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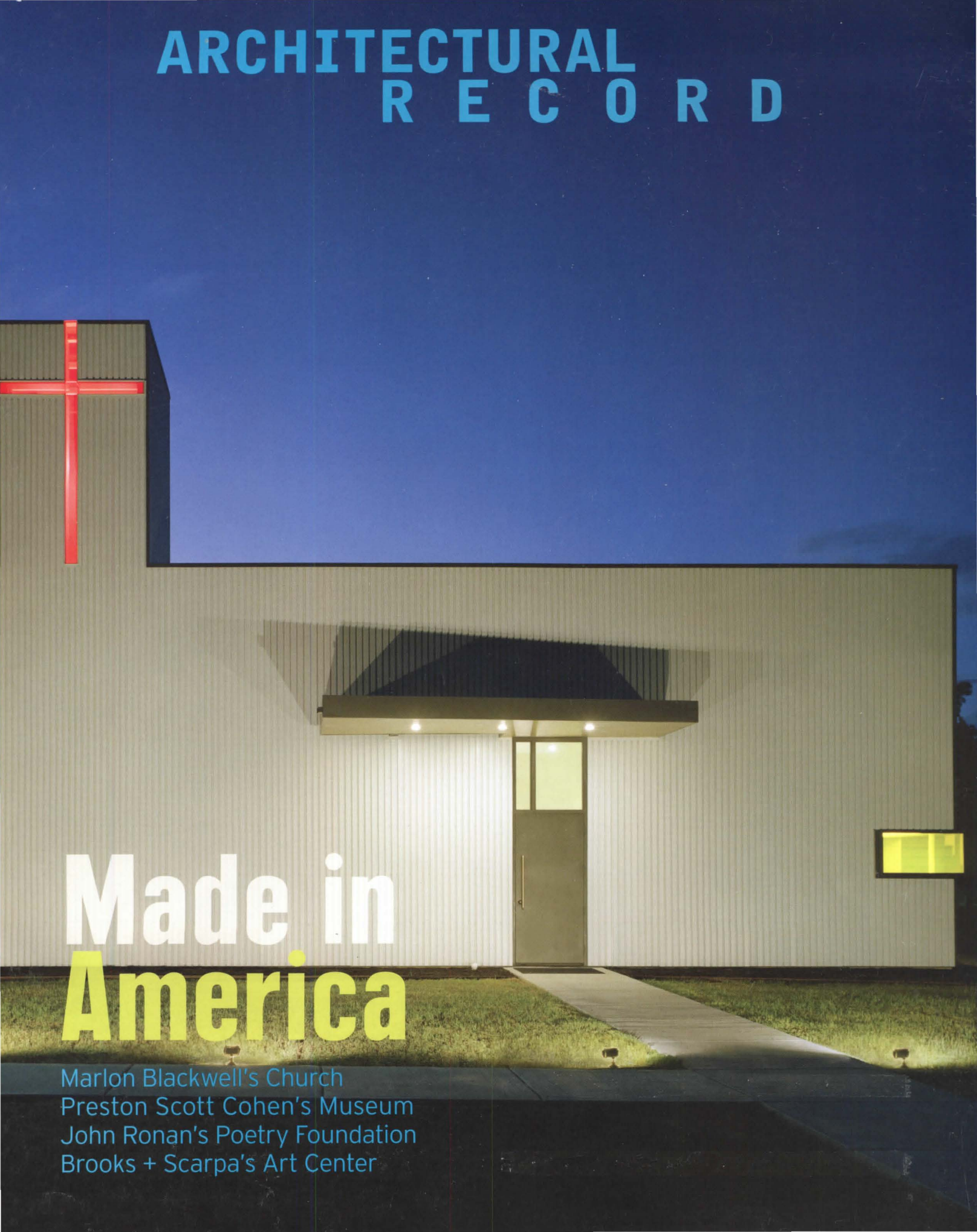

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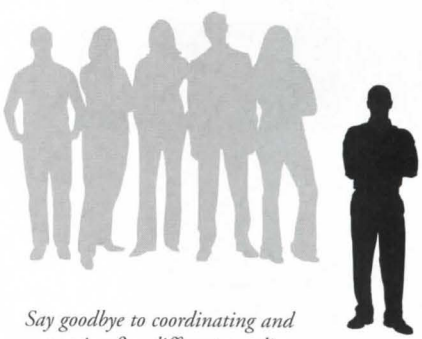

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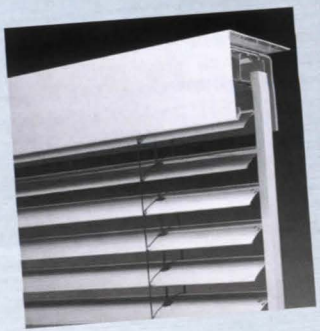

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LIGHTING

THIS PAGE: TEL AVIV MUSEUM OF ART, BY PRESTON SCOTT COHEN. PHOTO BY AMIT GERON.

ON THE COVER: ST. NICHOLAS EASTERN ORTHODOX CHURCH, SPRINGDALE, ARKANSAS, BY MARLON BLACKWELL ARCHITECT. PHOTO BY TIMOTHY HURSLEY.

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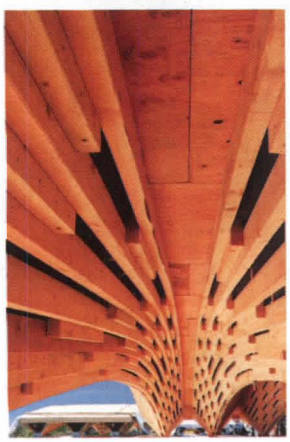

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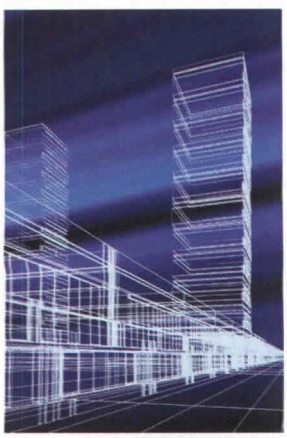

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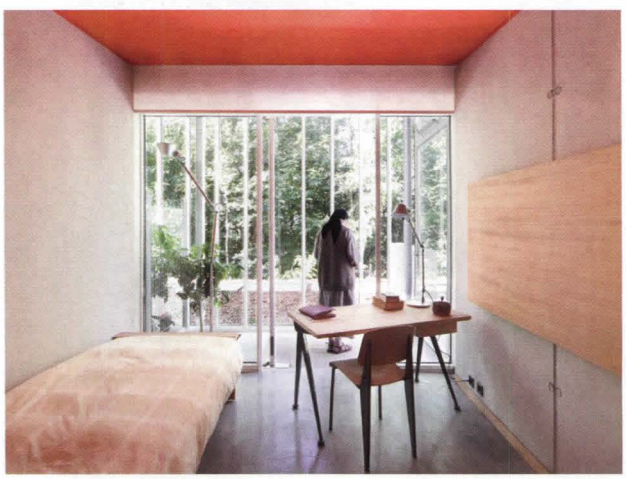
Readers largely praised a delicate expansion of a Le Corbusier masterpiece in the comments on our story "A Grand Opening for Renzo Piano's Controversial Expansion at Ronchamp Chapel."

[COMMENTS AND LETTERS]

Before I read the article and viewed the photos I was appalled. How could they! Ronchamp, for me, has always stood as the epitome of Modern architecture, and is one of the primary reasons I love Le Corbusier—for his blending of art and design. After seeing the photos and plans, after reading Piano's concept, I am now very impressed. This must be one of the most difficult commissions an architect could ever face—to add significant program to a beloved site and/or building. The sensitivity to the chapel and the on-target response to the present-day program show the great skill of a master, confident in his brushstrokes as he adds to the masterpiece.
—David Gardner



Piano tucked his Ronchamp expansion into the nearby hillside to avoid altering the view from Le Corbusier's chapel.

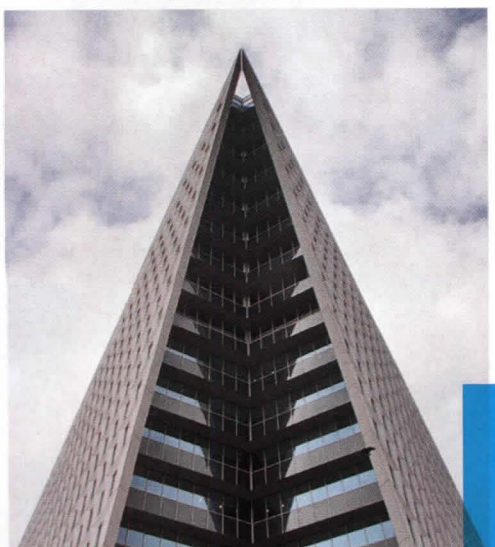
Thoughtful and positive response to the surroundings and program. Don't fully understand the prisonlike window wall, but maybe there was a reason for that. Otherwise, *bellissimo.*
—James Hambright

I was pessimistic about Piano's intentions originally. The new work, however, is even more banal than I anticipated. There is a distinct lack of invention and genuine investigation as well as a reversion to the typical stylistic crutches we have come to expect in most of Piano's work. It is overtly and cowardly deferential to Ronchamp.
—Shane Thompson

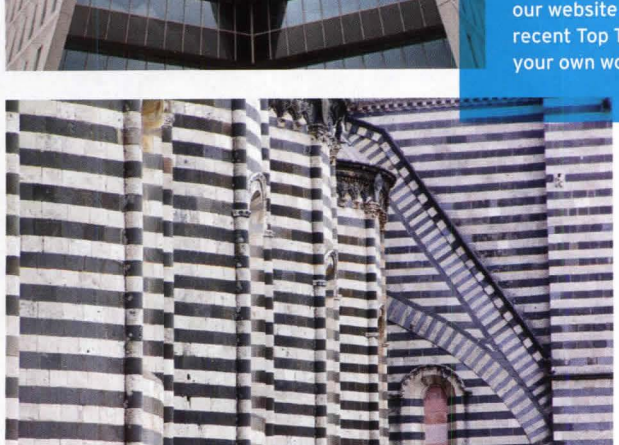
Are these nuns really prisoners behind bars? Beautiful scheme and very warm finishes; well done, except for the prison bars that are so evident and such a big part of the design.
—Robert Stirling Morris

Boxes built in a hill. Does it create a dialogue with the chapel? They look like cages, purposely hiding a view, avoiding the connection, the flow between the exterior and interior space. From the site plan, Ronchamp seems to respect the surroundings and soar into the sky more than the "humble" addition.
—Anonymous

[READER PHOTOS]



Every month, we publish a list of Top Ten Reader Photos, highlighting the best recent submissions to our photo galleries—including these images of Uytenhaak Architects' municipal office building in the Hague (above) and a 14th-century cathedral in Orvieto, Italy (below). Visit our website to see the most recent Top Ten and to submit your own work.



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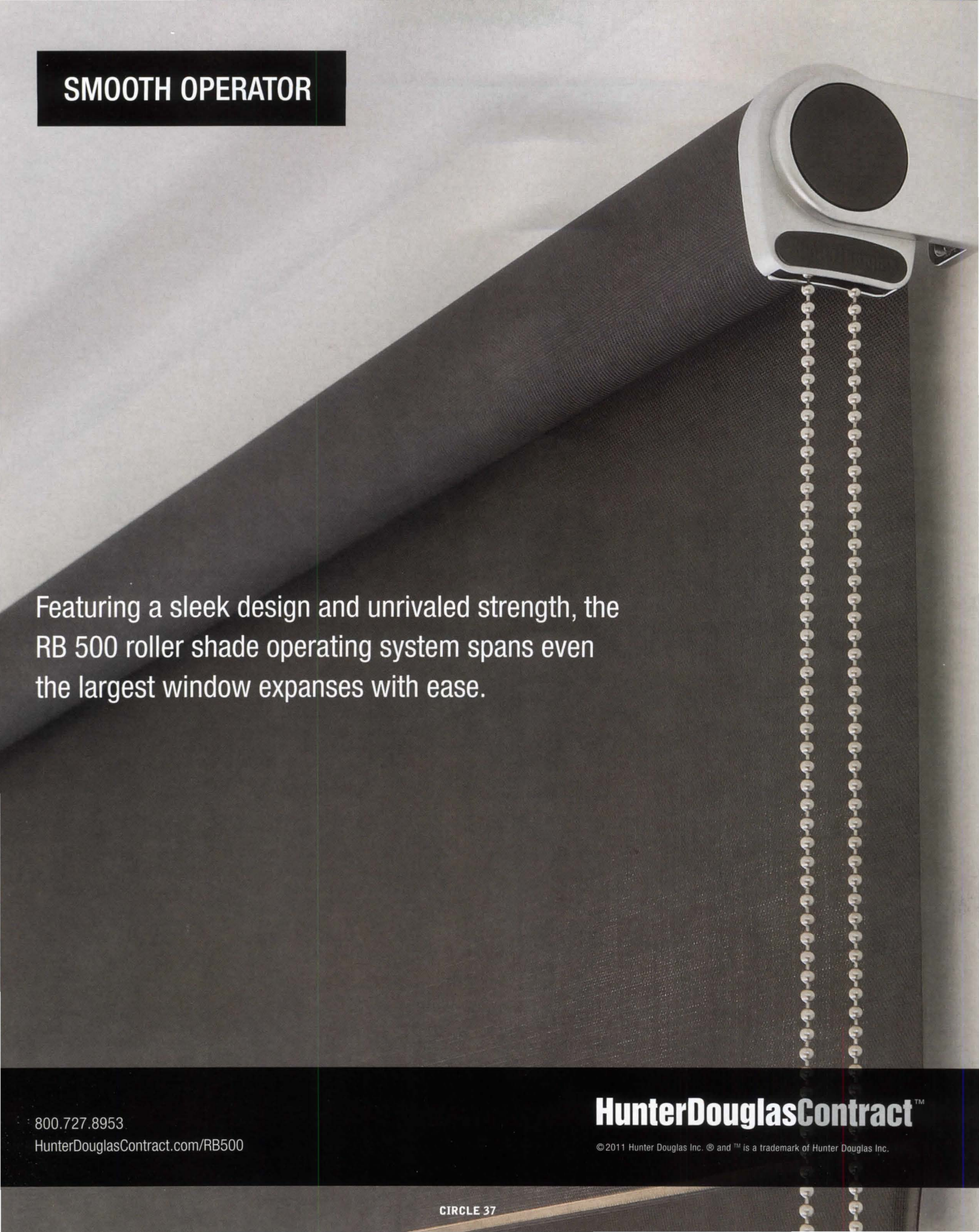
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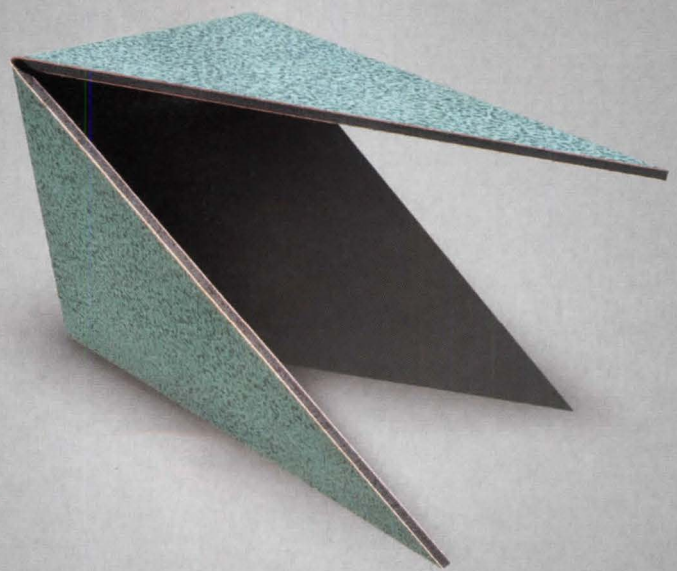

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CIRCLE 48

Born in the U.S.A.

Despite a bleak economic climate, American architects are making the most of their skills.

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NOVEMBER IS a month of darkening days, and this year it arrives with an extra chill for the design profession. As the mercury began to dip across most of America, so did the numbers in the Architects Billing Index, down a sudden five points in September, to 46.9. Many of RECORD's readers don't need to see that statistic, however, to know how tough this economic climate continues to be for architects, particularly those primarily engaged in residential and commercial design in the United States.

Still, the profession remains alluring: The best architecture schools have their pick of students, and this month we report on *DesignIntelligence*'s annual ranking of undergraduate and graduate programs around the country (page 55). Yet the field those graduates will enter in the years ahead is changing rapidly, not just because of the economy but because many architects are redefining what they do: They are increasingly engaged in areas such as urban design, environmental advocacy, and advancing digital technology. And that's good news.

Recently, I heard Jeanne Gang of Studio Gang in Chicago give a talk about her work. Just weeks before, she'd been awarded a MacArthur "genius" grant (page 22). This is only the fourth time an architect has won the honor—and the no-strings-attached five-year award of $500,000 that comes with it. Gang is a quintessentially American architect: As a woman with her own firm, she can certainly be called a pioneer. The daughter of a civil engineer in Illinois, she fell in love with building, materials, and infrastructure at an early age. Her most famous project, the 82-story Aqua tower in Chicago, took the classic American skyscraper and provided a twist with the innovative curving, cantilevered poured-in-place concrete floors that give the building its distinctive sensuous facade.

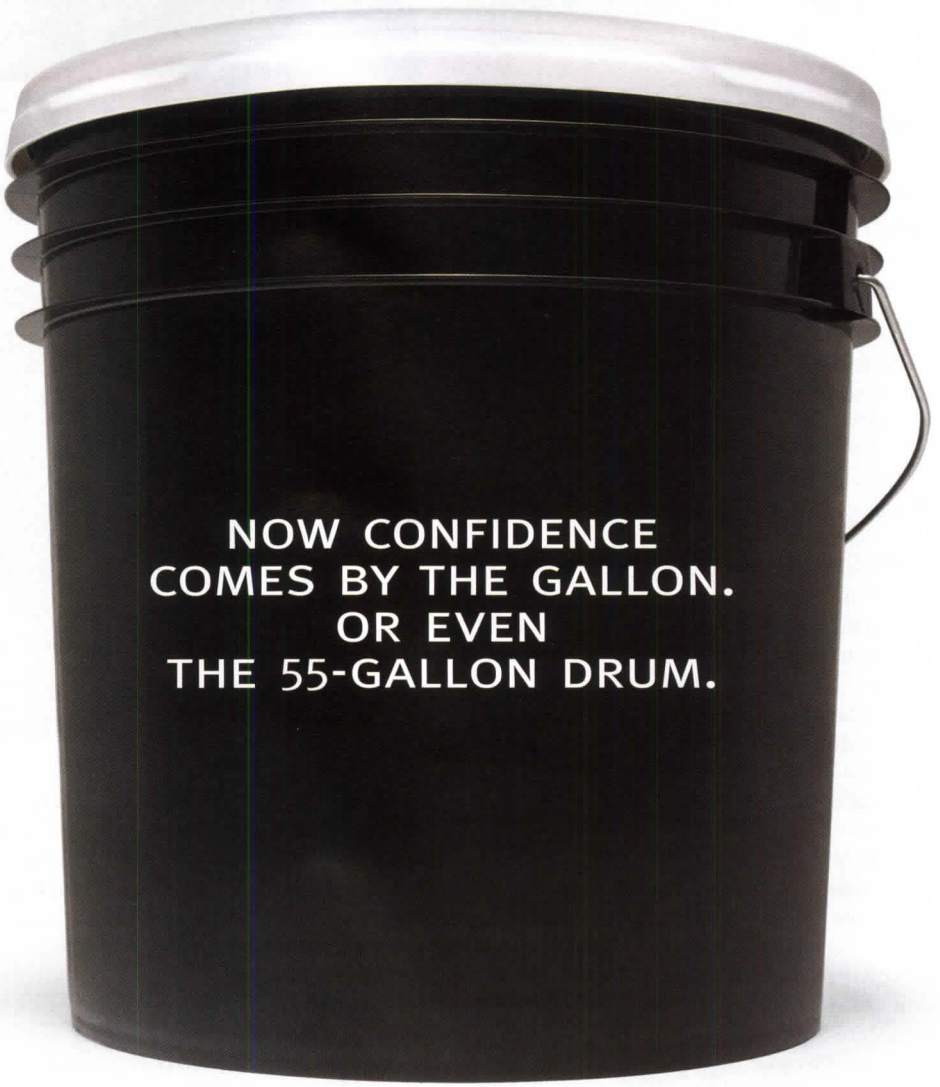
Yet Gang talks as much about ideas as she does about her built work. Her design method—like that at OMA, the Rem Koolhaas office where she worked early in her career—involves extensive research and open collaboration among the 30 young architects in her studio. And what occupies Gang's thinking is broad: the Chicago River and the deteriorating ecosystem of the Great Lakes; how to repurpose derelict factories in the inner-ring suburbs that have become the "arrival gates" for new immigrants; how to take an indigenous compressed-earth brick in India and make it stronger—to give just a few examples. Gang sees architecture as "touching on issues that go beyond the single building."

In this month's issue, we celebrate design with an American stamp. And while we are looking at projects that are single buildings, each is having a significant impact on its surrounding context and the public realm. Each design reflects, too, a certain pragmatism and egalitarianism, no matter the size of the budget. Whether a modest church in Arkansas or a vintage North Carolina warehouse turned art museum, they show off an American can-do spirit. A poetry center of glass and zinc translates Miesian corporate urbanity into an oasis for the quieter pursuits of literature—while connecting powerfully to the Chicago streetscape. A high-drama design by a Massachusetts architect for a museum in Tel Aviv makes the case that some of the most adventurous buildings by homegrown Americans are built overseas, where clients tend to be more open to pushing the envelope.

These architects, besides designing innovative and imaginative single buildings, are, like Gang, spending a lot of time outside the office—training the next generation of architects, engaging in their communities, or helping to tackle global issues such as poverty and sustainability. It's one way of diversifying—not a bad strategy these days—and, in the process, making the profession of architecture more vital to our world.

Cathleen McGuigan

Cathleen McGuigan, *Editor in Chief*



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- U. of Maryland Wins Solar Decathlon
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Steve Jobs: "A Great Client"

Architects who worked with the digital pioneer fondly recall his vision: exacting yet inspiring.

Designed by Bohlin Cywinski Jackson, the Apple Store on West 67th Street, in Manhattan, features an all-glass roof.

IN 2002, Apple opened its first non-mall retail store, in an old post office in New York's SoHo neighborhood. The late Herbert Muschamp, the *New York Times*' architecture critic, called the store's design "fairly bland," but certain Modernist-inspired elements stood out: white walls, metal trim, Lucite display tables, and slate floors. "This vocabulary," Muschamp wrote, "shifts Apple from the realm of wow-zowie computer graphics and elevates the company's wares to the level of Bauhaus archetypes. Marcel Breuer, meet Steve Jobs."

Jobs, who died on October 5 at the age of 56, was no Bauhaus-trained designer, but he had an intuitive sense of the way people respond to good architecture, says Karl Backus, a principal in the San Francisco office of Bohlin Cywinski Jackson, which has designed nearly all of Apple's 350-plus stores (including the one in SoHo). "Steve knew that the best architecture comes from solving design problems in a very simple and straightforward way," Backus says. "He was quite knowledgeable about architecture and design, and he would ask very pointed questions: Can we do this? Why not? And for the most part, his questions would take us into places we hadn't considered before." Adds founding principal Peter Bohlin: "Steve was a great client. He drove us hard to get it right. He always knew when things weren't good enough, and I don't think very many people have that quality. I will miss him greatly."

Jobs first hired Bohlin's firm, founded in Pennsylvania, to design a small sales office in Pittsburgh for NeXT, which he ran after leaving Apple in 1985. In 2000, he commissioned the firm to design the Emeryville, California, headquarters of Pixar. "I remember two things about my first meeting with Steve Jobs," Bohlin says. "One, I had a tie on, and he thought that was funny. And two, he said he thought we did very good large buildings and terrific houses, and the combination of those two building types would be just perfect for Pixar." Indeed, one of the houses Bohlin had designed, with James Cutler, was for Jobs's business rival, Bill Gates, near Seattle.

When Jobs, back at Apple, decided to move into the retail market (despite initial skepticism from critics), he turned to Bohlin to be part of the design team. From the start—Apple's first two stores opened on May 19, 2001, in Tysons Corner, Virginia, and Glendale, California—the stores were noted for their sleek, minimalist design, a reflection of Apple's products. Bohlin characterizes the aesthetic as "precise, intelligent, and rational," but also "dreamlike."

In recent years, Bohlin's firm—his 50-person San Francisco office handles most of the Apple retail work—has focused on eye-popping "flagship" stores, like the one on Fifth Avenue in Manhattan, with its glass cube entrance, and the more recent Shanghai store, with its 40-foot-high glass cylinder entrance surrounded by a shallow moat. Many stores have stunning interior glass staircases designed by structural engineer James O'Callaghan. Bohlin says Apple is opening about 40 to 50 new stores a year in the United States, Europe, and Asia. "We have at least a dozen on the boards at any one time, at different stages," he says.

Meanwhile, a house Bohlin designed for Jobs likely will never be built, the architect says. For years, Jobs fought to tear down a 1926 Spanish Colonial mansion he owned in Woodside, California. The so-named Jackling House, in which he lived for years, was designed by George Washington Smith, father of the Spanish Colonial Revival style in the United States. In 2001, Jobs set out to raze the structure and build a relatively modest, Bohlin-designed home in its place. The historic mansion was finally demolished this past February, besmirching Jobs's reputation among architectural preservationists [RECORD, April 2011, page 23]. With Jobs's death, Bohlin says there are no plans to move forward with the new house.

Last June, a frail-looking Jobs appeared before the Cupertino, California, city council to present details of a new Apple headquarters—a four-story circular building with a one-third-mile-wide hole in the middle. "It looks a little like a spaceship landed," Jobs told the council. Notably, he didn't mention the architect's name: Norman Foster, known for his high-tech style. Critics have already panned the project. "The proposed building is essentially one very long hallway connecting endlessly with itself," Christopher Hawthorne wrote in the *Los Angeles Times*. Paul Goldberger, writing in *The New Yorker*, likened it to a "giant donut."

Foster obliquely referred to the project in a statement released following Jobs's death, in which he praised the Apple cofounder as "one of the truly great designers and mentors." A spokeswoman for Foster + Partners said she could not reveal anything about the proposed headquarters, "as it remains confidential." ■

Visit us online to see additional images of Apple Stores.

PHOTOGRAPHY: © PETER AARON/ESTO

BY ASAD SYRKETT

[NEWSMAKER] **Jeanne Gang**

With a portfolio of widely praised projects to her credit, including Chicago's Aqua Tower, architect Jeanne Gang can now add "genius" to the list of accolades she has earned for her work. In late September, the 47-year-old founder of Chicago-based Studio Gang Architects was named a 2011 Fellow by the John D. and Catherine T. MacArthur Foundation. She is only the fourth architect to win the distinction, commonly referred to as a "genius" grant. Each of this year's 22 fellows is given a no-strings-attached grant of $500,000, dispensed over five years. We caught up with Gang to hear her reaction to receiving the prize, her plans for the award money, and where she feels the architecture profession is headed in the coming years.

PHOTOGRAPHY: © CHRIS KITAHARA

So, how are you doing? How have things changed since you became a MacArthur Fellow?

Jeanne Gang: (*laughs*) Well, it's just a bit crazier than usual, but besides that, nothing's changed.

Were you surprised?

I was surprised; it wasn't on my radar as something to even be watching out for. I guess they normally announce winners in September, but I wasn't even thinking about it, so it really was a great, great surprise.

How did you get the news?

A phone call! And it came at the end of a long week and a tough meeting.

What are your plans for the award funds?

Well, I'm going to make a specific plan, as [the award] is something you receive over five years, and I want to make sure I have a five-year plan. The general idea is that I'll be using it for our research or prototype work, more of the *experimental* side of our practice.

How will the award change things in your office and for your practice?

It gives a boost to that [research and experimental] side of the practice. It's always a struggle to try and find the funds to do the things that you want to do, especially for research. We're currently working on a book about the Chicago River, called *Reverse Effect*, and we've had to ask for grants. And you keep getting the budget back and you're like, "Okay, printing costs just went up; we have to cut five pages." So it's always a balancing act. [The award] will alleviate a little bit of the stress of finding the funding for some of these things and allow us to better explore the directions we want to go in.

There have been very few architects designated as MacArthur Fellows. Do you feel that your receiving the award elevates the profession?

Oh, I absolutely think it does. We've been, as architects, kind of underrepresented in this award, and I think the main reason is that people don't understand all the things that we architects do. They might put us in the category of professionals rather than thinkers or creative people who are working on really crucial issues that affect all of us. But we do! So, it's great to bring that forward. I think architects are really key right now in terms of addressing issues of the environment and addressing places on the planet that are being hit hard by the combination of poverty and natural disaster. Not only that, but architects also are really good at collaborating. We bring a lot of different fields together.

Where do you see the architecture profession going in this economic climate?

I don't know if you read about the Museum of Modern Art's *Foreclosed: Rehousing the American Dream* exhibition that we're a part of. It's an interesting show [opening February 15 and running through July 30, 2012] that starts to ask questions about how we rethink suburbia given the foreclosure crisis and the environmental issues related to forcing people to drive way out to live. How do we rethink these settlement patterns that are so vital to the way we will live in the future? The building side is important, but it's also crucial to study the intersection of architecture, urbanism, and landscape design and to come up with solutions in those areas.

Those kinds of collaborative solutions seem central to the philosophy behind your practice. Can you elaborate?

It's really about trying to pull expertise out of different fields and bringing that expertise together through the design process. Not starting out as if you know the answer, but starting out as if you know what the questions are and then trying to be open-minded enough to let other people's expertise influence you. It's one thing to have one consultant working on a problem and following the architect's lead, but it's quite different when you really are trying to listen to what different people are saying. Everyone works with structural engineers and landscape architects, et cetera. But there are two ways of working: One is to let them develop something based on your preconceived idea, and the other way is, at least in the beginning, to get good, solid input and then try to create something that responds.

Aside from the Chicago River book and the MoMA exhibition, what other projects are on your docket?

The studio is currently working on documents for two projects: the Arcus Center for Social Justice Leadership at Kalamazoo College in Kalamazoo, Michigan, and City Hyde Park, a 600,000-square-foot residential development in Chicago. We're also in the concept design stage for the Writers' Theatre in Glencoe, Illinois, and high-rise developments in Mexico City and Vancouver. ■

Visit us online to watch videos about Jeanne Gang's work.

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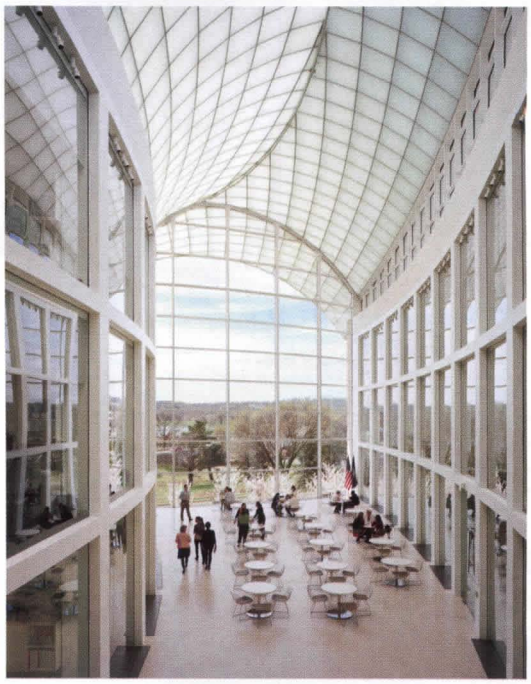
BY LAURA RASKIN

[FIRST LOOK]

A Permanent Home for Peace

Moshe Safdie's United States Institute of Peace opens on the National Mall's last buildable lot.



LEFT: **The smaller of two, this atrium, lined with window-walled offices, faces the Potomac River and is a more secluded gathering space for institute employees.**
BELOW: **The southeast facade is the public entrance to the Peace Institute.**

MOSHE SAFDIE was nibbling crab cakes in the recently completed, 150,000-square-foot glass-and-concrete headquarters he designed for the United States Institute of Peace in Washington, D.C. It was a silver October day, and lunch was served in a boardroom overlooking the Lincoln Memorial, Washington Monument, and Capitol building. "These are great views," Safdie noted, "and we made the most of them."

The commanding 73-year-old architect had just finished leading a tour of the institute, which had, indeed, scored prime real estate: the last buildable site available on the National Mall—a former parking lot on the northwest corner. Capitalizing on the surroundings, Safdie conceived a building with atria and offices filled with light, thanks to glass curtain walls and a billowing roof made of 1,482 glass panels.

Created by Congress in 1984, the institute is a nonpartisan organization whose mission is to help prevent and resolve international violent conflicts. For years, its roughly 325 employees worked in rented space in a nondescript office building, with no common area where they could host dignitaries and other visitors.

In 2001, the institute launched a design competition for a new headquarters. In December of that year, it awarded the commission to Safdie, who beat out four other finalists: Pelli Clarke Pelli Architects, Michael Graves and Associates, Polshek Partnership (now Ennead Architects), and Weiss/Manfredi (which withdrew). Prior to the call for entries, Safdie had never heard of the institute. "I couldn't figure out how such an important institution was not a known quantity," he says. The organization's president, Richard H. Solomon, says Safdie's scheme was chosen because the other proposals "were basically square buildings."

Safdie's five-story structure is blocky in shape, but it is topped by a sculptural roof whose two pointed wings cantilever over the heavy massing of the acid-etched precast-concrete building. In conceiving the roof, Safdie began with a series of fluid forms, "like a flock of birds," but the end result evokes a geometric sketch of a single bird's outstretched wings. Safdie says he's "not one who believes in overt symbolism," yet it's hard not to think of doves, the symbol of peace, when gazing at the roof. The 8-inch-thick roof consists of layers of glass set in a steel tube grid.

