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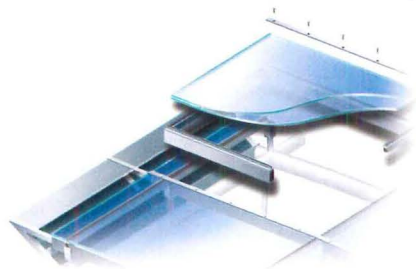
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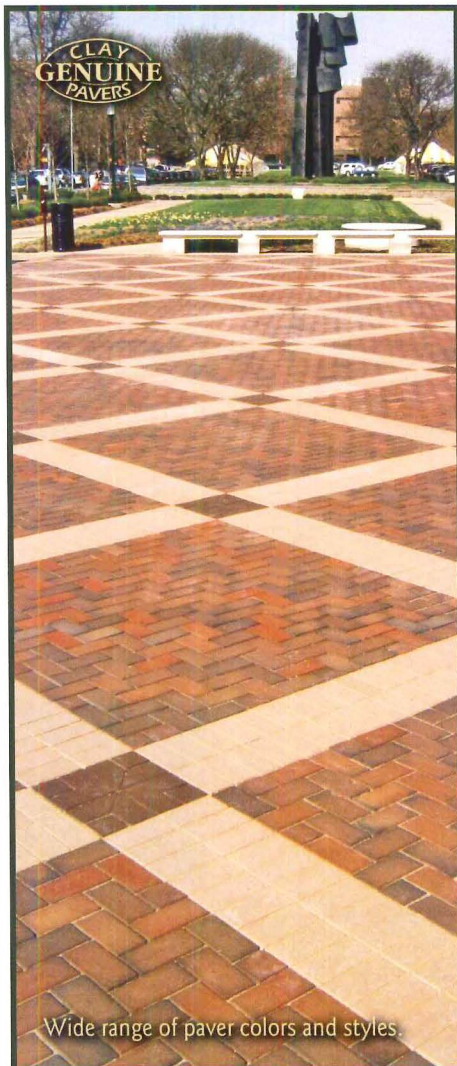
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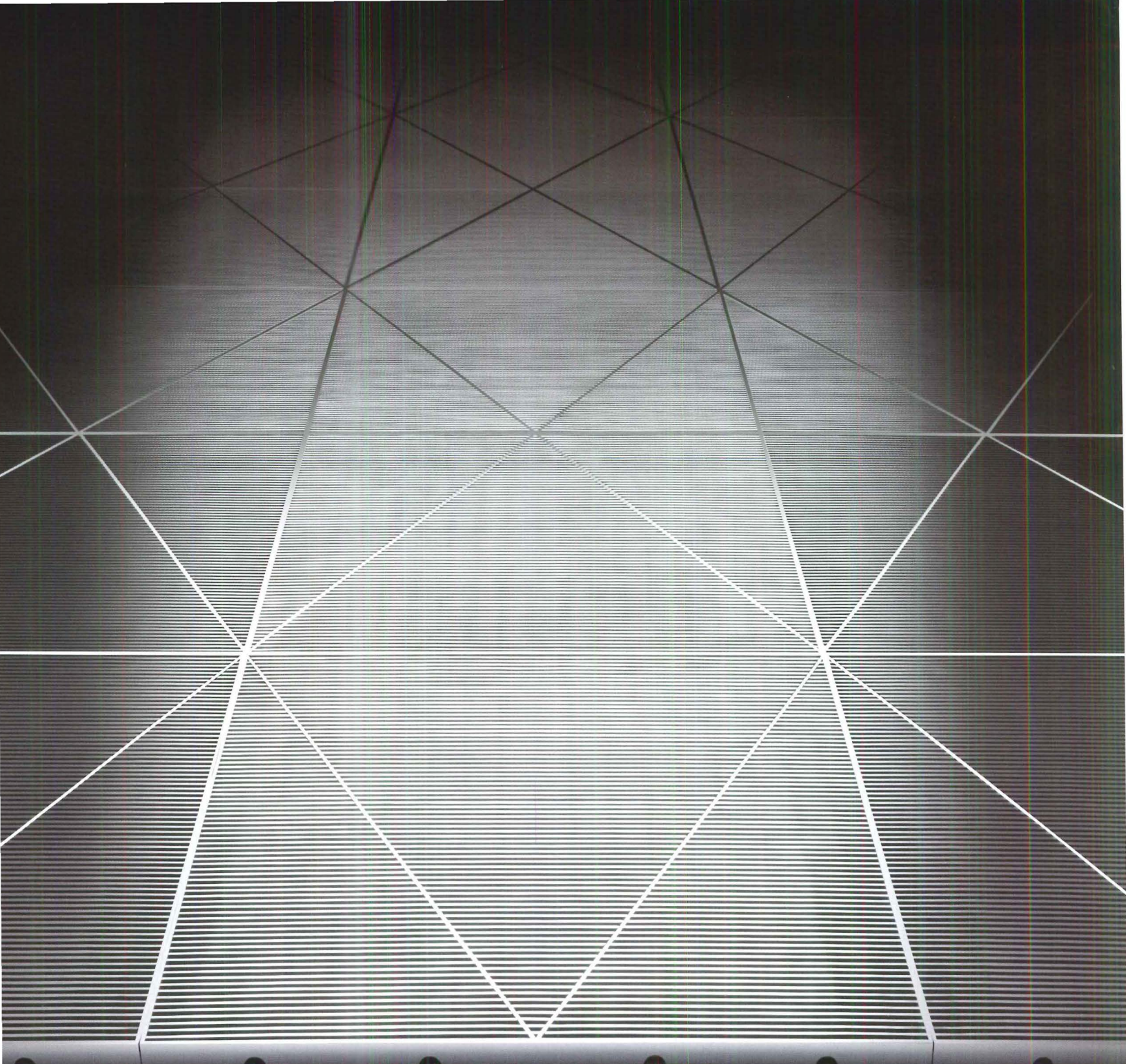
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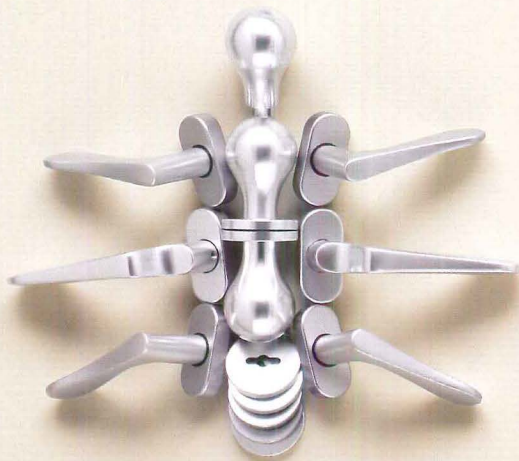
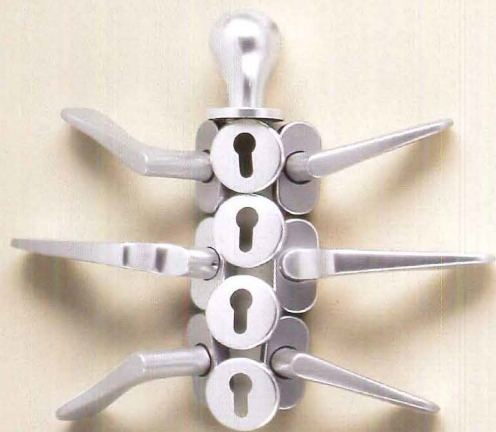
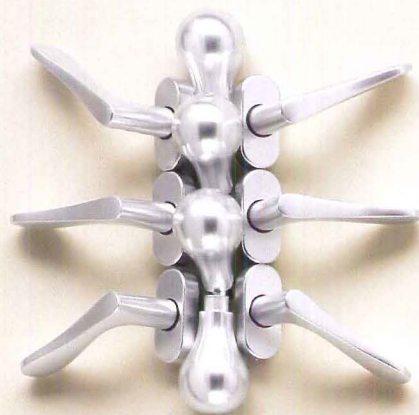
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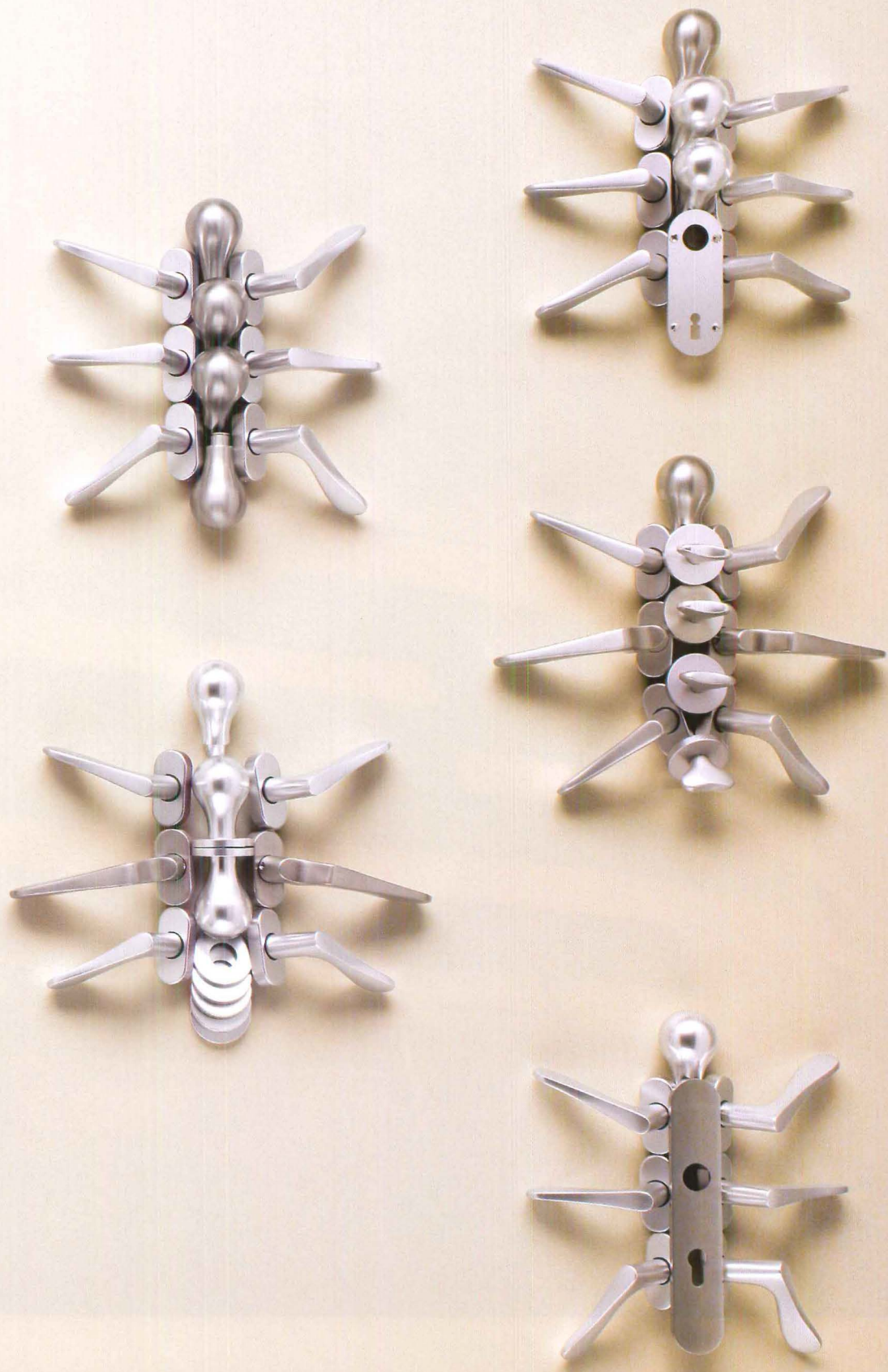
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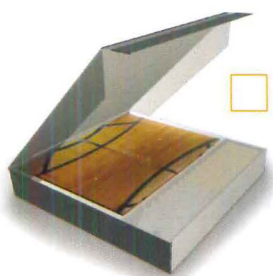
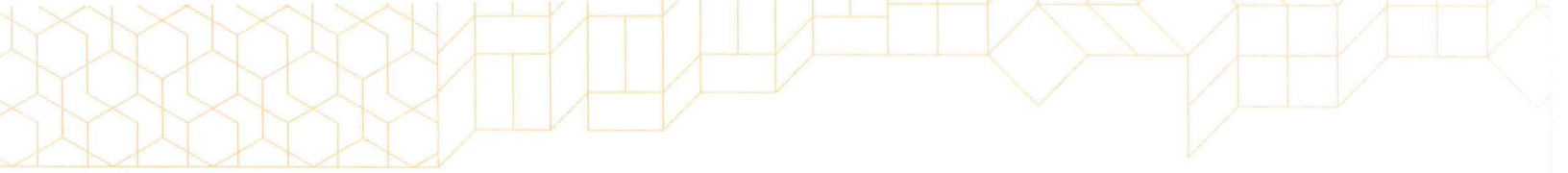


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11.2009

NEWS

- 33 **Five partners split from KPF London**
- 34 **Recession Report**
- 38 **Inspired spaces benefit design schools**
- 40 **Building debate at Yale**

DEPARTMENTS

- 25 **Editorial: Outlook 2010**
- 26 **Letters**
- 47 **Archrecord2: The emerging architect**
- 51 **Books: The City, Reconsidered**
- 55 **Snapshot: Big Bambú** *By David Sokol*
- 206 **Dates & Events**
- 212 **Backpage: Reader's Gallery**


FEATURES

- 61 **BusinessWeek/Architectural Record Awards 2009**
The 12th annual awards recipients demonstrate how good design can help increase revenue, decrease operational costs, and boost employee morale.
- 85 **America's Best Architecture Schools, 2010**
School rankings are influencing prospective students and employers across the country. RECORD takes a look at this year's survey. *By David Sokol*

BUILDING TYPES STUDY 894

- 95 **Introduction: High Q**
By Jenna M. McKnight
- 96 **41 Cooper Square, New York City**, Morphosis
By Joann Gonchar, AIA
- 102 **Price Center East, California**, Yazdani Studio of Cannon Design
By Jenna M. McKnight
- 108 **Harvard NW Science Building, Massachusetts**, Skidmore, Owings & Merrill
By Aleksandr Bierig

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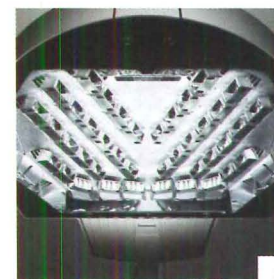
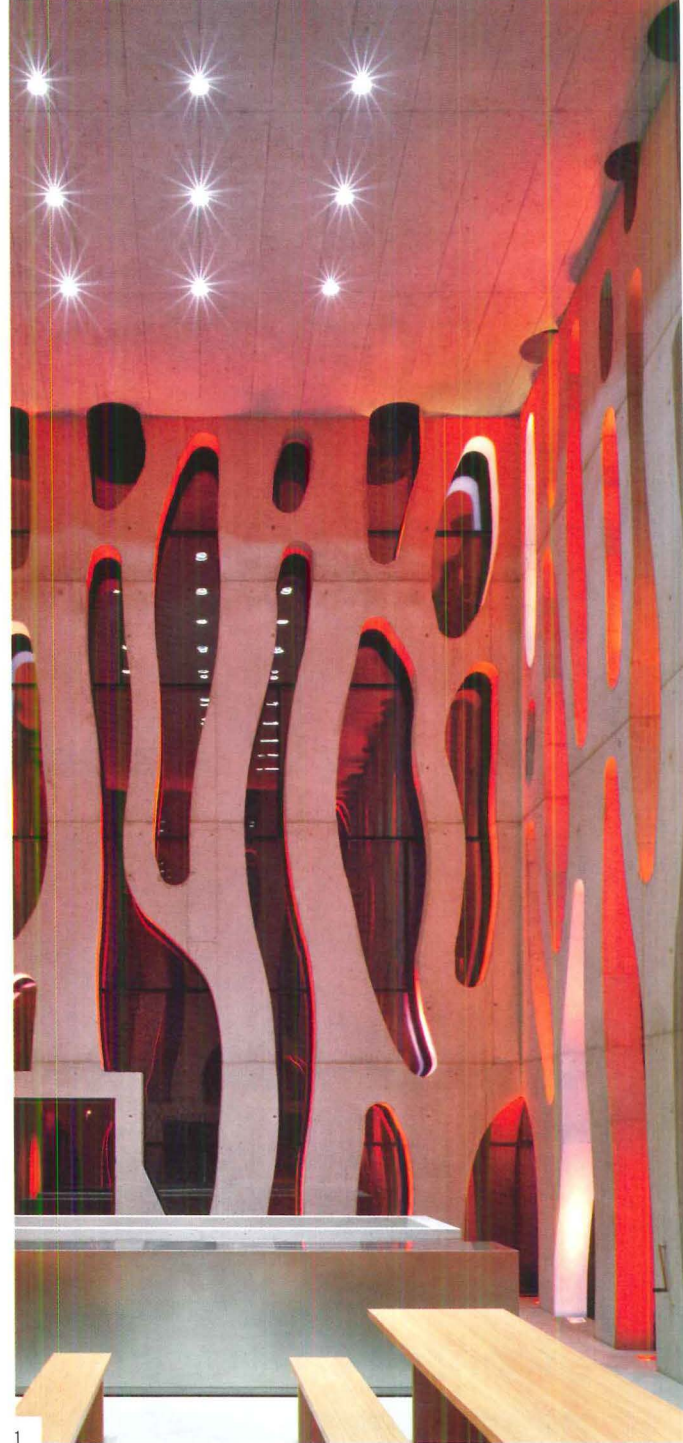
- 118 **Into Thin Air** 
While most structures are firmly rooted in the ground, some seem to float, almost weightless, through the skies.
By Josephine Minutillo

LIGHTING

- 172 **Nordwesthaus, Austria**
By Linda C. Lentz
- 177 **Tiffany Ginza, Tokyo**
By Naomi R. Pollock, AIA
- 181 **Peace Bridge, Buffalo, N.Y., and Fort Erie, Ontario, Canada**
By David Sokol
- 183 **Lighting Products**
By Rita Catinella Orrell

PRODUCTS

- 184 **Glass + Glazing**
By Rita Catinella Orrell
- 192 **Product Briefs**
- 204 **Reader Service**



1. **Nordwesthaus, Austria**, by Baumschlager Eberle, page 172.
2. **Warp9 LED**, by Kim Lighting, page 183.
3. **Barbie Shanghai, China**, by Slade Architecture, page 68.

 Expanded coverage of Projects, Building Types Studies, and Web-only features can be found at architecturalrecord.com.

On the cover: 41 Cooper Square, New York City, by Morphosis. Photograph © Roland Halbe.

11.2009
ON THE WEB 

Our Web site looks a bit different this month. We have **redesigned our home page** to include larger photography and to make our latest stories easier to browse. Look for more changes that will improve navigation throughout the site soon.



Reader Photo: Image of a house in Niagara Falls, Ontario, by New York firm Zerafa Studio is one of more than 2,000 reader-submitted images in ARCHITECTURAL RECORD's online galleries.

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Record TV

New in our Video Library: Thom Mayne of Morphosis takes us on a tour of his firm's new building for Cooper Union in New York City.

House of the Month

Alterstudio Architects hired a cherry picker to show a client potential views from a sloping site before building this three-story volume.

Greenbuild 2009

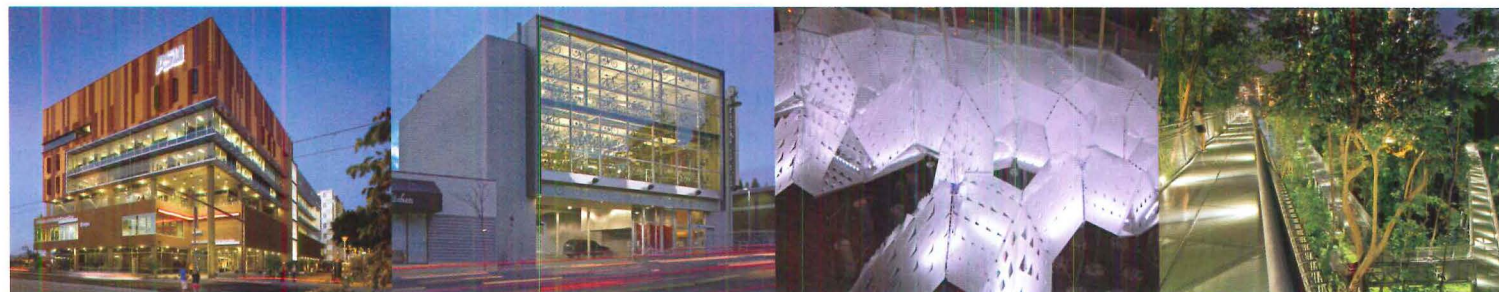
GreenSource is previewing the U.S. Green Building Council's expo with a guide to Phoenix—this year's host city—video tours, and more.

Your Comments

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—swelker, on "Architects Tread in New Territory: Shoe Design"

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Building Types Study

View additional college and university projects, including Arizona State University's Walter Cronkite School of Journalism.

BusinessWeek/Record Awards

In addition to winners featured in this issue, several projects have received Citations of Excellence. Read about them online.

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Bringing information from a slew of related and unrelated fields to their work, Nataly Gattegno and Jason Johnson are Future Cities Lab.

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Page 157-166

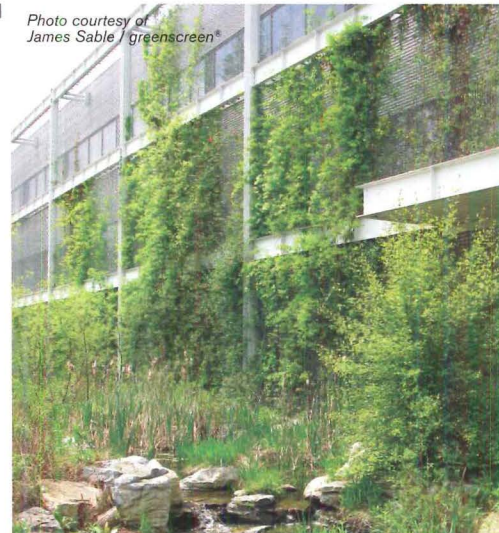
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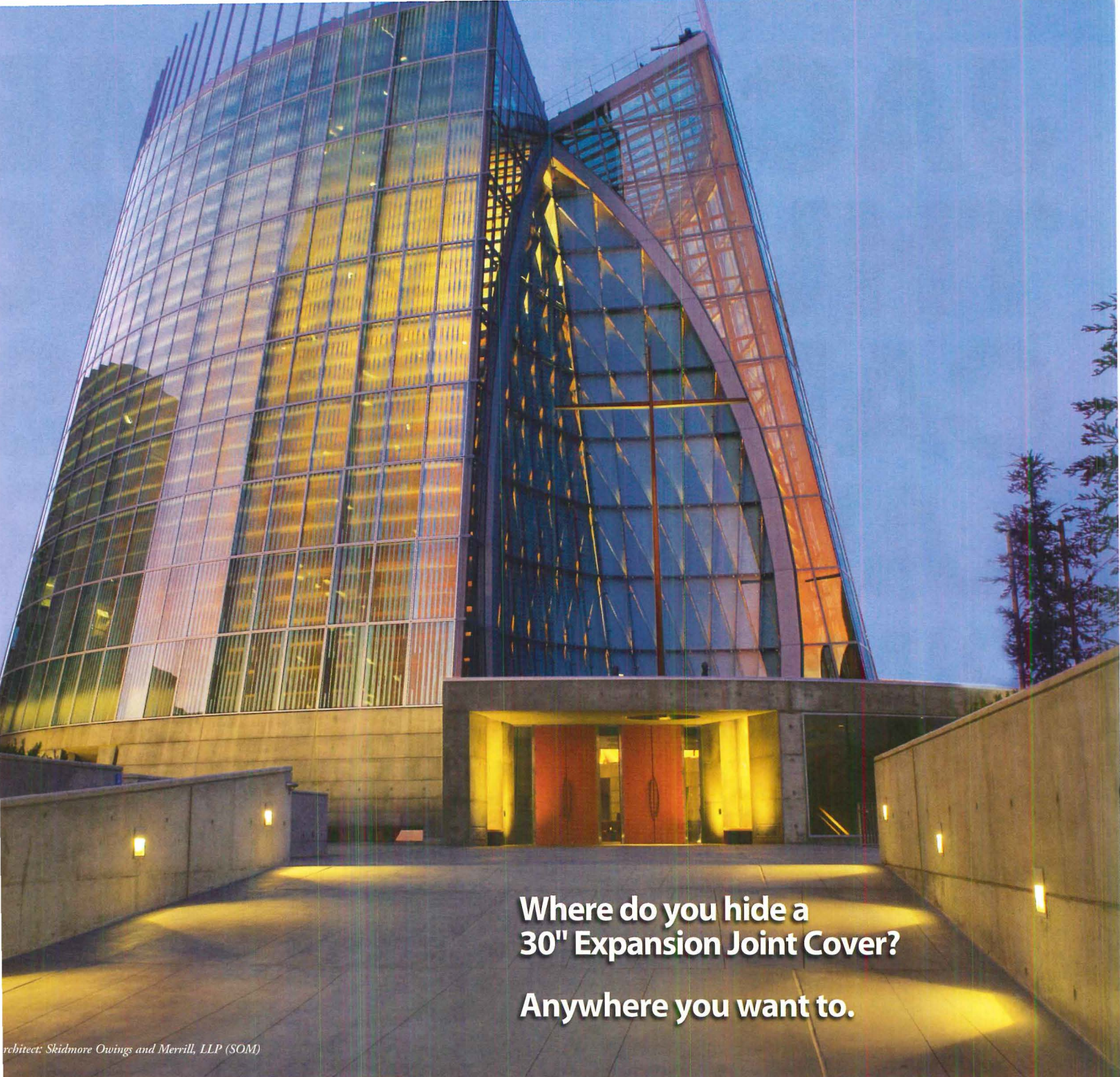
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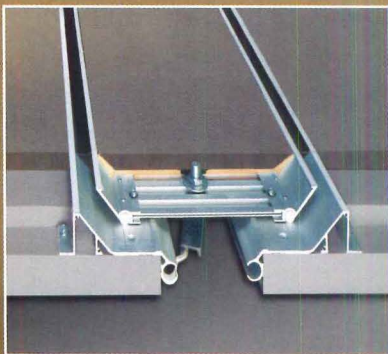
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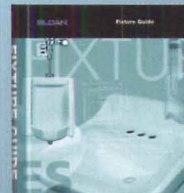
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Outlook 2010

Sticking to the Facts

BY ROBERT IVY, FAIA

WHENEVER TWO OR THREE ARCHITECTS gather – over the coffeepot, at a cocktail party, in the elevator – a single topic emerges: When will the recession end? Faced with frequent layoffs and calls from their bankers, and with a dynamic marketplace that seems to be constantly shrinking, principals have been relying on help wherever they might find it, whether through anecdotes, colleagues, advice from professional practice consultants, or Ouija boards. Then on Friday, October 16, 2009, the construction economists spoke.

Interest in where the markets will trend always draws a crowd. We all want to know the effect of the general economy on our businesses, and how prices of commodities and even world trade will affect our work and our clientele. This year, more than most, all eyes remained on center stage at the Capital Hilton in Washington, D.C., searching for clues. In full disclosure, McGraw-Hill Construction sponsors the annual Outlook Executive Conference, and I moderated this year's event. However, as an editor I listened with as rapt attention as any onlooker. What would happen in 2010?

In two days, we heard tempered remarks from all concerned. David Wyss, Standard and Poor's chief economist, led off with an analysis of the general economy, which he characterized as showing "glimmers of hope." He cited upturns in housing prices and improving financial markets, though unemployment remaining from the "synchronized sinking" of the world recession will hurt the construction industry. How are we emerging? With a bound? No, Wyss sees us "crawling out" of a recession that many have characterized as the Great Recession (with capital letters), headed toward a "slow recovery." Risks remain in the levels of unemployment, in the price of oil, and in the volatility of financial markets, any one of which could upset the slowly rising tides.

The shared wisdom of panelists and speakers regarding the stimulus for the construction industry can be summed up in a single word: Wait. Initial "shovel-ready" stimulus dollars went to infrastructure such as highway projects, even to asphalt, while the more complex building projects that require preparation and careful documentation should hit the architectural marketplace next year. The General Services Administration and other governmental agencies will receive much of the stimulus funding, in projects as massive as the new headquarters for the Department of Homeland Security in Washington, D.C., or in the energy retrofit of smaller regional office buildings.

Robert Murray, the Vice President for Economic Affairs for McGraw-Hill Construction, spoke last, and presented his long-awaited *2010 Construction*

Outlook for U.S. construction activity. However, individual sectors of the industry are behaving independently. Single-family housing has hit bottom and is beginning a slow upward trend. Commercial building "is still in deep decline," according to Murray. Surprisingly, institutional building, which has been a bulwark throughout the past two years, is dropping in volume as funding sources dry up. The educational sector, another strength of the last two years, is weakening. Public works and infrastructure, by contrast, "are set to turn up."

Murray and his peers do not see us rebounding with the élan of previous recession and recovery cycles, where low points would be followed by "V"-shaped jumps upward, but by a more deliberate "U"-shaped change that will not reach the heights of 2005–06. As a nor'easter was bearing down on the East Coast of the United States, Murray summarized by recognizing movement from the depths of the recession that began in 2007 that may reach 11 percent overall above the low points of 2009. Growth is relative in his scenario, however.

Is the stimulus working? When can American firms plan for a loosening of credit by the marketplace? Which sectors of the client community will be seeking architectural and building services? The *Outlook* addressed these questions and more, and if the prognostications prove false, at least for two days architects, engineers, constructors, and owners had data and facts to rely on, and could banish the anecdotes and vague worries of the past months to the dustbin. Examining the facts, and then analyzing them, provides momentary comfort and may help to build confidence, so necessary for the coming year.

LETTERS

Maximum sobriety

We thank Suzanne Stephens for her extensive coverage of the New Acropolis Museum [October 2009, page 76], but would like to note the irony of being faulted for succeeding at the very thing we intended to achieve. While Stephens criticizes the museum for not being "[our] most spectacular work," the whole point was to resist building an architectural spectacle. To quote from our competition entry: "At the onset, it was decided to 'play down' the architectural approach and to address the site with minimalist simplicity. The aim was maximum sobriety Within the unusual constraints of the site, the project ought to appear almost undesigned."

Stephens also regrets that the surface of the exterior concrete, which has no overpainting, sandblasting, or other cosmetic

correction, does not compare with the marble of the Parthenon "up the hill." Again, this is the whole point. The Acropolis Museum does not aim to compete with the ancients through egos or materials. On the contrary, as we stated in the competition document, "The goal of this orchestrated simplicity is to focus the viewers' emotions and intellect on extraordinary works of art."

*Bernard Tschumi Architects
New York City*

High expectations

Thank you for publishing the article and photos of New York City's High Line [October 2009, page 84]. I enjoyed them tremendously. Both the photos and actual casual experience of the High Line are an affirmation of the anticipation produced by the design renderings. The project is magnificent. It is the product of the

successful combination of recovered urban space, surprising adaptive reuse, historic New York City respect and reference, some transported Coney Island and Rockaway boardwalk flavor, and a small bit of my back deck thrown in.

*James Fleming, AIA
Larchmont, N.Y.*

Julius's pink pig

Thirty years ago, as AIA director of continuing education, I had the privilege of meeting with Julius Shulman ["Remembering Julius Shulman, the illustrious photographer," September 2009, page 30], and he shared with me his "pink pig" theory. "One rainy day as I drove through the mountains in Jamaica," he recounted, "a pink pig wandered out in front of my car, sat down, and looked straight at me. Before I could get out my camera to capture this

wonderful picture, he stood and walked away. Always be ready to capture every moment!" This small piece of wisdom stayed with me through my career. "Always be ready to capture every moment": wise advice from a warm and talented man. Thanks, Julius.

*Jack Kelso, AIA
Las Vegas*

Corrections

A News story in the July 2009 issue [page 20] about the Vancouver Winter Olympics athletes' village suggested that Norm Hotson of HBBH Architects was the sole master planner. In fact, there were other firms involved, including VIA Architecture, Stantec, and the landscape architecture firm PWL Partnership.

Send letters to rivy@mcgraw-hill.com.

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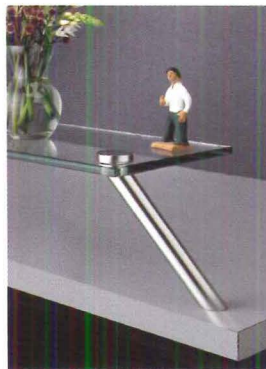
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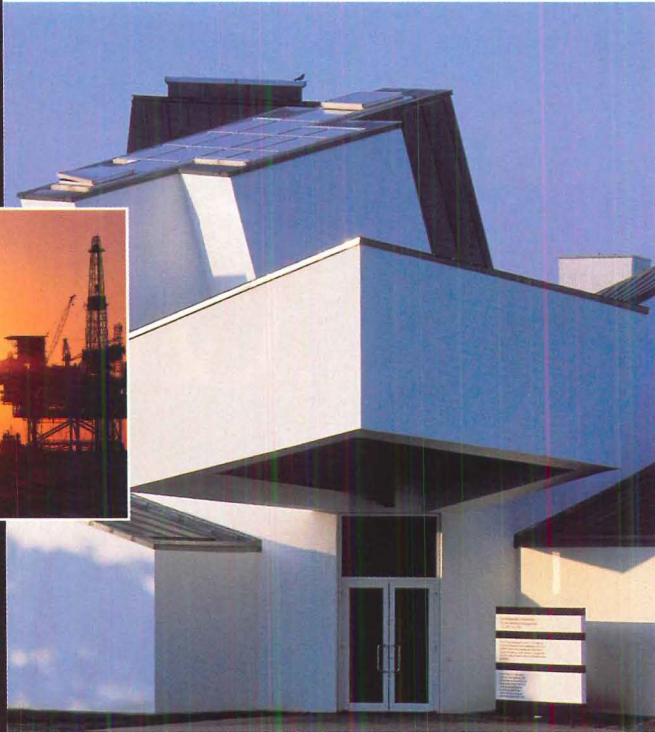


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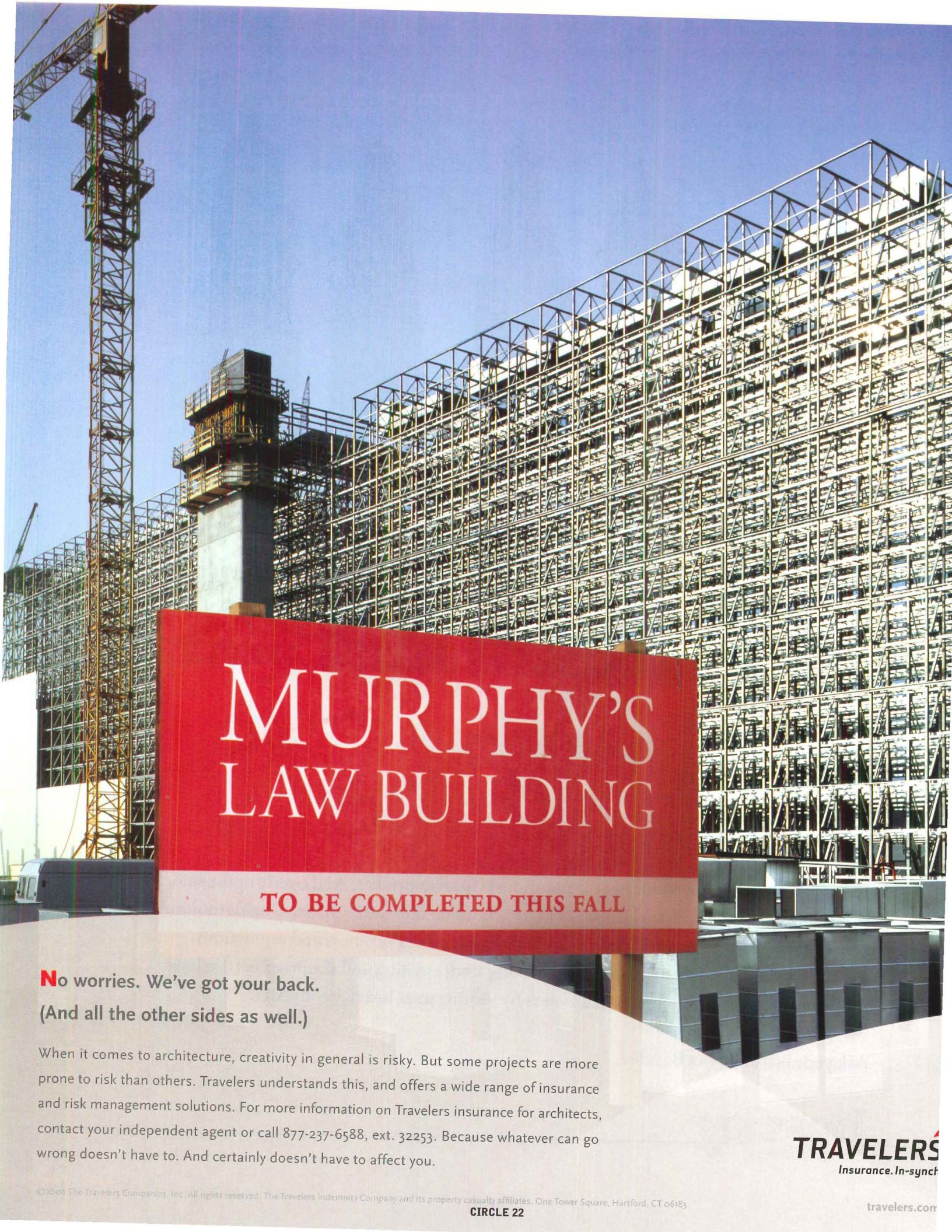


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Five partners split from KPF London

The five partners in the London office of Kohn Pedersen Fox Associates (KPF) have left to start their own practice. The founders of the new firm, named PLP Architecture, are Lee Polisano, FAIA, former president of KPF; David Leventhal, FAIA; Fred Pilbrow; Karen Cook, AIA; and Ron Bakker, AIA. The move comes after the five made a failed attempt to buy out KPF's U.K. operations in July.

"The London shareholders banded together to make an offer to purchase the London operation – the space, the people, and all the contracts that we had," says KPF chairman A. Eugene Kohn, FAIA. "They rather surprised us." At the time, the firm had a total of 13 shareholders, and the rest of the team rejected the offer.

According to Kohn, "Their hope was that KPF London would be separate from New York, and they would use the name, but be owned primarily by them-

selves, free to do what they wanted. But [the firm] is not like a franchise."

Polisano says setting up PLP Architecture will allow the five principals to explore opportunities they couldn't pursue while at KPF. "We want to push some of the other types of projects we're interested in, and push the geographic locations where we've been working," he says. "We'll begin to examine a number of things that we haven't been able to do." However, he was tight-lipped about what specific projects

PLP will initially take on.

Kohn, who is now heading up KPF's London office, reported that his firm has managed to hold on to the majority of its projects and employees. "To date, no project has left us," he says, before conceding that "I think there will be one or two that eventually do."

Of KPF's approximately 200 employees in London, "about 30" are now with PLP, says Polisano, who hopes eventually to build up a staff of 80 to 100 people. KPF has been replacing



those people by promoting from within, bringing employees over from New York, and "hiring some of the really phenomenal talent that's available in London, from all the great firms that laid off people," says Kohn. *Tim McKeough*

The five former KPF partners, from left: Karen Cook, Ron Bakker, David Leventhal, Lee Polisano, Fred Pilbrow.

SOM loses top architect to HOK



Carl Galioto

A Skidmore, Owings & Merrill (SOM) employee and partner of many decades has jumped ship from the firm's New York office for a rival.

In September, Carl Galioto, FAIA, joined HOK's New York office as senior principal after 30 years with SOM, where he contributed to the design of One World Trade Center, 7 World

Trade Center, and Terminal Four at John F. Kennedy International Airport. As head of the technical group, he helped SOM become known as a leader in the development of building information modeling, or BIM.

Galioto has worked with various public agencies and was instrumental in the creation of a new building code in New York City. He also served on a task force convened by the National Institute of Building Sciences to draft recommendations for high-rise codes.

Galioto, 55, admits it's unusual for someone of his stature to relocate,

but the new job has many advantages. Because HOK's 140-employee New York office is much smaller than SOM's, which reportedly had 320 employees as of August, Galioto can have a hand in a greater variety of projects. He may also boost the profile of HOK. In New York, the firm is best known for its health-care, science and technology, transportation, and corporate interiors work, Galioto says, adding that "it will be fun to get the word out" about the firm's range of expertise.

HOK is happy to have him, as he can help ramp up the firm's "buildingSMART"

initiative, which seeks to improve project delivery through BIM, says Patrick MacLeamy, FAIA, HOK's chief executive. "All these

things that he has been working on and dreaming about," MacLeamy says, "can be lived out with us." *C.J. Hughes*

Alsop heads up RMJM studio



The 61-year-old British architect Will Alsop has taken a job at RMJM after resigning in August from his eponymous U.K.-based firm owned by Archial Group. The newly launched "Will Alsop at RMJM" will be based in London and will work on projects across the globe.

Architects brace for prolonged recession

AR RECEPTION REPORT

As summer gave way to fall, some economic indicators suggested the Great Recession was ending, and yet many architects continue to struggle in an environment that provides only scattered reasons for optimism.

Much of the gloom can be explained through numbers. For example, the Dodge Index from McGraw-Hill Construction, which measures all current construction activity in the U.S., from homes to highways, has stood at an average of 85 for 2009, which is far below the average of 135 for 2007. "And if you adjust for inflation, it's even worse," says Kim Kennedy, an economist with McGraw-Hill Construction Research.

Projections for 2010 seem comparably grim. In September, the Architecture Billings Index, an indicator of construction activity nine to 12 months hence, registered at 43.1. The index, which is compiled by the AIA based on surveys sent to firms, has fallen below 50 for 20 consecutive months. "It's basically been flat since March [when it hit 43.7], and this is not good news," says Kermit Baker, the AIA's chief economist. "There was hope that the low 40s would turn into the mid 40s by now, but it hasn't really moved at all."

That stagnation has cost thousands of jobs. While specific figures about architects and unemployment are not available – the U.S. Labor Department

doesn't systematically track them, and neither does the AIA – the unemployment rate in the architecture and engineering sectors jumped to 7.3 percent in the second quarter of 2009, with 113,000 people looking for work, according to the U.S. Bureau of Labor Statistics. In the previous quarter, the unemployment rate was 5.6 percent. A year ago, just 3.2 percent of the industry – 54,000 people – was unemployed.

Suzanne Mecs, membership director at AIA New York, has seen the effects of the recession firsthand. Since last December, the chapter's "Not Business as Usual" get-togethers, which focus on coping with a lack of work, have drawn a total of 730 people, with almost a third streaming through the door in the past two months. In fact, the meetings have been so popular that the chapter converted a gallery into a classroom and now offers tutorials in ArchiCAD and Revit, as well prep classes for LEED exams. "We felt from the vibe of the first meeting we had struck a chord," Mecs says.

Even industry stalwarts have been pinched. Over the course of this year, Perkins + Will, for instance, shed 8 percent of its staff, from 1,730 to 1,600 employees, says president Phil Harrison, AIA. While the firm is landing new commissions, they're slow to get going, in a delay Harrison attributes not to a lack of credit, which was the common explanation for the slowdown a year ago, but to overly cautious attitudes.

"Our hope is to have sufficient work to keep moving forward," Harrison says.

Any commissions up for grabs are now fought over with ferocity, says Randy Regier, the president of Taylor, a California-based firm that laid off 8 of its 66 employees in February. To wit: Taylor, which focuses on health-care facilities, lost a hospital remodeling job this summer when it was underbid by another firm by \$4,000, Regier says.

In the meantime, Washington, D.C., is providing little cushioning, architects say. Tangible levels of stimulus funding haven't trickled down to most firms yet. And although health care is supposed to be a bright spot, the current impasse among lawmakers over health insurance has had a chilling effect. "We're waiting for a resolution," Regier says.

Not all is universally gloomy. Recent ABI figures about inquiries for new projects, including requests for proposals, were at 59.1 in August, besting July's 55.2 score. Plus, Snøhetta, the Norwegian firm behind the visitor center at the World Trade Center site, hired 10 of the 17 employees in its New York office since December 2007, when the recession began, says managing director Vanessa Kassabian. And the firm's other projects – mostly campus buildings whose funding is secure – have "insulated it through the year's end," Kassabian says. "But when that ends, we could have a problem." *C.J. Hughes*



An unexpected building boom in L.A.

The nine-college Los Angeles Community College District (LACCD) is in a unique situation. Despite a nationwide economic slump that is one of the worst in 50 years, the district has money to spend – and to build.

The LACCD, which serves more than 220,000 students throughout Los Angeles County, is in the middle of a \$5.7 billion building program funded by three bonds. The program, which began 2004 and is expected to be completed by 2014, is intended to modernize and add new facilities throughout the district.

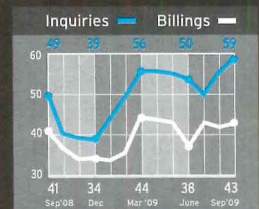
The LACCD is working with numerous architectural firms, including Leo A Daly, WWCOT, and Harley Ellis Devereaux. Of the nearly 90 new buildings planned, eight are completed, 29 are under construction (including an Arquitectonica-designed arts center, pictured above), and roughly 50 are either in the design phase or do not yet have an architect.

The construction boom is being funded by a \$1 billion bond passed in 2001, a \$1.2 billion bond passed in 2003, and a \$3.5 billion bond passed in November 2008.

The district is quickly putting the money to use. Larry Eisenberg, LACCD's executive director of facilities planning and development, estimates that the district is spending about \$30 million a week in construction payments. Eisenberg adds that it has been able to capitalize on the low-bid environment and, in some cases, has been able to "get deeper" down its wish list because of it. For instance, at Pierce College, the cost savings have allowed the district to build a child development center that was not originally in the budget. "It's an amazing market right now," Eisenberg says. *Joe Florkowski*

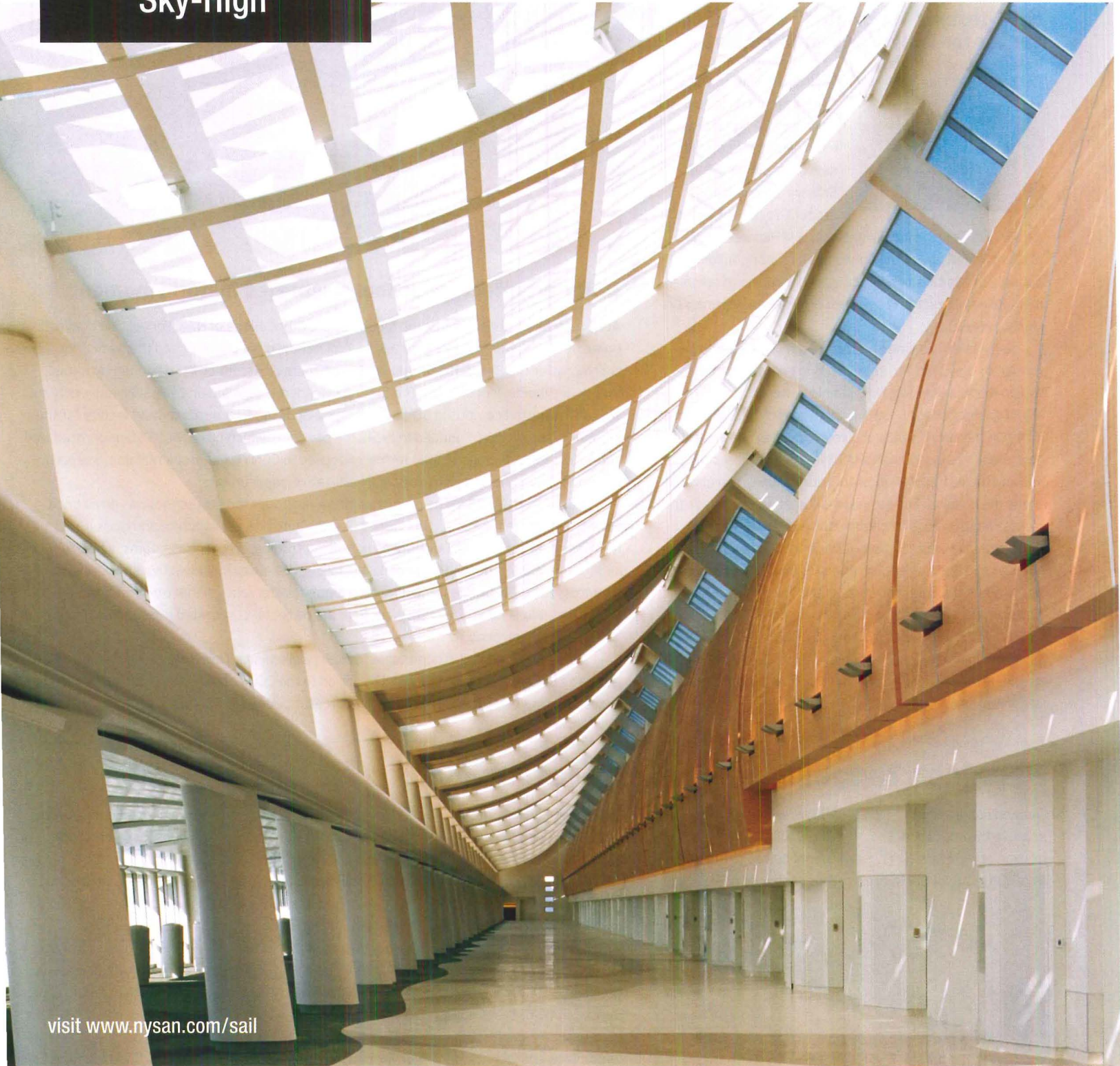
ABI on the rise

The Architectural Billings Index rose to 43.1 in September, up slightly from 41.7 in August. The inquiries score leapt to 59.1, its highest level since September 2007, which AIA Chief Economist Kermit Baker calls an "encouraging sign." But,



he adds, the inquiries score might be inflated, as the recession is spurring many firms to broaden their search for work.

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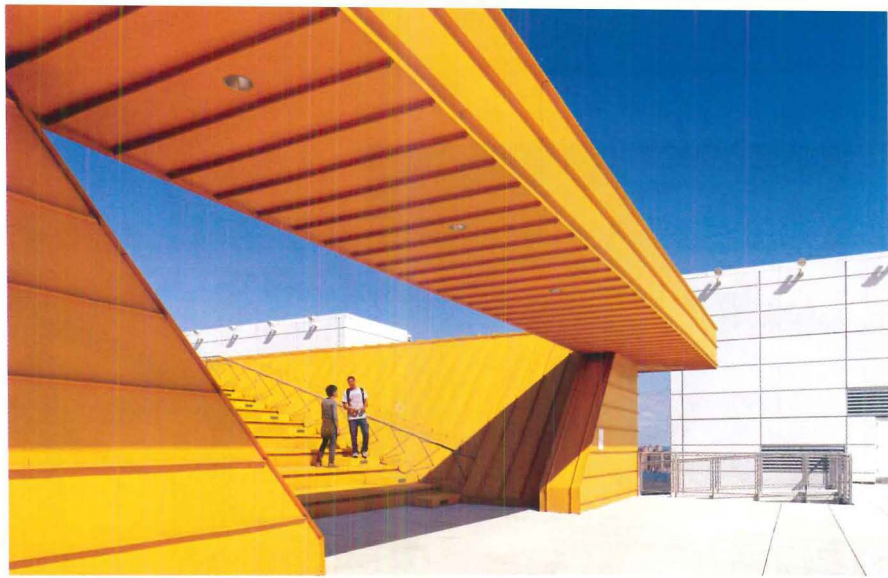
High above the Mississippi River as it bends around the University of Minnesota's main campus, a sparkling new glass building, the Science Teaching and Student Services Center

(STSSC), is rising. Principal designer, Bill Pedersen, FAIA, of Kohn Pedersen Fox, designed the five-story building not only to capitalize on its scenic site, but also to complement its neighbor, the Frank Gehry-designed Weisman Art Museum (1993).

Both buildings stand opposite each other on a plaza formed by a pedestrian bridge deck. In contrast to the Weisman's image of tumbling stainless-steel blocks, the 120,000-square-foot STSSC is relatively simple and smooth in form. On the curving west and south facades, the architects have employed a series of carefully placed vertical steel piers and a vertical strip of windows of fritted blue-green glass to shade the building. The east side features a brick facade that blends with the more traditional campus structures.

Inside, a broad, curving white concrete stairway connects all five floors. Meeting rooms, offices, and public spaces will be filled with light, and parts of the building will offer views of the river and downtown Minneapolis.

Construction began in January 2009, and the \$70 million building, designed to achieve LEED Gold certification, should be ready for occupancy by the 2010 fall semester. *Bette Hammel*



CCNY architecture school celebrates historic moment

At last, architecture students and faculty at the City College of New York (CCNY) have a home of their own. On September 16, several hundred people attended the dedication ceremony for the Bernard and Anne Spitzer School of Architecture, designed by Rafael Viñoly Architects. Not only is it the first new academic building on the public university's Upper Manhattan campus in 30-plus years; it also is the first purpose-built facility for the architecture program. Founded in 1968, the program, which has about 300 undergraduate and 100 graduate students, was formerly housed in CCNY's landmark building, Shepard Hall, alongside other academic and administrative departments.

Viñoly, who attended the grand opening event, says the new school was envisioned as "infrastructure for intellectual work." Clad in white precast concrete and glass, the 118,000-square-foot building contains light-filled studios, offices, classrooms, a library, auditorium, model shop, and digital design lab. Key features include a five-story atrium crisscrossed by sky bridges, and a rooftop amphitheater (above) that offers striking views of Manhattan. While mostly new construction, the project incorporated the concrete frame of a 1950s building formerly on the site.

The school is named in honor of Mr. Spitzer, a prominent New York developer and CCNY alum. The Spitzers recently donated \$25 million to the CCNY architecture school, the second-largest gift ever given to a U.S. architecture program. *Jenna M. McKnight*

Behnisch tapped for Baltimore law school

"A good building can improve the educational mission of a university," says University of Baltimore

(UB) president Robert Bogomolny. With his school poised to invest four years and more than

\$100 million dollars into a new facility for UB's law school, he clearly hopes so.

Last fall, Behnisch Architekten's Boston office won the commission for a new glass-and-steel structure in downtown Baltimore. The planned John and Frances Angelos Law Center will measure some 190,000 square feet, and will include classrooms, offices, a six-story library, and a moot courtroom. Behnisch will partner with local firm Ayers/Saint/Gross.

The law school's current facility, built in the

1980s when the student body was considerably smaller, hasn't aged well. Cinderblock construction, inadequate lighting and HVAC systems, and an outmoded library are among the chief concerns in the old building.

The new facility will incorporate Stefan Behnisch's famed attention to light and environmental sustainability. Firm partner Matt Noblett says they intend to organize the school around a central atrium (left) that uses the stack effect to exhaust air through the building, thereby minimizing the need

for air-conditioning. Other proposed features include a green roof and the extensive use of static and dynamic shading devices such as louvers on the facade.

Sited across the street from a train station at the crux of two major streets, the new building will be a highly visible addition to its neighborhood. Bogomolny hopes the center will be an integral part of Baltimore's revitalization, noting that "the health of the city impacts that of the university, and vice versa." *Sebastian Howard*



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Inspired spaces benefit design schools



Before moving into its new home in 2007, the University of Arizona's (UofA) architecture program had been housed in some unlikely locations over the years: In the 1980s, classes were held in a former Safeway store, and until 2007, an old Episcopal church. "When we moved to our new building, we took the altar and rectory table with us," remarks Ron Stoltz, the director of **UofA's College of Architecture and Landscape Architecture**, "but otherwise the new building is a complete departure from our past."

UofA's is just one of a dozen U.S. architecture schools that has built, expanded, or renovated its facilities in recent years. While the impetus for these projects varies, most schools typically are in need of larger and more modern venues. Often, they also want spaces that encourage interaction among various departments, and green elements that can serve as didactic tools. In many cases, these new facilities have aided considerably in student recruitment.

The UofA school is a prime example of these trends. Designed by Phoenix-based Jones Studio, the 70,000-square-foot, \$12.4 million project involved the renovation of an existing

facility and construction of a new 33,000-square-foot building. Shared by the architecture and landscape architecture programs, the school features large, daylight rooms, complete with exposed structural and mechanical systems.

Architecture and landscape also converge in the building itself, with an exterior, 54-foot-high and 200-foot-wide trellis, designed by Christy Ten Eyck, that's covered with vines. The building has been a powerful marketing tool, according to school officials, with applications to the architecture and landscape architecture departments rising 40 percent and 15 percent, respectively, over the past few years.

Penn State's Stuckeman Family Building, which opened in 2005, offers a similar story. Originally, the architecture and landscape architecture departments were located in a series of 50-by-50-foot buildings connected by skyways. "Some of the faculty liked the old buildings because they felt homey," says Scott Wing, head of Penn State's architecture department. "But there were a total of 40 doors leading outside, so professors and students came in and out without interacting with others in the department."

Designed by Overland Partners of San Antonio and WTW Architects of Pittsburgh, the school's new, 110,000-square-foot



1. **University of Arizona, College of Architecture and Landscape Architecture.**
2. **Syracuse University, Slocum Hall.**
3. **Penn State, Stuckeman Family Building.**

LEED Gold building has large atria and open floor plans. Faculty and students now have space to meet and collaborate on projects and competitions, such as the U.S. Department of Energy's Solar Decathlon. Similar to UofA, student applications have jumped 35 percent, which the school partly attributes to the new facility. "We wanted to attract some of the best students in the country," Wing says, "and now that we've moved into our new building, we're seeing higher-caliber applicants."

The nonaccredited Architectural Design (AD) program at Stanford University recently settled into the **Yang and Yamazaki Environment and Energy Building** (Y2E2), a \$120 million project designed by BOORA, a Portland, Oregon-based firm. The facility houses Stanford's Department of Civil and Environmental Engineering, which the AD program falls under. In the department's former home, architecture students were confined to a single studio with a slim clerestory window that offered a limited view of the outside world. Y2E2, which offers large studio spaces and open common areas that promote interaction between



faculty and students, is a welcome change.

"In Y2E2, the students and faculty easily flow between studio and informal spaces overlooking the large atrium," says John Barton, head of the AD department. The building boasts a variety of green technologies, including photovoltaic panels, radiant slabs, and four-story atria that take in cool air at night to chill the non-air-conditioned building.

Other schools have opted for renovating existing campus buildings instead of building anew. New York-based Garrison Architects revived **Syracuse University's 90-year-old Slocum Hall** to reveal grand spaces that had been sliced into cramped classrooms and studios. The project had an unexpected outcome. During construction, the architecture school moved to an off-campus site—a renovated warehouse in downtown Syracuse designed by Gluckman Mayner Architects. Even though most of the department moved back to Slocum Hall last fall, the school decided to keep the temporary facility, dubbed **The Warehouse**, open for studios taught by visiting scholars.

"Architects are always influenced by their environment, landscape, and urban environment," says Mark Robbins, dean of Syracuse's School of Architecture. "In The Warehouse, we can encounter urban realities in ways not possible in our idealized campus on a hill." *Mae Ryan*

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Russian drama, act II



Toronto-based Diamond and Schmitt Architects has won a competition to design the New Mariinsky Theatre in St. Petersburg, Russia. Originally, the commission had been awarded, in 2003, to French architect Dominique Perrault. But his scheme was abandoned following a string of problems, including ballooning costs and controversy over his bold, crystalline design.

Where Perrault's scheme would have been a radical departure for the area, Diamond and Schmitt has created a contemporary building that refers to its neighbors – brick structures with colonnaded porticoes and metal roofs. The new, 825,000-square-foot theater (above) will have a masonry base with bay windows and a swooping zinc roof. Construction is expected to begin immediately, with completion in 2011. *Tim McKeough*

Yalies vs. Yale

Robert A.M. Stern, FAIA, dean of the Yale School of Architecture, from which he graduated in 1965, is designing two new residential colleges for the Ivy League university. The school hasn't added any dorms to its New Haven, Connecticut, campus since the early 1960s.

But the project, planned for the northwestern edge of campus, calls for the demolition

of 13 buildings, including Seeley G. Mudd Library (1982), designed by Harold Roth, FAIA, and William Moore, AIA, both of whom earned M.Arch. degrees from Yale and have an office up the street.

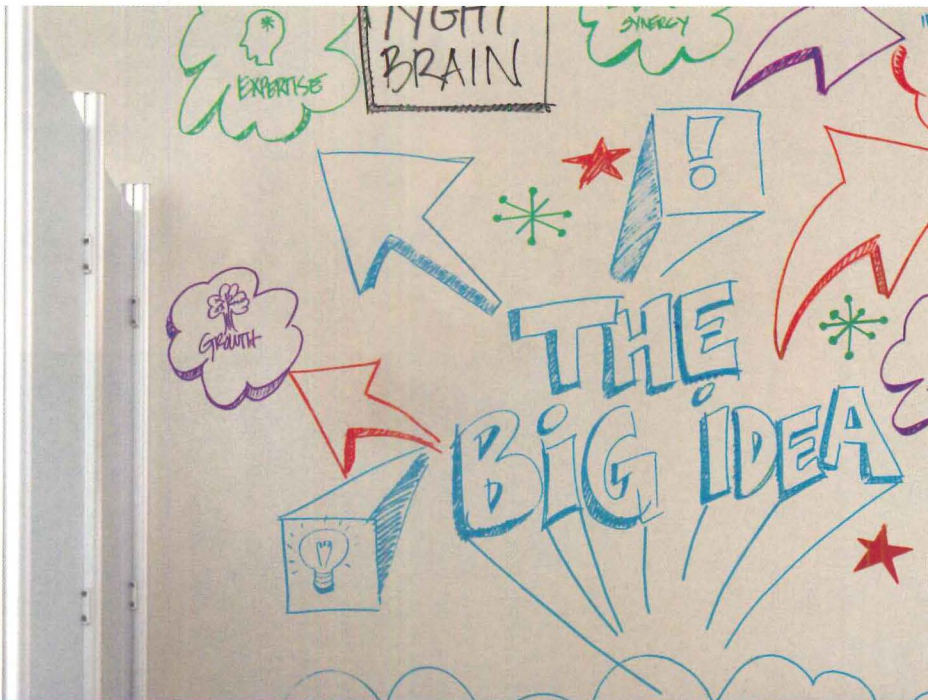
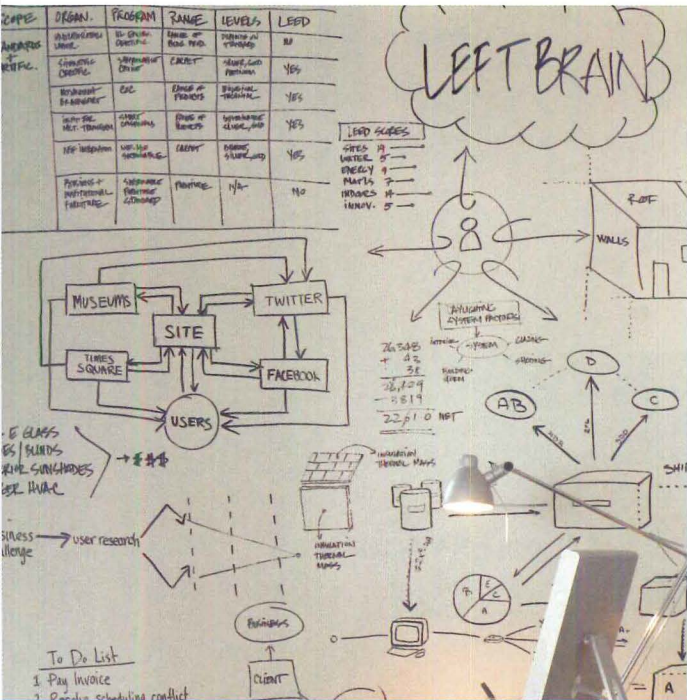
This summer, Roth and other critics met with Stern, though they couldn't convince him to incorporate any of the existing buildings, including Mudd,

into his scheme. "Bob Stern is a talented architect, and I'm sure whatever he does will be wonderful. But does it require a wholesale bulldozing?" says Moore.

