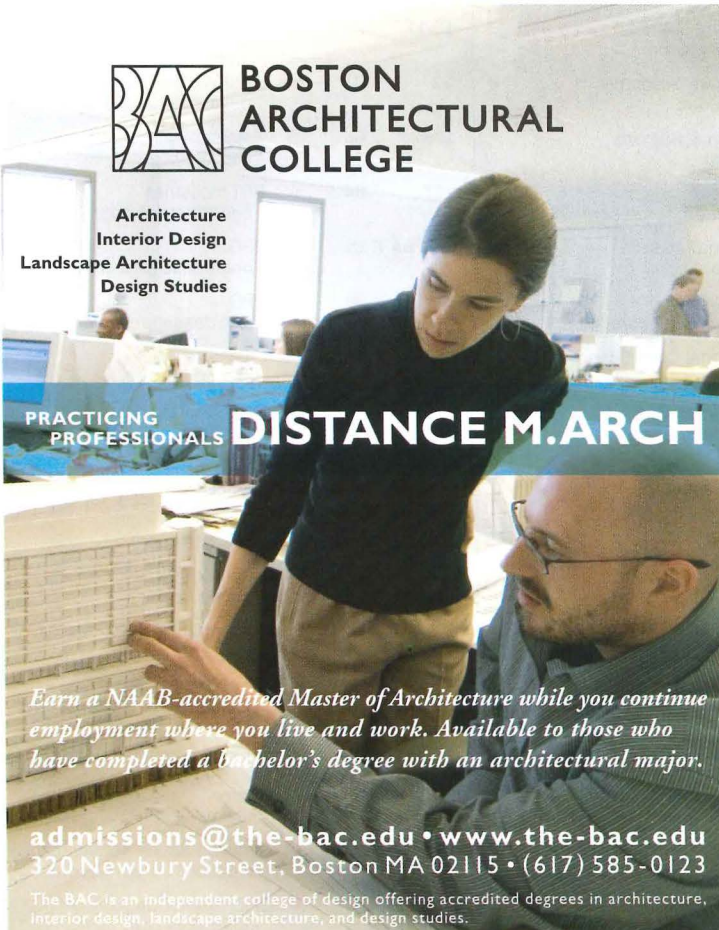
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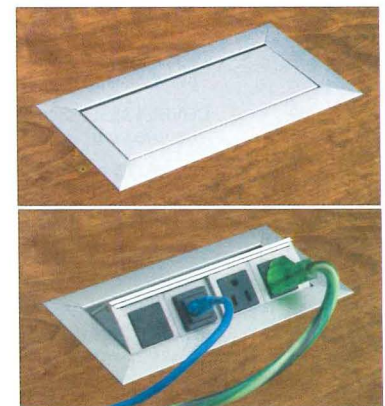
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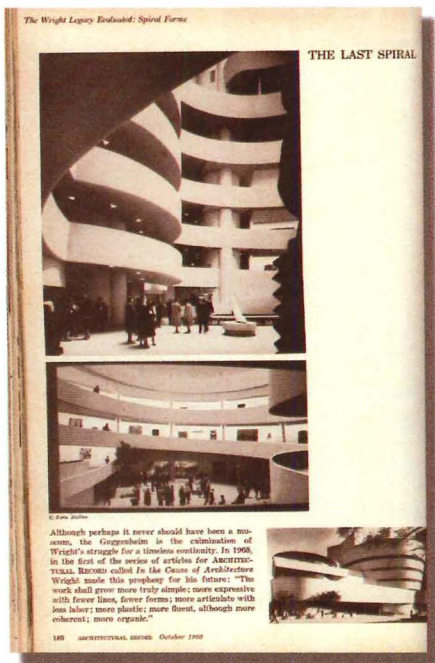
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AR Past and Present



ARCHITECTURAL RECORD October 1960, page 186

Currently undergoing an exterior restoration, the Guggenheim's curve relates to the interior ramp that combines circulation with the display of art.