In addition to creating a pleasant workplace, Safdie wanted to entice the public to wander into the new building. To achieve this he inserted two large atria. One faces the Lincoln Memorial, with an entrance on busy Constitution Avenue. Offices overlook the atrium through window-walls and, in turn, allow visitors glimpses of the inner workings of the institute. A smaller atrium, with an employee entry on Twenty-Third Street, looks toward the Potomac River. Again, glazed rooms overlook the space; at ground level, employees can be seen sitting at patio tables. The headquarters also includes a 20,000-square-foot Global Peacebuilding Center, a new public education initiative containing touch-screen kiosks, a resource center, and classrooms. It will be completed over the next few years.

Phase one of the $186 million institute was finished in October, less than three years after construction began. A grand opening is set for later this year.

Safdie has been busy. He has three other projects finishing up this fall: the Kauffman Center for the Performing Arts in Kansas City, Missouri; the Crystal Bridges Museum of American Art in Bentonville, Arkansas (see our website for coverage); and the Khalsa Heritage Centre in Anandpur Sahib, India. The institute, despite its prominent location, hasn't received the same anticipatory fanfare as Crystal Bridges, funded by Walmart heiress Alice Walton. Compared to Crystal Bridges' eight pavilions set around two ponds, the institute seems less contrived.

The roof is the building's big symbolic gesture—and Safdie agonized over it. For those who work inside the light-filled building, his angst paid off. (During the recent tour, Robin Wright, an institute fellow and author of the new book *Rock the Casbah*, gushed to Safdie, "I love your building. You bring me closer to God.") For those who never wander indoors, however, the exterior seems too referential to the heavy classicism of its monumental neighbors. It leaves one wishing Safdie had focused on more than the building's ethereal crown. ■

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[URBAN DESIGN]

Life in the Slow Lane

San Francisco's parklet program turns parking spots into mini-plazas.

Rebar, a San Francisco firm, designed a parklet outside of Tony's Pizza Napoletana in the North Beach neighborhood.

IT'S THE ULTIMATE revenge on the modern city: one less parking space, one more park. A century and a half after San Francisco city planner Jasper O'Farrell was driven out of town by a lynch mob for taking farmers' land to widen Market Street, parklets are reversing his folly, expanding the sidewalk into the flow of traffic, reclaiming street for feet.

Nearly two dozen of these mini-parks, designed by a coterie of local architects, have appeared in neighborhoods across the city, from Outer Sunset to the Financial District. Built atop parking spaces in front of cafés, galleries, and shops, these slivers of refuge often contain planters, bike racks, and tables at which passersby can enjoy their locally roasted *macchiatos*. Technically temporary, they're designed to slip through city bureaucracy. Permits last one year, at which point the parklet is re-evaluated at a public hearing. "It's representative of a new kind of city planning: full-scale prototypes and iterative, changeable design," says Matthew Passmore of the firm Rebar, which has designed and built three parklets so far.

Seemingly overnight, parklets sprout: driftwood benches outside Trouble Coffee, undulating bamboo planks fronting Revolution Café, a scrap-wood playground before the Fabric8 art gallery. Now emerging in places like Vancouver, Philadelphia, and Chicago, parklets are a San Francisco phenomenon, thronged with sunbathers on fog-free days but defamed by drivers in a city where fickle public transit and complex parking rules make the rare spot as good as gold.

The city's parklet movement took root several years ago. In late 2008, inspired by Gansevoort Plaza—a pop-up seating area in a bustling intersection in Manhattan's Meatpacking District—San Francisco launched an experiment on a congested corner in the Castro: It built a pocket park. Concrete barriers, a few tables, and a row of potted trees went up; locals gathered for lunch and people watching; bureaucrats blanched. "The notion of its being exploratory, doing something temporary, was so foreign to career bureaucrats," said Andres Power, project manager of the city's Pavement to Parks program, established in 2009. "They said it's too dangerous—you have streetcars, multiple grids coming together. Our response was, it's the best place to figure out if it can work, and make changes if it doesn't."

The experiment was a success. Power and his team quickly built two more plazas like it in neighboring Noe Valley; then in early 2010, they turned their program loose with a public call for proposals for parklets throughout the city. Forty came in; 20 permits went out. Their next RFP, in June of this year, netted 40 more. Permits are now being issued.

The parklets are permitted by a trio of city agencies—Planning, Public Works, and the MTA—but must be funded, built, and maintained by whoever applies for them (typically owners of cafés, galleries, and stores). City oversight boils down to one simple rule that is enforced by plainclothes inspectors: The space must be public.

The parklets have drawn criticism, from similar circles that fought and killed a proposal for food stands in the city's beloved Dolores Park and continue to battle the notion of POPOS (privately owned public open spaces) in downtown. Opponents argue that a parklet's extra seating is a revenue generator veiled as public good. Then there's the occasional voicing of the car driver's plight. One more parklet, after all, means two or three fewer places to park.

I've seen firsthand how incendiary parklets can be. Enjoying a fair-trade espresso one morning in a parklet outside of Four Barrel Coffee, I was heckled by a passing driver: "How's it feel to take away my parking spot?" he shouted, peppering his speech with curses.

While the city loses an estimated $5,000 per year in parking fees for each spot (and meter) removed, it gains an array of public gathering places. Built independently, quickly, and cheaply—usually between $7,000 and $20,000, often with materials and funds donated by neighbors—each parklet is defiantly unique, from Four Barrel's bike rack–cum–garden trellis to Terroir wine shop's planned bocce ball court. "If this was a typical, permanent city project, you wouldn't see that level of creativity," Power says.

Perhaps most notably, parklets give urban dwellers a place to kick back amid the bustle of the city. Says Seth Boor, whose studio, Boor Bridges, designed the Four Barrel parklet, "It's like having the front porch and yard that none of us has." ■

PHOTOGRAPHY © CHRIS SCHWEGLER/JENSEN/REBAR

- Project: William Allen High School, Allentown, PA

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AUDREY MATLOCK, EUGENE KOHN, AND THOM MAYNE ARE FEATURED SPEAKERS AT ARCHITECTURAL RECORD'S 2011 INNOVATION CONFERENCE, HELD NOVEMBER 3 IN NEW YORK CITY.

Project Perot Museum of Nature & Science
Location Dallas
Architect Morphosis

The Perot Museum of Nature & Science is now rising on a 4.7-acre site in central Dallas. Designed by Morphosis, the 180,000-square-foot building was conceived as a large cube hovering over a landscaped plinth. Clad in textured concrete panels, the cultural facility will feature an external escalator encased in metal and glass. Inside, visitors will find galleries, a theater, a café, a store, and educational and administrative space. Construction began last year, and completion is scheduled for 2013.

Project BAR House
Location East Hampton, New York
Architect Audrey Matlock Architect

For a sloping, 13-acre wooded site in East Hampton, Audrey Matlock has designed an 8,500-square-foot house that embraces the landscape. Two perpendicular bars—one elevated and one at ground level—will feature ample glass, concrete walls, and an exposed steel structure. Vertical sunshades will regulate natural light. Construction is slated to begin in the spring of 2012.

Project Hysan Place
Location Hong Kong
Architect Kohn Pederson Fox

Located in a dense Hong Kong neighborhood, the roughly 40-story, mixed-use Hysan Place will be a notable addition. KPF says it designed the 716,00-square-foot tower as a "series of shifting forms" with a multilevel podium containing retail and public space. The glass-clad building will feature vertical gardens, views of Victoria Harbor, and openings that usher in prevailing breezes. Moreover, a double-deck express elevator will shuttle visitors to a sky lobby. The building is reportedly the region's first pre-certified LEED Platinum commercial project. Construction is under way.

IMAGES: COURTESY MORPHOSIS (LEFT); AUDREY MATLOCK (TOP RIGHT); KPF (BOTTOM RIGHT)

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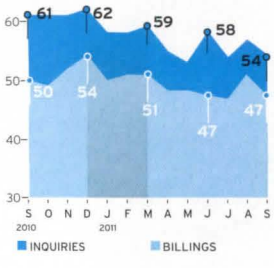
A Piercing Addition to Dresden Museum

The German armed forces' Museum of Military History, in Dresden, reopened on October 15 following a 10-year, $85 million reconstruction. Central to the project is a radical addition conceived by Daniel Libeskind: a five-story angular volume made of glass, concrete, and steel that cuts through the center of the 135-year-old Neoclassical building. Likened to a piece of shrapnel, the addition has drawn both criticism and praise. Its interior exhibits, according to the architect, examine "the societal forces and human impulses that create a culture of violence."

Preservation Group Unveils "Watch List"

In October, the World Monuments Fund announced its 2012 "Watch List," a biennial roster of archaeological, architectural, and cultural sites threatened by development, natural disasters, and decay. This time, 67 sites, from a total of 41 nations, landed on the list, including Manhattan's Manufacturers Hanover Trust building (1954), designed by Skidmore, Owings & Merrill (below).



Billings Plummet

After rising to 51.4 in August, the Architectural Billings Index plunged to 46.9 in September. The inquiries score also fell, from 56.9 to 54.3. "The economy needs to be stronger to generate sustained growth," says AIA chief economist Kermit Baker. Regional indices were: Midwest, 51.0; Northeast, 50.8; South, 47.3; and West, 46.7.

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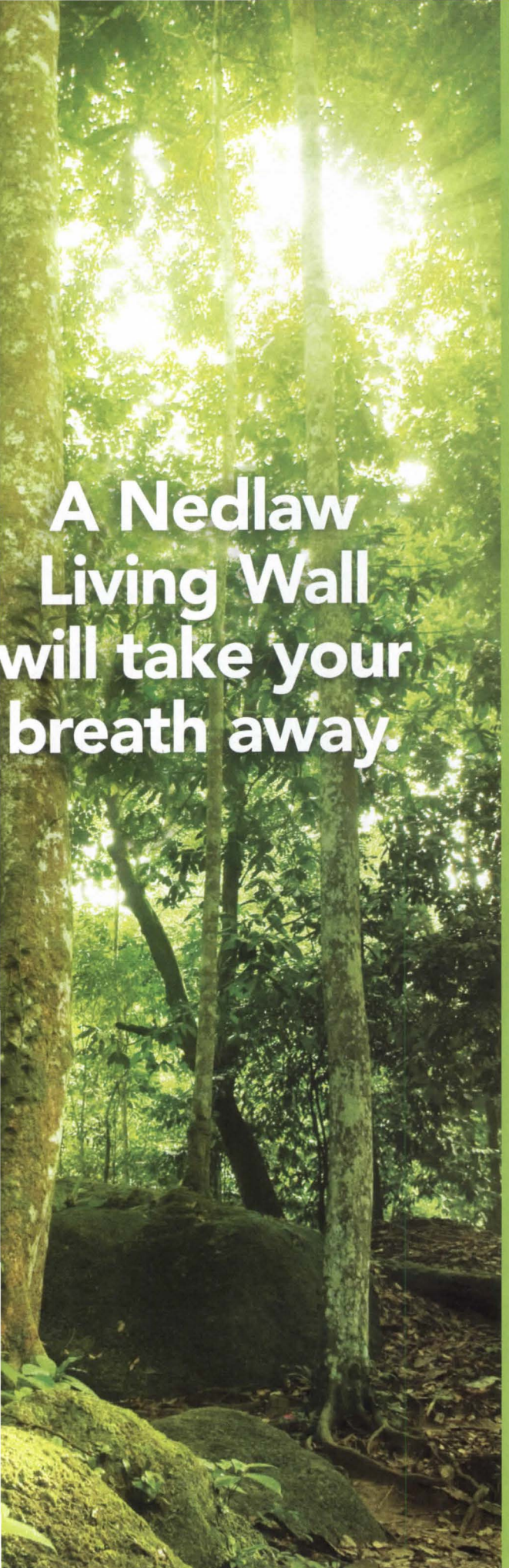

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The Graduates Gripe

Getting an architecture degree is expensive. Is it worth it in a recession?

IF BOOKSHELVES are to be believed, it has become fashionable to knock the way schools teach architecture. The latest this fall is humorous—*The Real Architect's Handbook: Things I Didn't Learn in Architecture School*, from Guy Horton and Sherin Wang. It dispenses cheeky wisdom such as, "If you already have a B.Arch., consider further education in a different field. Your M.Arch. can't make a real contribution to the field if you're just showing off software skills."

These writers might be on to something. Across the country, many recent graduates of the top schools also seem to be rethinking their education—spurred on, in many cases, by a lack of job prospects. "I don't want to say that architecture is dying, but it seems like it will be hard to make a nest egg and retire in this career," says Cody Fithian, 24, who graduated in May from the University of Texas (UT) at Austin, with a B.Arch.

Fithian is now doing public relations for movies, in part to buy time until he can land a design job, which he estimates that only 60 percent of his classmates have done six months after graduating. So, to improve his job chances in general, Fithian may pursue a master's in geology, skipping the master's-in-architecture route popular in the past.

While debt issues may not loom large at UT, which is a public school, other graduates have to contend with bills that can total tens of thousands of dollars in a career whose starting salaries can be $40,000.

"Architects are undervalued," says Jason, 30, who graduated from Howard University in 2005 with an architecture degree and from Columbia University in 2006 with one in urban planning. Even though he has worked regularly, Jason cannot afford the payments on $120,000 in loans, which forced him to postpone those payments for two years. Making matters worse, the large firm in Chicago that employs him froze his salary because of the recession, he says. Jason did not want his last name used, or the name of his firm, because he's now looking for work—as a developer. "Granted, the one thing I will miss is design, but I am barely designing now anyway," he adds.

Some of the best schools famously offer curriculums heavy on theory and light on real-world know-how. (See *America's Best Architecture Schools 2012*, page 55.) For graduates who end up at high-concept firms like Diller Scofidio + Renfro, that preparation can be useful. "You have to find a good match," says employee Alice Chai, who graduated from Rice University in 2010 with a B.Arch.

Yet Horton, the *Handbook* author, wishes that would change, with schools requiring more business classes. It's all about "imagining yourself as Rem Koolhaas, or Zaha [Hadid]," says Horton, 42, who earned a master's from the Southern California Institute of Architecture, in 2006. "You should have to take one course that focuses on practice." Working again after getting laid off from Perkins + Will and then being unemployed for two years, Horton is less cynical now about his education's value, but for many months, he says, "I regretted it." (Horton has also contributed to RECORD.)

Eager to burnish studio experience with knowledge of economics, some designers are eyeing MBA degrees.

Eager to burnish their studio experience with some knowledge of microeconomics, some young designers are eyeing MBA degrees. Marina Gabriella Brink, 24, graduated from Syracuse with a B.Arch. and a separate degree in economics. She took a job with Rafael Viñoly Architects, although she considered a job with JPMorgan Chase as an analyst. "If you want your own firm, it's good to have an MBA," she says.

And firms that may once have encouraged young designers to go back to school for their master's now seem to be open to business degrees, says Piper Lucas, a 2004 Cornell graduate with a B.Arch. who was building second homes in eastern Oregon until the recession hit. Now hunting for work in San Francisco, Lucas, 31, recently interviewed with a large firm that told her it liked the idea of MBAs running the company. "To be competitive in this market, you need to be unique," she adds.

Even the programs that emphasize internships over academics, like the University of Cincinnati, where students spend multiple semesters working off campus, are not immune to criticism. Kim Cwynar, a 2003 graduate, works for DiDonato Associates in San Diego, where she designs parapets to hide cell phone towers. For five years, on the side, she's also worked on whale boat tours and is now mulling a career change to marine biology.

Of course, there are upsides in architectural education, such as networking, which can help land top jobs. Mark Robbins, dean of the School of Architecture at Syracuse University, adds, "It's not the skills we teach. This way of thinking and problem solving will serve any student."

And in other ways, recent graduates may be unfairly blaming their alma maters. Jerry Adams, an executive recruiter in Chicago who gets 15 résumés a week from young people, up from zero in 2007, says architecture school graduates are getting slammed across the field regardless of their level of schooling. "It's not an educational factor," he says. "It's about experience." If those frustrated job seekers give up for good, the profession will suffer: "This will be a big problem in five years, because a generation could be wiped out." ■

C.J. Hughes, a RECORD *contributing editor, writes on design, architecture, and practice.*

EXHIBITIONS PACIFIC STANDARD TIME
BY SARAH AMELAR

Under the California Sun, Architecture Blossomed

Five Los Angeles cultural institutions shed new light on mid-20th-century design efforts.

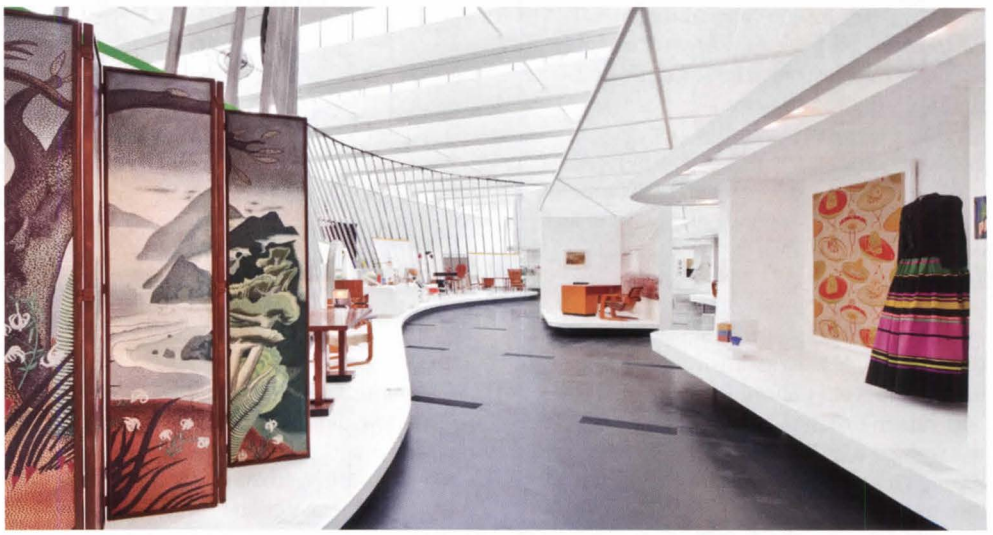
California Design, 1930-1965: "Living in a Modern Way" / Los Angeles County Museum of Art
Closes March 25, 2012

Eames Words / A+D Architecture and Design Museum
Closes January 16, 2012

Sympathetic Seeing: Esther McCoy and the Heart of American Modernist Architecture and Design / MAK Center
Closes January 8, 2012

Under the Big Black Sun: California Art 1974-1981 / Geffen Contemporary-MoCA
Closes February 13, 2012

Greetings from L.A.: Artists and Publics 1950-1980 / Getty Research Institute Exhibition Gallery
Closes February 5, 2012



PACIFIC STANDARD TIME: Art in L.A. 1945–1980—a collaboration among 60 cultural institutions across Southern California—is a grand bazaar, as eclectic, wide-ranging, and uneven as the period of art it celebrates. Initiated by the Getty Foundation, which provided $10 million in grants, this effort engages venues of radically different scales and aspirations to focus on the evolution of the Los Angeles art scene in the decades after World War II. With nearly every institution in on the act—from major museums to university galleries—art takes on a fluid definition, naturally spilling into architecture and design.

Though Pacific Standard Time (PST) has no single unifying viewpoint, many of the shows suggest that artistic risk taking was free to flourish here, far from New York's and

TOP: **All 1,869 objects from the 1949 Eames House living room in Pacific Palisades were reassembled in this full-scale replica of that room. The 1954 patio chaise is by Walter Lamb, the cabanas by by Hodgetts + Fung.**

ABOVE: **Hodgetts + Fung's waferlike canopies shield the sun from the museum's skylights. The 1930s folding screen was designed by Millard Sheets and the 1942 skirt and jacket ensemble by Louella Ballerino.**

Europe's art establishments, because Los Angeles was not yet taken seriously in the art world. So boundaries were dashed, multiculturalism was celebrated, and experimentation became exuberant, spanning from performance art to sculpture made of light. Gritty street art with subversive undercurrents—focused on societal rifts, identity politics, the Vietnam War—also surfaced, as documented in *Under the Big Black Sun: California Art 1974–1981*, at the Geffen Contemporary at MoCA.

But if MoCA's *Big Black Sun* is the noir of PST, the Los Angeles County Museum of Art (LACMA)'s *California Design: 1930–1965: "Living in a Modern Way"* is its sunny glow. Limelighting Mid-Century modern domesticity, *California Design* is an instantly engaging show, teeming with stylish, whimsical, or merely exquisitely crafted furniture, toys, fashion, jewelry, ceramics, photography, and surfboards. Nothing is gritty here. This radiant display frames a period in California portrayed as thriving and optimistic, with a booming population: an era between the Great Depression and the Vietnam War, before many ills disrupted the glossy surface.

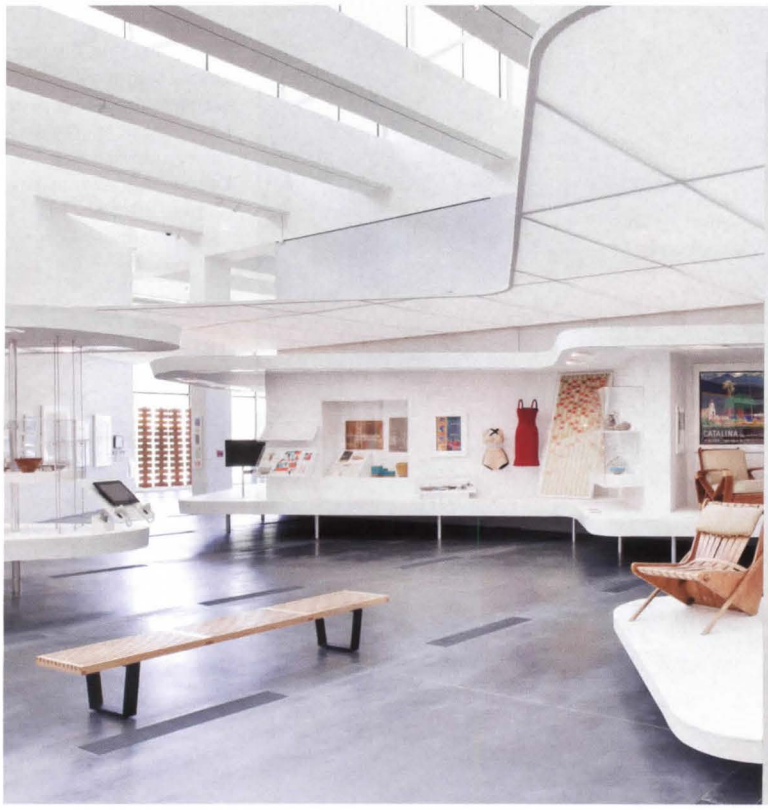
At the exhibition's entrance, a gleaming 1936 Airstream Clipper trailer greets you, its aerodynamic form evoking a fuselage. The similarities to aircraft (Airstream's designers had trained in aeronautical engineering) introduce a recurring theme: Here, as in Los Angeles's art, new technologies and materials (fiberglass, molded plywood, synthetic resins) from California's booming defense and aeronautical sectors would reappear in inventive peacetime applications. Nearby hangs a prototype of the bent-plywood body litter Charles and Ray Eames designed for the Navy, before harnessing the technology to create chairs. Beside the litter is a ceramic bowl by Gertrud and Otto Natzler, suggesting a related theme: California's tradition of craft, poised to cross over with industrial methods of production.

With a certain fluidity, the show is nominally divided into four sections: Shaping,

ABOVE: **The sofas with an integral corner table were designed by architects A. Quincy Jones and Frederick Emmons in the 1960s. The rectangular cocktail table (circa 1950) is by Milo Baughman, while the Eameses designed the low elliptical table in 1951 and the colorful storage unit in 1949.**

BELOW LEFT: **In the foreground is Richard Neutra's chair (1941–42) for his Channel Heights workers' housing.**

BELOW RIGHT: **A desk and chair by Kem Weber, exhibited at San Francisco's Golden Gate International Exposition in 1939.**



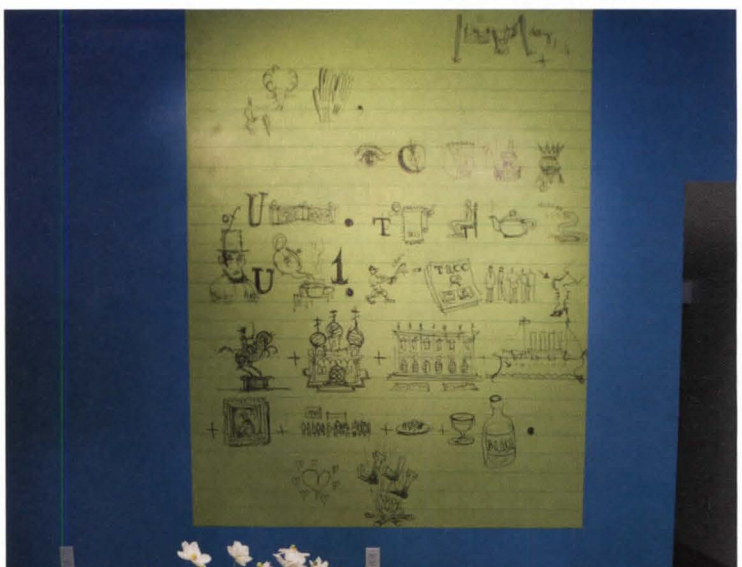
PHOTOGRAPHY: © LANE BARDEN

Making, Living, and Selling California Modern. "Shaping" focuses on early influences, including immigrant waves; "Making" on materials and fabrication; and "Living" on the casual indoor-outdoor lifestyle this mild climate enabled and the postwar housing surge popularized. But as curator Wendy Kaplan points out in the show's catalog, "selling" the carefree California image "permeates" it all, often "blurring boundaries between art and commerce." A newly prosperous population with a growing middle class, she writes, emerged from the Great Depression and wartime rationing "intoxicated by the power to purchase."

In that spirit, architects Hodgetts + Fung have given the exhibition a dynamic installation design not unlike a showroom, with a screen that snakes like an unfurling helix through the 25,000-square-foot space. This device provides a continuous backdrop for some 350 objects and their narrative, and creates intimate nooks within the sinuous folds, transcending shortcomings of Renzo Piano's bland and cavernous Resnick Pavilion (2010). Waferlike canopies filter out rays from troublesome skylights, allowing the curators to play diverse objects off one another, regardless of light sensitivity. And the curves cleverly hide large-scale surprises ahead: Raymond Loewy's fiberglass Studebaker (1963–64) or the entire contents of the 1949 Eames House living room, reassembled in a full-sized replica of that space while the original, in Pacific Palisades, is being restored.

Even in an age when a Mid-Century modern aesthetic saturates our common design lexicon, this exhibition offers little-known pieces by famous designers, such as a vanity by R.M. Schindler, and remarkable objects by obscure designers. The latter category includes a Zahara Schatz lamp, its fantastical protocircuit board base of clear heat-slumped acrylic revealing swirls and eddies of current-carrying wire. Playful items abound, from his-and-hers lobster-emblazoned swimwear to the original Barbie (Mattel was a major sponsor of the show). Hints of a darker side appear, but only in their upbeat guises. For example, *BOOM!... Or Golden Age!*, a nuclear-annihilation-themed board game, a cold war–era artifact, is presented but without mention of the Red Scare's tangible impact on Los Angeles: Hollywood blacklisting.

While *California Design* is by far PST's biggest show of architecture and design, it has counterpoints and resonances in other exhibitions. The Getty Center's *Greetings from L.A.: Artists and Publics 1950–1980* shows images of the Peace Tower (1966), erected in Los Angeles by sculptor Mark di Suvero, with artist Irving Petlin, architect Kenneth Dillon, and others, galvanizing opposition to the Vietnam War. (The tower will



ABOVE: ***Eames Words***, **a show at A + D, pairs quotations from Charles and Ray Eames with objects their commentary brings to mind.**

LEFT: **The letter on yellow-lined paper is a rebus puzzle, or pictogram, that Charles Eames sent his grandchildren while on a trip to Moscow. *Ray's Table*, honoring Ray Eames, was arranged by Eames Office alumna Tina Beebe.**

PHOTOGRAPHY: © WILLIAM LARSEN

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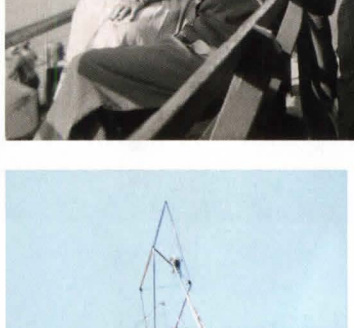
CIRCLE 65

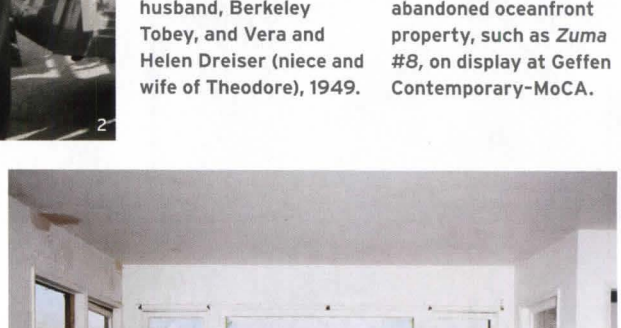
be recreated on its original site in West Hollywood in January.) In a grimmer realm, John Divola's photographic *Zuma Series, 1977–78*, at MoCA, records the decomposition of an abandoned oceanfront building.

Meanwhile, *Sympathetic Seeing: Esther McCoy and the Heart of American Modernist Architecture and Design*, at the MAK Center, pays homage to the architecture critic whose legacy underlies the LACMA show. A pioneeering advocate for Southern California Modernism, McCoy had an intimate connection to the MAK Center's home—the Schindler House and studio—where she worked as a draftsperson in the 1940s. There, you can now see McCoy on video or read the letters she wrote in fighting to save Irving Gill's nearby Dodge House (demolished in 1970).

A quirkier exhibition is *Eames Words*, at A+D, curated by Deborah Sussman, who worked with the Eameses in the '50s. The show—like its well-displayed rebus diagram, a letter from Charles Eames to his grandchildren—is essentially a pictogram, pairing quotes from the Eameses with enigmatic clusters of the everyday objects they suggest.

PST is a smorgasbord far heavier on art than architecture, but more architectural fare is coming. A Getty-sponsored collaboration among seven venues, including MoCA and SCI-Arc, will explore Los Angeles architecture from 1940 to the present. Slated to open in 2013, it is likely to serve up a fuller spread—pungent flavors and all. ■





1. **At the MAK Center show, presented in the house and studio on Kings Road where Esther McCoy worked as a draftsperson for R.M. Schindler, you can leaf through her writings.**

2. **Esther McCoy (foreground) at Santa Monica Pier with her husband, Berkeley Tobey, and Vera and Helen Dreiser (niece and wife of Theodore), 1949.**

3. **The Peace Tower, by Mark di Suvero and other activists, was erected in L.A. in 1966, galvanizing opposition to the Vietnam War. The photo is part of a Getty Center exhibition.**

4. **In his *Zuma Series, 1977-78*, John Divola documented an abandoned oceanfront property, such as *Zuma #8*, on display at Geffen Contemporary-MoCA.**

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CIRCLE 15

HOUSE OF THE MONTH INGRID SPENCER

PETER GLUCK AND PARTNERS' MODERN TAKE ON THE ADIRONDACK GREAT CAMP RESULTS IN TWO LANDFORM BUILDINGS.

SOME MINIMALIST architects boast that given enough money, they can make their architecture almost disappear. Although that claim seems to go against normal expectations about what so many architects really like to do, it often tempts those faced with a large program and a sensitive site.

Peter Gluck, for example, argues that creating an "experience" rather than building a visibly defined object should be an architect's supreme goal. With his recently completed Lakeside Retreat in New York's Adirondack Mountains, Gluck was able to prove his point—practically embedding in the earth 21,700 square feet of residential spaces for living and recreational uses. Conceptually and programmatically, the two buried buildings—a family house and a recreation building with an interior courtyard, amphitheater, gallery, and indoor pool—are essential pieces of a compound on a steeply sloped 21-acre site. The entire grouping, with two guest houses and abundant walking trails, and culminating in a 2,200-square-foot boathouse and dock, fulfills the same purpose as the nearby Adirondack great camps that cropped up in the mid- to late 19th century. The difference here in designing this family getaway, says Gluck, is that this project is done "without recreating the specific iconography of that period." Indeed, other than the use of local materials, the buildings share no physical resemblance to their log-and-stone Swiss Chalet–style predecessors.

Visitors arrive first at a 4,800-square-foot gatehouse garage removed from the compound, where they swap vehicles for electric golf carts. Then they proceed along descending paths that lead to two 1,600-square-foot, one-bedroom guest houses—complete with small kitchens and composed of stacked and rotated boxlike volumes.

1. **Gluck and his architect-led design-build firm ARCS Construction Services created the 10,600-square-foot submerged family house and the 11,100-square-foot recreation building by excavating 14,000 cubic feet of rock from the site.**

2. **Grass roofs on the submerged family house serve to absorb summer heat and add insulation to reduce heating and cooling loads.**

3. **Gluck's work is heavily influenced by his time spent in Japan: *The sunken* outdoor courtyards invoke the Japanese concept of *engawa*, an extension of interior spaces outside.**

PHOTOGRAPHY: © PAUL WARCHOL

Heading on toward the lake, visitors catch glimpses of angular main buildings that appear and disappear in the topography of the sloping site. Foundations and floor slabs and walls are concrete with requisite waterproofing and underground drainage. By placing so much living and recreational space underground, the architect reduced energy loads with passive geothermal heating and cooling. Rainwater is retained via the green roof areas.