Stern referred all questions to Yale, which says the \$600 million, 460,000-square-foot project will continue despite pleas for preservation. Construction is slated for 2011. *C.J. Hughes*

That was then

Gross billings at U.S. architecture firms increased nearly \$16 billion from 2005, and totaled \$44.3 billion in 2008. That equates to 54 percent growth over three years, with annual growth of about 16 percent. These findings come from the AIA's "Business of Architecture: AIA Survey Report on Firm Characteristics," which is conducted every three years to examine issues related to the business practices of AIA member-owned architecture firms. The study also revealed sizeable gains in the number of firms doing green design projects, as well as using building information modeling (BIM) software. *Mike Larson*



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Aid to typhoon victims

San Francisco-based Architecture for Humanity (AFH) is raising money to send a team of architects to Vietnam, Cambodia, and the Philippines to survey damage wreaked by Typhoon Ketsana, which struck the region in late September. With a long-term view of redevelopment, the nonprofit organization will begin its work after major media outlets and emergency relief groups have gone home, explains Barb Alvarado, AFH's associate development director. "We focus on community infrastructure, like schools and clinics," she says. "We try to do the most good for the least amount of money." Among AFH's completed projects around the globe are seven homes the group constructed in Mississippi after Hurricane Katrina, and community centers in India and Sri Lanka built after the 2004 Indian Ocean tsunami. *Sebastian Howard*

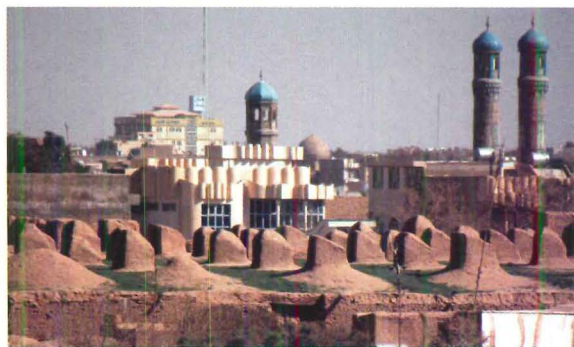
Praemium Imperiale winners



Zaha Hadid is one of five laureates of the 2009 Praemium Imperiale, presented by the Japan Art

Association. Established in 1998 to commemorate the association's anniversary and to honor the late Prince Takamatsu, the award recognizes lifetime achievements in arts categories not covered by Nobel Prizes. Each winner receives 15 million yen (approximately \$163,000). The other 2009 recipients are Hiroshi Sugimoto of

Japan, for painting and photography; Richard Long of the U.K., for sculpture; Alfred Brendel of Austria, for music; and Tom Stoppard of the U.K., for theater/film. Last year, Peter Zumthor won in the architecture category. Prior winners include Norman Foster, Frank Gehry, and Renzo Piano. *Jenna M. McKnight*



WMF watch list

The World Monuments Fund has announced its biannual list of "watch sites" – buildings and landscapes of significant cultural value that, according to the organization, require urgent attention. The 2010 list consists of 93 sites across 47 countries. Of those, 11 are in the Americas (with nine in the U.S.), 18 in Asia, and 26 in Europe. Sites represent a range of concerns and scales, from well-known landmarks such as Frank Lloyd Wright's Taliesin campuses in Wisconsin and Arizona to more unusual places such as Chiktan Castle, a 16th-century rammed-earth structure in India. Afghanistan's Old City of Herat (above), had also made the 1998 list. *Aleksandr Bierig*

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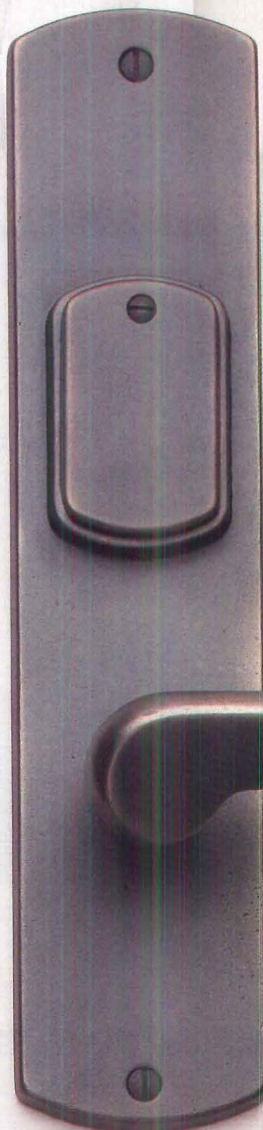
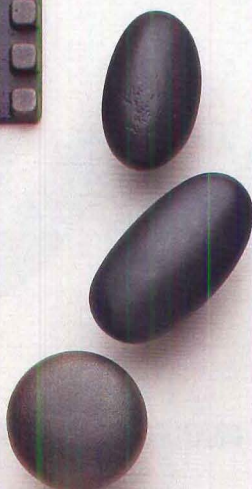
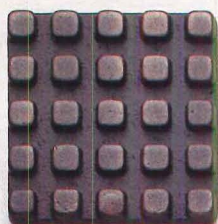
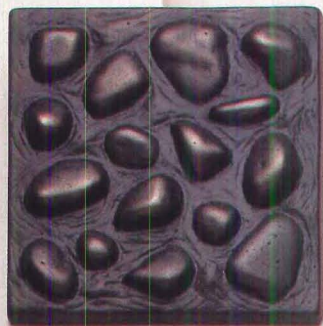


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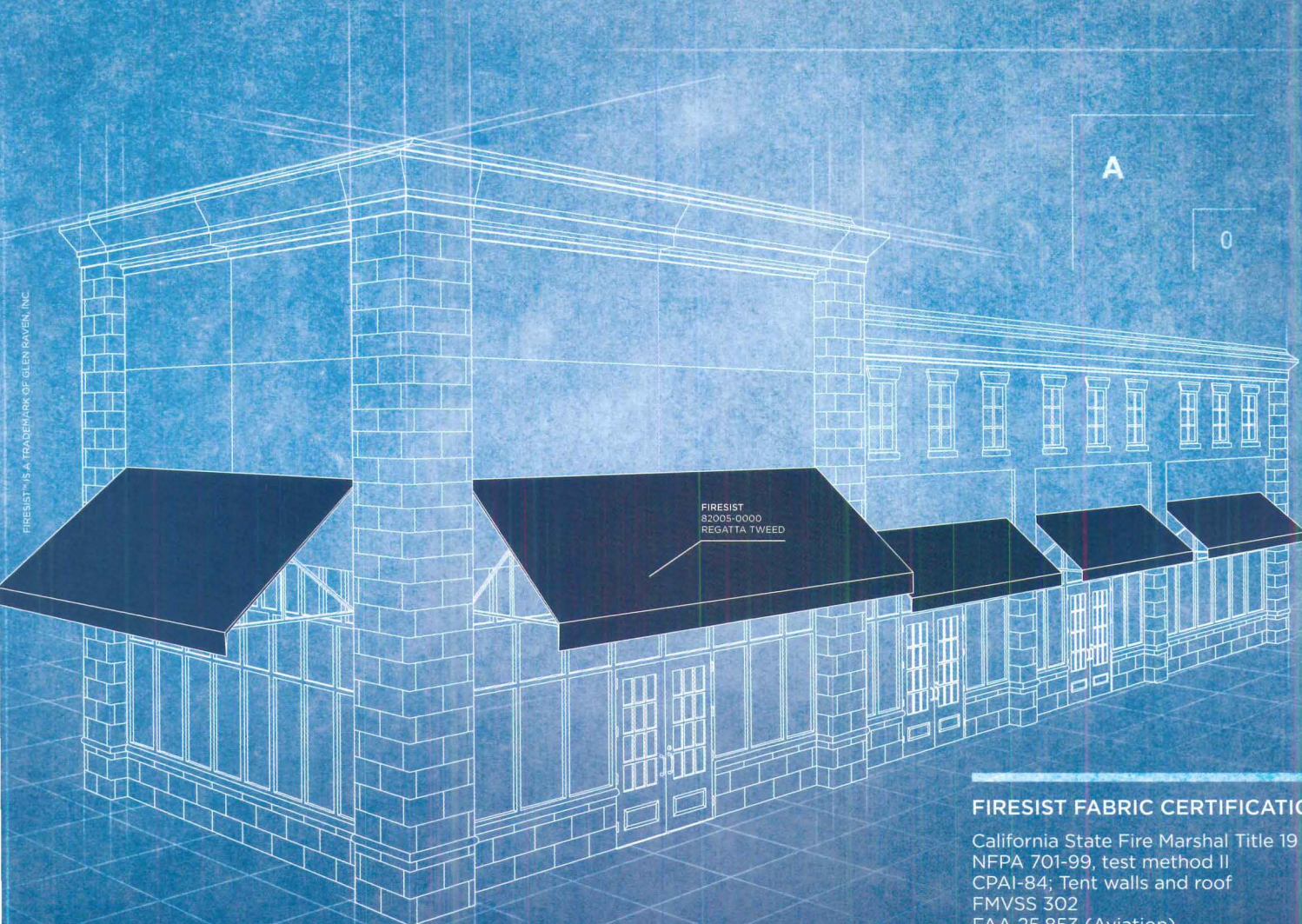
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LAN Architecture

ITALIAN NATIVE UMBERTO NAPOLITANO WANTED TO BE A MUSICIAN, and spent his teenage years in Naples in bands that dreamed of becoming the next Velvet Underground or The Stooges. Meanwhile, Grenoble, France-born Benoit Jallon was more obsessed with medical science – “the perfection of the body’s layers and stratum,” as he says. When the young M.D.-to-be discovered that buildings were as intricate and fascinating as the human body, and the budding

rockstar grew up a little and realized he needed a profession, they both turned to architecture. Now in their seventh year as coprincipals of 20-person firm LAN Architecture, based in Paris, they agree that when they met at the Ecole d’Architecture de Paris La Villette, they “had a single certainty, to have their own firm together,” as Napolitano puts it.

At this point, with a handful of large commercial projects completed, several more on the boards, and the receipt of the prestigious Nouveaux Albums des Jeunes Architectes (young architects award) in 2004 from the French Minister of Culture and Communication under their belts, Napolitano and Jallon are able to look back on their education and experience with some perspective. “I have great memories from my years at the university, when I studied and worked at both large and small firms to try to accumulate the maximum experience,” says Napolitano. “Everything was new and exciting, and I perceived the best from the architecture world. Still, I’m not sure I completely believe in the formative role of the university. I’ve personally learned more directly on the ground.” Jallon concurs, citing an example of

one professor in particular who gave brilliant project analyses and taught the importance of the architectural, social, artistic, and even economic contexts of projects. “Despite all that,” says Jallon, “his architecture was commonplace. It never convinced me. It was an example of a



big sensibility of approach, but not translatable in the act of building.” To Jallon and Napolitano, avoiding this failed connection between theory and practice is paramount.

The two named their firm Local Architectural Network (or LAN) Architecture, to herald their practice

philosophy. “It is important for us to express the idea of network, the interdisciplinarity of architecture, the notion of local, and the context of the project,” says Napolitano, who goes on to describe how, when their firm first started and the workload was lighter, they would organize gath-



Marchesini France, Saint-Mesmes, France, 2008.

Two volumes comprise offices, a workshop, exhibition space, and storage.



1. **Neue Hamburger Terrassen Master Plan, Hamburg, Germany, unbuilt.**

First-place winner in a competition with the purpose of rehabilitating an industrial district south of the Elbe River.

2. **Children's Toy Library, Bonneuil-sur-Marne, France, 2008.**

A solid volume serves as a protective container for its users – children.

erings – salons – of creative people, to help them get other points of view, “and to develop the notion of listening.” “For us, for our architecture, there is the continual questioning of rules,” he says. “Everything is the result of a continuous ‘restarting from zero.’”

Their desire to accept beginning at the beginning has helped them weather the economic storms of the past year, as has the fact that they’re designing projects in more than one country. “Of course we’ve felt it,” says Umberto. “Some projects have

stopped. But working in multiple countries allows us, for the moment, to be balanced.”

Balancing work and life (the two say they have families, friends, and lives outside of architecture, thank you very much, but no children yet, so their working hours are still crazy) is difficult, but this is what brings them joy. Asked if rock star and doctor might still be alternative fields for them, Napolitano says, “I would have liked to be the one who invented Nutella.” *Ingrid Spencer*

work

Future Cities Lab

RIGHT ON THE HEELS OF their Van Alen Institute New York Prize fellowship exhibition, the *Aurora Project*, Nataly Gattegno and Jason Johnson are putting their lives back together after nearly three years on the road. “For the first time in a while, all of our gear is in one place,” says Johnson. After four cities in three years – most recently Oakland, where they have accepted posts at the California College of the Arts (CCA) – the principals of Future Cities Lab (FCL) are looking

forward to a productive tenure on the West Coast.

Since founding FCL in 2004, Gattegno and Johnson have consistently drawn from otherwise discrete fields. Animalia, ecology, robotics, and evolution are central to the way the San Francisco-based designers have approached architecture that is, in FCL’s case, broadly defined. In the past five years, their approach has garnered considerable attention:

a second-place finish in the Seoul Performing Arts Center Competition in 2005; finalists in the 2008 City of the Future competition sponsored by the History Channel; a solo exhibition at Chicago’s Extension Gallery for Architecture; work featured in three books; and teaching posts at three prestigious universities before their current positions at CCA.

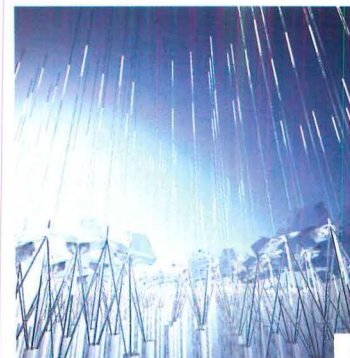
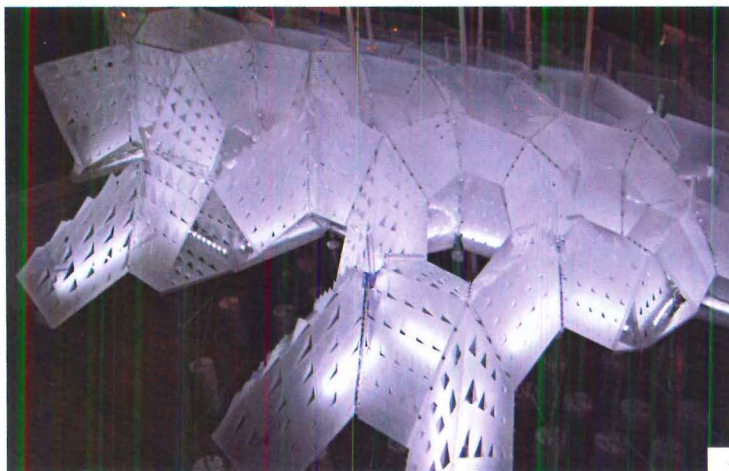
The Princeton grads move across platforms in their work, but



they are also deeply invested in collaboration, craft, and fabrication. *Aurora* may be a morass of cables and tensile members, but each cable and rod is painstakingly assembled.

The *Aurora Project* comprises three linked spaces, each with its own purpose in relation to the visitor. *Aurora*, the central piece, mapped the actions of gallery visitors onto real-time data on ice-field movement culled from the Arctic. Responsive

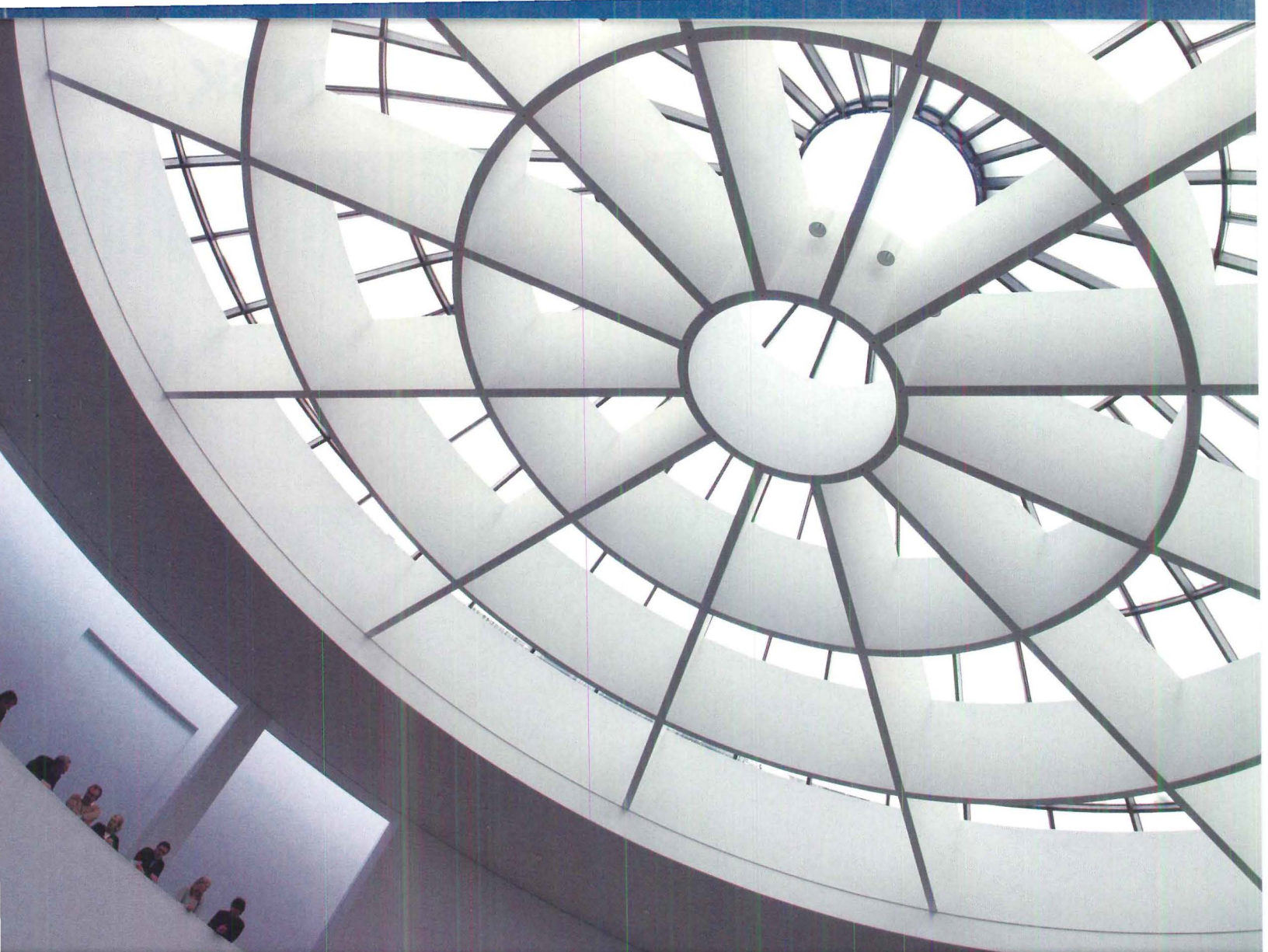
LEDs registered both environments, separated by nearly 3,000 nautical miles, onto a three-dimensional map. “One of the things that is misunderstood is that the aurora borealis – the lights themselves – do not change shape,” says Gattegno, “but they change their geometry in relation to the shifting dimensions of the Arctic region.” The map room, *Terra Incognita*, offers the designers’ own sketches that reflect the project’s genesis. Finally, the exhibition’s *Glaciarium* brings the melting floes into focus. As you step closer to a peep-hole to view the *Glaciarium*’s interior, you accelerate the process of its melting, which can be seen and heard. “It’s a political instrument,” says Johnson, “and it’s about your individual relationship with the idea of melting and displacement.” *William Richards*



1. **Stainless-steel cable was used to sew *Aurora* together. A high-tech process was used to design the project, but a manual one was employed to assemble it.**

2. **A rendering shows the plaster-cast buoys.**

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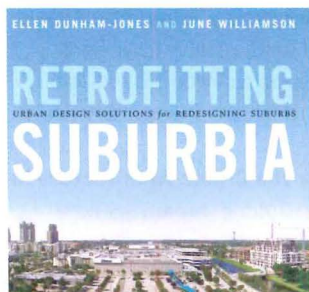
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The City, Reconsidered



Retrofitting Suburbia: Urban Design Solutions for Redesigning Suburbs, by Ellen Dunham-Jones and June Williamson. Wiley, 2008, 272 pages, \$75.

Why, where, and how should suburbia be retrofitted? This content-rich, well-written book provides compelling answers.

Advocating radical transformation of dysfunctional suburban environments, the authors propose makeovers that are not only socially, economically, and ecologically sustainable, but also aesthetically pleasing. A successful fight against sprawl, they assert, requires urbanizing suburbia. This means fine-grained block patterns; interconnected street networks for all travel modes; higher densities and mixed uses, including affordable housing; well-designed, activated civic spaces; restored and protected natural landscapes; and population diversity.

Dunham-Jones and Williamson's case studies of existing projects convincingly bolster New Urbanism's argument and identify distinct targets of retrofit opportunity, like residential subdivisions, big-box retailers, and industrial parks.

The book's analysis and commentaries are rigorous and comprehensive, predicated not on academic theory but on planning and development history, social science, demographics, market conditions, and

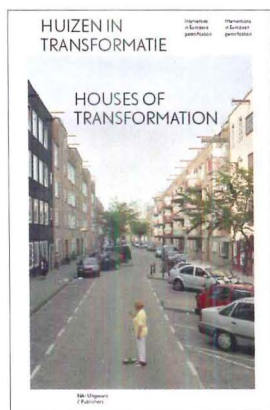
regulatory considerations. Photos, maps, site plans, charts, diagrams, and statistical data augment the text.

Despite some professional jargon – “dendritic,” “static tissue,” “transferable development rights” – this book is an accessible must-read for architecture and planning students, real estate professionals, public officials, and concerned citizens. *Roger K. Lewis*

Houses of Transformation: Intervening in European Gentrification, edited by Jaap-Jan Berg, Tahl Kaminer, Marc Schoonderbeek, and Joost Zonneveld. NAI Publishers, 2009, 224 pages, \$50.

During the past 20 years, urban redevelopment in Europe has followed the American model. Private development, constructed in league with city agencies, has replaced government-subsidized, mixed-income “social housing” built after World War II. Public space is becoming privatized or commandeered for the well-off and tourists. Existing low-income renters, the poor and foreign-born, are being driven out (though they may eventually receive subsidized housing farther from the city core).

Unlike in the U.S., however,



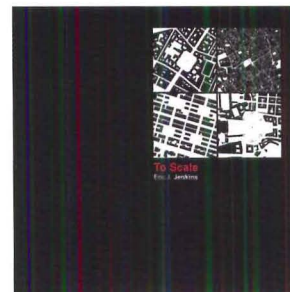
European architects, artists, and arts organizations are encouraging people who are being displaced to get involved in shaping their communities.

The essays here describe European attempts to alleviate the social costs of gentrification with lively billboard-size posters, enticing new public playgrounds, cafés, and gathering spaces. In the Transvaal quarter of The Hague, for example, the OpTek mobile project engaged the architecture firm RAL2005 to transform vacant condemned rental units into festive temporary hotel rooms, bringing life and bright lights onto the street. Rome's Stalker/ON collective, together with the nomadic Roma who had been camping almost invisibly on the banks of the Tiber, constructed a very visible wooden Roma-inspired house. In Southwark, London, artist Fritz Lang built “Estates” filled with fruits, vegetables, and herbs in the city's overlooked green strips, parks, and gardens, and then encouraged local residents to take them over.

These clever efforts and others in Barcelona, Brussels, Berlin, and Budapest were the subject of an exhibition at Amsterdam's Centre for Urban Culture in 2006. The exhibition provided the impetus for this eye-opening book, which also has essays by sociologists, planners, architects, and journalists who think it's not about the houses or the profits, it's about the people – in Europe, at least. *Jayne Merkel*

To Scale: One Hundred Urban Plans, by Eric J. Jenkins. Routledge, 2008, 225 pages, \$50.

Astonishingly, *To Scale: One Hundred Urban Plans* is the first book of figure-ground city plans since the format was invented by Colin Rowe



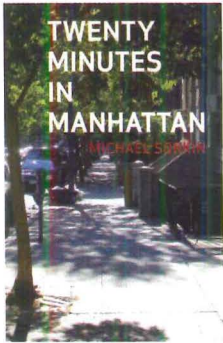
and Wayne Copper in 1967, at Cornell University. It is long overdue, since these plans – distilled urban layouts in black and white – represent the essential physical patterns of cities.

As a notation system, figure-ground uses the binary language of solids and voids to show urban form and spatial structure without the distractions of land use, zoning, traffic, and property lines. This volume is a particularly valuable reference because all the drawings are to the same scale, allowing comparisons among famous city districts from all over the world. It is a surprise to find, for instance, that two of Europe's most renowned public spaces, the Piazza Navona in Rome and the Place de la Carrière in Nancy, have identical plan dimensions.

To Scale: One Hundred Urban Plans is like an urban game board – the full-page plans beg to be played with and juxtaposed using tracing paper. The only drawback is that the drawings are student work and have a diagrammatic quality that occasionally obscures details. It is a minor complaint, and can be improved next time.

Jenkins's collection of city footprints shows that figure-ground, a term casually used today, is still largely unexplored. This book, which reminds us that space is the basic DNA of urban structure, ought to be followed by a concerted effort to record the complete genome of existing urbanism. *Steven Peterson*

BOOKS



Twenty Minutes in Manhattan,
by Michael Sorkin. Reaktion
Books, 2009, 215 pages, \$27.

The readers of ARCHITECTURAL RECORD know Michael Sorkin for his strong opinions. He is opposed to privatization (citizenship, he says, is the product “not of ownership but of affinity, interaction, and social reciprocity”), and a champion of the poor, who in New York “are daily

obliged to witness the spectacle of hyper-consumption.”

He is also an extraordinarily good writer, able to sustain a 58-page riff on stairways without once tripping on a step. That essay and the other 10 in this book (parts of which were previously published in RECORD and *The Village Voice*) aim to locate Sorkin’s views on urbanism in the neighborhoods he frequents – SoHo, TriBeCa, and Greenwich Village. His daily walk to work (the 20 minutes of the title) begins in his apartment building on Waverly Place, the site of hilarious blow-ups with his landlord (whose name Sorkin changed “to protect the author and publisher”). In describing life in the building – known as Annabel Lee – he only once gets sidetracked, defending himself against charges that his income from teaching, writing, and running

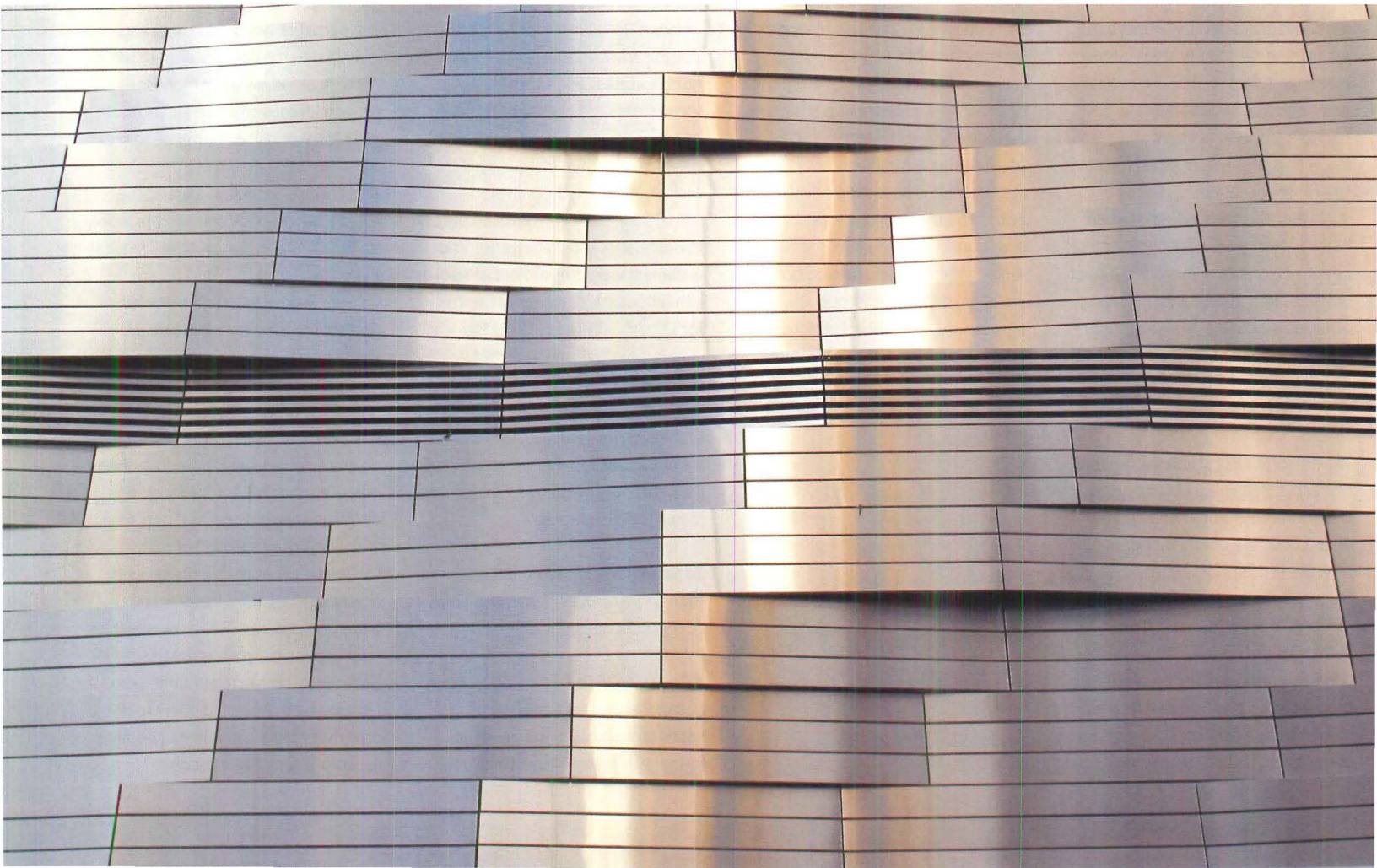
a small design and planning studio makes him an improper beneficiary of New York’s rent stabilization law.

From Annabel Lee, his daily walk to work takes him past Washington Square Park – recently the site of controversial renovations – and down La Guardia place, venue for riffs on Corbusian architecture (which he generally likes) and Corbusian planning (which he despises). As he crosses Houston Street, he waxes eloquent on everything from the misuses of zoning laws (“Every legal formulation produces both its poets and its bandits”) to sidewalk chewing gum (not simply disgusting, but “a sad commentary on the solidarity and sense of order of the citizenry”). He almost entirely avoids discussing 9/11 and its impact, a wise decision, given the need to understand the development of cities under ordinary circumstances. Sorkin has prescriptions, some on the micro scale (he knows how to recover Hudson Square, a part of Canal Street now

relegated to Holland Tunnel traffic, if only anyone would ask him) and macro (build for civilian populations on military bases made obsolete by the end of the Cold War). Sorkin supports the creation of new population centers as a way of avoiding what he calls “the dysfunctional twin morphologies of contemporary urbanism”: sprawl and mega-cities. Sorkin began working on the book 12 years ago. Like the best urban neighborhoods, his nuanced analysis took time to coalesce. *Fred A. Bernstein*

After the Crash: Architecture in Post-Bubble Japan,
by Thomas Daniell, Hitoshi Abe,
and Ari Seligmann. Princeton
Architectural Press, 2008,
192 pages, \$25.

“The more I understand, the less I feel able to explain,” writes Thomas Daniell. But in this tidy volume, Daniell, a New Zealand-born architect who has been living and working in Kyoto since the early 1990s,



After the Crash: Architecture in Post-Bubble Japan

Thomas Daniell
Foreword by Shigeru Ban, Introduction by Thomas Daniell

not only documents the “what” but delves deeply and intelligently into the “why.”

A collection of previously published essays, the book is organized into seven thematic chapters that take stock of urbanism and architecture in Japan in the lean years following the gluttony of the Bubble Period (which ended in 1990). Like all anthologies of existing texts, this one has inherent inconsistencies, both in terms of style and content. But an umbrella introductory essay and succinct overviews at the start of each

chapter help pull the book together.

After the Crash articulates sometimes surprising explanations for a range of Japanese architectural enigmas, among them the conspicuous absence of the open, public spaces central to many Western cities; the remarkably filtered or even ambivalent relationship between architecture and nature; and the ambiguous legacy of Metabolism, the often-overlooked 1960s architectural movement that never realized its full potential. Daniell describes Metabolism’s lasting impact on such recent works as Kisho Kurokawa’s Kuala Lumpur International Airport and Organ, the tubelike structure designed and used as offices by FOBA, the Kyoto architecture firm for which Daniell worked for many years.

Daniell’s firsthand observations of his own surroundings are among the book’s most engaging texts. Nowhere is this more palpable than in the poignant essay, titled “Letter from Kyoto,” which

concludes the book. Part autobiography and part admonition, it interprets Kyoto with the acumen of an insider but assesses the city’s growth with the objectivity of an outsider. It is true, as Daniell says, that familiarity with Japan often leads to myopia. But, as *After the Crash* attests, it can also foster clear vision. *Naomi R. Pollock, AIA*

BRIEFLY NOTED

A Common Destiny, photography by Cédric Delsaux, with an introduction by Bill McKibben. *The Monacelli Press, 2009, 224 pages, \$75.*

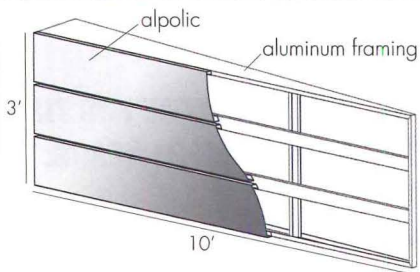
You’ll never see a steel plant as evocative as the one in this stark and beautiful volume of photography. In some 200 large-format pictures, Cédric Delsaux shows the nasty side effects of industrial globalization, documenting factories and nascent cities around the world. The photos are gorgeous, even when their subject matter is not.

Each full-page image is presented without a caption, yet a clear narrative emerges. Serene natural landscapes in the first few pages soon give way to images of order (for example, assembly lines), chaos (dilapidated buildings), and Postmodern falsity (the ersatz Manhattan skyline in Las Vegas). *Sebastian Howard*

Golden Gate Bride: History and Design of an Icon, by Donald MacDonald and Ira Nadel. *Chronicle Books, 2008, 128 pages, \$17.*

Overflowing with facts and stories about the design, construction, and upkeep of the world’s most famous bridge, this sweet little book reads like a love letter to the Art Deco masterpiece. Highlights include illustrations of the proposed color schemes (the U.S. Navy favored horizontal bands of yellow and black) and the book’s macabre finale – MacDonald’s five proposals for suicide-deterrent systems. *S.H.*

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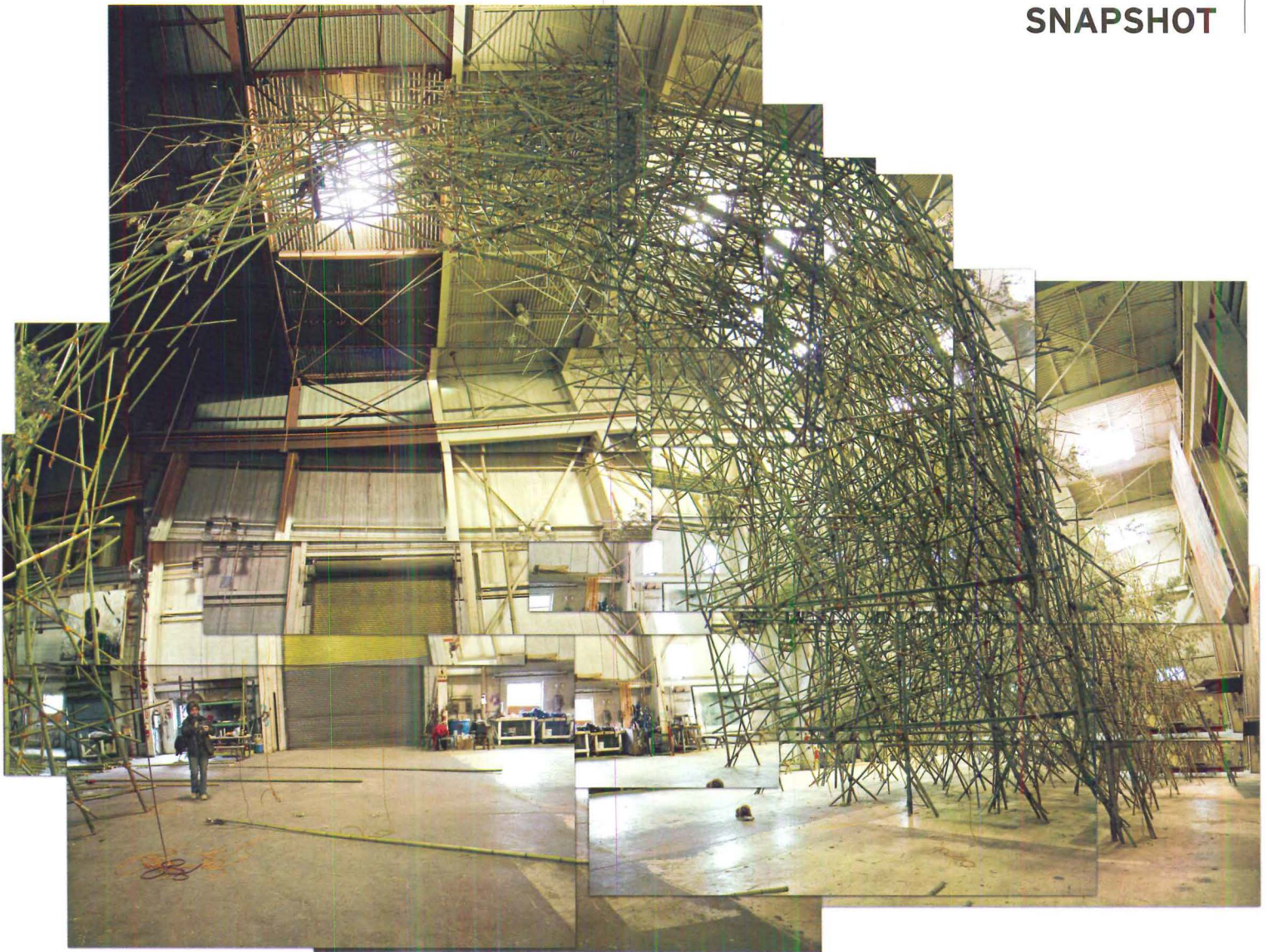
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A constant work in progress

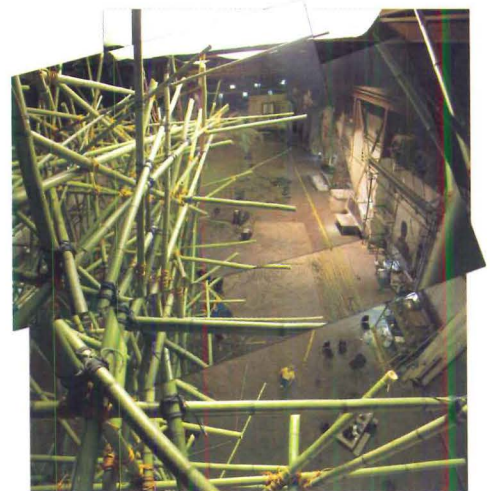
By David Sokol

ON ALMOST ANY GIVEN WEEKDAY IN BEACON, New York, as many as 12 rock climbers enter the former Tallix Foundry, suit up, and ascend and rappel *Big Bambú*. They have been doing so since September 2008, when artists and twin brothers Doug and Mike Starn started construction on this installation comprising 2,500 30- and 40-foot-long bamboo poles.

"In the early 1990s, we started putting toned [photographic] prints between pipe clamps," Mike Starn says of the artwork's inspiration. "For *Big Bambú*, we first thought that we could use pipe clamps, but the piece expanded so much that we had to choose a light, strong, and flexible material that could almost effortlessly be moved and connected to others." The Starn brothers' crew first erected the bamboo poles as a tower peak-

ing near the 50-foot-high ceiling; the poles are lashed together with climbing rope and require no external support. Then the team slowly dismantled the structure, retying poles to cantilever from the original form and creep down to the floor.

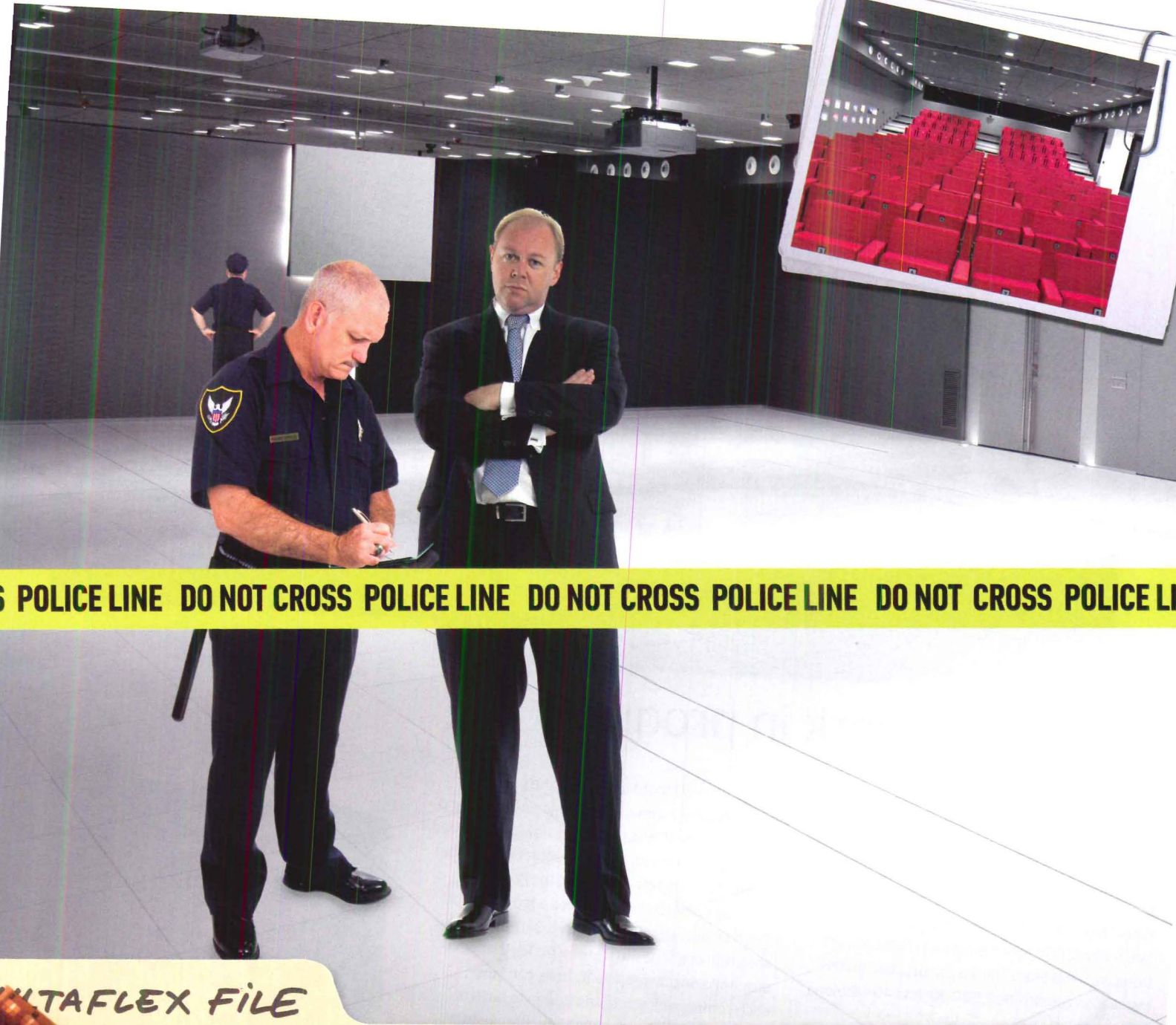
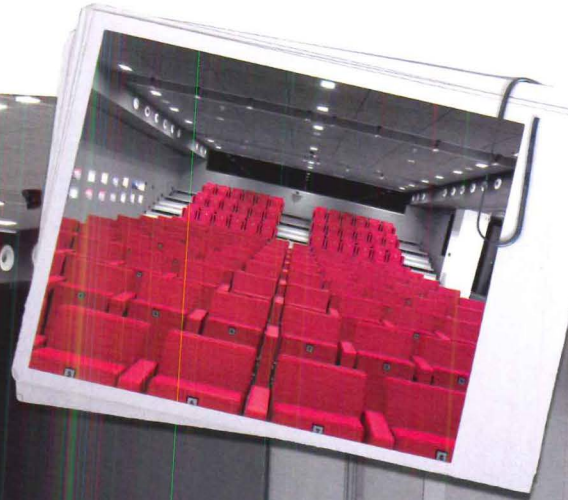
Today, *Big Bambú* occupies a footprint not much smaller than the foundry's 320-by-65-foot area, and continues to transform. The climbers dismantle one tower pole by pole, carrying each component across the bridge to build up the tower on the other side. "The Starns often say that *Big Bambú* is at once complete and never finished," comments their studio director Gaudéric Robilliard. Indeed, *Big Bambú* will slowly shuffle back and forth, much like a living being. But Mike Starn also refers to it as a metaphor – "a new lexicon of the interconnectedness of all things" – that transcends performance, sculpture, or architecture. ■



***Big Bambú* is something of a performance piece. The structure creeps across the space as climbers dismantle and reassemble components.**

The strange disappearance of 300 chairs in just six minutes.

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Good design is good business

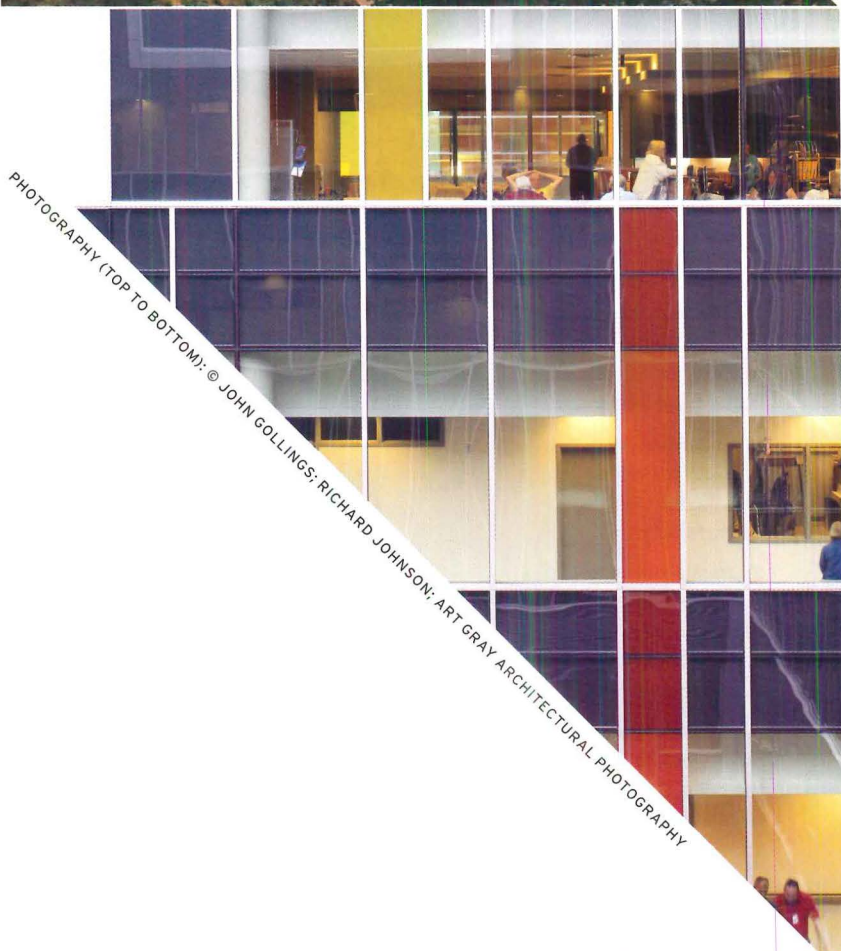
A BUILDING THOUGHTFULLY CONCEIVED EMPOWERS ITS USERS AND ALLOWS AN ORGANIZATION TO MORE EFFECTIVELY DELIVER ON ITS MISSION

THERE MAY BE SIGNS THAT THE SLUMPED ECONOMY is perking up, but many companies are still struggling. In times like these, it's critical that we champion design and illustrate its value, and the recipients of the 12th annual BusinessWeek/Architectural Record Awards do just that. From a hospital in southern Ontario to a park in downtown Houston, this year's eight winners and four finalists – all projects completed within the past four years – reveal that architecture is more than a grand gesture. A well-designed space can help a company increase revenue, decrease operational costs, and boost employee morale, among other benefits. Judging by this year's entries, clients are getting the message. Our jury of editors evaluated an exceptionally competitive pool of nearly 100 submissions from around the globe. Selecting the winners was tough. In the end, we chose a diverse group of inspired projects that clearly demonstrate that good design is a wise investment. As the economy starts to recover, many are questioning what architecture will look like in a post-recession world. The work featured here – projects that put business goals first – might offer some clues.

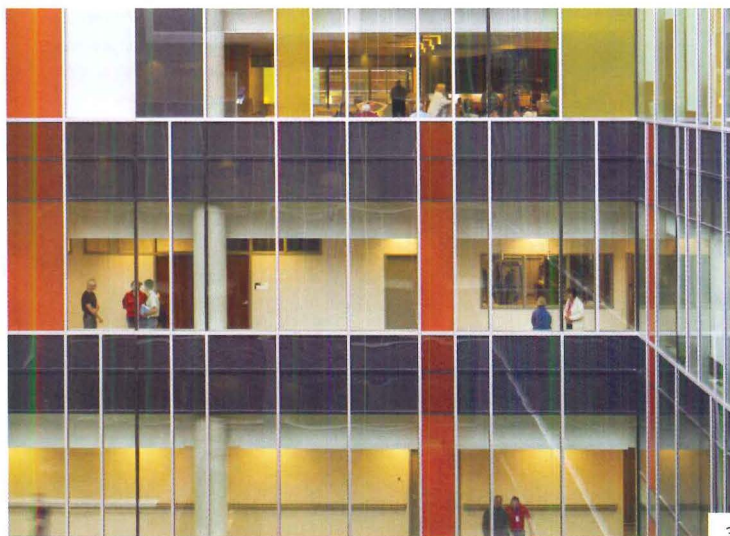
**BUSINESSWEEK/
ARCHITECTURAL
RECORD
2009 AWARDS
OF EXCELLENCE**

- 62 **Peterborough Regional Health Centre**
Stantec Architecture
- 64 **Autodesk – AEC**
KlingStubbins
- 66 **The Lab Gastropub**
AC Martin
- 68 **Barbie Shanghai**
Slade Architecture
- 70 **Urban Outfitters**
Meyer, Scherer & Rockcastle
- 72 **Eversheds**
Woods Bagot
- 74 **Hawks Boots**
Salmela Architect
- 76 **Discovery Green**
Hargreaves Associates, PageSoutherlandPage
- 78 **Citations**

 View slide shows of the 12 winning projects at architecturalrecord.com/features.



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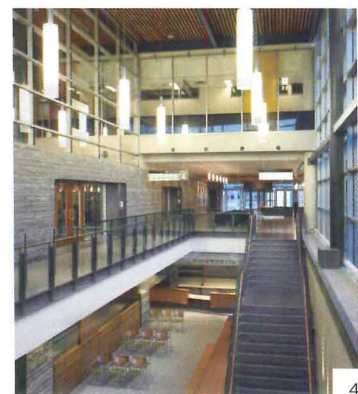


1. The hospital features roofs and terraces, some of them green, for patient and visitor use.

2. A glazed corridor provides a window into the interior life of the facility.

3. Orange and yellow glass, recalling autumn colors, adds visual interest to interior courtyards.

4. Openness and fluidity define the building's circulation spine.





WHEN MICHAEL MOXAN, DESIGN director at the Toronto office of Stantec Architecture, discusses the new Regional Health Centre in Peterborough, 78 miles north-east of Ontario's capital, he talks about transitions – how individual rooms connect to the circulation space, which then leads to the front entrance, the city, and the landscape beyond. Sited on Peterborough's second-highest elevation, the hospital overlooks the town of about 75,000. "There are a lot of layered hills and rock outcroppings," Moxan says. "It's where the agrarian south of Ontario

meets the stony Canadian Shield." The 700,000-square-foot hospital, which opened in June 2008, combined the city's two existing hospitals into a single building, encompassing 500 beds with facilities for surgery, intensive care, emergency care, ambulatory care, and support services.

A hospital's main business objective, of course, is to function efficiently. Along those lines, the hospital and architects worked together to create planning committees for different departments, spurring solutions such as organizing patient beds around central

cores while still giving the rooms access to daylight and views. The building's materials were from local sources, when possible, and sustainable measures (high-efficiency windows, green roofing, low-flow plumbing) reduce energy usage by 28 percent over baseline figures.

Those measures, however, are not what most take away from the building. Moxan says that in postoccupancy interviews, doctors and personnel point to the improved surgical theaters and enhanced staff models, "but somehow they always come back to natural light and views outside and the quality of the

work space." Canada's public-health system mandates that projects like this one be funded through federal-local partnerships; in this case, the health ministry covered 70 percent of the cost, and the community funded the rest. With this partnership in mind, Stantec's design revolved around the idea of bringing the community into the building, and it seems to have worked: Residents often come to its rooftop terrace café, even when they don't need medical care.

Aleksandr Bierig

WHEN SOFTWARE VENDOR

Autodesk decided to move the headquarters for its architecture, engineering, and construction (AEC) operations from subleased space to a just-completed speculative office building, division executives knew the fit-out would not be a routine corporate interiors project. The design and construction process would have to demonstrate the company's own building information modeling (BIM) software and its industry strategies, explains Phil Bernstein, FAIA, Autodesk vice president. "It needed to be 100 percent BIM and pure IPD," he says, referring to the

collaborative practice model known as integrated project delivery.

For the new headquarters, a multiparty agreement gave Autodesk, the architect-engineer KlingStubbins, and the contractor Tocci each a financial stake in the project, providing all with an incentive to help ensure a positive outcome. One of the many advantages of this arrangement was that it allowed the early involvement of subcontractors, since bidding was not a required part of the selection process. Input from subs was especially helpful for complex aspects of the project, such as the digitally

project

Autodesk - AEC
Headquarters
Waltham, Massachusetts

architect

KlingStubbins

milled ceiling that floats above a ground-floor space. Its configuration was conceived in consultation with the fabricator. "We needed to understand the limitations of the CNC [computer numerically controlled] equipment," says Chris Leary, AIA, KlingStubbins project director.

This ceiling is the defining element of a briefing center where customers view exhibits and test products. From an adjoining atrium that cuts through the building's three floors, they catch a glimpse of the activity in the office levels above. "It gives visitors a sense of the buzz of the space," says Leary.

With Autodesk occupying the building only since early 2009, it is too soon to quantify its influence on the bottom line. However, the briefing center's popularity with design and construction-industry organizations provides one indication of success. In addition to almost twice-weekly Autodesk sales presentations, the center has served as the site for professional networking events and other gatherings, helping raise the profile of the company and its products. "As a marketing phenomenon," says Bernstein, "the project has been successful beyond our wildest dreams." *Joann Gonchar, AIA*



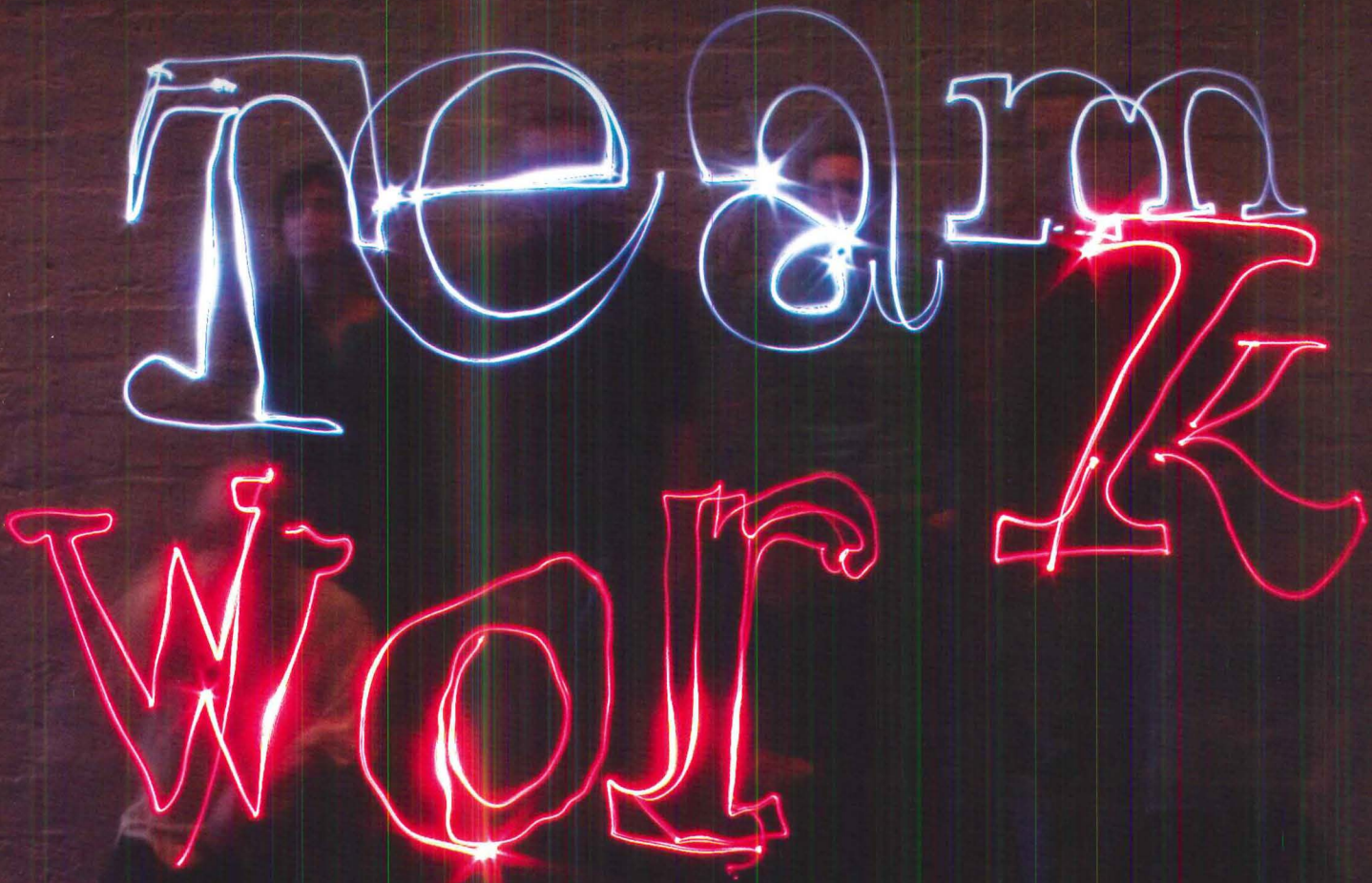
1. An intricate, digitally fabricated ceiling floats above a ground-floor gallery space.
2. A three-story atrium, along with an open-office

layout, provides employees with access to daylight and views, as well as visual connections among work groups.

3. Looking up through the atrium from the ground floor, visitors catch a glimpse of the activity in the office levels above.



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"Teamwork" light painting by tuncuncunc, Amsterdam

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THE CAMPUS OF THE UNIVERSITY of Southern California (USC) is some 2 miles from downtown Los Angeles. That fact – and L.A.'s lackluster public transit system – forces students in search of bars and bustle to drive to the city center. So in an effort to create a pedestrian-accessible hangout for students and professors, USC bought an old Sizzler restaurant just outside the campus limits with the intent of converting the building into an Irish pub.

But L.A. architectural firm AC Martin and USC director of hospitality Scott Shuttleworth

wound up creating something more innovative – a gastropub that evokes a vintage high school science classroom. Shuttleworth, who had experience in the private hospitality business, rejected the idea that the restaurant would succeed just because it was close to campus. The Lab Gastropub (“the Lab,” for short) would need to be a draw in itself.

AC Martin looked through old science textbooks for inspiration, and its research is evident throughout the bar and dining area. Walls are clad in subway tile, blackboards, and supersize graphics of scientific

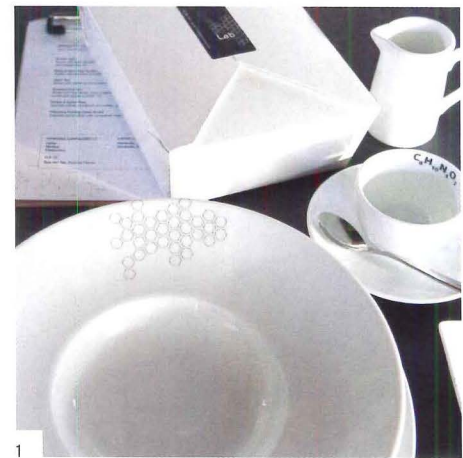
project
The Lab Gastropub
Los Angeles

architect
AC Martin

1. AC Martin's concept was executed at every level of the 4,300-square-foot project. The firm even designed the restaurant's place settings.

2. An outdoor patio provides patrons with a laid-back place to lounge and mingle.

3. Communal tables give the dining area a relaxed, collegial feel.



1



2

equipment. Christopher King, the Lab's lead designer, says that USC allowed the firm to “design almost every element,” right down to the coffee cups, which are emblazoned with the chemical formula for caffeine. Elegant, humanizing touches keep the space from feeling clinical. A slate dining table is framed with warm-colored wood, and leather cushions cover the chrome barstools.

L.A. has taken notice. While the school expected that the USC community would patronize the Lab, it didn't anticipate the number of locals and downtown profession-

als who have been frequenting the spot since its March 2009 opening. The Lab brings in some \$8,000 a day, more than doubling initial projections.

Next year, the city's new Metro-Expo line will give USC students easier access to the downtown area. But the Lab, just across the street, will likely continue to be a popular destination. *Sebastian Howard*



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BARBIE, THE DOLL, WAS BORN fully developed as Barbara Millicent Roberts in New York City at the American International Toy Fair, on March 9, 1959. Although she never lacked a stylish wardrobe, not until Barbie turned 50 did she get her own house – in Shanghai, China. The six-story temple devoted to this diminutive icon cost less than \$10 million and is the first flagship store in the world designed just for Barbie and related products. Why Shanghai? Mattel, Barbie's owner and creator, has faced disappointing returns in the U.S., where sales of Barbie fell 15 percent in 2007. Worldwide gross sales for the second quarter of 2009 are also down 15 percent. No wonder a potential 1.3 billion customers in China, where the retail market is reportedly strong, appeals to Mattel.

The store, known as Barbie Shanghai, stands out on the city's Huai Hai Road, owing to its Modern architecture and design sparked up by vivid "Think Pink!" colors. The New York City firm Slade

Architecture – cofounded by architects James Slade, AIA, and his wife, Hayes – worked with BIG, the branding and design division of Ogilvy & Mather, to create the feminine phantasmagoria inside. "We wanted an engaging and cohesive physical space to introduce the entire breadth of the Barbie brand to Shanghai and China," says James Slade.

In renovating the concrete-and-steel structure, Slade created a fritted-glass facade (patterned with Barbie icons) over molded translucent polycarbonate interior panels, where LEDs emit a pinkish glow – or other hues – by night. A fuchsia-toned-fluorescent-illuminated escalator spirits visitors from the pearlescent white entrance lobby, past a spa on the second floor, to the white (and fuchsia) double-height space on the third floor. Here begins a three-story circular stair wrapped in a glittering backdrop of Barbie dolls, which "makes Barbie physically and conceptually central to the store," says Hayes Slade.