PHOTOGRAPHY: DAVID M. HEALD, © SRGF, NEW YORK

Real Buildings Have Curves

From the ancient Mycenaean Treasury of Atreus in Greece to the Roman Pantheon, and from Borromini's San Carlo alle Quattro Fontane in Rome to Mendelsohn's Einstein Tower near Potsdam, Germany, architecture without corners has left its mark throughout the annals of built history. One noteworthy building shows its curves at the corner of 5th Avenue and 89th Street in New York City. Ever since 1811, when the Commissioner's Plan of New York imposed a grid onto the island, orthogonality has dominated Manhattan. But in 1959, Frank Lloyd Wright challenged this grid with his Solomon R. Guggenheim Museum (shown above prior to restoration).

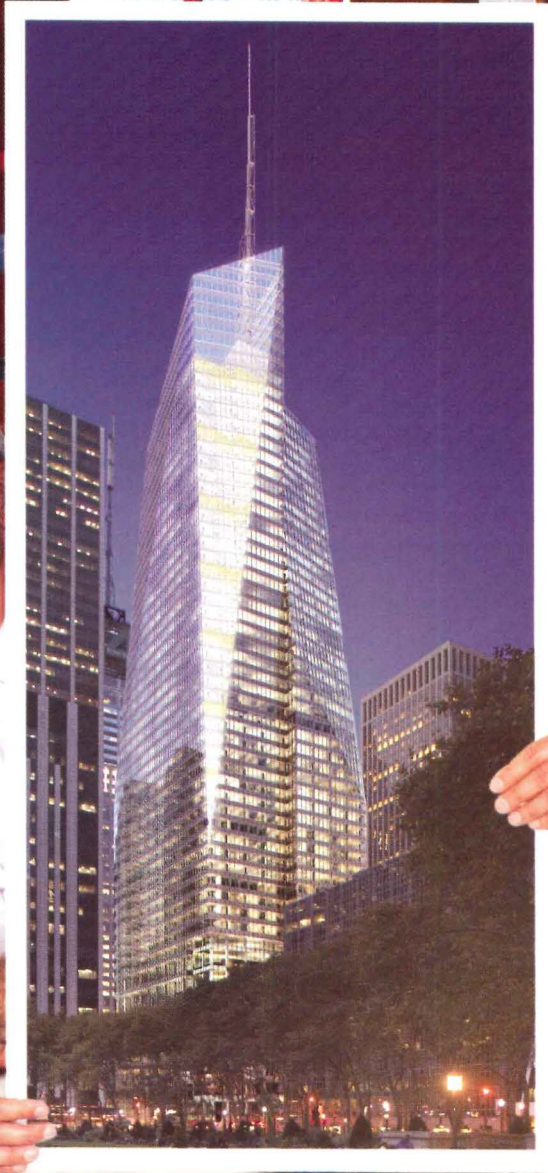
Its iconic curve relates to the ramp that spirals around the central atrium and combines circulation with the display of art. Contemporary buildings like UN Studio's Mercedes-Benz Museum in Stuttgart are the architectural progeny of Wright's innovative design (see page 126). This new museum, however, benefits from significant advances in technology and engineering unavailable to Wright in 1959. Not surprisingly, the Guggenheim is currently undergoing an exterior restoration (right) to fix surface cracks on its concrete structure, which was made originally by applying layers of a dry-mix, sprayed concrete from within the building. This did not allow for expansion joints, so the wall was subject to cracking. Overseen by preservation architects Wank Adams Slavin Associates, restoration workers have removed 12 layers of paint and continue to perform structural analyses. Following a year and a half of testing, the museum expects to begin work on the actual restoration project by early 2007. *John Gendall*



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Richard A. Cook and Robert F. Fox, Jr., partners of Cook+Fox Architects, on the site of the Bank of America Tower at One Bryant Park, developed by BofA and The Durst Organization.

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