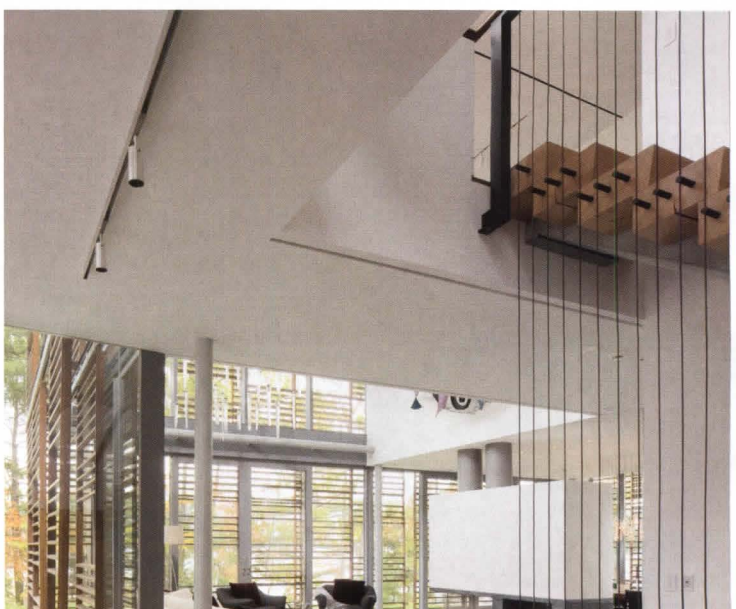
In the recreational building, dappled light from wood-screened windows and a skylight illuminate the lap pool. The family house with its master suite is more private, but it connects to nature with, for example, sleeping porches. "The entire project can be understood only by experiencing it sequentially," Gluck says. ■

LEFT: **The recreation building features a lap pool, steam room, staff lounge, open living area, interior courtyard, and an art gallery that connects the various spaces up to a second-floor glass dining room.**

BELOW: **In the more private family house, solid western Douglas fir was used for stair treads, and flooring is locally quarried bluestone. Slatted Cambria wood screens shade all walls with views toward the lake in both buildings.**

SITE PLAN

1 CAR ENTRANCE
2 GARAGE
3 MASTER BEDROOM SUITE
4 HOUSE POOL
5 LIVING AREA
6 DINING/LOUNGE
7 BOATHOUSE
8 FAMILY HOUSE
9 RECREATIONAL BUILDING



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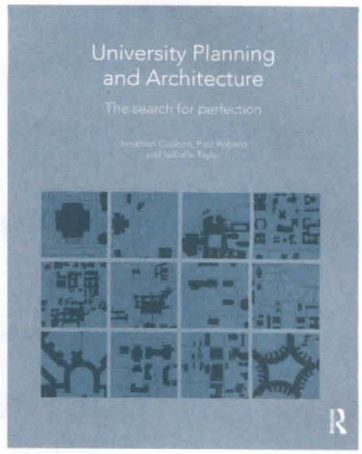


Communities of scholars from the 11th century until now

University Planning and Architecture: The Search for Perfection, *by Jonathan Coulson, Paul Roberts, and Isabelle Taylor. Routledge, 2010, 264 pages, $125.*

This ambitious history chronicles campus design from the founding of the first European universities in the 11th century until last year. Although buildings for higher education are often among the most significant ones we build, surprisingly few good studies of them exist. There are numerous books on individual campuses, some good ones on architects who design college buildings (such as *Robert A. M. Stern on Campus*), and plenty of guides for facilities managers (even this one has a chapter on how to plan a campus). But only a few solid general histories have been written. The best, Paul Venable Turner's *Campus: An American Planning Tradition*, was published in 1984 and has been out of print for decades, so Coulson, Roberts, and Taylor's richly illustrated volume is very welcome.

Its range—throughout time and around the world—means that no campus can be described in detail, but the book helps readers grasp the scope of the genre and see the featured campuses in a broad context. Plus, it considers not only individual buildings but also campus planning, a discipline that, the authors note, arose in the 19th century.

Although you could quibble about the choice of campuses, all of the most significant ones are mentioned at some point. Curiously, though, after the fine 37-page chronological survey, the 29 chapters on individual schools begin with Aarhus University and end with Yale. Discussing them in alphabetical order, rather than by the date of their founding or location, seems odd.

The authors explain that the first European universities at Bologna ("allegedly founded" in 1038) and Paris (1150) were merely places where groups of scholars took up residence and students came to be tutored by them. The phenomenon spread to other European cities. The scholars formed guilds that came to be "sanctioned by popes, prelates and princes." Lectures took place in houses, examinations and assemblies in churches and convents. Academic communities often migrated from one city to another where patrons erected structures to house them. Although a dormitory was built in Paris for very young students in 1180, communities of scholars and students living together were primarily a British phenomenon. It began in Oxford with the creation of University College in 1249 and soon appeared in Cambridge as well.

These early colleges consisted of a chapel, a lecture hall, and housing for tutors and students arranged in quadrangles. Since it was the 13th century, they were built in the Gothic style, at least until Sir Christopher Wren introduced classicism at Oxford and Cambridge in the 17th century.

The idea of an academic community living together (requiring more buildings than instruction alone) became the model for the first American universities, which were established surprisingly early in this country's history—Harvard in 1636, William and Mary in 1693, and Yale in 1701. But it was not until the late 19th and early 20th centuries that the Gothic-style quadrangles, which have become embedded in the American psyche, were built at colleges here.

The authors tell this story entertainingly and usually accurately, augmenting the text with lush color photographs. They tell many other stories, too, introducing readers to Peking University in Beijing (a colorful romantic series of structures in the "Chinese" style built in the late 19th and early 20th centuries for a Christian missionary college and appropriated by the Chinese government after the founding of the People's Republic in 1949), and to Qatar University in Doha (founded in 1973 and designed in a style inspired by "the villages, towns and cities of the Arab world" on a dramatic, elevated site using modern Western technology to accommodate the climate).

They describe quintessentially American campuses like Thomas Jefferson's 1817 verdant classical University of Virginia and Walter Netsch's postwar modern University of Illinois at Chicago, a collection of abstract concrete forms built at a freeway interchange and connected by aerial walkways. (A recent book by Sharon Haar, *The City as Campus: Urbanism and Higher Education in Chicago*, recounts its history in full.)

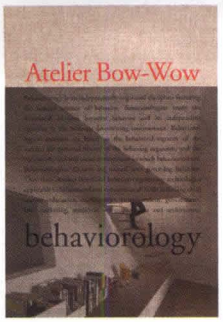
Coulson, Roberts, and Taylor have a tendency to emphasize coherence on campuses, praising Princeton for its 2007 Gothic-style Whitman College but omitting mention of Frank Gehry's audacious Lewis Science Library, completed just one year later. They praise Columbia's "redbrick tradition" but leave out Rafael Moneo's new metal and glass interdisciplinary science Northwest Corner Building there. Nor do they mention the challenges of the big new sites that Columbia, Harvard, and Yale have recently acquired beyond their campus boundaries. The authors are stronger on history than current projects and problems.

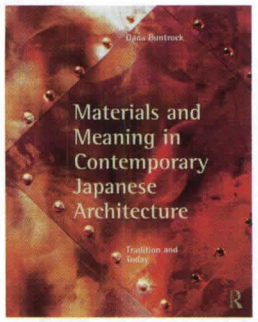
Handsome black-and-white plans precede discussions of each institution, but since they are not labeled, it is hard to locate buildings mentioned in the text, though a conscientious reader could find plans on the web for guidance. Still, there is a great deal in this book to interest the professional historian as well as the practicing architect—information that has never before been assembled in one handy volume.■

Contributing editor Jayne Merkel is an architectural historian who has written extensively on campus design.

BY NORMAN WEINSTEIN

An island nation where the cool and the ordinary flourish together.





21st Century Tokyo: A Guide to Contemporary Architecture, *by Julian Worrall and Erez Golani Solomon. Photography by Joshua Lieberman. Kodansha International, 2010, 239 pages, $20.*

New Architecture in Japan, *by Yuki Sumner and Naomi Pollock, with David Littlefield. Photography by Edmund Sumner. Merrell, 2010, 272 pages, $50.*

The Architectures of Atelier Bow-Wow: Behaviorology, *by Atelier Bow-Wow and Terunobu Fujimori, et al. Photography by Hiroyasu Sakaguchi. Rizzoli, 2010, 304 pages, $65.*

Materials and Meaning in Contemporary Japanese Architecture: Tradition and Today, *by Dana Buntrock. Routledge, 2010, 275 pages, $63.*

FLEXIBILITY HAS long been a guiding principle of Japanese architecture. Consider Japan's ongoing use of sliding doors or screens to shape fluid interior space. These four very different books about Japanese architecture since the 1980s reveal new twists in that heritage of design, many brought about by surprising fusions of vernacular materials and new technology. All of them balance accounts of quintessential Japanese architectural developments—a house with a Shinto shrine at its heart, for example—with an array of ideas applicable globally.

21st Century Tokyo: A Guide to Contemporary Architecture presents a concise yet provocative overview of flexible thinking. Carefully researched, finely detailed, and affectionate toward its subject, its authors are two architect-educators and a photographer, all transplants from other countries. The book is unusual among architecture guidebooks, because Worrall and Solomon "have let our eyes rest not just on the impressive and beautiful, but also on the ordinary and the typical." So a reader can careen from commentary on Kenzo Tange's sci-fi-futuristic Fuji Television Headquarters to Toyo Ito's newest Ginza glam store to Masayuki Irie's generic budget hotel. In spite of single-page descriptions and black-and-white-only photography, this guide engages by bringing insight to quirky projects like the fish-shaped Ariake incinerator and the mind-boggling Reverse Destiny Lofts, an apartment complex for elders offering playful sensory stimulation rather than bland quietude.

New Architecture in Japan offers a far more sweeping and richly produced overview than the Tokyo guide, while noting some of the same projects by starchitects Ito, Tadao Ando, and Fumihiko Maki. Edmund Sumner's color photographs do justice to the forms of Japanese whimsy and wit and clarify the rationale behind Jun Igarashi's Rectangle of Light, a small house clad in thin horizontal bands of softwood, offering textural variations in grain that you might encounter in a lumberyard or in a child's ice-cream-stick model. Yuki Sumner and RECORD international correspondent Naomi Pollock are seasoned observers of Japanese culture as well as of architecture, and shine a penetrating light on how architects today balance traditional vernacular architecture with contemporary design, and meditative designs with those promoting manic consumerism. Like the creators of the Tokyo guide, the authors revel in the idiosyncratic yet apt. Big Window House by Tezuka Architects, for example, is a two-story box, one story of which dissolves into a public space when the giant second-story window is opened downward, temporarily erasing half of the front facade. It dramatizes Japanese flexible thinking when it comes to shuffling between private and public realms. Another Tezuka gem is the Fuji Kindergarten, a circular design where students can safely play on the school's tree-lined roof, blurring distinctions between playground and classroom.

Oddball contemporary Japanese designs are rarely the result of mere caprice. Japan's cities today are crazy-quilts of narrow, bizarrely shaped building lots. Extraordinary flexibility is demanded for an architect to work sensibly and imaginatively within such limitations. Atelier Bow-Wow, founded by Yoshiharu Tsukamoto and Momoyo Kaijima, has been preeminent in its dedication to fresh style and functionality. Their book *Behaviorology* is an exquisitely produced catalog of their work to date. It includes thoughtful essays by Tsukamoto and various critics. The title refers to the firm's belief that architecture behaves, either harmoniously or discordantly, with nature and its inhabitants, and that its creation must entail thinking about a number of behaviors simultaneously. The result of their method is a dazzling display of compact homes with ingenious solutions for living small. There are townhouse stairs that double as seating for socializing, and there is the appropriately named Sway House, whose walls sway away from the street as the house rises toward the sky, creating a sense of spaciousness within a Lilliputian residence.

Japan has had to develop flexible thinking because of its limited range of local building materials, and its aesthetic predilection for timber. Dana Buntrock has written a valuable and long-needed overview of the historic, aesthetic, and spiritual meanings attached to Japanese building materials. By taking this approach, she reveals, for instance, Fumihiko Maki's feel for traditional vernacular materials like cedar, demonstrating that much of contemporary Japanese architecture judiciously juggles past and present. "Natural materials are garrulous," architect Hiroshi Naito tells the author. Buntrock offers insights into how the most ancient and "talky" materials catalyze flexible thinking in the most modern of Japan's architects. ■

Norman Weinstein is an educator and critic who contributes to RECORD, ArchNewsNow, *and* Blueprint.

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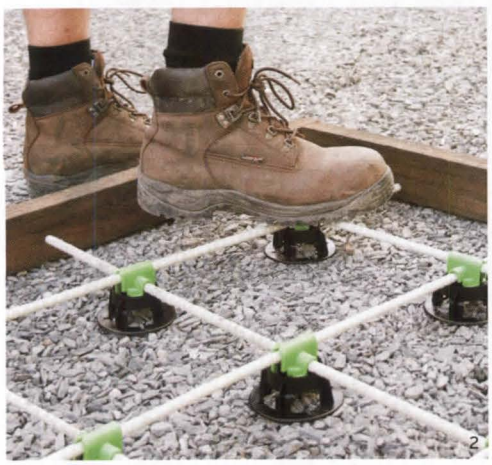
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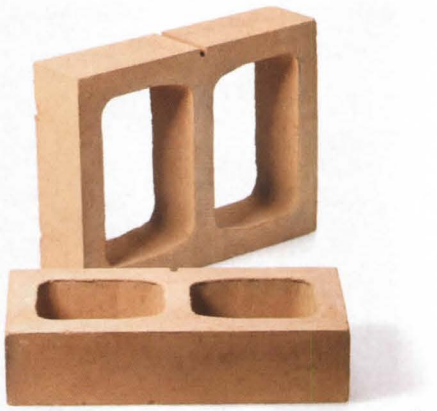
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6

Enviromesh [1+2]

Ozsafe Industries ozsafe.com.au

A finalist in this year's INDEX: Award design competition, Enviromesh GFRP (glass fiber reinforced polymer) rebar is positioned as the next generation of reinforcing technology for concrete construction. Compliant with all relevant building codes, including ACI-440 in the U.S., Enviromesh rebar is made from high-strength glass fibers along with a corrosion-resistant vinyl resin; the system's easily cut 9mm pultruded bars are claimed to be stronger than steel. The lightweight rebar, which arrives preassembled with chairs, is intended as a replacement where an alternative to steel, epoxy-coated steel, and stainless steel bars is desired, such as structures built in or close to seawater or requiring low electric conductivity or electromagnetic neutrality. While the way builders will use the material is almost identical to installing steel rebar mesh, a direct substitution of GFRP bars in a concrete member designed with steel bars will not always be possible. CIRCLE 200

Sana Stone's Basket Weave [3]

Through Stone Source stonesource.com

First used on the facade and interior vestibule walls of Manhattan's Junoon restaurant by Currimbhoy & Co., Sana Stone's Basket Weave is made in Jaipur, India, from blocks of white marble or black limestone that are hand-chiseled into horizontal ribbons of concave and convex forms. The hand-polished 18" x 16" x 3" modules are then pinned together to create the illusion of a weave. CIRCLE 201

Ziva Stone Tile [4]

Artistic Tile artistictile.com

Ziva is a collection of sculptural stone tile designed with a floral or leaf pattern. Each 16"-square hand-carved tile uses a combination of polished and honed finishes. The tile is suggested for indoor wall applications in bathrooms, powder rooms, lobbies, restaurants, retail stores, and spas. Shown here is the Leaves pattern in Lake Blue stone. The collection starts at $45 a square foot. CIRCLE 202

Thru-Wall Unit Masonry [5]

Calstar Products calstarproducts.com

An alternative to Portland cement–based CMUs and kiln-fired clay masonry units, Thru-Wall units combine the structural properties of standard concrete block with the look of a traditional brick wall. Half as tall as standard concrete blocks, the units are made with fly ash, fine aggregates, water, pigments, and a small amount of an undisclosed proprietary material. CIRCLE 203

Pyrolave Stone [6]

Pyrolave USA pyrolave.fr

Pyrolave's range of enameled lava stone is extracted from the heart of volcanic craters in Auvergne, France. Blocks of stone are mined using simple handheld tools, then cut into slabs to be processed and glazed in a range of glossy and matte colors (a delicate crazing appears on the surface during cooling). It can be used in a range of applications, including countertops, exterior cladding, and feature walls, such as for the spa shown above. CIRCLE 204

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CIRCLE 16

ARCHITECTURAL RECORD

Good Design is Good Business 2012 CALL FOR ENTRIES

The editors of ARCHITECTURAL RECORD would like to invite submissions for the **2012 ARCHITECTURAL RECORD GOOD DESIGN IS GOOD BUSINESS** awards program (formerly the **BusinessWeek/Architectural Record Awards**).

Good design has become a top priority for leaders looking to rebrand, boost productivity, and attract customers. The Good Design is Good Business awards honor architects and clients who best utilize design to achieve such strategic objectives.

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Email questions to arcallforentries@mcgraw-hill.com. SUBMIT YOUR ENTRIES BY **01/15/2012**.

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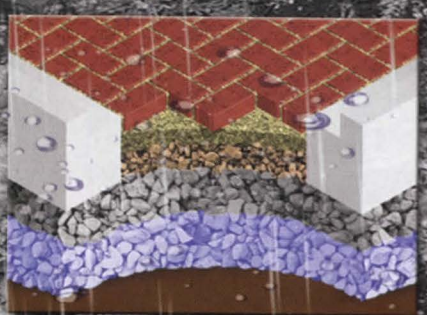

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To learn more about the Hollenbeck installation visit: http://www.ecosurfaces.com/hollenbeck.html

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CIRCLE 27

AMERICA'S BEST ARCHITECTURE SCHOOLS 2012

#1 ARCHITECTURE PROGRAMS

» GRADUATE
HARVARD UNIVERSITY

» UNDERGRADUATE
CORNELL UNIVERSITY

By James P. Cramer

***DesignIntelligence*'s annual "America's Best Architecture & Design Schools" rankings are just out. Featured here are the top 10 M.Arch. and B.Arch. programs.**

YOU NEED TO BE A RISK TAKER, a speculator—and determined, stubborn, and young to want to go to architecture school these days. Tuition is up, and graduation does not guarantee a job. The supply/demand curve for graduates has changed dramatically: Since 2008, a previous talent shortage has given way to an oversupply. With the persistently bleak economy, unemployment and underemployment rates are at historic highs. Many firms don't have steady work, a troubling condition that is likely to linger—or even worsen. In addition, there are other obstacles to entering the profession: an internship system shepherded by sometimes distracted volunteer-professionals; comprehensive testing often for just one segment of professional practice, usually having to do with health, safety, and welfare; and compensation schedules that can be unfair.

So why go to architecture school? People who are driven to become architects can't convince themselves otherwise. They seek the creativity, inspiration, and service to the community through the tangible achievement of architecture. They desire to be part of the historical legacy of this storied profession.

In spite of uncertain times, the future will need architects who can bring intelligence and insight to planning, urban design, sustainable building, and creating livable cities. We will still require talented professional leaders who have vision, optimism, and passion.

For these reasons it is important to measure the quality of architectural education. Although any ranking is bound to be controversial, we can't escape the fact that there are better and worse schools. Quality is hard to measure, and, admittedly, the annual *DesignIntelligence* "America's Best Architecture & Design Schools" rankings have limitations. As I have stated previously, small schools and new programs are at a disadvantage because the number of graduates is lower than at more established ones. Nevertheless, our rankings raise awareness of educational needs among those preparing students for graduation, those hiring graduates, and students themselves. They also help improve communication between the

AMERICA'S TOP ARCHITECTURE SCHOOLS

Practitioners once again rank architecture schools according to the graduates entering their offices.

TOP 10 PROGRAMS GRADUATE

	2012	2011	2010	2009	2008	2007	2006
Harvard University	1	2	1	1	1	1	1
Yale University	2	3	2	4	13	3	8
Columbia University	3	4	4	3	3	9	4
Washington University in St. Louis	4	9	11	6	5	6	10
Kansas State University	5	--	16	11	13	--	--
Cornell University	6	6	7	6	3	6	--
Massachusetts Institute of Technology	6	5	3	4	2	4	8
University of Michigan	8	1	--	9	8	16	--
University of Pennsylvania	8	8	11	--	18	11	4
University of Cincinnati	10	6	6	2	7	2	2

TOP 10 PROGRAMS UNDERGRADUATE

	2012	2011	2010	2009	2008	2007	2006
Cornell University	1	1	1	1	2	1	1
University of Texas at Austin	2	7	5	6	6	9	2
Virginia Polytechnic Institute and State University	3	4	4	2	1	4	7
California Polytechnic State University, San Luis Obispo	4	4	3	3	4	6	3
Rice University	5	3	9	8	11	2	3
Rhode Island School of Design	6	11	7	4	17	5	5
Southern California Institute of Architecture	7	6	--	19	--	--	--
Syracuse University	7	2	2	4	3	3	7
Iowa State University	9	--	18	12	14	14	13
Pratt Institute	10	9	15	12	9	14	10

Methodology: "America's Best Architecture & Design Schools 2012," by *DesignIntelligence* and Greenway Group on behalf of the Design Futures Council, ranks accredited undergraduate and graduate architecture programs from the perspective of professional practitioners. The survey, conducted in mid-2011, polls professional practice leaders who have direct experience hiring and evaluating the performance of recent architecture graduates. Firms were queried about which programs are best at preparing students for professional practice. The top 10 of the 20 B.Arch. and M.Arch. programs ranked by *DesignIntelligence* are published here.

In addition, students and the deans and chairs of NAAB-accredited academic programs participate in their own surveys. Some of the data collected from these studies is included. More details about the methodology can be found at www.di.net.

schools and the professional community about weaknesses that need to be addressed.

In its entirety, "America's Best Architecture & Design Schools" is an annual report comprising several distinct surveys that rank undergraduate and graduate architecture, landscape architecture, interior design, and industrial design programs. For the 2012 edition, 360 firms in the four professional fields participated. Each respondent has direct responsibility for hiring and/or supervising recent graduate new hires in one or more of those fields surveyed. Practitioners selected to participate were drawn from a *DesignIntelligence* database of leading firms defined by both revenue and reputation.

The Greenway Group and *DesignIntelligence* have been conducting private studies and annual surveys for the Design Futures Council on architecture and design education for almost 15 years. These studies were originally undertaken on behalf of professional firms that wanted to share information with one another about which schools were better preparing students for the profession. We contacted CEOs, managing partners, and human resource directors with questions about their hiring experience in the past five years. Research reveals clearly that the profession cares deeply about education—which most of the practitioner-participants view of increasing economic importance and relevance in the years ahead.

With regard to architecture programs alone, practitioners from 185 leading U.S. architecture firms participated in our current research, "America's Best Architecture & Design Schools 2012." In answering a multitude of questions, they rated their satisfaction with the state of architecture education in the United States today as follows: 14 percent indicated they are very satisfied, 53 percent are satisfied, 32 percent are either neutral or dissatisfied, and only 1 percent are very dissatisfied. But in their evaluation of graduates' understanding of building, facility, and equipment life cycles, 47 percent of respondents say the graduates are inadequate.

Additional data collected in the Best Schools research delve into participants' rankings of the biggest concerns within the profession—for example, if recent graduates are bringing to the firms innovative ideas about sustainability.

Because the *DesignIntelligence* Best Schools research ranks undergraduate and graduate architecture programs that are accredited by the National Architectural Accrediting Board (NAAB), one would logically ask if there is really that much difference among schools.

Of course, there are significant differences among schools, just as there are among leading professional practices. Cultures, technologies, tenure systems, facilities, administrators, budgets, design studios, alumni support, and attitudes of college and university presidents toward the profession change from school to school. Some schools do not have strategic plans for allocating tuition, nor the institutional resources to achieve goals that have value for students, the profession, and the public. Other schools do not have communications plans in place to disseminate information to professional firms hiring their graduates.

We also solicited rankings from deans and department heads of NAAB-approved architecture programs to see how peers rate other schools. Sixty responded (discussed below).

In addition, we seek student opinions. This year, more than 1,600 B.Arch. and M.Arch. students responded to a separate *DesignIntelligence* student survey. They indicated resounding satisfaction and confidence in their education, with 56 percent grading the quality of their program as excellent and another 34 percent placing it above average. Ninety-two percent say they believe they will be well prepared for their profession upon graduation.

ARCHITECTURE SKILLS ASSESSMENT

The collegiate programs that practitioners deem strongest for each skill area

Construction methods and materials

1. California Polytechnic State University, San Luis Obispo
2. Kansas State University
3. University of Kansas
4. Syracuse University
5. University of Cincinnati

Research and theory

1. Harvard University
2. Yale University
3. Massachusetts Institute of Technology
4. Princeton University
5. Southern California Institute of Architecture

Sustainable design practices

1. Kansas State University
2. California Polytechnic State University, San Luis Obispo
3. University of Oregon
4. University of California, Berkeley
5. Auburn University
6. Massachusetts Institute of Technology

ARCHITECTURE DEANS SURVEY

Sixty deans and chairs of architecture departments responded to a survey about which undergraduate and graduate programs they considered the best.

Most-admired undergraduate architecture programs

1. Cornell University
2. Virginia Polytechnic Institute and State University
3. Cooper Union
4. Syracuse University
5. California Polytechnic State University, San Luis Obispo

Most-admired graduate architecture programs

1. Harvard University
2. Columbia University
3. Massachusetts Institute of Technology
4. University of Pennsylvania
5. University of Michigan

Practitioners' Top 10 for Architecture

We can't discuss all 40 architecture programs that were ranked at the top of the *DesignIntelligence* Best Architecture Schools lists in these pages, but let's take a look the top 10 undergraduate and graduate schools.

Cornell University again dominated the undergraduate rankings. In the past nine years, Cornell has placed first seven times. It was followed this year by the University of Texas at Austin; Virginia Tech; California Polytechnic State University, San Luis Obispo; Rice University; Rhode Island School of Design; Southern California Institute of Architecture and Syracuse University (tied for seventh); Iowa State University; and Pratt Institute.

In graduate architecture education, Harvard University edged out Yale University and the University of Michigan (the only other two schools that have been ranked first in the history of the *DesignIntelligence* survey). Yale placed second, followed by Columbia University, Washington University in St. Louis, and Kansas State University. Tied for sixth were Cornell and the Massachusetts Institute of Technology. The University of Michigan and the University of Pennsylvania tied for eighth, followed by the University of Cincinnati.

The findings were particularly interesting with regard to the ranking held by the University of Michigan last year, which took first place among the graduate programs. Its relocation to eighth place is respectable, but raises the question about how it made it to No. 1 in the 2011 ranking. We can only conjecture

that its communications strategy, aimed at reaching numerous firms (not just alumni) to tout its programs and accomplishments, elicited more respondents who had hired Michigan graduates or who were impressed by its strategic vision. Michigan didn't game the system: Indeed, we encourage schools to talk to the whole profession about the quality of their programs.

A complete list of the top 20 undergraduate and top 20 graduate architecture programs is available through www.di.net, along with regional rankings, student satisfaction data, and rankings of landscape architecture, interior design, and industrial design programs.

Deans' and Chairs' Rankings of Architecture Programs

The ranking by the deans and department heads from 60 programs who participated in a separate *DesignIntelligence* educational survey differs from the practitioner-respondents in many of the criteria: Academics did not assess how well the graduates were trained for practice. Instead they focused on other aspects of education. Many cited an outstanding faculty, an emphasis on social awareness, or a balance of art and technics. Certain programs appealed to deans and chairs because of the interdisciplinary approach or collaboration with other departments, or an emphasis on scholarly education. While these criteria for evaluating may have differed from practitioners' responses, the same schools seemed to surface: Undergraduate programs most cited were Cornell, Virginia Tech, Cooper Union, Syracuse, and Cal Poly, San Luis Obispo. Most admired by deans were graduate architecture programs at Harvard, Columbia, MIT, Penn, and the University of Michigan.

These academic leaders also find they must adapt to the changing economic situation. Our data show that they speculate they will have fewer resources to work with in the future, with 37 percent of the 60 respondents expecting tighter budgets. Nevertheless, 90 percent say that enrollment will be the same or higher. This will put stress on schools.

ARCHITECTURE STUDENT SURVEY

This year 1,659 B.Arch. and M.Arch. students registered their opinions in the DesignIntelligence student survey. Here is a sample of what students said, with more data available—including student satisfaction by school—in "America's Best Architecture & Design Schools 2012" published by DesignIntelligence.

How they grade the quality of their program overall

Excellent	56%
Above average	34%
Average	8%
Below average	2%
Failing	0%

Believe they'll be well prepared for their profession upon graduation

Yes	92%
No	8%

What they'll do after graduation

Pursue an advanced degree in architecture	18%
Pursue an advanced degree in something other than architecture	3%
Work in a private practice	56%
Work for a corporation	2%
Work in academia	2%
Work in government	1%
Be self-employed	3%
Volunteer or work for a nonprofit or community service organization	2%
Work in a field other than architecture	2%
Two or more of the above	0%
Undecided	10%

Now and the Future

Another *DesignIntelligence* research project compares the costs of architecture education ("Architecture School Tuition & Fee Report 2011–2012") at different schools. Tuition varies for both the undergraduate and graduate programs. The overall average for B.Arch. programs is $20,115 in-state and $25,400 out-of-state. At the current time, M.Arch. program tuition plus fees are similar to the B.Arch. programs. The tuition at this year's top-ranked B.Arch. program, Cornell, is $41,541, and at this year's top-ranked M.Arch. program, Harvard, it is $40,166. Both of these Ivy League programs offer a variety of scholarship and aid packages to their students.

Another *DesignIntelligence* survey of architecture students found that upon graduation, the average graduate expects to shoulder a debt load of more than $36,000. To put this price tag into perspective, *DesignIntelligence* compensation research finds the average 2011 starting salary for a graduate with a B.Arch. is $40,044, down from $40,871 in 2010. The starting salary for an M.Arch. graduate is $45,266, down from $46,544 last year.

The phenomenon of transformational change—in technologies, systems, materials, sustainability, management, and demographics—is unfolding faster in professional firms than it is in higher education. This gap is a concern. That said, architectural education is arguably better today than it has ever been.

But more can be done. Research participants say more practitioners should teach and more faculties should be professionally licensed. Business and management skills need to be introduced in the studio. No longer does tenure benefit students. Real estate finance should be a basic part of architectural education, and while many practitioners admire theory courses, they feel students need heavier doses of reality.