A special twist shows that

demographics matter. Since most Barbie fans are usually under eight years old, Mattel expanded the brand: While the fourth floor is devoted to Barbie dolls and their paraphernalia, the fifth carries Barbie-inspired girls' attire. The third floor caters to grown women who desire Barbie-type clothes and jewelry. They can even get a "Plastic Smooth" facial at the spa on the second floor. Those seeking to heighten the experience can stop off at the sixth floor's glossy pink-and-black restaurant for a "Barbitini" (a Barbie martini, if you need to ask).

Not surprisingly, with this kind of multipronged appeal, store traffic shows promise: Mattel says the total number of visitors between March 6 and July 31 was 302,763. Of that number, 63 percent were new to the Barbie doll. Next? The unoccupied seventh and eighth floors could be turned over to Barbie home furnishings, pets, or Ken dolls. The opportunities are endless. *Suzanne Stephens*



1. The exterior of the renovated building turns pink with LED lighting.

2. A circular stair links three levels of retail, beginning with the third floor.

3. A beauty salon on the third floor is wrapped in mosaic-tile walls with mirrors set in a backlit panel.



4

4. Inside the circular stair, visitors can view 800 Barbie dolls while gliding between the third, fourth, and fifth floors.

5. An escalator, illuminated by fuchsia-toned fluorescent lighting, takes visitors from the lobby to the third floor.

6. The store carries apparel for grown women and young girls, along with the Barbie dolls.



5



6



project
Urban Outfitters
Headquarters
Philadelphia

architect
Meyer, Scherer &
Rockcastle

IN 1970, RICHARD HAYNE, A 23-year-old with an anthropology degree, started selling bohemian clothing and bric-a-brac out of a small shop in Philadelphia. Over time, his modest business grew to become Urban Outfitters, a public company that now operates five brands and generates more than \$1 billion a year.

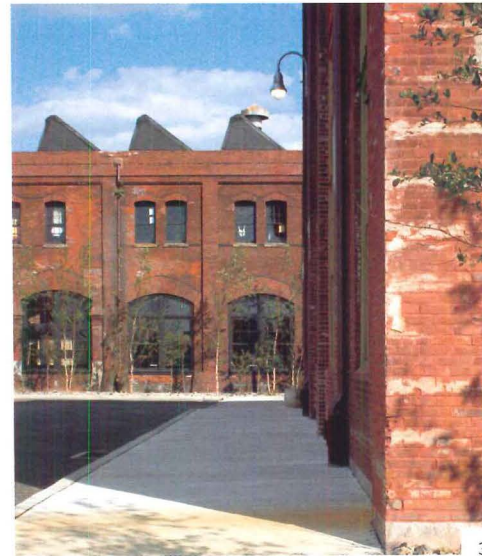
With its corporate headquarters spread among six buildings in downtown Philadelphia, the company set out to create a unified campus in 2004. A generic office park was not an option: Hayne wanted a place befitting a retailer that offers hip, youthful merchandise with a vintage twist. He acquired five abandoned buildings (four purchased, one leased) in the decommissioned Philadelphia Navy Yard, a riverfront property a few miles from the city center. Meyer, Scherer & Rockcastle, a Minneapolis-based firm that specializes in adaptive reuse, was hired to transform the brick structures into an inspiring environment for roughly 600 employees.

The architects had several guiding principles for the 285,000-square-foot project. For starters: Preserve the buildings' scars. "It's all about revealing the

palimpsest of history, rather than sanitizing it back to one moment in time," explains firm principal Jeffrey Scherer, FAIA. And so steel was left rusty, old paint remained, and ample material was reused – stairs were fashioned from wooden beams, for instance, and windows were removed, reglazed, and reinstalled. Another priority was to ensure every office and design studio fostered creativity. In all five buildings, light-filled interiors with open layouts have a relaxed vibe; amenities such as a gym, dog park, and farmers' market add to the informal atmosphere.

By all accounts, the \$100 million project was money well spent. In late 2006, the company moved into its new digs; in 2008, revenue increased 22 percent, to a record \$1.8 billion, and the retailer opened 49 new stores (it now has nearly 300), including its first garden center, Terrain, near Philadelphia. Moreover, recruitment time for senior managers has decreased 41 percent, employee turnover has dropped to 11 percent, and fewer sick days are being used. "The campus has sparked recruitment and improved creative collaboration," Hayne says, "which ultimately impacts our bottom line." *Jenna M. McKnight*

1. By keeping the buildings' "scars," layers of history are revealed.
2. In light-filled studios with open layouts, designers dream up wares for five brands, including Free People and Anthropologie.
3. The renovated brick buildings were constructed between 1880 and 1939.
4. The architects integrated remnants of the naval shipyard into the design.







1. Daylight fills the well-appointed, contemporary reception area on the client meeting floor.

2. The new employee restaurant offers good food and stylish decor.
3. Lawyers and support staff collaborate in

sunny, semi-open, hybrid studios.
4. Business lounges accommodate clients between meetings.



EVERSHEDS IS A GLOBAL LAW firm with its sights set on the 21st century. Accordingly, when creating the fit-out for the relocation of its London headquarters to a new eight-story, 165,000-square-foot building, senior partner Cornelius Medvei worked with the interior design team at Woods Bagot to develop a facility that would attract the best young talent and respond to an evolving workplace in terms of culture, technology, and the environment.

Rather than basing the design on a preconceived notion of what a legal office should be, the designers conducted extensive research

culminating in a closely monitored, 9-month trial at Eversheds' existing premises. This effort was essential to the scheme. "It made sure we got it right before we spent money," says Simon Pole, Woods Bagot project director. It also informed and involved the company's 720 employees – a factor in the eventual, seamless move.

The resulting contemporary space, deemed a new benchmark for the legal profession, is a radical shift from the typical cellular office plan. Flexible "hybrid studios" around the open, daylight-filled attorneys' floors consist of modular furniture systems that foster collaboration and commu-

nication among lawyers and support staff. Glass partitions and acoustical masking minimize distractions, while a central information desk reduces filing by 57 percent and the number of printers by 63 percent. A future-ready technology infrastructure allows for mobility on- or off-site. As for amenities, there are client business lounges, plus improved dining venues, showers, bicycle storage, and sleeping accommodations.

Sustainability, notes Pole, was critical to the success of the project, which achieved an Excellent rating under the Building Research Establishment Environmental

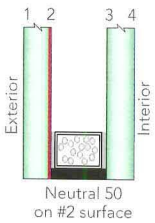
Assessment Method (BREEAM) due to such features as an active chilled beam system, daylight controls and shading, a comprehensive recycling program, and a green roof.

As intended, this savvy approach has raised the bar at Eversheds. An October 2008 postoccupancy report indicates that 96 percent of the staff is more motivated to work due to the design of the new workplace. According to Medvei, "The project has had outstanding results," which he attributes to a host of factors, most notably the architects' willingness to include employees in the design process from start to finish. *Linda C. Lentz*

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FOR ALMOST 10 YEARS, TrueRide, a municipal skate-park manufacturer based until 2007 in Duluth, Minnesota, operated out of an old missile base that employees affectionately referred to as “the tree fort.” As the business expanded, the company grew weary of constantly reshaping its 25,000-square-foot office and production space, and in 2004 it hired Salmela Architects to convert a defunct burial-vault-manufacturing facility near Lake Superior into a workshop and office for the company. “The site was a complete mess when I first saw it,” says David

Salmela, FAIA, principal of Salmela Architect. “Concrete columns, burial vaults, and pipes were scattered everywhere.”

For only \$63 per square foot, Salmela Architect renovated the existing, 14,200-square-foot building, added a second-story cantilevered office, and inserted the discarded burial vaults into the landscape to create artificial hills. “We could have just plopped the new building next to the old one, but we wanted to use the site to its maximum potential so employees could see dramatic views of the city, harbor, and hills,” says

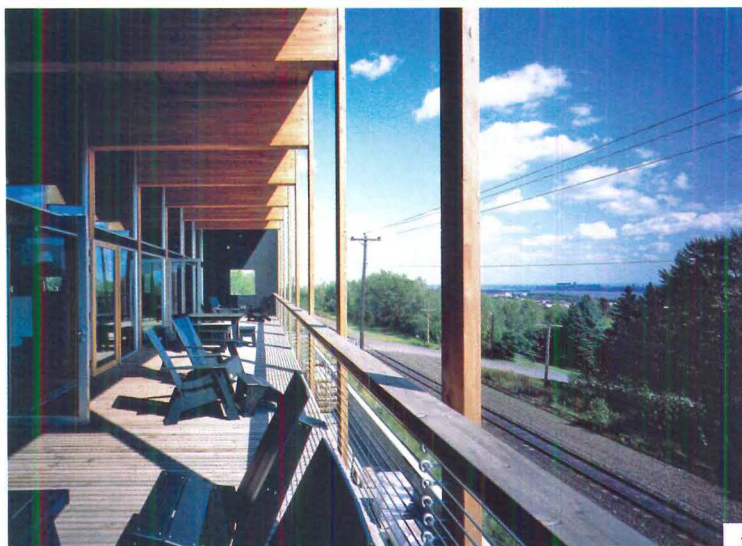
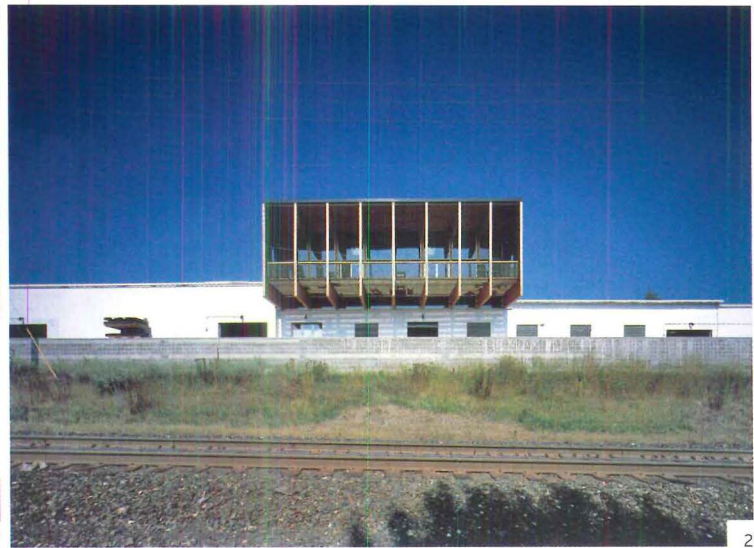
project
Hawks Boots Sustainable Manufacturing Facility
Duluth, Minnesota

architect
Salmela Architect

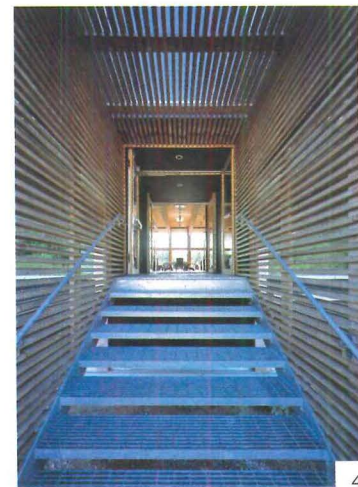
Salmela. Inside the open office space, TrueRide helped execute Salmela’s vision. The company built its own desks, installed custom-designed Finland birch flooring, and finished the walls with the same recycled black Skatelite material used in constructing skate-park ramps.

By the time TrueRide moved into its new facility, dubbed Hawks Boots, the company had started two additional companies that use the same materials as its skate parks: Epicurean, a manufacturer of wood-fiber cutting boards, and Loll, a producer of outdoor furniture made

mostly of high-density polyethylene. When the founders decided to sell TrueRide (now located in suburban Los Angeles) in 2007 to focus on the new ventures, the space’s flexibility made the switch easy. “Since we moved, we’ve increased our business by 278 percent,” says Greg Benson, company C.E.O. “Now, when clients come to our facility, they get an immediate sense of who we are and that we’re serious about what we do.” *Mae Ryan*



1. The client built office furniture designed by the architect.
2. Salmela Architect’s addition perches on a repurposed burial-vault production facility.
3. A balcony offers views of the adjacent railroad tracks and Lake Superior beyond.
4. A daylight stairway connects the manufacturing plant with the office above.



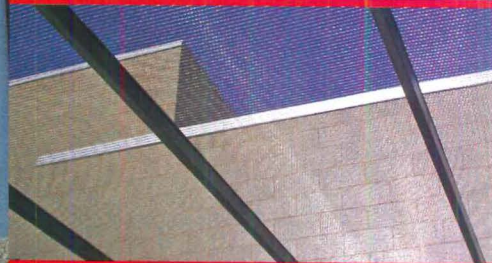
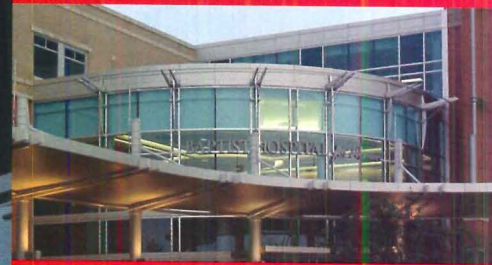
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1

SINCE OPENING IN APRIL 2008, this 12-acre public park has helped energize Houston's east side, turning a less fashionable part of town dominated by Minute Maid Ballpark, Toyota Center Arena, and the George R. Brown Convention Center into a family-friendly neighborhood attracting both residential and commercial development. Hargreaves Associates designed the park, while PageSouthernlandPage (PSP) designed a number of small buildings in the park, including a restaurant (The Grove), a café (The Lake House), a park-administration facility, an outdoor stage, and entrance pavilions for a 600-car underground parking garage.

Hargreaves laid out a main north-south promenade and a series of east-west paths leading to outdoor rooms, such as a great lawn, a picnic lawn, a performance space, a fountain, and a waterside garden next to a 1-acre lake. The firm's design establishes strong connections between the park and its surroundings, including city streets and attractions such as the two sports venues and convention center.

Sustainability drove PSP's architectural work, informing the placement of buildings (along

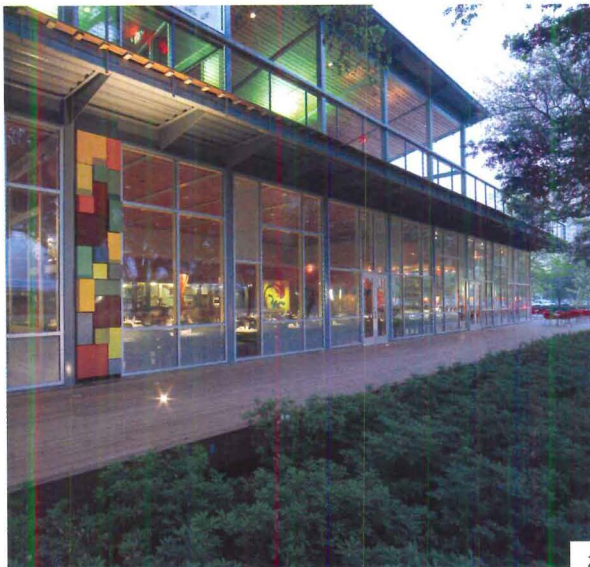
rows of existing oak trees that provide shade), the selection of materials (glass facing north and east, local Gulf Coast brick facing south and west), and the design of roofs (angled to the north to bring daylight inside and induce air movement under porches). Photovoltaic panels on the porch roofs generate 8 percent of the energy needed for the park, while solar hot-water heating reduces energy use by the restaurant and café, and recycled groundwater from the garage helps supply the lake. PSP designed the buildings to LEED Gold standards.

"This project shows the power of public space," states Lawrence Speck, FAIA, the lead designer for PSP, who is particularly proud of the broad mix of people coming to the park. While wealthy Houstonians and philanthropic groups such as the Kinder Foundation supplemented public funding for Discovery Green, they made it clear from the start that the park would be for everyone in town, says Speck. In addition to drawing more than 700,000 visitors in its first year, the park has attracted new construction, such as a 37-story residential tower on one side and a 30-story office building on another. *Clifford A. Pearson*

1. The 12-acre park offers a range of spaces to handle various kinds of activities.

2. The north elevation of the restaurant building opens onto the park and a row of old oak trees.

3. A view of the park looking north shows Minute Maid Ballpark near the top and the George R. Brown Convention Center on the right.



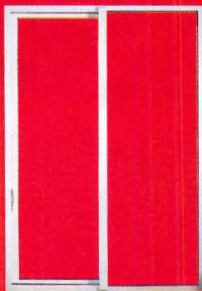
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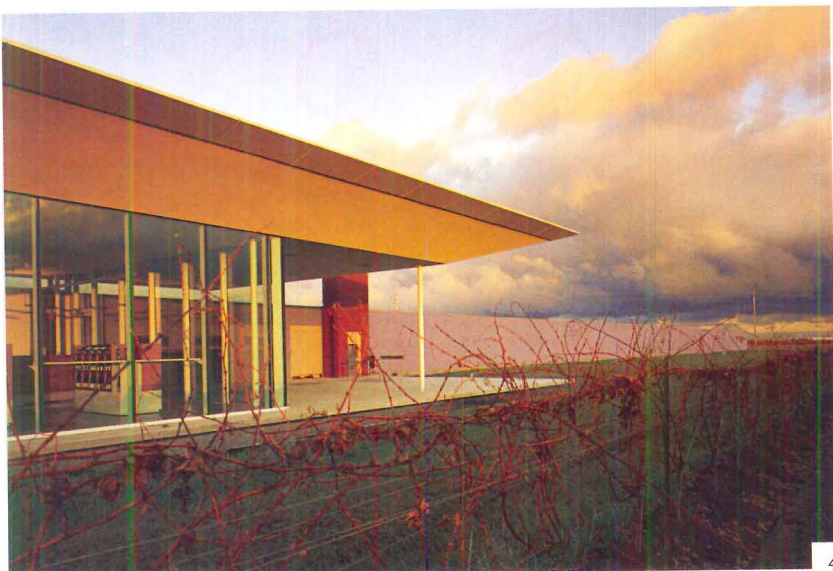
project

The East Harlem School
New York City

architect

Peter Gluck and Partners

The nonprofit East Harlem School (EHS) replaces an old facility with what the school's head, Ivan Hageman, calls a "cloister of education." Small, horizontal windows prevent street life from distracting students (1, 2), and a new gym has helped improve the school's athletic program (3). Since opening in 2008, EHS's cost per student has declined, and fund-raising has increased.
Sebastian Howard



project

Southbrook Vineyards
Niagara-on-the-Lake, Canada

architect

Diamond and Schmitt
Architects

This LEED Gold winery argues for the power of iconic design. With its 656-foot-long blue wall (5) and tapered, cantilevered roof (4), the building is a draw in itself – Southbrook Vineyards gets as many as 500 architectural tourists a day. A 20 percent increase in production capacity (6) and better quality control in the new facility have also helped profits rise. *S.H.*





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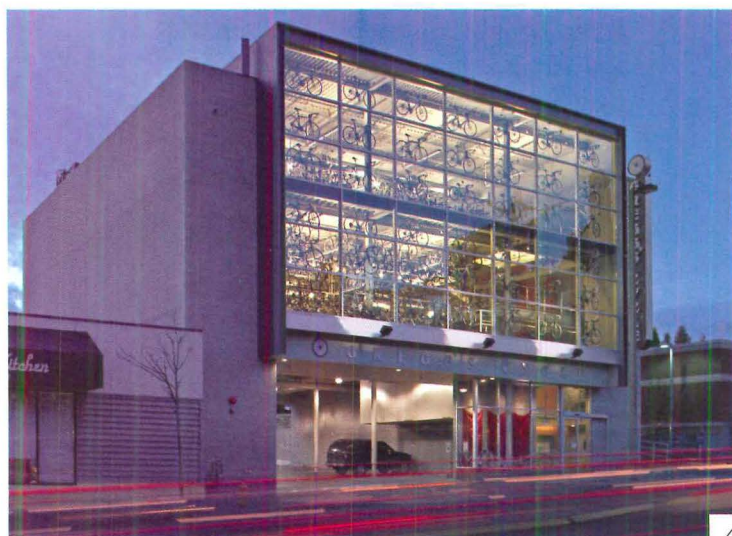
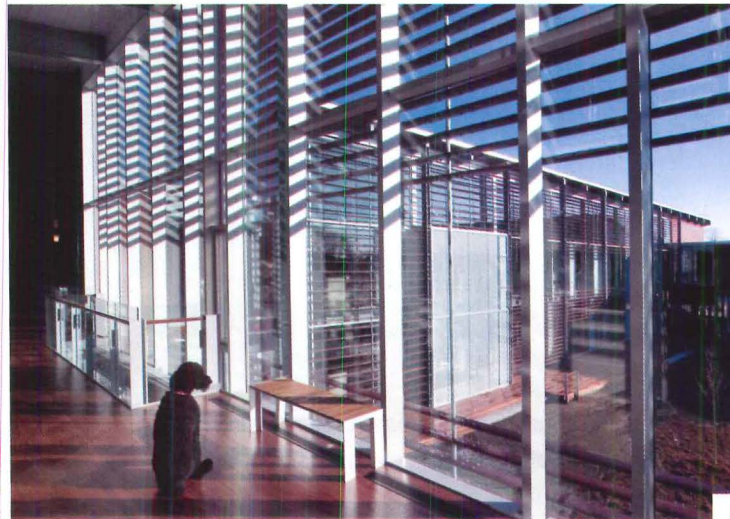
project

IFAW
World Headquarters
Yarmouth Port,
Massachusetts

architect

designLAB architects

The global headquarters for the International Fund for Animal Welfare (IFAW) is sited on a former brownfield restored by the non-profit organization. An open design (1-3) encourages communication between employees, reduces the square footage per person by 35 percent, and cuts operational costs. While the organization's old home attracted few visitors, the new LEED Gold facility draws about 50 people each week. *S.H.*



project

Gregg's Bellevue Cycles
Bellevue, Washington

architect

Weinstein A|U Architects +
Urban Designers, LLC

A bike shop lofted above a parking garage, Gregg's Bellevue Cycles is simple and functional. Inside, the use of rugged materials prevents bikes from marring the interiors (5), while a striking glass facade and display announces the shop to passersby (4). These features helped the new facility outperform Gregg's Cycles' other two stores in 2008. *S.H.*



Don't let your plans go sideways.



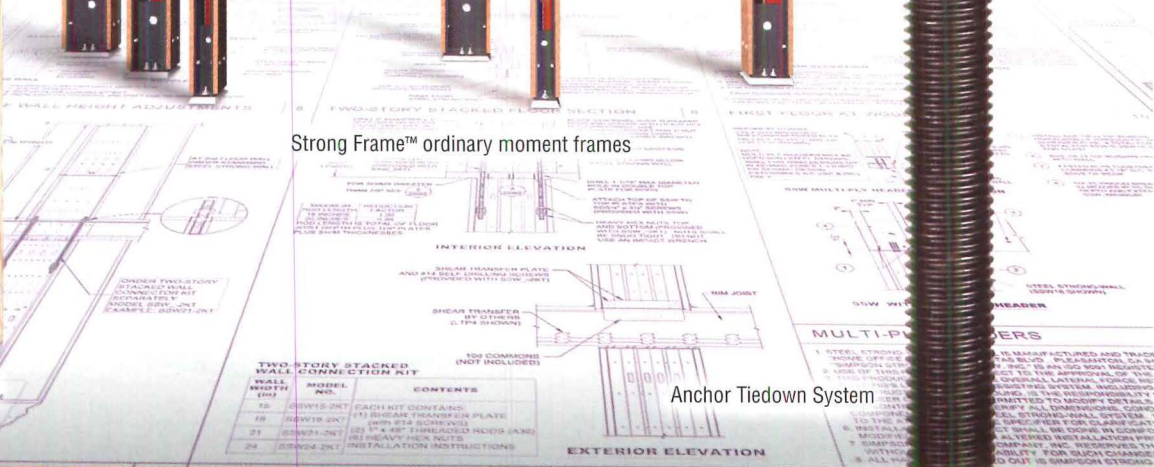
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2010

AMERICA'S BEST ARCHITECTURE SCHOOLS

Love 'em or hate 'em, school rankings are influencing prospective students' decisions on where to apply, and architecture firms' decisions on whom to employ. RECORD looks at this year's survey and asks people in academia and the profession what it all means.

BY DAVID SOKOL

EVERY FALL SINCE 1999, *DesignIntelligence* – the bimonthly journal of the Design Futures Council (DFC), a Washington, D.C.–based think tank whose executive board includes representatives from some of America's most widely known design firms, schools, and manufacturers – has published rankings of the best architecture schools in the nation. Each year, as the public cracks open the latest black-

and-yellow guide, people take to the blogosphere where, sporting handles like "Rationalist" and "Worried_Mom," they share criticism, advice, and pleas for help. Recent comments include: "Betcha those ... high school students and grad-school applicants are drooling over this list right now";

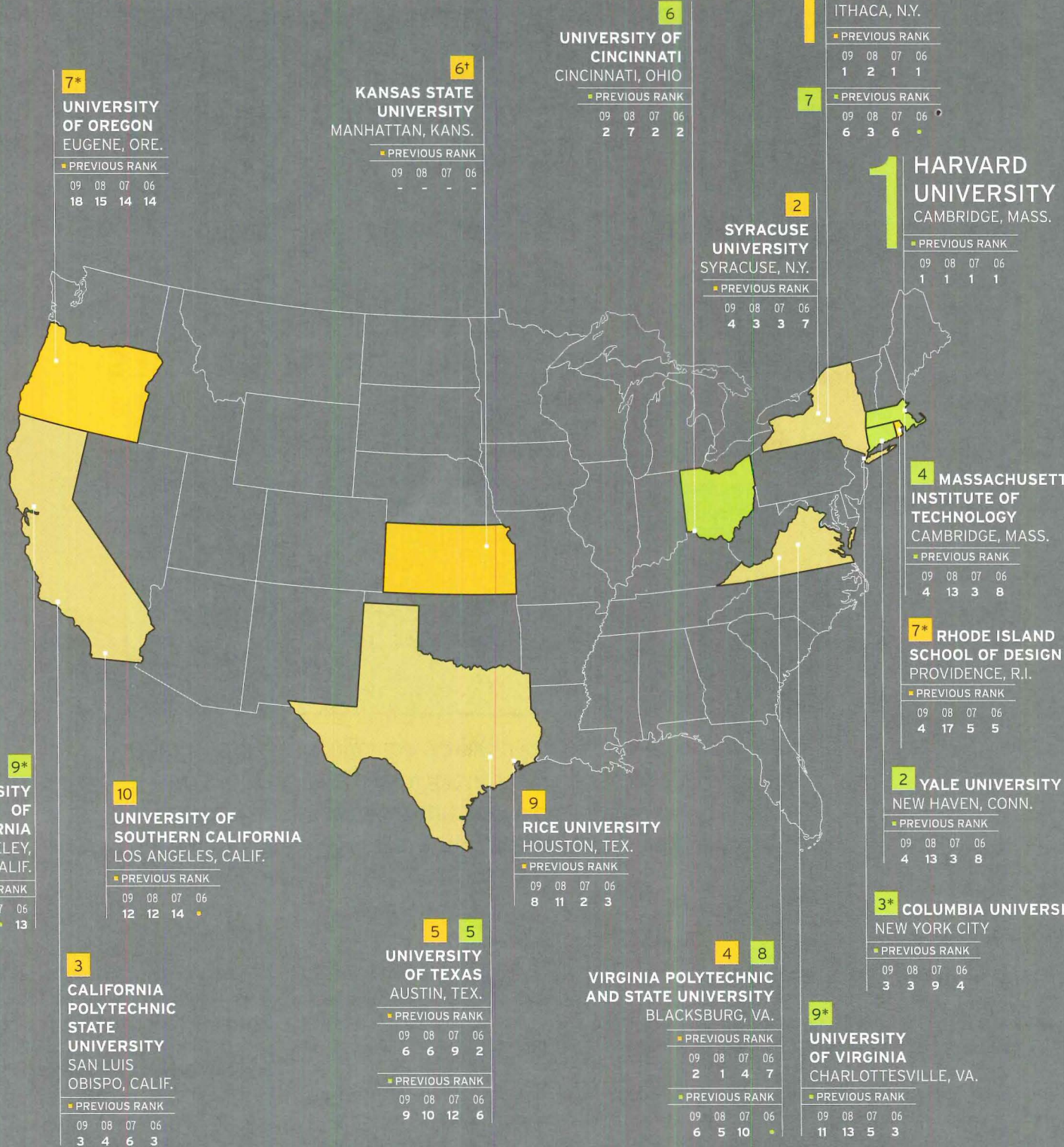
"While I don't put too much stock in these kinds of rankings, I also don't like to see my school fall down the reputation ladder"; "There are so many schools out there that it's very hard to even know which ones to look at."

The *DesignIntelligence* rankings are

a lightning rod for comment because they have become a tool for students choosing the academic programs that will launch their design careers. Today they are the only attempt to rank accredited Bachelor of Architecture (B.Arch.) and Master of Architecture (M.Arch.) programs in the United States.

James Cramer, the founding president of DFC and publisher and founding editor of *DesignIntelligence*, says the undertaking wasn't always a reference for application and enrollment

- TOP 10 UNDERGRADUATE ARCHITECTURE SCHOOLS AND HISTORICAL RANKINGS BY GEOGRAPHIC AREA
- TOP 10 GRADUATE ARCHITECTURE SCHOOLS (M.ARCH.) AND HISTORICAL RANKINGS BY GEOGRAPHIC AREA
- STATES WITH BOTH UNDERGRADUATE AND GRADUATE RATED PROGRAMS



* EQUAL NUMBER OF VOTES FOR EACH SCHOOL.
 ■ INDICATES PROGRAM DID NOT RANK IN THE TOP 15

† FIRST YEAR KANSAS STATE UNIVERSITY ELIGIBLE FOR INCLUSION AS IT WAS NOT PREVIOUSLY NAAB-ACCREDITED
 ALL LOCATIONS ARE APPROXIMATE

TOP 10 UNDERGRADUATE
ARCHITECTURE SCHOOLS

- 1 CORNELL UNIVERSITY, Ithaca, N.Y.
- 2 SYRACUSE UNIVERSITY, Syracuse, N.Y.
- 3 CALIFORNIA POLYTECHNIC
STATE UNIVERSITY, San Luis Obispo, Calif.
- 4 VIRGINIA POLYTECHNIC INSTITUTE AND
STATE UNIVERSITY, Blacksburg, Va.
- 5 UNIVERSITY OF TEXAS, Austin, Tex.
- 6 KANSAS STATE UNIVERSITY,
Manhattan, Kans.
- 7 UNIVERSITY OF OREGON, Eugene, Ore.
- 8 RHODE ISLAND
SCHOOL OF DESIGN, Providence, R.I.
- 9 RICE UNIVERSITY, Houston, Tex.
- 10 UNIVERSITY OF SOUTHERN
CALIFORNIA, Los Angeles, Calif.

TOP 10 GRADUATE ARCHITECTURE
SCHOOLS (M.ARCH.)

- 1 HARVARD UNIVERSITY, Cambridge, Mass.
- 2 YALE UNIVERSITY, New Haven, Conn.
- 3 COLUMBIA UNIVERSITY, New York City
- 4 MASSACHUSETTS INSTITUTE
OF TECHNOLOGY, Cambridge, Mass.
- 5 UNIVERSITY OF TEXAS, Austin, Tex.
- 6 UNIVERSITY OF CINCINNATI,
Cincinnati, Ohio
- 7 CORNELL UNIVERSITY, Ithaca, N.Y.
- 8 VIRGINIA POLYTECHNIC AND
STATE UNIVERSITY, Blacksburg, Va.
- 9 UNIVERSITY OF VIRGINIA, Charlottesville, Va.
- 10 UNIVERSITY OF CALIFORNIA,
Berkeley, Calif.

SURVEY METHODOLOGY

THE WASHINGTON, D.C.-BASED think tank Design Futures Council (DFC) has sponsored the rankings of America's best architecture schools since 1999, largely using questionnaires completed by practicing architects. Greenway Group conducts the survey every June, with respondents – 234 this year – pulled from DFC members, including the study's underwriters (mostly large firms and manufacturers). Smaller firms are also included, chosen mostly from DFC's membership to get a geographic mix. Any firm can participate, but "we don't consider it a random sample," says James Cramer, publisher and founding editor of *DesignIntelligence*, which Greenway publishes for the DFC. "We go for the quality firms that are most highly regarded." D.S.

SKILLS RANKINGS**

ANALYSIS AND PLANNING

- 1 Harvard University
- 2 Virginia Polytechnic Institute
- 3 Cornell University
- 3 Massachusetts Institute of Technology
- 5 University of Cincinnati
- 5 University of Oregon

COMMUNICATION

- 1 Harvard University
- 2 Yale University
- 3 Cornell University
- 3 Virginia Polytechnic Institute
and State University
- 5 University of Cincinnati

COMPUTER APPLICATIONS

- 1 Massachusetts Institute of Technology
- 2 Carnegie Mellon University
- 2 Virginia Polytechnic Institute
and State University
- 4 Columbia University
- 5 California Polytechnic
State University, San Luis Obispo

CONSTRUCTION METHODS
AND MATERIALS

- 1 California Polytechnic
State University, San Luis Obispo
- 1 Virginia Polytechnic Institute
and State University
- 3 Auburn University
- 3 University of Cincinnati
- 5 Massachusetts Institute of Technology

DESIGN

- 1 Harvard University
- 2 Yale University
- 3 Virginia Polytechnic Institute
and State University
- 4 Cornell University
- 5 Columbia University

RESEARCH AND THEORY

- 1 Harvard University
- 2 Massachusetts Institute of Technology
- 3 Princeton University
- 4 Columbia University
- 4 Yale University

SUSTAINABLE DESIGN
PRACTICES AND PRINCIPLES

- 1 University of Oregon
- 2 University of California, Berkeley
- 3 University of Texas, Austin
- 3 University of Virginia
- 5 Auburn University

** INDICATES COLLEGIATE ARCHITECTURE PROGRAM
THAT IS STRONGEST IN EACH SKILLS AREA
(UNDERGRADUATE AND GRADUATE)

decisions. In the mid-1990s, "it was a privately commissioned report that architecture firms asked Greenway Group [Cramer's consultancy company] to do. They knew they were unhappy with some schools, and they wanted to find out why," he notes.

Historically, the rankings have leaned toward occupational preparedness. Administered by the Greenway Group, the rankings rely heavily on a proprietary survey distributed to the hiring authorities of several hundred architecture firms. (See sidebar on "Methodology," this page.) Moreover, the 20-minute questionnaire focuses on recent graduates' readiness to enter the architecture profession. The highlight of the survey asks participants to list their top 10 schools based on the practice readiness of their graduates, and follows up with several variations of the question oriented to particular skills. The answers usually reflect each firm's hiring radius, as well as the broader sweep of reputation.

A vocational bent may only heighten the importance prospective students attach to this year's *DesignIntelligence* rankings, as the recession has made new jobs scarce. Lee Waldrep, previously associate executive director of the National Architectural Accrediting Board and now assistant director at the University of Illinois at Urbana-Champaign School of Architecture, reports that only eight of 88 M.Arch. recipients in the school's 2009 graduating class were able to get jobs, "and most of those offers were the result of prior summer internships."

For another window into the tough job market, consider industry giant HKS. According to H. Ralph Hawkins, FAIA, its chairman and C.E.O., the Dallas-based firm established a fellowship program last year that offers a \$20,000 hiring bonus to the top health-care architect coming out of graduate school. Since then, HKS has laid off 33 percent of its staff, so a formalized program represents "a way to keep some flow of students into our firm," Hawkins says. "We do not want to lose those graduating classes to this economy, as we did back in '87."

The rankings remain a resource for practitioners. Ron Radziner, FAIA, a partner at Los Angeles-based Marmol Radziner + Associates, notes, "If a school from which we've never had a student appears in the top 10, I'm more apt to look at that school, or at an internship application from one of its students, more seriously." Jim Way, AIA, director of operations at the Houston firm Kirksey, echoes that position, noting that he directs advertise-

DEANS AND CHAIRS SURVEY

"EARLY ON, deans at a number of schools moaned about the rankings," remembers Theodore Landsmark, Assoc. AIA, president of Boston Architectural College. The deans and chairs feared that state funding might be tied to their position on the charts. Some people in the academy still view the survey with a certain skepticism. "The higher our rank, the more intelligent we think the document is," laughs Douglas Oliver, a professor at Rice University School of Architecture and director of design at Morris Architects, in Houston. "If we slip we think the system is flawed."

In response to earlier criticism, in 2007, Greenway began using a school-evaluation survey informed by questionnaires sent to academic leaders in addition to its practitioner-driven rankings. "Deans and chairs of all NAAB-accredited architecture programs are invited to participate," Cramer says. This year 67 programs responded, and the deans' opinions do not differ from those of practitioners as dramatically as was perhaps suspected. Academia's top five schools hew closely to the more publicized rankings; only the appearance of Auburn and Princeton in the B.Arch. and M.Arch. ratings, respectively, differentiates this list from the practitioner-rated top 10. D.S.

DEANS AND CHAIRS SURVEY

MOST ADMIRED
B.ARCH. PROGRAMS

- 1 Cornell University
- 2 University of Texas, Austin
- 2 Virginia Polytechnic Institute and State University
- 3 Auburn University
- 3 Rice University

MOST ADMIRED
M.ARCH. PROGRAMS

- 1 Harvard University
- 2 Yale University
- 3 University of California, Berkeley
- 4 Massachusetts Institute of Technology
- 5 Princeton University

ments for his summer internship program at ascendant institutions.

DesignIntelligence has also encouraged decision-making within academia. Without the rankings, "It can be terrible to get faculty to take seriously that we need to continually reinvigorate and revise," says R. Thomas Jones, dean of the College of Architecture & Environmental Design at California Polytechnic State University, San Luis Obispo, whose undergraduate program is ranked third in this year's listings. Jones also recalls interviewing for his current job: Cal Poly's consistently high ranking did not substitute for first-hand knowledge of student work and campus culture, "but it got me on the plane."

To appreciate the prominence of the *DesignIntelligence* survey in the profession, it's helpful to log on once again. "I taught for a little while at one of the top 10 schools," a person named "Adso" wrote on *Archinect* shortly after the release of the seventh annual survey, "and although I know the rankings are largely BS, there are a lot of people who take these things very seriously and have a lot invested in them." The rankings resonate through the profession, from the drafting tables of high school art classes to the offices of deans and studio principals. But just as *US News & World Report* is regularly faulted for its rankings of colleges and universities, *DesignIntelligence* is not immune to disapproval.

Many people interviewed for this article observe that the prerequisite of NAAB accreditation, for example, neglects excellent B.S. programs such as the four-year preprofessional degree offered by the University of Virginia, whose M.Arch. program sits in the ninth spot this year. Another common concern is that those schools graduating the most students have a leg up in the rankings, because they will be on the radar screens of more recruiters responding to the DFC survey. In a similar vein, those recruiters may be susceptible to politicking, or they may just have a soft spot for their respective alma maters.

"Numerical rankings are a pretty coarse instrument," states one educator who declined to be named for this story. "The assumption in this method is that the person filling out the survey is someone in a firm who is recruiting new employees and has contact with people applying for jobs. But there's no guarantee that that person has that contact."

Rick del Monte, AIA, managing director of the Beck Group in Dallas, was one

of several survey takers clarifying this point. "Of our recruiting, we consistently find really good graduates from a list of five schools," he says. Yet DFC provides del Monte with a list twice as long. "Beyond that, you're going on reputation." Douglas Oliver, director of design at Morris Architects in Houston and a professor at Rice University School of Architecture, says, "A lot of people transfer their prejudices about a university overall – say, the importance of technology at MIT – to that school's architecture programs."

Numerous sources contacted for this article refer to a dialogue that took place within the membership of the Association of Collegiate Schools of Architecture in 2005. That thread suggested that the ACSA launch a competing series of rankings, or a rebuttal paper scrutinizing the accuracy and depth of the *DesignIntelligence* rankings. No new ranking came of this talk, though.

To Greenway's credit, it has tweaked its approach. The rankings issue of *DesignIntelligence* now incorporates the views of deans and students (see sidebars, this page and page 90), and their opinions are combined with practitioners' rankings to yield separate rankings in a chapter of the issue entitled "The Cramer Report." Moreover, the practitioner-based rankings have been altered to accommodate specific concerns. "In the early years, rankings were based almost exclusively on surveys sent to private employers," says Theodore Landsmark, Assoc. AIA, president of Boston Architectural College. "So Cramer expanded the range of employers who were queried to include some public-sector employers, since schools like the HBCUs [historically black colleges and universities] are more likely to send their graduates into public-sector employment."

Cramer is quick to acknowledge shortcomings. Regarding the size advantage, he admits that smaller schools or programs that enjoy only regional renown usually do not break the top 10. "Typically, they will make it into the top 20 or 30." He also notes that respondents' subjective opinions can be swayed by news-making as much as reputation. "There can be a communication change at a school, and all of a sudden firms are really impressed by something happening at that school," says Cramer. "Or there's an alliance between a strong firm and a fledgling school, like NBBJ with the University of Hawaii or SOM with RPI. That gets a lot of press, so other firms start

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ARCHITECTURE STUDENT SURVEY

PERCENT OF STUDENTS WHO BELIEVE THEY WILL BE WELL PREPARED FOR THEIR PROFESSION UPON GRADUATING

93

WHAT STUDENTS ARE PURSUING (%)

41	Bachelor of Architecture
16	Bachelor of Science in Architecture
4	Bachelor of Arts in Architecture
1	Bachelor of Arts in Architecture Studies
35	Master of Architecture
3	Other (including dual degrees, Bachelor of Fine Arts in Architecture, and other architecture programs)

QUALITY OF PROGRAM OVERALL (%)

49	Excellent
40	Above average
8	Average
2	Below average
0	Failing

QUALITY OF PROGRAM RELATIVE TO COST (%)

52	Excellent
28	Above average
16	Average
4	Below average
1	Failing

WHAT STUDENTS DO AFTER GRADUATING (%)

33	Pursue an advanced degree in architecture
6	Pursue an advanced degree in something else
50	Work in private practice
3	Work for a corporation
3	Self-employment
3	Undecided or other
1	Work in government
1	Community service
85	Planning to take the Architect Registration Exam
77	Planning to become LEED certified

thinking that that program is getting stronger, and they take a closer look at it."

Recent shifts in the *DesignIntelligence* rankings do mirror headlines, if with some lag time. Two and a half years after Mark Robbins, the former National Endowment for the Arts director of design, was named dean of Syracuse University's School of Architecture, for example, its undergraduate ranking jumped from seven to three; it ranks second in the 2010 edition. Also in the undergraduate category, Rhode Island School of Design, number seven, showed dramatic improvement between 2008 and 2009, just as John Maeda replaced Roger Mandle, who had been president for 15 years. And a big winner in the 2010 rankings is the University of Oregon's School of Architecture and Allied Arts, which leapt 11 spots since 2009, perhaps thanks to its push to lead the sustainable-design movement: This year's questionnaires were distributed just months after the school launched an Ecological Design Certificate program, and broke ground on a demonstration low-impact house.

The timely correlation between architecture schools' activities and the perception of their quality promises future bumps and dips in the rankings. Boston Architectural College graduated its first class of distance-learning M.Arch. candidates this past May, and most of those students are already employed in architecture firms. Therefore, the perceived success of that effort may reach DFC survey respondents more quickly. In the midterm, the recession may impact not only the rankings' importance to users but also the substance of the standings. Jones, in San Luis Obispo, says that budget cuts are already increasing the desirability of higher-paying out-of-state students, which will affect the composition of the student body. Perhaps the quality of

the education may suffer next, he adds. "We're going to see larger class sizes. I don't know how that will affect our ranking." Looking at the long-term picture, schools will find that their ability to infuse topics such as sustainability, BIM, and digital fabrication into their curricula will affect their standing among their peers.

The diversity of the top 10 schools reflects the industry. "I think all architecture offices emphasize different things and have different ways of working," Radziner says. "Over the years, you discover which schools have the sorts of students and teach the kinds of things that resonate with your own office." Such diversity applies to rankings, too. The academy shouldn't use *DesignIntelligence* as its sole benchmark, says Virginia Tech College of Architecture and Urban Studies dean A.J. Jack Davis. "There are a number of schools that ask us what we do to get into the top 10," he notes. "You absolutely have to give the faculty free rein, and then you have to support them."

As for those blog-reading, desperate-sounding aspiring architects, the University of Illinois's Waldrep, who is also author of the popular book *Becoming an Architect: A Guide to Careers in Design*, puts *DesignIntelligence* in a larger context of student concerns. He suggests: Pair *DesignIntelligence* with the ACSA's *Guide to Architecture Schools*; read NAAB's independent reviews of architecture programs; converse with students and recent alumni. "Too often," he adds, "prospective students don't have a clue as to what their criteria should be. I tell students and parents, What's the ranking for you?" The standards are individualistic, not unlike the practice of architecture itself. ■

David Sokol is a New York-based contributing editor to ARCHITECTURAL RECORD.

THE MAN BEHIND THE NUMBERS



JAMES CRAMER, HON. AIA: Perhaps best known to architects as the chief executive of the American Institute of Architects from 1988 to 1994, Cramer founded Greenway Group in 1982 and launched it as a fully staffed organization shortly after leaving the AIA. His Atlanta-based firm operates a management consultancy that services the design and construction industries. The company's communications division administers think tanks (such as the Design Futures Council), organizes conferences, produces publications (such as the bimonthly DFC journal *DesignIntelligence*), and assembles the annual architecture-school rankings. He is the author of several books, including *Design Plus Enterprise: Seeking a New Reality in Architecture* (2002, 2nd edition). To learn more about his company and its methodology, and to discover trends that have materialized over the course of 10 years of surveys, go to architecturalrecord.com/features for an exclusive interview with Cramer. D.S.

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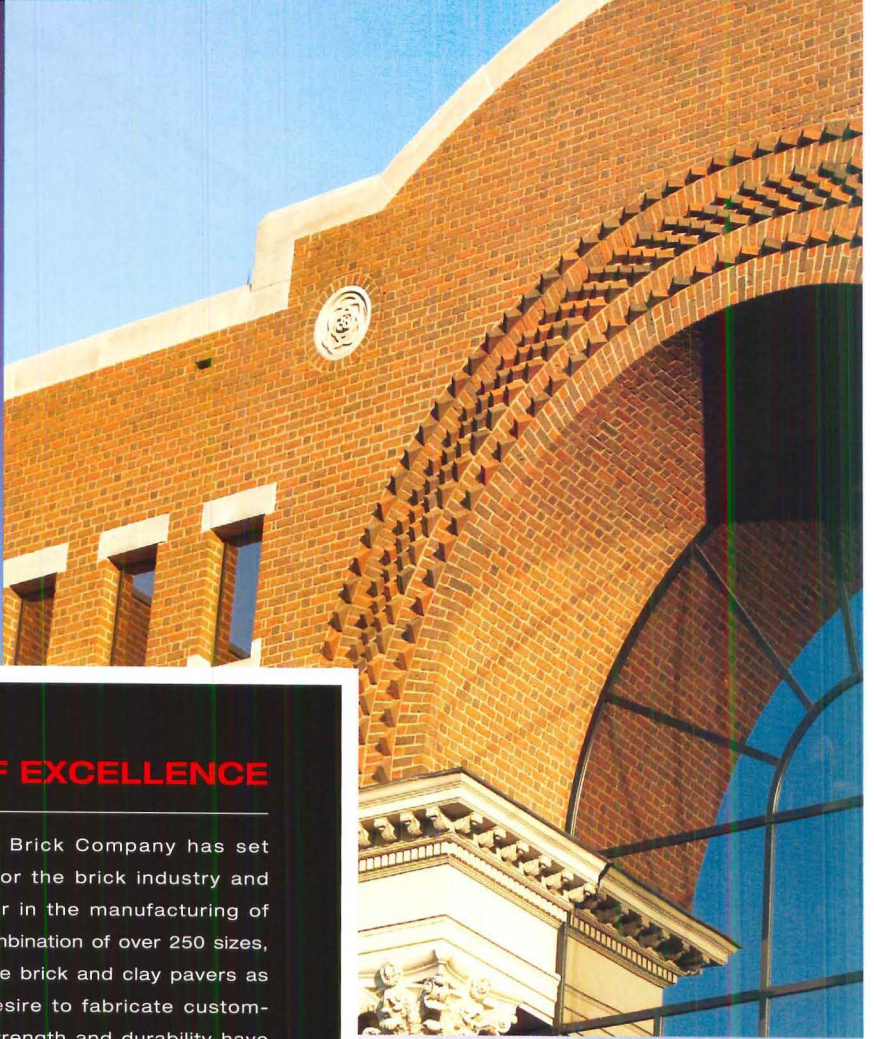
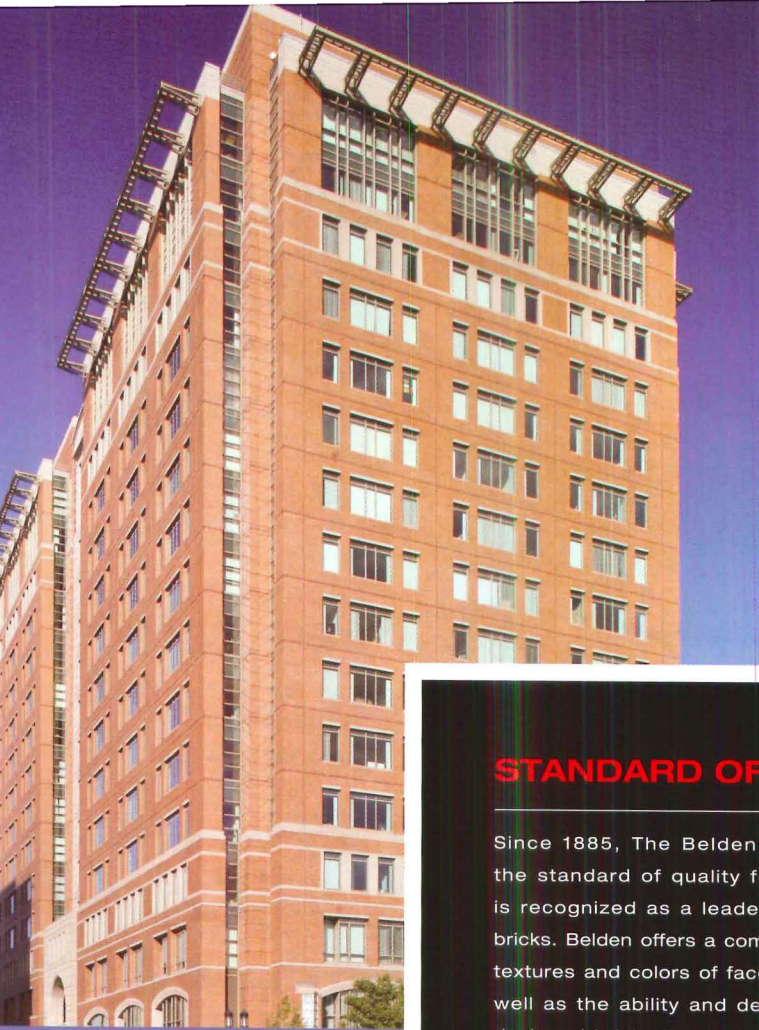
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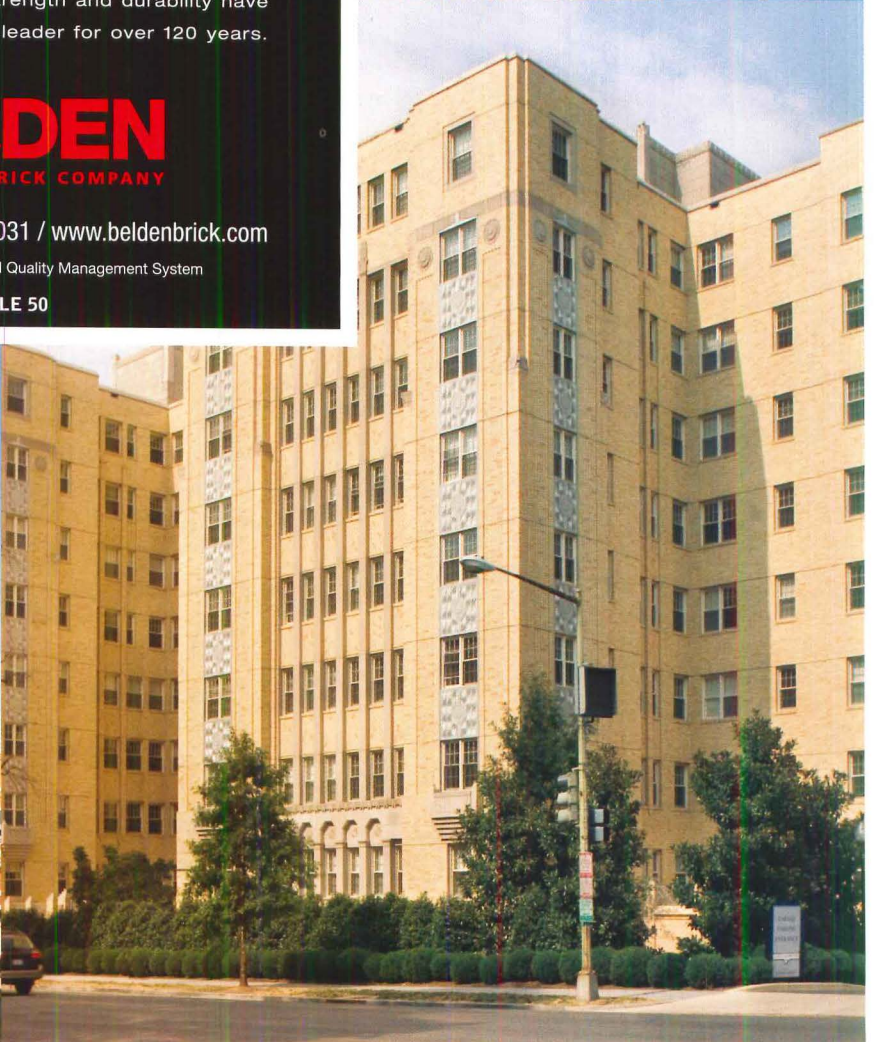
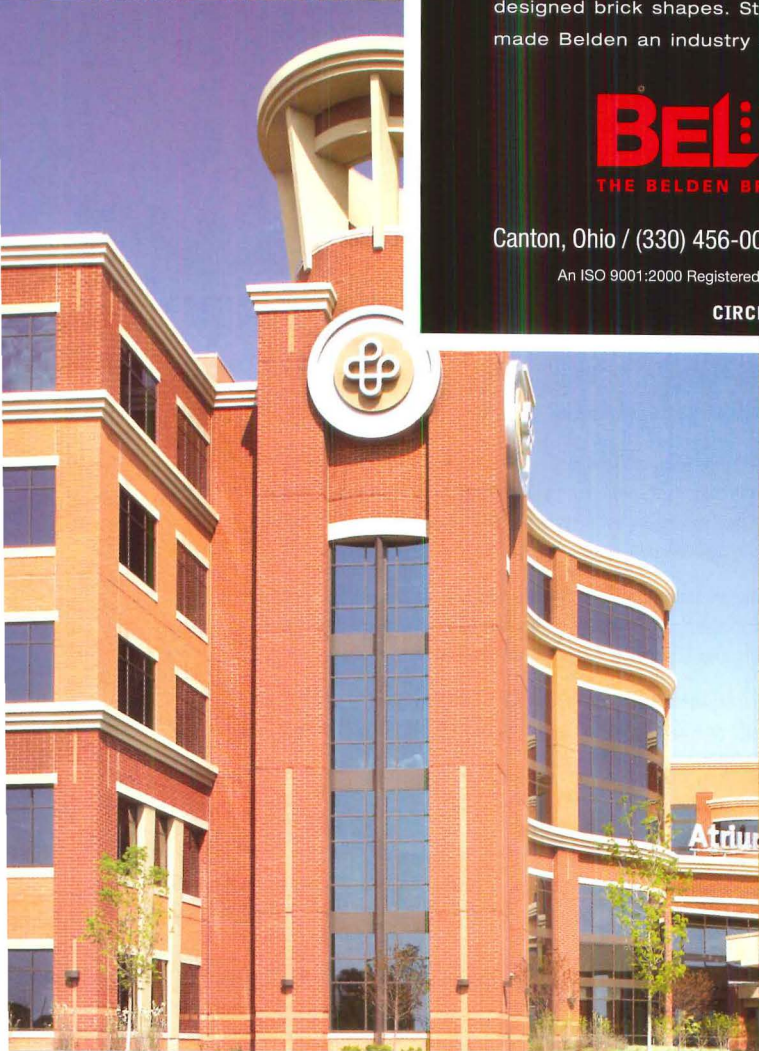
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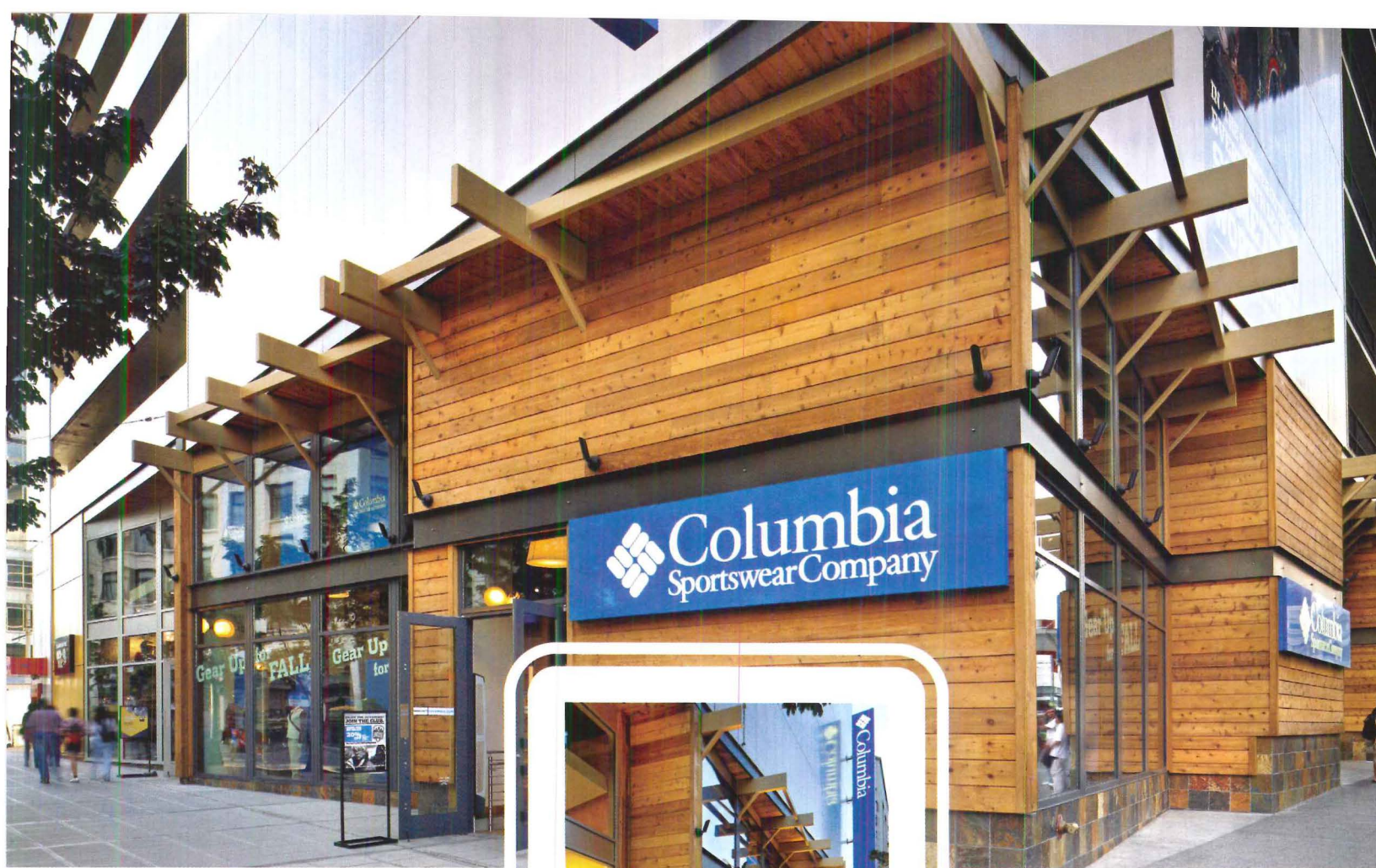
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HIGH

FOR THIS MONTH'S ISSUE, we carefully considered dozens of high-quality university projects from around the globe, from Australia to Singapore, Italy to Israel. In the end, we opted to showcase a diverse trio of important buildings right here in the U.S., where the majority of our readers live and work. All three are large facilities that have a strong presence on their respective campuses, yet their temperaments are strikingly different.

The tough guy is 41 Cooper Square, designed by Morphosis and located in the heart of Manhattan's East Village. Thom Mayne, FAIA, sheathed this new Cooper Union facility in a crumpled metal-mesh skin, giving it a fierce and gritty aesthetic that corresponds with its urban milieu. This powerful exterior also seems appropriate given the building's occupants – engineering and art students who are among the most talented in the country.

Similarly, Price Center East at the University of California, San Diego, makes a statement, although in a very different fashion. For this renowned research institution, Mehrdad Yazdani created a gregarious

student center that plugs into a web of pathways and connects to an existing building. Perhaps most notably, it helps bolster the urban core of the school's sprawling, 1,200-acre campus, providing students with a lively place to shop, eat, study, and simply hang out.

The reticent member of our group is the colossal Northwest Science Building at Harvard University. Designed by Craig Hartman, FAIA, of Skidmore, Owings & Merrill, the low-rise facility totals 530,000 square feet, more than half of which sits underground. It was constructed on an irregularly shaped lot on the north edge of campus and features varied facades that respond to neighboring structures, including historic houses. The elegantly designed building is massive without being oppressive.

When it comes to campus design, there certainly is no one-size-fits-all approach, as these buildings illustrate. Online, we feature an expanded collection of university projects in the U.S. and beyond – each making a strong impact in its own distinct way. *Jenna M. McKnight*



THE COOPER UNION

41 Cooper Square

NEW YORK CITY | Morphosis

A raw and charismatic vertical campus connects students to each other and their urban environment. By Joann Gonchar, AIA

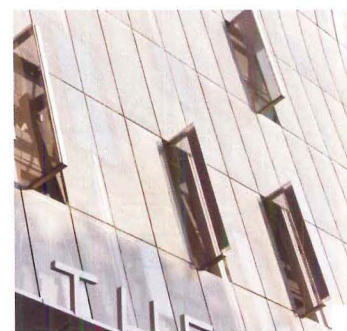
THE NEW, \$111.6 MILLION ACADEMIC BUILDING at New York City's Cooper Union for the Advancement of Science and Art is the type of extroverted structure one would expect from architect Thom Mayne, FAIA, of the Santa Monica-based firm Morphosis. It has a sharp and folded, perforated-stainless-steel shell with an aggressive gash in its main facade. Performance is part of the rationale behind the dynamic sheath, which cloaks a poured-in-place concrete building with a standard window-wall system, helping mitigate heat gain in summer and retain heat in winter. The outer skin is one of several tightly coordinated sustainable features that are likely to earn the project, designed with local associate architect Gruzen Samton, a Platinum certification under the U.S. Green Building Council's LEED rating system.

The screen, which Morphosis has deployed in other projects, including the Caltrans District 7 Headquarters, in Los Angeles [RECORD, January 2005, page 12], and the San Francisco Federal Building [RECORD, August 2007, page 96], serves not only as an energy-conserving element. It also helps integrate the building, known as 41 Cooper Square, into its urban surroundings, says Mayne, who argues that it is "highly contextual." The skin crimps and curves, he points out, to respond to the frenetic energy of its East Village environment. And from below the bottom hem of this outer coat, V-shaped, poured-in-place concrete columns emerge to bring the building to the ground. The sculptural and slightly rough supports surrounding the otherwise mostly transparent

first level are made of structural rather than architectural concrete, contributing to the exterior's raw charisma. The building exudes "a kind of toughness that is New York," he says.

This sensibility, explains Mayne, is also in sync with the mission of the egalitarian, but highly selective, tuition-free college, which offers degrees in architecture, engineering, and art. The 150-year-old school was founded by inventor and industrialist Peter Cooper, who had less than a year of formal education. 41 Cooper Square "is embedded in the values of the institution," says the architect.

The nine-story, 175,000-square-foot building was constructed primarily to house the engineering school but also includes some facilities for art and architecture students. It is considerably

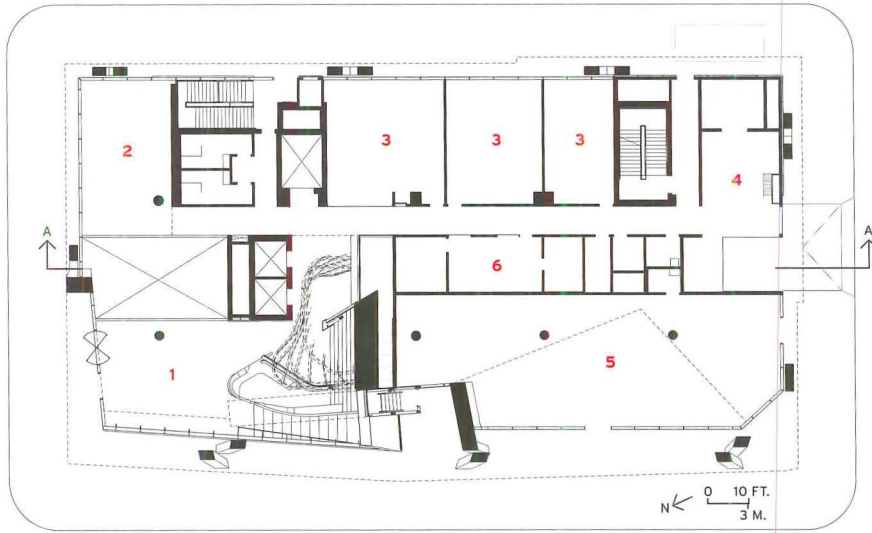


OPPOSITE: The perforated skin curves in and out, as though responding to the energy of the urban environment.

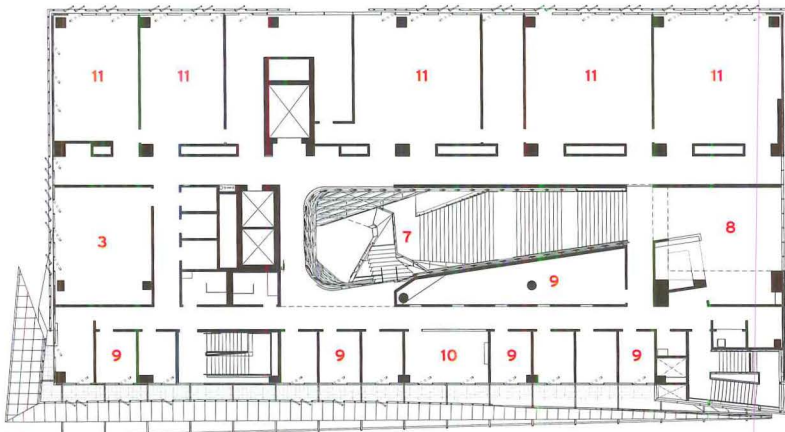
1.,2. The semitransparent outer shell contains gashlike cutouts as well as more regular apertures. Operable panels, controlled by a building management system, open to allow more daylight into the interior.

PHOTOGRAPHY: © ROLAND HALBE, EXCEPT AS NOTED; IWAN BAAN (OPPOSITE)

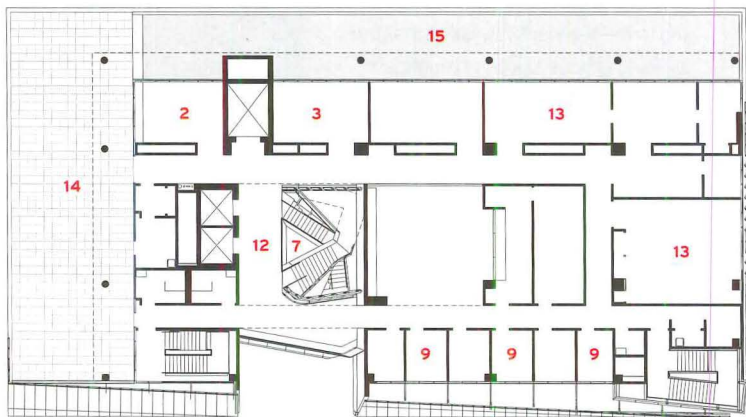
DRAWINGS



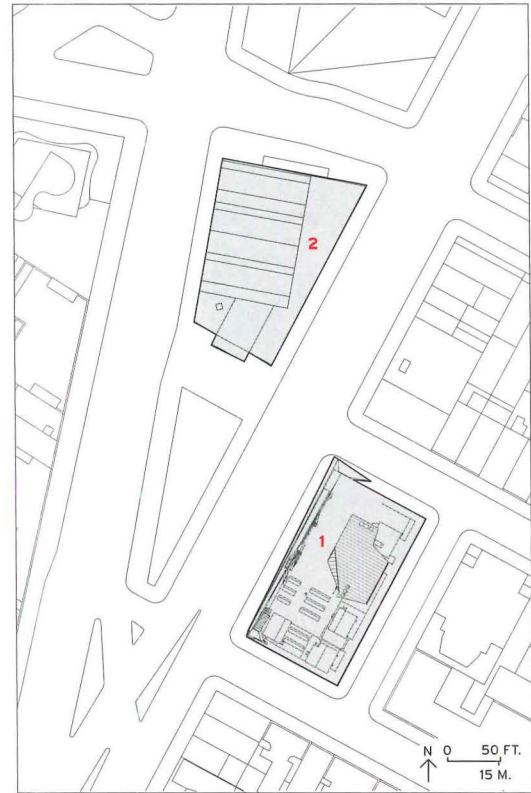
FIRST FLOOR



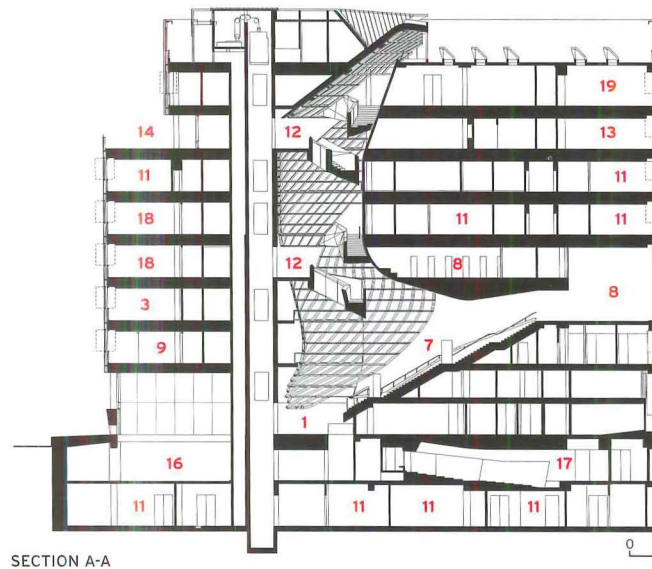
FOURTH FLOOR



EIGHTH FLOOR



1. 41 Cooper Square 2. Foundation Building



SECTION A-A

- | | | | | |
|----------------|--------------------|--------------------|--------------------|----------------------|
| 1 Lobby | 5 Retail | 9 Offices | 13 Computer center | 17 Auditorium |
| 2 Multipurpose | 6 Central services | 10 Study lounge | 14 Roof terrace | 18 Student workspace |
| 3 Classrooms | 7 Atrium | 11 Laboratories | 15 Green roof | 19 Art studios |
| 4 Loading | 8 Activities space | 12 Skip-stop lobby | 16 Gallery | |



1

larger than the two-story, early-20th-century academic building previously on the site. However, the new volume is roughly equivalent to the college's most identifiable structure – the 1859 Italianate brownstone Foundation Building, which sits kitty-corner to the new building across leafy Cooper Square. But Morphosis can't claim much of the credit for the dialogue that this similarity in scale creates. 41 Cooper Square's dimensions – 100 feet wide by 180 feet long by 135 feet tall, with setbacks on the north and east – were determined well before the firm was selected in September 2003. The size was set as part of a city-approved rights swap that permits the school to develop the site of the engineering department's former home a few blocks to the north as a commercial property.

The development plan created an additional source of revenue for Cooper Union and simultaneously allowed replacement of aging academic facilities. In addition, construction of the new building provided an opportunity to promote interaction among the school's various academic disciplines. "We hoped to encourage students to come together in a natural way," says George Campbell, Jr., Cooper Union president.

Morphosis responded to the desire to foster interaction by creating a vertical campus around a series of social spaces. The primary one is an amorphously shaped atrium that extends from the ground floor to a skylight on the roof. It is carved out from the center of otherwise surprisingly regular and rectilinear floor plans with offices and study lounges lined up along the building's western edge, and instructional spaces, including engineering labs, art studios, and classrooms, along the eastern edge.

Where the floors are open to the atrium void, a curving lattice defines the space's limits. The geometric but fluid web of glass-fiber-reinforced gypsum over an armature of steel pipe protrudes into the entry lobby, enticing students to walk up a 20-foot-wide



2



3

1. The heart of the building is an amorphously shaped atrium that extends from the ground level to a skylight on the roof. Where floors are open to the multistory void, a curving lattice defines its limits.

2. Within the atrium, a 20-foot-wide grand stair connects the first four floors.

3. On the upper levels, the void narrows around a faceted, spiral stair with a luminous resin-clad balustrade.

grand stair that connects the first four floors. On the upper floors, the atrium narrows around a segmented and spiraling stair with faceted, resin-clad balustrades illuminated from within.

The atrium has clearly become a lively social hub. Early in September, shortly after the building's official opening, and just a few days into the academic year, students could be seen chatting, studying, and eating lunch on the grand stair's landings. Others were observing the activity from upper-level balconies, or "sky bridges," which afford views across and into the atrium and sight lines out to the city beyond.

Part of the atrium's appeal is its spatial complexity: It is made of overlapping surfaces and geometries that shift with every change in vantage point. But, although it is visually stimulating, the complexity doesn't always have a corresponding functional advantage. One instance where it becomes a liability is in the vertical circulation.

Like several other Morphosis projects, the Cooper Union building has skip-stop, or express, elevators intended to encourage occupants to walk and to provide additional opportunities for interaction. These aims are valid. However, the system at Cooper Union seems too idiosyncratic. For example, anyone who wants to travel between levels 6 and 7 on foot, and by way of the atrium, would be unable to do so since the spiral stair has no run connecting these floors. Instead, occupants must choose between the egress stairs or the service elevator.

But quirky circulation aside, 41 Cooper Square seems to hit all the right notes. It contains the vibrant spaces for informal interaction and provides the state-of-the-art educational facilities that Cooper Union required. Mayne fulfilled these client mandates without ignoring the building's civic presence, creating a gutsy, and appropriately energetic, addition to Lower Manhattan's urban fabric. ■

 To comment on this project and rate it, go to architecturalrecord.com/projects.

ARCHITECT: Morphosis – Thom Mayne, FAIA, principal; Silvia Kuhle, AIA, project manager; Pavel Getov, AIA, project architect; Chandler Ahrens, Natalia Traverso Caruana, Go-Woon Seo, project designers; Jean Oei, job captain

ASSOCIATE ARCHITECT: Gruzen Samton

CLIENT: The Cooper Union for the Advancement of Science and Art

CONSULTANTS: IBE Consulting Engineers, Syska Hennesy Group (m/e/p); John A. Martin Associates, Goldstein Associates (structural); Langan Engineering and Environmental Services (civil)

GENERAL CONTRACTOR: F.J. Sciam Construction

SIZE: 175,000 square feet

COST: \$111.6 million

COMPLETION DATE: June 2009

SOURCES

STAINLESS-STEEL SKIN:

A. Zahner Company

WINDOW WALL: Vistawall; Moduline

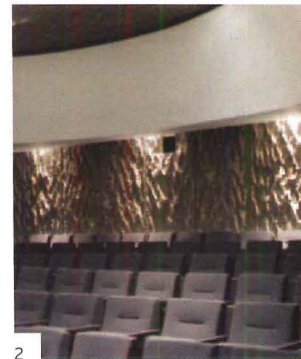
RESIN BALUSTRADE: 3Form

ELEVATORS: Hollister-Whitney

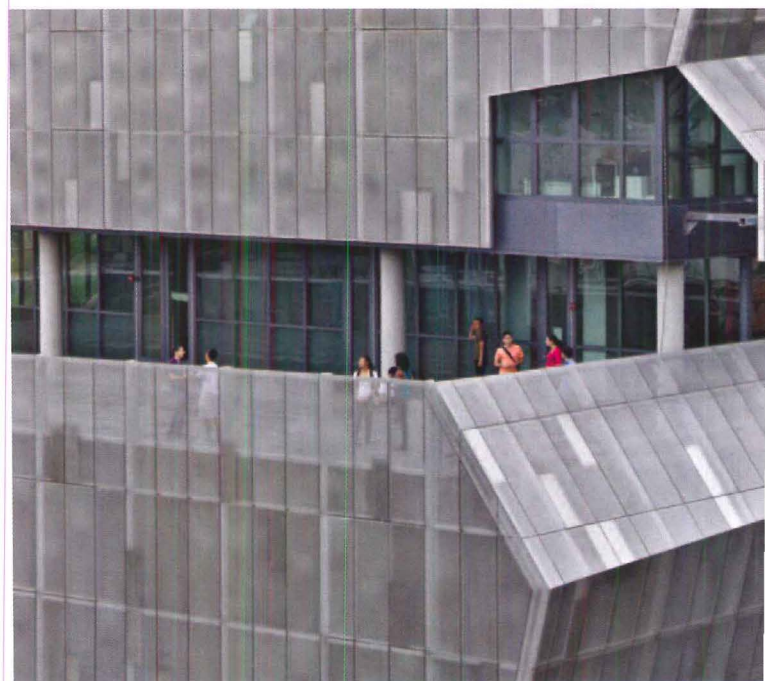
GREEN ROOF: American Hydrotech



1



2



5



3



4

1. Social spaces, including the foyer for a basement auditorium, afford views to other levels and to the outside.

2. A crinkled, sound-absorptive wire mesh lines the auditorium walls.

3. In contrast to the sculptural outer shell, the building's instructional spaces are largely rectilinear and regular.

4.,5. Required setbacks on the eighth floor created the opportunity for a north-facing roof deck and an east-facing green roof.

RIGHT: Through a gashlike opening in the main facade, occupants can view Cooper Union's most identifiable structure – the Italianate Foundation Building.



Price Center East

SAN DIEGO, CALIFORNIA | Yazdani Studio of Cannon Design

A sizable expansion to a student union serves as a vibrant centerpiece for the University of California, San Diego, campus.

By Jenna M. McKnight

LOCATED IN LA JOLLA, the University of California, San Diego, campus mimics the suburban sprawl so prevalent in the American West. Spread across 1,200 acres, the grounds consist of scores of bulky buildings set among eucalyptus groves, vast lawns, and a labyrinth of roads. Guided by a 1989 master plan by Skidmore, Owings & Merrill, school leaders have been working to create a centralized “downtown” district, and the new Price Center East aids considerably in this effort. Created by Yazdani Studio of Cannon Design, this vigorous addition to a 20-year-old student union fortifies the campus core while also providing vital amenities to the growing UCSD community.

One of 10 schools in the University of California system, UCSD is a leading research institution founded in 1960. Its young age and pioneering spirit are reflected in its bold and disparate architecture, with works by Moshe Safdie, Arthur Erickson, and Antoine Predock, among others. Its most idiosyncratic edifice, Geisel Library, a 1970 sci-fi extravaganza by William L. Pereira, is as recognizable as the school mascot (a Triton) and is even featured in the UCSD logo.

For the \$66 million (total cost) student-center expansion, the school issued an RFP in 2003 and short-listed five firms. Mehrdad Yazdani beat out formidable competitors, including Eric Owen Moss and Rafael Viñoly. Based in Los Angeles, Yazdani describes his 20-employee studio as a “hybrid practice,” with all the benefits of being part of Cannon Design fused with an

atelier’s high level of experimentation.

While not beholden to any particular style, Yazdani wasn’t entirely free from precedent while dreaming up the new building: It had to merge with the existing Price Center West, designed by Kaplan McLaughlin Diaz. Recognized for its novel layout when it opened in 1990, the center comprises stone-clad volumes that wrap an outdoor food court – a breezy setting popular with students and befitting a campus a few miles from the beach. But when it was built, UCSD’s student population numbered 17,000. With enrollment now approaching 30,000, an enlarged central hub had become crucial.

At first, the university wanted to employ the same courtyard-style layout in expansion. But after a series of workshops and thorough analysis, Yazdani decided it wasn’t the right approach. “If it’s going to be an urban

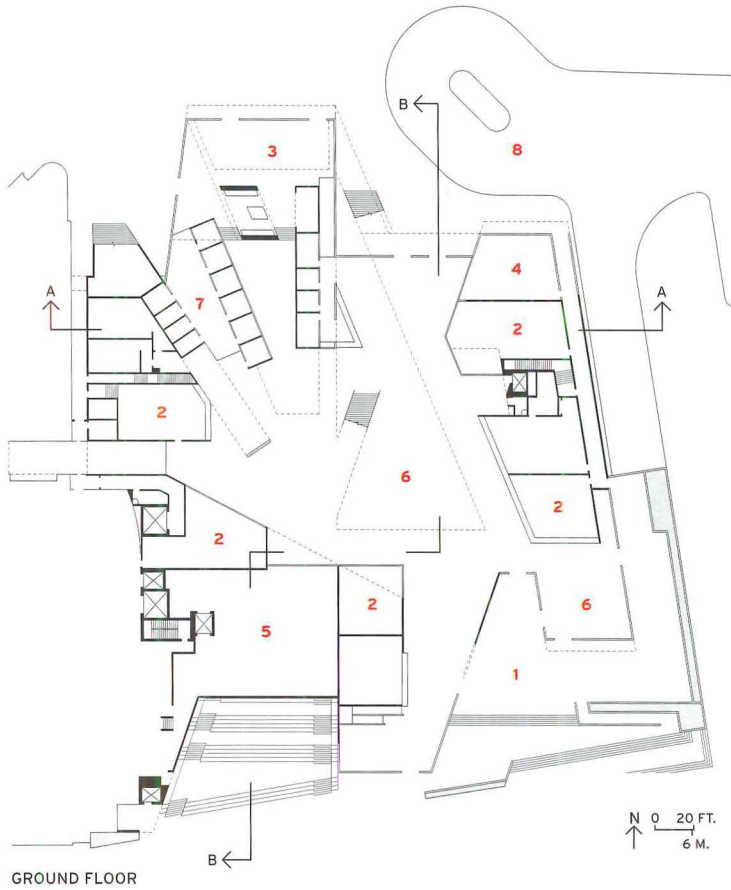
OPPOSITE: A grand stairway on the south doubles as seating and looks over a “town square.” Appearing to float above the street, boxy volumes with concrete walls and storefront glazing are supported by steel beams and columns.



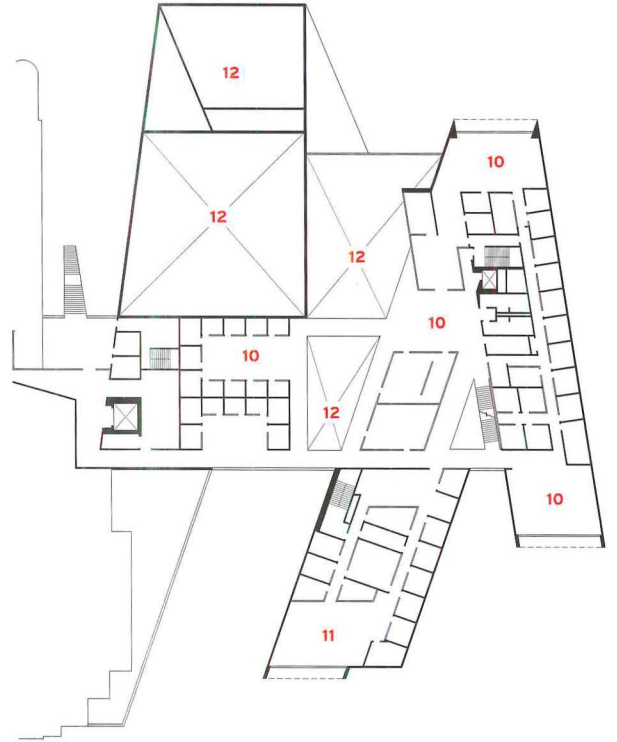
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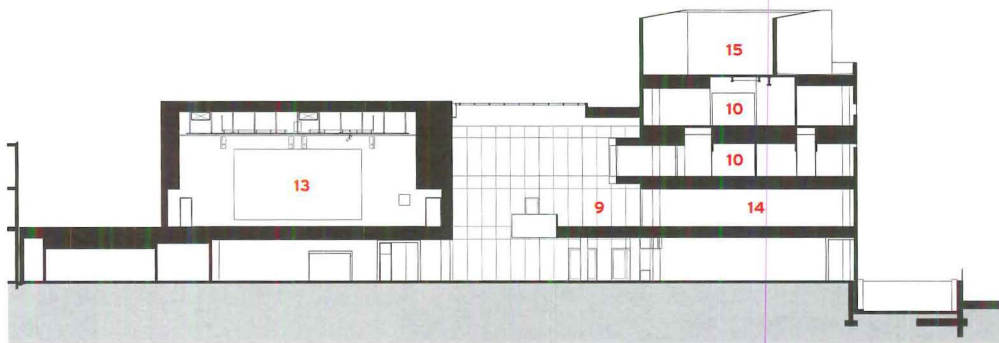
DRAWINGS



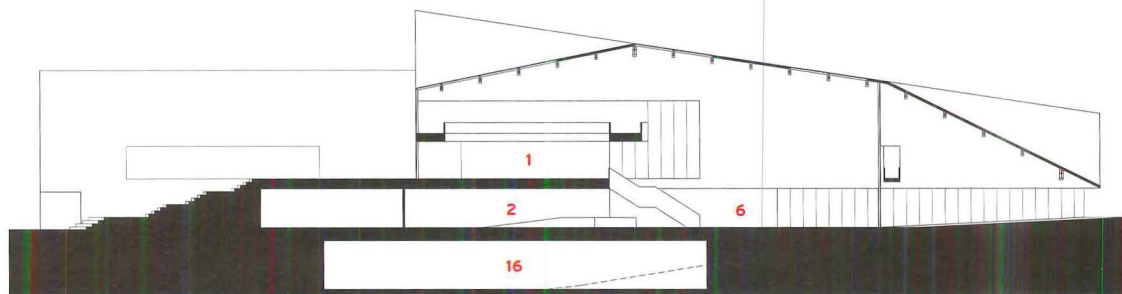
GROUND FLOOR



THIRD FLOOR



SECTION A-A

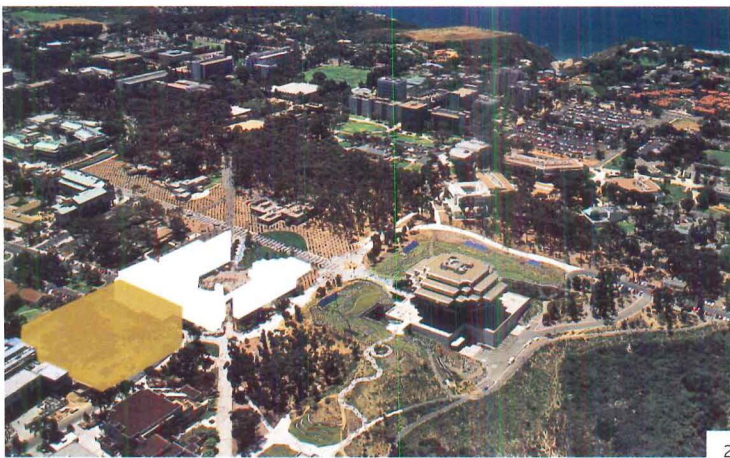


SECTION B-B

- 1 Plaza/entry
- 2 Food service
- 3 24-hour lounge
- 4 Retail
- 5 Grocery store
- 6 Seating/food court
- 7 Study capsules
- 8 Campus shuttle stop
- 9 Lounge
- 10 Student services
- 11 The Loft nightclub
- 12 Open to below
- 13 Ballroom/dance studio
- 14 Cross-cultural center
- 15 Mechanical
- 16 Loading dock



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building," he told the university, "we're going to need to increase density, activate street edges, and have a relationship to the exterior pedestrian spine of campus." With the existing center focused inward, the "extroverted" addition would push outward and make its presence known.

Completed in August 2008, the 172,000-square-foot facility certainly is assertive. Constructed on a 5.9-acre site with a 6-foot slope, the building's hulking form is broken into parts to avoid the monolithic massing often found on university campuses. Those parts – rectilinear and geometric volumes of varying scales that either thrust forward or retreat – are positioned in response to circulation patterns. On the north, they converge

with several walkways and a circular drive that serves as a campus shuttle stop. On the south, they front grassy swaths and a paved area now referred to as the "town square." Both sides feature ample glazing, strengthening the center's connection to the streetscape and giving students the chance to see and be seen.

If there is a formal entrance, it's on the southwest, where wide stairs double as seating and look over the "piazza," calling to mind the grand steps of an old courthouse. Proceeding up and into the building, the nonlinear, hyperdense organization of the space becomes fully apparent. There's a lot to take in. On the east is a maze of offices, retail areas, meeting rooms, and a nightclub;

the western half contains more retail, ballrooms, a dance studio, and a renovated/expanded bookstore. Open areas are furnished with movable chairs and couches, where students meet, eat, study, even snooze. On the second level, the new building connects to the old via a bright yellow passageway.

At the heart of the facility is a four-story, 56-foot-tall atrium, designed as a counterpoint to Price Center West's courtyard. Despite a common assumption, San Diego isn't eternally warm and sunny, and "when the cold air rolls through in the fall and winter, everyone migrated into the narrow corridors," Yazdani says. And so he gave the students a spacious interior gathering area bathed in natural light. A stairway cuts through the center,

1. On the north, ample glazing offers views of a 24-hour lounge on the ground level, and farther back, a dance studio on the second floor.

2. The new building (gold) merges with the existing student union (white); to the northwest is Geisel Library, an eccentric behemoth.

3. Circulation patterns and the desire to create an urban-style landmark inspired the building's broken-down massing, with volumes of varying scales.

ARCHITECT: Yazdani Studio of Cannon Design – Mehrdad Yazdani, Assoc. AIA, design principal; Craig Hamilton, AIA, project principal; Rob Benson, project manager; Mark Piaia, AIA, project architect; Craig Booth, John Chan, senior designers

CLIENT: University of California, San Diego

CONSULTANTS: Englekirk and Sabol (structural engineer); IBE Consulting Engineers (mechanical); Coffman Engineers (electrical); Hirsh & Company (civil); Pamela Burton & Company (landscape); M.A. Mortensen Company (general contractor)

SIZE: 172,000 square feet (new); 66,000 square feet (renovated)
COST: \$53 million (construction)

SOURCES

STRUCTURAL SYSTEM:

McMahon Steel

CURTAIN WALL: Tower Glass

GLAZING: Viracon

ROOFING: NeoGard; Sarnafil

ACOUSTICAL CEILING:

Armstrong

METAL CEILING: Ceilings Plus

OFFICE FURNITURE:

Steelcase

leading up from an expansive court ringed by eateries, a grocery store, a post office, a computer lab, study pods, and a 24-hour lounge. An imposing Barbara Kruger mural, with news tickers and giant photographs of clocks, adds zing to this buzzing microcity.

The project involved several structural challenges. For instance, to maximize the ground level for public functions, the team placed a loading dock below-grade. The 12,500-square-foot space is mostly column-free to provide clearance for large trucks. Custom-made plate-steel girders transfer overhead loads to the sides of the structure.

Given that San Diego sits on several fault lines, seismic issues also were a concern. The building, composed of a structural steel frame with cast-in-place concrete walls, was designed to withstand a powerful quake – not easy, given its challenging geometrics, explains Ety Benichou, the project's structural engineer. The solution was to separate it into two discrete structural units, the east and west, connected using a seismic joint that varied in width from 6 inches at the lower portions of the building to 10 inches at the roof, according to Benichou. Throughout the facility, every hanging element was braced, even lamp fixtures. "As a California architect," Yazdani says, "you come to embrace the braces."

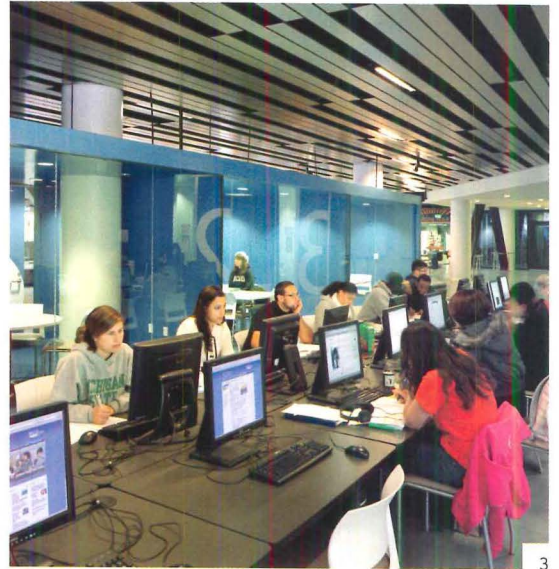
Fortunately, no seismic events have put these measures to the test. But in terms of use, the facility is performing quite well: About 12,000 people pass through each day, many stopping off to have a bite, check e-mail, or rendezvous with friends. "It's packed," boasts Paul Terzino, student center director. "We already had to buy more furniture." With Price Center East, Yazdani Studio has created an exuberant landmark that bolsters the urban core and takes center stage on this vast California campus. ■

To comment on this project and rate it, go to architecturalrecord.com/projects.





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1.,2. Five skylights totaling 2,255 square feet bring natural light into the 56-foot-high atrium. A giant mural by Barbara Kruger invigorates the space.

3. Various rooms, such as a ground-level computer lab, feature a dropped ceiling with thin metal bars. In the background, enclosed study pods have floor-to-ceiling windows.

4. A bright yellow tunnel connects the old building to the new.

5. A view of an information desk on the third floor shows the facility's relaxed, modern vibe. Vivid colors and enlarged text aid in wayfinding throughout the interior.

Harvard NW Science Building

CAMBRIDGE, MASSACHUSETTS | Skidmore, Owings & Merrill

A new laboratory building aims to find its own voice on a historic campus. By Aleksandr Bierig

BUILDING AT HARVARD IS FRAUGHT WITH COMPLICATION. Historic works of architecture by H.H. Richardson, Le Corbusier, and Walter Gropius are down the street. When one tries to keep to those standards, the world at large deems it wasteful (a 2009 *Vanity Fair* article pointed to recent construction – estimated at 6.2 million square feet and \$4.3 billion since 2000 – as an example of the university’s profligate spending). And the neighbors, the faculty, and the students all have to be appeased. If that weren’t enough, when Craig Hartman, FAIA, head of Skidmore, Owings & Merrill (SOM)’s San Francisco office, designed his first university lab building for Harvard, he also had to deal with the outsize personality of then-president Lawrence Summers (who resigned in 2006 after a number of

missteps, including his controversial comments on women in science, and is now director of President Obama’s National Economic Council). “He was a very, very challenging person,” recalls Hartman, whose equanimity seems an uneven match for Summers’s famed bluster. Summers’s taste tended toward a Georgian aesthetic, but then he saw the movie *My Architect*, a film about Louis Kahn by his son, Nathaniel. “After that,” says Hartman, “when I talked about wood, when I talked about brick, it was a home run.” Such fortuitous occurrences brought this massive steel-and-concrete structure to realization, where concerns of history and culture were balanced with the extraordinary technical requirements of a contemporary science building.

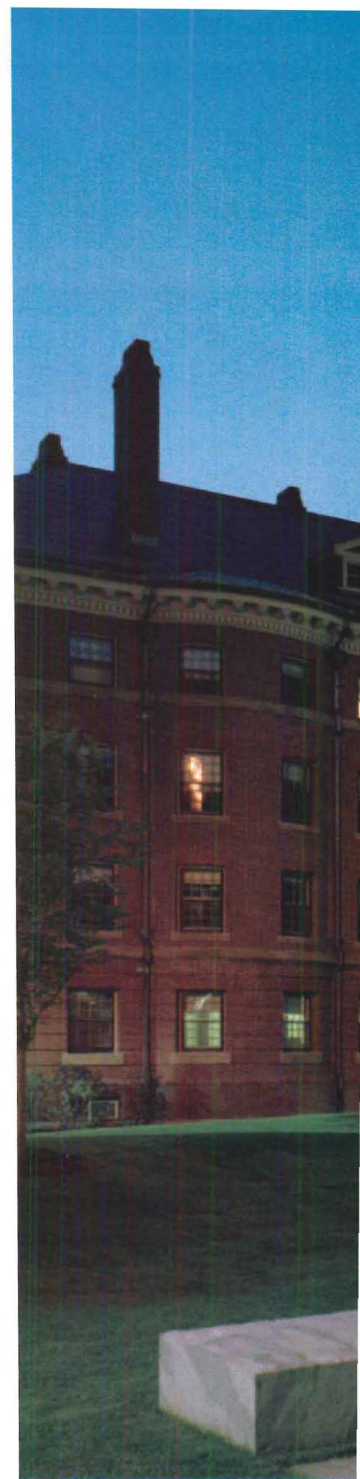
The process began in 2002, when Harvard commissioned Philip Enquist, FAIA, partner in charge of urban design and planning for SOM Chicago, to design a master plan for the northwest corner of campus. That area consists of a haphazard mix of buildings, among them a 1962 lab by Minoru Yamasaki and a museum designed by Henry Greenough and George Snell in 1871. After the scheme’s completion, the university decided to pursue the construction of two new buildings at the edge of the site.

Nanzeen Cooper, assistant dean for campus design and planning, worked with a faculty committee to select Hartman for the project, arguing that “you can always get a lab expert to join the team, but if you fail on the architecture, there’s no going back.”

Hartman began by meeting with the residential community that borders the site to the north. While the master plan had called for a series of small buildings to connect to the neighborhood, Hartman and the faculty felt that domestically scaled structures would be insufficient for its resident scientists. Proposing instead to set the building back from the street, he offered the neighbors a generous landscape and convinced community members to support the project.

It was determined early on that the most efficient use of space would be to combine the proposed buildings – one for the Department of Engineering and Applied Sciences and the other for Organismic and Evolutionary Biology – into a single structure. To accommodate those functions, as well as to provide storage space for university collections, the four-story building twists and turns through the tangled campus fabric, never seeming as large as its 530,000 square footage suggests, partly because it cannot be perceived all at once.

Accordingly, the overall organization of the building is complex. Most of the physical-science labs run along the north and west brick elevations, next to



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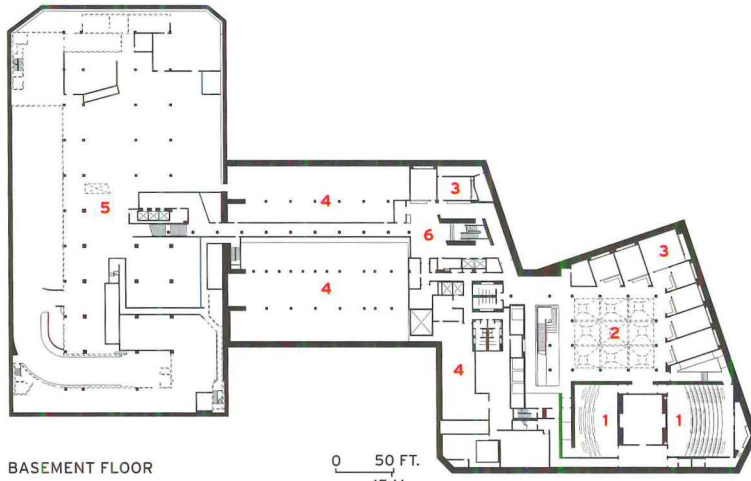


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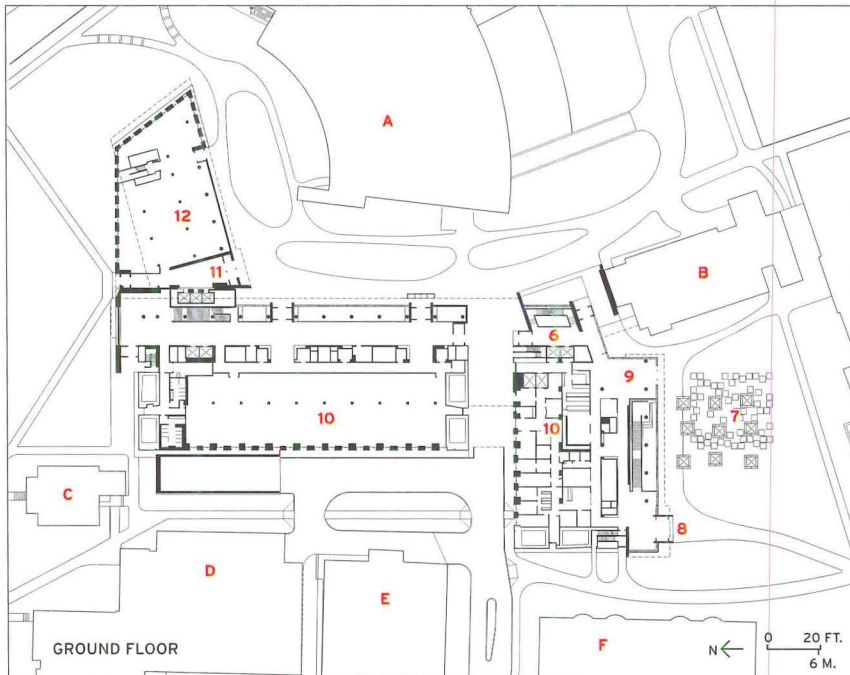
ABOVE: Architect Craig Hartman says, "The building wanted to be warm during the day and like a lantern at night."

1. Called the "Hub," this suspended glass cube acts as a hinge for the circulation of the building, offering space for encounter and discussion.
2. Students and faculty are drawn into the building corner framed by sustainably harvested Pucte wood.
3. The east facade is punctuated with large, double-height "living rooms" that provide informal group spaces.

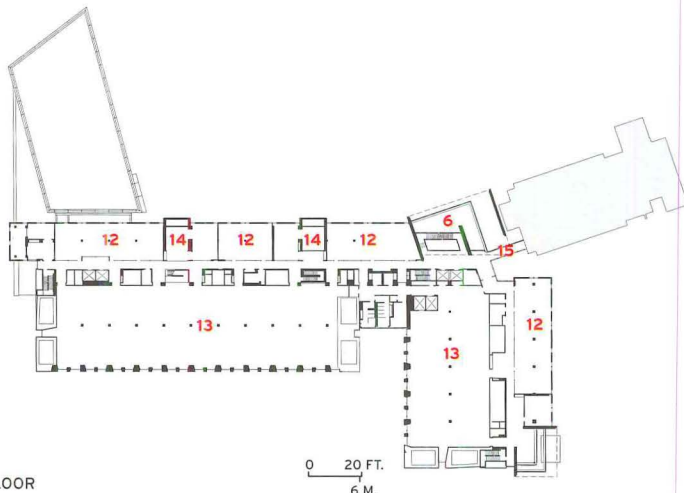
DRAWINGS



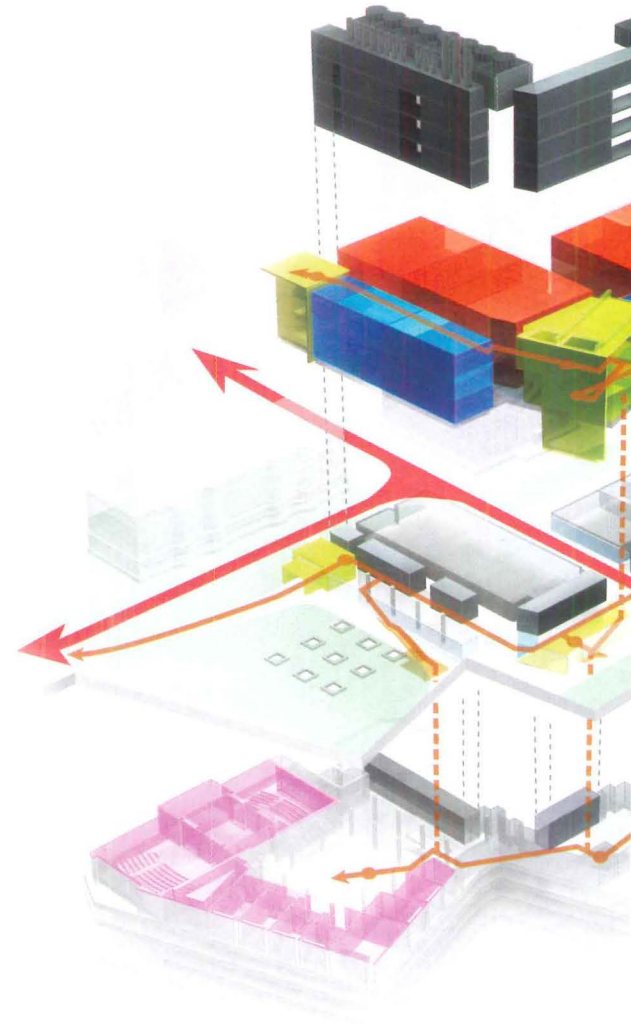
BASEMENT FLOOR



GROUND FLOOR

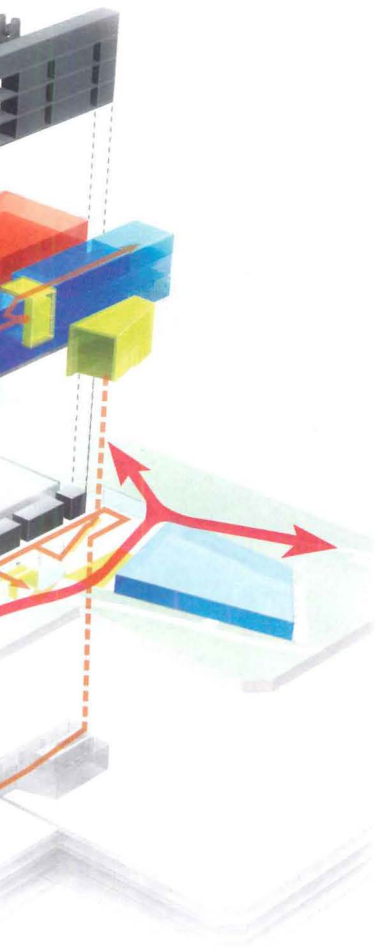


THIRD FLOOR



- 1 Lecture hall
- 2 Concourse
- 3 Seminar rooms
- 4 Service/storage
- 5 Existing parking garage
- 6 Hub staircase
- 7 South yard
- 8 South entry
- 9 Café
- 10 Teaching labs
- 11 Garage elevators
- 12 Computational labs and offices
- 13 Laboratory loft
- 14 Living rooms
- 15 Bridge to MCZ Lab

- A 38 Oxford Street, a former electron accelerator building, now used for physical science labs.
- B Museum of Comparative Zoology (MCZ) Lab, 1972.
- C Palfrey House, a historic farmhouse used for offices.
- D 60 Oxford Street, university information systems and computational lab, designed by Perry Dean Rogers, 2003.
- E Engineering Science labs, designed by Minoru Yamasaki, 1962.
- F Conant Hall, graduate dorms, designed by Shepley, Rutan, and Coolidge, 1893.



MECHANICAL SPINE

A ladder-braced steel frame holds the mechanical requirements for the labs.

LABS AND OFFICES

Physical labs are shown in red, computational labs in blue, and communal spaces in green.

GROUND LEVEL

The arrows show how the building engages both interior routes and its surroundings.

BASEMENT LEVEL

An event space and classrooms are beneath the south yard, with labs and storage throughout.



SECTION PERSPECTIVE

Labs on the left are supported by a mechanical spine, while the right-hand side offers more sectional variation.



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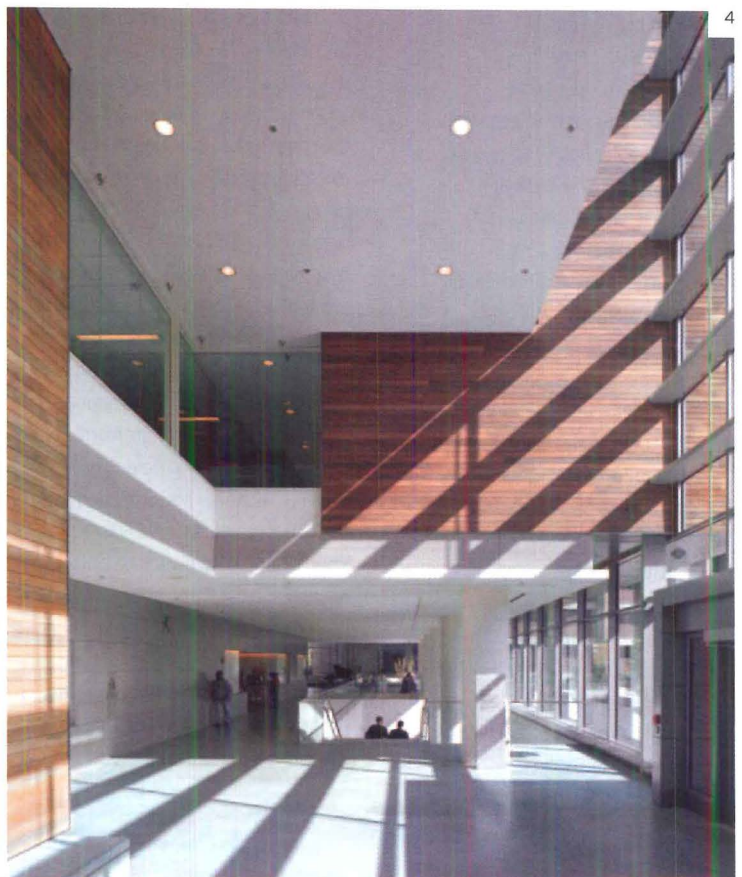
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1. The South Yard, designed by Michael Van Valkenburgh, features 12 skylights that also act as benches.

2. The north and west brick facades give a contrasting exterior expression for the physical science labs.

3. The building connects to an existing 1972 lab on its southeast corner.

4. The main south entry is open and inviting, reacting to the insular nature of much of the campus.



4

PHOTOGRAPHY: © ANTON GRASSL/ESTO (2)

ARCHITECT: Skidmore, Owings & Merrill – Craig Hartman, FAIA, design partner; Carrie Byles, AIA, project manager; Philip Enquist, FAIA, campus planning; Keith Boswell, AIA, technical director; Leo Chow, AIA, senior design architect; David Frey, AIA, project architect; Mike Temple, AIA, design architect

CLIENT: Harvard University
CONSULTANTS: Bard, Rao + Athanas Consulting Engineers (m/e/p); GPR Planners Collaborative (lab planners); Michael Van Valkenburgh Associates (landscape)

SIZE: 530,000 square feet
COST: Withheld
COMPLETION DATE: September 2008

SOURCES

EXTERIOR CLADDING: Pizzotti Brothers (masonry); Ipswich Bay Glass (metal/glass curtain wall); Imperial Woodworking (wood)

ROOFING: Sarnafil (elastomeric membrane)

WINDOWS: Parklex (shadow box insert); Solar Ban 70 XL (glass)

INTERIOR FINISHES: Armstrong World Industries, USG Interiors, BPB celotex, Life Science Products, Lindner USA (suspension grid); Maharam Fabric (wall coverings); Formica (laminates); Daltile, American Olean (floor and wall tile); Armstrong, Johnsonite (resilient flooring); Shaw (carpet); Mechoshade Systems (window treatment)

FURNISHINGS: Bedco (lab furniture); Paolenti (lounge seating); Steelcase (office furniture); Paul Brayton Designs (leather upholstery)

CONVEYANCE: Kone Elevators

a massive mechanical spine constructed with a steel-braced ladder-frame system that provides a large interior scaffold for the heavy m/e/p requirements of the labs. With regard to the latter, SOM worked with lab planners GPR to develop a 10-foot-6-inch module that provides flexibility for a range of uses. Across from the “wet” labs on the upper floors, the architects allowed the computational labs and offices to assume a lighter, more flexible quality. These rooms on the south and east sides are framed in glass – translucent toward the hallway, and clear with operable windows toward the exterior. There, the monotonous procession of offices is punctuated by a series of “living rooms” – informal double-height meeting spaces.

Large staircases, a ground-level café, and an underground event space also encourage an environment of openness and collaboration, as opposed to the often insular nature of science buildings. This idea is carried to the exterior planning, as well. Coming from the central campus, one approaches alongside a generous courtyard with twelve large, square, bench-height boxes. Designed by landscape architect Michael Van Valkenburgh, the lawn doubles as a green roof over the event space – the boxes act as skylights for the room below. Stacking the open and closed communal spaces directly on top of one another characterizes the building’s architectural strategies – more than half the square footage is underground, and spaces with more flexibility, like circulation corridors and stairways, are exploited to create opportunities for encounter and collaboration.

All of this is very far from Louis Kahn’s innovative design for the 1961 Richards Medical Labs at the University of Pennsylvania. There, Kahn conceived the building’s organization by proposing the idea of “served” and “servant” spaces – hollow concrete towers for mechanical equipment and circulation serving glazed labs that ended up being too small and too difficult to control tem-

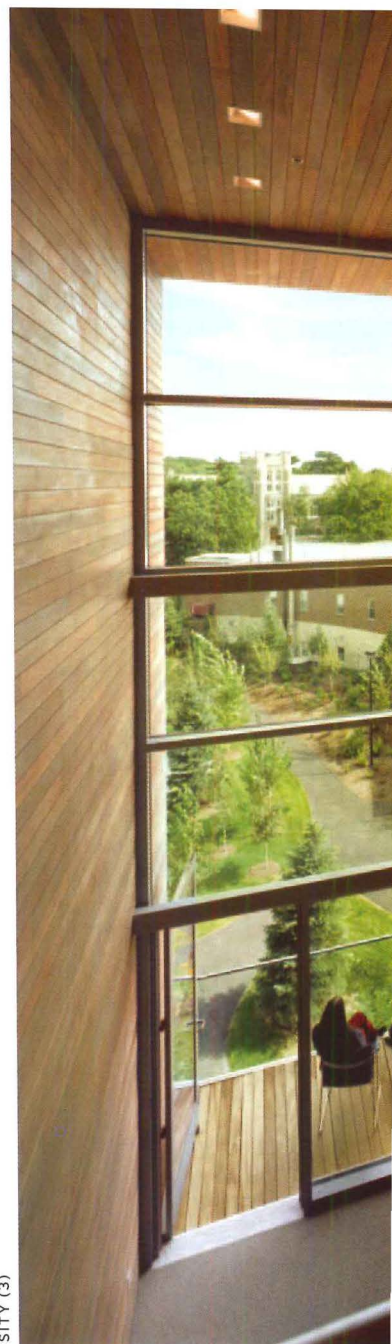
perature. Perhaps in part due to that history, SOM’s contribution seems less integral than Kahn’s, as if the architecture only needed to wrap around a technically overdetermined whole.

Because of the interior programming, the domain of architecture was pushed farther and farther out until everything jammed into a single surface. It’s not that the building doesn’t achieve its intentions – the wood and brick lend a sensitive touch. Yet, the north and west brick facades feel as if they belong to another structure. They refer to a sort of generic “Harvard brick building,” while at the same time they demonstrate their nonstructural role with syncopated fenestration. Ultimately, the gesture is neither contextual nor tectonic. On the opposite facade, SOM’s desire to express “human” materials led to placing wood beneath glass – a seemingly elegant solution that actually required a complex system of venting so the wood wouldn’t be damaged under heat stresses – showing that even small gestures were subject to severe technical demands. On both sides, Modernism’s lucid simplicity, which was conceived partly as the rejection of ornament, acts as a front (quite literally) for the complex and inscrutable contingencies of modern science.

In this way, the building begins to express the bind of architecture in the present. Hartman continually stated a desire for the building to reflect its own time, as most of the structures at Harvard have done. His achievement may not have the power and clarity seen in the works of nearby “masters,” but the complexity of our moment precludes such heroics. Hartman’s architectural decisions – weaving the building into its surroundings, creating space for collaboration – are hard-won victories in this context. Modern lab buildings are not so much works of architecture as they are machines. ■

To comment on this project and rate it, go to architecturalrecord.com/projects.

PHOTOGRAPHY: © ANTON GRASSL/ESTO (2, 4); COURTESY HARVARD UNIVERSITY (3)





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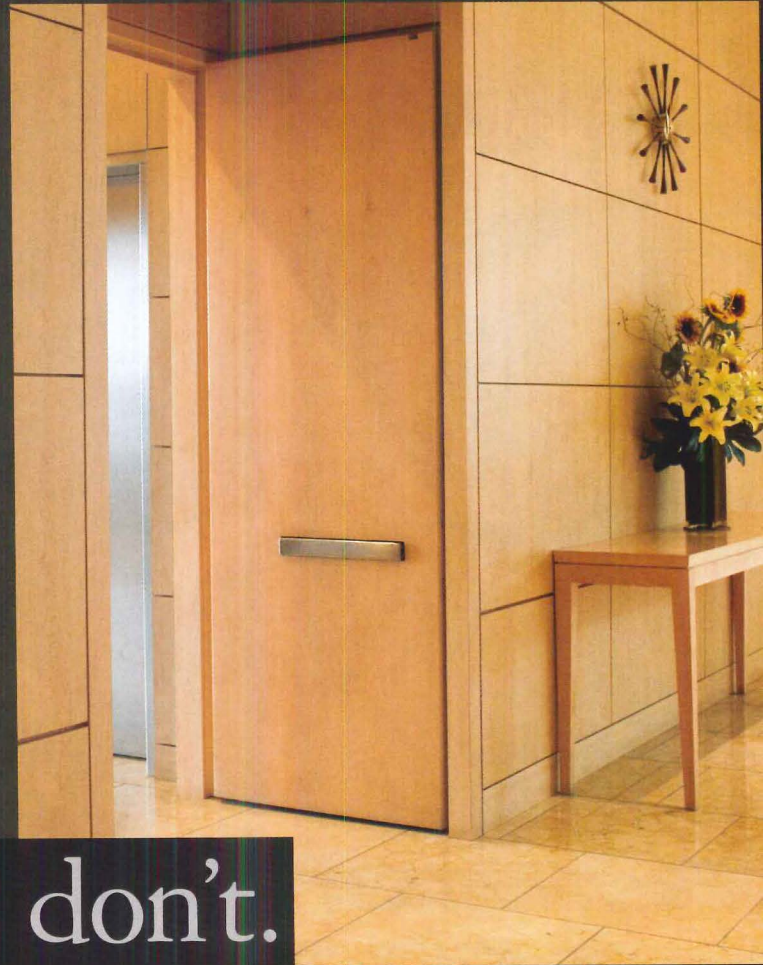
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1. As seen looking east through a double-height "living room," spaces were designed to be flexible and open to the outside.
2. The interior staircase of the "Hub" turns circulation space into a dramatic social collector.
3. The underground event space is lit from above by twelve large skylights and surrounded on three sides by lecture rooms.
4. A view down the laboratory corridor shows the flexibility and repetitious nature of the space. The left wall is directly connected to the mechanical spine that runs through the center of the structure.

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Into Thin Air

While most structures are firmly rooted in the ground, some seem to float through the skies

By Josephine Minutillo



Continuing Education

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/AIA Continuing Education article. To earn one AIA learning unit, including one hour of health, safety, and welfare (HSW) credit, turn to page 128 and follow the instructions. Other opportunities to receive AIA/CES credit begin on page 131.

Learning Objectives

1. Identify building materials used for lightweight construction.
2. Explain the advantages of using prefabricated components.
3. Discuss the challenges involved in designing temporary structures.
4. Discuss innovative uses of glass and acrylic.

LONG GONE ARE THE DAYS when bricks and mortar were the building materials of choice. The solid, imposing structures they produced have given way to lightweight, light-filled assemblies that, whether temporary or not, convey an ephemeral quality as they look to the skies or tread ever so gently on the earth.

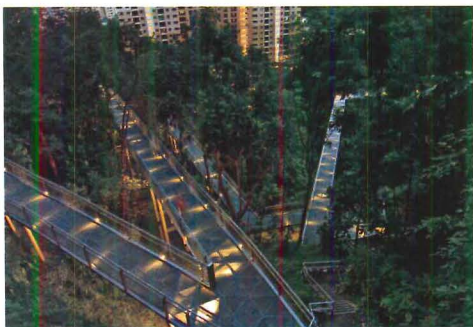
One such ethereal project in Singapore meanders through the treetops while leaving as light a footprint as possible on the ground below. Designed by Singapore-based LOOK Architects following an international competition, the project consists of a pedestrian bridge spanning the busy Alexandra Road along the island's southern coast and a zigzagging elevated walkway inside the densely wooded Telok Blangah Hill Park, an area formerly inaccessible to the public.

Completed in 2008, the project, initiated by Singapore's Urban Redevelopment Authority (URA), creates a continuous pedestrian access in this residential area, where high-rise apartment buildings and colonial houses border lush forests.

"Singapore is a very dense Asian city," explains Look Boon Gee, cofounder of LOOK Architects, "But there has been a concerted effort by the government to balance development and nature to preserve the natural heritage."

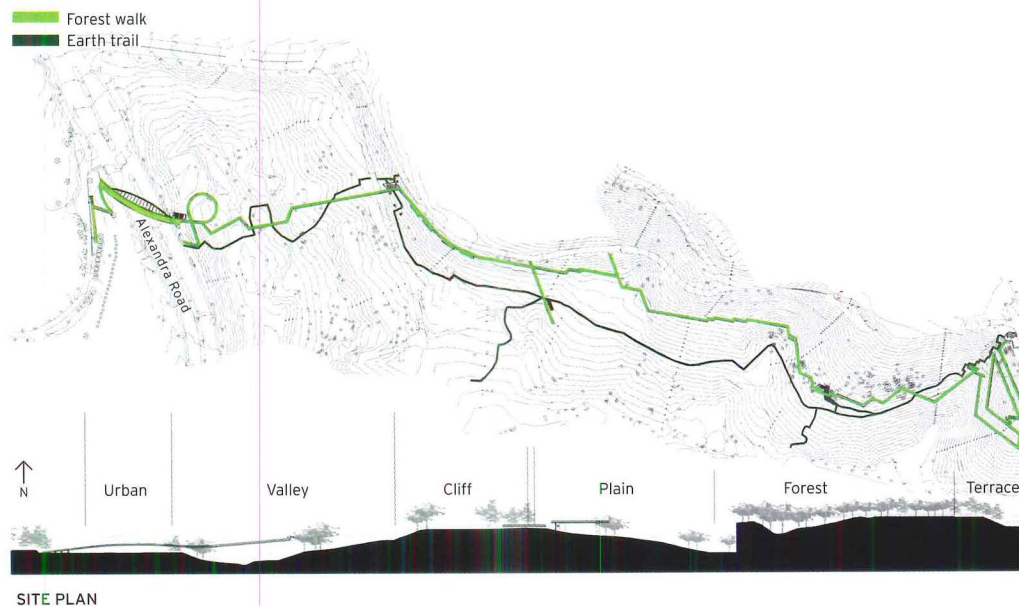
LOOK's park intervention – called Forest Walk – literally goes out of its way to prevent any destruction of its natural setting, snaking around trees to avoid tearing them down. At the same time, it takes advantage of the unique experience of walking through a tree canopy, with up-close views of the wildlife and vegetation, and lookout points to take in the harbor views in the distance.

The designers also exploit the meandering path to maintain a 1:12 gradient, making Forest Walk accessible to wheelchair-bound visitors and children in strollers. (Stairways along the path lead to the earth trail below, laid out in conjunction with the elevated walkway overhead.) As it progresses along its nearly mile-long expanse, the walk rises more than 200 feet from its starting point at the Alexandra Arch Bridge – which LOOK designed as



Forest Walk's 6.5-foot-wide deck meanders through the tree canopy for a close glimpse of wildlife and vegetation (above). Supported on stiltlike columns,

Forest Walk rises 200 feet over the course of its nearly mile-long path within the Telok Blangah Hill Park along Singapore's southern coast (right).





a sweeping gateway into this sanctuary of calm repose. Forest Walk begins by traversing a low valley, and at certain points it reaches nearly 60 feet above grade. The walkway is hoisted into the air by steel columns measuring 8 inches in diameter at these extreme heights. For most of the walkway, where it rises only 20 to 25 feet off the ground, the columns average 6 inches in diameter.

The 6.5-foot-wide deck is composed of a triangulated grating held together by steel beams. The design for the grating was inspired by the triangle-shaped leaves of the local Mile-a-Minute plant, its clinging vine prominent throughout the site. While the shape refers deliberately to nature, the rigid, tessellated deck that resulted provides added stability and slip-resistance.

Additional stabilizers come in the form of steel rod cross bracing between facing columns. The design did not have to conform to seismic

regulations, and Gee admits that if it had, the stilt-like columns would be much bigger.

To facilitate construction and minimize disturbance to the site, the entire assembly was designed as a kit-of-parts, with the columns, railings, gratings, and shelters all prefabricated off-site. On-site work was limited to the pouring of the concrete footings (which are reinforced with micropiles), a long, arduous process due to the undulating topography and dense plantings of ferns, orchids, and other native plants.

The translucent deck allows sunlight to pass through to the earth floor and foliage below. The galvanized-steel-mesh railings also transmit light, as well as rainwater, and make the overall structure appear to float through the trees à la *Swiss Family Robinson*. "Even though this is a man-made structure," Gee explains, "we wanted to maintain an immediate connection to the surroundings."

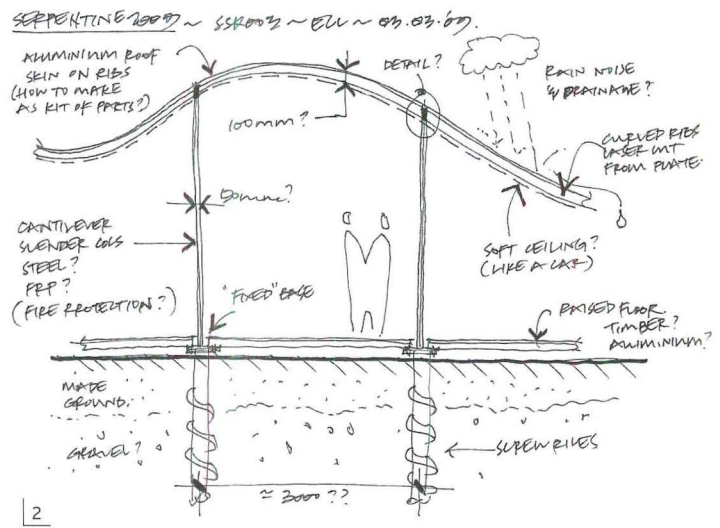
The Forest Walk is a popular nighttime destination. Its translucent deck is lit from below to create a luminous trail (above).

The walkway zigzags at the path's steepest points to maintain a 1:12 gradient accessible to wheelchairs and strollers (below).





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1. For the Serpentine Pavilion, SANAA insisted on mirror-polished aluminum for both the underside and top of the roof. The serene park reflections contrast with the animated character created when the space is filled with visitors.
2. An early concept sketch illustrates the basic structure.
3. The pavilion spreads out over 6,000 square feet inside London's Kensington Gardens.

The Forest Walk, which is open to the public at all hours, has become an especially popular destination in the evenings, when its translucent deck transforms into a luminous trail suspended in the dark night sky.

A cloud over London

In what has become a tradition for the Serpentine Gallery, this summer witnessed the construction of the ninth Serpentine Pavilion in London's Kensington Gardens. The design for the temporary structure is awarded to an internationally renowned architect who has not yet built in the U.K. Ryue Nishizawa and Kazuyo Sejima of the Japanese firm SANAA got the call this year.