Practitioners tell us that they expect plenty of opportunities ahead if design entrepreneurs and architectural educators work together. We need to ensure that this happens. ■

James P. Cramer is founding editor of DesignIntelligence *and cochair of the Design Futures Council. He is chairman of the Greenway Group, a management consultancy.*

ADDITIONAL DATA IS AVAILABLE AT www.di.net, INCLUDING: Top 20 undergraduate and graduate architecture programs / Architecture student satisfaction surveys from 35 schools / Hidden gems of architecture, interior design, landscape architecture, and industrial design education / The 25 most-admired architecture and design educators of 2011 / Top 10 undergraduate and top 10 graduate interior design, landscape architecture, and industrial design programs / Historical rankings of leading architecture, interior design, landscape architecture, and industrial design programs / Skills assessment rankings for each profession that name top programs for preparing recent graduates in a range of specific skills / Programs most admired by deans of architecture, interior design, landscape architecture, and industrial design / Directory of leading U.S. architecture and design programs

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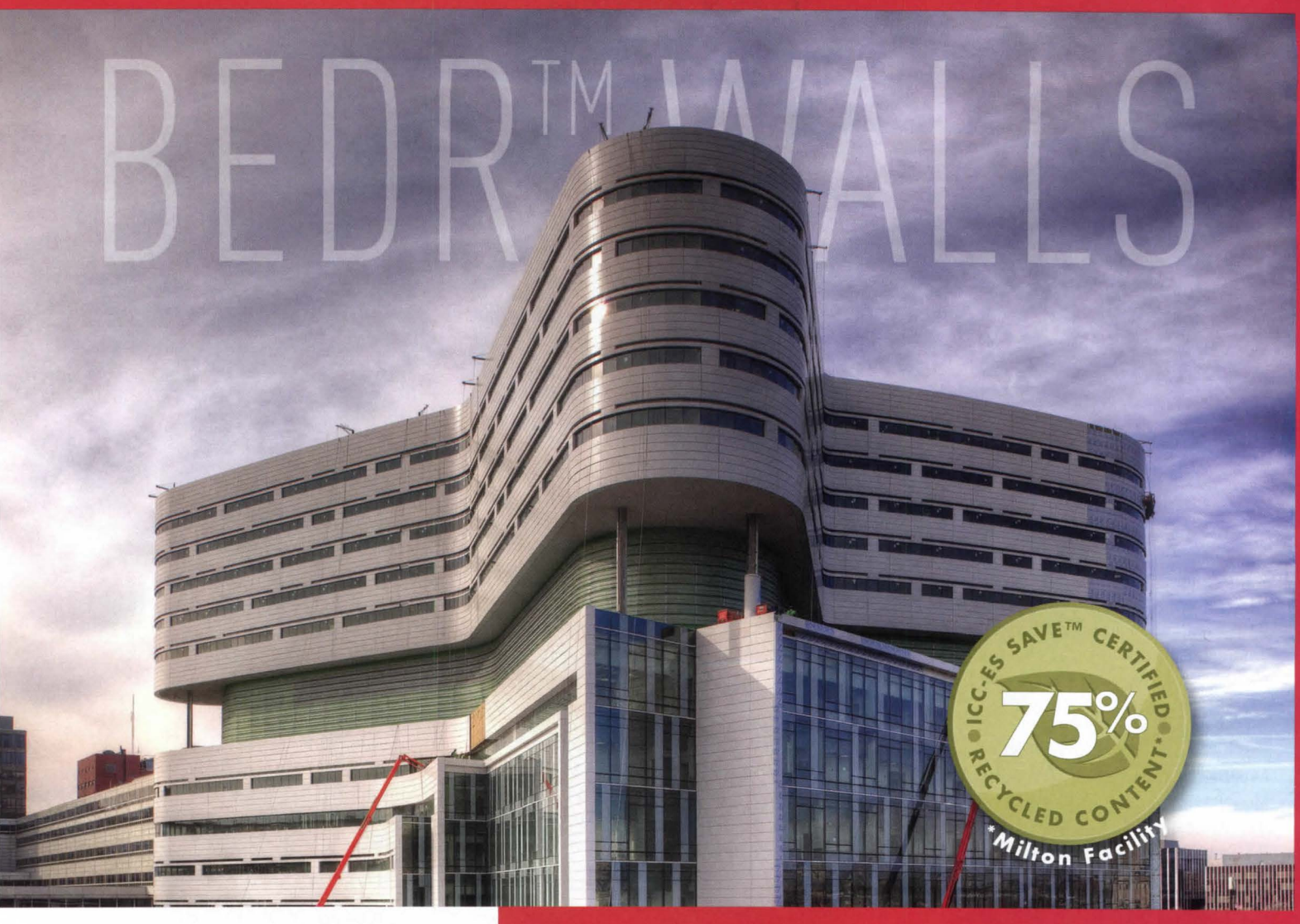

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CIRCLE 68

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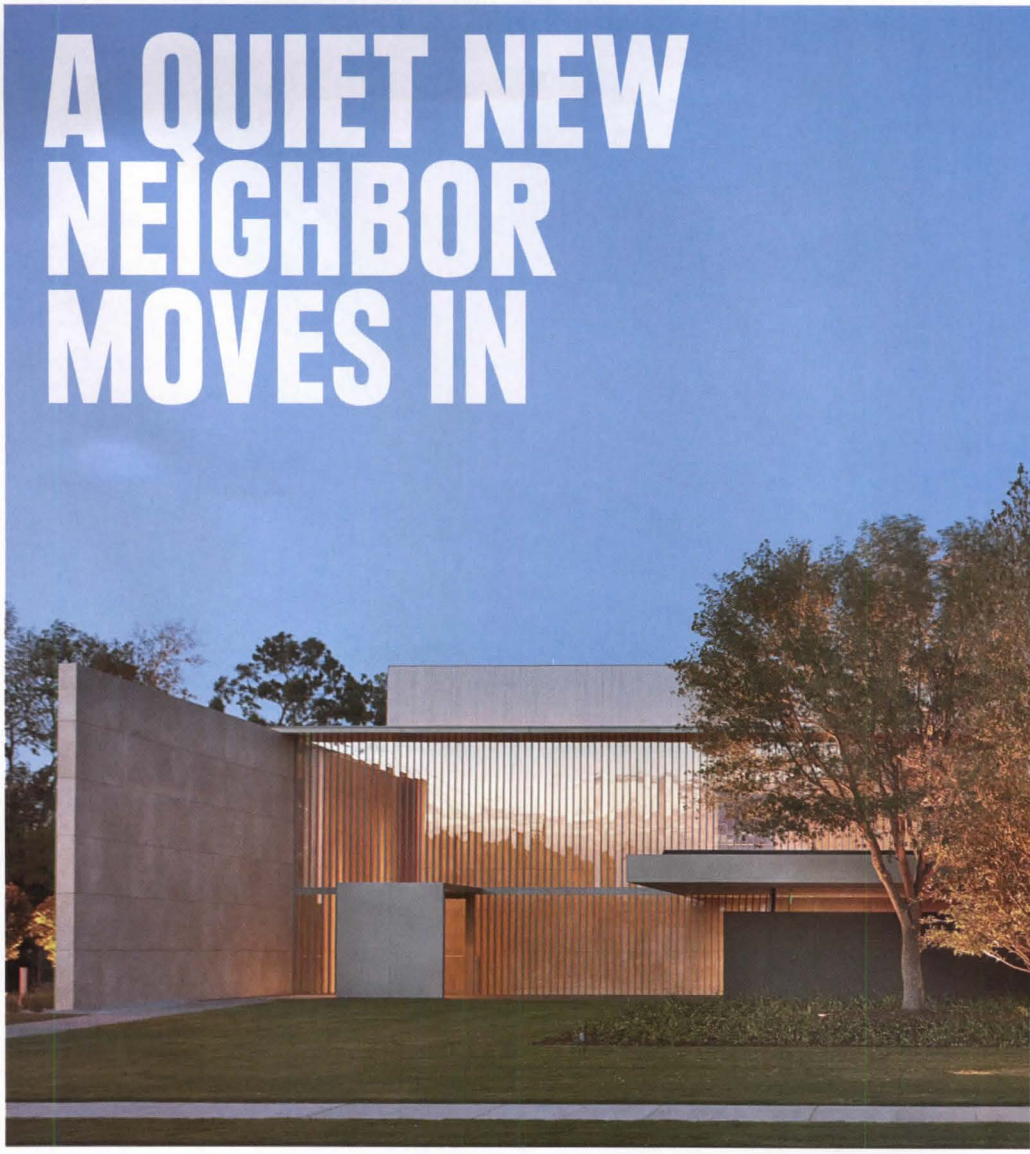
A QUIET NEW NEIGHBOR MOVES IN

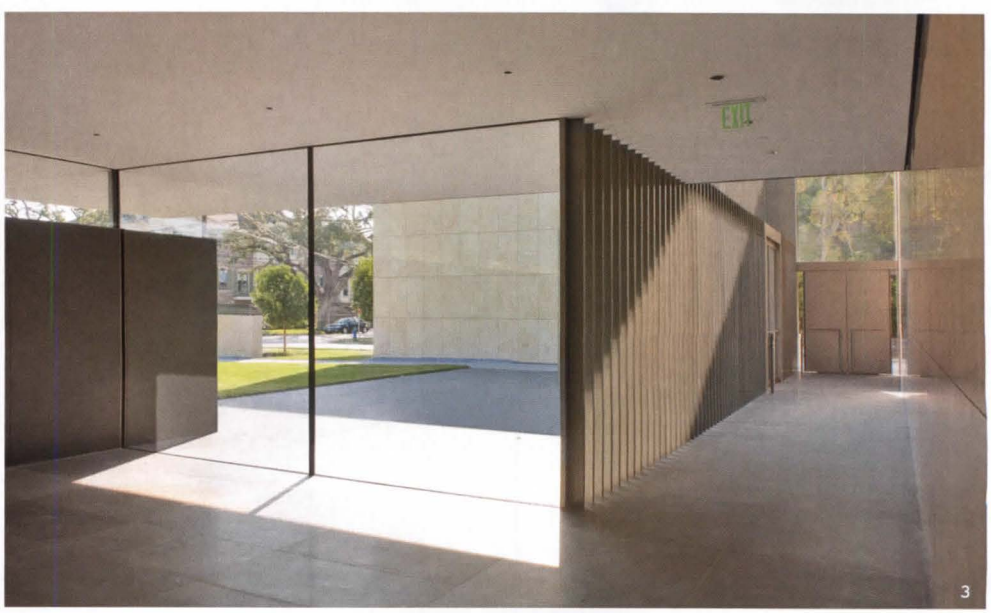
Yoshio Taniguchi has returned to the U.S. for his second significant commission here—an elegantly restrained new home for the Asia Society Texas Center.

By Beth Broome



BEYOND MILES and miles of unzoned urban sprawl, Houston's lush Museum District offers one of the city's deepest breaths of fresh air. A showplace for art and architecture, the mostly residential neighborhood features seminal cultural buildings by Mies van der Rohe, Philip Johnson, Renzo Piano, and Rafael Moneo, among others. Building on this tradition, the Asia Society Texas Center (ASTC) has moved into the neighborhood with its just-completed, sumptuous new home designed by Tokyo-based Yoshio Taniguchi. Following Taniguchi's expansion for New York City's Museum of Modern Art [RECORD, January 2005, page 94]—his first project outside his native Japan—the ASTC opens to the public in April with an inaugural exhibition from the Rockefeller Collection of Asian Art. The 38,000-square-foot, $48.4 million center is a departure for ASTC, too. Founded in 1956 by John D. Rockefeller III, the nonprofit has long had a global presence, but until now its Houston branch (founded in 1979) operated out of a warren of rented offices. As the Society proceeded to purchase this residential parcel, there was one holdout: an aging house on the corner. So Taniguchi rotated his building. Rather than facing the broad esplanade to the west, it would now look north, taking advantage of the site's long end and second-floor views to the downtown skyline.

Taniguchi oversaw all the details, and even flew in to supervise the placement of the front lawn's heritage oaks. Responding to the Society's mission of fostering ties between Asians and Americans with programs in art and culture, business and policy, and education, the building includes a 273-seat theater, a 4,000-square-foot gallery, and a 3,000-square-foot meeting space, as well as offices, a café, and a gift shop. While a showpiece, the low-lying building does not bully the neighboring residences, and it demonstrates Taniguchi's trademark adherence to a whispered aesthetic and commitment to order and "stillness." The new ASTC is serious, but not solemn. ■



3

1. **Rose-colored light reflects off the facade's Jura limestone and slender, channel-glass-like windows with aluminum mullions.**

2. **The second-floor lounge looks out to a raised reflecting pool (with fog) toward downtown Houston's skyline.**

3. **Visitors arrive through the main entrance (at left) or via double doors that lead to a valet drop-off.**

4. **Limestone, balsaltina stone, and cherry wood clad the Great Hall.**

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CIRCLE 42

Made in America

OVER THE PAST half century, the mass marketing of American architecture and building techniques has brought a dreary banality to many of the skylines and townscapes around the world, as well as at home. Yet the American pioneering ethos, which led architects to push boundaries both real and symbolic, still survives. The spirit of experimentation with new materials, techniques, and building types, and the belief in efficiency and pragmatism, continue to exist at the core of the nation's design. In the following pages, we present some intriguing examples of contemporary American building—projects that bring imaginative new ideas to vernacular design, adaptive reuse, and urbanity, and share a strong connection to place and historical roots. In a country of vastly diverse climates and topography, as well as cultures and traditions, the best architecture remains a form of individual expression, yet one that derives its meaning from where it is built and whom it serves.

The enclosed garden of John Ronan's Poetry Foundation in Chicago.

Contemporary Art Museum Raleigh | Brooks + Scarpa Architects

URBAN REVIVAL CAROLINA STYLE

Located in a restored produce warehouse, an innovative art center links past and present in an emerging historic district with a promising future.

By Linda C. Lentz

ONE OF THE COUNTRY'S "best" and "fastest-growing" cities (according to *Bloomberg BusinessWeek* and *Forbes*), Raleigh has a lot going on in and around its 144 square miles: North Carolina state government facilities, major universities, a vibrant tech industry, and a multifaceted cultural scene. Luckily, a quorum of local officials, professionals, and entrepreneurs strives for an urbanscape that both looks to the future of this small, thriving metropolis and retains its Southern charms.

The city's busy downtown is a hybrid collection of buildings dating from the 18th century to a new convention center and Marriott. Just a block away, the Depot Historic District resonates with the vernacular of its heyday (from the 1880s to the 1950s) as a commercial railroad hub. The four blocks of low-rise brick warehouses, factories, and depots appear to be frozen in time. But stretching out among them, the bold, cantilevered canopy of Raleigh's Contemporary Art Museum (CAM) serves as a vivid affirmation that the neighborhood is moving forward.

A non-collecting museum, CAM Raleigh showcases the work of emerging artists. It is affiliated with North Carolina State University, and hosts educational programs for community schools. So while this museum did not require special climate-control systems, the directors did ask the architects to include space for a learning center and for special events. They also wanted the architecture to echo CAM's innovative agenda.

Designed by the Los Angeles–based Brooks + Scarpa, the recently completed CAM is already an icon in the area, which feels a lot like New York City's SoHo in the 1970s. Extant businesses stand alongside a growing number of galleries, design studios, shops, and watering holes in restored spaces, with some thoughtful mixed-use developments at the periphery of the neighborhood. The city is also building a new light-rail terminal here that will guarantee commuter traffic. Design principal Lawrence Scarpa, whose firm had a small office in Charlotte at one time, picked up on this vibe and developed a scheme that exploits the 21,000-square-foot structure's "good bones."

The two-story masonry warehouse was built

OPPOSITE: **Inspired by the existing building's loading dock (above), architect Lawrence Scarpa created a translucent canopy made of pale blue steel beams that fade into the sky and support a sheer polycarbonate roof and ceiling of aluminum mesh panels layered with aluminum petals.**

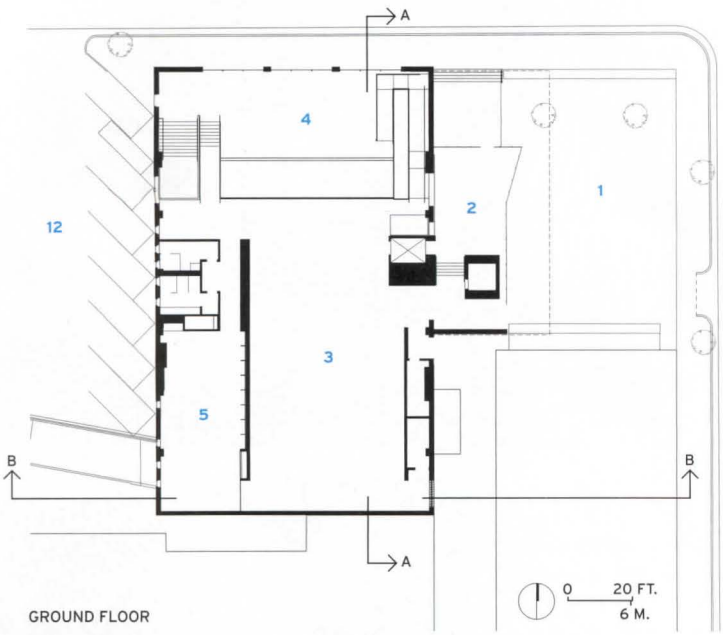
TOP: **A beautifully realized fusion of old and new, CAM Raleigh serves as an icon for the city's reemerging Depot Historic District, in which it's located, as well as for the city itself.**

ABOVE: **This photo of the building, taken mid-renovation, shows the street-side north facade during the restoration process and the loading dock prior to its demolition. The architects transformed the parking lot into a sculpture court with adjacent universal ramp access into the new lobby.**

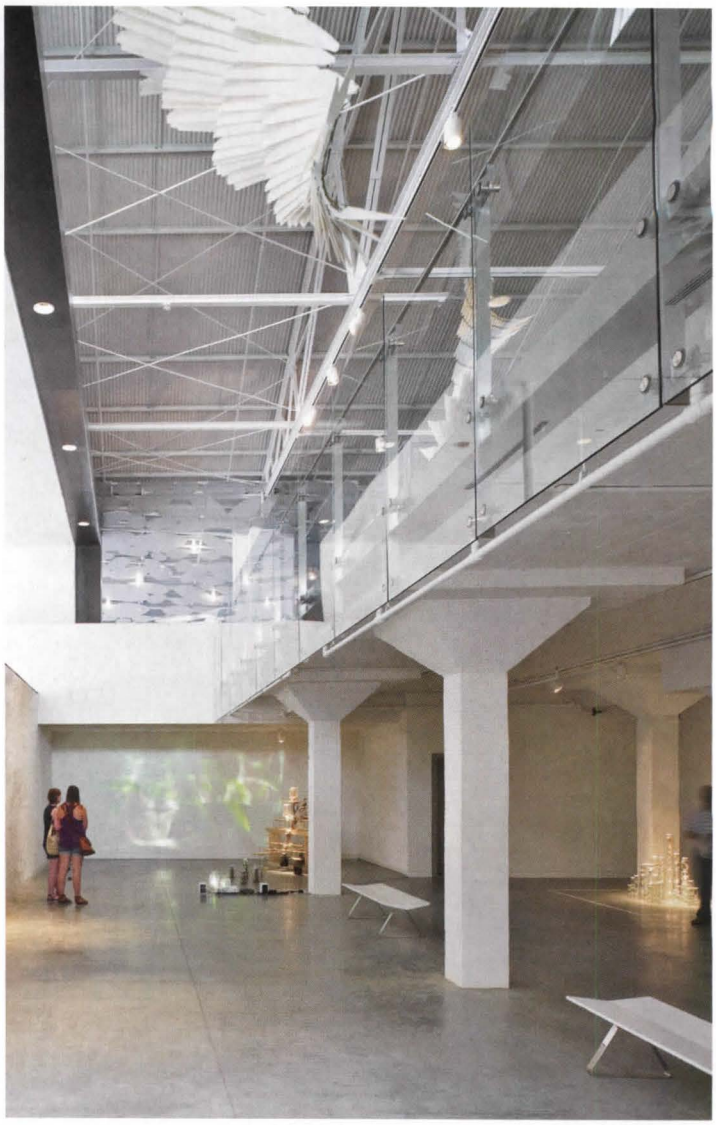
To see more images, visit us online at architecturalrecord.com.

1 SCULPTURE COURT
2 LOBBY
3 MAIN GALLERY
4 STREET GALLERY
5 EDUCATION
6 LOWER GALLERY
7 ELEVATOR
8 MEDIA LIBRARY
9 ART PREP
10 OFFICE
11 CATERING STAGING
12 PARKING

BASEMENT FLOOR



GROUND FLOOR



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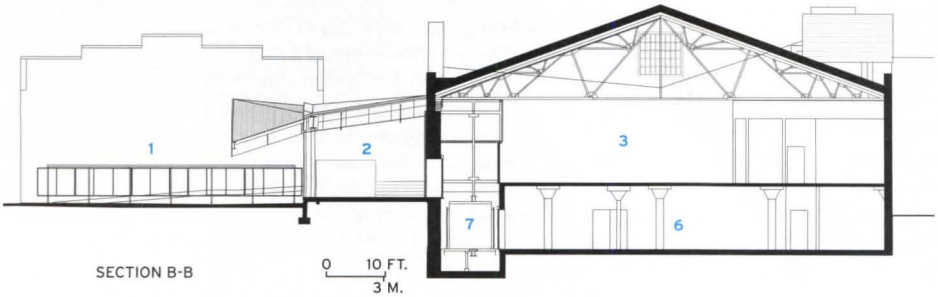


SECTION B-B

CREDITS

ARCHITECT: Brooks + Scarpa – Lawrence Scarpa, design principal; Steve Schuster, Mark Buckland, Jon Zellweger, project architects

ARCHITECT OF RECORD: Clearscapes

CLIENT: CAM Raleigh

ENGINEERS: Lysaght & Associates (structural); the Wooten Company (m/e/p)

GENERAL CONTRACTOR: CT Wilson Construction

SIZE: 22,300 gross square feet

COST: $3,400,000

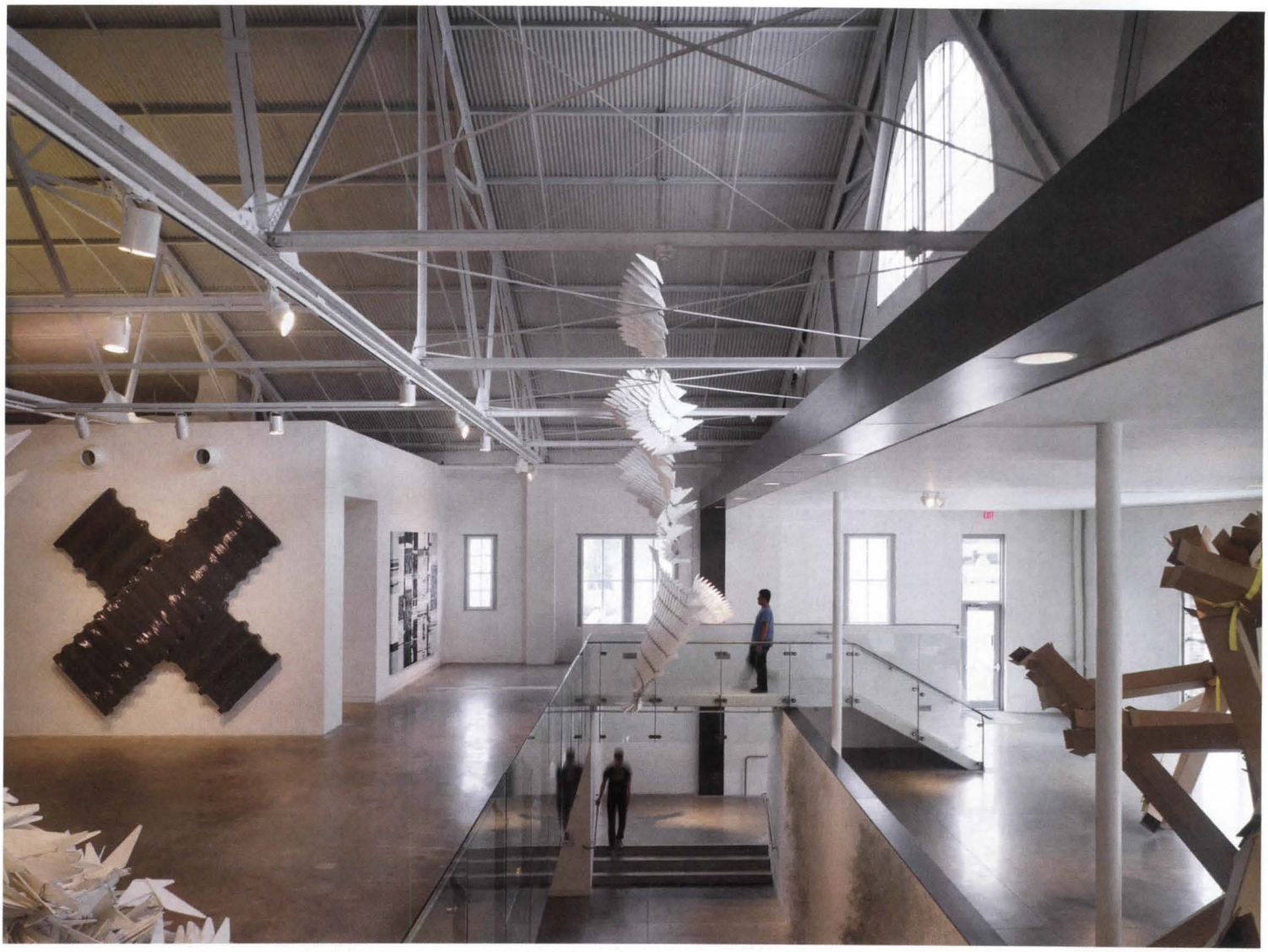
COMPLETION DATE: December 2010

SOURCES

METAL: Griffin Steel, AlumiWorks (canopy/ceiling); Kawneer (curtain wall, windows)

GLAZING: Pilkington, DuPont (curtain wall); Polygal (canopy roof)

CEILING: Fry Reglet (acoustical)



for a blacksmith in 1910, then enlarged slightly by Brogden Produce 15 years later. When CAM purchased the property in 1997, its northern elevation was completely covered with metal panels. Scarpa stripped the facade, restoring the brick and glazing the three bays underneath. Then he cleared the interior, leaving the original steel and masonry intact, and integrating mechanicals and insulation so that the place feels like it might have when it was built. In the first of two significant moves, Scarpa sliced through the thick concrete floor, where a large coal chute once divided the slightly raised main volume from the 1925 street-level addition. This allows a new basement gallery to connect with two open, split-level galleries above, via a steel mesh bridge and stairs. A ramp and new elevator (configured within the old cage) provide universal access to the sub-grade gallery, office, and art preparation room.

In a grand gesture, meant to be as much art as functional device, Scarpa added a 900-square-foot glazed entrance pavilion along the east elevation, creating a sculpture garden out front. Taking his cues from the loading dock it was replacing, he played with the shed roof in plan, folding it into an origami-like plane that dips and sails out from the building and flows into the lobby as a ceiling, for a fluid transition from outdoor to indoor space.

This ethereal tour de force is made of steel beams, painted pale blue to mimic a Southern porch ceiling. The beams support a sheer polycarbonate roof on top and an aluminum insect mesh lined with a whimsical array of powder-coated petals underneath.

"The idea is that you have a building from a period that is heavy and permanent," says Scarpa. "The [canopy] is light and floating, so there is tension between the two—one representing today and the other yesterday." ■

OPPOSITE: **The architects cut through the thick concrete floor to bring daylight into the basement and open it to the upper galleries. Existing concrete support columns provide a solid, structural contrast to newly installed glass partitions, and to the evocative art currently on display—one of the museum's inaugural exhibitions, titled *Urban Nature*, by New York-based Japanese artist Naoko Ito.**

ABOVE: **Like Brooks + Scarpa's architecture, artist Dan Steinhilber's inaugural installation in the upper main and street-level galleries, *Hold On, Loosely*, explores the relationship between the building's history as a produce warehouse and its future as a museum for rotating shows. While the artist's work is purely conceptual, the architects' design is grounded in reality, preserving the fabric of the original structure, but with contemporary details: steel beams and brick walls, painted white; concrete floors, ground and polished; boarded-up windows, uncovered. One of the only concessions: A new perforated aluminum ceiling with acoustical paneling lines the existing roof deck to dampen potential noise in the vast space filled with hard surfaces.**

St. Nicholas Eastern Orthodox Church | Springdale, Arkansas | Marlon Blackwell Architect

GIVING SPIRIT FORM

An architect in northwest Arkansas converts a typical metal shed into a striking place of worship.

By Laura Raskin

NOT MUCH distinguishes one town from the next along Interstate 540 in northwest Arkansas. From north to south along the flat terrain, Bentonville, Springdale, and Fayetteville come and go in waves of corporate office parks—this is Wal-Mart's home turf, and other companies have sprung up here, too. Look out the wrong side of the car and you might miss St. Nicholas Eastern Orthodox Church just outside of Springdale, tucked among other houses of worship that could pass for overstock furniture stores.

St. Nicholas is starkly unlike the others. Fayetteville-based architect Marlon Blackwell converted a metal shed—a form so frequently plunked down here it's practically indigenous—into a 3,600-square-foot local icon. This is a fitting gesture for a denomination that venerates its own icons: In the sanctuary, parishioners pray in front of the iconostasis, a row of painted saints, angels, Christ, and the Virgin Mary, the links between heaven and earth. A boxy steeple extends from the church's western elevation. Three splashes of color create a trinity: a slender red cross in the skylit tower, a yellow window on the southwest corner, and a blue window on the northwest corner. Blackwell calls the building a billboard.

He heard about St. Nicholas's need for a new home from colleagues at the University of Arkansas, where he is a professor. The congregation was meeting in a run-down office space when a parishioner died and left money to the church, enough to help purchase three acres of land in front of a public park. A house and a 40-by-60-foot metal shed stood on the property.

The congregation couldn't afford to build a brand new church. They may in about seven years, when the current mortgage is paid off and membership grows from 120 to a projected 200 parishioners. In the meantime, Jonathan Boelkins, project manager, says he and his team thought about tearing down the shed. "But it had structure and it had a roof, and so we thought, well, we'll see what we can do with it," he says. Boelkins and Blackwell wanted to give the building a presence from the road and, as Blackwell says, "give spirit form in the present." They studied the history of Orthodox churches and found that their designs vary widely in the world: Each takes on a regional identity, rooted in its time, and St. Nicholas would be no different.

Deciding the shed could speak to its locale and simultaneously provide an exalted space, Blackwell sought a variance from the city, which usually prohibits the use of metal panels as a new building material. This was a chance to dignify a ubiquitous type and raise questions about architecture as a spiritual offering. "A lot of people are turning churches into metal buildings," he says. "We turned a metal building into a church."

Blackwell and his team kept the roof, the structure, and the original skin on all but the western elevation and other, select areas. But they wrapped the building in new box-ribbed metal panels, keeping the western elevation

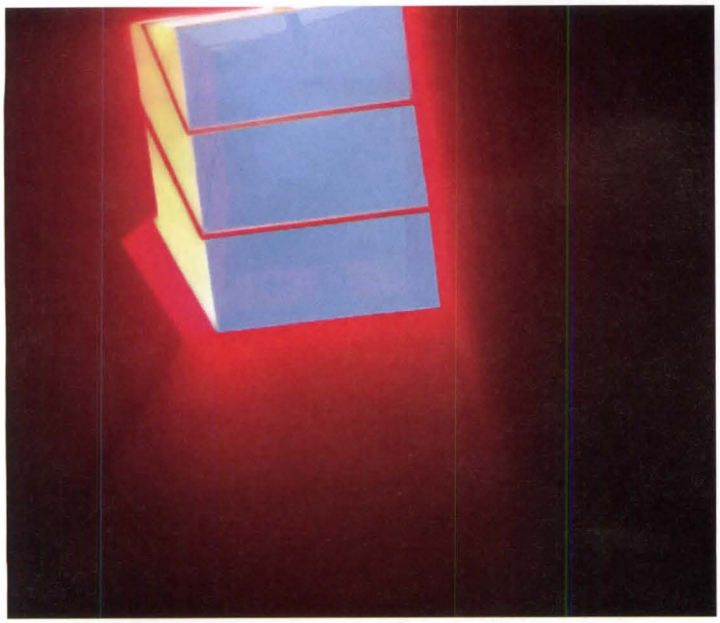
OPPOSITE: **At night, St. Nicholas presents a glowing, balanced composition. The architects embedded blue and yellow glass windows and a red cross in the white, western elevation. To further delineate the church, they surrounded it with a skirt of black mulch.**

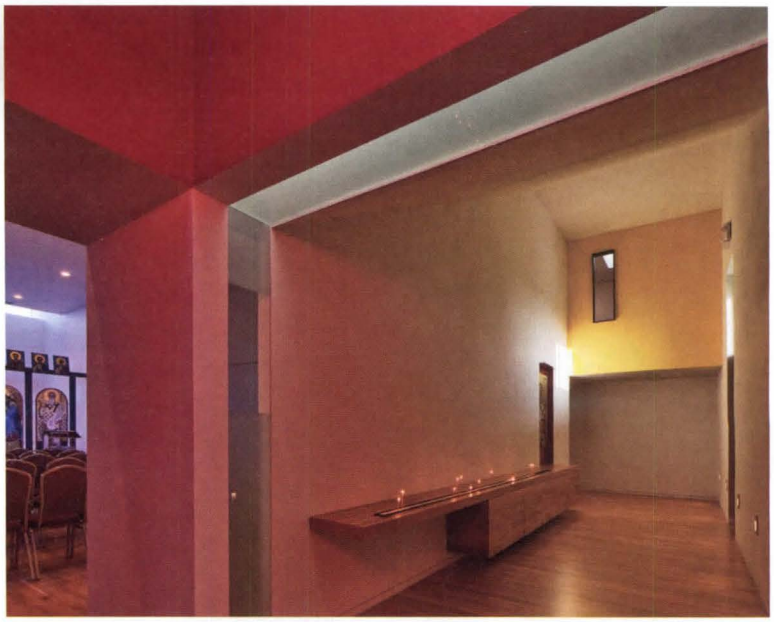
THIS PAGE, TOP: **Seen from Interstate 540 in northwest Arkansas, the church becomes a billboard.**

THIS PAGE, BOTTOM: **The roof, structure, and much of the original paneling of a metal shed became the bones for the church, which was wrapped in new, more refined box-ribbed metal panels. A narrow addition to the western elevation became the narthex.**

MARLON BLACKWELL ARCHITECT (RIGHT)

For a video tour of the project see our website or iPad edition.



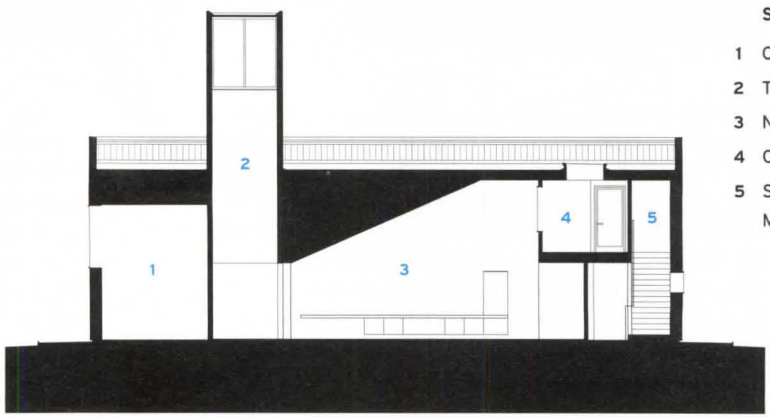


white and the rest a dark bronze. "The panels are just exquisite," says Blackwell. "They turn the building into corduroy."

The shed's long axis ran north-south, but the Orthodox like to pray facing east. The architects added a narrow addition to the western elevation to create the narthex. They moved the front entrance to the western elevation and marked the interior entry to the sanctuary with a steeple. Focus in the sanctuary is on the iconostasis in front of the altar, where Father John Atchison, parish priest, performs the rituals of the service under a slot window that allows morning light to filter in.

Domes are important in Orthodox churches, but Blackwell didn't want to disturb the flat roof. So he traded a couple cases of beer for a used satellite dish. The team skim-coated it with plaster and embedded it in the ceiling. "I joked to Father John, 'You have a direct line to God now,'" says Blackwell. "And he said, 'Yeah, but now it's pointing down.'" The rest of the two-story building is spare. The original concrete floor remains in the fellowship hall, a meeting space separated from the sanctuary by a movable wall.