That the call came in early February, just five months before the pavilion was to be erected on the gallery's nearby lawn, meant that the Tokyo-based SANAA and engineering firm SAPS,

collaborating with London-based Arup, had to work fast to design, fabricate, and assemble a structure that would contain spaces for a café and an auditorium where performances, talks, film screenings, and poetry readings are presented from July through October.

Given the packed program of events and London's inclement weather, SANAA quickly abandoned its initial idea not to make architecture at all. But the architects' desire to keep the structure as ethereal as possible led to a design that essentially consisted of a very thin, very shiny roof on lots of little sticks.

"SANAA wanted the roof to be 1/2 inch thick; We were aiming for 2 inches," says Ed Clark, Arup's project director. "They got closer to their target than we did." But although SANAA's vision included a solid aluminum roof, that presented countless practical challenges, especially when

it came time to dismantle the structure. The final roof section – composed of a 3/4-inch-thick birch plywood core sandwiched between ultrathin layers of mirror-polished aluminum – came in at just under an inch.

In plan, the amoebalike shape covers 6,000 square feet – "drifting freely between the trees like smoke," according to the architects. But in order to support such a thin surface over an area that large, the designers had to engage in a technically complex exercise for the seemingly simple design.

"We were building endless physical models in Tokyo while the London team was doing computer analysis," recalls Sam Chermayeff, who was SANAA's project architect, along with Lucy Winter Styles. In its final form, the roof structure reaches as high as 11 1/2 feet and dips down as low as 3 feet to reveal to visitors the identical upper surface. Arup used GSA, its own in-house software, to

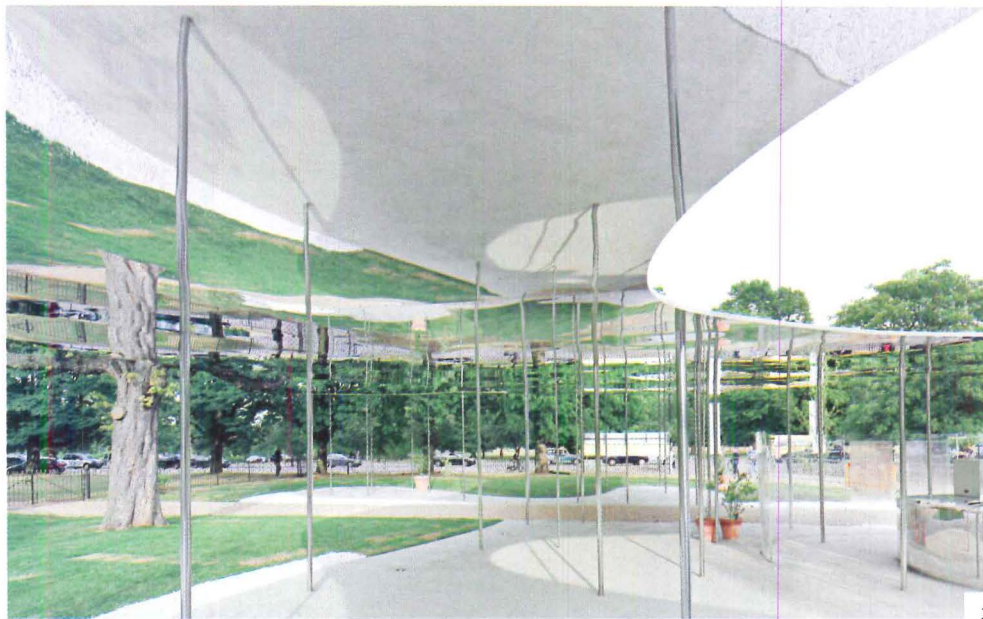
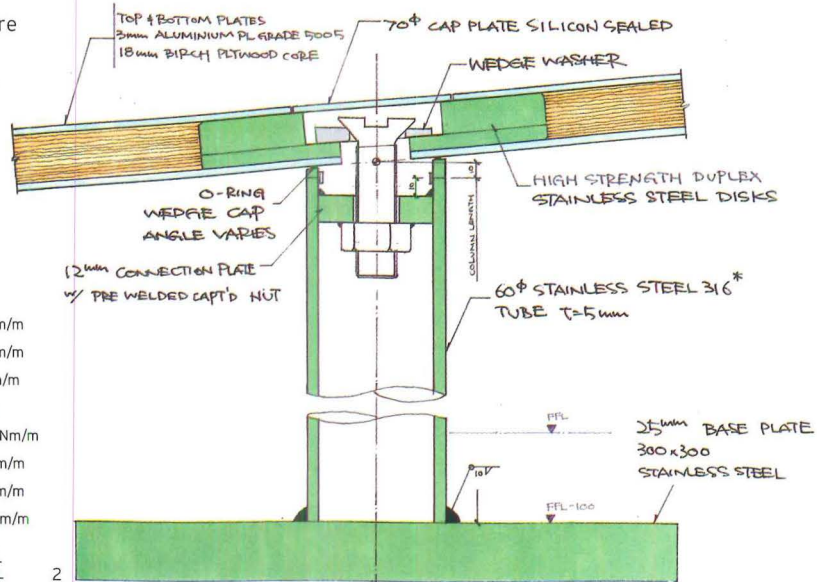
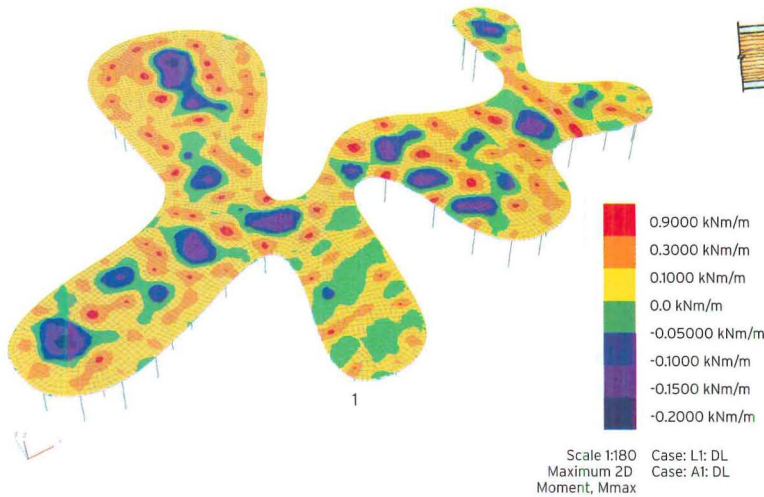


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1. Arup employed advanced analysis software to predict roof deflection and determine placement columns.
2. The design team created a custom aluminum construction that could be quickly fabricated and easily dismantled and reassembled.
3. The roof rests on 112 steel columns, a combination of 2.36-inch-diameter hollow tubes and 1.57-inch-diameter solid rods.

analyze the roof's bending moment. The firm also took advantage of Cecil Balmond's Advanced Geometry Unit (AGU) to manipulate the contour lines of the curving, undulant roof.

Resolving the roof's ultimate form went hand-in-hand with determining the size, number, and arrangement of the columns needed to support it. In the end, two column types were specified. Roughly three quarters of the 112 vertical supports are 2.36-inch-diameter hollow steel tubes. The remaining columns, located in areas that are not as heavily loaded, are 1.57-inch-diameter solid steel rods. Cost issues, time constraints, and limited availability prevented the design team from further minimizing the already super-slender column dimensions. On the other hand, according to Clark, "The differing diameters add variety and richness to the forest of columns."

The columns are anchored 6.5 feet into

the ground with screw piles, which, while good at transferring loads, also minimize the amount of concrete and excavation required, and can be easily disassembled by unscrewing them – an advantage for temporary structures. (This year's pavilion has been bought by a private collector.)

Stainless-steel discs within the composite aluminum structure stabilize the connections between the columns and the roof. Aluminum

"WE WANTED THE PAVILION TO LOOK AS THOUGH IT WAS FLOATING."

cap plates conceal the joints, creating a smooth, seamless surface. The construction team used a micrometer-controlled countersinking tool – typically reserved for aircraft fuselages – to get the finish as flush as possible. While the roof ap-

pears to be a continuous surface, it is made up of 10-foot-tall-by-5-foot-wide panels whose tongued plywood edges interlock with adjacent panels like a jigsaw puzzle. "If you're not pushing boundaries, you're not doing your job," Clark admits. "We essentially developed a new, custom roof system in five months."

According to Chermayeff, "We wanted the pavilion to look as though it was floating, as if sometimes it was there, and sometimes not. There is no strong line between it and the park." To that end, the architects "stirred up the borders," as Chermayeff puts it. The curves that define the 4-inch-thick concrete floor do not follow those of the roof above it. To create the required sheltered areas, SANAA used highly transparent, curving acrylic panels similar to the ones they employed for the interiors of New York's Derek Lam Shop [RECORD, September 2009, page 78].

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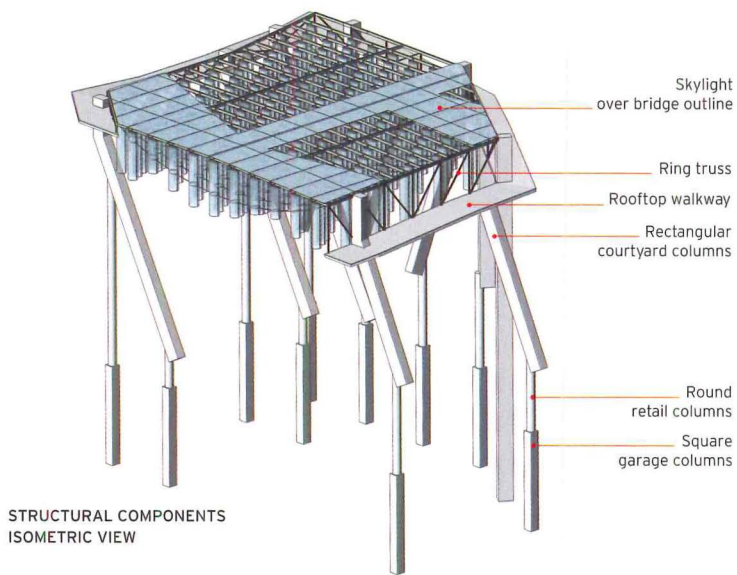
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Architect: SRG Partnership, Inc. • Seattle, Washington Photographer: Spike Mafford Photography

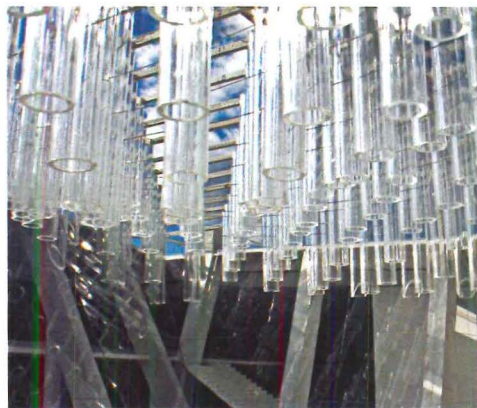
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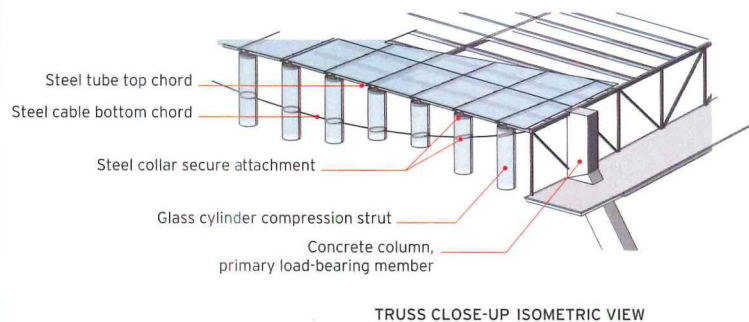
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STRUCTURAL COMPONENTS ISOMETRIC VIEW



Isometric views of the roof structure in EOMA's mixed-use project detail its various components (top left and bottom right). The innovative glass roof brings light deep into the courtyard and retail spaces (top right). The 196 glass rods vary in length (left).



TRUSS CLOSE-UP ISOMETRIC VIEW

The bending and spiraling form of these panels, too, do not conform to the curving roof lines above, or the concrete floor below. "We did not want to create a sense of enclosure," explains Chermayeff. "There are no doors. The panels are only there to provide some protection against the wind and rain."

The 1-inch-thick panels are buried 1 foot below grade, cantilevering more than 8 feet out from the ground. The panels do not touch the roof, acting completely independently of it. As the roof rises from the ground, the panels' own curving shape maintains the required stiffness, allowing it to support itself.

California dreaming

While SANAA's Serpentine Pavilion uses a forest of thin steel rods to support a cloudlike roof, a project by Eric Owen Moss Architects (EOMA) turns

the roof itself into a forest of rods. In this case, however, the rods are laminated glass cylinders.

EOMA developed the roof concept five years ago for its competition entry to enclose the Robert and Arlene Kogod Courtyard at the Smithsonian Institution Patent Office Building in Washington, D.C. – a project eventually awarded to, and completed by Foster + Partners [RECORD, March 2008, page 98].

"The competition asked for an innovative roof that pursued a different conception of glass," recalls Moss. "Glass is an ethereal material that isn't really there. I wanted to juxtapose something ethereal with a supporting structure. That was the center of the exploration, to test the limits of what glass could do."

Moss's ethereal exploration found new life when a developer wanted to pursue it for a mixed-use structure in Culver City, California, a

former industrial area now populated by media, entertainment, and production companies. The project, which was recently approved for construction by the city's planning department, features five levels of parking for 800 vehicles (three underground and two above ground) and 50,000 square feet of retail space positioned on three floors around an open courtyard.

The courtyard is topped by a dense vertical field of glass rods that offers a constantly changing vision of light and sky through an expanse of shimmering glass. The glass walls of the courtyard incline to maximize sunlight to the retail spaces.

But EOMA's design, developed in its various incarnations using CATIA software, goes beyond a conventional glass skylight to incorporate acoustical and structural properties. Sound is diffused within the array of 196 rods, which vary

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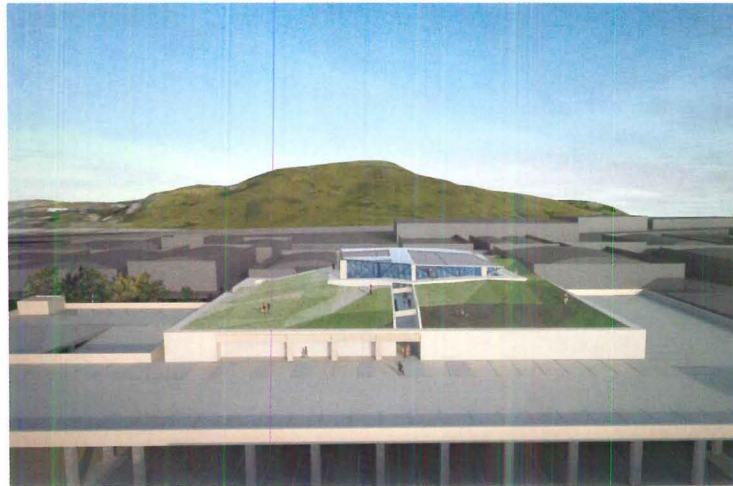


in length from 6 to 14 feet. Plugged cylinders act to reflect sound. (Moss and the developer anticipate musical performances in the courtyard.)

The long-span structural system used throughout the rest of the building is interrupted by the walls of the courtyard. Its innovative, composite roof features structural glass trusses spanning east-west between five steel trusses. The steel trusses are supported by 10 canted, rectangular columns positioned around the court walls. A horizontal glass skylight over the structural members partially encloses the court and provides weather protection for the walkways and stairs located beneath it. A green roof will cover the third-floor retail area surrounding the courtyard enclosure.

The glass truss is an unprecedented composite assembly combining a hollow-steel-tube top chord, a 5/8-inch-diameter stainless-steel-cable bottom chord that forms a catenary curve, and vertical members consisting of the laminated glass rods acting in compression within the truss.

The cylinders themselves, specified with 1/2-inch-thick structural glass, are attached by



The courtyard's glass roof rises from the green roof around it.

Though prototypes of the cylinders, which are planned to be 2 feet in diameter, have been made, EOMA is currently investigating glass fabricators in several countries that would produce the structural glass on a large scale.

"While the glass

is a pin connection to the steel tube, or top chord, above them. A stainless-steel collar wraps around the inside of the cylinder at the location where the cable passes through it. Two methods for attaching the collar to the cylinder were explored. A simple bolted application is one option. An alternative method is to secure the attachment through a direct lamination between the steel and glass.

roof does all of these things – technically, structurally, acoustically – none are immediately intelligible as objectives," explains Moss. "It obviates the meaning of structure and is, instead, an experience of space." ■ (CEU Questionnaire on page 128)

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 - A avoid trees
 - B provide lookout points
 - C maintain a 1:12 gradient
 - D all of the above
- 2 **Forest Walk's deck rests on which of the following?**
 - A steel beams
 - B circular steel columns
 - C concrete footings
 - D all of the above
- 3 **Which of the following does not provide reinforcement in Forest Walk's structure?**
 - A galvanized-steel railings
 - B triangulated deck
 - C micropiles
 - D steel rod cross bracing
- 4 **How high does the Forest Walk rise in elevation over its course?**
 - A 20 to 25 feet
 - B 60 feet
 - C 200 feet
 - D nearly 1 mile
- 5 **Which of the Serpentine Pavilion's column types supports more load?**
 - A the hollow steel tubes
 - B the composite aluminum section
 - C the solid steel rods
 - D none of the above
- 6 **Which element of the Serpentine Pavilion interlocks with adjacent members?**
 - A the aluminum roof surface
 - B the screw piles
 - C the individual roof panels
 - D the concrete floor
- 7 **Which of the Serpentine Pavilion's elements is the thinnest?**
 - A the hollow-steel-tube columns
 - B the solid-steel columns
 - C the roof
 - D the concrete slab
- 8 **Which of the following provides support for the Serpentine Pavilion's 8-foot-tall acrylic panels?**
 - A its vertical cantilever
 - B its own curving shape
 - C its connection to the roof
 - D both A and B
- 9 **In the Culver City project, the bottom chord of the glass truss takes which form?**
 - A a straight line
 - B a catenary curve
 - C a round arch
 - D none of the above
- 10 **In the Culver City project, which truss element acts in compression?**
 - A the steel-tube top chord
 - B the steel-cable bottom chord
 - C the steel collar
 - D the glass cylinder

Program title
 "Into Thin Air,"
 ARCHITECTURAL RECORD
 11/09, page 118

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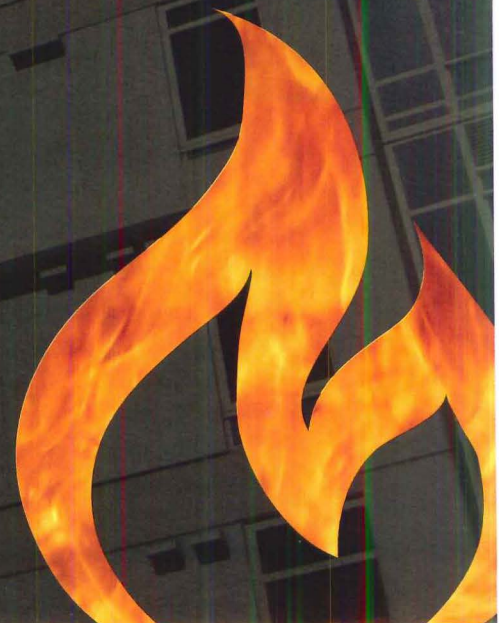
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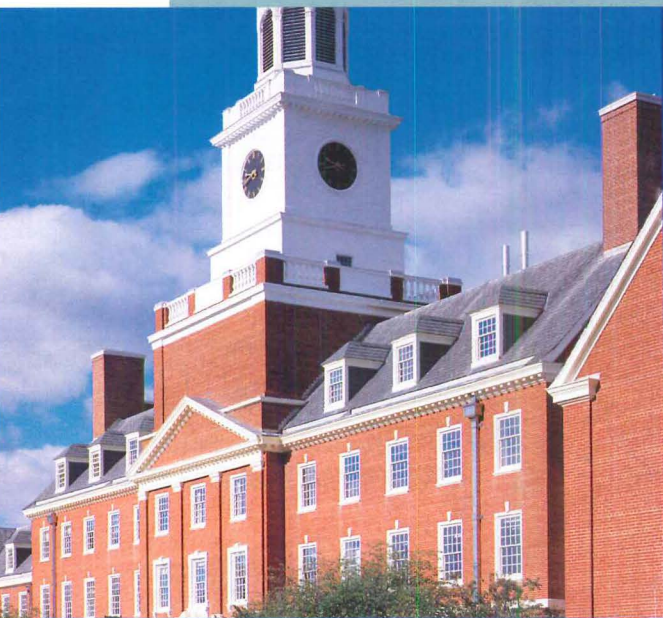
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Window Replacement Solutions for Commercial and Institutional Buildings

133-137

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- Apply sustainable design principles to building living habitats as well as to provide water conservation in vertical, horizontal and planted installations.
- Discuss the selection of a wall coating system based on its performance, embodied energy and sustainable properties.
- Describe an exterior LED optical system that controls glare, saves energy and can be applied to dark sky planning codes.
- Apply product attributes to provide an opportunity for daylight harvesting, durability and safety in glass flooring.



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Renovating an Historic Structure for LEED Platinum Certification

151-155

How some key decisions made in the Portland AIA's new headquarters were geared toward sustainability.

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- Describe innovative measures for managing ventilation and heating/cooling costs.
- Explain key steps to repurpose an historic structure into a LEED-accredited facility.
- Identify best practices for using windows to enhance natural lighting.
- Evaluate if a rainwater runoff system is appropriate for a project.



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Luxury in the Kitchen

139-143

Style Meets Performance in Next Generation Appliances.

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- Discuss the latest trends in residential refrigeration.
- Identify high-performance characteristics of modular refrigeration.
- Compare the benefits of three cooking technologies.
- Explain the technologies involved in speedcooking.



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Design Alternatives to the Enclosed Elevator Lobby: Fire and Smoke Safety Solutions

145-149

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- Explain the building code requirements for fire and smoke containment at the elevator shaft.
- Describe the enclosed elevator lobby solution mandated by the IBC.
- Compare and contrast available alternatives to the traditional enclosed elevator lobby solution.
- Describe unique fire and smoke code requirements and solutions for areas of refuge, countertop enclosures, healthcare facilities, and prisons.



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Strategies for More Sustainable Exterior Solutions

157-166

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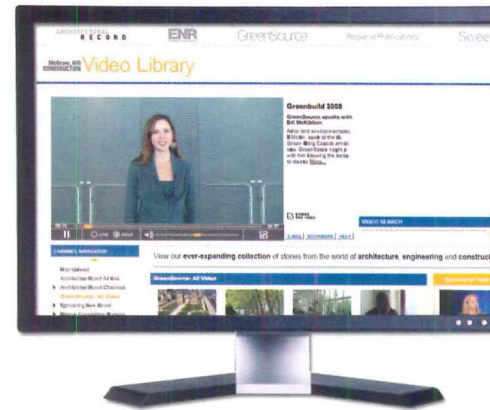
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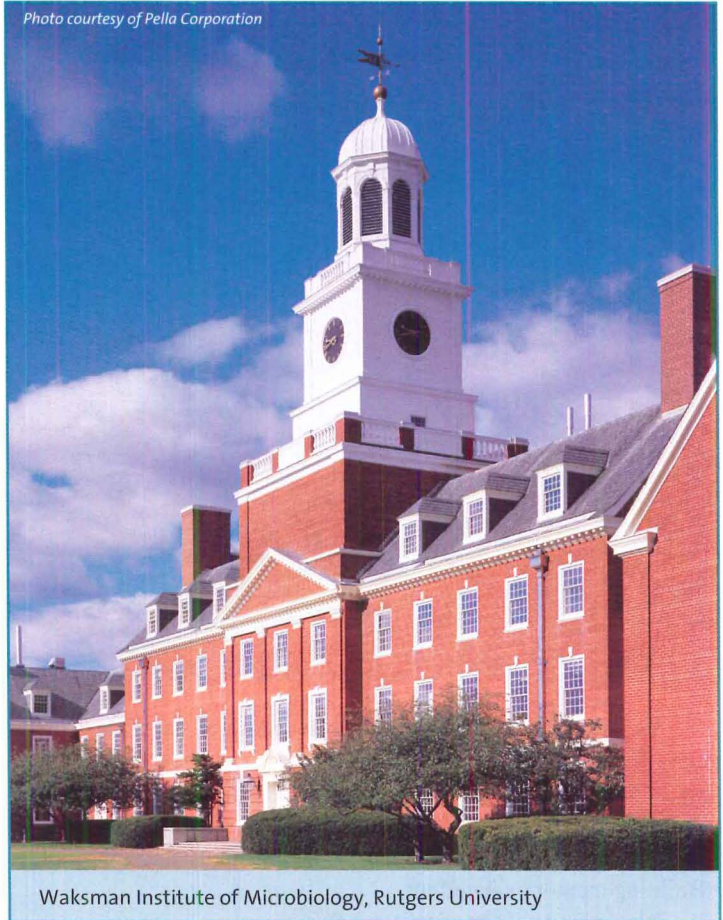
By Peter J. Arsenaault, AIA, NCARB, LEED-AP

OVERVIEW

We often think of building projects as new construction. However, the reality is that in any given year, there are typically more building renovation and rehabilitation projects undertaken by owners than there are new construction projects. Only a relatively small percentage of these existing building projects fall in the category of “historic” with the associated public programs and design restrictions that go along with that designation. The majority are motivated by changing owner needs, energy concerns, maintenance considerations, and general modernization or upgrade requirements. In all of these cases, windows are often a topic of interest and concern. Should they be replaced or can they be repaired? If they are replaced, what are the options? Which option is best for a particular situation? Understanding how to answer these questions gives architects the ability to work with their clients to make informed decisions and improve the overall outcome of projects.

WHAT DETERMINES THE HISTORIC SIGNIFICANCE OF BUILDINGS?

The usual first question to ask regarding an existing building of some age and character is whether or not it has been listed by the U.S. Department of the Interior or the State Historic Preservation



CONTINUING EDUCATION



Use the learning objectives below to focus your study as you read **Window Replacement Solutions for Commercial and Institutional Buildings**. To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit, answer the questions on page 137, then follow the reporting instructions or go to ce.ArchitecturalRecord.com and follow the reporting instructions.

Learning Objectives

After reading this article, you should be able to:

- Define the historic significance of existing windows in buildings.
- Differentiate between different historic standards & guidelines for window rehabilitation.
- Design a window rehabilitation plan for buildings.
- Evaluate window replacement options for existing commercial and institutional buildings.

Office (SHPO). Individual buildings can be listed as a certified Historic Structure on the National Register of Historic Places and be subject to rehabilitation standards and guidelines issued by the US Secretary of the Interior and administered by the US National Park Service (NPS). However, even if a building isn't yet listed, the fact that it is eligible may suggest compliance with the standards if the owner would like to eventually see it listed. Further, a building located in a *registered historic district* & certified by the NPS as contributing to the historic significance of that district will also be subject to applicable provisions of the standards. The incentive for the owner to comply with these standards comes most often in the form of Federal income tax credits of 10 – 20% on rehabilitation work done to the buildings. Eligibility of these tax credits will be subject to a NPS or SHPO review and certification process to demonstrate compliance with the standards.



Beyond the previously mentioned scenarios, buildings can be determined to be “non historic” and, if they were built before 1936, may still be eligible for a 10% tax credit provided they meet the following criteria:

- Building cannot be listed in:
 - National Register of Historic Places
 - National Register listed historic district
 - Certified State or local historic district
- Must be rehabilitated for non-residential use

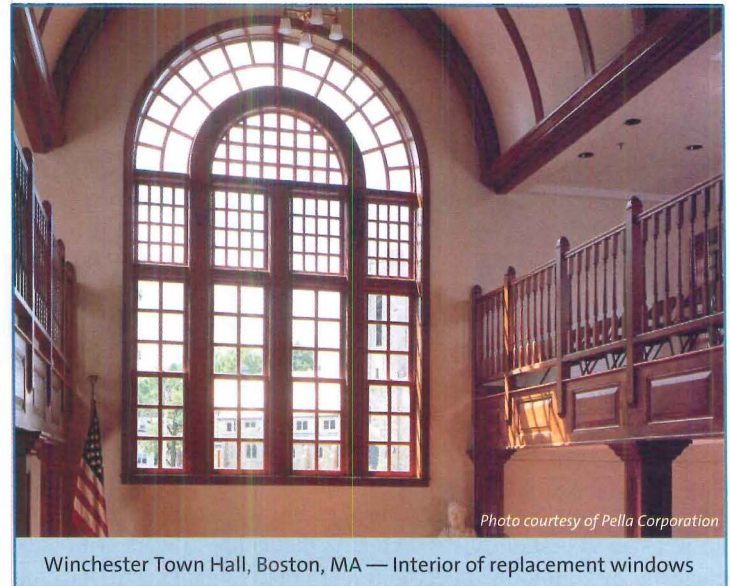
Under this scenario, there is no formal review process by National Park Service.

For all other buildings, and the most common scenario involving window replacement, renovations or rehabilitation work is simply undertaken as a building project with the following characteristics:

- No tax credits are being pursued or they are not applicable
- The building is not subject to review by NPS or SHPO
- The architect and owner review and select the best option available for window related work.

WINDOW REHABILITATION GUIDELINES AND PLANNING

Looking more specifically at windows as historic features, they are usually considered significant when they are original to the building. However, they can also be important if they were changed within a time period of significance, if they demonstrate exceptional craftsmanship or design, or if they contribute notably to the historic character of the property. Hence, windows will need to be looked at under these criteria to determine whether repair or replacement is the preferred option. In making that assessment, the basic options include the following:



- Identify / Retain / Preserve – following a field survey and identification of the existing windows, the first option to consider is whether or not some or all of the windows will be retained and preserved with little or no additional work.
- Protect and Maintain – some windows may require some basic attention at the maintenance level in order to protect them from deterioration and remain fully functional.
- Repair – other windows may have broken pieces or elements that require functional repair of that damage. Repairs should always be carried out with the intention of matching the existing elements as closely as possible or practical for general aesthetic and operational needs in addition to any historic concerns.
- Replace – when none of the above are truly feasible, then the windows need to be considered for replacement. In doing so, using the following criteria can be useful since any one of them may be appropriate justification to replace rather than repair a window:
 - Deterioration is too severe to effectively repair – i.e. the existing elements of the windows are not in tact enough to assure that the repairs will be long lasting.
 - The historic character of the buildings is not based on the windows hence, their replacement will not detract from that character.
 - Cost of repair vs. replacement – labor intensive repairs may cost considerably more than a purchased replacement window



Photo courtesy of Pella Corporation

Window deterioration

while the replacement may perform much better over the life of the building.

- Ease of operation for operable windows or adding operability to non-opening windows is important to indoor air quality in buildings and user satisfaction.
- Hazard abatement including lead based paint or asbestos based material is more appropriately performed by removing and replacing the entire window rather than just the subject materials.

Replacing windows or adding new windows to an existing building may also be appropriate for the following reasons:

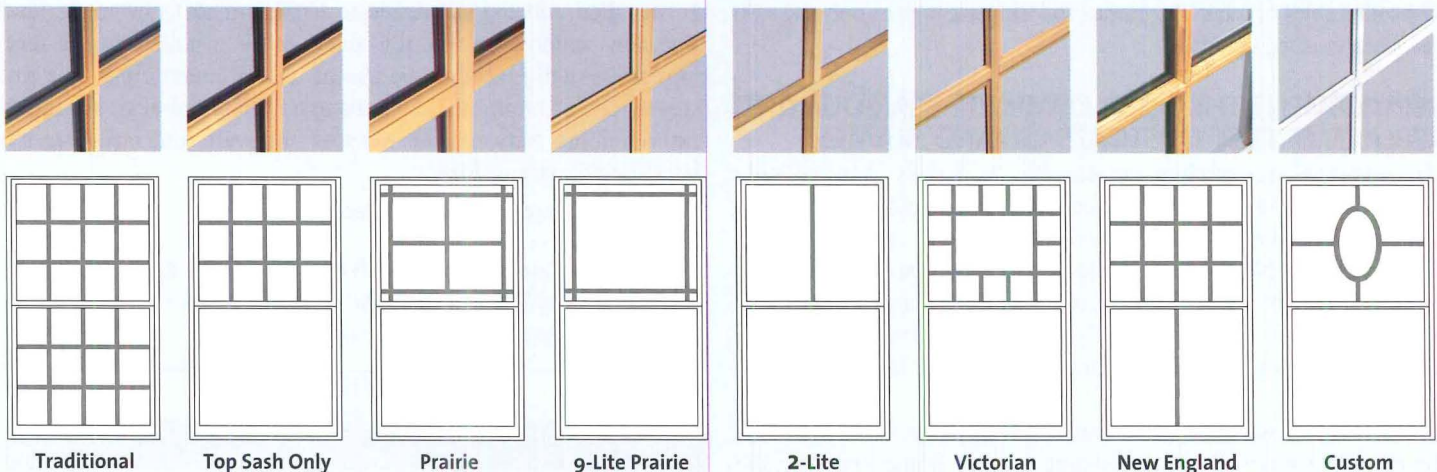
- Design for Missing Historic Features: windows that have been previously removed, filled in, or deteriorated inconsistently in a building need to be addressed. The best approach is usually to provide new replacement windows that match as closely as possible the existing windows in the rest of the building.
- Alterations/Additions to Historic Buildings: a legitimate alteration or addition to an older or historic building is allowable under the Rehabilitation Guidelines but the style may or may not be an issue. In most cases it is preferred that any building additions or substantive alterations are compatible in style with the existing but can clearly be discerned as constructed at a different time. Hence the preference in this case will be to have new windows that do NOT match exactly, but are aesthetically compatible instead.

- Energy Retrofitting: meeting contemporary energy needs is an increasingly common reason to replace windows. This applies to the glass and window unit as much as to the cavities around the windows to increase overall R-values and decrease air infiltration. Some of the energy improvements may be visible, while many, such as insulating around window frames and adjacent wall cavities, may not be.
- Health and Safety Code requirements: Changes in codes may dictate changes in the windows to comply with provisions not in effect when the existing windows were installed. Further, once a building is substantially renovated beyond a certain level or if the occupancy changes, the entire building may no longer be “grandfathered” and will need to be made fully compliant with all current code provisions, including window requirements.

WINDOW REPLACEMENT DESIGN ISSUES

Once the decision is made to replace rather than pursue repair of the windows, then some fundamental design decisions need to be considered.

- Pattern and Size: The pattern and size of openings are the most visible aspect of the windows. Generally, keeping the same pattern of openings is seen as desirable, but there may be reasons to change the sizes to be either larger or smaller. Conversely, there may be reasons to consider keeping the size identical in all respects to the existing.
- Type: Window type is a fundamental choice. The decision to keep the same style as existing or change to another such as double hung, single hung, casement, awning, fixed or other types best suited to the rehabilitated building need to be determined.
- Materials: Window unit materials for commercial and institutional buildings include not only aluminum and other metals, but increasingly wood, aluminum clad wood, fiberglass, or all vinyl windows are being used based on the preferred characteristics of those materials.
- Proportions: Window proportions of the overall window unit and the individual components such as frame & sash determine a great deal of the look and aesthetic of the windows in the building, both inside and out.



Common Muntin profiles and patterns

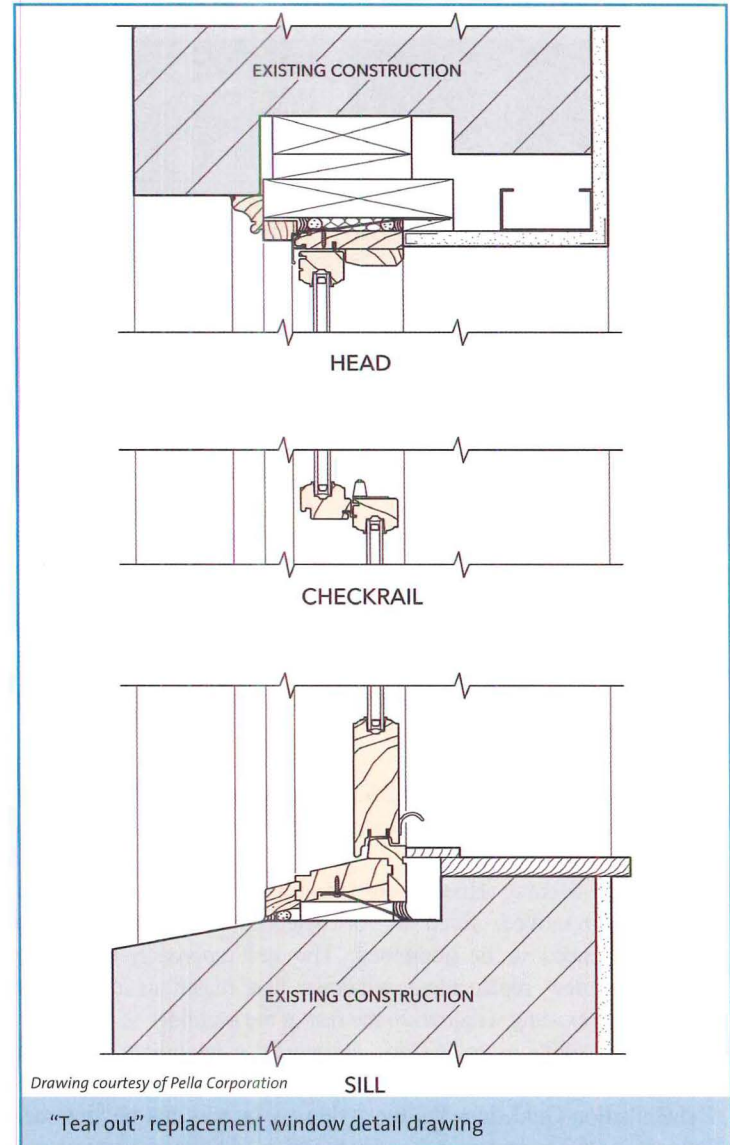
- **Muntins:** Muntin patterns & profiles vary notably as does the rationale to include them or not as part of the design. Historical considerations or general design appearance may require them, but energy concerns may seek to minimize them. Many window manufacturers offer choices that include muntins placed over both sides of double glazing with spacers between the glass to simulate historic profiles yet minimize the interruptions in the glass and potential air and water leakage points.
- **Structure:** Structural performance of the window units, including wind and storm resistance, may influence the selection of window type, materials, and size of units.
- **Trim:** Exterior & interior trim can, in many cases, be saved and re-used, even if the rest of the window unit is being replaced. When the exterior trim is beyond repair, a wide variety of new trim solutions are available.
- **Glazing:** Glass type needs to be considered not just related to the layers of glazing, but to the color, tint, reflectance and other properties. Similarly the strength and code requirements may dictate the use of glass that is tempered, laminated, or with other properties.
- **Operation:** Ease of operation of the window unit by building occupants can be a determining factor in replacement window selection, particularly in larger window units.
- **Noise:** Acoustic control in urban or airport locations will often be a factor suggesting that tight sealing and perhaps inoperable windows may be preferred in certain cases.
- **Energy:** Energy efficiency applies to the entire window unit, not just the R-value of the glass. In reviewing manufacturers' technical information on windows, look for the overall tested energy ratings and compare the results among manufactured units to be sure the specified units will meet the intended performance criteria.
- **Budget:** The overall budget needs to take into account the labor costs to install the replacement window, not just the cost of the materials. Just as some manufactured window units can be more expensive than others, some installation methods can also vary the cost. Replacement window systems that allow for installation from inside the building eliminate the need for lifts and equipment on the exterior, thus saving money on the installation.

Using the above as a basis, then the first fundamental decision to reach is whether to undertake complete tear outs of the existing window sash and frames or retain the frames and trim and replace only the sash inside the existing opening.

REPLACEMENT THROUGH COMPLETE TEAR-OUT AND REPLACEMENT OF EXISTING SASH AND FRAMES

This approach to window replacement is usually selected only when it is deemed necessary to meet historic, aesthetic or functional considerations since it can involve considerably more labor and time to achieve. Nonetheless, if the existing frame and trim impedes the achievement of other criteria, such as energy efficiency or maintenance, or if the only way to restore the historic appearance is to replace the window frame and/or trim, then it is a logical choice.

The process for implementing this approach will begin with the complete removal of the existing sash & frame exposing the



exterior wall system. The rough opening will need to have any incidental items such as abandoned fasteners or flashing removed and where appropriate, new insulation installed in exposed cavities. From there, new treated blocking at the head and jambs can be installed and the sill needs to be shimmed to be made level. The new window unit is now ready to be installed and fastened in place, usually through the use of retrofit metal clips. The final steps include shimming the jambs to assure plumbness, sealing the exterior joints between the window and wall, and installing new interior and exterior trim.

Continues at ce.ArchitecturalRecord.com.

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Program title: **“Window Replacement Solutions for Commercial and Institutional Buildings”** (11/09, page 133). AIA/CES Credit: This article will earn you one AIA/CES LU hour of health, safety, and welfare (HSW) credit. (Valid for credit through November 2011). **Directions:** Refer to the Learning Objectives for this program. Select one answer for each question in the exam and fill in the box by the appropriate letter. A minimum score of 80% is required to earn credit. **To take this test online and avoid handling charge, go to ce.ArchitecturalRecord.com**

1. **Buildings considered historically significant may be eligible for:**
 - a. recognition in local newspapers.
 - b. incentives from window manufacturers.
 - c. Federal income tax credits to the Owner of 10 – 20% of rehabilitation cost.
 - d. None of the above
2. **Justification to replace existing windows might include:**
 - a. severe deterioration.
 - b. cost of repair vs. replacement.
 - c. hazardous material abatement.
 - d. All of the above
3. **The primary reason to undertake energy retrofitting of windows is:**
 - a. to increase window overall R-value and decrease air infiltration.
 - b. to qualify for historic tax credits.
 - c. to reduce water penetration.
 - d. None of the above
4. **The choice of replacement window materials for commercial and institutional buildings include:**
 - a. fiberglass.
 - b. aluminum clad wood.
 - c. metal.
 - d. All of the above
5. **The following is not a consideration in selecting glass for replacement windows:**
 - a. Color
 - b. Tint
 - c. Reflectance
 - d. Frame type

6. **The cost of replacing windows is:**
 - a. only dependant on material cost.
 - b. dependent on both material and installation method which affects labor.
 - c. only dependent on installation method and labor.
 - d. dependent only on the type of building the windows are going into.
7. **Complete tear out and replacement of the window and frame is never a logical choice.**
 - a. True
 - b. False
8. **A “pocket” installation refers to:**
 - a. sliding a replacement window unit into the pocket of the existing opening.
 - b. providing the replacement with only pocket tools.
 - c. using subframes to create a pocket receptor.
 - d. a small window installation.
9. **The Secretary of the Interior Standards allow only window repair, not replacement.**
 - a. True
 - b. False
10. **To qualify for a 10% tax credit, a building must be:**
 - a. a certified historic structure.
 - b. reviewed and approved by the National Park Service.
 - c. non-residential.
 - d. held by the Owner for five years.

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Material resources used: This article addresses issues concerning health and safety.

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The World Green Building Council (WorldGBC) is a union of national Green Building Councils whose mission is to accelerate the transformation of the built environment towards sustainability.

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The WorldGBC provides an international forum and voice for the national Green Building Councils.

We champion proven tools that accelerate market transformation from traditional, inefficient building practices to new generation high-performance buildings while transforming the skills and knowledge of the industry as a whole.

CLIMATE SOLUTION

Green buildings are a necessary component of the strategies adopted by cities and countries worldwide to meet their national and international commitments to reduce carbon emissions and address other environmental impacts.

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November 10, 2009

In conjunction with Greenbuild

Luxury in the Kitchen

Style Meets Performance in Next Generation Appliances

Provided by Thermador

Fueled by interest in nutrition and healthy living as well as the celebrity status of chefs and popularity of lifestyle television programming, cooking has been upgraded from mere preparation of food to a creative and often social activity. As a result, kitchens have taken center stage in the home, combining design and appliances that are sophisticated, convenient, and time saving, and in many instances mirroring the sleek, practical aesthetic of the professional kitchen.

In a new home, the kitchen is often a key selling point. In an existing home it's the space most regularly revamped in order to obtain the latest systems, cabinetry and appliances. According to Oregon-based CNW Research, which has studied U.S. consumer spending for more than a decade, kitchens are at the top of the list in consumer home remodels, and consume more attention, energy, finances and complex decision-making than any other home project.

Consumer expectations for kitchens and appliances are continually evolving. Among the consumer lifestyle trends for 2010



Photo courtesy of Thermador

revealed at this year's International Home + Housewares Show are the Wellness Kitchen, driven by the desire for maximized nutrition and purified air and water, the Green Kitchen, and Cooking for Fun, which recognizes the preferences of cooking enthusiasts.

Manufacturers are meeting heightened awareness and enjoyment of all things culinary with elegant, high tech appliances that enhance the experience and bring gourmet results home. This article will explore new trends and technologies in residential kitchen refrigeration and cooking, focusing on features that offer added flexibility, improved performance, better food safety and environmental responsibility.

MODULAR REFRIGERATION

Introduced in the 1990s, modular refrigeration is a popular trend in residential kitchens. The term modular refrigeration refers to stand alone, independent refrigerated units that are available as fresh food, freezer or wine preservation columns of varying widths, generally between 18 and 36 inches. They provide considerable design flexibility, giving architects the option to forego the often cumbersome refrigerator-freezer combination in favor of two or more refrigeration columns of any size and configuration and serving different functions. The units offer multiple design and installation possibilities, and can be placed wherever they are needed — separately or side by side — for a kitchen customized according to a preferred workflow. Some users, say, may select

CONTINUING EDUCATION



Use the learning objectives below to focus your study as you read *Luxury in the Kitchen: Style Meets Performance in Next Generation Appliances*. To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit, answer the questions on page 143, then follow the reporting instructions or go to ce.ArchitecturalRecord.com and follow the reporting instructions.

Learning Objectives

After reading this article, you should be able to:

- Discuss the latest trends in residential refrigeration.
- Identify high-performance characteristics of modular refrigeration.
- Compare the benefits of three cooking technologies.
- Explain the technologies involved in speedcooking.



a cook's refrigerator for unprepared items near the stove and one closer to dining room for beverages and condiments, while another may want a freezer column containing meats next to the oven and a column for fresh food next to the sink to facilitate vegetable preparation. Refrigeration is moving out of the kitchen too, as consumers opt to place products where they are going to use them — a wine storage unit in a family room or refrigeration in an outdoor entertaining space.

In addition to liberating the kitchen from the hegemony of the monolithic fridge/freezer combination, modular refrigeration has been well received because of the way it looks and performs.

Aesthetics

With the more streamlined look in kitchens, large appliances are following suit, being disguised and integrated into the overall décor. While stainless steel finishes are still popular, the predominant design trend today in home refrigeration is to go one step beyond integration to true flush mount refrigeration where the unit "disappears" into the kitchen cabinetry for a cleaner, ultra modern look.

Modular refrigeration harkens back to German engineering, and the *Kuhlschrank*, which literally means 'cool cabinet. "It's a cabinet with a compressor and the cabinet gets cold. Because modular units are more a part of the cabinetry than an appliance, they represent a paradigm shift in the way design professionals think about refrigeration and configuring the kitchen.

FOOD CHILLING AND STORAGE PERFORMANCE

Each modular refrigeration column operates with its own motor and compressor, eliminating air exchange between the refrigerator and freezer compartments — often the source of odor and/or flavor transfer. Air temperature is also more evenly distributed and humidity levels are appropriate for vegetables and fruits to stay crisp and fresh longer.

To achieve equal temperature levels on all shelves, multi-flow air systems provide a continuous flow of air running along the interior back wall. Cold air channels behind the door racks ensure that food items on these racks are stored at the same temperature as in the refrigerator compartment.

Many models have individual temperature- and humidity-controlled compartments to achieve longer food storage for specific items, such as fish which should be stored at 32 degrees F, meat and poultry at 33 degrees F, and produce at 35 degrees F. Zoned sensors respond to food temperatures in these different sections and trigger adjustments to keep temperature consistent within 1.5 degrees F.

Express chill and freeze buttons have also become standard features on today's modular units: When warm food is added to the refrigerator or freezer, the unit quickly returns to the proper temperature, as sensors override the current selection, temporarily pushing the unit into maximum cooling mode.



CONVENIENCE FACTORS

Refrigerator interiors are designed for practicality. Spill-proof glass shelves facilitate easy cleanup. Door shelves are adjustable, freezer columns accommodate extra tall items and gallon door storage reflects consumer preferences of economical family-size purchases. At the touch of a button motorized shelves raise and lower to accommodate items of various heights, even when they're fully loaded with up to 22 pounds of food.

Water and Ice Dispensers. Over the years, manufacturers have improved their ice and water dispensers and today's models have capabilities such as measured dispensing and rapid filling such that an 8-ounce glass can be filled in 8 seconds. Anti-clump systems agitate ice at timed intervals to keep it from freezing together after defrost cycles or extended door openings. Through-the-door systems allow easy access to water, ice cubes and crushed ice without having to open the refrigerator cabinet. Large flexible dispensers with pull-down pitcher flaps allow the use of extra tall or wide containers.

Water dispensers almost always include water filtration capabilities. Carbon is primarily used in refrigerator filtration because of its ability to absorb chemicals and impurities that diminish the taste and smell of the

water. Filtration systems vary according to brand, though most are carbon-only or a combination of carbon and a fiber filter to catch rust, lead and other sediments found in water. Filters should be changed as specified by the manufacturer or at least every six months to ensure continued water quality and keep contaminants trapped by the filter from leaking back into the water. While refrigerator ice and water dispensers do increase energy usage, they can offer a healthier alternative to bottled water at a fraction of the price and without the health risk of drinking from plastic containers. An additional benefit is the fact that many refrigerator water filters also retain fluoride, which is usually not found in bottled water.

No-Frost Systems. Virtually all modular refrigeration systems use adaptive defrost control systems that defrost only when it's needed, which saves energy and eliminates freezer burn. Sensors electronically calculate the amount of time needed in between

Lighting. Refrigerator lighting is getting more energy efficient. Replacing the formerly ubiquitous incandescent light bulb scheduled for phase out in the U.S., Europe, Canada and other locations, the refrigeration industry has turned to LED, and halogen lights. Of the two, the halogen light spectrum is considered to display the true color and texture—and thus condition—of foods. A typical lighting scheme may include two upper halogen spotlights and two halogen wall towers to illuminate food evenly, so even foods at the back can be easily seen and don't languish out of sight as the expiration date passes. LED lights may be slightly less expensive to operate, but they cast an unattractive bluish light on foods.

Quiet Operation. The compressor keeps the refrigerator cool. A standard compressor circulates cool air on a set cycle. But at the heart of quiet operation is a variable speed compressor, which keeps running at very slow revolutions per minute, and cycles up only when necessary to maintain the temperature of the products inside the cabinet. Some companies even insulate the compressor in higher end models.

Greater Capacity. Manufacturers are continually working to gain extra capacity within the same footprint. One way of doing this is through more effective insulation technology. Proprietary vacuum panels reduce the thickness of refrigerator walls, and thinner walls mean more room inside. A partial vacuum is created within the panel walls and filled with a low conductivity substance such as powder, fiber or aerogel. Increased energy efficiency is another byproduct as heat gain in the refrigerator is reduced, thereby reducing the energy required to maintain lower temperatures within.

ENVIRONMENTAL AND ENERGY CONSIDERATIONS

Refrigerators are moving toward more positive environmental and energy performance.

Refrigerants. There has been a movement toward a new generation of environmentally friendly refrigerants. Hydrofluorocarbons (HFC), a group of compounds containing carbon, fluorine and hydrogen, but not chlorine, have replaced chlorine-containing chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFC). HFCs, however, are not an ideal solution as they have a global warming impact. Major HFC releases occur during their manufacture, from filling refrigeration equipment and from refrigerators' end-of-life deterioration.

Other substances being tested as an alternative to HFCs are greenhouse-neutral hydrocarbons such as propane and isobutane, which are extensively used in European and Asian refrigerators.

The drawbacks are that these substances carry slight flammability concerns and are currently not UL approved or sanctioned by building codes in many municipalities.

Energy Efficiency. A refrigerator runs 24/7, and in a typical home, generates 8 percent of the total annual energy expense, according to 2005 data from the U.S. Department of Energy. Compared to the 1970s, when a new refrigerator averaged 1,800 kilowatt-hours (kWh) per year, the best of today's versions log in only about 500 kWh annually. Recent improvements in insulation and compressors have cut some of the fat out of energy usage. Variable speed compressors, for example, save energy by operating at ultra slow revolutions per minute rather than shutting off and turning on again, which expends energy unnecessarily. Refrigerators and freezers with individual compressors generate only the energy required to keep their own compartment properly chilled. Adaptive defrost systems operate only when needed, and there are settings to adjust temperatures for low food levels, to disable ice making and lighting when users are on vacation and to function in Sabbath mode, meaning that lights, fans, sounds, alarms, compressors or other electrical activity is disabled when the refrigerator door is opened without affecting its operation.

All refrigerators sold in the United States are required to meet the Department of Energy's efficiency standards, and many meet the department's more stringent Energy Star qualifications as well. A new refrigerator with an ENERGY STAR label is required to use at least 20 percent less energy than stipulated by current federal standards. Today's Energy Star rated refrigerators use about half the energy of those manufactured prior to the early 1990s. Through its rating system of appliances, the program claims to have helped save enough energy in 2008 alone to avoid greenhouse gas emissions equivalent to those from 29 million cars — all while saving consumers \$19 billion in utility costs. However, when it comes to free standing refrigerator ratings, the ENERGY STAR program is not without its critics. Detractors decry the lack of independent auditors — manufacturers supply data on their own products — and contend that the energy efficiency bar is set too low, with too many products qualifying for the star to make it meaningful. For built-in refrigerators, ENERGY STAR criteria are more rigorous. The built-in installation makes the heat exchange to the outside more difficult than freestanding units, and the air inlet and air outlet for cooling air are more restricted in the built-in installation. In



addition, outside dimensions are fixed due to the built-in cabinet and so with a given interior volume, more insulation can not be added than the outside dimensions allow. Freestanding units have more tolerance.



Photo courtesy of Thermador

Today's kitchens feature sophisticated cooktops, built-in ovens and warming drawers.

INSTALLATION

When it comes to installation, slimmer modular units are far easier to move and install than conventional refrigerators that can weigh up to 800 pounds.

One complaint of design professionals used to be the complicated installation, but the industry has responded with prepackaged and labeled parts to simplify the procedure. Still, cabinet preparation is crucial to a smooth installation. With modular refrigerators, the intent is that any standard size kitchen cabinet can be replaced by a modular column, with a gap between two tall cabinets the ideal scenario. Units should have hinges that can open to 115 degrees to allow the columns to be fully flush mounted without sacrificing accessibility. Hinges should also be heavy duty, and be able to support more than 200 pounds of door weight, particularly if custom wood panels are used. For complete installation details, the product's spec sheet should be consulted. Installers familiar with flush-mounted modular units should be used, as there is a learning curve experienced by non-cabinet installers.

COOKING APPLIANCES

Cooking is the application of heat to food. Indoor cooking is almost entirely done either in an oven or on a cooktop, and is broadly divided into gas and electric types. Consumers are interested in appliances that deliver gourmet results, maximum nutrition with time savings

at the right price points. There are no Energy Star ratings applicable to cooking appliances, though manufacturers do consider energy efficiency a competitive advantage, and are the prime movers in the new designs, materials and processes that will boost energy efficiency while reducing embodied energy over the life cycle of the product.

Design Flexibility with Cooktops

Because they can be installed on an island or other location with ample counter space, cooktops afford design flexibility. Consumers appreciate their modularity, which allows placement of interchangeable elements including griddles, steamers, woks, rotisseries, and deep fryers that can be switched at will. Many cooktops also incorporate smart features that can select proper cooking times and temperatures for various foods. Offered in gas, electric, and dual fuel and in ceramic glass, porcelain-coated steel, or stainless steel today's cooktops may be designed with integrated downdraft ventilation, varying burner placement, and front or side controls. For serious cooks, the space between burners, grate size, and configuration are important factors. For example, those who routinely cook with large pots and pans would do better with four widely spaced burners than five or six crowded together.



35 ports/16 ³/₄ " perimeter

28 ports/10 ³/₄ " perimeter



The design of a star burner offers greater heat coverage, and a smaller cold spot, making it ideal for any pan size.

Gas. Gas cooktops are the choice of many serious cooks. Gas burners produce heat instantly, and can be easily controlled to change the flame quickly between low and high heat. When gas burners are turned off, the heat stops and so does the cooking. Improving on the traditional gas ring burner are star-shaped burners that distribute heat more evenly from the center of the pan to its edges. The perimeter of a star-shaped burner can be up to 56 percent greater than a round burner of the same diameter, which allows for more flame ports and thus better flame spread and reduced cold spots. With star burners boil times are faster too, with a range of from over 24 minutes to 12 minutes and 40 seconds to boil four quarts of water.

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Program title: "Luxury in the Kitchen: Style Meets Performance in Next Generation Appliances" (11/09, page 139). AIA/CES Credit: This article will earn you one AIA/CES LU hour of health, safety, and welfare (HSW) credit. (Valid for credit through November 2011). **Directions:** Refer to the Learning Objectives for this program. Select one answer for each question in the exam and fill in the box by the appropriate letter. A minimum score of 80% is required to earn credit. **To take this test online and avoid handling charge, go to ce.ArchitecturalRecord.com**

1. **The predominant design trend today in home refrigeration is:**
 - a. flush mount refrigeration.
 - b. stainless steel panels.
 - c. bottom freezers.
 - d. water and ice dispensers.
2. **What is primarily used in refrigerator water filtration?**
 - a. fiber
 - b. copper
 - c. cellulose
 - d. carbon
3. **At the heart of quiet operation in a refrigerator is:**
 - a. insulation.
 - b. a baffle system.
 - c. a variable speed compressor.
 - d. a small motor.
4. **All refrigerators sold in the United States are required to:**
 - a. be Energy Star rated.
 - b. meet the Department of Energy's efficiency standards.
 - c. have isobutane refrigerants.
 - d. have adaptive defrost systems.
5. **In order to be fully flush mounted without sacrificing accessibility, modular refrigerators should:**
 - a. have 115 degree hinges.
 - b. have 150 degree hinges.
 - c. match the kitchen cabinetry.
 - d. be mounted next to a countertop.
6. **The perimeter of a star-shaped burner compared to that of a round burner is:**
 - a. much less.
 - b. almost the same.
 - c. 78 percent greater.
 - d. 56 percent greater.
7. **When specifying a gas cooktop, a prime consideration is:**
 - a. maximum BTU output.
 - b. minimum BTU output.
 - c. maximum and minimum BTU output.
 - d. maximum wattage.
8. **Tests conducted by the U.S. Department of Energy show that this amount of heat is transferred to the pot in induction cooking:**
 - a. less than 30 percent
 - b. up to 40 percent
 - c. less than 60 percent
 - d. up to 90 percent
9. **Sophisticated convection ovens for home cooks use this to more precisely direct the heat toward the food:**
 - a. a fan
 - b. top blowers
 - c. a baffle system
 - d. multiple fans
10. **Which is not a primary heat source in speed cooking ovens?**
 - a. halogen lamps
 - b. quartz lamps
 - c. convection heating
 - d. microwaves

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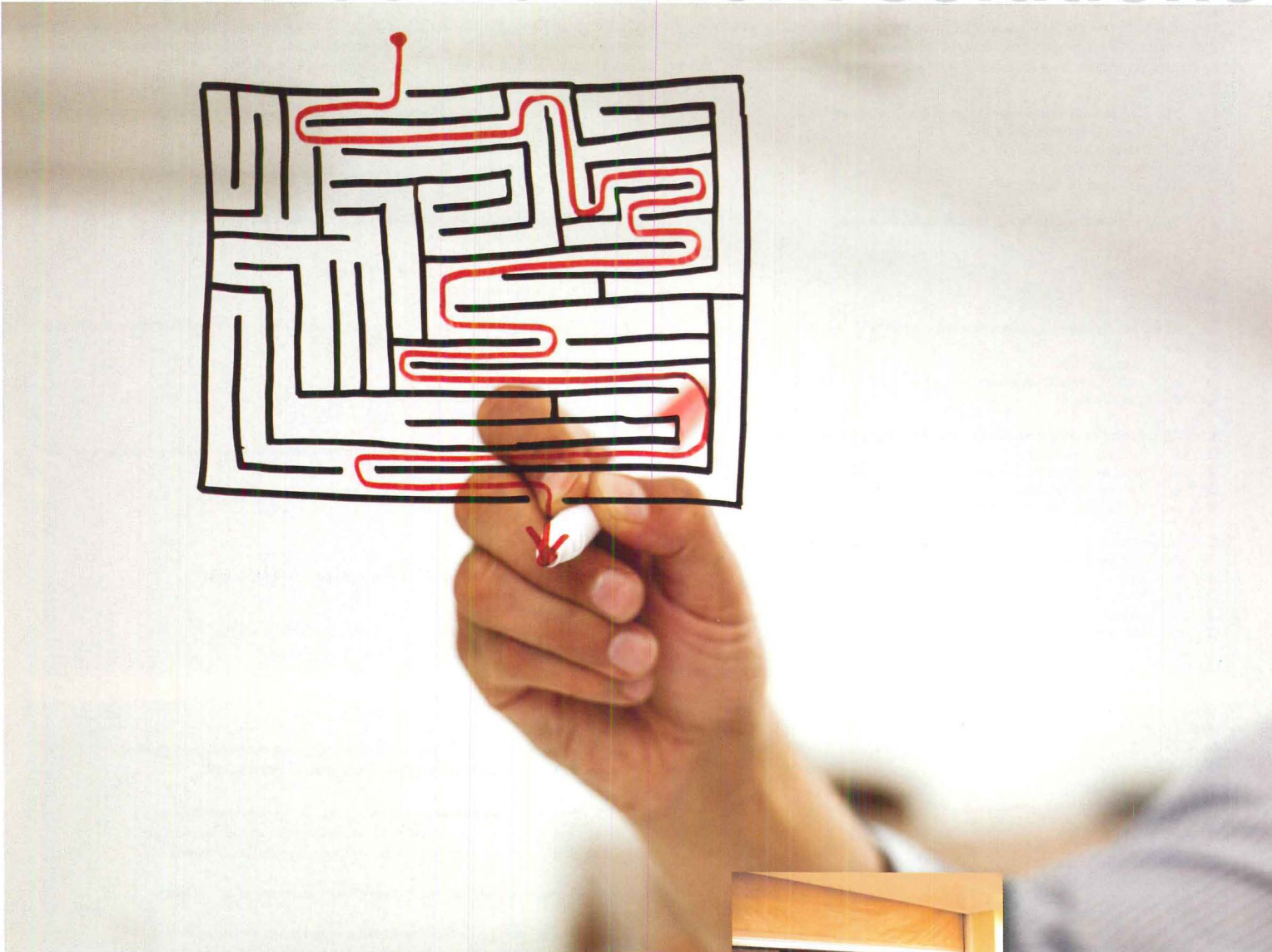
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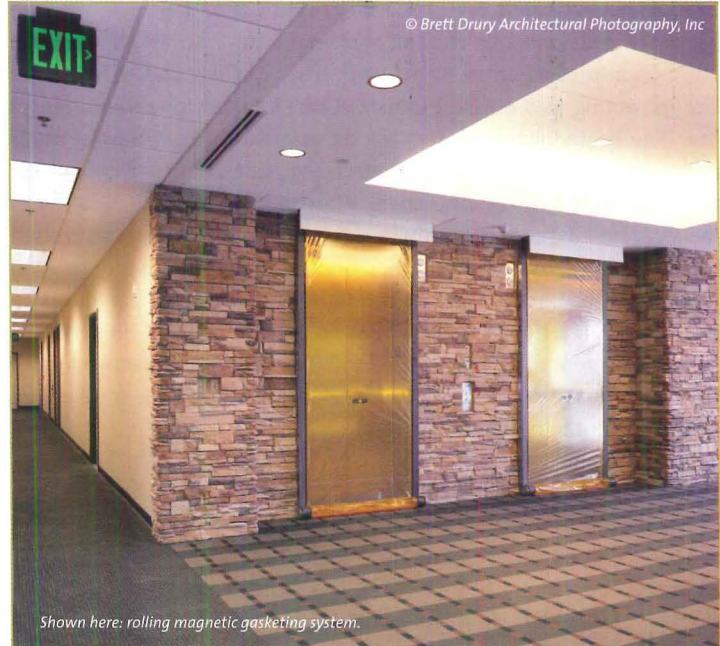
Design Alternatives to the Enclosed Elevator Lobby: Fire and Smoke Safety Solutions

Provided by Smoke Guard, Inc.
By Jeanette Fitzgerald Pitts

SMOKE AND FIRE IN THE BUILT ENVIRONMENT

The National Fire Protection Agency (NFPA) reported that in 2008, in the United States, there were fires in 95,000 apartment buildings, 10,000 industrial properties, 6,000 educational properties, and 6,500 institutional properties. 390 civilians died in those apartment fires and 3,975 sustained fire-related injuries. An additional 120 civilians died that year in non-residential structural fires, in which 1,400 civilians were injured. While these tragedies occurred during a fire, the real culprit was the smoke. According to FEMA, asphyxiation is the leading cause of fire deaths, exceeding burns by a three-to-one ratio.

Both evidence and experience confirm that buildings must be designed to protect occupants from fire and smoke, but debate continues to rage about the best way to provide that protection. Active fire suppression systems, such as automatic sprinklers, have proven to be very effective at containing the spread of fire throughout a building, but do little to combat the creation and spread of dangerous smoke. Passive fire protection systems manage fire spread by dividing a building into distinct fire containment compartments equipped with fire-rated floors, walls, doors, door hardware, and duct penetrations. These passive systems act to restrict the movement of smoke. Walls serve as smoke barriers keeping the smoke from migrating into other parts of the building, but smoke easily maneuvers around ungasketed fire-rated doors and into open space.



Shown here: rolling magnetic gasketing system.

New design alternatives to the enclosed elevator lobby are less design-intrusive, more effectively control smoke migration, and, simultaneously, minimize the requisite maintenance and overall costs of the fire and smoke protection solution.

CONTINUING EDUCATION



Use the learning objectives below to focus your study as you read *Design Alternatives to the Enclosed Elevator Lobby: Fire and Smoke Safety Solutions*. To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit, answer the questions on page 149, then follow the reporting instructions or go to ce.ArchitecturalRecord.com and follow the reporting instructions.

Learning Objectives

After reading this article, you should be able to:

- Explain the building code requirements for fire and smoke containment at the elevator shaft.
- Describe the enclosed elevator lobby solution mandated by the IBC.
- Compare and contrast available alternatives to the traditional enclosed elevator lobby solution.
- Describe unique fire and smoke code requirements and solutions for areas of refuge, countertop enclosures, healthcare facilities, and prisons.

The International Building Code (IBC) is the most widely adopted building code in the United States, providing a single set of comprehensive and coordinated construction and design codes that guide the development of projects nationwide. The 2006 edition contained significant changes for vertical shafts. “In terms of fire and life safety, the general goal of the IBC is to ensure that if a fire occurs in a building, it won’t grow too rapidly and occupants will have the ability to escape,” explained fire code consultant Gregory J. Cahanin, Cahanin Fire and Code Consulting. “In a multi-story building, the IBC mandates that automatic sprinklers be installed to contain the spread of fire and works to compartmentalize every floor, so that if a fire occurs, it stays on the floor where it began.”

Despite the combination of active and passive fire containment techniques written into the building code, smoke migration has continued to be a dangerous and deadly aspect of building fires. Over the past decade, the IBC has recognized the need to better contain the spread of smoke in a multi-story building and has begun requiring that buildings also be equipped with smoke protection for horizontal assemblies, in addition to the active and passive fire containment systems already described.

Today, the IBC mandates smoke protection in several different areas throughout a multi-story building. Smoke protection is required at the elevator shaft, in areas of refuge, to separate an atrium from the rest of the building, and wherever a fire and smoke rated wall has been opened up to provide access or counter space. Additionally, smoke protection needs to be added to most multi-story historical renovations to bring the existing building into compliance with current fire and life safety codes which require both vertical and horizontal barriers that may not have been in place originally.

SMOKE AND FIRE IN THE ELEVATOR SHAFT

Elevator shafts act like chimneys in multi-story buildings enabling large quantities of air to move from floor to floor and, when a fire occurs, acting as a conduit transporting smoke throughout a building. The heated smoke enters the elevator shaft from the fire floor and rises, displacing the resident cooler, denser air. Stack effect pressures in the elevator hoistway draw this cool smoke up through the vertical shaft. As the smoke rises, it easily leaks back through the elevator doors and onto other floors, spreading quickly beyond its point of origination and exposing occupants on upper floors to this dangerous and toxic hazard. Despite design teams' best efforts to compartmentalize, the vertical elevator shaft compromises each floor and must be specifically addressed to provide fire, smoke, and life safety in the built environment.

IBC Requires an Enclosed Elevator Lobby — or Something Better

Where three or more stories are connected by an elevator shaft, architects are required, by the IBC, to isolate each floor from the elevator shaft with both fire and smoke protection. In Section 707.14.1 (IBC 2009 Section 708.14.1), the IBC prescribes in its charging language that design teams incorporate a fire-rated, enclosed elevator lobby onto each floor to provide the requisite separation. As the name may suggest, an enclosed elevator lobby is a room that is built around the elevator doors that can be closed off from the rest of the floor in the event of a fire. The code mandates, in Section 708, that the fire partitions shall have a fire rating of not less than one hour and, in accordance with Section 715, that the openings in fire partitions must be protected by an opening protective with a minimum of a 20 minute fire rating. Simply put: the enclosed elevator lobby must be constructed with walls that have a one hour fire rating and doors that have a 20 minute fire rating, as a minimum.

Beyond the requisite fire rating, it is also mandated in the IBC that the corridor walls and doors in them shall resist the passage of smoke. The code contains the construction requirements for creating wall assemblies that are capable of restricting the movement of smoke from one side of the wall to the other. The doors or opening protectives must meet the air leakage performance outlined by the Underwriters Laboratories (UL) 1784 test. These air leakage tests of door assemblies examine the rate that air and smoke leak from one side of the door to the other and establish that particular door assemblies appropriately resist the spread of smoke.

In order to meet the fire and smoke protection requirements, architects commonly specify fire-rated swing doors with gaskets as



Photo courtesy of Smoke Guard, Inc.

Section 707.14.1 of the 2006 IBC prescribes that design teams incorporate a fire-rated, enclosed elevator lobby at the elevator shaft. The code also identifies seven exceptions to this rule.

the doors used to enclose a lobby. When the swing doors close, the gasket fills in the empty space between the door and the frame, creating a seal to prevent smoke from leaking out of the vestibule. This lobby becomes a barrier on the fire floor keeping smoke from penetrating the elevator shaft and, simultaneously, prevents smoke from migrating out of the elevator shaft onto a non-fire floor.

While enclosed elevator lobbies are the code-prescribed solution for maintaining fire, smoke, and life safety at the elevator shaft, they are often far from ideal in terms of how they can impact an architect's designs. In some buildings, like a standard office tower, elevator lobbies are naturally created amidst a bank of elevators, which makes the vestibule easy to incorporate into the space. However, in building types that are more complex, or that have design intentions that significantly differ from the standard office tower, the vestibule solution can create a real challenge for an architect trying to figure out how to incorporate enclosed lobbies into the design. Additionally, it can be a challenge to create a vestibule that feels open and continuous with the rest of the building.

Another problem that is commonly cited with the lobby fire and smoke barrier solution is the amount of floor space that it requires to execute. Instead of setting aside dead space on every

floor for an enclosed elevator lobby, architects could use that space to add one more hotel room or hospital room to the floorplan, or create larger condos generating more revenue for the owner from essentially the same footprint.

Over the years, new products, systems, and design techniques have been developed giving architects more tools to create fire and smoke barriers than the basic construction materials used to build self-contained boxes around the elevator doors. There are now code-compliant alternatives to the enclosed elevator lobby enabling architects to meet fire and life safety code requirements with a much smaller intrusion on the building's floorplate. In response to the dynamic construction environment and new practices and tools available, the codes have evolved to identify instances when an enclosed elevator lobby is no longer necessary and to allow architects to implement fire and smoke containment solutions that are equal to or superior to the enclosed elevator lobby of long ago. IBC 2006 specifically identifies seven exceptions to the enclosed elevator lobby mandated by Section 707.14.1 and an allowance for alternative means and modes.

Exception 1: Ground Floor of a Building with Automatic Sprinklers

Exception one applies to buildings where the ground floor is equipped throughout with automatic sprinklers. When the ground floor is protected with automatic sprinklers, enclosed elevator lobbies on the ground floor are not necessary to meet fire and life safety codes. Most new buildings will incorporate automatic sprinklers throughout the building and will qualify for this ground floor exception.

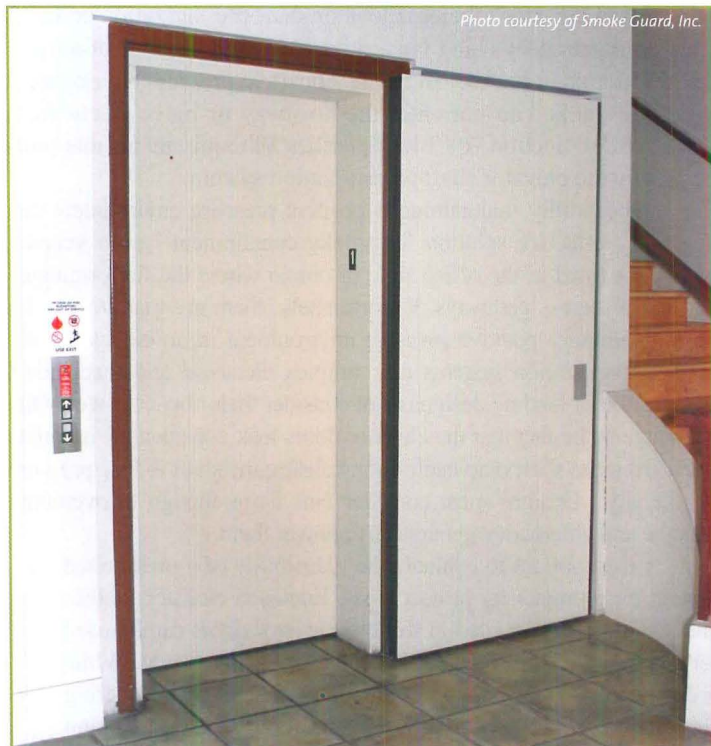
Exception 2: No Elevator Shaft

In buildings where the elevator is not enclosed in an elevator shaft, there is no requirement for an enclosed elevator lobby to separate the shaft from the rest of the floor. Elevators entirely within a hotel atrium are a common application of this provision.

Exception 3: The Additional Door Option

Another way to avoid designing an enclosed elevator lobby onto each floor is to specify that a gasketed swing door be mounted directly at the elevator opening and held open with a magnetic hold device. The IBC refers to this door as an "additional door" and as long as it carries an S rating (smoke rating), is equipped with a closer, the device that pulls the door closed when the magnetic hold-open releases, is "openable from the elevator car side without the use of a key, tool, knowledge, or special effort", and is tested in accordance with UL 1784 for air leakage, this swing door solution readily meets the fire and smoke barrier code requirements for the space. In the event of a fire, the magnetic hold-open releases and the swing doors close over the elevator opening. The gasketing along the jamb of the door assembly fills in the space between the swing door and the door frame, creating a seal to block smoke from trespassing onto the floor. A drop seal is mounted to the door undercut to prevent smoke migration at the sill.

While this solution is much more space friendly than creating an enclosed elevator lobby on each floor, there are a few concerns that should be considered before mounting swing doors to the



A swing door mounted at an elevator opening and held open with a magnetic hold meets the fire and smoke partition code requirements, but can be susceptible to tenant tampering and have an undesirable aesthetic effect in the space.

elevators in your designs. Swing doors closed over the elevator door can impede firefighter access to the area and creates a visible barrier between a firefighter riding the elevator and an occupant waiting on the floor. Additionally, swing doors are often wedged open by tenants or inadvertently blocked by furnishings on the floor. If they are unable to properly close, they are useless as a smoke barrier.

Exception 4: Sprinkler Trade-Off

Buildings less than 75 feet in height that have sprinklers installed throughout, do not need to isolate the elevator shaft from the rest of the building. Healthcare facilities (I-2) have other special requirements defined in Section 407 regarding protection from smoke migration. I-3 occupancies (confinement facilities and prisons) and buildings more than 75 feet in height cannot apply this exception.

Exception 5: Sprinklers and Smoke Partitions

Where a building is equipped with an automatic sprinkler system, the fire and smoke partition required at the elevator shaft can be reduced to smoke partition construction, which means that the assembly can be rated for smoke protection only and no longer needs a fire rating. Additionally, the opening protective, or door, in a smoke partition needs only to be rated in accordance with UL 1784. Since the building code requires that all high rise buildings have automatic sprinkler systems, many high rises can take advantage of this exception.

Exception 6: Elevator Shaft Pressurization

The IBC recognizes that elevator shaft pressurization can be used to separate the elevator shaft from the rest of the building in lieu

of enclosed elevator lobbies. Elevator shaft pressurization contains smoke migration by using fans to inject large quantities of air into the elevator shaft in order to create a positive pressure environment in which smoke can not enter the hoistway or move freely from floor to floor. Section 707.14.2 describes all requirements that must be met by the elevator shaft pressurization system.

Successfully maintaining a positive pressure environment can be a very effective solution for smoke containment—even keeping smoke confined in the office suite or condo where the fire originated and out of egress pathways. Unfortunately, there are many obstacles to maintaining a positive pressure environment in an elevator shaft. Shaft pressurization systems are complex electrical and mechanical systems. Floor loading designs must consider their impact as well. One challenge is the fact that the elevator doors leak considerable amounts of air from the shaft onto each floor, causing the shaft to lose pressure continually. Designs must consider fans large enough to overcome leakage and emergency generators to power them.

It is important to evaluate the plausibility of a pressurized system on a project by project basis. Enclosed elevator lobbies and swing doors mounted in front of elevator doors can be used for fire and smoke protection in buildings of any height. While pressurization is not limited by building height, engineering considerations indicate that effective elevator shaft pressurization can only occur in low/mid-rise and some high rise buildings. The size of the shaft and the number of cars in the shaft are among the factors that will determine how many floors can be effectively and economically pressurized.

Alternative Means and Modes

As previously mentioned, the code doesn't explicitly describe every alternate solution available to architects for replacing the enclosed elevator lobby on a project. Section 104.11 allows for alternative means and methods of construction that are equal to or superior to the requirements in the code. The International Code Council (ICC) evaluates various products and design solutions and tests them against the initial enclosed elevator lobby standards. This agency approves or denies the application of that solution as a substitute for an enclosed elevator lobby in its published Evaluation Service Report (ESR). Two products that have been approved by the ICC as viable substitutes to an enclosed elevator lobby are horizontal sliding accordion doors and rolling magnetic gasketing systems.

Accordion Doors

Accordion doors are large, steel doors that hide in a pocket in the wall and deploy horizontally along a track in the ceiling when a fire is detected. These products can bend around corners, unusual shapes, escalators, and other building fixtures, providing a highly flexible fire and smoke barrier solution. The doors can be fire-rated and use gaskets to create a seal with the walls, ceiling and floor once fully deployed to provide the requisite smoke resistance. These products slide into place to create an enclosed elevator lobby if a fire occurs, but are housed out-of-sight, allowing architects to leave the space open during regular day-to-day activities. Even though these accordion doors are often hidden, they still require that archi-

ects earmark a certain amount of space for the enclosed elevator lobby that will be created when the doors deploy.

Rolling Magnetic Gasketing System

A rolling magnetic gasketing system creates a smoke barrier at the elevator shaft opening by deploying a reinforced, transparent, polyimide film down over the shaft door when smoke is detected in the area. The edges of the film are equipped with flexible magnetic strips that adhere to metal rails on either side of the doorway providing a virtually air-tight seal. The ICC recognizes the combination of the normally fire-rated elevator hoistway doors and the rolling magnetic gasketing system, which deploys an air-tight film over the shaft door, as an approved alternative for an enclosed elevator lobby. The fire-rated elevator doors provide the requisite fire protection and the UL 1784-tested rolling magnetic gasketing system provides the necessary smoke protection.

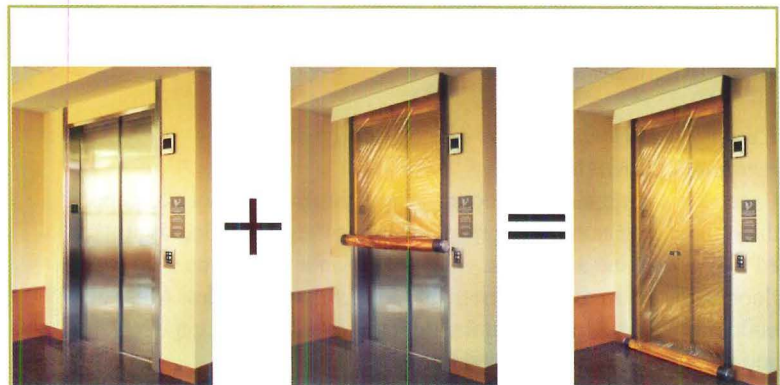


Photo courtesy of Smoke Guard, Inc.

The combination of the fire-rated elevator doors and the UL 1784-tested rolling magnetic gasketing system meets the IBC code requirement that prescribes an enclosed elevator lobby at the elevator shaft.

This solution eliminates the need to incorporate an enclosed elevator lobby in the architectural design, returning an incredible amount of space to the floorplate. “These rolling magnetic gasketing systems essentially create a smoke containment vestibule right in front of each elevator door opening that is three inches deep, rather than a couple hundred square feet. They are less obtrusive to circulation flows in a building and aesthetically occupants don't feel like they are getting off of the elevator into a little alcove or box. In fact, they won't even notice it,” states Mike DeOrsey, Project Manager, Burt Hill, Boston, MA.

Many design professionals believe that specifying accordion doors and rolling magnetic gasketing systems in front of the elevator opening meets the additional door criteria (Exception 3) more effectively and aesthetically than swing doors.

Continues at ce.ArchitecturalRecord.com.

See Quiz on the Next Page

or

Take the Quiz Free Online

To receive AIA/CES credit, you are required to read the entire article and pass the test. Go to ce.ArchitecturalRecord.com for complete text and to take the test. The quiz questions below include information from this online reading.

Program title: "Design Alternatives to the Enclosed Elevator Lobby: Fire and Smoke Safety Solutions" (11/09, page 145). AIA/CES Credit: This article will earn you one AIA/CES LU hour of health, safety, and welfare (HSW) credit. (Valid for credit through November 2011). Directions: Refer to the Learning Objectives for this program. Select one answer for each question in the exam and fill in the box by the appropriate letter. A minimum score of 80% is required to earn credit. To take this test online and avoid handling charge, go to ce.ArchitecturalRecord.com

1. Which of the following correctly describes the requisite fire and smoke ratings of the enclosed elevator lobbies mandated by the IBC?
 - a. Enclosed elevator lobbies are not prescribed by the IBC.
 - b. Both walls and doors must be fire-rated for one-hour.
 - c. Walls have a one-hour fire rating. Doors have a twenty-minute fire rating.
 - d. Walls have a twenty-minute fire rating. Doors have a one-hour fire rating.
2. What are some of the shortcomings of the traditional enclosed elevator lobby requirement?
 - a. Amount of floor space required.
 - b. Difficult to make the vestibule feel open and continuous with the rest of the building.
 - c. Challenging to incorporate into the space design.
 - d. All of the above.
3. There are code-compliant alternatives to the enclosed elevator lobby prescribed by the IBC.
 - a. T
 - b. F
4. What is the maximum air leakage rate allowed by UL 1784?
 - a. 0.6 cfm/sq. ft
 - b. 900 cfm/sq. ft
 - c. 0.33 cfm/sq. ft
 - d. 3 cfm/sq. ft
5. What is the range of air leakage rates achieved by rolling magnetic gasketing system when tested in accordance with UL 1784?
 - a. Rolling magnetic gasketing systems have not been UL 1784 tested.
 - b. 0.33-0.6 cfm/sq. ft
 - c. 3 cfm/sq. ft
 - d. 900 cfm/sq. ft
6. How does a rolling magnetic gasketing system meet the enclosed elevator lobby requirement?
 - a. Fire-rated elevator doors provide the fire protection. UL 1784-approved rolling magnetic gasketing system provides the smoke protection.
 - b. The rolling magnetic gasketing system provides the fire barrier. Elevator doors provide the smoke barrier.
 - c. The rolling magnetic gasketing system does not meet the enclosed elevator lobby requirement.
 - d. None of the above
7. Which of the following solutions is highly susceptible to tenant tampering?
 - a. rolling magnetic gasketing system
 - b. elevator shaft pressurization system
 - c. accordion doors
 - d. swing doors
8. Which of the following is a solution for creating an area of refuge?
 - a. elevator shaft pressurization system
 - b. swing door mounted at an elevator hoistway door
 - c. rolling steel door
 - d. fire-rated/smoke-rated rolling magnetic gasketing system
9. In order to have a countertop opening in a fire-rated or smoke-rated wall, the IBC requires the following:
 - a. a rolling steel door.
 - b. a smoke curtain system.
 - c. the rating of the wall be maintained by specifying an appropriate fire or smoke-rated assembly in the opening.
 - d. The code does not allow countertop openings in fire or smoke-rated walls.
10. How many smoke compartments are required, by the IBC, on each floor of a healthcare facility or prison?
 - a. 0
 - b. 1
 - c. 2
 - d. 2 or more

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Material resources used: This article addresses issues concerning health and safety.

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Renovating an Historic Structure for LEED Platinum Certification

How some key decisions made in the Portland AIA's new headquarters were geared toward sustainability

Provided by JELD-WEN® Windows and Doors

Portland, and the state of Oregon, has always been on the cusp of environmental leadership. So when it came time for the city's American Institute of Architects (AIA) chapter to undertake a new headquarters, the organization's leadership steered it toward becoming a pioneer in renovating an historic structure into a jewel of a sustainable structure. In the end, cutting edge design and the latest in green building technology came together to create AIA Portland's new Center for Architecture, hailed nationwide as a model for urban redevelopment.

The center is the first AIA building in the world to achieve a LEED Platinum rating from the U.S. Green Building Council (USGBC), but how it achieved the rating is the real story. The 10,000-square foot center, with 5,000 square feet of occupied space, has been turned into a showpiece from what was once a dilapidated livery stable thought to be the oldest surviving structure in northwest Portland's thriving Pearl District. This case study will focus on: how key decisions were made regarding the renovation that contributed to the building achieving LEED Platinum status; the products that were utilized that helped secure LEED points toward energy efficiency; renovating an historic structure that would otherwise have been torn down; innovative uses of natural and artificial lighting; and rainwater management.

ENERGY EFFICIENCY AND VENTILATION

Achieving measurable energy efficiency is one of the most high-profile elements of receiving LEED certification. Conserving energy is a long-term benefit of using efficient products, designs and construction techniques that can add up to great savings over



Photo courtesy of Michael Mathers

A six-panel folding door opens the building to the surrounding neighborhood and also contributes to the space's ventilation plan.

the life of a structure. In fact, USGBC requires a building to achieve at least two points for energy efficiency.

To earn LEED credits for optimizing energy efficiency performance, USGBC requires one of the following path options described below be selected. Project teams documenting achievement using any of these options are assumed to be in compliance with EA Prerequisite 2.

Option 1 — Whole Building Energy Simulation (1–10 Points)

Demonstrate a percentage improvement in the proposed building performance rating compared to the baseline building performance rating per ASHRAE/IESNA Standard 90.1-2004 by a whole building project simulation using the Building Performance Rating Method in Appendix G of the Standard.

Option 2 — Prescriptive Compliance Path: ASHRAE Advanced Energy Design Guide for Small Office Buildings 2004 (4 Points)

Comply with the prescriptive measures of the ASHRAE Advanced Energy Design Guide for Small Office Buildings 2004.

CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Renovating an Historic Structure for LEED Platinum Certification**. To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit and sustainable design, answer the questions on page 155, then follow the reporting instructions or go to ce.ArchitecturalRecord.com and follow the reporting instructions.

Learning Objectives

After reading this article, you should be able to:

- Describe innovative measures for managing ventilation and heating/cooling costs.
- Explain key steps to repurpose an historic structure into a LEED-accredited facility.
- Identify best practices for using windows to enhance natural lighting.
- Evaluate if a rainwater runoff system is appropriate for a project.

Option 3 — Prescriptive Compliance Path: Advanced Buildings™ Core Performance™ Guide (2-5 Points)

Comply with the prescriptive measures identified in the Advanced Buildings™ Core Performance™ Guide developed by the New Buildings Institute.

For Portland AIA, the chapter incorporated Option 1 and implemented several energy efficiency strategies to reduce energy consumption in its drive to achieve a Platinum rating. The first decision the chapter made was to incorporate a 100 percent electric power philosophy.

“Our goal was to make the building utilize only electric power and capitalize on the clean energy sources, such as hydro-electric and wind-power, that are available on the local electrical grid in the Northwest,” said Alan Scott, AIA, a principal with Portland-based Green Building Services and a member of the Center’s LEED certification team.

Other energy saving measures include natural ventilation with roof-mounted turbines and dampers with displacement ventilation, thermal destratification fans that move heated air back to the occupied zone, basement duct work that allow for diffused air heating and cooling, and energy-efficient windows and doors to conserve energy all year long and leverage natural heating and cooling opportunities. Using double-paned Low-E glass in windows and doors took advantage of today’s advanced glass technology that has progressed significantly the past 30 years and is changing the way heating and cooling plans are designed in today’s structures.

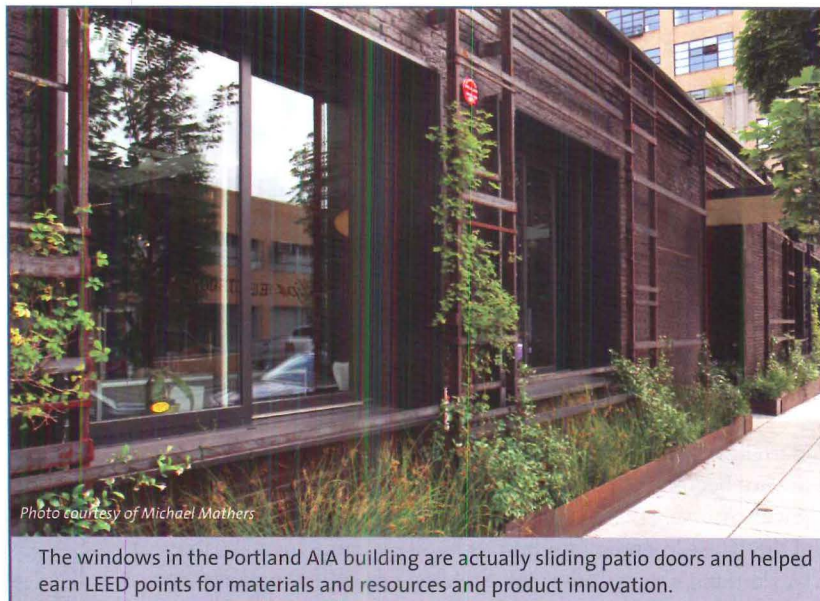
LOW-E AND OTHER GLASS TECHNOLOGY

Advances in glass coating technology and stronger regional energy code requirements have helped create a new generation and more sophisticated array of Low-E glass options. The windows and doors in the Portland AIA chapter’s new headquarters feature Low-E coatings that contributed to LEED certification points.

The Portland (Ore.) AIA chapter’s Center for Architecture was the first AIA building in the world to earn a LEED platinum rating.

To know which Low-E is best suited for a project, it’s important to understand just what Low-E is, and how it works. Low-E, meaning “Low-Emissivity,” is an extremely thin layer, or more commonly several layers, of metallic particles applied to the glass which, in simple terms, allows the glass to act like a sieve. Long wavelengths, or heat, are filtered out, while short wavelengths (the visible light spectrum) are allowed to pass through.

However, today Low-E means much more. By changing the types of materials used in the “stack” or layers of Low-E, or by increasing or decreasing the number of layers, it is possible to get more specific in designing glass that will meet exact project needs. Need high visible light but low U values? There’s a Low-E for that. Need greater protection from fading? There’s a Low-E for that. And



it can get even more precise. Adding argon gas to the captive air space between glass panes will improve insulating value. Adding various tinting agents to the glass itself will allow for even further refinement of the glass’ performance.

Low-E is *not* the same as tinted glass. Tinting is the adding of alloying materials to the glass itself. The depth of color of tinted glass will change with glass thickness, so that a sheet of 3mm glass will have a lighter tint than that of a sheet of 6mm glass. Small windows next to large fixed units or doors can have different tints, since the standard glass thickness of smaller panes is typically thinner than that of larger ones. Low-E, on the other hand, is applied to the glass, and therefore will have a similar appearance regardless of glass thickness. Also, tinted glass tends to absorb sunlight and will get very hot when installed as a single pane, hence tinting does not improve insulating value.

Solar Heat Gain Coefficient (SHGC) is a rating for measuring how much heat gain is admitted through a window. The lower the SHGC rating, the better the ability of the window to block the heat from the sun. SHGC can also be controlled by the use of Low-E coatings combined with the use of tints, and can even be influenced by the glass surface the Low-E coating is placed upon. Additionally, since less than half of the total solar energy spectrum is visible to the human eye, solar performance of glass can be visually deceptive.

Darker tints don’t necessarily mean significantly better SHGC values. For instance, green tinted glass will allow 77 percent visible light transmission, while gray glass only allows 45 percent, yet the gray glass only improves SHGC by 2 percent. A better way to improve SHGC, without compromising visible light transmittance, is through SHGC-specific Low-E coatings.

Perhaps one of the least-often discussed elements regarding glass performance is the comfort level of occupants. If the inside glass temperature of an insulated unit is significantly lower than the room temperature, it can give the occupants a feeling that the room is colder than it actually is. For example, at 0 degrees Fahrenheit outside, the inside surface of double pane glass can be as much as

30 degrees warmer than single pane glass, but still 25 degrees cooler than the same assembly with Low-E coated glass. The converse can be true during hot summer months. Since the Portland AIA building does experience some days of extreme heat and cold throughout the year, this factor was important for keeping occupants comfortable all year long and during those extreme temperature swings. Low-E has the ability to keep the temperature of the surface of the glass facing the interior very near that of the room itself, regardless of outside temperatures.

WINDOW SENSORS

To further take advantage of the operable windows and maximize energy usage at the same time, Portland AIA utilized window-mounted switches that turn off the Center's HVAC systems if the windows are left open. This technology ensures that no energy is wasted if the structure envelope is not engaged to conserve the resources used.

"The window sensors have worked better than expected," said Scott. "The way the system works is if one window is open, the HVAC system shuts off the heating or cooling in that zone but not the overall mechanical ventilation system. Only when more than one window is open does the system shut-off and defer to the roof vents."

Scott says one of the biggest benefits of the redesign is that the AIA staff understands and has adopted the overall system. Because of the staff's buy-in, the building is running 21 percent more efficiently when it comes to energy usage than first predicted in the initial model.

"They truly prefer the natural ventilation system and are aware of the energy efficient measures," he said. "The connection between the design and the users is the success story with this building."

The windows and doors contributed to other LEED credits through materials and resources selections and process innovation.

Rainwater Management

Portland is known for its rainfall and the Center for Architecture wanted to capitalize on the amount of precipitation the area experiences annually. An innovative management system that captures and reuses rain helped the building earn six LEED points for water efficiency.

The rainwater system came about because the design team needed to perform a seismic upgrade on the building for better earthquake preparation, said Alan Scott, AIA, a principal with Portland-based Green Building Services and a member of the Center's LEED certification team. The solution for more stability was to build a concrete box in the basement and build on top of that a rigid steel frame in the entryway. The design team saw an opportunity to use the concrete box as a 6,000 gallon cistern for storing captured rain water that could then be used in place of potable water in toilets and urinals. All that was needed was a flexible water bag that acts as the central part of the system to line the cistern.

In addition, the gutters and downspouts on the north end of the building were combined with the gutters of the adjacent building, meaning two structure's worth of water was being funneled to the cistern.

"We wanted to capture all that water so the Center is really doing more than its fair share to manage stormwater in the setup," noted Scott. "The system collects water off the north half of our building and the south half of the building next to us. It goes through a prefilter and then into the cistern. Then the water is pumped out and goes through filters and a UV sanitizer. From there, the water goes to toilets and urinals."

The results speak to the success of the custom rainwater management system. Through water efficient fixtures and reused rainwater, the AIA reduced its annual potable water demand for toilets and urinals by 97 percent, plus provided for the Center's minimal irrigation needs. In addition, storm water planters on the south side of the building and permeable pavers in a portion of the sidewalk manage the remaining runoff.

"Overall, we reduced potable water use by about 88 percent," said Scott. "That's a tremendous cost savings and environmental benefit."

To determine if a rainwater management system is right for a building, Scott suggests calculating the number of people in the building and the operating schedule (demand), measure the roof area for capturing rainwater, and determine the area's rainfall data on a monthly basis. That calculation will determine if there's sufficient rainwater capture to meet monthly demand and what the optimal cistern size should be.



Through water-efficient fixtures and reused rainwater, the AIA reduced its annual potable water demand for toilets and urinals by 97 percent, plus provides for the Center's minimal irrigation needs.

For example, the windows and doors were manufactured within 500 miles of the Portland area, as was the glass used in the units and the Low-E coating that was applied. In addition, the wood windows and doors were treated to the core with a proprietary, water-based, vacuum-pressure process that is free of volatile organic compounds (VOCs) and ensures a long-lasting lifecycle, making it more environmentally preferred than the industry standard “dip treatment” method.

OPERABLE WINDOW AND DOOR UNITS

Moving from a building that had no operable windows, the new Center for Architecture team determined that workable windows and doors were important. The idea of increasing natural ventilation, as well as connecting with the local community and welcoming them into the space, was accomplished by installing multiple windows at street level and folding doors that completely opened up large openings, similar to what is used in restaurants for outdoor seating areas.

Due to the uniqueness of the space, the windows needed to be oversized yet still be operable. The window provider came up with the solution to actually use sliding patio doors as the windows, and install handles not in the middle but at the bottom so they would be easy to reach for occupants. The result is a series of patio doors on the south wall designed to look like windows.

Due to the uniqueness of the space, the windows needed to be oversized yet still be operable. The window provider came up with the solution to actually use sliding patio doors as the windows...

One of the original features of the structure was an arched entryway that was used for transporting horses into the stable. Years later, the arch was covered over. However, when the chapter saw this unique feature it planned to restore the archway for visual appeal and to keep with the traditional design of the building. To make this a focal point, the architect team brainstormed ideas with its window and door provider to install a folding door that would completely open up the entryway and allow easy access as well as ventilation.

The folding door contains five panels and opens accordion-style to the east side of the building, which is also the side that faces the Portland Streetcar that runs just a few feet away. The Center for Architecture staff can easily open the folding door system and welcome guests and bring natural ventilation into the space.

To provide further energy efficiency and increase ventilation, the architect designed a series of small ventilation holes above the main front entry door that allows cool night air to flow through the building without the security concern of open windows and doors. This night flush system supports the passive cooling plan to save energy costs while still maintaining a comfortable interior environment.

“The beauty of the Portland climate is that it does cool down at night, even on the hottest days of the year,” said Scott. “We wanted

to take advantage of that with an automated system that starts itself when the outside temperature drops below a certain point. It works like a whole-house fan in a residence and pulls cooler air into the space.”

2030 CHALLENGE

In addition to LEED certification, Portland AIA was also designed to meet the goals of the 2030 Challenge, which aims to reduce the amount of global greenhouse gas (GHG) emissions to positively influence climate change. Architecture 2030, the organization that started the challenge, says that buildings are the major source of demand for energy and materials that produce by-product greenhouse gases (GHG).

“Meeting the 2030 Challenge was the bigger picture we had our eye on in improving the overall energy efficiency plan for the building,” said Scott. “The decision to use alternative energy sources, and to incorporate operable windows, was a direct result of our goal to meet 2030. We knew we wanted to do as much as possible to reduce our carbon emissions.”

Architecture 2030 has issued The 2030 Challenge asking the global architecture and building community to adopt the following targets:

- All new buildings, developments and major renovations shall be designed to meet a fossil fuel, GHG-emitting, energy consumption performance standard of 50 percent of the regional (or national) average for that building type.
- At a minimum, an equal amount of existing building area shall be renovated annually to meet a fossil fuel, GHG-emitting, energy consumption performance standard of 50 percent of the regional (or national) average for that building type.
- The fossil fuel reduction standard for all new buildings and major renovations shall be increased to:
 - 60 percent in 2010
 - 70 percent in 2015
 - 80 percent in 2020
 - 90 percent in 2025
 - Carbon-neutral in 2030 (using no fossil fuel GHG emitting energy to operate).

These targets may be accomplished by implementing innovative sustainable design strategies, generating on-site renewable power and/or purchasing (20 percent maximum) renewable energy and/or certified renewable energy credits.

Because of its innovative measures and decisions to reduce its carbon footprint, already the Center for Architecture is achieving 91 percent reduction in carbon emissions and plans to bridge the remaining distance to meet the 2030 Challenge through photovoltaic panels and the purchase of carbon offset credits.

➤ [Continues at ce.ArchitecturalRecord.com.](http://ce.ArchitecturalRecord.com)

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Program title: **“Renovating an Historic Structure for LEED Platinum Certification” (11/09, page 151).** AIA/CES Credit: This article will earn you one AIA/CES LU hour of health, safety, and welfare/sustainable design (HSW/SD) credit. (Valid for credit through November 2011). **Directions:** Refer to the Learning Objectives for this program. Select one answer for each question in the exam and fill in the box by the appropriate letter. A minimum score of 80% is required to earn credit. **To take this test online and avoid handling charge, go to ce.ArchitecturalRecord.com**

1. **What energy philosophy did Portland AIA implement?**
 - a. 100 percent natural gas power
 - b. 100 percent electric power
 - c. 100 percent solar power
 - d. Natural gas and electric power
2. **What does Low-E stand for?**
 - a. Low-Energy
 - b. Low-Environmental
 - c. Low-Emissivity
 - d. Low-Effort
3. **Which LEED credits did the wood windows help the Portland AIA building earn?**
 - a. Materials and Resources
 - b. Process Innovation
 - c. Sustainability
 - d. A and B
4. **How much carbon emissions reduction has the Portland AIA building realized?**
 - a. 22 percent
 - b. 31 percent
 - c. 91 percent
 - d. 94 percent
5. **Which of the following was not part of the Portland AIA Board of Directors’ goals for the new headquarters?**
 - a. High rise building
 - b. LEED Platinum space
 - c. Near public transportation
 - d. Flexible classroom space
6. **The Center for Architecture building was built in the 1880s and used originally as what type of space?**
 - a. Butcher
 - b. Stable
 - c. Blacksmith
 - d. Garage

7. **What type of concrete was used in the floor of the Portland AIA building?**
 - a. Disposable
 - b. Heavy-duty
 - c. Recycled
 - d. Flyash
8. **What type of exterior door opens the Portland AIA building to the surrounding neighborhood?**
 - a. French
 - b. Sliding
 - c. Folding
 - d. Garage
9. **For what percentage did the Portland AIA building earn a LEED point for sight lines?**
 - a. 25
 - b. 50
 - c. 75
 - d. 90
10. **What activity prompted the Portland AIA to investigate a rainwater management system?**
 - a. Excavation process
 - b. A seismic upgrade for earthquakes
 - c. Plumbing analysis
 - d. Irrigation planning

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Material resources used: This article addresses issues concerning health and safety and sustainable design.

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Strategies for More Sustainable Exterior Solutions

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Use the learning objectives below to focus your study as you read **Strategies for More Sustainable Exterior Solutions**. To earn one AIA/CES Learning Unit, including one hour of health safety welfare/sustainable design (HSW/SD) credit, answer the questions on page 166, then follow the reporting instructions or go to ce.ArchitecturalRecord.com and follow the reporting instructions.

Learning Objectives


After reading this article, you should be able to:

- Apply sustainable design principles to building living habitats as well as to provide water conservation in vertical, horizontal and planted installations.
- Discuss the selection of a wall coating system based on its performance, embodied energy and sustainable properties.
- Describe an exterior LED optical system that controls glare, saves energy and can be applied to dark sky planning codes.
- Apply product attributes to provide an opportunity for daylight harvesting, durability and safety in glass flooring.

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At the National Wildlife Federation Headquarters in Reston, Virginia, a living habitat is incorporated into the building façade. Photo courtesy of James Sable / greenscreen®



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Strategies For More Sustainable Exterior Solutions

By Celeste Allen Novak, AIA, LEED AP

There is beginning to be a rich consensus that it is better to build within the framework of environmental design rather than to ignore the living systems of our planet. Design stewardship means that professionals are now creating living habitats, buildings that breathe, environments that protect water resources and capture daylighting.

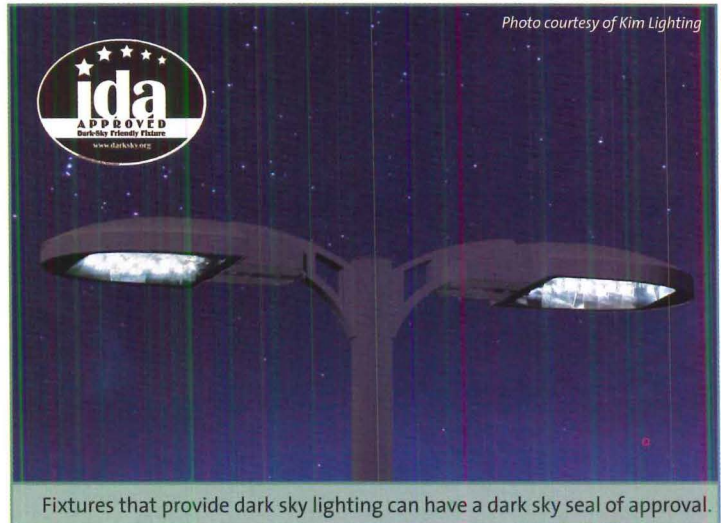
In the 1990s as a response to the emerging knowledge that buildings were wasting natural resources and energy, the AIA Committee on the Environment provided a list of measures to be used as metrics when selecting building systems. This article will describe some of the ways in which manufacturers are meeting the challenges posed by the AIA as well as the U.S.Green Building Council, to provide products that are beneficial to the environment.

Consider Building a Living Environment

“Managing the organic environment can be a challenge to the designer as well as the community that is required to nurture its growth patterns,” says Paul Baumbauer, President of IRONSMITH. Growing living screened façades, planting trees downtown or creating garden paving systems may require the integration of natural materials with other building systems, or at a minimum, the



Phoenix Civic Space Park features paver grates with unfinished aluminum trim rings to provide stormwater management.



Fixtures that provide dark sky lighting can have a dark sky seal of approval.

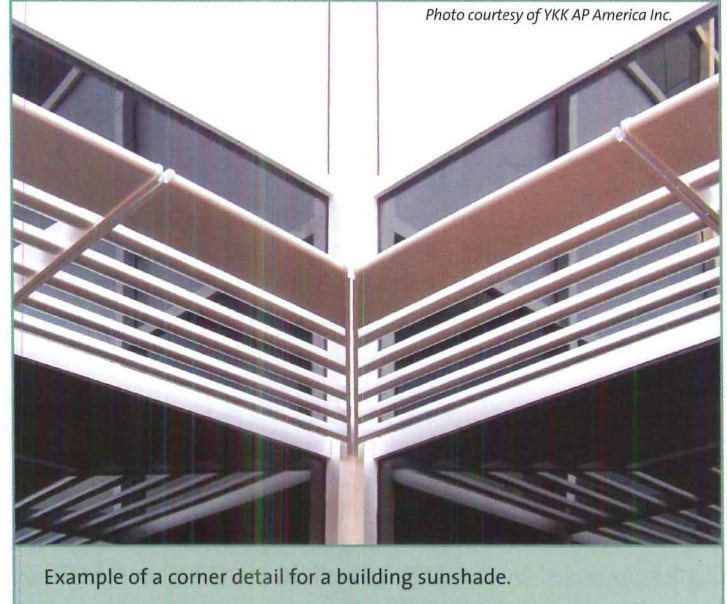
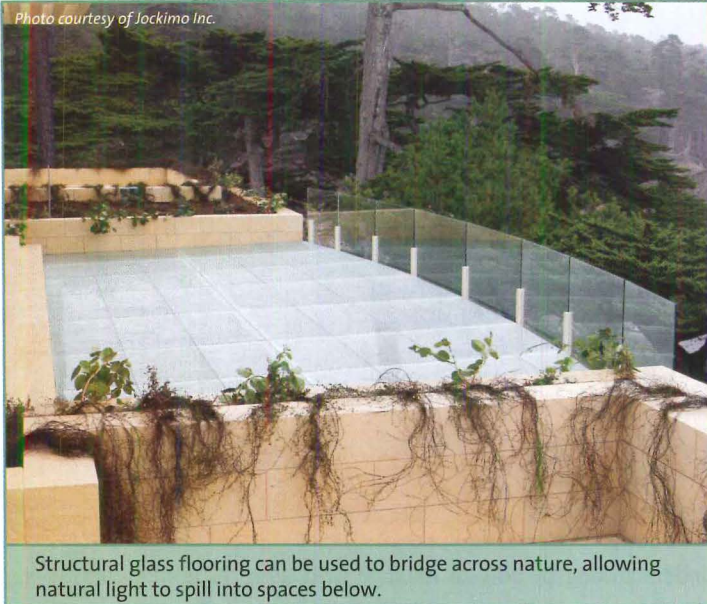
understanding of how to manage or design for a changing, living environment. Moreover, according to James Sable at greenscreen®, designing for nature “is more efficient building energy performance as well as human well-being. It is the means to embrace nature rather than protect from nature — by design. Natural spaces are designed to welcome humans and increase the daily experience of human life.”

Incorporating natural systems also includes low impact design for water conservation as well as the high impact designs for dark sky lighting and daylight harnessing. As Jim Engelke, ASLA, LEED AP, from SOIL RETENTION states, “It’s important to recharge our aquifers because the scope of our development has increased the amount of impervious surfaces and thus reduced their ability to recharge themselves. Whether from rooftops or roadways, water is conveyed off into storm drains to rivers and oceans, but the earth is not receiving its fair share.”

Controlling lighting at night, a “dark sky” practice, means that the design professional can provide both a safe nighttime environment without prohibiting a view of the night sky and stars to the surrounding neighborhood. According to April Ruedaflores, Marketing Manager of Kim Lighting, “Designers should be able to harness light and place it where it is needed.”

When using glass flooring to provide daylight harvesting, Tim Czechowski of Jockimo Inc. remarks, “There is an old saying, ‘knowledge is power,’ and that in order to choose the very best glass flooring and glass treads/steps, one must to learn as much information as possible about the product. Glass flooring is a liability product and in turn, using the safest possible glass flooring solution possible is critical when specifying it for projects.”

In the response to new market demands for materials that are safe for the environment, new products are now available that provide even more sustainability. As an example, a thin exterior surfacing system, with high thermal properties is made from cement rather than a petroleum product. John Garuti Jr. of Formulated Solutions LLC notes that it is now possible for chemistry to “provide the means to redefine a wall system, combining durability, flexibility, increased permeability and hydrophobicity — all within a zero-VOC cementitious system.”



Codes and standards are growing green, merging and creating new regulations. “Specifying systems that exceed code will help meet the new initiatives of the Department of Energy which is encouraging the U.S. construction market to build energy efficient buildings. The commercial fenestration market has improved over 50 percent in energy performance in the last 5 to 10 years and continues to focus on recycled content, life cycle performance and waste stream avoidance to bring the industry to new heights

of sustainable building.” says Mike Turner, Vice President of Marketing for YKK AP America Inc.

This article will review a number of strategies for more sustainable exteriors. The featured exterior products are highlighted with five of the “Ten measures of Sustainable Design” developed by the AIA Committee on the Environment. In general, many of these products meet more of these measures than are listed.¹

STRATEGY #1: MEASURE 4: BIOCLIMATIC DESIGN – BUILDING LIVING HABITATS

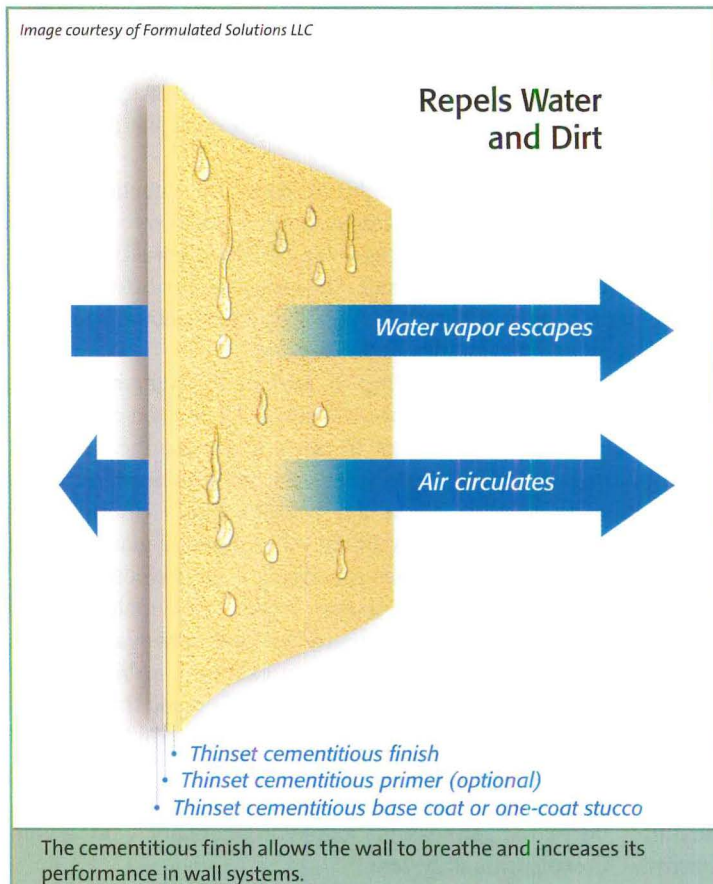
Sustainable design conserves resources and maximizes comfort through design adaptations to site specific and regional climate conditions.

The Vertical Wall — designing for living habitats and energy efficiency

The headquarters of the National Wildlife Federation is nestled into a wildlife area. Designed holistically, the massive planted screen wall on the south facing exposure is both a natural habitat as well as a mechanical system that reduces heat gain on the wall’s exterior facade. Indigenous deciduous vines were established to provide leafy shade in the summer and streaming sunlight in the winter. The three dimensional metal grid was engineered for the climate and cooling for the southern exposure of the building.

Providing a living green façade on, or adjacent to, buildings is beneficial for two main reasons. First, they are systems that can increase the performance of the mechanical system by providing both shade and natural cooling. When planted screens shelter rooftop mechanical systems or building facades, they protect the units from heat island gains and hot rooftop areas. Air that is tempered around the mechanical system reduces the cooling load; less energy is required to cool the ambient air to room temperature. Secondly, planted screens create a transition zone that incorporates nature into architecture when used to shade a building façade.

Modular, stacking green wall systems should be rigid, light weight and engineered to meet required spans and design loads.



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Planted green walls should have structural capability and can be attached at the perimeter of a wall system. Systems are available that can span from 8 feet to 12 feet and that can resist a 90 mph wind load. Some important criteria for professionals to consider include:

- Remember that green wall panels are designing with a living system that changes as it grows.
- Think about the importance of materials used to create the metal grids and choose systems that use a high percentage of recycled steel as part of a more carbon neutral design strategy.
- Review plant materials with a landscape architect or horticulturist. Living systems can take a while to mature and depending on the climate zone or urban environment should be chosen for adaptability and longevity.
- Account for the water, nutrient and drainage conditions that will change as the plant grows.
- Don't underestimate the time of growth, and provide information to the building owner on the reasons for investing in the maintenance of this living system.

One of the latest trends in using green walls is to create vertical gardens in multi-storied buildings. When designing at elevated surfaces, the professional needs to design this system as a series of elevated planters, understanding the solar orientation and wind loads as well as providing a means to convey water to raised floor platforms. Some of the future advances in green grid façade technologies will be the incorporation of gray water systems to efficiently support the building's long term integration of the plant areas, providing nutrients to the plants as well as water purification.

Vertical planting systems are also an important opportunity to contribute to community habitat planting. As shown in studies like Lloyd Crossing, by Mithun Architects, calculations can be made that reestablish native habitat, species, birds and plants to maintain a sense of place, expanding from the familiar

horizontal approach to the building site to include its vertical wall surfaces. Planted green wall systems can provide the place for bird songs, providing an acoustic buffer from the street.

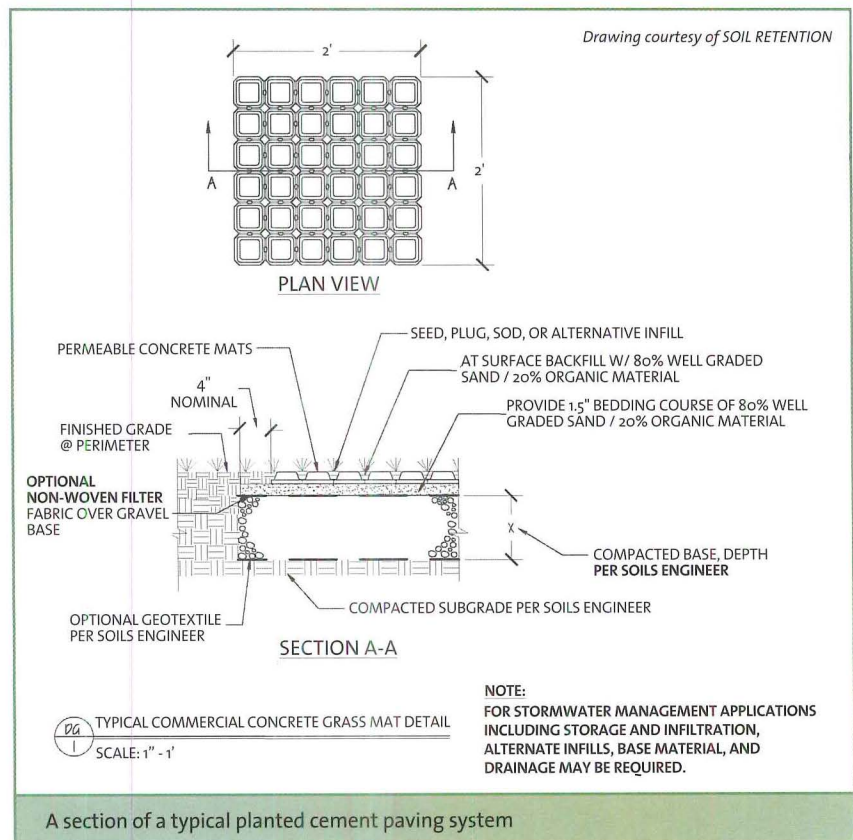
From a planning or community perspective, cities are often requiring more sensitivity toward the creation of place. Parking structures and large blank walls on commercial buildings can become assets rather than eyesores by the placement of vertical green walls. Using planted vertical green walls can assist the professional in obtaining credits in virtually every category of LEED® V3 including site development, water efficiency, regional credits, energy efficiency, recycled content and innovation. Planted green walls are an innovative way to make an aesthetically pleasing and natural habitat for the entire biology of the building site and the neighborhood of a locale in a new built facility.


STRATEGY #2: MEASURE 6: WATER CYCLE

Sustainable design conserves water and protects and improves water quality.

The Horizontal Plane — *designing for living habitats and water conservation*

Low growing oregano, marjoram and thyme, bring fragrance when grown in a permeable, flexible and plantable concrete paving system. Using permeable, flexible, planted paving systems provides an opportunity to recharge the local aquifers, the source of drinking water in all areas of the country. These systems can assist with federal requirements for storm water management, reduce heat island effects, and in some communities, increase



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glass treads and flooring

the proposed building footprint based on additional detention and infiltration areas per city ordinances and codes.

Most plantable concrete paving systems are cellular. One of the newest products is made from pre-cast concrete, cast around a flexible mesh. Installed correctly, this system will provide a living horizontal plane in a surface that will provide stormwater management as well as an innovative green parking garden. Plantable concrete paving systems provide an opportunity for the continuation of connecting living habitats across a site's infrastructure.

These systems can be as thin as one and one half inches thick, and be laid as a two foot by two foot precast concrete mat. The surface below the mat is prepared with a base of crushed rock, between three and four inches for residential applications and up to 12 inches for commercial projects. Over the aggregate a structured soil or root zone is placed, comprised of 80 percent sand and 20 percent organic materials. The mat is set over this engineered soil surface in grids that are fitted and aligned together. Because the mat layer is thin and set on top of the root zone, the plantings share irrigation moisture between all of the cells. In contrast, many individual cellular pavers are deeper and tend to constrict proper irrigation moisture from transferring cell to cell. In the Construction Specification Institute Master spec Section 32 12 43 (1997 Section 02795), permeable, plantable paving systems have their own category and performance standards.

The flexible concrete paving system is designed to expand and contract with the freeze thaw cycle, has low moisture content, and can be specified in numerous colors to match the designer's palette. Beside fragrant herbs, landscape designers can specify other low growing plants, silvery grasses, new hybrid drought tolerant buffalo grass or even just an aggregate or bark infill. After planting, the horizontal surface can be mowed as it grows or in snowy climates, with proper height adjustments can be scraped by snow plows with teflon runners and squeegee blades. In icy weather, planted driveways provide, safe walkways as the concrete warmed by the sun, transfers heat through the soil providing ice melt that infiltrates into the ground below instead of ponding.

The new Red Bull headquarters in Santa Monica, California, designed for LEED® platinum, by architect Yi Shen with HLW International, used permeable paving for storm management.

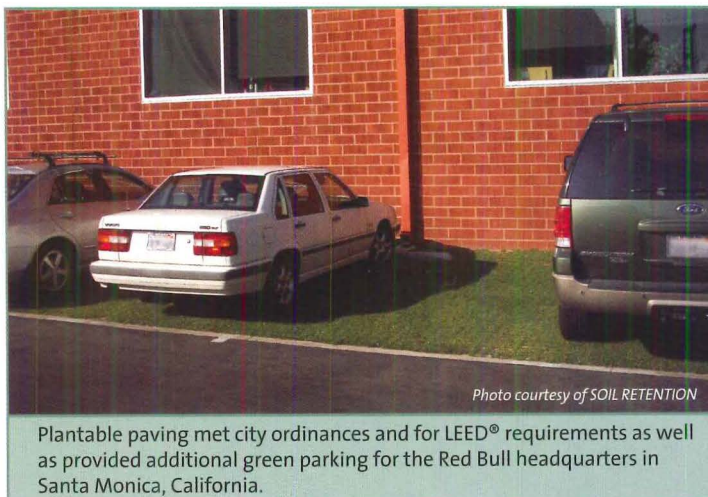


Photo courtesy of SOIL RETENTION

Plantable paving met city ordinances and for LEED® requirements as well as provided additional green parking for the Red Bull headquarters in Santa Monica, California.

Plantable concrete paving systems can assist with LEED® credits in numerous ways. In site development categories, they protect and restore habitats, maximize open space and provide stormwater design credits for quality and erosion control. They assist with the reduction of heat island effects for non-roof categories and some systems can also be used for green roofs. These paving systems can be used as a permeable water filter that can collect water for re-use, and planted with water efficient landscaping for more water savings on the site. They can contribute to an innovation credit as part of an integrated strategy for design and site planning.

Plantable concrete paving systems provide an opportunity for the continuation of connecting living habitats across a site's infrastructure.

Tests have been performed on these systems that show that they maintain their stability, even under the weight of large vehicles, providing proof for city fire departments that this product meets requirements for deflection standards. This product should be installed as a system. A common mistake is to believe that the substructure is not needed in order to grow a paved field of grass. These concrete mats can have up to 45 percent replacement of portland cement with fly ash, providing assistance with LEED® V3 credits for the highest levels of post-consumer recycled content. Many of these systems are manufactured throughout the United States and can also assist with credits for regional materials.

As an added bonus, planted concrete paving systems are easy to install and can increase buildable footprints by reducing detention requirements. Last year, six or seven church volunteers in Florida installed over 5,000 sf of pavers a day for their new planted driveway area. Local planning and building departments are requiring more stormwater onsite retention to comply with the federal National Pollutant Discharge Elimination System (NPDESII) statute. In response, architects and owners are providing alternative parking areas that also double as infiltration basins.

Planted concrete paving systems provide professionals with many opportunities for LEED® credits including those for site development, stormwater design, heat island effect, water efficient landscaping and recycled content not to mention the many ways to design with these systems for innovation credits. Professionals and homeowners are planting natural areas in constructed parking lots and driveways to increase green space. Installing planted driveway paving systems can contribute to the reduction of the heat island effect in urban areas, create more opportunities for storm water detention, and help the environment with an ecological alternative to solid asphalt or concrete paving.

► [Continues at ce.ArchitecturalRecord.com](http://ce.ArchitecturalRecord.com).

Celeste Allen Novak, AIA, LEED AP principal at rizzolobrown + novak architects specializes in sustainable design materials and methods and teaches as an adjunct professor at Lawrence Technological University.