Modest though it is, St. Nicholas brings Blackwell's office back to its roots after several big-budget projects farther from Fayetteville. They are working on an elegant store in Moshe Safdie's new Crystal Bridges Museum in nearby Bentonville; a high school; a Montessori school; a renovation-addition to the University of Arkansas's architecture school; and a cabin in the woods. "We can still make architecture anywhere, at any scale," says Blackwell. "That's been one of our missions: to say, hey, architecture can happen here." ■



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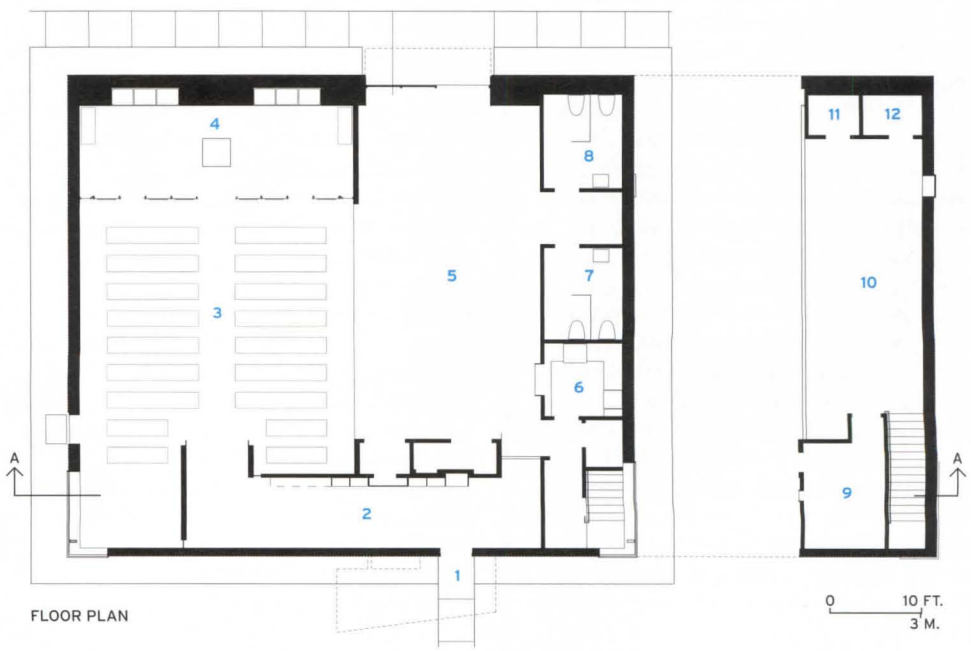
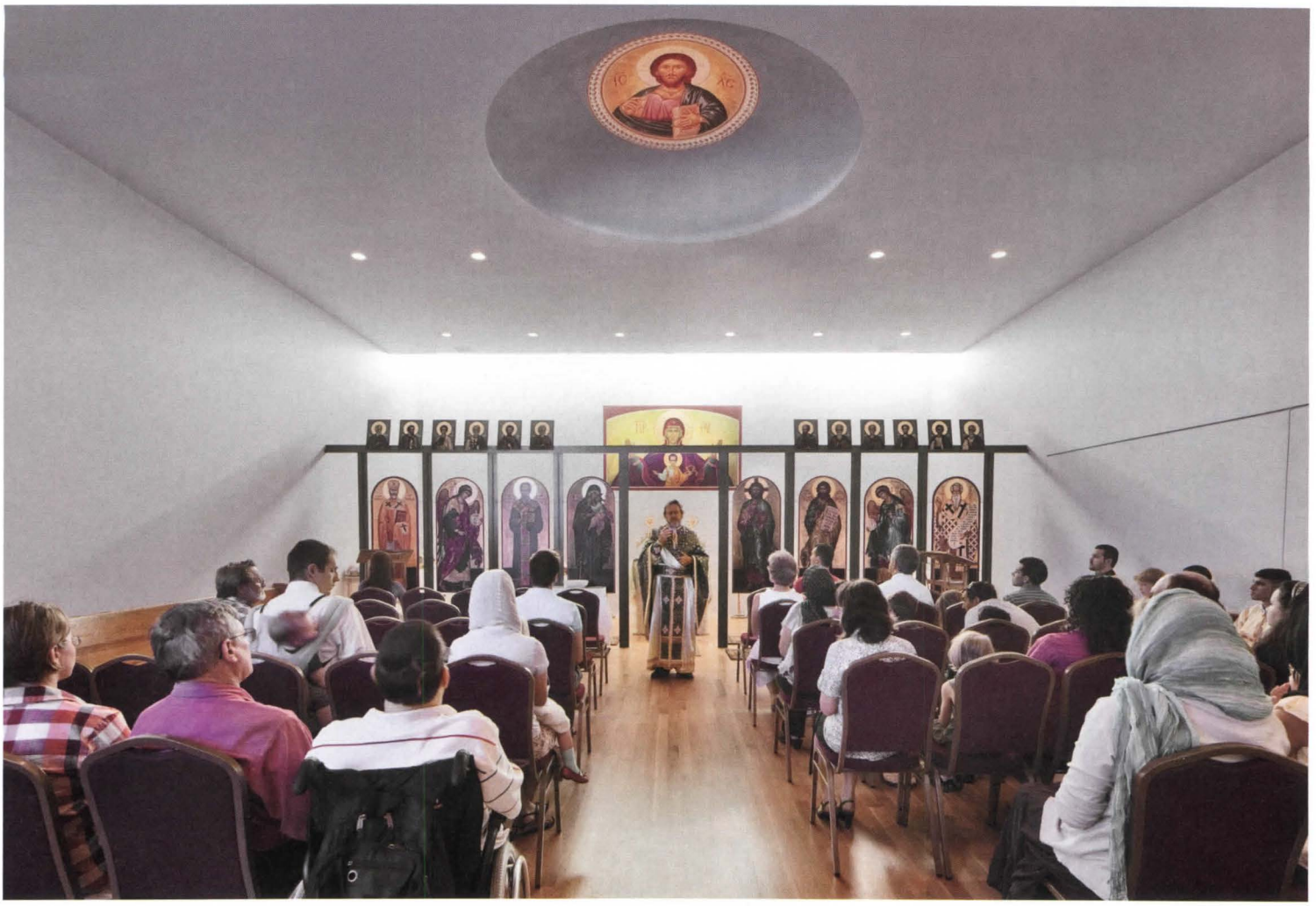


FLOOR PLAN



PLAN

1 FRONT ENTRANCE
2 NARTHEX
3 SANCTUARY
4 ALTAR
5 FELLOWSHIP HALL
6 KITCHEN
7 MEN'S ROOM
8 WOMEN'S ROOM
9 OFFICE
10 MEZZANINE
11 STORAGE
12 RESTROOM

OPPOSITE, TOP LEFT: **A cross emits a red glow at night because of the painted, skylit steeple. The tower marks the entrance to the sanctuary.**

OPPOSITE, TOP RIGHT: **The narthex provides a quiet, candlelit place for prayers or reflection. A small window into the sanctuary allows visitors to see what's happening before entering.**

THIS PAGE, TOP: **An operable wall separates the sanctuary from the fellowship hall.**

THIS PAGE, BOTTOM LEFT AND RIGHT: **The architects traded a few cases of beer for a used satellite dish, which they skim-coated in plaster and recessed into the ceiling of the church to create the dome.**

CREDITS

ARCHITECT: Marlon Blackwell Architect – Marlon Blackwell, principal in charge; Jonathan Boelkins, project manager; Meryati Blackwell, associate; Gail Shepherd, Bradford Payne, Stephen Reyenga, project team

CLIENT: St. Nicholas Eastern Orthodox Church

ENGINEERS: Bates & Associates (civil); Myers-Beatty Engineering (structural)

GENERAL CONTRACTOR: Lourie Construction

SIZE: 3,600 square feet

COST: $405,000

COMPLETION DATE: December 2009

SOURCES

METAL PANELS: *Metal Sales Manufacturing*

CANOPY SOFFITS: HardiePanel

WINDOWS: Ozark Steel (custom steel frames); Abrams Glass (aluminum stops); Vanceva (colored glass); Kawneer (clear operable window)

OPERABLE WALL AND ICONOSTASIS: Razorback Iron Works (custom steel frames)

ENTRANCES: Kawneer (aluminum storefront)

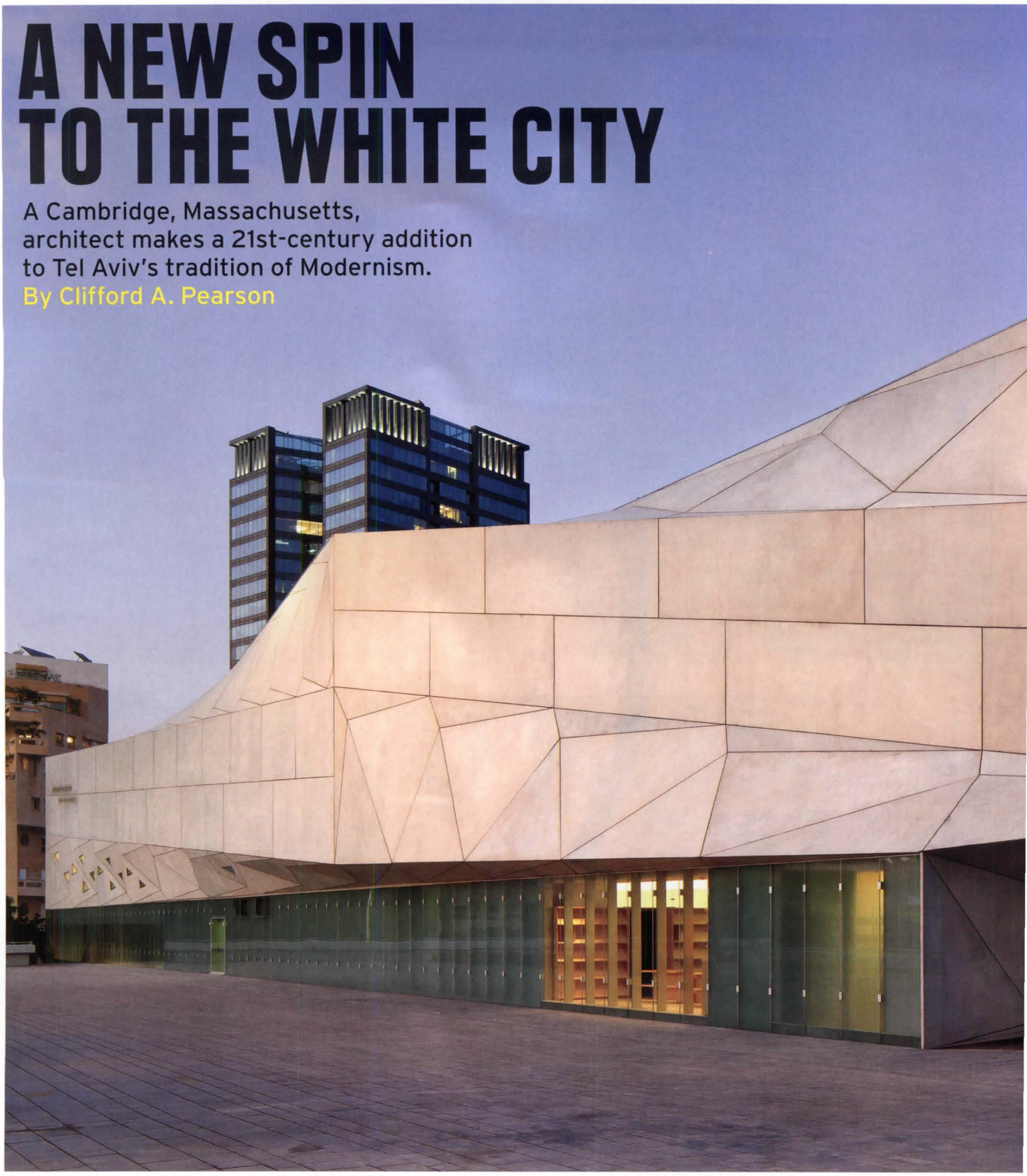
EXPORT

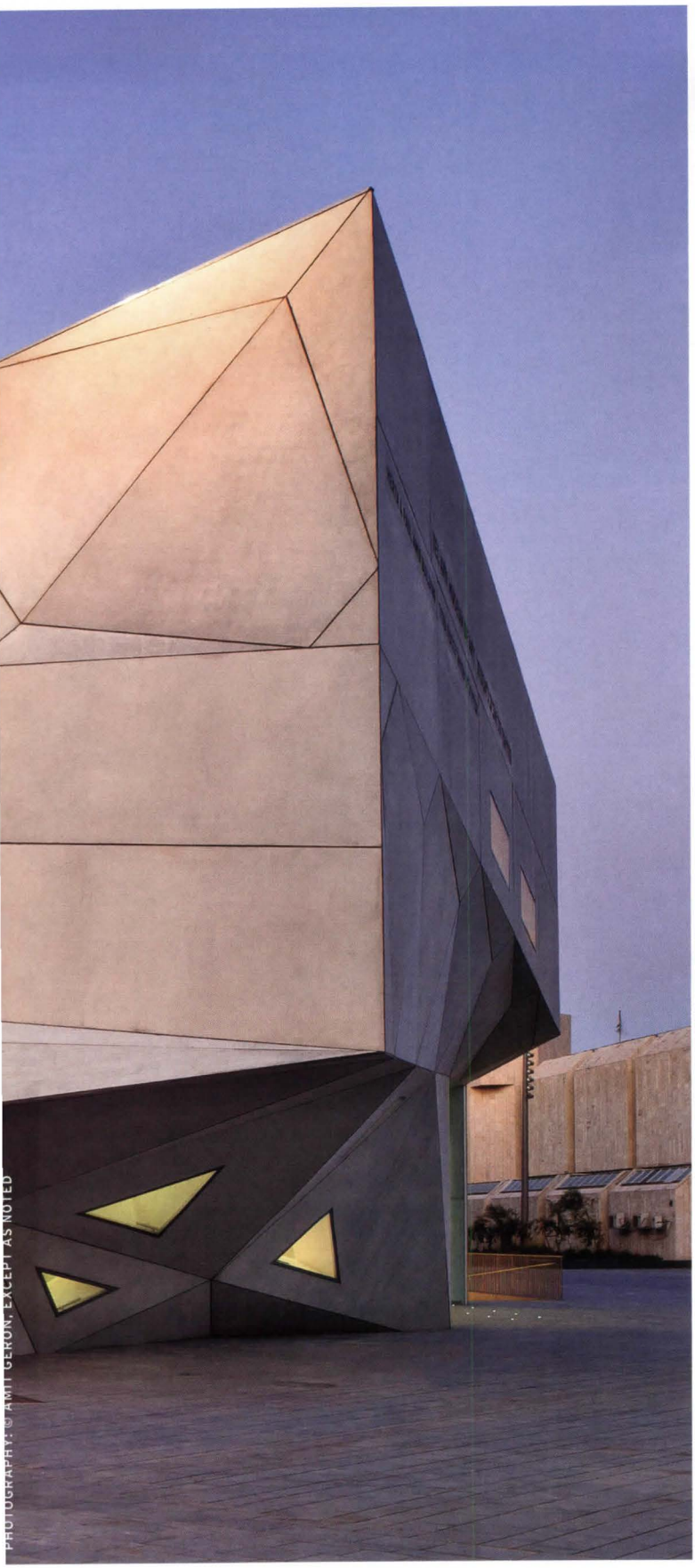
Tel Aviv Museum of Art | Preston Scott Cohen

A NEW SPIN TO THE WHITE CITY

A Cambridge, Massachusetts, architect makes a 21st-century addition to Tel Aviv's tradition of Modernism.

By Clifford A. Pearson





PHOTOGRAPHY: © AMIT GERON, EXCEPT AS NOTED

From the plaza, visitors enter the $55 million addition through doors tucked into its folded form (below). On the west, Cohen lightened the composition by inserting clear and translucent glazing that brings light and views into the museum store.

SEEN FROM the flat plaza that wraps around it on two sides, Preston Scott Cohen's radical addition to the Tel Aviv Museum of Art strikes a geometrically independent pose. But this angled and faceted block dressed in precast concrete actually connects with its context much more than it disrupts, continuing a legacy of innovative architecture that has made Tel Aviv a Bauhaus mecca since the 1920s. Called "the White City," Tel Aviv's early-20th-century downtown boasts buildings by Erich Mendelsohn, a master plan by Patrick Geddes, and hundreds of International Style structures. In 2003, UNESCO declared it a World Cultural Heritage site.

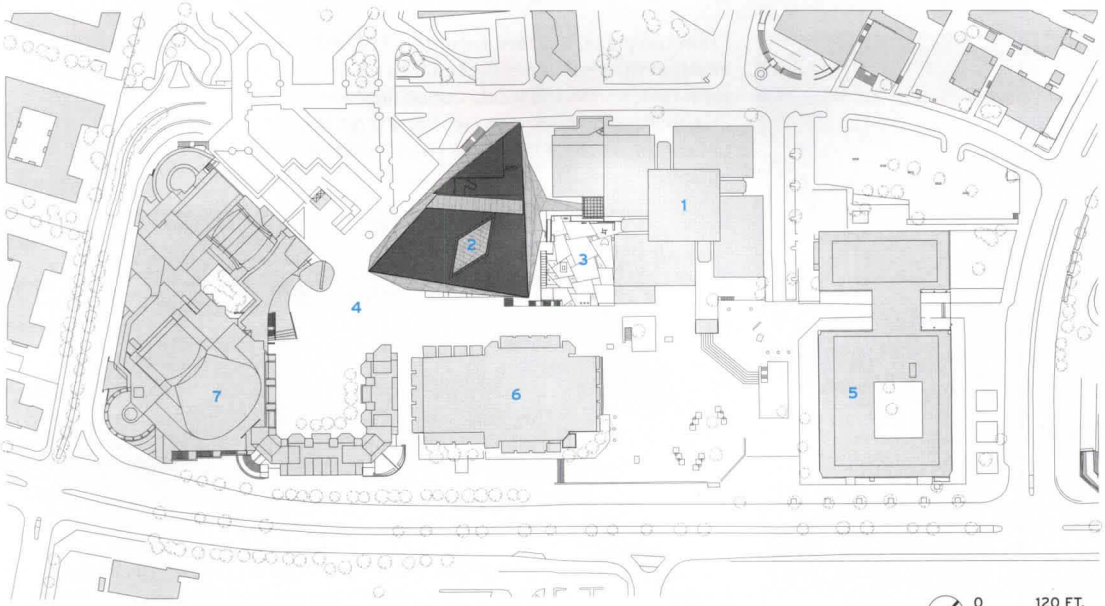
Like those 20th-century buildings, Cohen's 195,000-square-foot museum addition expresses a faith in the latest technology. And like much traditional Mediterranean architecture, it hides an intriguing core within a cool, white exterior. The museum's new wing—called the Herta and Paul Amir Building—works from the inside out. Spiraling around a dramatic 87-foot-high atrium that the architect calls the Lightfall, the building takes visitors through a series of spatial experiences that are complex at its center and simpler at its perimeter. In its construction, too, the project started from the inside, with precast-concrete panels manufactured on-site in an area that is now a gallery. After casting the panels, workers attached them to the building's steel frame to form a faceted, weatherproof envelope. (See sidebar, page 80.)

Even the building's location is set within something else—an interior site with no frontage on Shaul Hamelech Boulevard, the main street leading to the Tel Aviv Museum. While the museum's 1971 Brutalist-style main building (designed by Dan Eytan and Yitzchak Yashar) addresses Shaul Hamelech from across an entry plaza, Cohen's adjacent building sits behind a public library and a performing arts complex. Visitors discover the addition only by turning left after walking through the entry plaza. (If they arrive by car, they park below ground, then take an elevator to the redesigned plaza in front of the addition.)

Asked by the museum to provide rectangular galleries in a building on a triangular site, Cohen used the central atrium to negotiate between the two geometries—in the process creating a skylit element that cants, angles, and curves from three stories below grade to two above. Beautifully constructed of poured-in-place concrete with long slashes cut out to bring light and views through it, the Lightfall asserts its own identity as a freestanding structure within the museum. Although the Lightfall holds itself up, it does not support any other part of the building. (See sidebar, page 82.)

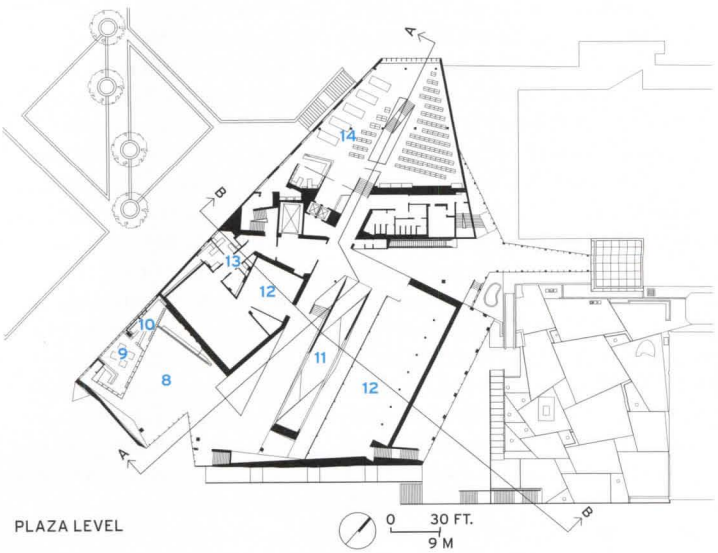
"The Lightfall is both an autonomous element within the building and the piece that joins everything else," says Cohen, who used sophisticated computer software to help shape the complex (*continued on pg. 79*)

View additional images online.

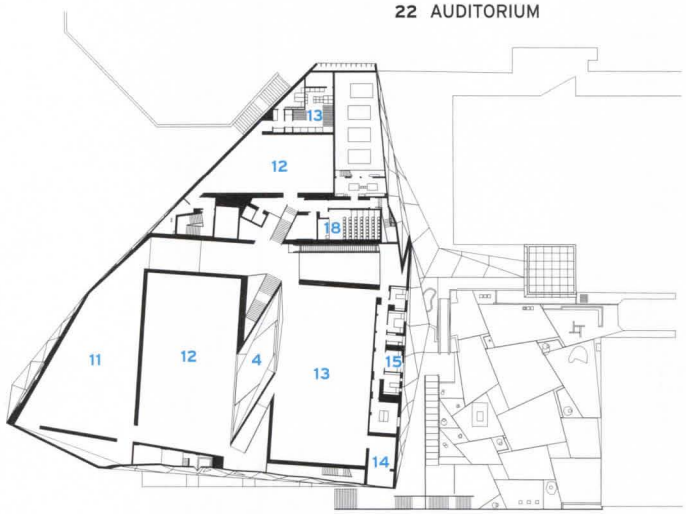


SITE PLAN

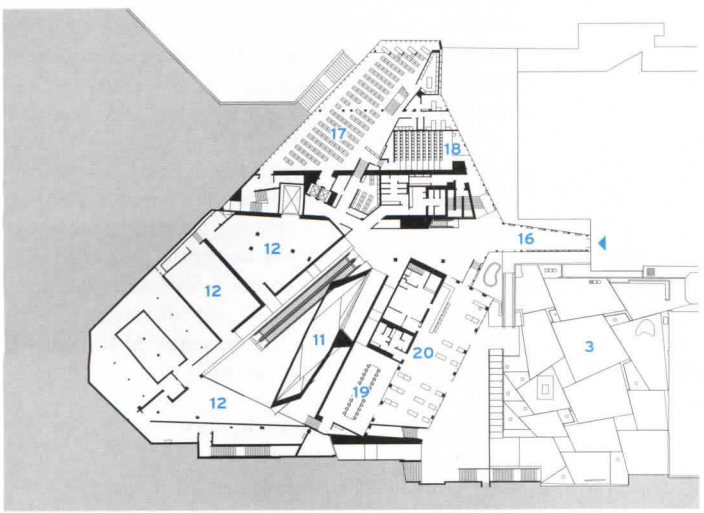
1 MAIN MUSEUM BUILDING
2 AMIR BUILDING
3 SCULPTURE GARDEN
4 PLAZA
5 COURTHOUSE
6 LIBRARY
7 PERFORMING ARTS CENTER
8 LOBBY
9 BOOKSTORE
10 COAT CHECK
11 LIGHTFALL
12 GALLERY
13 OFFICES
14 LIBRARY
15 VIDEO
16 CONNECTOR TO MAIN BUILDING
17 LIBRARY STACKS
18 CLASSROOM
19 CONFERENCE
20 RESTAURANT
21 CAFÉ/BAR
22 AUDITORIUM



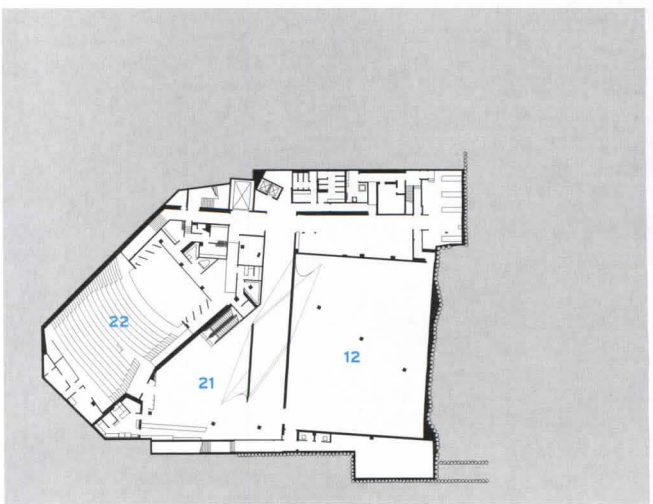
PLAZA LEVEL



UPPER LEVEL

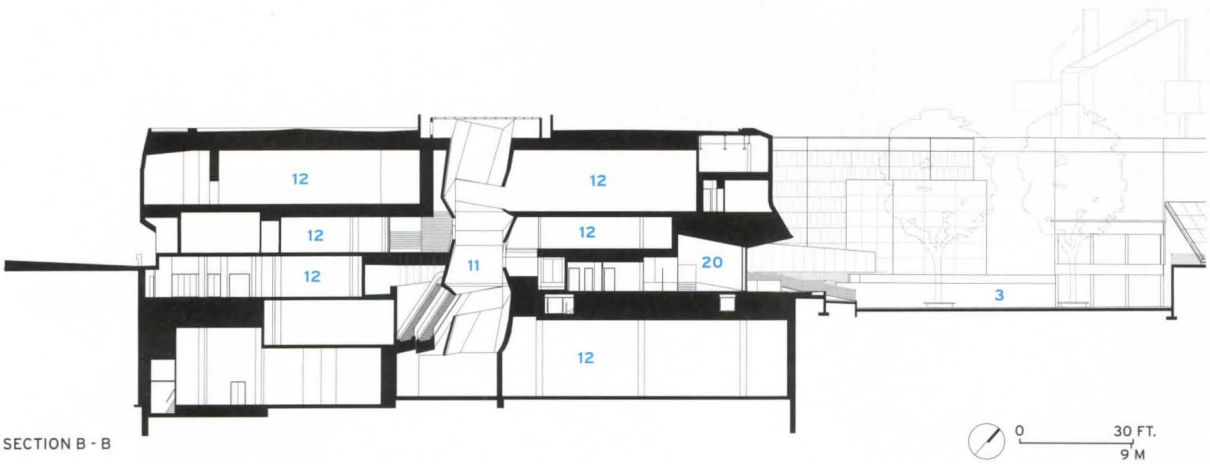


LOWER LEVEL



LOWEST LEVEL

The museum's main building (above) was designed by Dan Eytan and Yitzchak Yashar. Opened in 1971, it proved to be a good example of how Israeli architects adapted the Brutalist style to the Mediterranean climate. The new addition (seen as a rendered image in the photographic collage, left) stands across a small sculpture garden from the existing museum. It occupies a site within a larger complex of civic and cultural buildings, including a courthouse (bottom right in photograph), a public library (bottom center), and a performing arts center (far left).



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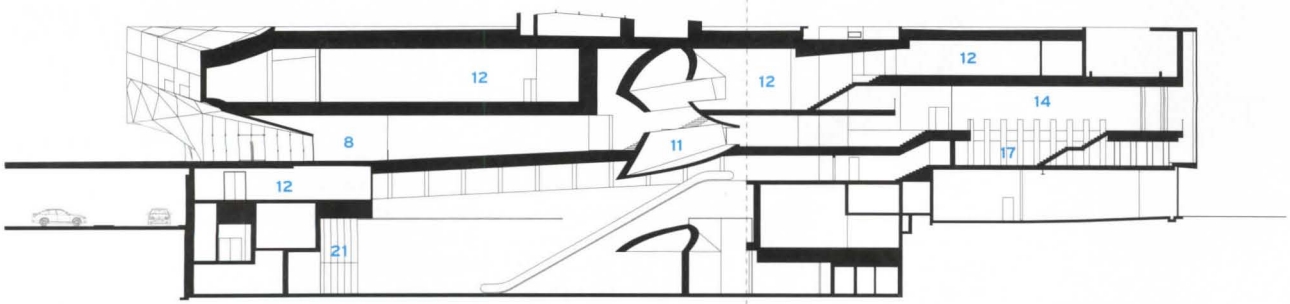

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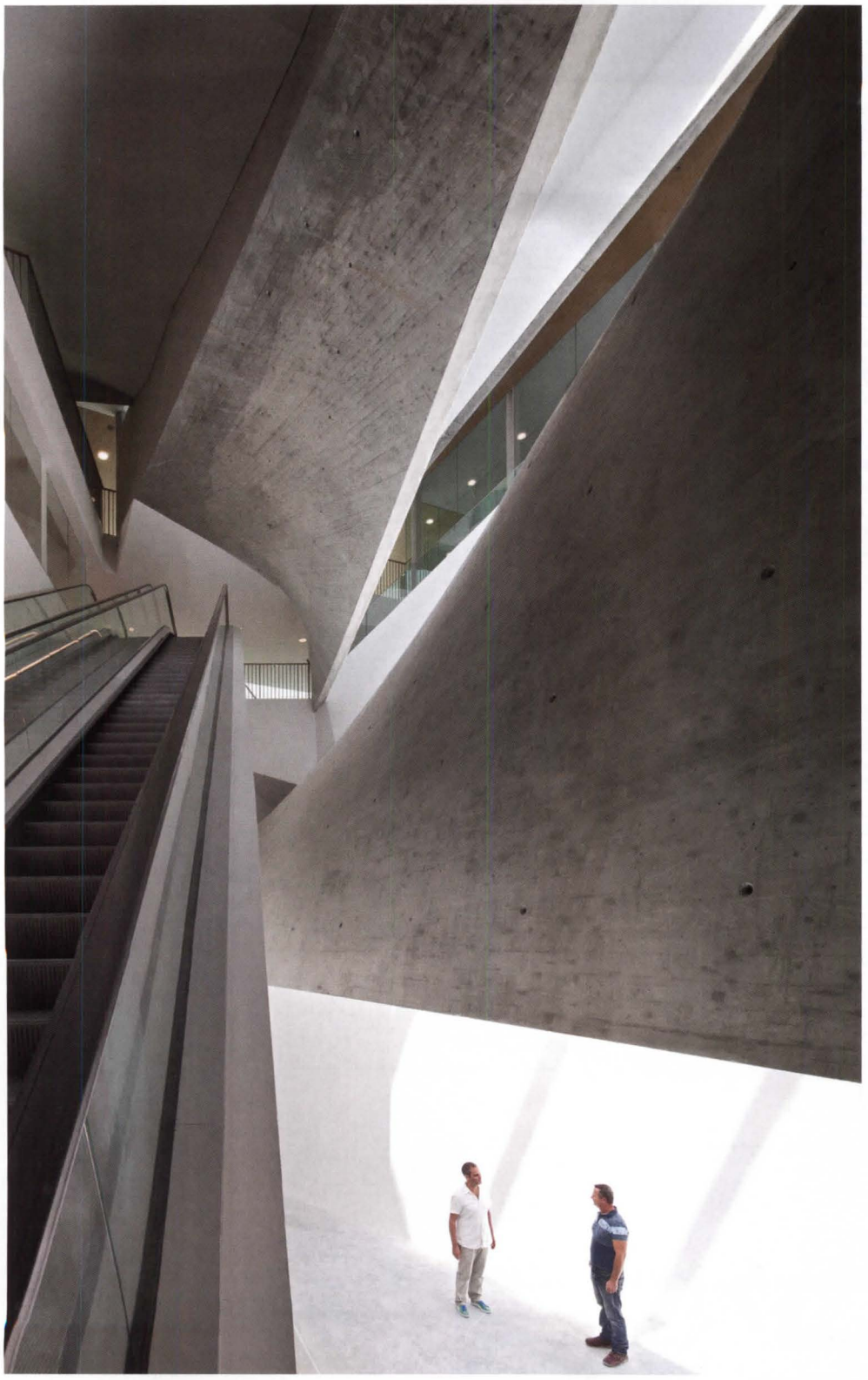
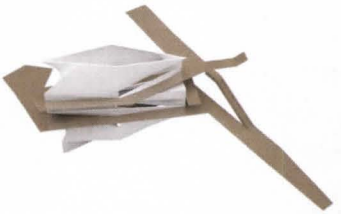




ABOVE: **The poured-in-place concrete form of the Lightfall can be seen by visitors as they move around the central atrium space.**

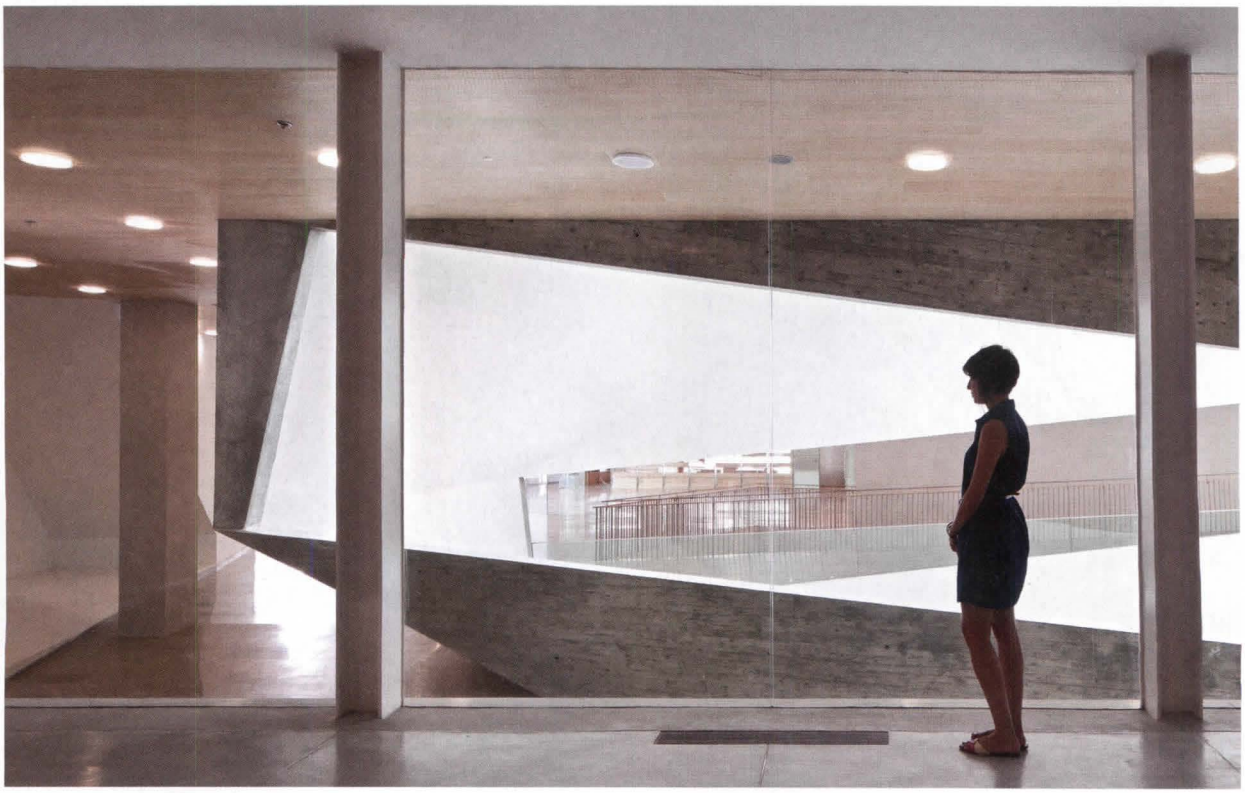
ABOVE RIGHT: **Drawings from top to bottom show the Lightfall by itself, then with circulation paths, galleries, and finally the building's envelope.**

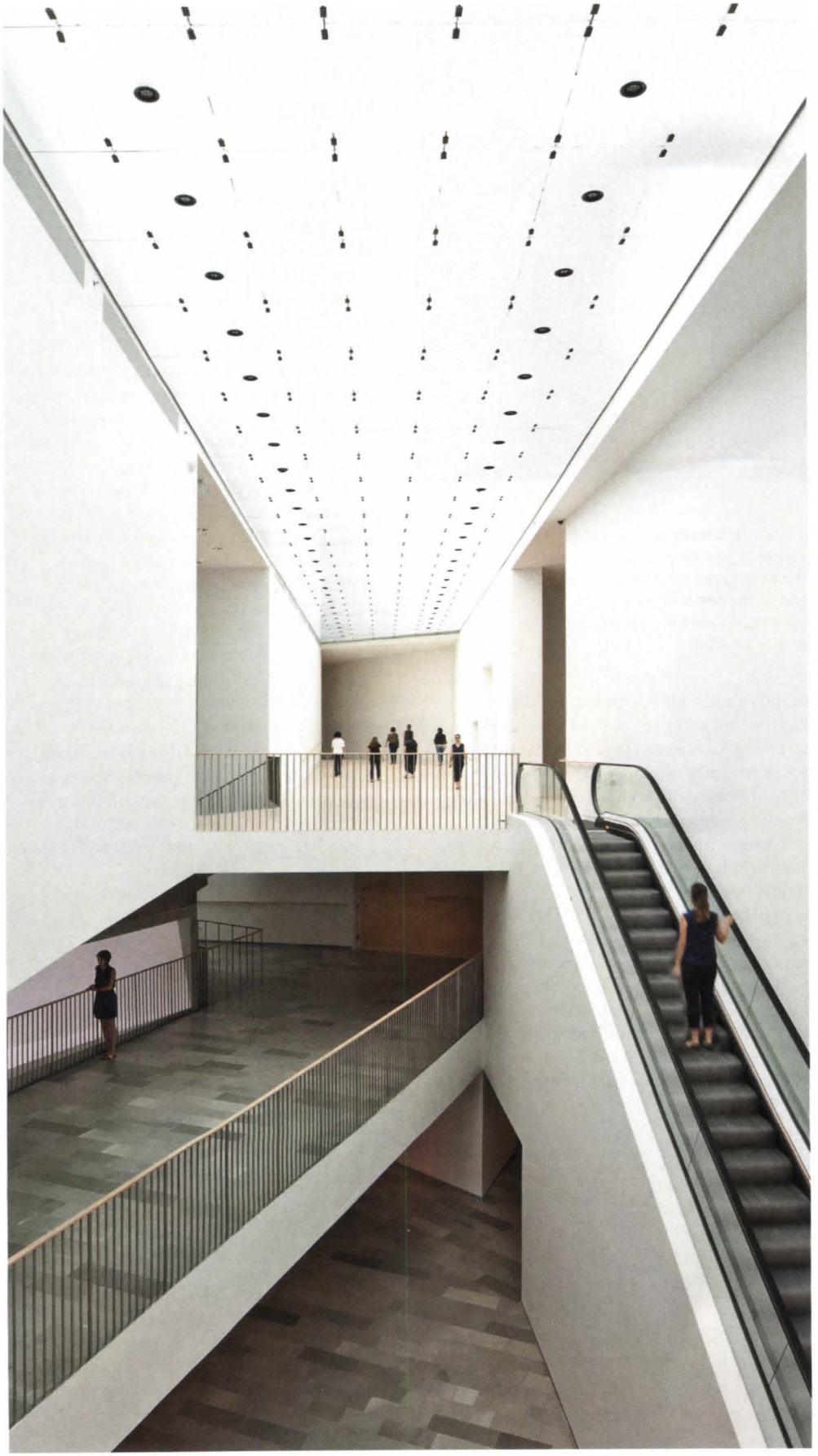
OPPOSITE: **The 87-foot-high void at the center of the Lightfall comes as a dramatic contrast to the building's low-slung appearance from the plaza.**

ABOVE: **The plain, orthogonal galleries spiral around the Lightfall, which asserts its presence at certain places within the exhibition spaces.**

RIGHT: **Long rectangular cuts in the Lightfall offer views through the central void and into galleries on the opposite side.**

OPPOSITE: **Visitors entering from the museum's main building take a long escalator to the Israeli Promenade, a skylit space leading to galleries displaying 20th-century and contemporary Israeli artworks.**





structure. "It's the source of authority in the architecture, not just the leftover space." And because the stairs and ramps around the Lightfall provide most of the circulation in the museum, the galleries can provide more space for art.

Visitors can enter the new building two different ways: through a glass-enclosed connector from the main building or from the plaza. In many respects, the addition acts as a pair of museums, and the circulation into and through it reinforces this impression. If you come from the old building, you arrive at a tall lobby with a long escalator that takes you to a top-floor space called the Israeli Promenade. From there, you follow a path along the perimeter of the building to a series of large galleries exhibiting the museum's acclaimed collection of 20th-century and contemporary Israeli art. In essence, this portion of the building serves as an extension of the existing museum and the collections found there.

If you enter the Amir Building from the plaza, though, you discover a different kind of museum—one dedicated to changing exhibitions, as well as photography, architecture, and design. It also houses a museum shop on the entry level, a 450-seat auditorium below, and a two-story library above. From the plaza, the building appears as a horizontal object rising just a couple of stories. But after you buy your ticket and walk to the Lightfall, you can look both down and up the full height of the atrium. "This plunging, vertical space comes as a surprise," says Cohen.

No matter your route, moving through the new building is an architectural dance between neutral, orthogonal galleries and the ever-changing geometry of the Lightfall. Sculpted as a series of 28 hyperbolic paraboloids, the Lightfall exerts a magnetic pull

CREDITS

ARCHITECT: Preston Scott Cohen – Preston Scott Cohen, principal in charge of design; Amit Nemlich, project architect and architect of record; Tobias Nolte, Bohsung Kong, project team; Steven Christensen, Guy Re Moor, project assistants; Cameron Wu, Andrew Saunders, Janny Baek, competition team

ENGINEERS: YSS Consulting Engineers (structural); M. Doron-I. Shahar Consulting Engineers (HVAC)

CONSULTANTS: Tillotson Design Associates (lighting); Landman Aluminum (glazing consultant)

SOURCES

PRECAST-CONCRETE PANELS: Danya-Minrav

CURTAIN WALL AND GLAZING: Custom by Hezkelevitch Engineering and R.B.R Technologies

toward the center of the building. While its concrete shell is exposed on its sides facing the galleries, white plaster on its interior surfaces reflects daylight throughout the building. Cohen stacked the galleries and rotated each one 22.5 degrees from the next, spiraling the spaces around the void.

The museum's director, Mordechai Omer, who oversaw the project since the design competition in 2003 but died just months before it was set to open in November, had insisted on simple galleries with no direct daylight. While the resulting rooms do provide flexible spaces for many kinds of exhibitions, the larger ones—such as the 9,000-square-foot temporary gallery on the lowest level—come across as cold and distant settings for art. Other museums have found ways of filtering daylight to protect art while using the light to animate gallery spaces.

The architectural energy generated by the Lightfall dissipates on the outside of the building, where large precast-concrete panels form a taut, flush skin of folded planes. Cohen had wanted to continue the hyperbolic paraboloids found in the Lightfall on the building's facades, but this proved to be too expensive. So he created faceted surfaces instead. As a result, the exterior lacks the visual excitement of the interior and seems a bit disconnected from its geometries. The plaza beyond the building, which Cohen redesigned as a hard, abstract plane, would benefit, too, from some shaded areas and places to sit.

Yet the Herta and Paul Amir Building offers Tel Aviv an exciting new place to see art and experience innovative architecture. While its Lightfall activates a powerful, centripetal force inside, it makes strong connections to the museum's main building and to the city's history of embracing radical leaps in Modernism within its urban fabric. ■

ABOVE: **Tucked into the northwest corner of the addition, the library is the only space with columns and one of the few with generous glazing. A lower level provides more space for stacks.**

Continuing Education

To earn one AIA learning unit, including one hour of health, safety, and welfare (HSW) credit, read the entire Tel Aviv Museum of Art project story and its accompanying sidebars. Then complete the test online at no charge at architecturalrecord.com. Upon passing the test, you will receive a certificate of completion and your credit will be automatically reported to the AIA. Additional information regarding credit reporting and continuing education requirements can be found online at ce.construction.com under "resources and requirements."

Learning Objectives

1 Identify the constructability challenges posed by the geometry of the Tel Aviv Museum of Art addition.

2 Describe the materials and construction techniques used to realize this geometry.

3 Describe the structural and building envelope solutions used to realize this geometry.

4 Discuss how the museum project team integrated structural and mechanical systems.

AIA/CES Course #K1111A

[ENVELOPE]

A Folded and Faceted Facade

By Joann Gonchar, AIA

Preston Scott Cohen, architect of the recently opened expansion to the Tel Aviv Museum of Art, refers to the addition's exterior as "the urban version" of the building's Lightfall—the spiraling skylit atrium and circulation space that vertically connects the new galleries. But for reasons of expense, instead of enclosing the building with sensuous curved surfaces similar to those that define the twisting interior space, Cohen opted for a curtain-wall system of precast-concrete panels. No two of the 465 panels are alike, but most are in the shape of quadrilaterals or triangles, and some are as long as 30 feet on a side. They fit together to create a subtly faceted wrapper made up of large folded planes.

Primarily because of the difficulty of finding a precast manufacturer with the necessary expertise, the project team elected to produce the 5-inch-thick cladding elements at the building site, according to Israel Chaskelevitch, principal of the eponymous firm that served as the construction manager through late 2009. Keeping the fabrication process on-site also helped avoid the damage that might occur during transportation, especially to the panels' vulnerable knifelike edges and sharp corners.

Starting in March 2009, and for more than a year after that, contractors cast the panels in a fabrication plant they set up within an already enclosed lower-level gallery. Using smooth, steel-topped tables as the base of the panels' formwork and reconfigurable magnetic dams to define the different shapes and angles, they cast each panel in two layers, placing steel reinforcement before the second pour. The process ensured that contractors could provide the required amount of concrete cover for this reinforcement—an especially important detail due to Tel Aviv's corrosive salt air, Chaskelevitch points out.

The back of the panels incorporate steel plates that serve as the connection points to an underlying support system of vertical steel ribs placed every 8 feet on center and anchored to the building's primary Vierendeel truss structure. With cranes, workers lifted the panels, which weigh as much as 9 tons, into place, and then adjusted their position from behind before welding

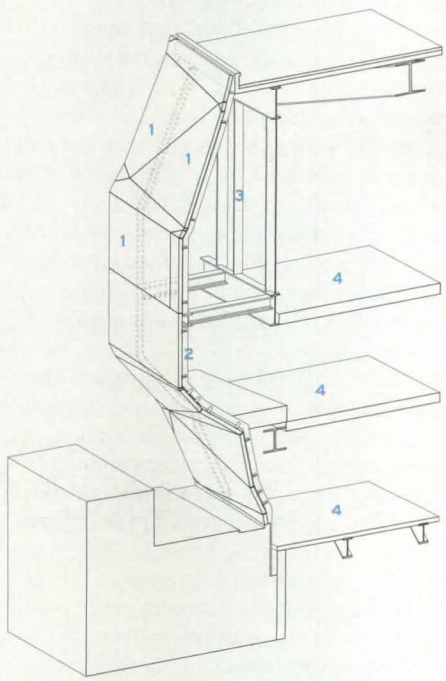
the embedded steel plates to the structural armature. Finally, they filled the resulting 11/16-inch joint between each cladding piece with a special combination of sealants recessed about an inch from the surface to create a reveal.

Although the facade material wasn't specified in Cohen's 2003 competition entry, he always envisioned the addition's exterior as concrete. He preferred it over other materials, he explains, because he wanted to tie his expansion to Tel Aviv's modern architecture and the mostly exposed concrete and white stucco buildings that have earned it the moniker "the White City." He hoped to avoid making a building that seemed like it belonged in Jerusalem, he says, where everything is built of honey-colored stone.

The client, however, had other preferences, and the drawings released for bid in 2007 called for stone-clad, cast-in-place concrete walls. The architect credits the construction manager for devising the curtain-wall-and-precast solution and for winning over the reluctant client with full-sized mock-ups of a 30-foot-square portion of both proposed assemblies. Not only was the precast option less expensive, but it also allowed for larger cladding elements—especially for the cladding suspended from the soffits, where the weight of the stone would have necessitated small, mosaic-like pieces. "The sheer size and smoothness of the panels was overwhelmingly impressive," says Cohen, referring to the concrete mock-up. Amit Nemlich, project architect, confirms that the final cladding solution was the most appropriate one. "Tel Aviv is a new city," he says, "and concrete is a modern material." ■

ABOVE: **To fabricate the precast cladding, contractors set up a shop in an already enclosed lower-level gallery. They used steel-topped tables as the formwork base and reconfigurable dams to define the panels' different shapes and angles.**

TOP: **The facade panels, which are as long as 30 feet on a side and weigh up to 9 tons, are secured with welds to an underlying armature of steel ribs. These elements, placed every 8 feet on center, are tied to the building's primary structure.**



FACADE
SECTION - AXONOMETRIC

1 PRECAST-CONCRETE PANELS
2 PANEL-SUPPORT STRUCTURE
3 VIERENDEEL TRUSS
4 FLOOR SLABS

PHOTOGRAPHY: UHAD MATALON, COURTESY TEL AVIV MUSEUM OF ART

[STRUCTURE]

A Spiraling and Twisting Core

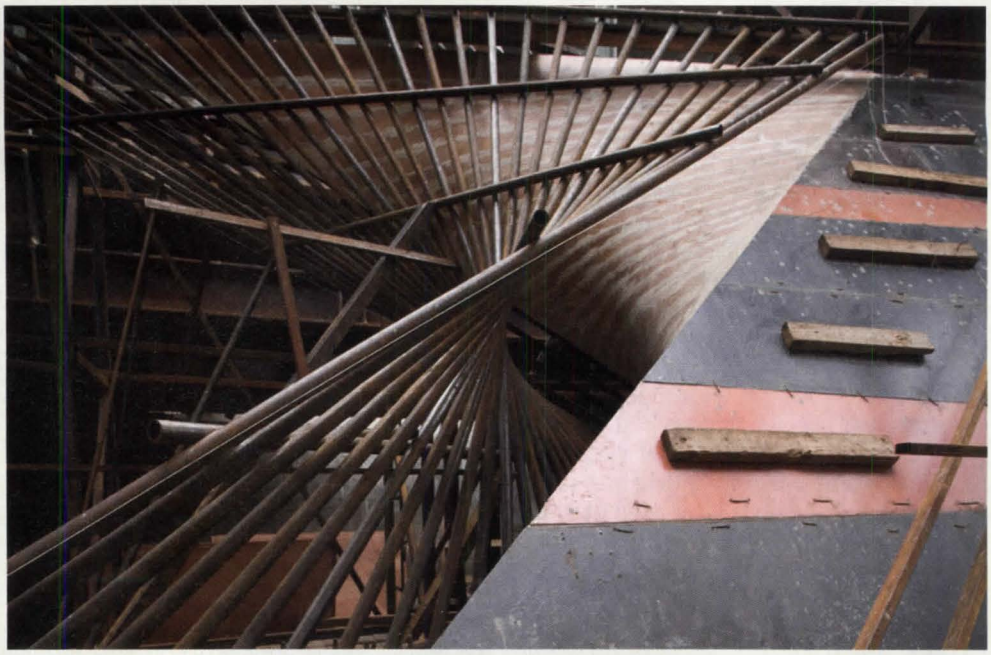
The atrium, or Lightfall, inside the just-completed Amir Building addition to the Tel Aviv Museum of Art serves much the same purpose as the space at the heart of Frank Lloyd Wright's Solomon R. Guggenheim Museum in New York City: Both are dramatic, sculptural voids with circulation spiraling around their perimeters. But the similarities end there, points out Preston Scott Cohen, the new building's architect. Unlike the Guggenheim atrium, the Lightfall "doesn't consume the whole museum," says Cohen. It allows for the flexible, rectangular galleries that his client desired.

Although the shapes of the Tel Aviv Museum's new exhibition spaces are much more conventional than that of the Lightfall they surround, the structure of the galleries is still complex, notes Dani Schacham, a partner with YSS, the project's structural engineer. The galleries are composed of stacked structural systems, with each level rotated 22.5 degrees relative to the one below. Vierendeel trusses, some carrying two levels and almost 30 feet deep, span as much as 110 feet. These carry smaller intermediary members.

In addition to providing large, mostly column-free exhibition spaces, the strategy permitted designers to take advantage of the structure's depth for ductwork and other equipment, without encroaching on the height of galleries. However, routing the mechanical systems around and through the steel members required intense coordination with the project's 3-D model and among different trades, points out Amit Nemlich, project architect. "HVAC integration was a real challenge," he says.

All involved in the project agree that the Lightfall proved an even tougher design and construction problem because it is made up of 28 poured-in-place concrete hyperbolic paraboloids, or doubly ruled surfaces curved like saddles and often referred to as "hypars." Schacham describes the configuration of the Lightfall's surfaces as a "rectangular spring": Each hypar is supported by adjacent hypars, so that they form a self-supporting object that coils vertically 87 feet, bringing daylight from a skylight to the lowest gallery level, more than 42 feet below grade. The assemblage, which is structurally independent from the surrounding gallery framing, is designed to withstand gravity and seismic loads, but with concrete thicknesses of only 6 or 7 inches. However, in some locations, where two surfaces join, the concrete is as thick as 15 inches. The Lightfall walls would have been even thicker at its prowlike corners, but contractors devised steel cages for these areas that remain buried in the concrete and define interior voids. The hollows reduced the amount of concrete required, along with its associated loads, and made it possible for workers to fasten the formwork with tie rods.

The concrete surfaces are finished in white plaster on the Lightfall's interior but left exposed on the gallery-facing side, revealing the imprint of the formwork constructed of



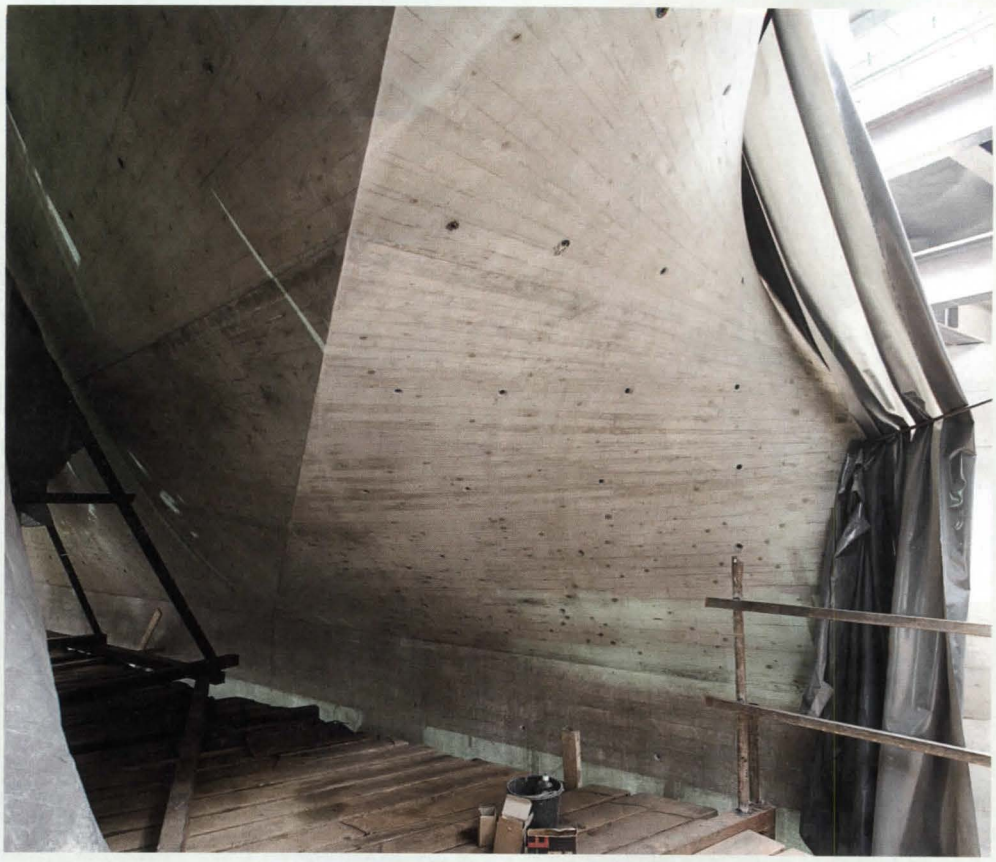
TOP: **The formwork for the twisting Lightfall consisted of three layers: curved spruce planks assembled in a fashion similar to shipbuilding, sheets of bent plywood, and steel tubes welded together in a fanlike fashion.**

BOTTOM: **Embedded inside the Lightfall's surfaces is a dense network of rebar.**

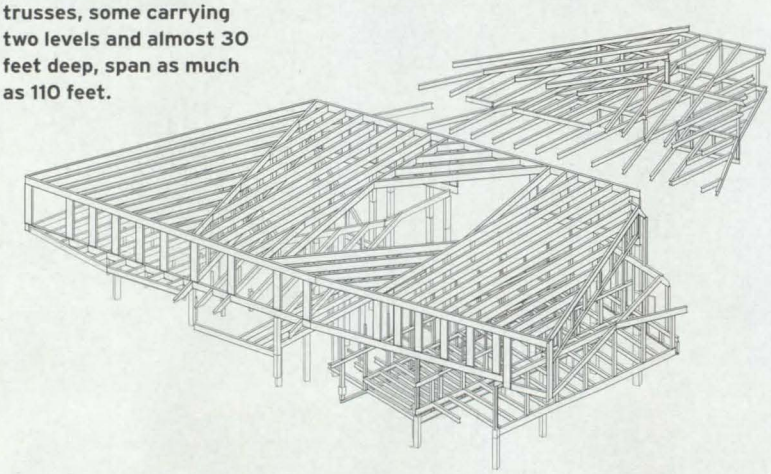
OPPOSITE TOP: **The concrete surface is left exposed on the gallery-facing elevations of the Lightfall, revealing the imprint of the formwork.**

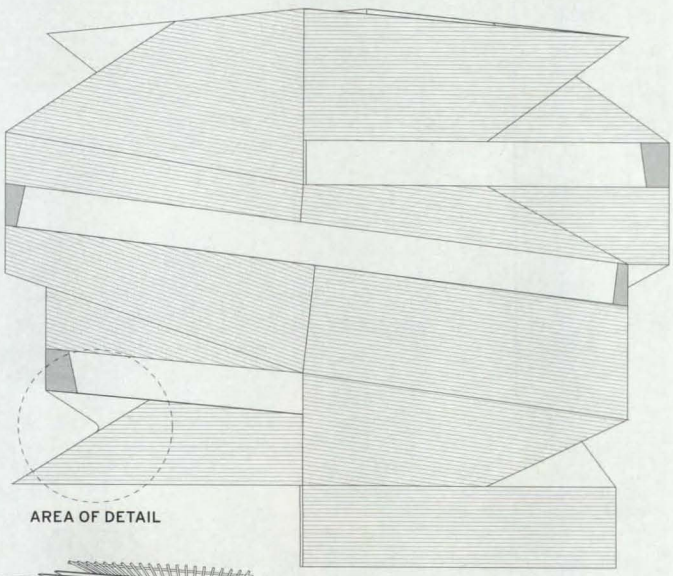
curved 3-inch spruce strips in a process that Nemlich likens to shipbuilding. Contractors braced this hull-like inner formwork layer with bent plywood sheets and an outer structure of straight steel tubes welded together in a fan-like array to conform to the hypars' curves.

Embedded inside each hypar is a dense network of reinforcing bars. Once a pour began, contractors hit the formwork with mallets and applied vibration to prevent air from becoming trapped and to ensure the concrete's complete consolidation. They also carefully monitored the speed of the hydration process to avoid cracking—a particular concern in the few areas where the concrete is especially thick. Because of the demanding geometry and a desire for pristine surfaces, some of the hypars took as long as a month to construct, according to Israel Chaskelevitch, principal of construction management firm Chaskelevitch Engineering. "Even the concrete that would be covered with plaster needed to be precise," he says. *J.G.* ■

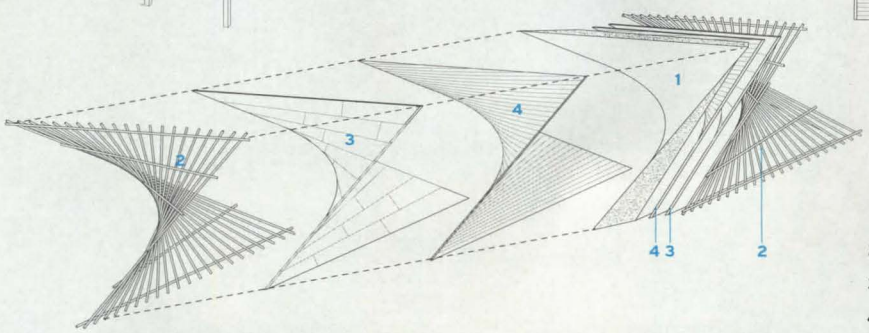


BELOW: **The galleries surrounding the Lightfall are composed of stacked and rotated structural systems. Vierendeel trusses, some carrying two levels and almost 30 feet deep, span as much as 110 feet.**





LIGHTFALL - WEST ELEVATION



FORMWORK DIAGRAM

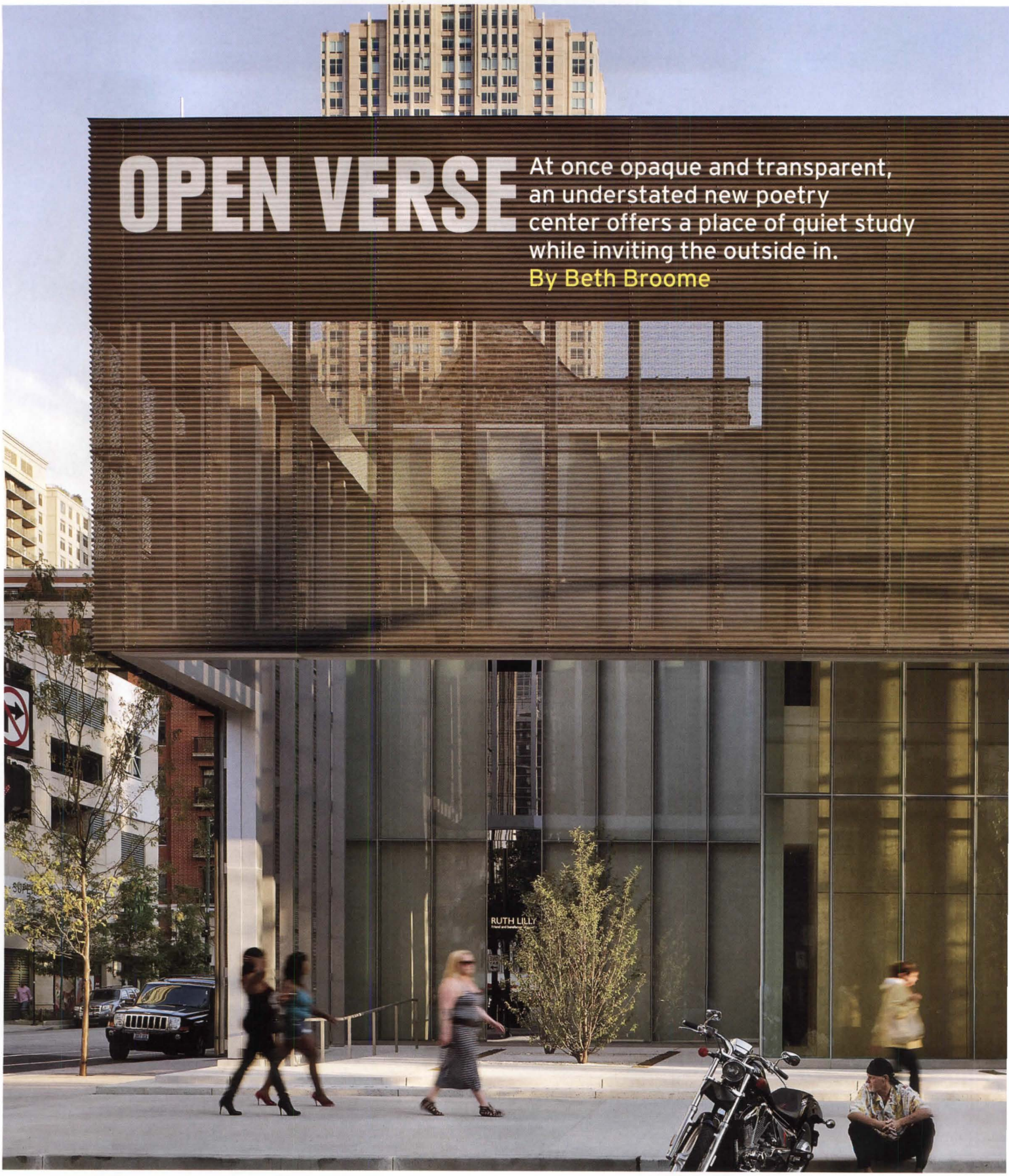
1 CAST-IN-PLACE CONCRETE
2 STEEL PIPES
3 BENT PLYWOOD
4 SPRUCE PLANKS

Poetry Foundation | Chicago | John Ronan Architects

OPEN VERSE

At once opaque and transparent, an understated new poetry center offers a place of quiet study while inviting the outside in.

By Beth Broome



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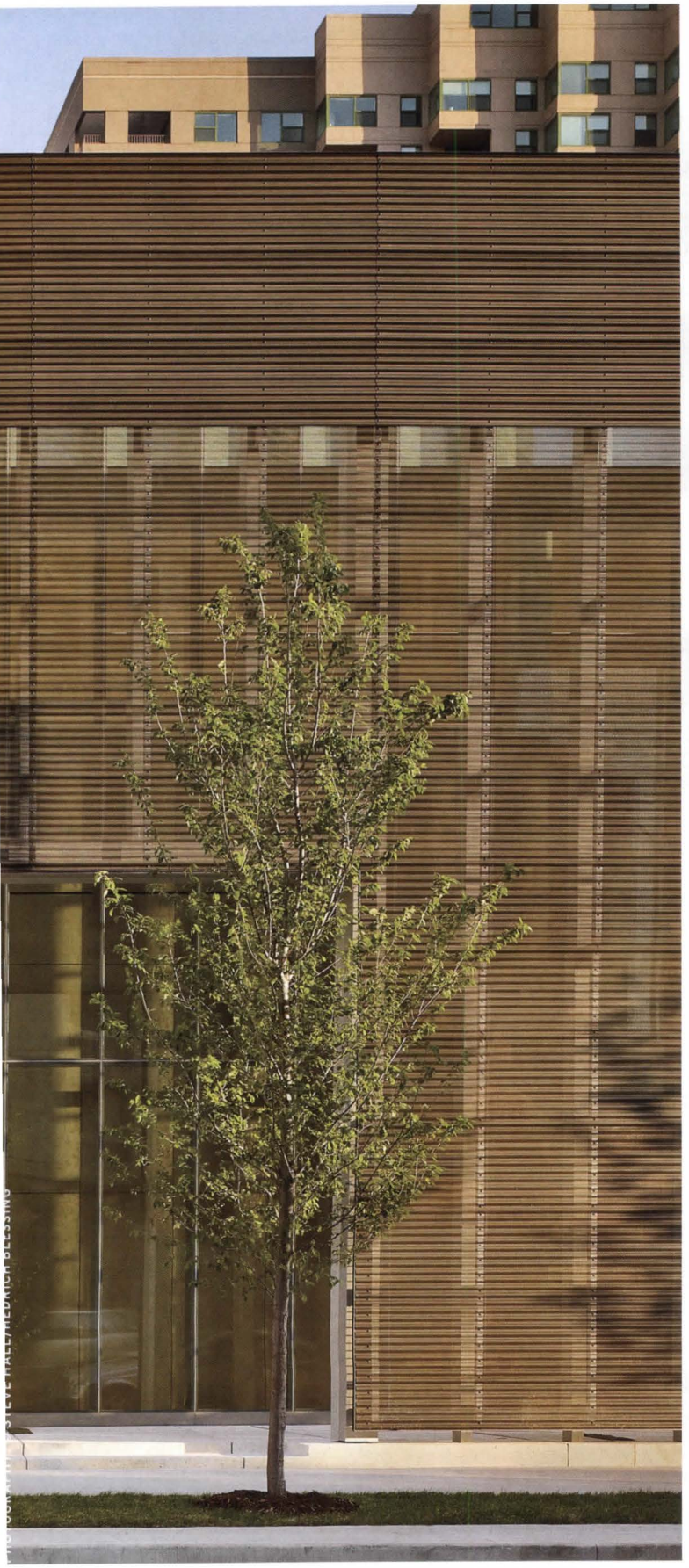
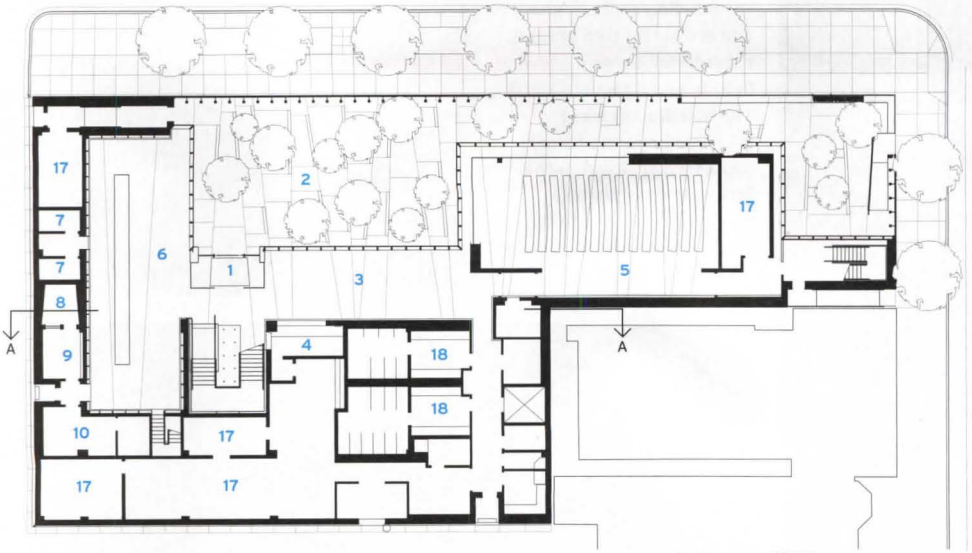


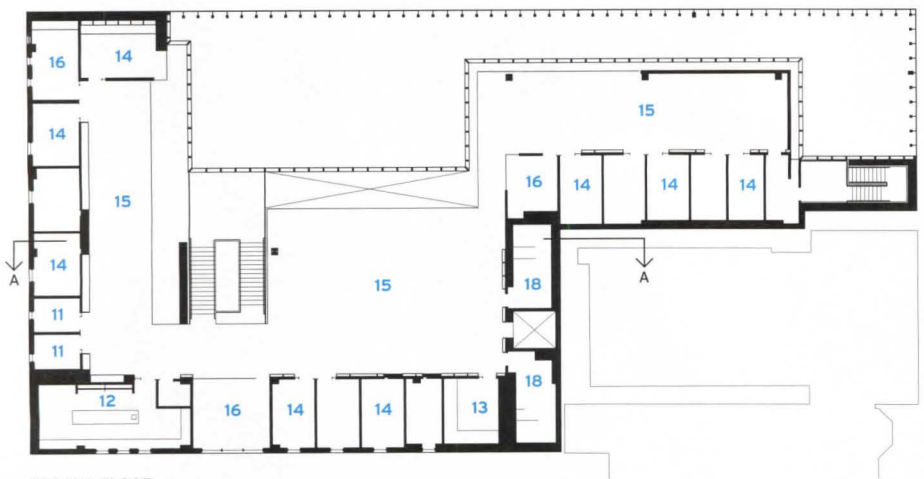
Walls of oxidized zinc define the building's site boundary and are perforated around the interior garden, allowing light in and views out (left). The building is raised slightly above the street plane (right). A cut in the facade invites visitors behind the scrim into the garden and building (below).