See Quiz on Page 166

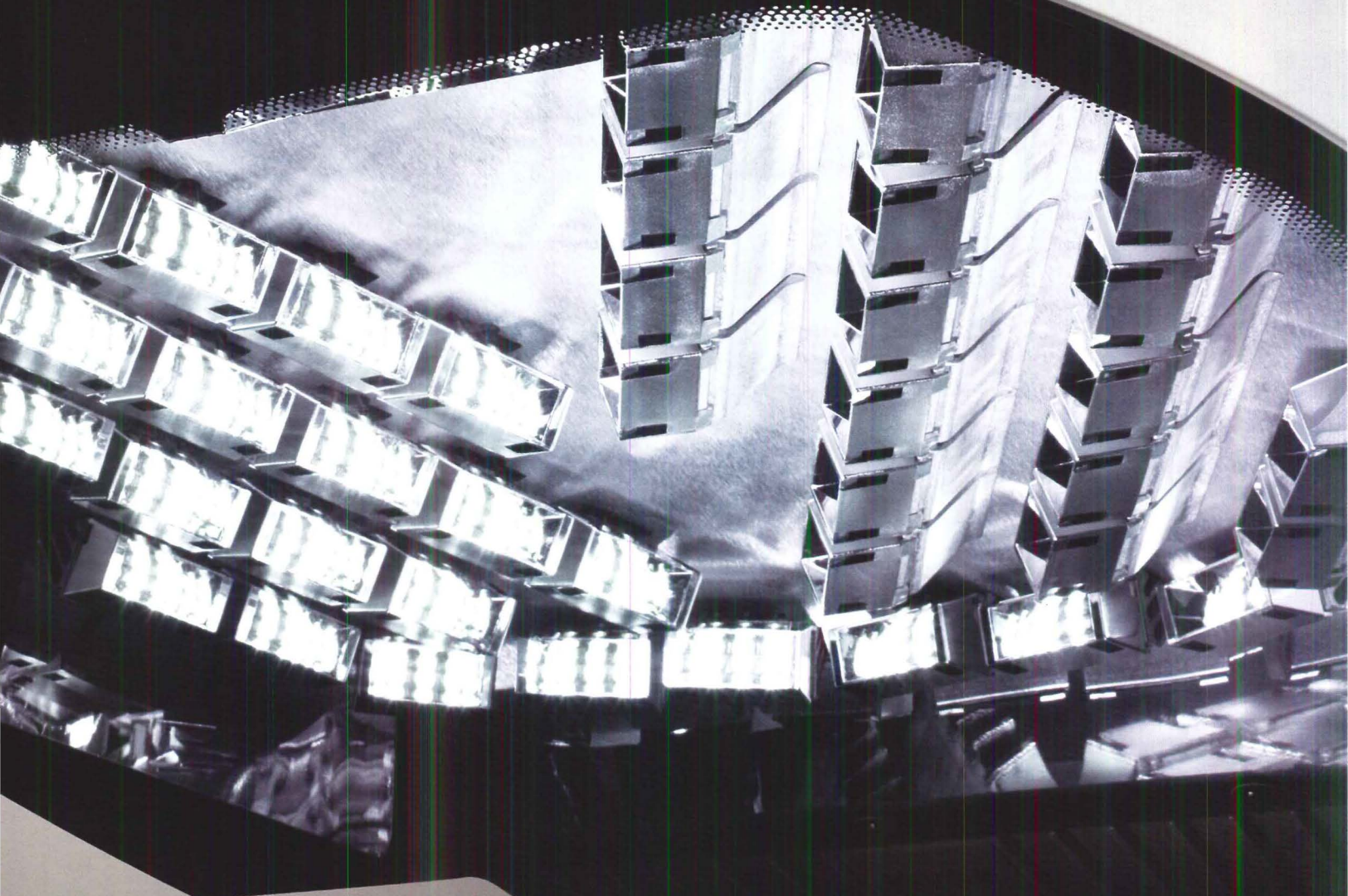
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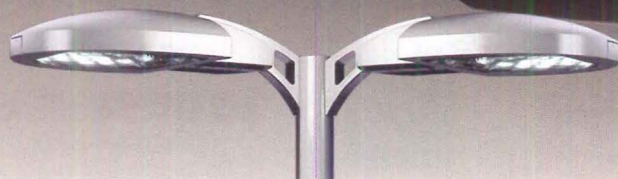


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Program title: "Strategies for More Sustainable Exterior Solutions" (11/09, page 157). AIA/CES Credit: This article will earn you one AIA/CES LU hour of health, safety, and welfare/sustainable design (HSW/SD) credit. (Valid for credit through November 2011). **Directions:** Refer to the Learning Objectives for this program. Select one answer for each question in the exam and fill in the box by the appropriate letter. A minimum score of 80% is required to earn credit. **To take this test online and avoid handling charge, go to ce.ArchitecturalRecord.com**

1. Planted green screens:

- a. cause building mold.
 b. amplify noise from the exterior.
 c. provide cooling and reduce the mechanical load.
 d. cannot be used for LEED® credits.

2. Drivable concrete paving can be:

- a. permeable.
 b. flexible.
 c. plantable.
 d. All of the above

3. The principal advantage of a concrete mat system over cellular permeable paving is:

- a. irrigation is limited to individual plant watering.
 b. irrigation moisture is distributed more evenly among all of the plants.
 c. plants are part of the delivered system from the factory.
 d. concrete can be cast on site to make any grid area.

4. Professionals who use trees as a design strategy should:

- a. educate their clients.
 b. require volunteer assistance.
 c. not worry about climate for finish protection.
 d. work only with new tree planting systems.

5. Thermal de-bridging can be accomplished by:

- a. placing the curtain wall directly on the slab.
 b. using systems with no thermal barriers.
 c. installing windows with monolithic glazing.
 d. installing sun shading devices with thermal anchors.

6. What certification is defined as the evaluation of the eco-effectiveness of a product by assessing the materials used in its production as well as the production process itself, including the use of renewable energy, water conservation and stewardship, and the manufacturers' social responsibility?

- a. C2C
 b. LEED® Platinum
 c. AIA Top Ten Award
 d. Green Globes

7. Thinset cementitious surfacing is:

- a. permeable.
 b. flexible.
 c. durable.
 d. All of the above

8. Which of these differentiate thinset cementitious surfacing from acrylic-based EIFS systems?

- a. The professional only has limited color choices.
 b. The product has zero VOCs.
 c. The product can't be used in coastal areas.
 d. The product can be applied as a dry coating.

9. The ADA requires that walking surfaces exceed an anti-slip rating of:

- a. 0.5.
 b. 0.6.
 c. 0.7.
 d. 1.0.

10. LED lighting:

- a. cannot be used outdoors.
 b. cannot be used in hot climates.
 c. contains lead and mercury.
 d. can be used in community street or site lighting.

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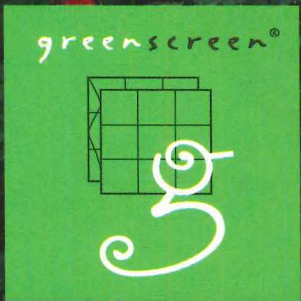
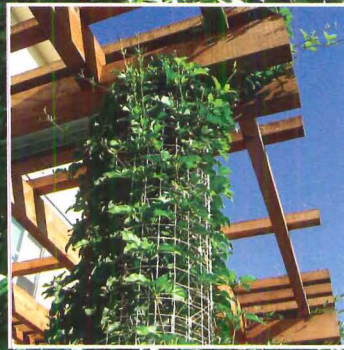
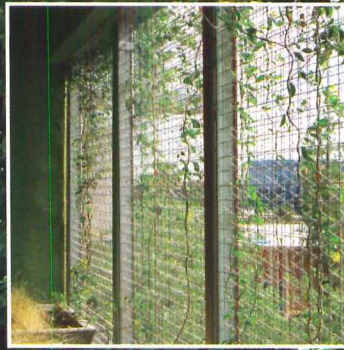
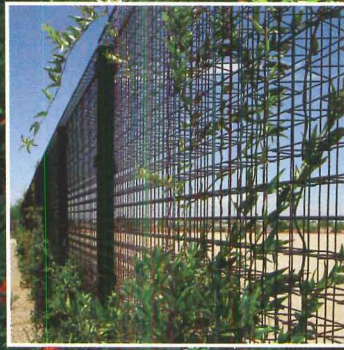
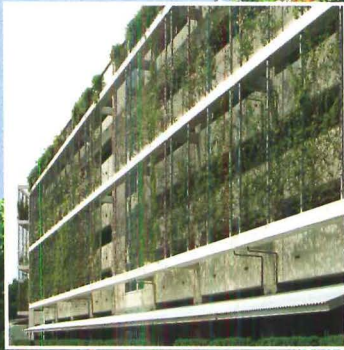
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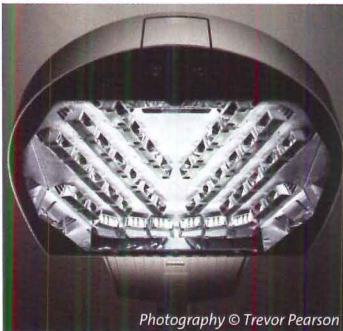
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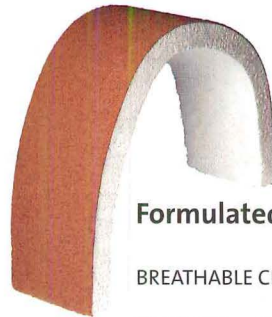
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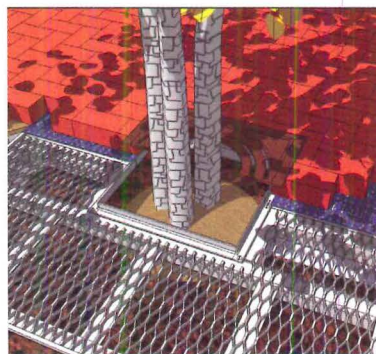
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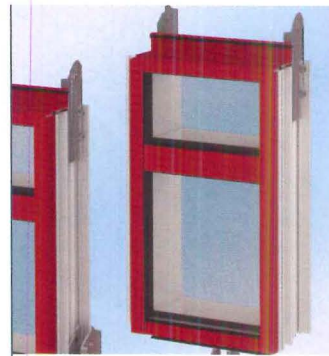
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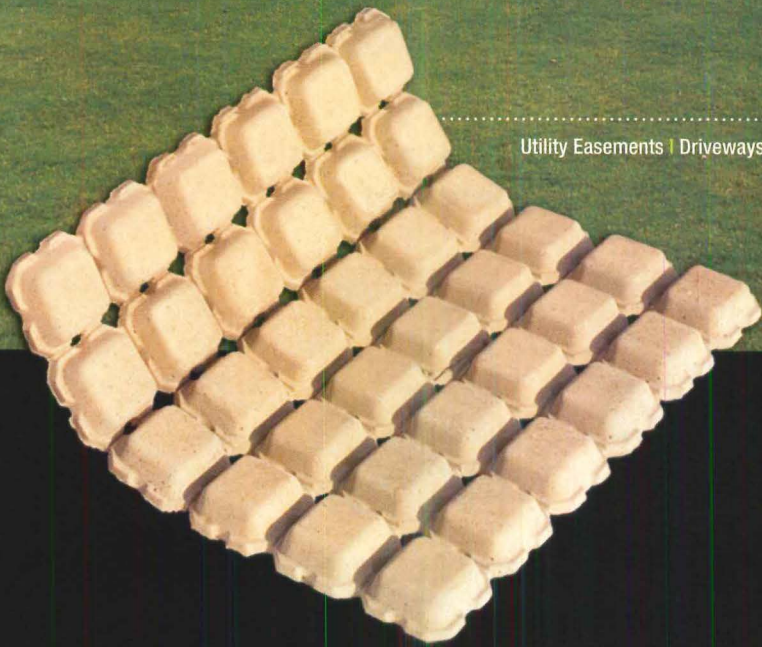
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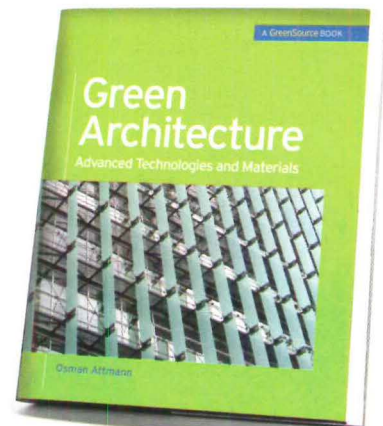
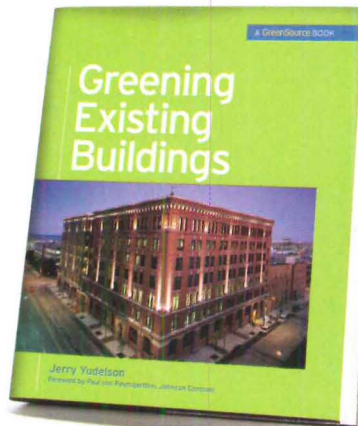
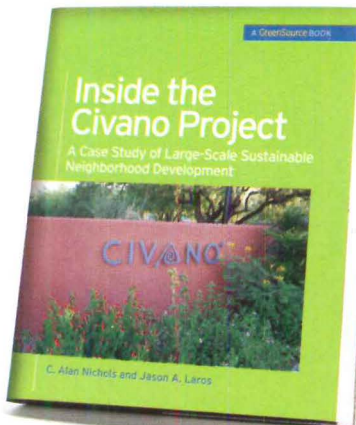
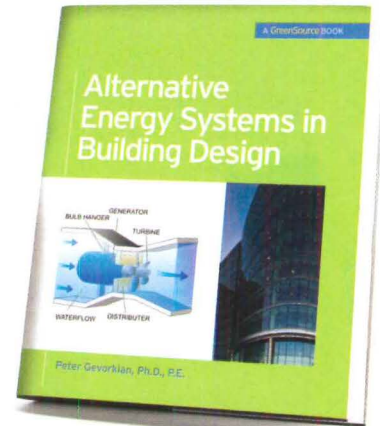
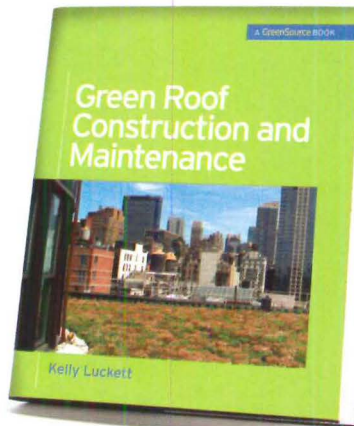
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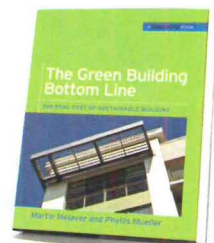
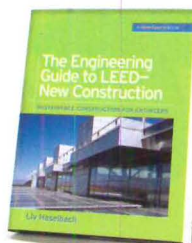
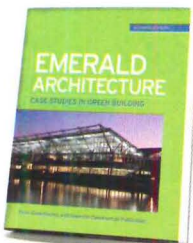
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An emblematic project for engineering sciences and for administrative services at the l'Ecole Polytechnique Fédérale de Lausanne (EPFL)



EPFL is to pursue its development with the renovation of two buildings at the very heart of its Ecublens campus.

The project centres on a landmark building for engineering sciences. Based on the present mechanical engineering halls, this new building will be home to the Institute of Bioengineering, including the new Centre for Neuroprosthetics, a technology showcase for EPFL's engineering teams. The project also involves the refurbishment of the former central library, which will allow the regrouping of several key administrative services.

These buildings will form a key link between the new Rolex Learning Center and the existing campus buildings.

EPFL is launching an international call for a prequalification competition. Interested architects may submit a presentation dossier for the initial procedure, and preliminary study mandates will be attributed to selected candidates. The successful project will be selected by an international jury and executed by a general contractor.

Relevant information can be obtained from:

EPFL

Domaine Immobilier et Infrastructures

Unité des Constructions

BS 207

Station 4

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Switzerland

or at <http://chantiers.epfl.ch/>

Dossiers must be received at the above address by 12h00 on 30th November 2009, at the latest.



Nordwesthaus, Austria Baumschlager Eberle	173
Tiffany Ginza, Tokyo Kengo Kuma	177
Peace Bridge, Buffalo, N.Y., and Fort Erie, Ontario, Canada Mulvey+Banani International	181
Lighting products	183

The ubiquitous “abuse” of the light-emitting diode (LED) has cluttered the landscape with visually jarring displays of lighting for lighting’s sake. Yet, when used properly and with discretion, this ever-progressing technology can be a powerful design tool, as illustrated by the three successful projects that are presented here. In each case, the flexible capabilities of LED modules and luminaires, along with the benefits of sophisticated programming, enabled the designers to manipulate light, merging it with the architecture to create context, establish identity, and define structure. The effects are dazzling – and illuminating!

Baumschlager Eberle’s **Nordwesthaus** casts its reflection on a quiet corner of Lake Constance

By Linda C. Lentz

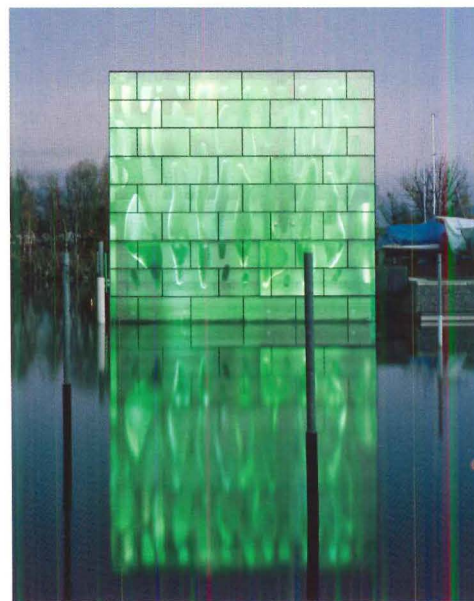
AT THE BASE OF LAKE CONSTANCE, WITHIN the picturesque Rhine Delta Nature Conservation Zone of southwestern Austria, a radiant, transparent pavilion celebrates the completion of a small but distinctive marina in the town of Fussach. A two-level, multifunctional event facility-cum-boat-house dubbed Nordwesthaus, the 2,067-square-foot structure appears to float on the edge of the moorings. A virtual beacon in its peaceful environs, it casts a shimmery reflection on the waterscape, and according to architect Dietmar Eberle, Nordwesthaus “is already an attraction for architecture tourists.”

Nearly a decade in the making, the Hafen Rohner (Rohner Port) is the result of a three-phase rehabilitation process that began in 1999. At that time, the owner, Maria Rohner, collaborated with the nearby Lochau office of Eberle’s firm, Baumschlager Eberle, to devise a plan that would transform the site of her family’s recently dismantled lakeside aggregate business to a more suitable enterprise for the idyllic wetland setting. Phase One, a yacht harbor along with a dramatically cantilevered single-story office building for Rohner created by the architects [RECORD, October 2001, page 140], made design waves when it was completed in 2000. Phase Two, a radical redesign of the shoreline, followed in 2005. Nordwesthaus, which is the culmination of the project, was realized in July 2008.

The ethereal yang to the cooler yin of its notable predecessor – a raised cast-concrete “tube,” dynamic in its horizontal linearity, with long, slotted windows on two sides and one fully glazed elevation fronting the lake – the new building is a crystalline rhomboid erected on landfill and supported by a base of piles beneath a concrete foundation. It rises approximately 45 feet from the water. And while the earlier office is a wood-lined concrete shell, Nordwesthaus comprises an amorphous, openwork concrete form enveloped by a glass box made of 5-by-10-foot double-glazed, float-glass panels framed in metal T-profiles and fixed to the structure with steel clips. Its textured exterior surface layer softens the sharp contrast of the solid concrete core and its translucent envelope.

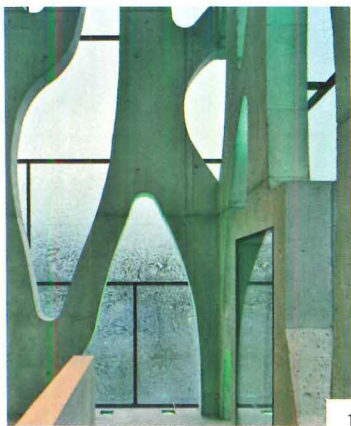
“The purpose of these overlays is to allow light and shade to move around the inside,” Eberle explains. By day, sunlight interacts with the architecture, transforming the interior into a kaleidoscope of its surroundings. In the evening, the lighting creates an X-ray effect that reveals the building’s structural skeleton through the glass, producing a reedlike moiré pattern that evokes both water and flora.

“The rich light display was always important in making design decisions,” says Eberle. For that reason, he and project architect Christoph von Oefe worked with the Austria-based lighting



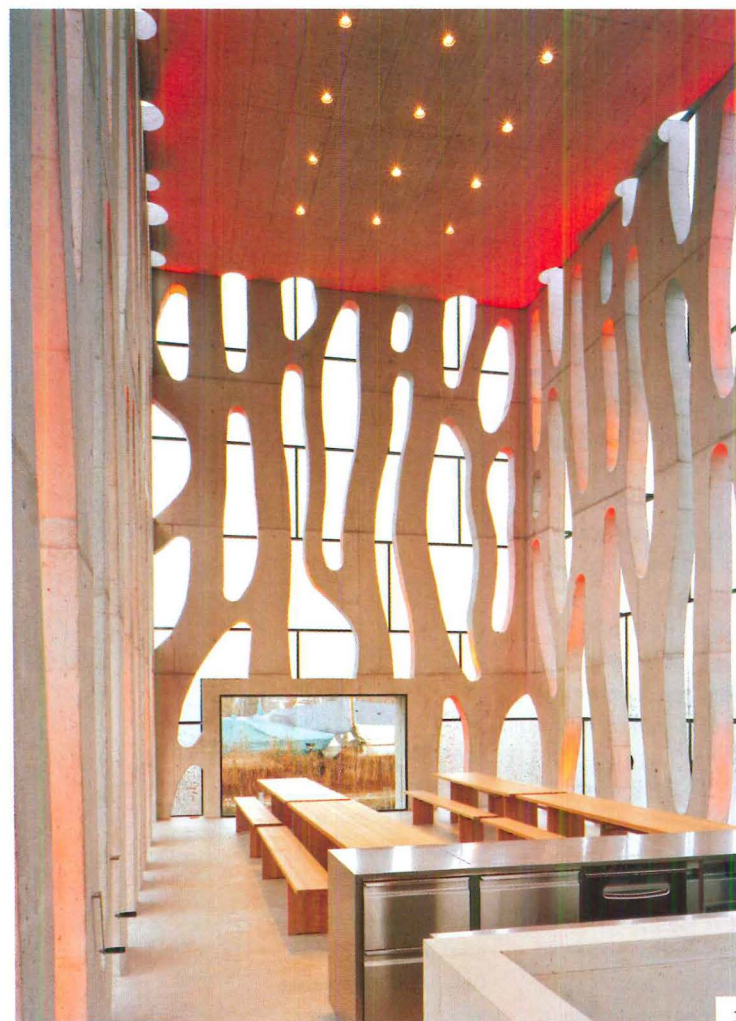
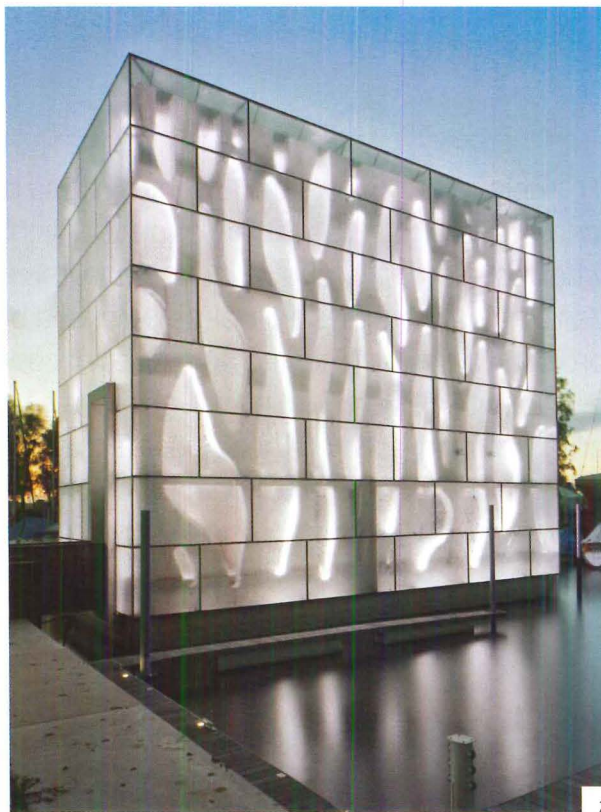
ABOVE: The reedlike concrete skeleton of Nordwesthaus is reflected through the exterior glazing onto the lake.

OPPOSITE: Halogen downlights and custom LEDs illuminate a variety of functions.



1. Custom LED luminaires are embedded in recesses of the structural concrete form.

2.,3. DMX-controlled lighting schemes cycle through a vast array of hues from icy white to fiery reds.



Project:

Nordwesthaus,
Fussach, Austria

Architect:

Baumschlager
Eberle—Dietmar
Eberle, principal;
Christoph von Oefele,
project architect

Consultants:

Ledon (lighting
design); Mader + Platz
(structural engineer);
GMI Ing. Peter Messner
GmbH (building
technology)

SOURCES

Lighting: Ledon
(RGB LED spotlights;
DMX 512); Zumtobel
(downlights)

Glazing:

Glas Marte (ICE-H)

Concrete:

Oberhauser-Schedler
Bau

manufacturers Ledon and Zumtobel to devise a scheme combining incandescent and LED sources. The solution not only illuminates the unique structure effectively in the landscape, but also provides the appropriate light levels and ambience required for a wide variety of functions, including business seminars, workshops, parties, private dinners, readings, and music recitals.

To accommodate the more utilitarian needs of the diverse programs, a series of halogen downlights was installed in the 29-foot-high concrete ceiling of the simply furnished main space. "These lamps introduce a certain light intensity that enables the participants of seminars to read texts," says Eberle. Plus, he adds, they can be dimmed, which assures an aesthetically seamless integration with the more atmospheric LED system – the ultimate wow factor – composed of 116 LED spotlights developed by Ledon specifically for the project.

Embedded in discreet recesses around the perimeter of the concrete floor, each removable luminaire is made up of 12 integrated RGB (red/green/blue) LED modules that offer a vast range of more than 16 million colors. The composition of the luminaires allows for extremely subtle shade variations during any one of the Digital Multiplexing (DMX)-controlled sequences programmed to cycle through the entire color spectrum, from icy white tones to fiery reds, oranges, and yellows. Asymmetrical optics on the face of the fixtures distribute the light evenly to ensure that the amoebalike voids in the walls are fully illuminated, spreading the beams wide to the sides of the room, and to the outside – without the spotty, unpleasant glare sometimes associated with overly bright or exposed clusters of light-emitting diodes.

In terms of logistics, Eberle notes that there are no active heat sinks because the mass of the concrete structure in which the LED luminaires are installed keeps them cool, running smoothly at optimum outputs, and low-maintenance. Additionally, both the energy supply and DMX controls are easy to access on the lower ground floor, and the operation desk is conveniently situated at the bar located in the event space.

Beyond contributing to the building's landmark status, the carefully considered lighting at Nordwesthaus seems to be good for business. Rohner reports that it highlights every event perfectly and provides impressive staging.

"The sequences loop every five minutes," says Eberle, so that when they are activated, there is continual movement. "The overall effect is difficult to describe or even illustrate in photographs," says the architect. Never harsh or sudden, the lighting generates a gentle vibrancy and aura that ultimately fuses with the architecture. ■

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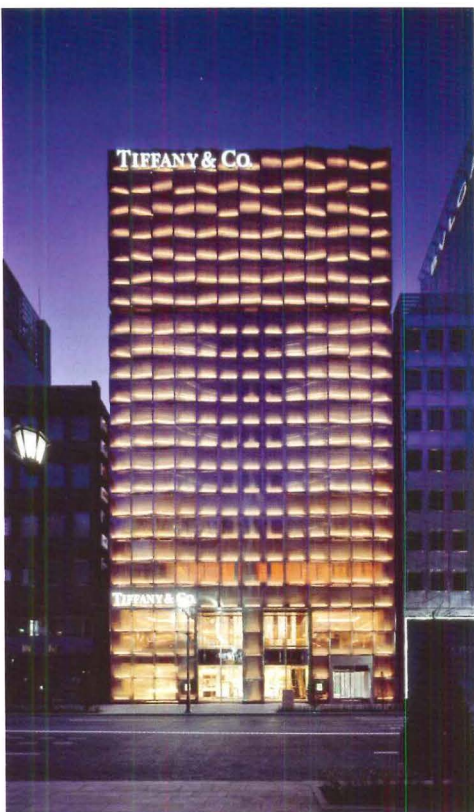
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ABOVE: Rows of pinpoint LED luminaires provide a glittering effect on Tiffany's facade.

RIGHT: An expansive backlit stone wall greets visitors in the entrance foyer.



Kengo Kuma creates a luminous jewel box for **Tiffany Ginza**

By Naomi R. Pollock, AIA

NOTHING SAYS ELEGANCE LIKE A CLASSIC

Tiffany diamond. And nothing evokes a Tiffany diamond (in architectural language) like the facade of the jeweler's flagship store in the heart of Tokyo. The creation of architect Kengo Kuma, this shimmering, faceted wall of aluminum honeycomb and high-transparency glass reflects street activity during the day but turns into a dazzling light show when the sun goes down.

Prominently located on a broad boulevard in Ginza, the city's high-end shopping district, the new store fills the base of an aging, nine-story office building acquired by the New York retailer for its Tokyo headquarters. "We wanted this building to visually represent Tiffany in Japan,"

explains Michael Crist, president of Tiffany & Co., Japan. Adding fresh sparkle and luster to the tarnished structure, Kuma's proposal for a new facade plus an interior renovation won the heart of Tiffany's competition jury.

Both client and architect wanted to front the street with a uniform elevation, though the store itself only occupies the bottom three floors of the building. The first level targets the young, trendy shopper, the second aims at the big spender, and the third hosts a customer-service area in addition to a salon. Tenant office space occupies the remaining floors above. Inspired by Tiffany's signature diamond setting, in which the cut stone is lifted from the ring allowing light to reach it

from multiple directions, Kuma covered the entire wall with individual square panels, all 292 of them canted at various angles and mounted separately with steel prongs. "We treated each panel as an independent architectural piece," says Kuma.

Composed of two layers of honeycomb, an aluminum material normally hidden inside airplane wings but here laminated between glass sheets and secured by steel frames, every panel is illuminated from behind by a row of LED pinpoint luminaires. Lining the base of each panel, these lights were chosen not just for their compact size and long lamp life but also because of their welcoming, warm white color of 3000 Kelvin. Up close, the metal screens emit a brilliant glow, but



1,3. Within the shop, the architect and lighting designer specified space-saving LED tape to accommodate building constraints, halogen spots for sparkle, and fluorescent fixtures for ambient illumination.

2. Kuma's chandelier, lit with LED pinpoint strips, echoes the building's exterior.

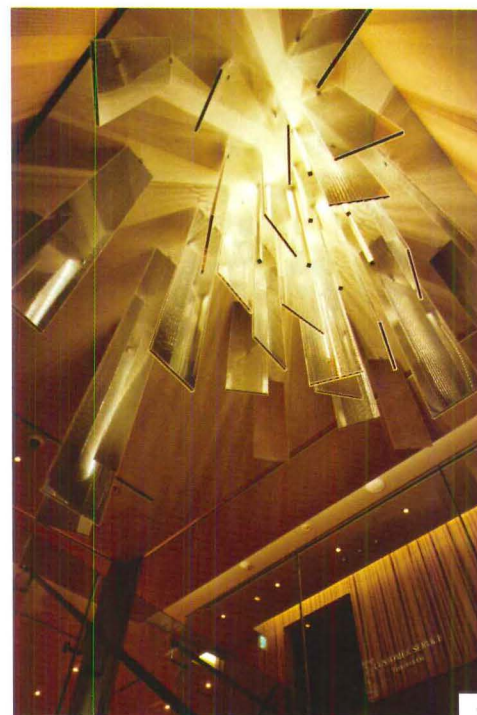


from afar, the building's broken surface makes a different statement, especially at night when the tiny lights go on and off in a smooth, undulating sequence. "We wanted to create an optical effect with the character of breathing," explains the facade's lighting designer, Satoshi Uchihara.

But the bling does not stop at the front door. Unlike most Tiffany shops around the world, this one opens with a dramatic, double-height entrance foyer that binds the two sales floors together. Visible from the outside but spectacular on the inside, the atrium's back wall of golden stone acts as the showpiece of this well-appointed store. Sourced and sliced in Italy before shipment to Japan, the 0.16-inch-thick stone panels are

glued to sheets of high-transparency glass in front and supported by 0.39-inch-thick glass slabs in back. Lit from behind by ceramic-metal-halide lamps enclosed within reflective panels, the luminous wall with its crystalline pattern is a mesmerizing sight that complements the jewels displayed in its recessed niches.

Within the shop, Kuma had to choose space-saving luminaires, such as LED tape, that could accommodate dropped beams and other building constraints, plus he had to incorporate the company's standard lighting solutions: halogen lamps to spotlight the merchandise, LEDs within the showcases, and fluorescent fixtures for ambient lighting. Nonetheless, a magnificent, Kuma-



Project: *Tiffany Ginza, Tokyo*
Architect: *Kengo Kuma & Associates—Kengo Kuma, principal*
Lighting Design: *Uchihara Creative Lighting—Satoshi Uchihara, principal*

SOURCES

Curtain wall: *DEVICE (honeycomb); Asahi Glass (glazing)*

Lighting: *Maxray (interior downlights and ambient fixtures)*

Stone: *Nagano Stone Co.*

designed chandelier crowns the stairway that connects the second and third floors. Composed of 27 rectangular panels of acrylic-covered aluminum honeycomb – each one outlined with an LED pinpoint strip – the fixture echoes the materiality and twinkle of the eye-catching facade.

Combining luminescence and transparency, Kuma's scheme is a decidedly new direction for the venerated brand famous for its vaultlike exterior wall and shuttered steel doors. It is a strategy that firmly establishes Tiffany's presence in Ginza without severing the tie to Fifth Avenue. ■

Naomi R. Pollock, AIA, is *ARCHITECTURAL RECORD's* special Tokyo-based international correspondent.

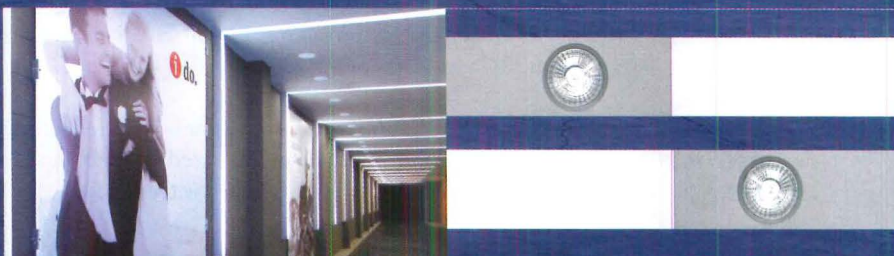
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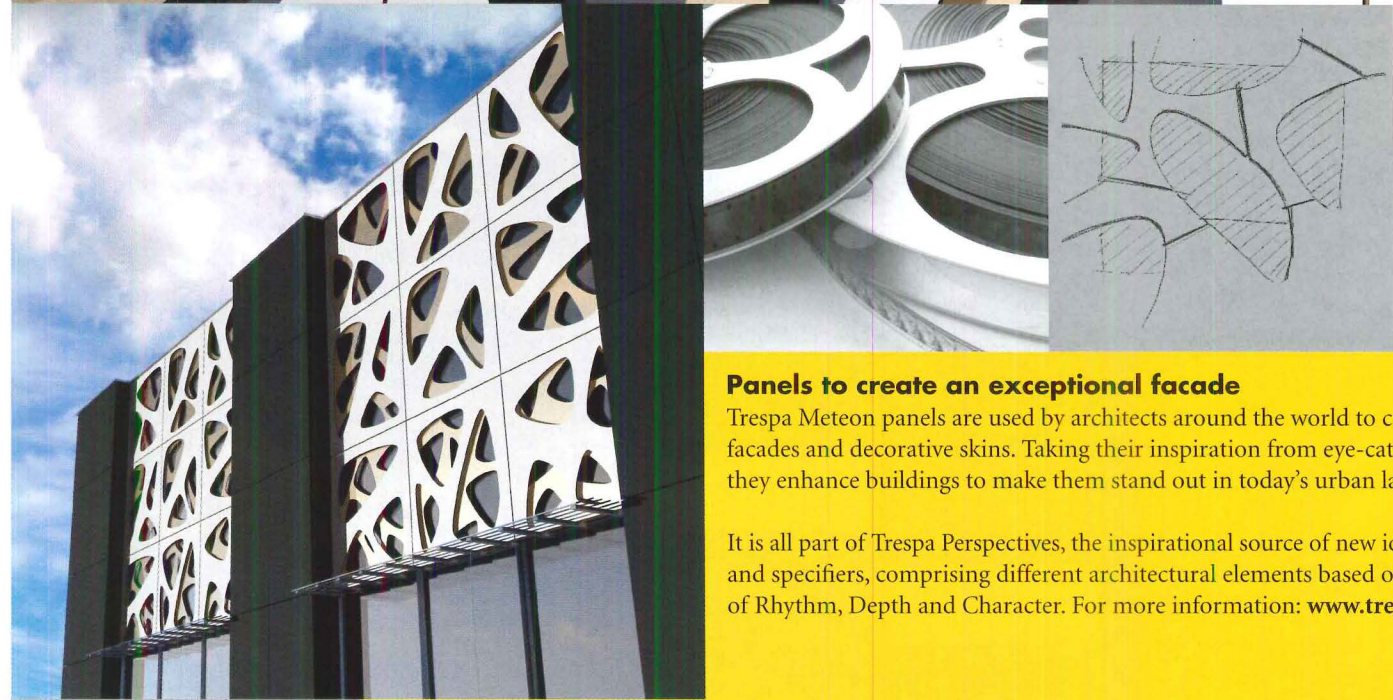
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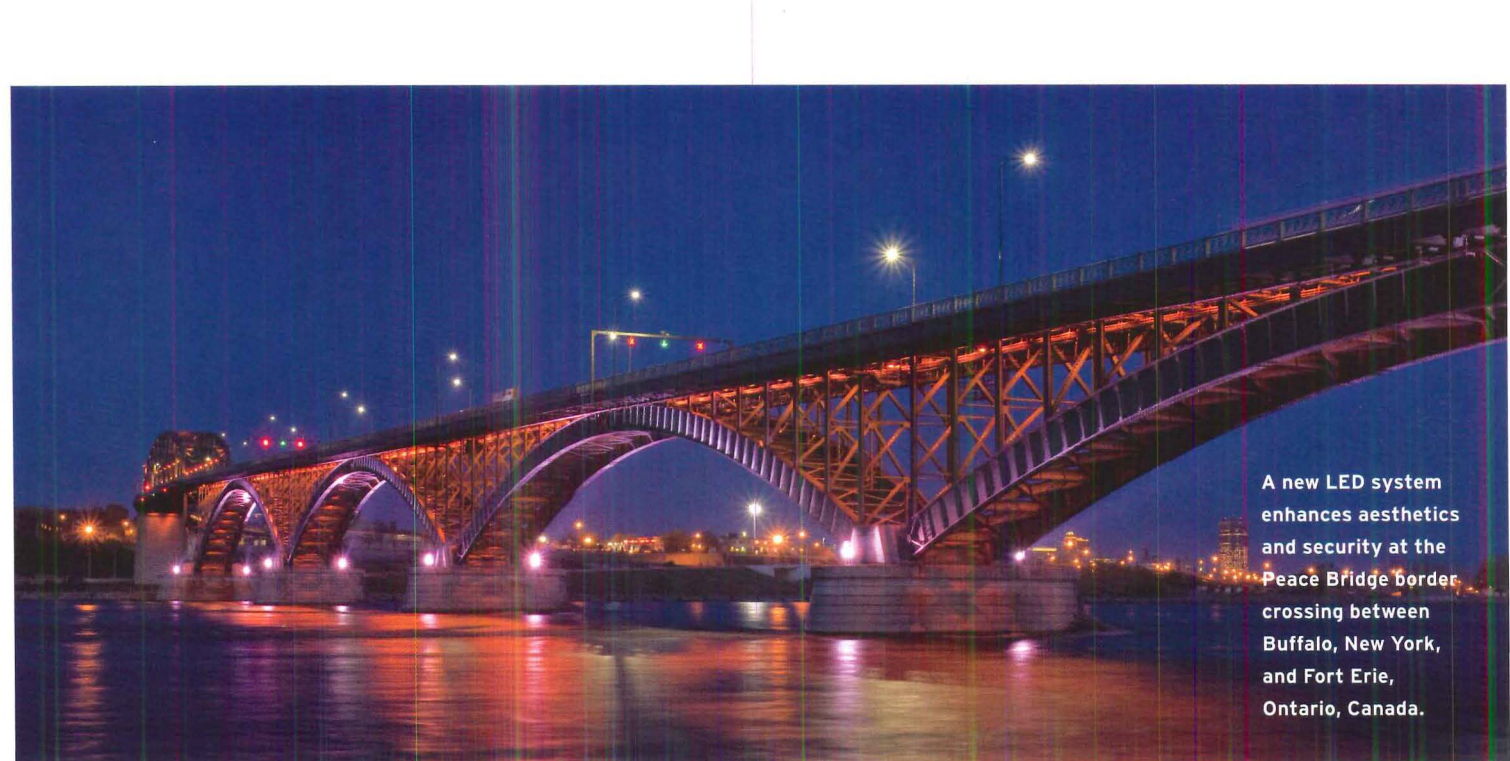
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A new LED system enhances aesthetics and security at the Peace Bridge border crossing between Buffalo, New York, and Fort Erie, Ontario, Canada.

Mulvey+Banani illuminate the U.S. Peace Bridge to Canada

By David Sokol

THE PEACE BRIDGE CONNECTING BUFFALO to Fort Erie, Ontario, commemorates cordial relations between Canada and the United States. Yet until last January, the high-pressure sodium lamps illuminating the hulking deck bridge exemplified hostility. “They were causing glare and not really lighting the structure at all,” says Mulvey+Banani senior lighting designer Paul Boken.

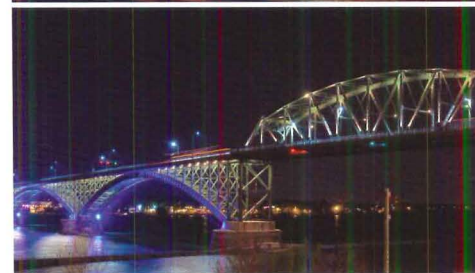
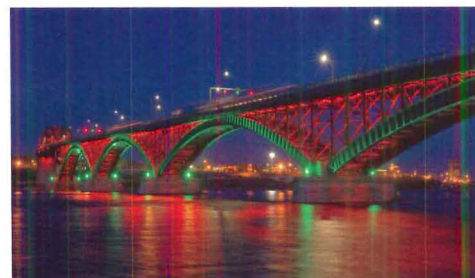
So when the joint American-Canadian Peace Bridge Authority received a \$1 million grant to upgrade systems, it determined the old equipment should go, and commissioned Mulvey+Banani to develop a new lighting concept in March 2008.

Completed in May 2009, the firm’s design underscores the beauty of the bridge’s lace-like trusses and its overall symbolism. “A bridge represents movement, so we didn’t want to create a static image,” Boken explains. Now, at the top of the hour, a light system manager (LSM) randomly chooses from approximately 50 light sequences, and for 10 minutes it washes the bridge in duotone combinations or pulses of illumination. For the remaining time, the LSM chooses a single static arrangement from a collection that ranges from pastel pairings to a simple whitewash to special holiday and Buffalo Sabres color schemes.

According to Boken, there are 695 LED luminaires installed on the 5,800-foot-long bridge. To

integrate them, the designer used a holistic Color Kinetics system with software that maps and engages the LEDs in clusters, rather than individually, for numerous lighting sequences. Its DMX (Digital Multiplexing) signals then travel from the Fort Erie-based server on fiber-optic cable spliced to fiber-optic infrastructure installed underneath the bridge. At six junctions evenly spaced above bridge piers, the fiber-optics convert to ethernet wiring. This controls the LEDs, which are not compatible with fiber-optic technology, inconspicuously tucked underneath structural beams on Unistrut arms – and within reach of a suspended catwalk for easy installation and maintenance.

Daily light shows entertain residents on both sides of the Niagara River as well as anyone driving across it. To let drivers enjoy these colorful displays without distraction, the design team mounted canted LED luminaires on a Parker truss 6 feet above the height of a typical truck cab and shielded each fixture with a honeycomb louver. “We weren’t so concerned about light reflecting on the beams,” notes Boken, “but rather showing a source that could be mistaken for a stoplight.” In a similar spirit of safety, new full-cut-off, metal-halide lamps increase visibility for motorists and security cameras. Yet, despite its use of state-of-the-art illumination combining LED and metal-halide sources, Mulvey+Banani’s lighting design for the Peace Bridge has reduced its average energy consumption by 50 percent. ■



Project: Peace Bridge, Buffalo, N.Y., and Fort Erie, Ontario, Canada

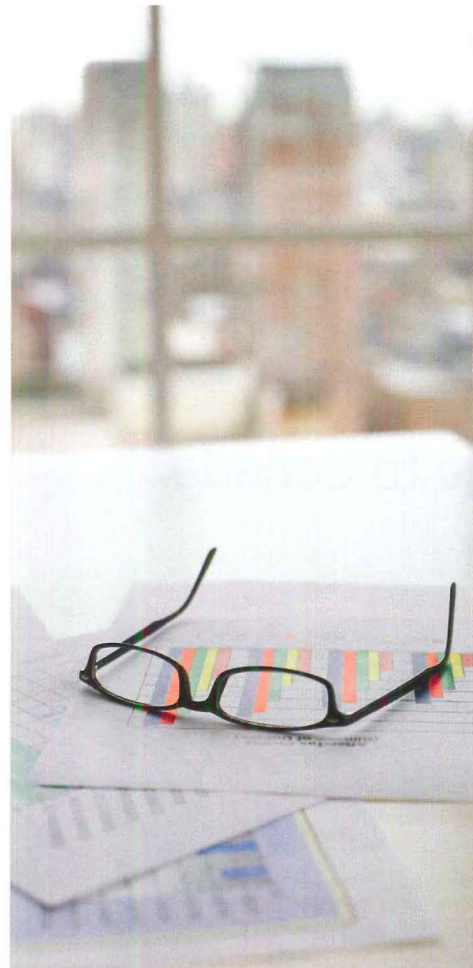
Lighting Design: Mulvey+Banani International—Paul Boken, senior lighting designer

SOURCES

Lighting: Philips Color Kinetics (LED luminaires and technology)

David Sokol is a New York-based contributing editor to ARCHITECTURAL RECORD.

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Lighting PRODUCTS

► **Lighting, out of a box** The handmade pendant scrap lights from graypants are created out of repurposed cardboard boxes gathered from dumpsters and local businesses in the Seattle area. Founded by architects Seth Grizzle, Jonathan Junker, and Jon Gentry, graypants is in the process of teaming up with Refugee Women's Alliance and other similar organizations in Seattle to help provide a craft-based skill to local refugee women. The scrap lights, which take two to three hours to fabricate, have been used in restaurants, galleries, offices, and residences. graypants, Seattle. www.graypants.com **CIRCLE 200**

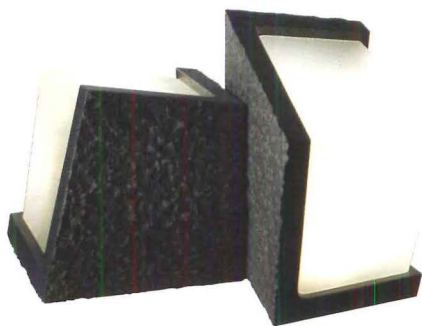


► **Retro industrial** Based on the classic "trouble finder" light used for working in small spaces at the turn of the 20th century, the Wiley lamp (far right) maintains its original look with a built-in handle made of FSC-certified oak, light guard cages, and glare shields. Four shade options include the "daisy" (shown, far right) which fans open at the bottom for changing the bulb. The McCoy (near right) is a stripped-down industrial pendant originally marketed with other drop-cord fixtures as "electrician's supplies." This fixture works well above bars, tables, and counters, and, like Wiley, can be paired with reproduction bulbs and cloth cords. Rejuvenation, Portland. www.rejuvenation.com **CIRCLE 201**

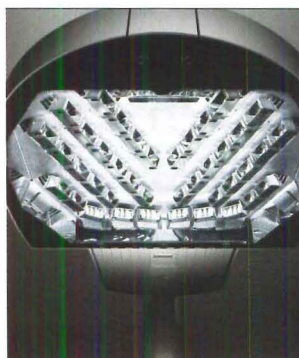


► ▼ **A solar landscape**

Qnuru, founded in 2008 by MacArthur Foundation Fellow and award-winning sculptor Tom Joyce produces a line of sculptural solar landscape lighting that does not require ties to the power grid, trenching, or external wiring. The Talus landscape fixture (below) is available in pairs or sets of eight, and conceals a custom-designed PV solar collection system behind each translucent lens. Aquila (right) is a solar-powered pole lamp with three petals placed at varying heights to form a tree-like canopy. Solar cells are positioned on the top of each petal beneath a clear, high-impact acrylic lens. Warm-light LEDs are mounted on the underside onto a highly reflective luminaire behind a translucent acrylic lens. Qnuru, Albuquerque. www.qnuru.com **CIRCLE 202**



For more information, circle item numbers on Reader Service Card or go to architecturalrecord.com/products.



◀ **Warp speed ahead** The Warp9 LED is a low-glare, high-performance outdoor area light using LED technology. The fixture's optical system shapes, points, and tightly controls the beam. It is constructed from more than 90 percent recycled materials and the housing, LEDs, and drivers contain no lead or mercury. Kim Lighting, City of Industry, Calif. www.kimlighting.com **CIRCLE 203**

▼ **Adaptive family** Designed by Pablo Pardo of Pablo Designs and Ralph Reddig of Haworth, LIM (Light in Motion) is designed to be a multipurpose, multitask LED lighting family. Available in L- or Y-shaped fixtures, LIM can be used as a freestanding task or floor lamp, or as a slat-mount, panel-mount, under-shelf-mount, or under-worksurface-mount lamp. Magnets and other simple attachment methods complement the fixture's simple elemental structure. Haworth, Holland, Mich. www.haworth.com **CIRCLE 204**



New glass technologies take center stage

RITA CATINELLA ORRELL

The versatility of glass as a building material is on display in these three case studies, ranging from a digitally printed artwork for a private school to a light-diffusing ceiling cover for a landmark zoo building renovation to the facade of a university library that allows views while controlling light and heat transmission. A roundup of more of the latest new glass and glazing products follows.

Artistic wall feature

Standard Bent Glass, a source for curved annealed monolithic glass, custom artist glass, and security glass, is one of three companies in North America with the manufacturing capabilities of SentryGlas Expressions. SentryGlas is a computer-based digital-imaging system for decorative glass utilizing DuPont technology, which enables any icon or picture to be reproduced in laminated safety glass. The technology has been fully tested for both interior and exterior applications and meets safety glazing codes.

The company's most recent project applying this technology was unveiled last September at the Nulman Lewis Student Center at the Wheeler School in Providence, Rhode Island. The "Welkin" glass art piece, designed by artist Nicole Chesney, connects the student center to the Clark Alumni House with one panel leading to the courtyard. The piece represents the first time that such a bright white has been utilized with SentryGlas technology. The piece consists of four panels of laminated SentryGlas, each approximately 8' high, 4½' long, and weighing 300 pounds. Standard Bent Glass, Pittsburgh. www.standardbent.com **CIRCLE 205**

Frosted, corrugated diffusers

By applying a frosted coating to its Cathedral glass product, Nathan



Allan Glass Studios developed a process to create highly decorative glass light covers while eliminating shadows and hot spots. Available in tempered or tempered/laminated form, the glass technique breaks up the hot spots and distributes the light more evenly over the glass surface. This process was applied to the ceiling of the Bronx Zoo's landmark Lion House Reconstruction, a LEED Gold project completed last year by New York City-based firm FXFOWLE.



1. Art wall panel in the Nulman Lewis Student Center in Providence, Rhode Island.

2. Facade of the Henry Madden Library at California State University in Fresno.

3. Light covers in the Bronx Zoo's landmarked Lion House in New York City.

of the new Henry Madden Library at California State University in Fresno, the California-based architectural firm AC Martin Partners needed both to provide privacy and allow views of the campus. The firm's design intent for the library in general was to reference the tectonics and craft of basket weaving and the varied textures of the agricultural landscape.

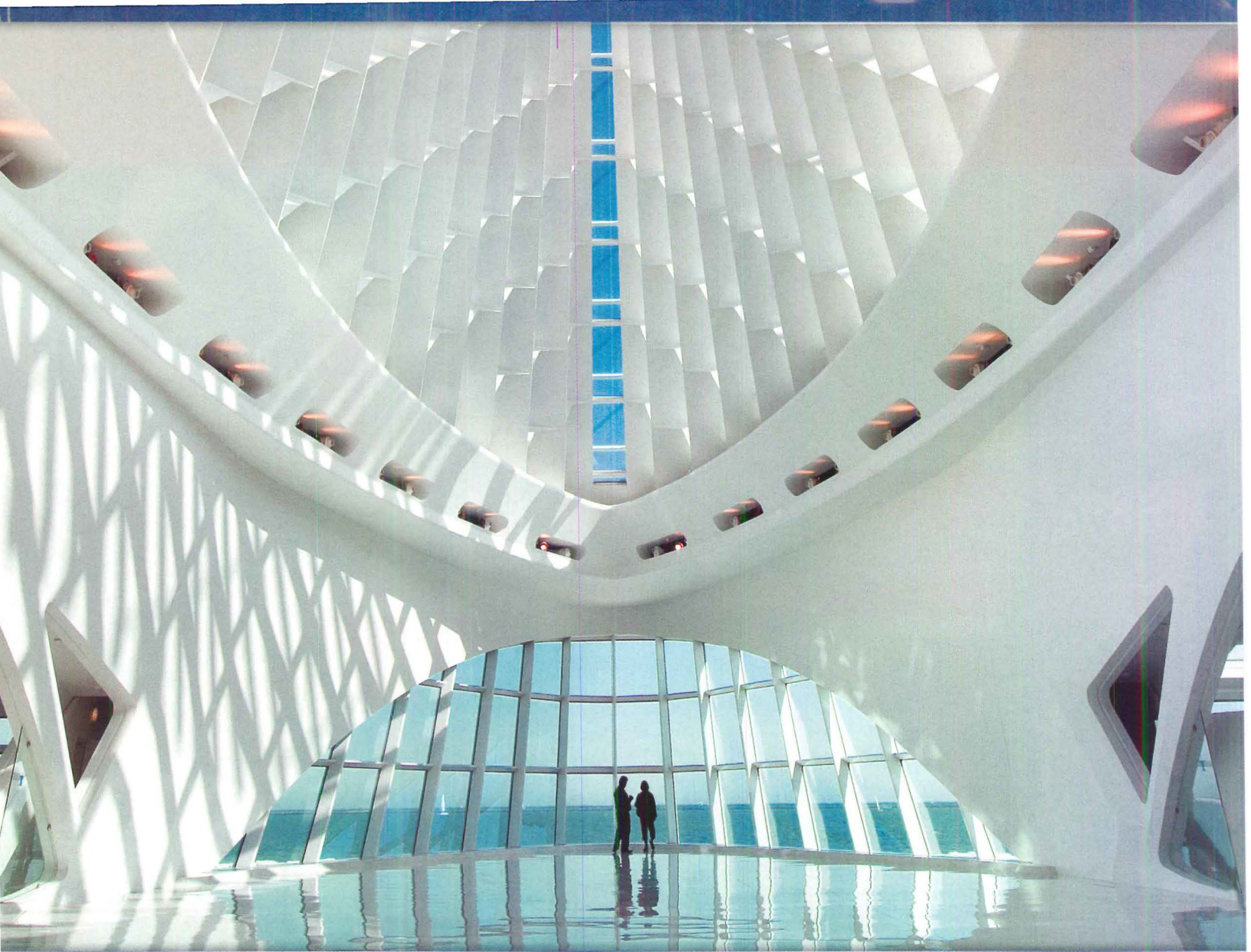
The use of Panelite ClearShade IGU with a clear tubular honeycomb allowed the glass panels to read as a monolithic surface from the exterior while creating an ephemeral effect from the interior. In addition to providing 48 percent visible light transmission, the facade can reduce solar heat gain by 75 percent due to the shading function of the honeycomb core. Panelite, Culver City, Calif. www.panelite.us **CIRCLE 207**

Strategically positioned under the ceiling skylights to absorb the natural light rays, the corrugated light covers are the focal point of the ceiling. The light sources are diffused by the irregular surface shape of the glass, and the coating allows the glass to glow, particularly during nightfall. Nathan Allan Glass Studios, Richmond, British Columbia. www.nathanallan.com **CIRCLE 206**

Honeycomb core facade

For the upper-story reading room

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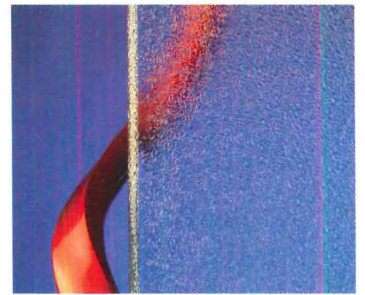
THE AMERICAN
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► **Reduced solar heat gain** Pittsburgh Corning has expanded its LightWise Architectural Systems to include energy-efficient glass block panels that help lower heating and cooling costs by letting in visible light and reducing thermal transmittance. Each block features a low-emissivity, coated-glass panel sandwiched within the block to reduce solar heat gain by about 70 percent. The panels offer an insulating U-value of 0.34 unframed. Framed panels offer a U-value of 0.38. Available in four patterns (Decora, shown). Pittsburgh Corning, Pittsburgh. www.pittsburghcorning.com

CIRCLE 208



▼ **Chilled-out glass** Ice is the newest texture from channel glass manufacturer Lamberts. Featuring a "frosty" appearance, Ice is an image-obscuring texture, providing both daylighting and privacy. Ice can be designed to form up to 23'-tall facades and interior partitions of unlimited length. It is manufactured with 40 percent postconsumer-recycled content in Europe's first and only clean-burning, oxygen-fired cast-glass plant. Bendheim, Passaic, N.J. www.bendheimwall.com CIRCLE 209



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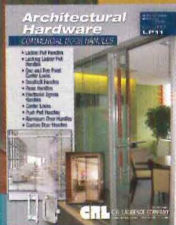
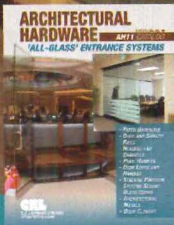
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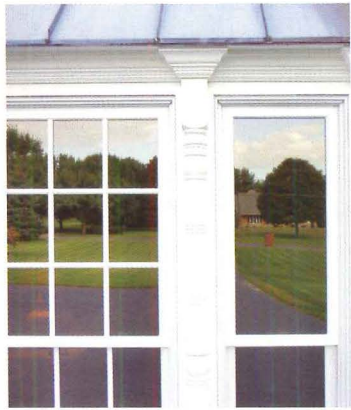


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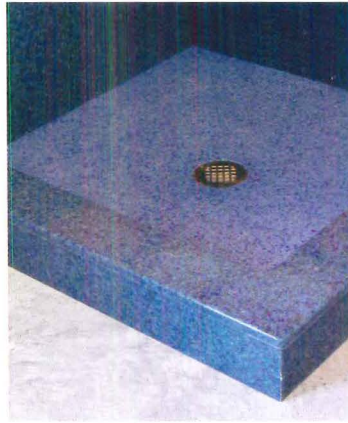
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◀ **Tax-credit helper** Kolbe's ThermaPlus LoE insulating glass is another option for homeowners looking for products that qualify for the federal income-tax credit for energy-efficient home upgrades. ThermaPlus LoE insulating glass is available in the Ultra, Heritage, and Classic Series product lines, and in the company's impact- and laminated-glass products. Two energy-efficient insulation options are offered. Kolbe & Kolbe Millwork, Wausau, Wis. www.kolbe-kolbe.com **CIRCLE 210**

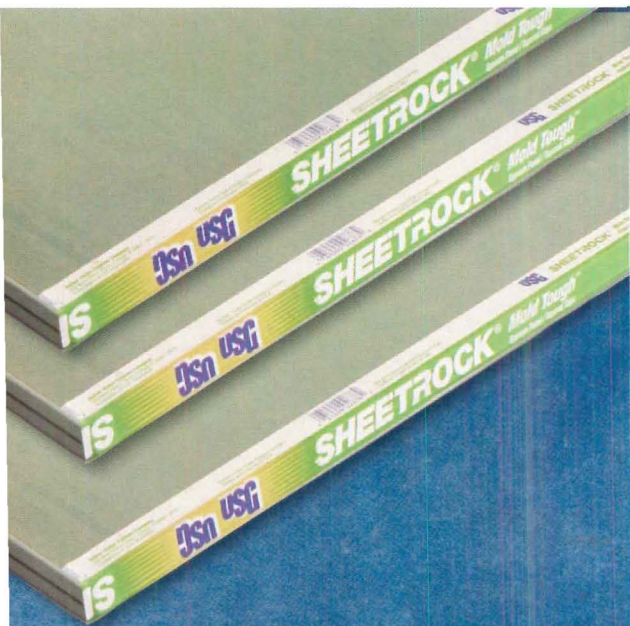
▶ **Recycled-glass option** Robal Glass is a new material manufactured by Monroe Industries in Avon, New York, made of recycled glass in a clear, soy-based resin. Using a recently patented process, Robal Glass can be cast into a wide variety of shapes, sizes, and colors and has up to an 82 percent or more recycled content. Custom colors, smooth or bumpy textures, and color gradations are available. Green Grove Design, Rochester, N.Y. www.greengrovedesign.com **CIRCLE 211**



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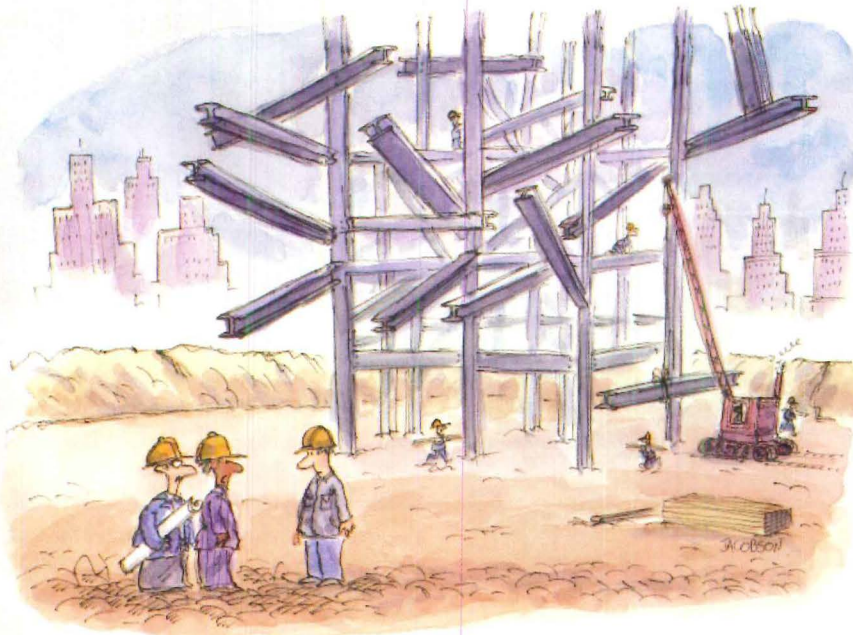
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► **Skylight fix** For a decade, the owner of an office building in Greenwich, Connecticut, had to drape a blue tarp over the building's top-floor skylight in order to cope with unwanted solar heat gain and glare. Replacing the old skylight with Sage Electrochromics' electronically tinting glass allowed the tenant to keep the natural light, while maintaining some control. A 14" PV strip installed on the exterior along the bottom of the skylight powers the glass. Sage Electrochromics, Faribault, Minn. www.sage-ec.com **CIRCLE 213**



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► **Comfort glass** Ti-AC 23 low-E glass has a solar heat gain coefficient of 0.23, the lowest level available in a high-performance product on a clear substrate, according to the manufacturer. Developed for use in a wide range of commercial applications, Ti-AC 23 maximizes solar control, light transmittance, and air-conditioning efficiency, while also minimizing glare. AGC Flat Glass N.A., Alpharetta, Ga. www.na.agc-flatglass.com **CIRCLE 215**



◀ **Cool blues** PPG Industries' performance-glazings business has launched the dark-blue Pacifica and light sky-blue Solarblue glasses, two new blue-tinted glass options. Both may be combined with Solarban or Sungate 500 coatings to maximize energy efficiency. Three additional tints can be specified by adding Solarcool reflective coatings to Pacifica and Solarblue glasses, with solar heat gain coefficients ranging from 0.32 to 0.25, or by combining Pacifica glass with subtly reflective, color-enriched Vistacool coating, yielding a solar heat gain coefficient of 0.27. PPG Industries, Pittsburgh. www.ppg.com **CIRCLE 214**



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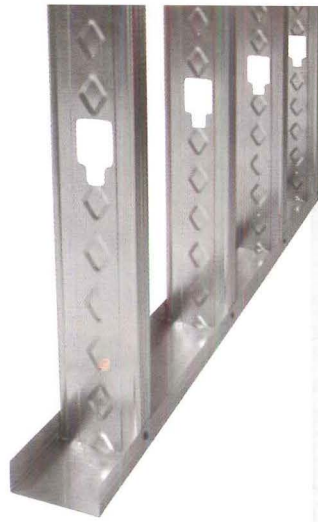
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◀ Steel framing system

Engineers from leading steel framing manufacturers ClarkWestern Building Systems and Dietrich Metal Framing are codeveloping the ProSTUD drywall framing system. The ProSTUD system's high-strength, lightweight steel components feature a number of technological advances to enhance stiffness, and they have been extensively field-tested for quality and ease of installation. Dietrich Metal Framing, Columbus, Ohio. www.dietrichmetalfaming.com **CIRCLE 217**



◀ **Facade family** In order to help specifiers looking for energy-efficient fenestration, YKK has introduced the enerGfacade family of products. The group currently includes the Luminance light shelf system, the ThermaShade sunshade, and the YOW350T architectural grade window system (shown). The YOW350T is a heavy-duty system that includes a triple glazing feature with integral blinds to provide strong solar heat gain control. YKK, Austell, Ga. www.ykkap.com **CIRCLE 218**



▼ **Brown batts** EcoBatt glass-wool insulation combines a minimum of 30 percent (up to 50 percent) postconsumer-recycled bottle glass with the biobased Ecosse binder, which is up to 70 percent less energy intensive than the company's previous binder. Ecosse eliminates the artificial colors, acrylics, phenol, and formaldehyde traditionally used in fiberglass insulation binders. The line includes residential and commercial batts, blowing wool, and some high R-value commercial products. Knauf Insulation, Lanett, Ala. www.knaufinsulation.us **CIRCLE 219**



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- Many finishes are available including clear/bronze anodize, Kynar/Duramar, and powdercoating.

www.aluflam-usa.com
714.899.3990

Contact: Zac Monroe



Circle 156

DOORS, WINDOWS

UNIQUE DAYLIGHTING SYSTEMS

WR | G

Major Industries, Inc.