IN THE ROMANTIC version of the story, creative genius endures poverty in pursuit of a higher calling. Rodolfo and Mimì's story would not have been *La Bohème* without the famously shabby garret, from which Rodolfo's poetry flowed. But as Chicago's new center for the Poetry Foundation by John Ronan Architects shows, a windfall of cold cash certainly can help when trying to make concrete an architectural idea.

The building, which opened in June, has its origins in a classic rags-to-riches story. *Poetry* magazine, founded by Harriet Monroe and published continuously since 1912, lurched along on a shoestring budget for most of its history. The magazine's life was turned upside down in 2002 when Indianapolis pharmaceutical heiress Ruth Lilly bequeathed about $200 million to the little publication. Soon after, the Poetry Foundation (which grew out of the Modern Poetry Association) was formed. One of its early decisions was to build a permanent home for



FIRST FLOOR



SECOND FLOOR

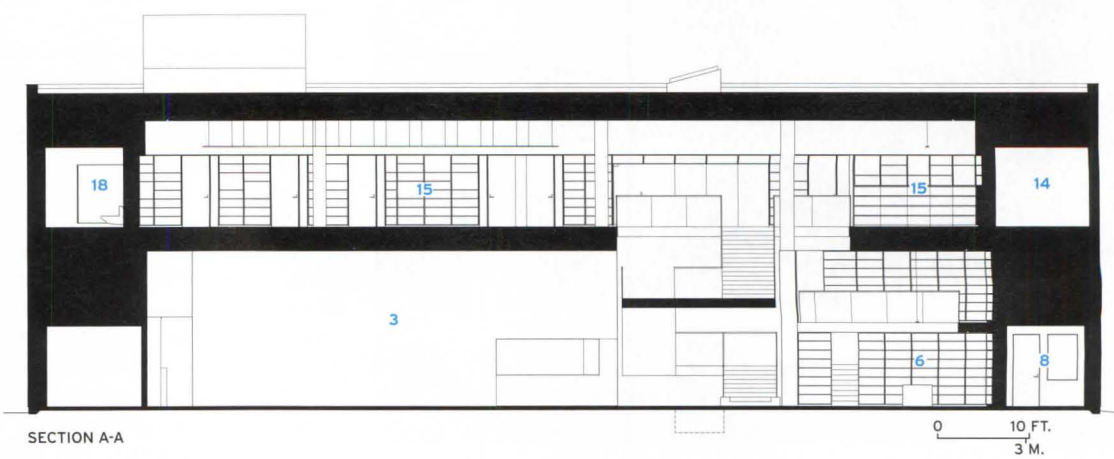
1 ENTRY VESTIBULE
2 GARDEN
3 GALLERY
4 RECEPTION
5 PERFORMANCE SPACE
6 LIBRARY
7 LISTENING ROOM
8 ISOLATION ROOM
9 CONTROL ROOM
10 WORKROOM
11 PROOFREADING
12 COPY ROOM
13 LAYOUT
14 OFFICE
15 OPEN OFFICE
16 CONFERENCE
17 MECHANICAL/ELECTRICAL/STORAGE
18 TOILET

Poetry, which had long housed its collection of books, manuscripts, and recordings in the basement of Chicago's Newberry Library and hosted readings in borrowed spaces around the city. Predictable controversy erupted when some of the foundation's trustees opposed the decision, decrying the hubristic palace they believed would result.

John Ronan says he steered clear of the internal politics, keeping his sights on the task at hand. Initial visioning sessions revolved around the question "What is a building for poetry?" "There's no paradigm for this building," the architect points out. In any case, what he has created is not trophy architecture. In keeping with the art form it serves, the new Poetry Foundation is a respectful, restrained building that employs an economy of means and methods, just as a good poem employs an economy of language.

While giving physical presence to the foundation, the new 22,000-square-foot building also had to reflect its mission: to help poets pursue their art, and to raise poetry's profile and bring it to the public by making it visible and accessible. The choice of this urban site—a corner lot in Chicago's North River neighborhood surrounded by residential towers—and the decision to make transparency central to the building design address these desires. In addition to offices, the client requested a library to house its 30,000 noncirculating volumes, a dedicated space for readings, and a gallery for related exhibitions. One of the more unusual requirements was for a garden that could be used to host events. Exploring this element drove the initial design investigation and resulted in a 4,000-square-foot courtyard carved out of the site's north side.

To define the site's boundary—without rendering the building opaque or fortresslike—Ronan wrapped the perimeter with a corrugated, oxidized zinc wall, which, around



SECTION A-A

ABOVE: **In the evening, the foundation transforms into a glowing event space.**

FAR LEFT: **Rather than tucking away the library in a hidden corner, the foundation displays its collection. Visitors encounter double-height shelves of books before even passing through the main entry.**

LEFT: **The garden's American hornbeam and sweetbay magnolia trees will eventually grow into a soaring canopy.**

A POET'S PERSPECTIVE

Billy Collins,
U.S. Poet Laureate, 2001–2003

What is the role of poetry in contemporary life?
It is a vital but minor one. Poetry isn't for everyone; it suffers from the competition of other louder and more immediately glamorous forms of information transferal like television. Many people have been driven away from it in high school, but it's very much alive and well.

What was your experience of the new Poetry Foundation building?
The Center is an amazing building. It's spectacular in the original sense of that word—it really knocks your eyes out when you see it. But the odd thing about having a building for poetry is that poetry doesn't require housing; it's distinguished as an art because of that. I was there for the opening and I watched people on the street walk past, struck by the building. Then they read "Poetry Foundation" in front of it, and they are confused. One thing a glamorous building like this does is correct the idea of poetry as the poor Little Match Girl of the arts. We think of poets as living in garrets and hiding in universities; we don't expect poetry to make such dramatic architectural statements as this building does.

What was it like to read there?
The acoustics are very good. The one drawback is that, facing the podium, the wall on the right is glass, and that's where people walk into the building. So as a reading or lecture is going on, you have a distracting traffic of people coming in and out that are looking in to see what's going on, so people look out to see them. Sometimes you want a space to be enclosed and sealed off from what is going on without.

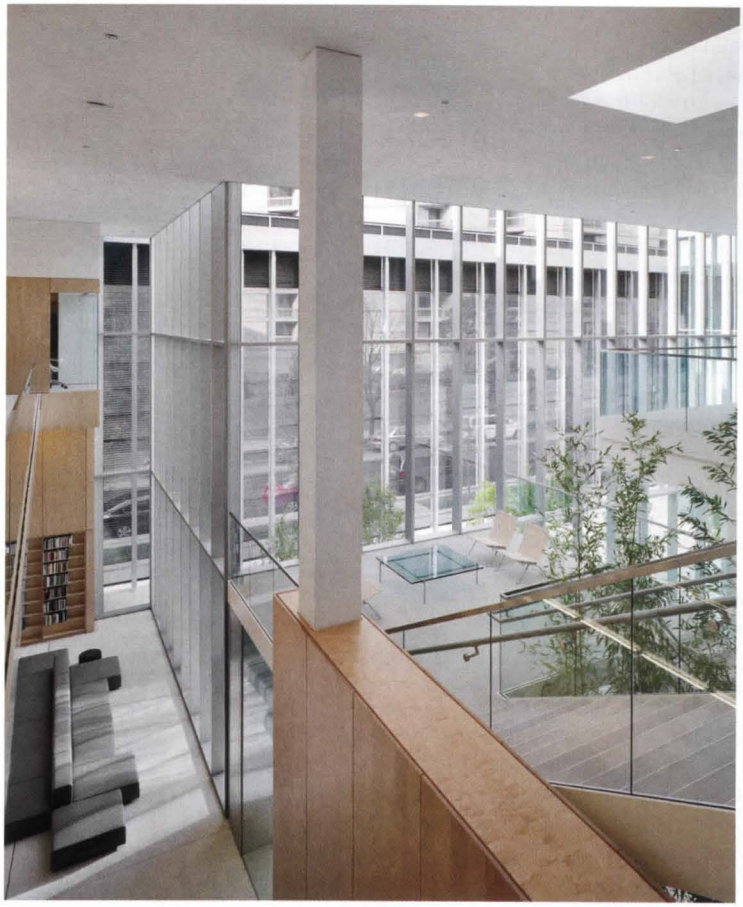
Is the building poetic?
A lot has been said about poetry and architecture, but usually that's just a metaphor. Ronan did say that he wanted to construct this building as a kind of parallel to a poetic experience. The building is basically glass, and you might say there are two kinds of poetry: One is stained glass and one is clear glass. Stained glass poetry wants to be very decorative and colorful and have a brilliant surface, and the poetry I prefer, the poetry of clear glass, makes you want to see through it to something vital. As you walk through the building you get many angles from which to look at the interior. If you walk 25 or 30 feet in some direction and turn around, you are seeing an entire reconfiguration, and that is actually a quite accurate physical representation of what a poem does.

Interview by Rita Catinella Orrell

the garden, becomes perforated and veil-like, blurring the lines between inside and out.

As you pass through a narrow corridor formed by the metal screen and the glass front of the performance space, you reach the garden and, through double-height windows, see the library's colorful patchwork of book spines lining shelves on two levels. Baltic birch plywood embraces the interior by forming the shelves as well as paneling. The building is conceived as layers of materials—zinc, glass, and wood—that compress and then separate to create different spaces. "The idea is that this spatial narrative unfolds as visitors move through and between these layers," says Ronan. "We were trying to achieve a transcendent materiality where we take very humble materials and then ennoble them in some way—not unlike what a poet would do with words." For example, the team spent months developing the sandblasted concrete (for the ground-level floors that extend out into the garden), which incorporates white silica and cement and specks of slag, lending it a warmth and complexity.

Inside, public spaces occupy the ground floor while the offices upstairs are organized according to operations: administrative, magazine and website, and programs. The north, garden-facing glass, which jogs in and out, admits abundant, diffuse light, even on



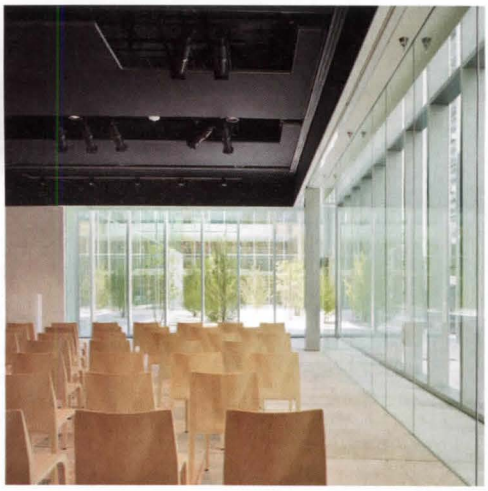
OPPOSITE: **Just beyond the entry vestibule, the main stair leads to second-floor offices.**

LEFT: **Daylight floods into the building through skylights and a north-facing glass facade. Inside, each vantage point presents unique views through and out of the building. Beyond the garden and perforated screen, cars pass silently on West Superior Street.**

BELOW: **A 44-foot-long study table occupies the library, and diminutive cork stools define the children's reading area. A loungelike stair landing floats above the entry.**

an inclement day, and helps to visually connect the different spaces. To balance the conflicting demands of a building that celebrates its urban surroundings while functioning as a center of quiet work, the team employed a host of acoustic strategies, such as varied surface materials and an interior glass wall in the performance space, where poets read without amplification. During the day the foundation hums with the hushed business of the staff and visitors. At night, when it hosts readings, the building transforms into an elegant, diaphanous event space, as light and activity spill out into the garden and the street beyond.

Foundation president John Barr says that since the building's opening, use of the library and attendance at readings and functions have increased exponentially—and that, including its website, the foundation now reaches about 19 million people compared with just 10,000 *Poetry* subscribers previously. "A good poem has something indefinable, or magical, about it that keeps you coming back to experience it again," he says. "And our hope is that this building does that in architecture—it keeps people returning." ■



ABOVE: **The 125-seat poetry reading room connects to the garden and street with floor-to-ceiling windows and combats noise with interior glass walls and a stretched fabric ceiling and wall, among other acoustic strategies.**

BELOW: **Open offices look down onto the garden and into the gallery, watched over by a vinyl transfer portrait of *Poetry* magazine founder Harriet Monroe.**

CREDITS

ARCHITECT: John Ronan Architects – John Ronan, lead designer; Tom Lee, project architect; Evan Menk, senior technical coordinator; John Trocke, Marcin Szef, Wonwoo Park, design team

ENGINEERS: Arup (structural); dbHMS (m/e/p/fp); Terra Engineering (civil)

CONSULTANTS: Reed Hilderbrand (landscape); CharterSills (lighting); Threshold Acoustics (acoustic)

GENERAL CONTRACTOR: Norcon

SIZE: 26,000 square feet (including garden)

COST: $10.2 million (construction)

COMPLETION DATE: June 2011

SOURCES

METAL PANELS: Umicore Building Products

CURTAIN WALL: CMI Architectural Products

GLAZING: Viracon (glass); LinEl Signature (skylights)

ACOUSTICAL CEILINGS: Armstrong

RESILIENT FLOORING: Johnsonite; Armstrong

CARPET: Bentley Prince Street

OFFICE FURNITURE: Herman Miller

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CIRCLE 32

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CIRCLE 76

From concept to completion

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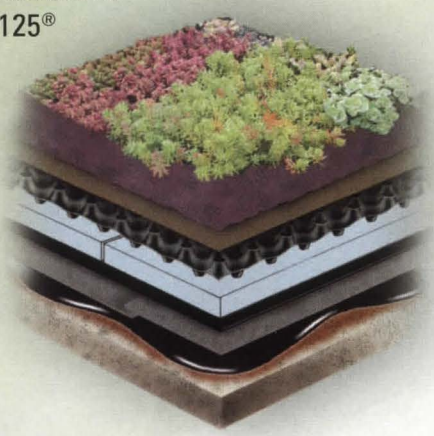

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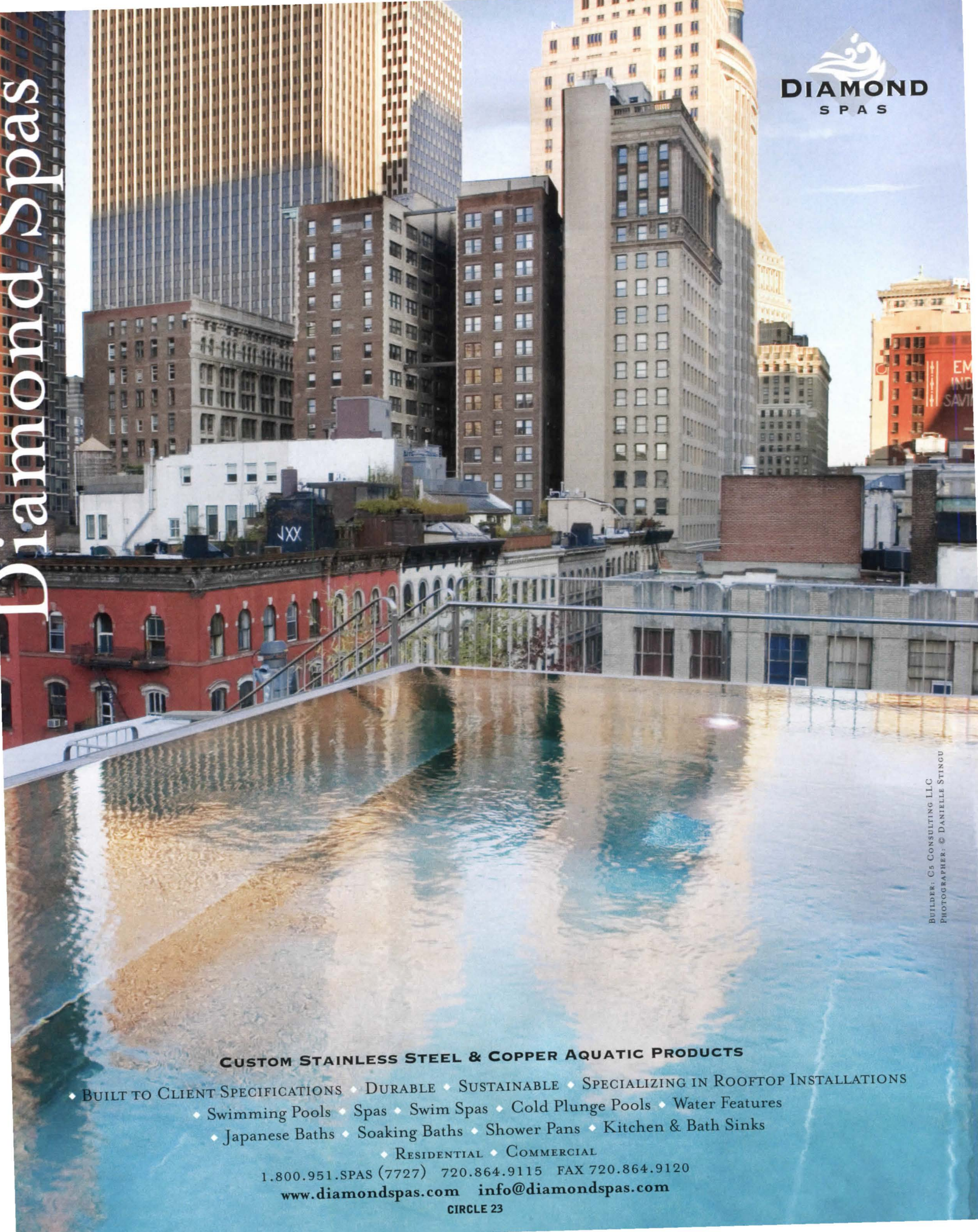
CIRCLE 40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CIRCLE 67

Morse and Ezra Stiles Colleges

New Haven

KieranTimberlake's renovation and expansion retains the medieval-modern spirit of the Eero Saarinen–designed complex at Yale.

By Suzanne Stephens

WHILE REGARDED as one of Eero Saarinen's most distinctive works during his short career, the Morse and Ezra Stiles Colleges at Yale University (1958–62) in New Haven have long seemed more appealing in photographs than in real life. Part of the reason is the surrounding competition: When you walk past the chunky, textured stone of the Collegiate Gothic residential colleges designed by James Gamble Rogers from 1925 to 1934, it's a little hard to adore the pasty, raw concrete and stone aggregate surfaces of Saarinen's stolid clusters. Even Vincent Scully, master of Morse College from 1969 to 1975, admits, "I liked Rogers's Branford and Berkeley better, but I didn't have a choice. [Yale president] Kingman Brewster assigned me to Morse because of my association with modern architecture."

Saarinen, who had studied at Yale in the 1930s, was aware of Yale's obsession with residential Collegiate Gothic (or Georgian) quadrangles, many of which were coming to completion while he was there. By the time Saarinen got the commission to design Morse and Stiles in the late 1950s, he had studied such historic settings as Italy's village of San Gimignano and the Campo in Siena. His scheme for the Yale colleges featured four-story housing punctuated by a 10-story tower and a 14-story one. The complex embraced a grassy crescent courtyard, hemmed on the other side

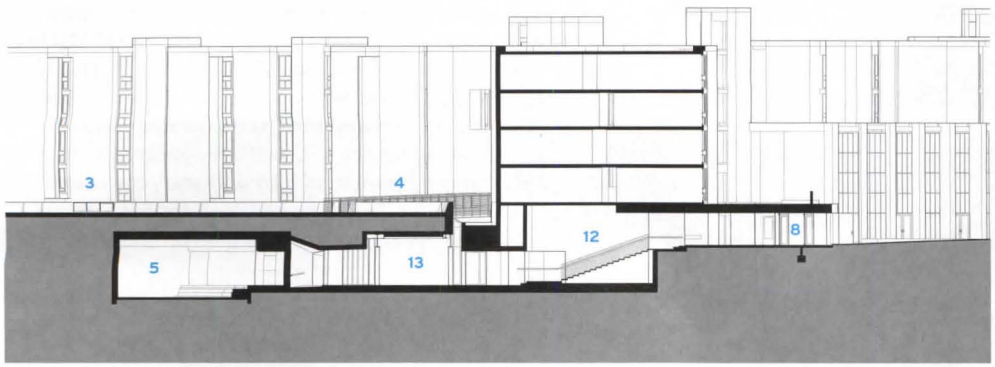
KieranTimberlake's reworking of the Saarinen complex keeps the aboveground exteriors intact. A new steel and locust wood bridge leads from the colleges down to the crescent courtyard.

View additional images online.

1 STILES COLLEGE
2 MORSE COLLEGE
3 CRESCENT COURTYARD
4 BRIDGE
5 THEATER
6 ARTS
7 FITNESS
8 STILES LOBBY
9 MORSE LOBBY
10 STILES COURTYARD
11 MORSE COURTYARD
12 STILES STAIR
13 CIRCULATION

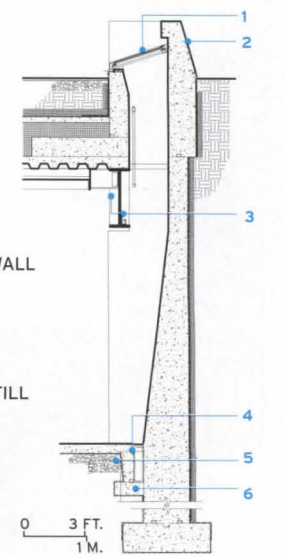
HYBRID PLAN, UPPER AND LOWER FLOOR

SITE PLAN

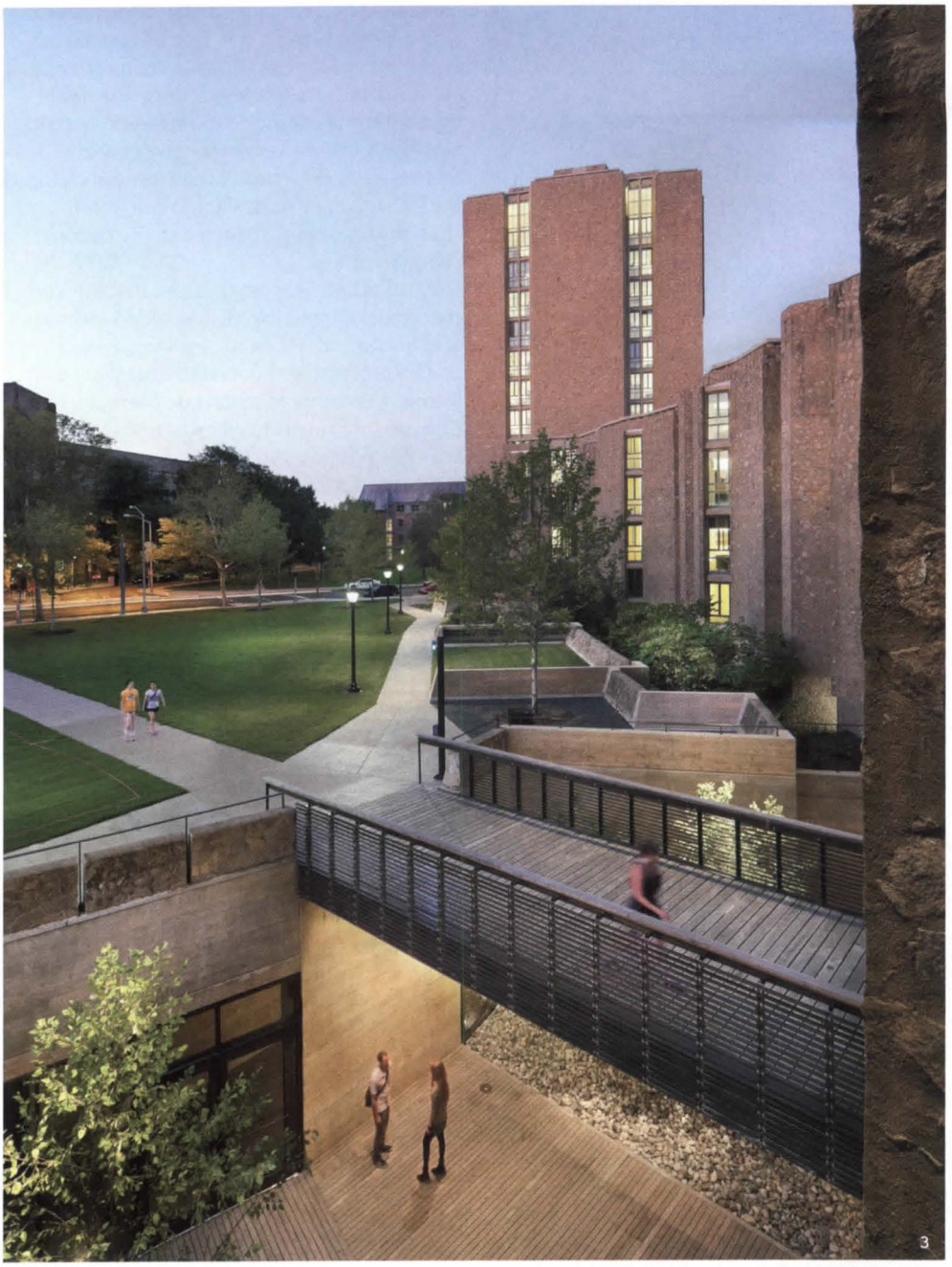


SECTION A-A

1 SKYLIGHT
2 CONCRETE WALL
3 STEEL BEAM
4 PLENUM
5 CONCRETE GRANULAR FILL
6 WATERSTOP



WALL SECTION SKYLIGHT DETAIL



1. **Today's crescent courtyard closely resembles the 1962 original. However, the moatlike edges have been rebuilt to include skylights that illuminate the activity areas extending under the lawn.**

2. **Morse's and Stiles's (shown) courtyards now each have a terraced deck of ipé wood extending from the dining room, replete with a water feature. From the colleges' separate courtyards on the southeast, the grade drops about 7 feet to the lawn of the crescent court on the northwest.**

3. **KTA carved out a below-grade court between the two colleges at the edge of the crescent courtyard to create an expansive lightwell for the subterranean spaces.**

by Tower Parkway. Saarinen intended the complex at the western edge of campus to be a porous village, with pathways allowing more freedom of pedestrian movement than found in the enclosed quadrangles. But by the late 1960s, with student unrest, town-gown problems, and the admission of women, the village turned into a castle keep under lock and key.

Rather than resort to stone or brick, Saarinen built the colleges of poured-in-place concrete. He mixed in a large-scale, crushed granite so the aggregate would have a flinty, hard, angular quality. Yet the resulting exterior, notes Scully, is "kind of soft and flat-looking, like adobe." The battlement massing was unforgiving. Scully recalls, "Paul Rudolph [chair of the School of Architecture from 1958–67] used to say it looked like a set for *Ivanhoe*."

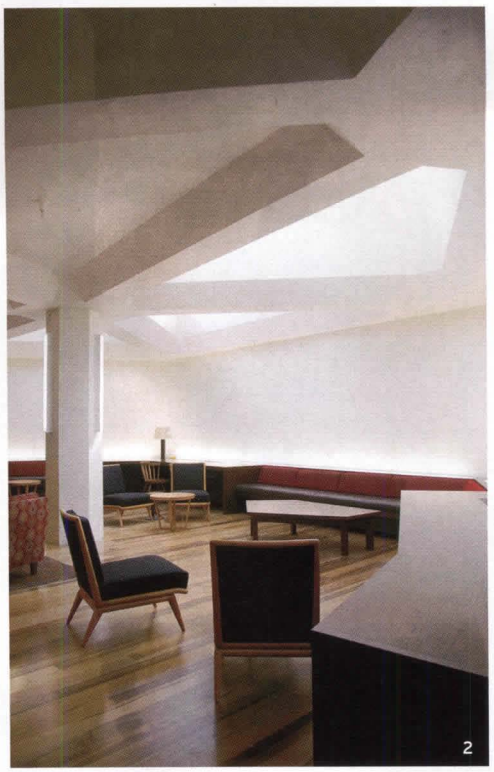
Today the modern-medieval fortress has softened with age—although it could stand a bit more ivy. When Yale decided it was time to renovate and expand the colleges, it hired KieranTimberlake Architects (KTA) to remedy problematic features that had existed since 1962. One of KieranTimberlake's assignments was to reconfigure the living quarters for the 500 students. (Each residential college also includes a Saarinen-designed house for the master, plus accommodations for each dean and two fellows.) Saarinen, in accordance with a wish expressed by a student survey, had designed the rooms as stand-alone singles. But over the years, it became clear that the students wanted single rooms that were integrated into suites, typical of Yale's other residential colleges. KTA, which already had redone Berkeley, Silliman, Pierson, and Davenport Colleges, carried out the mission with jigsaw-puzzle precision.

In its 285,000-square-foot renovation and expansion, the Philadelphia firm preserved the concrete and stone exterior but added 25,000 square feet of new construction underground. In doing so, KTA reclaimed basement areas and created a two-level addition extending underneath the crescent courtyard on the northwest side of the complex. Here now are new social and recreational spaces—a theater, as well as arts, dance, exercise, and music studios—that budget cuts hobbled in the original. "Putting in foundations and waterproofing was a structural tour de force," says KTA's Stephen Kieran. "Conceptually, we poured forms and spaces like lava under the existing buildings and let them flow out."

To get light into the underground spaces, the architects carved out a below-grade court in the space between the two colleges and redesigned the moatlike walls edging the colleges to incorporate skylights. They cut up the original concrete walls of the moats into panels and combined them with new board-form concrete ones. The subterranean concrete and steel-beam structure also includes massive tree wells for new planting above, while a steel and wood bridge spans the sunken court.

KTA also redesigned the two smaller sloping grassy courtyards on the south; now Morse's and Stiles's dining halls open onto outdoor ipé wood decks. Reclaimed storm water trickles down the terraced landscape the students refer to as "the beach."

One of the more dramatic transformations involved reworking the common rooms across the entryways from the dining halls. Saarinen



had hoped to create rathskeller-like spaces, which he did using a concrete hexagonal columns with radiating ribs that create triangular coffers. The architectonic ceiling was never appreciated because the rooms were so dark. Since KTA inserted concrete and glass monitors between the arms of the ribs, and changed the floors from a dark slate to oak, more students have been attracted to the lighter common rooms.