▲ Guardian 275 translucent panel skylights and curtainwall save energy and eliminate glare.

Product Application:

- System shown: Guardian 275 polygon skylight
- New and retrofit applications

Performance Data:

- Sandwich panel design for enhanced thermal performance
- Guardian 275 can be configured for blast and hurricane protection
- Field-tested results backed by industry-long warranties

www.majorskylights.com
888.759.2678

Contact: info@majorskylights.com



Greenbuild Booth # 5244

Circle 157

DOORS, WINDOWS

SPECIALTY GLAZING

Unicel Architectural

▲ Vision Control® is a unique cord- and string-free patented sealed glass unit with operable louvers. It is germ and dust free as well as maintenance free and can be installed in doors, sidelights, windows, partitions, skylights, and curtain walls. Vision Control provides a wide array of solutions to heat, light, and sound control for utmost hygiene, privacy, and security. Now available: Vision Control® Mini, with 1-in. airspace. Specially created for sliding doors and is also perfectly suited for retrofit applications in windows with glass pocket depths as narrow as 1-1/4 in. thick.

www.unicelarchitectural.com
800.668.1580

Contact: Viviane Chan



Circle 158

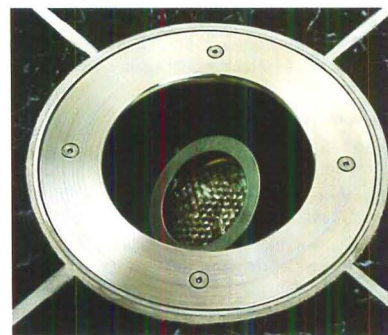
ELECTRICAL, LIGHTING

VERSATILE LAMP

Hunza Lighting USA

▲ The Hunza IG111GM Well Light offers the ultimate in lamp adjustability, combined with flush installation, durable construction, and compact size. Using a standard halogen MR16 up to 75W, the lamp can be adjusted up to 45° from vertical. Easily installed with the supplied mounting canister, the fixture has an integral 110v transformer and a heavy-duty drive-over lens.

www.hunzausa.com
888.578.6005



Circle 159

ELECTRICAL, LIGHTING

ARCHITECTURAL CEILING FANS & LIGHTING

G

G Squared Art

▲ Flyte ceiling fan, GOOD DESIGN Award winner. Quiet, powerful, reliable, an energy saver.

Product Application:

- Suitable for sloped ceilings up to 30°, can be used on 8-ft. ceilings or on cathedral ceilings with optional downrods up to 6 ft. long

Performance Data:

- Other finishes available
- Cap for non-light use included; integrated 100W mini-can halogen bulb, bulb included
- Lifetime warranty

www.g2art.com
877.858.5333

Contact: info@g2art



Circle 160

ELECTRICAL, LIGHTING

CYLINDER PENDANT

\$\$ | G | NEW

MP Lighting

▲ MP Lighting's L96 LED pendant can be used for both commercial and residential applications.

Performance Data:

- Pendant down light illumination
- Horizontal double, vertical double, single and dual circuit rails
- Canopy mount
- 50,000 hours product lifetime
- Energy efficient and environmentally friendly

www.mplighting.com
604.708.1184

Contact: David Brick



Circle 161

ELECTRICAL, LIGHTING

LED LIGHTING SYSTEMS

WR | G | NEW

Sternberg Lighting

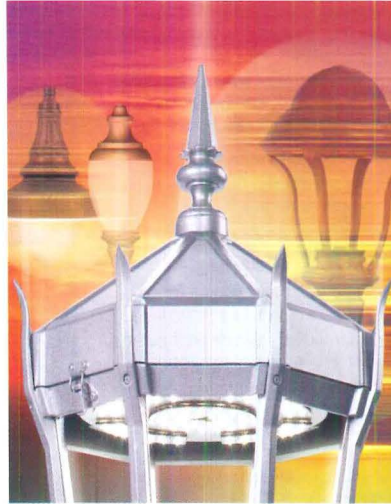
▲ UNRIVALED™ decorative outdoor LED lighting provides energy savings in excess of 50%.

Product Application:

- University of Notre Dame, Notre Dame, IN

Performance Data:

- Approximately 70,000 hours of system life (16 years)
- Energy consumption can be reduced by over 50% with comparable photometric performance



www.sternberglighting.com
800.621.3376

Contact: Peter Schreiber

Circle 162

ELECTRICAL, LIGHTING

LUMINAIRES

\$\$\$ | G | NEW

Teka Illumination

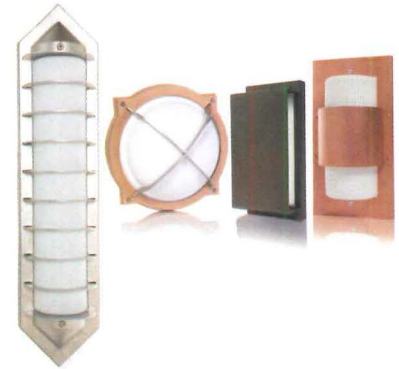
▲ The Arcade Series: four elemental designs manufactured from enduring metals of copper, bronze, stainless steel, and brass.

Product Application:

- High-end homes
- Commercial
- Outdoor living environments

Performance Data:

- Constructed from lifetime materials
- Utilizes 4W and 8W LED with BKSSL technology for superior thermal management and significant energy reduction



www.tekaillumination.com
559.438.5800

Contact: Becky Carlson

Circle 163

ELECTRICAL, LIGHTING

UNIVERSAL POWER MODULE

\$\$\$ | G

B-K Lighting

▲ UPM is a robust, water-tight housing option for transformers and ballasts. Patented knockouts can be re-inserted after removal again and again.

Performance Data:

- Tree-strap mounting system facilitates non-invasive installation.
- Surface mount includes stainless steel mounting brackets.
- Monument Mount provides a clean concrete water-tight installation for ground-level luminaire applications. Designed with a stability flange for easy installation and an ASV (anti-siphon value).



www.bklighting.com
559-438.5800

Contact: Becky Carlson

Circle 164

EQUIPMENT

MECHANICAL LIFT CONCEALS SMALL SCREENS

\$\$\$ | G | NEW

Accuride International Inc.

▲ The Ascent is a slim and compact push-to-operate mechanical lift designed to carry TV or computer screens.

Product Application:

- Retail stores, customer service counters, and kiosks
- Classrooms, business/home offices
- Medical equipment, offices, or conference rooms

Performance Data:

- No power required; movement controlled through weights to counterbalance screens
- Screens up to 14.5 lb., 17.5 in. tall and 22 in. diagonal; swivels 112°



www accuride.com
888.459.8624

Circle 165

INTERIOR FINISHES, FURNISHINGS

BAMBOO PLYWOOD & FLOORING

\$\$ | G | NEW

Smith & Fong Co. Plyboo

▲ The world's first FSC-certified bamboo plywood and flooring. Also available urea formaldehyde-free.

Performance Data:

- LEED Credit MR 6: Rapidly Renewable Materials
- LEED Credit MR 7: Certified Wood
- LEED Credit EQ 4.4: Low-Emitting Materials



www.plyboo.com
866.835.9859

Circle 166

INTERIOR FINISHES, FURNISHINGS

STACKING CHAIR

WR

Beaufurn

▲ Their products fit your vision and your budget—beautifully. Beaufurn SA-308/309 Stacking Chair: This striking, contemporary design is durable and easy to maintain.

Product Application:

- Ideal for any commercial space
- Colleges, universities
- Restaurants, lounges

Performance Data:

- Available in wood or laminate
- Customizable with your logo
- Stackable, space-saving design



www.beaufurn.com
888.766.7706

Contact: Bill Bongaerts

Circle 167

INTERIOR FINISHES, FURNISHINGS

DECORATIVE METAL CEILINGS

\$\$\$ | G

The Gage Corporation, Int.

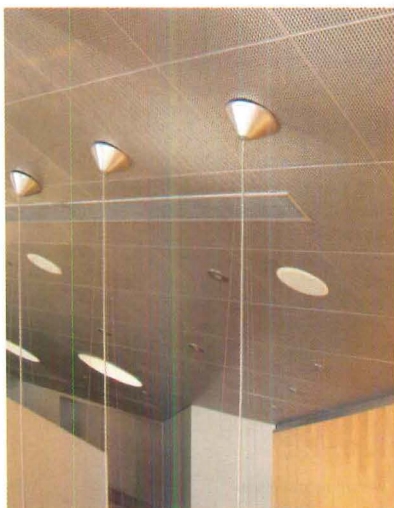
▲ Gage ceilings are visually rich, functional, and versatile as a design medium.

Product Application:

- Planet Hollywood, Westgate Resorts
- Destiny New York Cruises, Directions in Design
- Foxwoods Casino, Wilson Associates

Performance Data:

- Class A ASTM E-84
- Feature more than 50% post-industrial recycled aluminum



Circle 168

www.gagecorp.net
608.269.7447, 800.786.4243

INTERIOR FINISHES, FURNISHINGS

FLOORS OFFER A CHOICE OF TOPPING

WR | G

Action Floor Systems

▲ Combine a hard maple court surface and seamless synthetic surface for a surrounding running track.

Product Application:

- Neenah High School, Neenah, WI
- Oconomowoc High School, Oconomowoc, WI

Performance Data:

- Comprehensive selection of engineered wood subfloor systems
- Action's Herculon synthetic floors are solvent free from bottom layer to top coat



Circle 169

www.actionfloors.com
800.746.3512

Contact: Tom Abendroth

INTERIOR FINISHES, FURNISHINGS

ORNAMENTAL PLASTER CEILING TILES

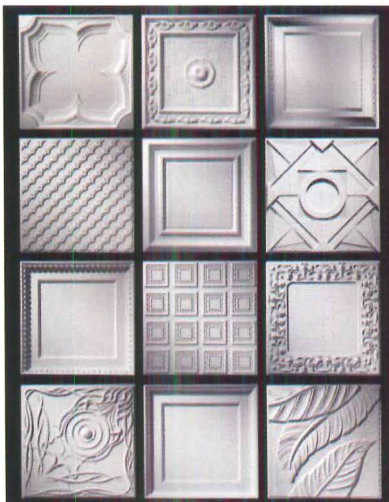
G

Above View Mfg., By Tiles, Inc.

▲ Ornamental plaster ceiling tiles fabricated from a non-toxic, non-combustible, proprietary composition.

Performance Data:

- The tiles drop into any standard 15/16-in. T-Bar grid system.
- The design line consists of more than 60 standard designs.
- Custom design work, custom colors, and faux finishes are available.



Circle 170

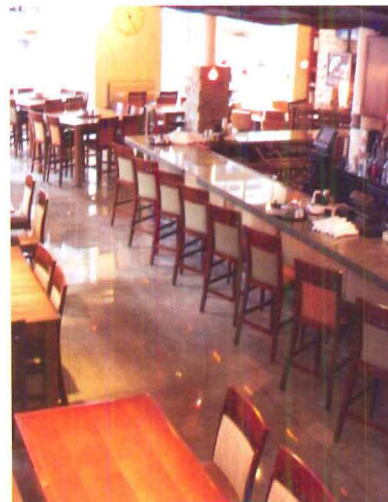
www.aboveview.com
414.744.7118

INTERIOR FINISHES, FURNISHINGS

PERMANENT SHINE FOR POLISHED CONCRETE

Vexcon Chemicals

▲ Certi-Shine® is a premier product of choice for polished concrete. Manufactured by Vexcon Chemicals, a leader in the development of innovative building materials for over 30 years, a Certi-Shine floor will outlast and outperform many other types of flooring. Certi-Shine is backed by a 20-year warranty, a nationwide network of factory-trained and certified installers, will resist staining, and can earn LEED points on your next green project. Call their toll-free number or visit their web site to learn more.



Circle 171

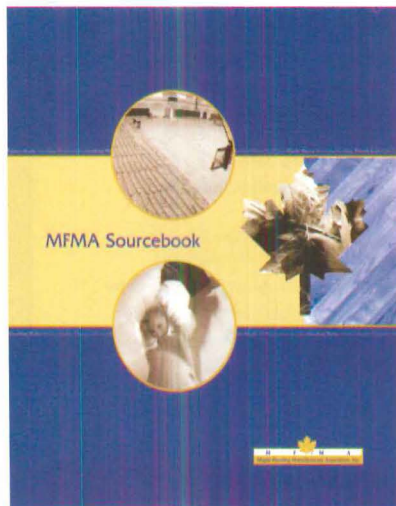
www.vexcon.com
888.839.2661

INTERIOR FINISHES, FURNISHINGS

SPORTS FLOORS

Maple Flooring Manufacturers Association

▲ The Maple Flooring Manufacturers Association (MFMA) is the authoritative source of technical and general information about maple flooring and related sports flooring systems. Through cooperative member programs, MFMA establishes product quality, performance, and installation guidelines; educates end users about safety, performance, and maintenance issues; and promotes the use of maple, beech, and birch flooring products worldwide.



Circle 172

www.maplefloor.org
888.480.9138
Contact: Daniel F. Heney,
dheney@maplefloor.org

LANDSCAPING, SITEWORK

LANDSCAPE EDGING

\$\$\$ | G

Sure-Loc Edging, Inc.

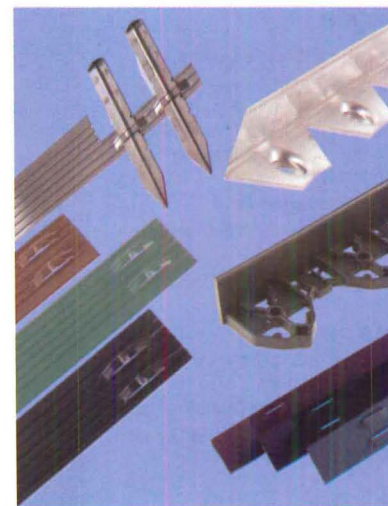
▲ Professional-grade landscape edging: aluminum and steel edging, aluminum and plastic paver edging.

Product Application:

- IBM Headquarters
- Millennium Park, Chicago, IL
- Cabela's Store, Detroit, MI

Performance Data:

- Dual-stake locking system with seamless connections
- End-stake adapters allow for staking at any point



Circle 173

www.surelocedging.com
800.SURE.LOC
Contact: Karl Nieboer

LANDSCAPING, SITEWORK

THREE-DIMENSIONAL MODULAR TRELLIS

G
greenscreen

▲ Use for green walls, freestanding fences, enclosures, and landscape elements.

Product Application:

- Valley Metro Light Rail, Phoenix, AZ
- US Census Bureau parking structures, Suitland, MD
- Rush University Medical Center, Chicago, IL

Performance Data:

- Recycled content steel
- Complete system of attachment hardware



www.greenscreen.com
310.837.0526
Contact: sales@greenscreen.com

Circle 174

LANDSCAPING, SITEWORK

VERSATILE CITY BOLLARDS

\$ | NEW

FAAC International, Inc.

▲ FAAC offers two versatile styles of bollards for traffic control and parking deterrent solutions.

Performance Data:

- Automatic, semi-automatic, and fixed versions. Master slave capability up to nine slave units.
- Model 275 hydraulic version has a duty cycle of up to 5,000 cycles a day. All bollards have finishing options to match surrounding architecture.



Model 220

Model 275

www.faacusa.com
800.221.8278
Contact: Dan Ollar, General Manager

Circle 175

MATERIALS

ARCHITECTURAL NATURAL STONE

\$\$\$ | G

Vermont Structural Slate Company

▲ Quarrier and fabricator offering select slates, quartzites, sandstones, limestones, marbles, granites and basalts.

Product Application:

- Unfading mottled green and purple slate roofing
- Architect: Timothy D. Smith & Associates



www.vermontstructuralslate.com
800.343.1900
Contact: Craig Markcrow

Circle 176

MATERIALS

CRACKLE GLASS WALL

\$\$\$ | G | NEW

Nathan Allan Glass Studios Inc.

▲ A sparkling wall of glass unifies three floors while complementing French luxury jeweler, Mauboussin's exquisite pieces. Three layers of low-iron glass, mixed with cracked ice and mirrored substrates, are safety laminated to form a faceted diamond appearance.

Product Application:

- Mauboussin, New York, NY (Architect: Rockwell Group. Photo: Bärbel Miebach)
- Cladding, fascia, feature walls



www.nathanallan.com
604.277.8533 ext. 225
Contact: Barry Allan, Director

Circle 177

MATERIALS

FIRE-RATED VERSION

G | NEW

Technical Glass Products

▲ Technical Glass Products offers a valuable course for AIA HSW credit: "Burning Issues: Understanding Today's Fire-Rated Glass and Framing."

Products featured:

- FireLite® family of fire-rated glass ceramics
- Pilkington Pyrostop™ safety-rated glass firewalls

Also contains:

- New trends in fire-rated glazing materials
- Assessment and liability issues
- Recent code changes and how they impact design



www.fireglass.com
800.427.0279

Circle 178

MATERIALS

GLOSS SHEEN FOR EXTERIORS

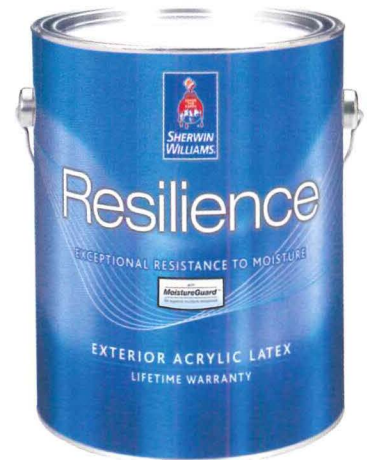
\$\$\$ | G | NEW

The Sherwin-Williams Company

▲ New Resilience™ Exterior gloss sheen offers an ideal solution for exterior trim work.

Performance Data:

- Provides excellent hide and durability
- Formulated with revolutionary MoistureGuard™ Technology
- Gloss sheen delivers intense color
- Quickly cures to resist moisture
- Low-VOC formula meets green standards



sherwin-williams.com
800.321.8194
Contact: Terry Makowski

Circle 179

MATERIALS

ANTI-REFLECTIVE GLASS

Glas Trösch AG

▲ LUXAR anti-reflective glass is perfect for any glass application where glare and reflection are not wanted. LUXAR reduces glare and reflection to less than 0.5%. It is perfect for store fronts, stadiums, facades, projection rooms, museums, restaurants, and display cases. It is available on low-iron, float, and tinted glass for maximum clarity in 2mm to 12mm thickness to meet any project requirement.



www.luxar.ch
 Contact: hytechglass@glastroesch.ch

Circle 180

MECHANICAL SYSTEMS, HVAC, PLUMBING

HVLS FANS

G

MacroAir Technologies

▲ MacroAir Technologies are the inventors of energy-efficient, high-volume, low-speed ceiling fans with a 12-year warranty.

Product Application:

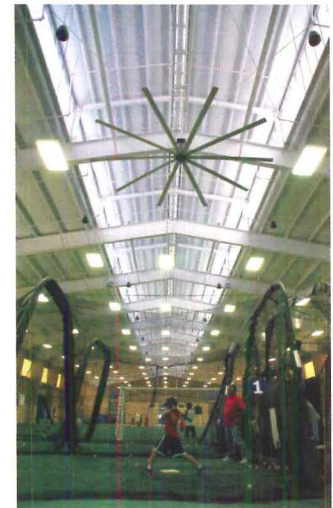
- Mercedes-Benz of Beverly Hills, Beverly Hills, CA
- OSO Libre Winery, Paso Robles, CA
- Hot Water Night Club, Milwaukee, WI

Performance Data:

- 375,000 cfm
- 6-24 ft. diameter

www.macro-air.com
 866.668.3247

Contact: Jaylin Krell



WECC Booth # 735, 737

Circle 181

ROOFING, SIDING, THERMAL & MOISTURE PROTECTION

ARCHITECTURAL TERRA COTTA

WR | G

Boston Valley Terra Cotta

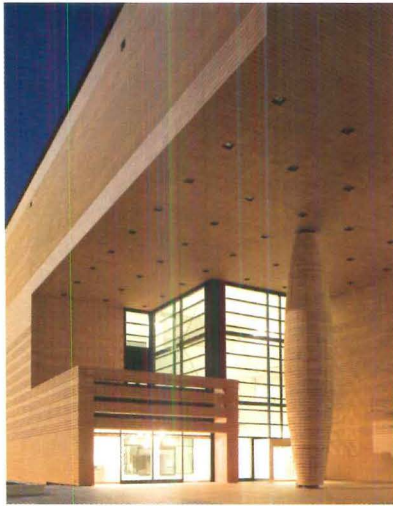
▲ TerraClad is a natural terra cotta product formed into a high-performance ceramic rainscreen panel.

Product Application:

- Arizona Disability Service Campus, Phoenix, AZ
- Bechtler Museum of Modern Art, Charlotte, NC

Performance Data:

- Miami-Dade NOA No. 08-1014.03; NYC MEA 120-07-M
- Engineered to meet ASTM C1167 freeze-thaw



Build Boston Booth # 346

Circle 182

www.bostonvalley.com
 888.214.3655
 Contact: Sheri L. Carter

ROOFING, SIDING, THERMAL & MOISTURE PROTECTION

BUILDING WITH BRICK OR STONE?

CavClear

▲ CavClear systems help protect masonry wall integrity by controlling moisture and eliminating mortar bridging.

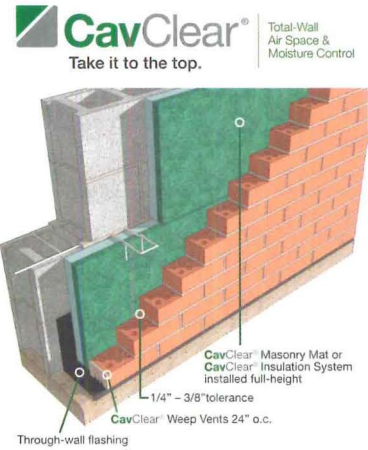
Product Application:

- Langston Hughes Elementary School, Chicago, IL
- Villanova University School of Law, Villanova, PA
- Steven Potter Office Building, Crowley, TX

Performance Data:

- 1-in. minimum completely clear wall air space
- No mortar bridging in any area of wall cavity

www.cavclear.com
 888.436.2620



Circle 183

ROOFING, SIDING, THERMAL & MOISTURE PROTECTION

SUSTAINABLE METAL ROOFING & WALL SYSTEMS

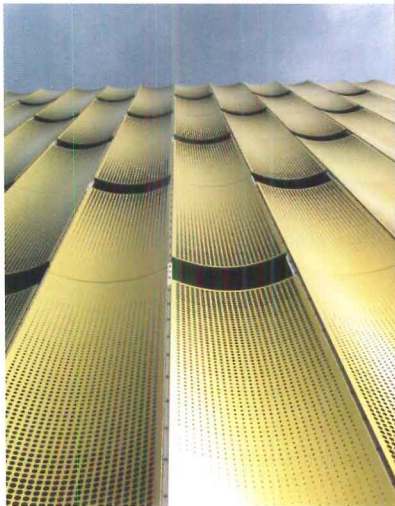
WR | G | NEW

Fabral, Inc.

▲ Fabral, a premier supplier of metal roofing and wall systems, brings a new vision to architectural metal with a new array of specialty colors and finishes on aluminum.

Performance Data:

- The natural beauty of aluminum in a wide range of color tints
- Semi-transparent clear coats and extraordinary metallics
- Iridescent finishes that combine the reflection and refraction of light
- Varying patina, natural wood, stone, and nature-inspired designs



www.fabral.com
 800.884.4484

Contact: Donna Berryhill

Circle 184

ROOFING, SIDING, THERMAL & MOISTURE PROTECTION

TRANSPIRED SOLAR COLLECTOR

WR | G

ATAS International, Inc.

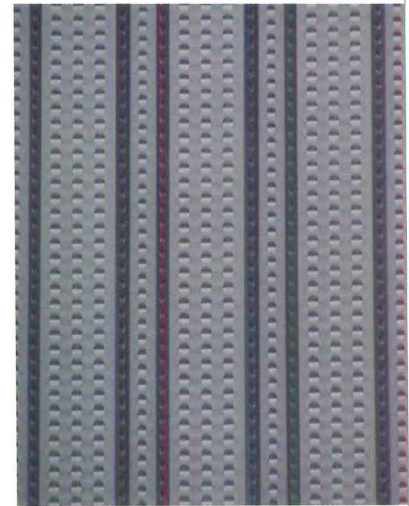
▲ To provide supplemental heating, the InSpire™ system utilizes solar energy to preheat fresh air using perforated metal wall panels.

Performance Data:

- Converts up to 80% of solar energy
- Lowers heating costs by \$3-5 per sq. ft. of panel per year
- Qualifies for LEED credits
- Payback generally within three years
- Heats fresh air and utilizes free solar energy

www.atas.com
 800.468.1441

Contact: info@atas.com



Greenbuild Booth # 2768

Circle 185

SPECIALTY PRODUCTS

BALUSTRADES, COLUMNS & CORNICES

Architectural Columns & Balustrades by Melton Classics, Inc.

▲ Melton Classics' extensive selection of maintenance-free balustrades provide the design professional with over 100 balustrade designs, and the ability to incorporate radius stairs and balconies to enhance the beauty of their projects. Balustrades are offered in synthetic stone, fiberglass/marble composite, polyurethane, cast stone, and polyvinyl and are engineered to reduce weight and meet IBC structural codes. They also offer a comprehensive selection of architectural columns, fiberglass cornices, and polymer millwork.



www.meltonclassics.com
800.963.3060
Contact: Mike Grimmert

| Circle 186

SPECIALTY PRODUCTS

COPPER CHIMNEY POTS

\$\$\$ | G

European Copper

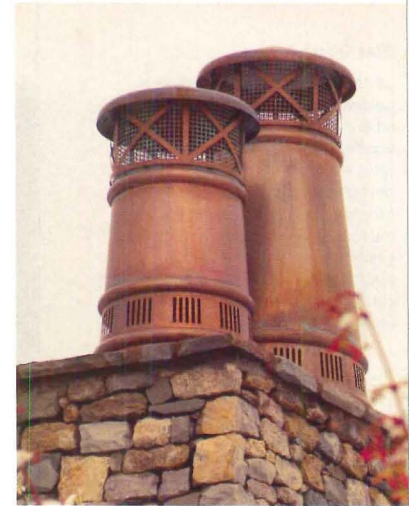
▲ UL-listed, 100% recyclable chimney pots fit all leading fireplace systems.

Product Application:

- Utica Place, Tulsa, OK
- Cacia Hall Preparatory School, Tulsa, OK
- Private residence, Tulsa, OK

Performance Data:

- UL listed for both masonry and pre-engineered fireplaces
- Certified by OMNI Testing Laboratories



www.europecopperchimney.com
800.391.0014
Contact: Pat Keegan

| Circle 187

SPECIALTY PRODUCTS

EXTERIOR SOFFIT & FASCIA CLADDING

G

Gordon Incorporated

▲ SOFFIT-SHIELD™—exterior soffit and fascia cladding system for high durability and load performance.

Performance Data:

- Passes Florida Building Code Test Protocols for design loads of +/- 125 psf
- Exposed material: aluminum and stainless steel
- Large and small missile impact resistant
- Hurricane resistant up to Cat. 5/ tornado resistant up to F4 (≤222mph)
- Miami-Dade County, Florida, Notice of Acceptance NOA No. 08-0505.07
- Patent pending, LEED credits available



www.gordonceilings.com
800.747.8954
Contact: sales@gordonceilings.com

| Circle 188

SPECIALTY PRODUCTS

HAND DRYER

\$\$\$ | G

Dyson B2B, Inc.

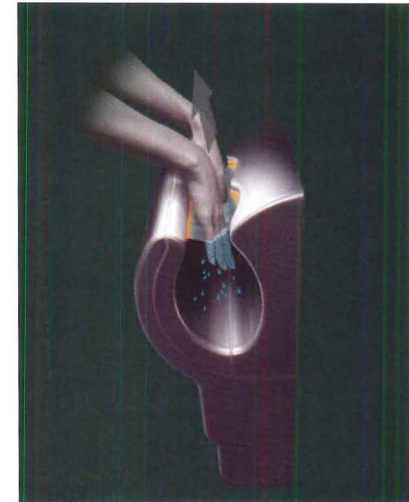
▲ New CE course: "Hand Dryer Technology: Sustainable, Hygienic, and Cost Effective."

Product Application:

- The Gherkin, London
- Dodger Stadium, Los Angeles, CA

Performance Data:

- Uses up to 80% less energy
- Qualifies for LEED



www.dysonairblade.com
888.DYSON.AB
Contact: Matthew Cool

| Circle 189

SPECIALTY PRODUCTS

INFECTION CONTROL DISPENSER

WR | G | NEW

APCO Signs

▲ HealthView Dispenser is designed for infection control products including wipes, hand foam, tissues, and masks.

Product Application:

- Chevron Corporate, Concord, CA
- Prentice Women's Hospital, Chicago, IL

Performance Data:

- Pre-engineered aluminum components
- Wall, stanchion, or kiosk mounting



www.apcosigns.com
404.688.9000

| Circle 190

SPECIALTY PRODUCTS

PRE-ENGINEERED CANOPIES & WALKWAYS

WR | G

Structures Unlimited, Inc.

▲ Single-source responsibility. Glare-free, diffuse daylight eliminates glare and shadows.

Product Application:

- Yankee Stadium
- Baycare/Aurora Health Center
- Norris Cotton Federal Building



www.structuresunlimitedinc.com
800.225.3895
Contact: info@structuresunlimitedinc.com

| Circle 191

Going Green?



Get there today with new market intelligence from McGraw-Hill Construction's *SmartMarket Reports*.

Gain a competitive edge with MHC's comprehensive coverage of the green marketplace—from commercial and institutional green building trends to water use, global green and the green home consumer.

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- Green building currently represents a \$24-\$29 billion market for new building and is projected to grow as large as \$140 billion by 2013
- On average, AEC/O perceive a 9.9% increase in ROI from green buildings over time
- 70% of home buyers are either more or much more inclined to purchase a green home over a conventional home in a down housing market
- Using water efficient technologies can decrease operating costs by 11-12%

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Dodge Sweets ENR Regional Publications Architectural Record GreenSource

POSITIONS VACANT

rice
school of architecture

**Rice School of Architecture
Tenure-Track Positions for 2010 - 2011**

Rice University invites applications and nominations for two tenure-track faculty appointments at the level of Assistant Professor. These full-time positions are available beginning Fall 2010 for outstanding candidates qualified to conduct design studios, lecture courses, and seminars at both the undergraduate and graduate level. Candidates should hold, at minimum, a Master of Architecture degree or its equivalent. Prior teaching and professional experience, a record of scholarly work, and particular focus are highly desirable. Applications will be considered until February 15, 2010. Letter of interest, curriculum vitae and list of references should be sent to:

**Faculty Search Committee
School of Architecture, MS-50
Rice University
6100 Main Street
Houston, TX 77005, USA**

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A. Total number of copies-average number of copies of each issue during preceding 12 months: 131,676; actual number of copies of single issue published nearest to the filing date: 124,690.

B. Paid and/or requested circulation-(1)Paid or requested outside-County mail subscriptions stated on Form 3541-average number of copies of each issue during preceding 12 months, 102,400; actual number of copies of single issue published nearest to the filing date, 98,163. (2)Paid In-County subscriptions-average number of copies of each issue during preceding 12 months, 0; actual number of copies of single issue published nearest to the filing date, 0. (3)Sales through dealers and carriers, street vendors and counter sales, and other non-USPS paid distribution - average number of copies of each issue during preceding 12 months, 22,480; actual number of copies of single issue published nearest to the filing date, 19,464. (4)Other classes mailed through the USPS- average number of copies of each issue during preceding 12 months, 0; actual number of copies of single issue published nearest to the filing date, 0.

C. Total paid and/or requested circulation-average number of copies of each issue during preceding 12 months, 124,880; actual number of copies of single issue published nearest to the filing date, 117,627.

D. Free distribution by mail-(1)Outside county as stated on Form 3541- average number of copies of each issue during preceding 12 months, 3,028; actual number of copies of single issue published nearest to the filing date, 2,939. (2)In-county as stated on Form 3541- average number of copies of each issue during preceding 12 months, 0; actual number of copies of single issue published nearest to the filing date, 0. (3)Other classes mailed through the USPS- average number of copies of each issue during preceding 12 months, 0; actual number of copies of single issue published nearest to the filing date, 0. (4) Free distribution outside the mail-carriers and other means- average number of copies of each issue during preceding 12 months, 1,556; actual number of copies of single issue published nearest to the filing date, 2,114.

E. Total free distribution- average number of copies of each issue during preceding 12 months, 4,584; actual number of copies of single issue published nearest to the filing date, 5,053.

F. Total distribution- average number of copies of each issue during preceding 12 months, 129,464; actual number of copies of single issue published nearest to the filing date, 122,680.

G. Copies not distributed- average number of copies of each issue during preceding 12 months, 2,212; actual number of copies of single issue published nearest to the filing date, 2,010.

H. Total- average number of copies of each issue during preceding 12 months, 131,676; actual number of copies of single issue published nearest to the filing date, 124,690.

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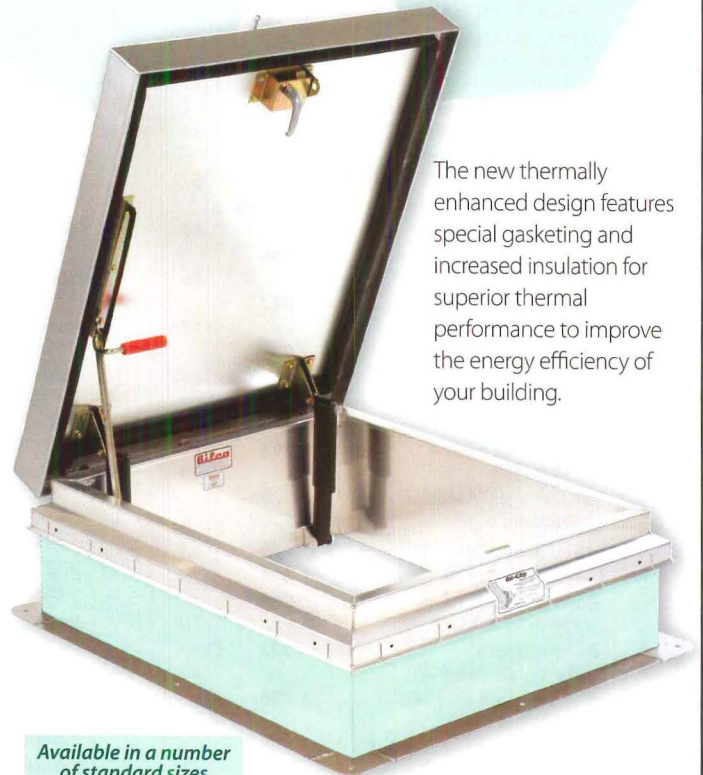
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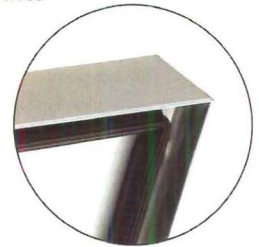
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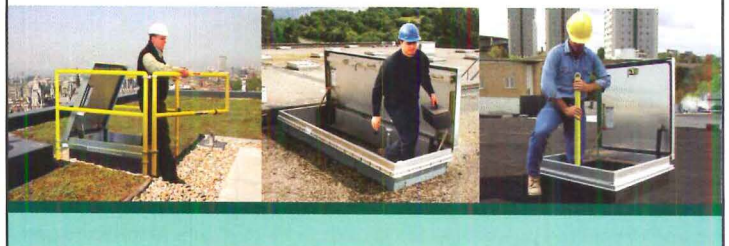


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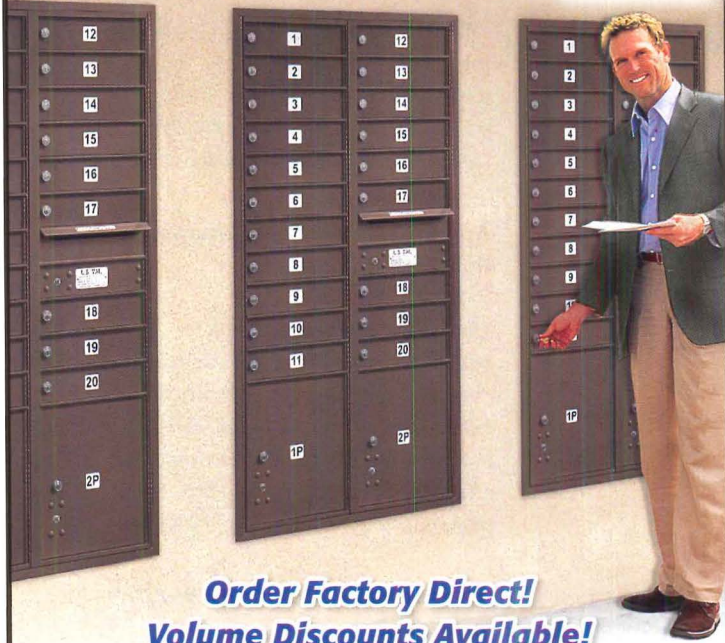
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15	Alcan Composites <i>AlucobondUSA.com</i>	24	99	Gordon Inc <i>gordonceilings.com</i>	211	10	Petersen Aluminum <i>pac-clad.com</i>	14
30	ALPOLIC/Mitsubishi Chemical FP America Inc <i>alpolic-usa.com</i>	52-53	37	Graphisoft <i>archiCAD13.com</i>	65	54	Pilkington North America <i>pilkington.com</i>	116
55	American Specialties, Inc. <i>americanspecialties.com</i>	117	71	Greenscreen <i>greenscreen.com</i>	167	3	Pine Hall Brick Co. <i>americaspremierpaver.com</i>	4
	Architectural Record <i>archrecord.construction.com</i>	18	39	Guardian SunGuard <i>sunguardglass.com</i>	73	11	Pittsburgh Corning <i>pittsburghcorning.com</i>	17
1	Armstrong World Industries <i>armstrong.com</i>	cov2-1	5	HDI Railing Systems <i>hdிரailing.com</i>	6	8,26	PPG Industries, Inc. <i>ppgideascpes.com</i>	10-11, 43
67	AZON USA INC. <i>azonintl.com</i>	156	87	Headwaters <i>flyash.com</i>	203	59	Quality Stone Veneer <i>qualitystoneveneer.com</i>	126
21	Beazley USA <i>beazly.com</i>	31	95	HEWI <i>hafele.com</i>	209	97	Rakks <i>rakks.com</i>	210
149	BEGA <i>bega-us.com</i>	39	145	Hunter Douglas Contract <i>hunterdouglascontract.com</i>	20-21	27	Rocky Mountain Hardware <i>rockymountainhardware.com</i>	44
50	Belden Brick <i>beldenbrick.com</i>	93	147	Hunter Douglas Contract - Nysan <i>nysan.com</i>	35	61	SAFTI Fire Rated Glass <i>safti.com</i>	129
88	Bilco Company, The <i>bilco.com</i>	203	146	Hunter Douglas Contract - NBK <i>hunterdouglascontract.com/nbk</i>	50	48	Sage Electrochromics <i>sageglass.com</i>	91
	Brick Industry Association <i>brickinfo.org</i>	128A- 128P	98	Invisible Structures Inc <i>invisiblestructures.com</i>	210	89	Salsbury Industries <i>mailboxes.com</i>	205
63	BSH/Thermador <i>thermador.com</i>	139- 143	69	Ironsmith <i>ironsmith.biz</i>	161	38	Samsung Staron Surfaces <i>getstaron.com</i>	67
	Build Boston <i>buildboston.com</i>	208	66	JELD-WEN Inc <i>doorcrafts.com</i>	151- 155	56	Sherwin-Williams <i>sherwin-williams.com</i>	121
	BuildingGreen <i>buildinggreen.com</i>	203	70	Jockimo <i>jockimo.com</i>	163	43	Simpson Strong-Tie Company Inc <i>simpsonstrongwall.com</i>	81
85	C.R. Laurence Co., Inc. <i>crlaurence.com</i>	188	33	Johns Manville <i>jm.com</i>	57		Skyscraper Museum, The <i>skyscraper.org</i>	209
40	Cambridge Architectural <i>architecturalmesh.com</i>	75	60	Julius Blum & Co Inc <i>juliusblum.com</i>	127	13,14	Sloan Valve Company <i>sloanvalve.com</i>	22-23
96	Cascade Coil Drapery <i>cascoadecoil.com</i>	210	41	Kawneer <i>kawneer.com</i>	77	64,65	Smoke Guard, Inc. <i>smokeguard.com</i>	144, 145-149
9	Ceilings Plus <i>ceilingsplus.com</i>	12-13	103	Kim Lighting <i>kimlighting.com</i>	165	102	Soil Retention <i>soilretention.com</i>	169
23	CENTRIA <i>centria.com</i>	37	25	Kullman <i>kullman.com</i>	42	46	Syska Hennessy Group <i>syska.com</i>	84
6,12	Construction Specialties, Inc. <i>c-sgroup.com</i>	7,19	92	Landscape Forms <i>landscapeforms.com</i>	206	4	Technical Glass Products <i>tgpamerica.com</i>	5
84	CPFilms Division of Solutia, Inc. <i>cpfilms.com</i>	182	90	Laticrete International, Inc. <i>laticrete.com</i>	205	22	The Travelers Companies Inc <i>stpaultravelers.com</i>	32
18,19	Decoustics <i>decoustics.com</i>	28-29	80	LEDtronics Inc <i>ledtronics.com</i>	175	31	Timely <i>timelyframes.com/ar</i>	54
16	Doug Mockett & Company Inc <i>mockett.com</i>	26	101	Lutron Electronic Co., Inc. <i>lutron.com</i>	cov-4	83	Trespa <i>trespanorthamerica.com</i>	180
42	Dow Corning <i>dowcorning.com</i>	79		McGraw-Hill Construction <i>construction.com</i>	132,201	45	Umicore <i>vmzinc-us.com</i>	83
20	Draper, Inc. <i>draperinc.com</i>	30		McGraw-Hill Professional <i>mhprofessional.com/construction</i>	170,210	44	US Green Building Council <i>greenbuildexpo.org</i>	82
35	E Dillon & Company <i>edillion.com</i>	59	24	MDC Wallcoverings <i>mdcwall.com</i>	40-41		USG Corporation <i>usg.com</i>	49,185 187,189 191
47	EFCO Corporation <i>efcorp.com</i>	89	36	MechoShade Systems, Inc. <i>mechoshade.com</i>	60	49	Virco, Inc. <i>virco.com</i>	92
17	EIMA Association <i>eima.com</i>	27	94	modularArts <i>modulararts.com</i>	208	100	WAC Lighting <i>waclighting.com</i>	cov-3
91	Engineered Lighting Products <i>elplighting.com</i>	205	81	MP Lighting <i>mplighting.com</i>	176	53	Wausau Tile, Inc. <i>wausaupaving.com</i>	115
79	EPFL - DII - Managemnt <i>chantiers.epfl.ch</i>	171	58	Nana Wall Systems, Inc. <i>nanawall.com</i>	125	51	Western Red Cedar Lumber Association <i>realcedar.org</i>	94
144	Eventscape <i>eventscape.net</i>	193	57	National Terrazzo & Mosaic Assn <i>ntma.com</i>	123		World Green Building Council <i>worldgbc.org</i>	138
32	Figueras Seating USA <i>figueras.com/mutaflex</i>	56	34	NJ SmartStart Buildings <i>njsmartstartbuildings.com</i>	58	82	Zumtobel Lighting, Inc. <i>zumtobel.us</i>	179
68	Formulated Solutions LLC <i>tessfinishes.com</i>	158	93	NYU-SCPS <i>scps.nyu.edu</i>	207			
			2	Oldcastle Glass® Naturalite® <i>oldcastleglass.com</i>	2-3			

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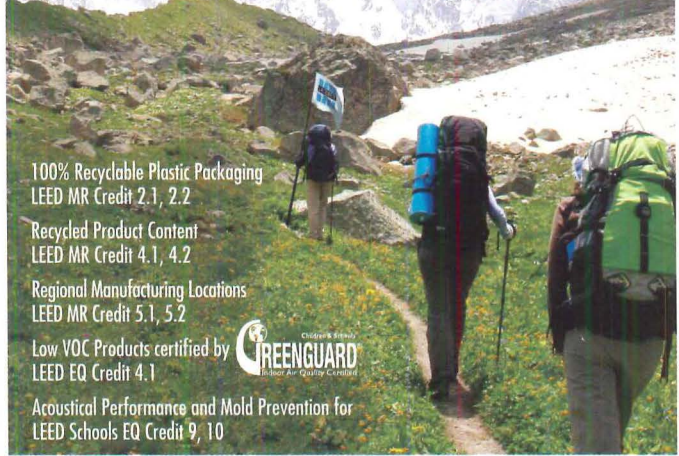
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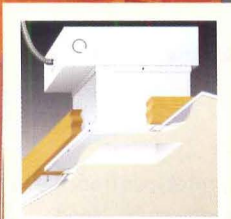


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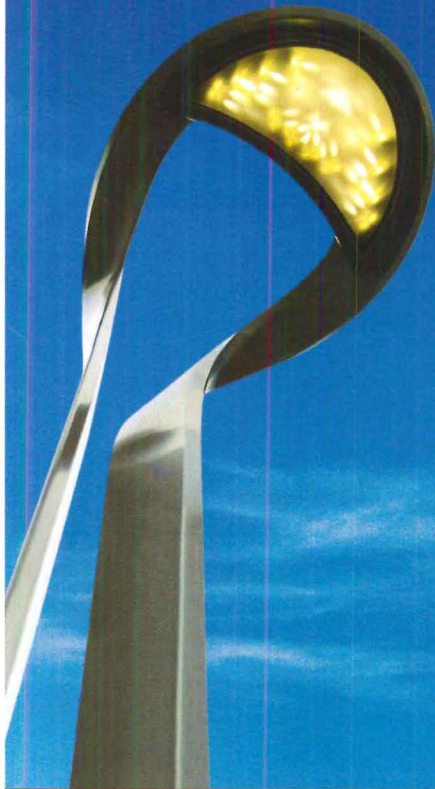
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DATES & EVENTS

New and Upcoming Exhibitions

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New York City

November 6–December 20, 2009

Featuring works by a number of notable international artists and designers, this exhibition plays with the notion of digital technology. In this first American presentation, prominent members of the Parsons community create work in traditional, digital, and mixed media that extends the idea of ink on paper and showcases how machinery and technology can enter the representational process. Visit newschool.edu/events.

Detour

New York City

December 3, 2009–January 10, 2010

This show documents notable architectural projects along Norwegian tourist routes that have gained national and international attention. The exhibition design is marked by a large cylindrical construction that transports the visitor to the Norwegian landscape through the use of films and models. For more information, call 212/229-8919 or visit newschool.edu/events.

Graffiti Gone Global

Miami, Fla.

December 4–6, 2009

Set to take place in a 4,000-square-foot venue in the Midtown Arts District, this groundbreaking exhibition will be the largest in Miami to feature the work of today's top street artists. Presenter SUSHISAMBA has commissioned Miami-based architect HOX (Douglas Hoekzema) to design a sprawling, Brazilian-inspired favela structure for *Graffiti Gone Global*. For more information, visit graffitigoneglobal.blogspot.com.

Ongoing Exhibitions

B Like Burnham

Chicago

Through November 20, 2009

This exhibition helps Chicago Architecture Foundation visitors understand the man, the Plan, and the legacy of Daniel H. Burnham. For more information, call 312/922-3432 or visit www.architecture.org.

What Makes India Urban? Challenges Towards Mobility, Infrastructure, Energy, and Perpetual Change

Berlin

Through November 26, 2009

This exhibition takes place in the framework of the Asia-Pacific Weeks 2009. This year's thematic focus is "Mobility and Energy." At Aedes am Pfefferberg. For more information, call 0049-30-2827015 or visit www.aedes-arc.de.

Architect Sverre Fehn: Intuition • Reflection • Construction

Helsinki, Finland

Through November 29, 2009

In this retrospective of Norway's most prominent architect, 18 of his built and unbuilt projects are on display. Awarded the Pritzker Prize in 1997, Fehn is especially known for his museum and exhibition buildings and private houses. For more information, visit mfa.fi/atmuseum.

Architecture at Cooper 1859–2009

New York City

Through December 4, 2009

Tracing the succession of Cooper Union's architecture from its 19th-century brownstone Foundation Building through Thom Mayne's 41 Cooper Square (2009), this exhibition includes recently discovered blueprints of the Foundation Building from the Leopold Eidlitz reconstruction work in the 1880s. For more information, visit www.cooper.edu or call 212/353-4220.

Thomas Jefferson's Academical Village: The Creation of an Architectural Masterpiece

Charlottesville, Va.

Through January 3, 2010

This exhibition will present the original drawings, prints, and letters that Thomas Jefferson exchanged with his colleagues as the plan for the University of Virginia took shape. For more information, visit virginia.edu/artmuseum.

Ghost Stories, New Designs from Nendo

New York City

Through January 10, 2010

The newest projects and prototypes from the renowned Tokyo-based design studio Nendo will be seen for the first time at the Museum of Arts and Design. Nendo has garnered international attention and more than 45 design awards for its beautifully simple yet surprisingly humorous work in interiors, furniture, product design, graphics, and architecture. For more information, visit www.madmuseum.org.

The Art of Architecture:

Foster + Partners

Dallas

Through January 10, 2010

Coinciding with the grand opening of the Winspear Opera House, this exhibition explores Foster + Partners' major architectural achievements over the past four decades. It features architectural models, drawings, renderings, photographs, and videos to give insight into the formal and conceptual underpinnings of the practice's work. For more information, visit nashersculpturecenter.org.

Palm Springs Modern:

Photographs by Julius Shulman

Pittsburgh

Through January 31, 2010

This exhibition features almost 100 original photographs of iconic designs by Modernist architects such as Richard Neutra, Albert Frey, and John Lautner. Also presented are 20 original drawings, and renderings of three key projects by Neutra. Call 412/622-3131 or visit www.cmoa.org.

China Prophecy: Shanghai

New York City

Through March 2010

This exhibition explores the 21st-century skyscraper city of Shanghai, a vast metropolis of 18 million residents – the largest city in the world's most populous nation. For more information, call 212/945-6325 or visit www.skyscraper.org.

House of Cars: Innovation and the Parking Garage

Washington, D.C.

Through July 11, 2010

In a world without parking garages, parking lots might sprawl across cities. For more than 100 years, the parking garage has provided design and engineering solutions to the parking problem. This is the first major exhibition to explore the history of this familiar structure and to open conversations about innovative designs and parking solutions for the future. For more information, call 202/272-2448 or visit www.nbm.org.

Lectures, Conferences, and Symposia

Architecture and Design as a Catalyst for Change

Chicago

November 5–7, 2009

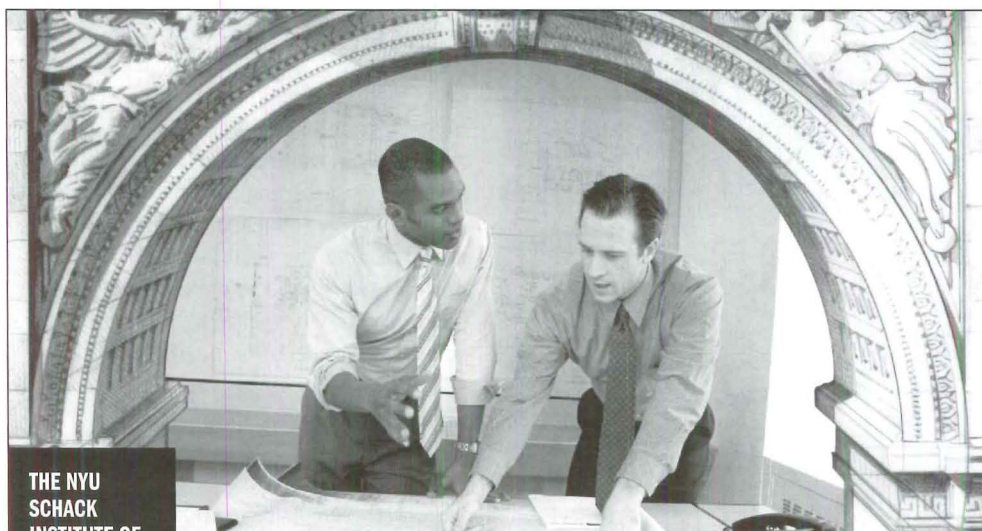
This conference will be the first meeting of the Association of Architecture Organizations, which intends to develop an alliance of like-minded nonprofit groups to educate the public about architecture and the built environment, and to serve as a forum for the sharing of best practices, materials, and ideas. At the Chicago Architecture Foundation, in the heart of downtown Chicago. For more information, visit www.adenweb.org/conference2009.

GreenBuild International Conference and Expo

Phoenix

November 11–13, 2009

GreenBuild is the world's largest conference and expo dedicated to green building. Thousands of building professionals from all over come together for three days of educational sessions, renowned speakers, green-building tours, special seminars, and networking events. For more information, visit www.greenbuildexpo.org.



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DATES & EVENTS

Jefferson, Palladio, Art and Architecture and the University of Virginia

Charlottesville, Va.

November 20–21, 2009

This two-day symposium will feature leading and emerging scholars from several disciplines to explore the art and architecture of Thomas Jefferson, Andrea Palladio, and the development of architecture at the University of Virginia, including the work of McKim, Mead & White. To register, call 434/924-1428.

Book Talk and Signing with Randall Mason, Author of *The Once And Future New York*

New York City

December 1, 2009

In *The Once and Future New York*, Mason challenges several myths about New York's historic preservation, asserting that preservationists were not simply antiquarians concerned only with architecturally significant buildings, but that many were social reformers interested in recovering the city's collective history. For more information, call 212/945-6324.

China Eco Expo

Beijing

June 3–5, 2010

Featuring green-building products, technologies, and services from around the world, this high-level conference addresses China's need for more sustainable, ecofriendly growth. Highlights include an extensive matchmaking program and a full-scale model "Green Office of the Future." For more information, visit www.ecoexp.com.

Competitions

USITT 2010 Student Design Competition

Registration deadline: November 20, 2009

This competition asks, "What is the ideal theater for teaching professional theater?" The question is to be explored by a team composed of at least one theater student currently enrolled in a college or university theater program and one architectural student enrolled in an accredited architectural college or university program. E-mail sfg@workshoparchitects.com.

Unplanned

Submission deadline: November 30, 2009

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Paul Goldberger
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White Magnolia Plaza, image courtesy of SOM

DATES & EVENTS

multiple formats, from physical models to drawings, animations, video games, or experimental formats. Visit losangeles.superfront.org.

The SHIFT**oston** Ideas Competition

Submission deadline: December 11, 2009

Submit your most innovative, provocative, and radical ideas in this competition that seeks to collect new visions for Boston's urban environment. Eligible topics include renewable energy, ecological urbanism, creative redevelopment, municipal involvement in the field of design, and the city as a cultural center and cultural force. For more information, visit www.shiftboston.org.

Construction Excellence Awards

Submission deadline: January 15, 2010

Recognizing the outstanding achievements of professionals in the design, fabrication, and functionality of acoustical and specialty ceilings as well as in interior systems construction, these awards also further their contributions to the architectural industry. Call 630/584-1919.

Tradewell Fellowship with WHR Architects

Submission deadline: January 22, 2009

The Tradewell Fellowship was created to build the careers of aspiring health-care architects. Each year, the Tradewell Fellow is involved with clients in early master planning and design with a particular focus on healing environments and collaborative design methods. The Fellowship begins and ends in July and includes employment at WHR Architects in Houston. For more information, visit www.whrarchitects.com.

Atlantic City Boardwalk Holocaust Memorial Design Competition

Submission deadline: April 1, 2010

This is a two-stage international design competition to choose a winning proposal to build a fitting and compelling memorial to the Holocaust, and genocide in general, which has the potential to raise the consciousness of millions of visitors each year. Entry is anonymous and open to professionals and students in architecture, design, and the visual arts. Visit www.acbhm.org.

E-mail information two months in advance to sebastian_howard@mcgraw-hill.com. For more listings, visit architecturalrecord.com/news/events.

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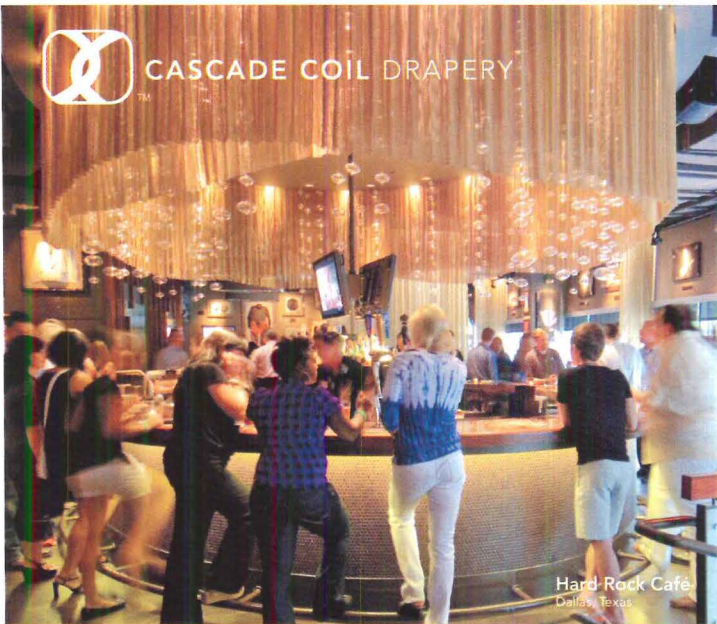
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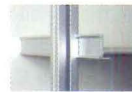
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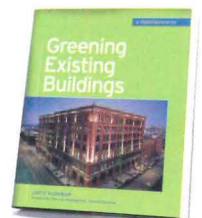
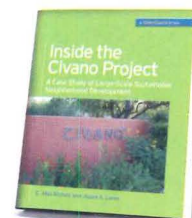
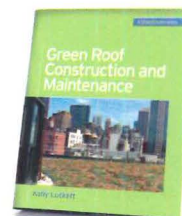
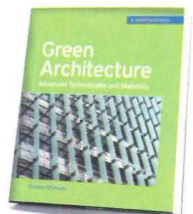
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1. **First Place:**
The Weber Thompson–
designed Terry
Thomas Office Building
in Seattle. Photo
submitted by
“ghanson.”

2. **First Runner-up:**
The Estuarine Habitats
& Fisheries Center
in Lafayette,
Louisiana. Designed
by Eskew+Dumez+
Ripple and Guidry
Beazley Ostteen.
Photo submitted by
“nmarshall.”

3. **Second Runner-up:**
The Folk Pottery
Museum of Northeast
Georgia in Sautee
Nacoochee, Georgia.
Designed by Robert M.
Cain. Photo submitted
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2




3

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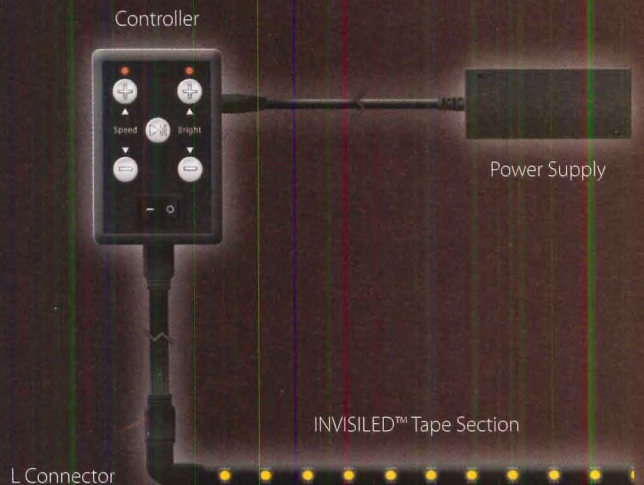
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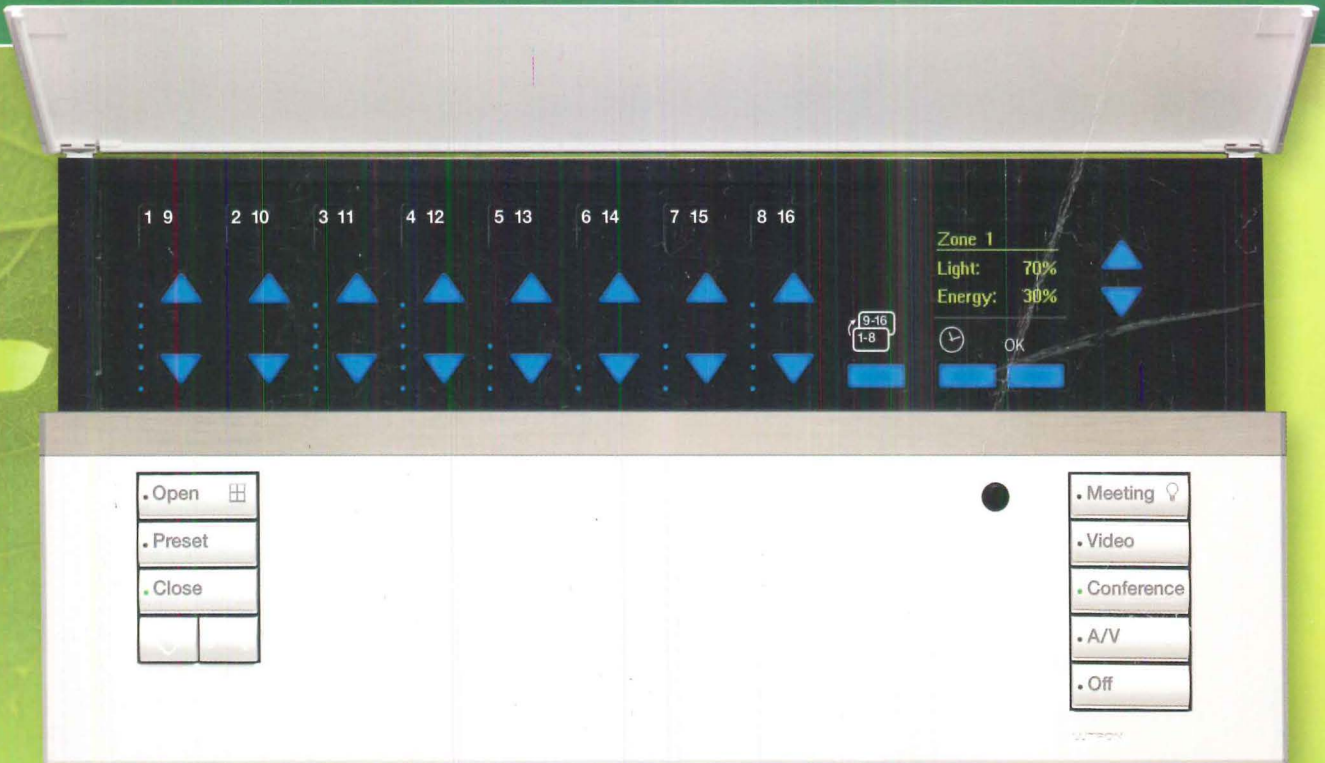
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