All in all, the renovation and spatially complex underground expansion keep Saarinen's architecture intact, while evoking as well Louis Kahn's rugged concrete forms and Carlo Scarpa's detailing of materials. More important, getting rid of the old palace-basement sensibility appears to be successful with the residents. According to the current master of Morse College, Frank Keil, and the master of Stiles, Stephen Pitti, the students now want to be assigned to the colleges—a far cry from the days when they asked to be transferred out. ■

1. **KTA designed the underground areas to receive ample light through a sunken courtyard and glazed walls, while giving circulation areas architectural expression with sloping concrete ceilings.**

2. **Light monitors inserted between arms of the concrete ribs in the common rooms transformed the spaces, as did replacing most of the slate floors with oak.**

3. **A new subterranean crafts workshop under Morse College has board-formed concrete walls and skylights.**

4. **KTA renovated Stiles and Morse dining rooms by installing new oak floors, acoustical finishes, lighting and restored chandeliers, plus redesigning the serveries and renovating the kitchens.**

CREDITS

ARCHITECT: KieranTimberlake – Stephen Kieran and James Timberlake, design partners; Evan Yassky, associate in charge; Chris Macneal, technical review; Casey Boss, Andrew Cronin, Richard Hodge, Johann Mordhorst, Jason Niebish, James Unkefer, Kristine Wander, Paul Worrell, Zinat Yusufzai, core design team

CLIENT: Yale University

ENGINEERS: URS (civil); CVM (structural); AltieriSeborWieber (m/e/p/fp)

CONSULTANTS: OLIN (landscape); ARUP (lighting)

SIZE: 285,000 square feet

COST: Withheld at client's request

COMPLETION DATE: September 2011

SOURCES

GLAZING: Oldcastle BuildingEnvelope

METAL AND GLASS CURTAIN WALL: Schüco

METAL FRAME WINDOWS: Hope's Landmark 175

4

Gilman Hall, Johns Hopkins University

Baltimore

Kliment Halsband replaces the void at the core of a stately building with a lively space for study and socializing.

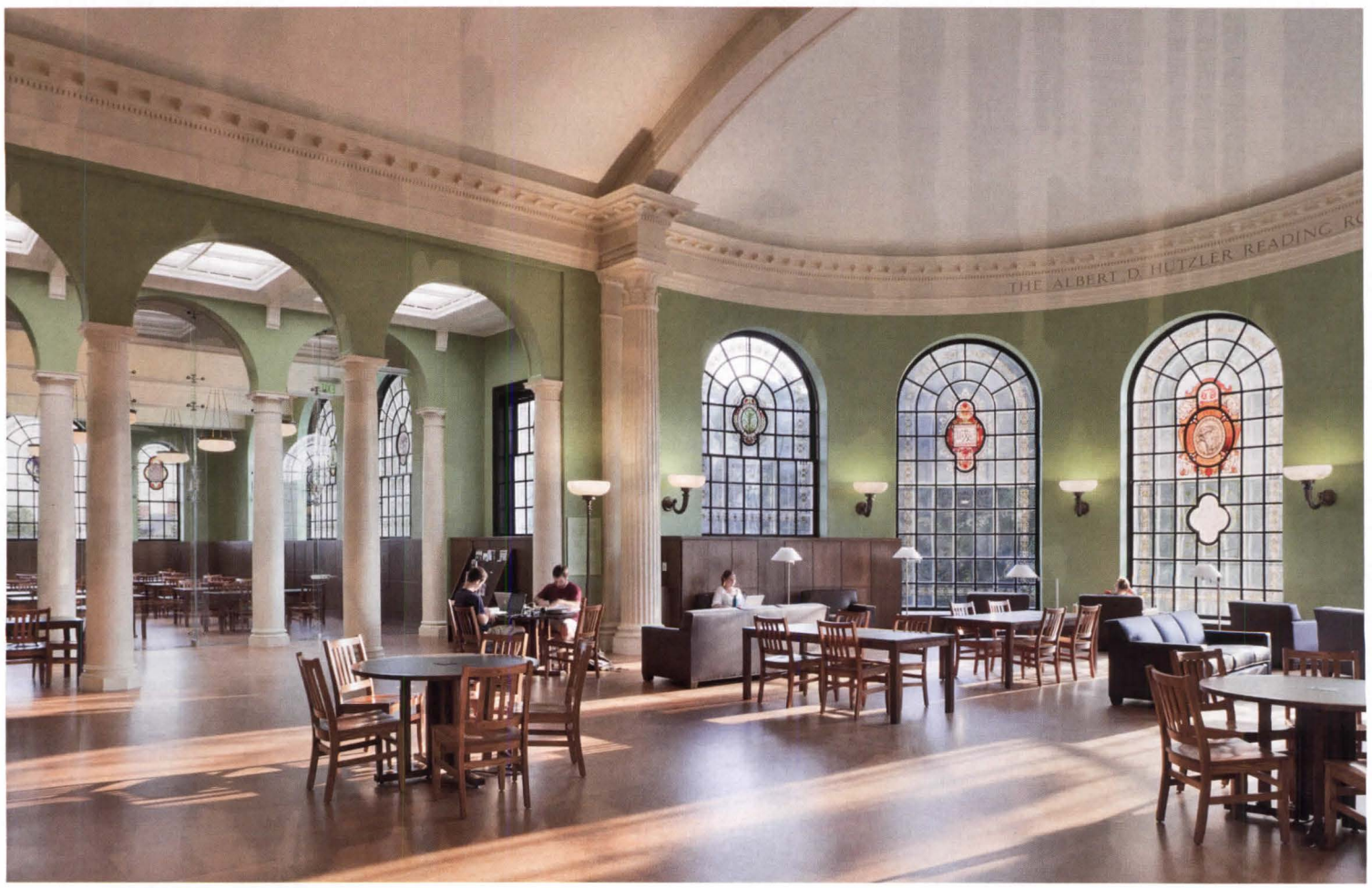
By Joann Gonchar, AIA

WHEN A COLLEGE expands and grows, building shiny state-of-the art facilities at its periphery, the oldest buildings at the heart of campus are sometimes neglected. Such was the case with campanile-topped Gilman Hall at Johns Hopkins University in Baltimore. The Federal style redbrick structure, built in 1915 to house the School of Arts and Sciences, occupied a privileged spot at the head of the main quadrangle. But despite its prominent location, Gilman, which included a library and four stories of office and classroom space around a courtyard, lacked basic infrastructure such as up-to-date climate-control systems and code-compliant stairs—that is, until the completion

LEFT: **The campanile-topped Gilman occupies a privileged spot at the head of the main campus quadrangle.**

BELOW: **The historic reading room now has perimeter millwork that helps disguise mechanical systems.**

OPPOSITE: **In a space that had been an inaccessible light well, the architects created a skylit social hub. The walls' new terra-cotta cladding conceals acoustical material.**



of a $58.6 million renovation last year by the New York City architects Kliment Halsband.

Not only were the facilities antiquated, but Gilman's space was underutilized: The 25,000 square feet of book stacks had sat almost completely empty since the construction of a new library in 1964. In addition, the courtyard, which included an enclosed passageway linking the main entry to a reading room, was inaccessible to occupants. It functioned as little more than a light well.

The client considered Gilman's exterior "a don't-touch zone," according to Kliment Halsband partner Frances Halsband. However, her firm had more freedom on the interior. "We kept what worked, but were completely unsentimental about what didn't," she explains. For example, the architects got rid of the old stacks, claiming the space for new faculty offices, seminar rooms, and administrative areas. And they reconfigured circulation, adding elevators and rebuilding stairs.

The renovation's boldest move was demolition of the courtyard passageway. Its removal allowed the transformation of the previously unusable core into a lively atrium, where students can chat or study. This new gathering space has a precisely engineered tension-grid skylight overhead, white marble salvaged from the old library stacks underfoot, and walls clad in buff terra-cotta panels. These conceal sound-absorptive material, softening what would have been an acoustically harsh environment.

Tucked underneath the atrium is a new archaeology study center. It is surrounded on all four sides by cases for the display of ancient pottery, glassware, and other artifacts and by an almost 8-foot-wide circulation zone open to the skylight above. In certain locations, anyone circumnavigating the study center can peer beyond the objects on view, through a second layer of glass, into the center's interior—a feature that has the effect of making the entire room into an oversized vitrine.

In Gilman's grand historic spaces, the architects' touch was much lighter. In the reading room, for instance, where colonnades separate an apselike area from a pair of side areas, they restored stained glass windows, replaced historically unsympathetic lighting with replicas of the original torchères and wall sconces, and disguised new mechanical systems in paneled millwork. They also inserted structural glass partitions behind the columns to acoustically divide the main and flanking spaces.

Much of the renovation work focused on improving environmental performance. In addition to the new building systems, changes such as the replacement of single-glazed wood windows with double-glazed versions and the furring out of perimeter walls for insulation

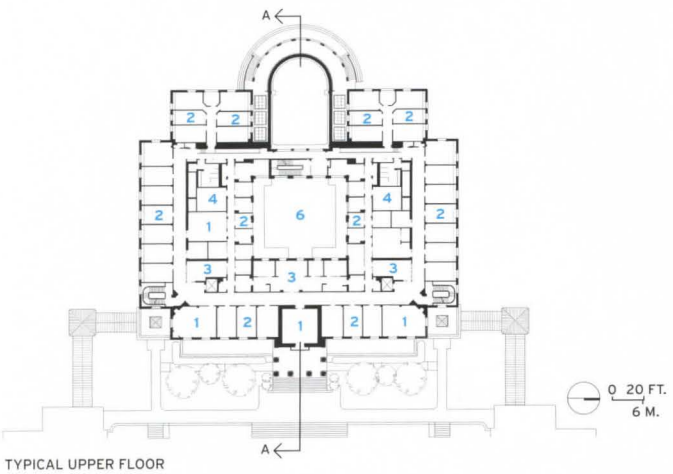
TOP: **The architects inserted an archaeology study center just below the atrium. The center is surrounded on all four sides by vitrines and by a circulation zone open to the skylight above.**

LEFT: **In a few locations, anyone walking around the study center can peer beyond the artifacts on display and into the room's interior.**

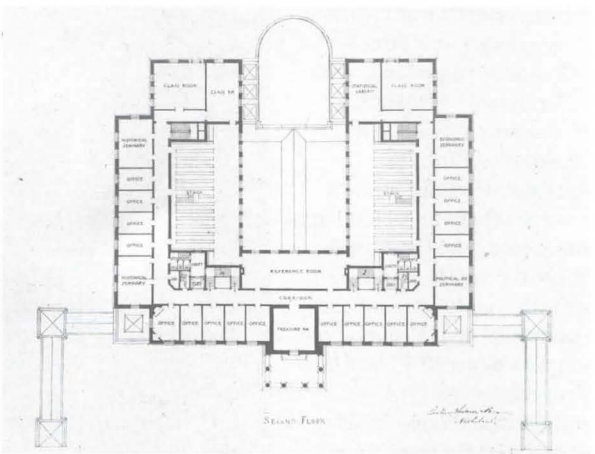
have put Gilman on track for LEED Silver certification. Fortuitously, creation of the atrium should also help the building achieve its energy-saving goals, since covering the former light well reduces the size of the exterior envelope by almost one-third. However, the architects make no distinction between the efficiency measures and the conversion of a lifeless void into a social hub. Both efforts are intended to enhance the utility of the nearly century-old building, according to Halsband. "All of it," she says, "is part of preparing Gilman for the next 100 years." ■

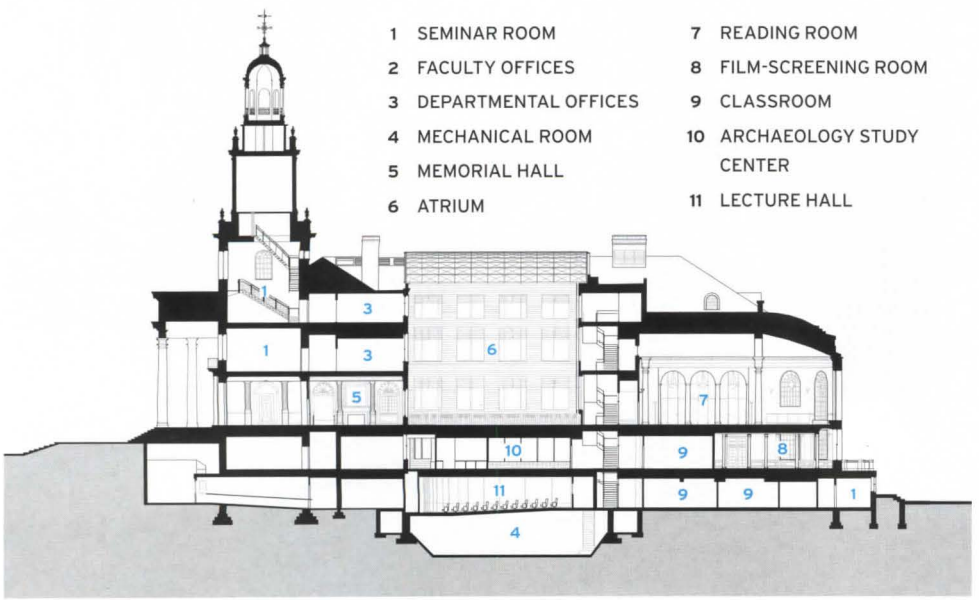
LEFT: **Diaphanous, gourd-shaped sculptures by artist Kendall Buster are suspended from the atrium's tension-grid glazed roof.**

BELOW: **Gilman's original configuration included a central light well bisected by a bridgelike passage and 25,000 square feet of library stacks.**



TYPICAL UPPER FLOOR





1 SEMINAR ROOM
2 FACULTY OFFICES
3 DEPARTMENTAL OFFICES
4 MECHANICAL ROOM
5 MEMORIAL HALL
6 ATRIUM
7 READING ROOM
8 FILM-SCREENING ROOM
9 CLASSROOM
10 ARCHAEOLOGY STUDY CENTER
11 LECTURE HALL

0 20 FT.
6 M.

SECTION A-A

CREDITS

ARCHITECT: Kliment Halsband Architects – Frances Halsband, Robert Kliment, Alex Diez, partners; Carolyn Hinger, David Miller, project architects; Jennifer Stencel, Natalie Rebuck, Robert Litherland, project team

CONSULTANTS: Robert Silman Associates (structural); James Posey Associates (m/e/p, f/p); Schlaich Bergermann und Partner LP (gridshell)

CLIENT: Johns Hopkins University

SIZE: 146,500 square feet

COST: $58.6 million

COMPLETION DATE: June 2010

SOURCES

ATRIUM CLADDING: NBK Ceramic

ATRIUM GRIDSHELL: Novum Structures

STRUCTURAL GLASS WALL: Oldcastle BuildingEnvelope

Durant Hall, University of California, Berkeley

Mark Cavagnero refreshes and subtly reorganizes a century-old building in the historic core of a storied campus.

By John King

1. A new terraced entry plaza provides accessibility without compromising Durant's classical symmetry.
2. Work in the vaulted first-floor corridor includes refurbishment of original light fixtures.
3. In the reorganized basement, walls of frosted and clear glass define conference rooms and offices.
4. The skylit second-floor reception area for the deans' offices doubles as an informal event space.

WHEN ARCHITECT John Galen Howard mapped a Beaux-Arts plan for the University of California, Berkeley campus in the early 20th century, one of the first buildings erected in its spirit was Durant Hall—a two-story steel-frame structure completed in 1911 and wrapped in granite along classical lines. Designed by Howard for the law school, and later serving as home to the university's East Asian Library, the 18,000-square-foot box has been restored to house the administrative offices of the College of Letters and Sciences, which had been scattered among several locations. The building also has been brought discreetly into the 21st century, its formal aura softened by an emphasis on sustainability and a new entry plaza that invites students to linger.

"A straight restoration would have left it wooden, part of the past, but clumsy changes would have been criminal," says Mark Cavagnero, a Bay Area architect best known for a refined but strong Modernist style. While this design philosophy might make his firm seem an odd choice for restoring Howard's landmark, Cavagnero got his start in the office of Edward Larrabee Barnes, where he oversaw the restoration of San Francisco's ornate California Palace of the Legion of Honor.

Except for common areas, most of Durant's interior had been altered haphazardly over the decades, leaving little of historic value. The regal exterior, however, was as evocative as ever. And that posed the first design challenge: circulation. The central corridor on the first floor was reached via stairs from landings on the north and south ends. Adding ramps or an exterior elevator would have upended the building's classical symmetry, so Cavagnero looked to Durant's western face, where a shallow slope and hedges masked the structure's basement. With minimal excavation, the area was reborn as a terraced plaza approached

3

4

from three directions, with one approach being a gently sloped path that is inviting for pedestrians and people in wheelchairs.

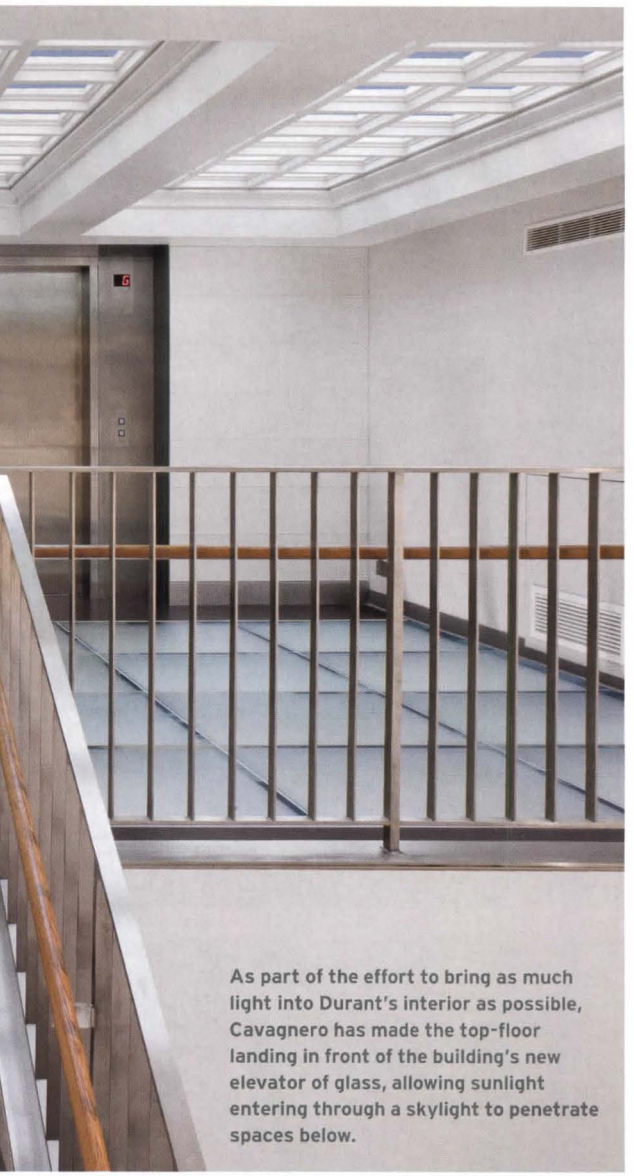
The reoriented basement, which in its prior life was jammed with support-staff desks and storage areas, now has a quiet, open feel and includes a graduate research center. The look is contemporary and clean, with opaque glass panels covering the structural walls and a combination of frosted and clear glass for walls defining conference rooms and offices—all part of Cavagnero's effort to bring as much light into the space as possible.

Cavagnero's work in the first-floor corridor was closer to pure restoration. Here the utilitarian red rubber originally on the floor has been replicated; the plaster walls and vaulted ceiling have been patched; and the bronze chandeliers, which Howard designed and referred to as "lamps of learning," have been refurbished to accommodate compact fluorescents.

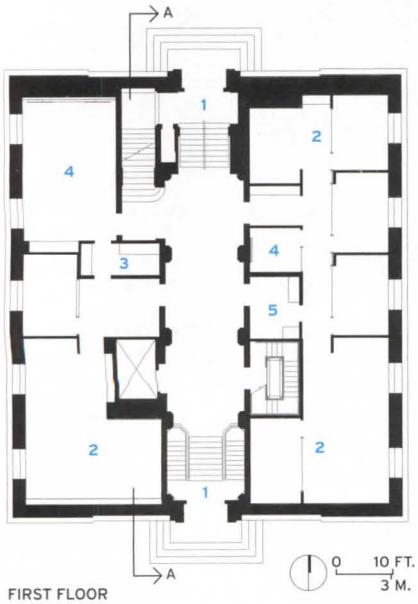
The second floor is more assertive: Worn white marble stairs lead to an oak-paneled doorway and then the skylit central reading room accented with Doric columns of creamy yellow marble. It's a compact but powerful space already popular for small talks and other events; during the day it serves as the reception area for the four deans' offices that frame it.

But the project's main goal was consolidation of administrative space, and that is what Cavagnero has done. The attic behind the pitched roof now contains staff cubicles, for instance, as do second-floor spaces once jammed with staff-only library shelves. This deft accommodation of old and new also includes discreet energy-efficiency upgrades such as new mechanical units tucked into original millwork. The strategy paid off: Earlier this year Durant earned a Silver rating from the U.S. Green Building Council, making it the first LEED-certified building on Berkeley's central campus—evidence that there's no inherent conflict between the needs of our future and the classical landscapes of our past. ■

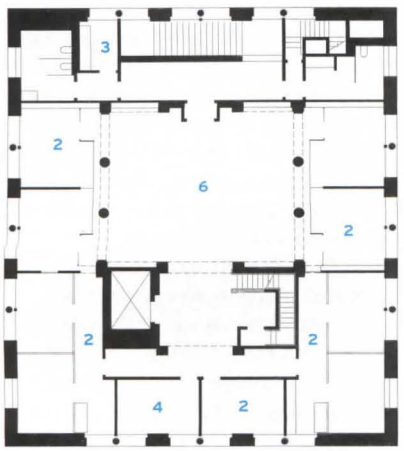
John King is the urban design critic of the San Francisco Chronicle *and author of* Cityscapes: San Francisco and Its Buildings *(Heyday, 2011).*



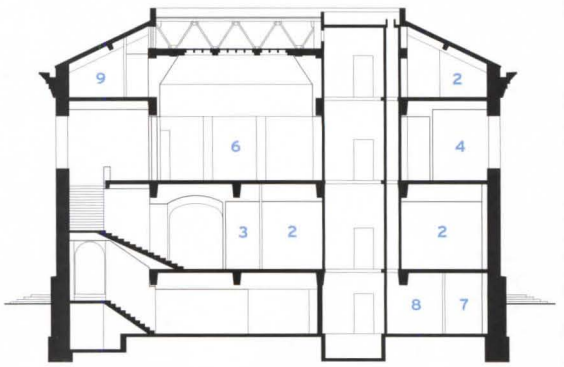
As part of the effort to bring as much light into Durant's interior as possible, Cavagnero has made the top-floor landing in front of the building's new elevator of glass, allowing sunlight entering through a skylight to penetrate spaces below.



FIRST FLOOR



SECOND FLOOR



SECTION A-A

1 ENTRY
2 OFFICES
3 PANTRY
4 CONFERENCE ROOM
5 COPY ROOM
6 RECEPTION
7 ELEVATOR MACHINE ROOM
8 MECHANICAL ROOM
9 I.T./DATA ROOM

CREDITS

ARCHITECT: Mark Cavagnero Associates – Mark Cavagnero, principal in charge; Kang Kiang, project director; Paul Davison, project architect; Paul Loeffler, interior architect

CLIENT: University of California, Berkeley

CONSULTANTS: Van Maren & Associates (civil); Tipping Mar (structural); Cammisa and Wipf (m/e/p), GLS Landscape Architecture (landscape); Knapp & VerPlanck Preservation Architects (preservation)

SIZE: 18,000 gross square feet

COST: $7.8 million

COMPLETION DATE: August 2010

SOURCES

ENTRANCES: Blumcraft

ELEVATOR: Cemcolift

RESILIENT FLOORING: Artigo

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CIRCLE 07

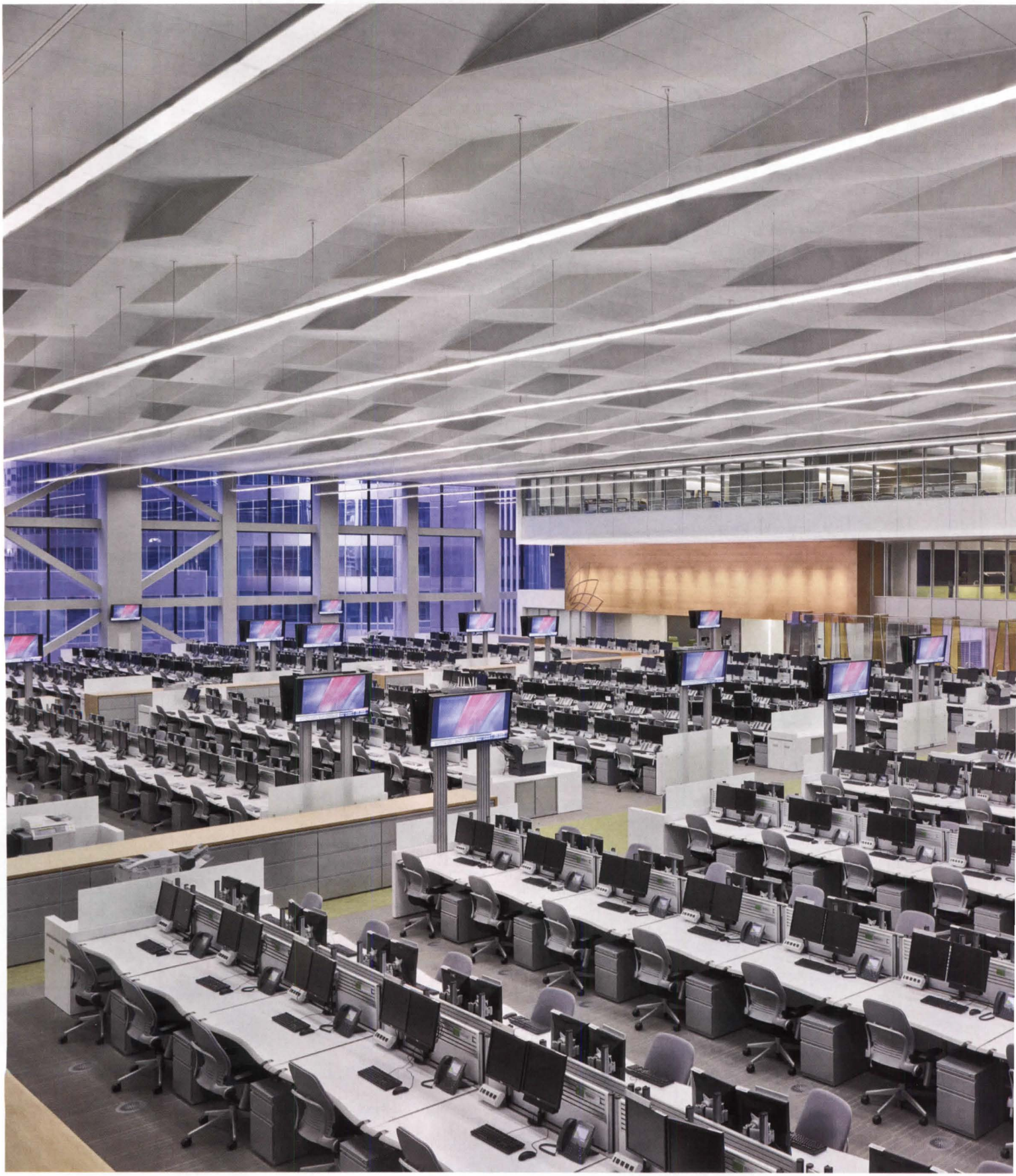
CAPITAL IMPROVEMENTS

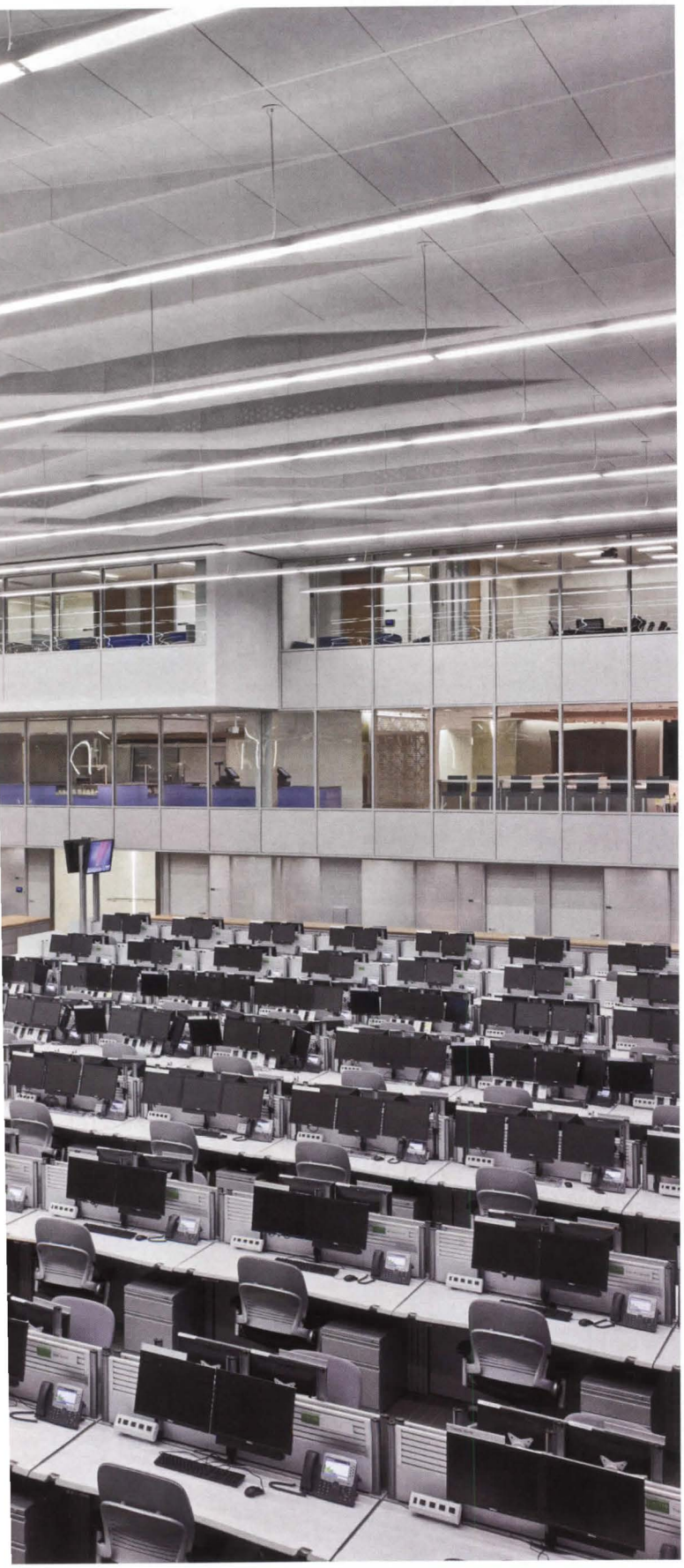
Corporate branding gets an illuminating twist in two projects where light is as essential as environmental graphics to convey company philosophy in satellite offices—one urban, the other suburban. In each case, architect and lighting designer integrate the interior fit-out of an existing space with an effective lighting scheme that is not only energy-efficient and low maintenance, but also tailored to client identity as it relates to the new location.

BP Chicago
Gensler
By David Sokol

ACROSS THE COUNTRY, corporations whose fortunes are built on indefatigable twentysomethings are reverse-migrating from suburbia to cities, where many young professionals prefer to live. At the leading edge of this trend, energy giant BP moved its trading and treasury departments in 2010 from a corporate campus in Warrenville, Illinois, to downtown Chicago, where it now occupies three floors of the Chicago Mercantile Exchange (CME) building. To make the move work, the company teamed with Gensler to replace existing interiors that had been cobbled together from conference rooms. "You could never achieve functionality by keeping traders apart from their support networks," Dane Rausch, Gensler senior associate and design director in the firm's Chicago office, says of those old spaces scattered over multiple floors.

BP moved its suburban Chicago office to renovated digs in the Chicago Mercantile Exchange building, where, from reception to trading floor, light impacts its corporate identity and employee quality of life.





The LEED Platinum project features a 33-foot-high, city-block-wide trading floor illuminated by indirect/direct energy-efficient T5 fixtures, all housing state-of-the-art daylight-harvesting dimming ballasts and controls. These luminaires also light the articulated wave ceiling, or "white sky," above the traders' heads.

The Gensler team placed the traders on a 24,000-square-foot trading floor that can seat 500 people. To do this, the architects fashioned a pit from the original CME that soars three stories high, and built acoustically separated mezzanines around it to house the main cafeteria, as well as BP's treasury department. Teaming, conference, and training zones and a smaller café also line the perimeter.

To facilitate the retrofit, the building owner punched two 160-foot-wide apertures into the east- and west-facing elevations bookending the trading floor, and double-glazed the new openings in a manner sympathetic to the fenestration of the entire building. "Early on everybody thought that, by knocking floor-to-ceiling holes in the wall, we wouldn't need to light this huge trading floor," recalls lighting designer Mark Sills, of CharterSills. Yet shadow studies revealed that the length of the floor prevented full daylight penetration. To illuminate the space evenly and thoroughly, CharterSills suspended two-lamp T5 luminaires from the trading floor ceiling, which spans a whole city block. This reduced glare, and – compared with an early concept that treated lighting as furniture – minimized visual obstacles for employees in the mezzanines.

A sophisticated control system operates shades installed along the new curtain walls, responding to the sun's position and intensity. The same digital cues impact the T5s, which brighten and dim in four zones grouped by their distance from the giant windows. To access the trading floor, employees and visitors pass through one of eight corridors. T5s embedded in drywall create flush, vertical bands of white light that are a playful counterpoint to the flood of light on the trading floor.

CharterSills standardized lamp types throughout the project, using mostly linear T5s. "A design with thousands of different things may look perfect on day one, but you can't maintain it," Sills says. In addition to providing a uniform 3500 Kelvin color temperature, this strategy made the most of existing ceiling heights; in more intimate interior volumes like elevator lobbies or breakout areas, the designers installed CFL downlights to avoid expanding the plenum and to create a wall wash that makes those spaces seem larger. Similarly, controls of varying complexity are installed to correspond with the function of a space. For example, closets include occupancy sensors, a teaming room may have a simple switch, and conferencing facilities operate on presets. Although BP wanted wow-factor lighting design, Sills says the project demanded realism for the sake of its own long-term viability: "Just because something has bells and whistles doesn't mean we have to employ them." ■

David Sokol is a Washington, D.C.–based contributing editor for RECORD.

CREDITS

ARCHITECT: Gensler – Dane Rausch, senior associate/design director, Chicago

LIGHTING DESIGN: CharterSills – Mark Sills, design principal

CLIENT: BP

ENGINEERS: TGRWA (structural); Environmental Systems Design (m/e/p/fp, technology, a/v)

GENERAL CONTRACTOR: Lend Lease (US) Construction

SIZE: 223,646 square feet

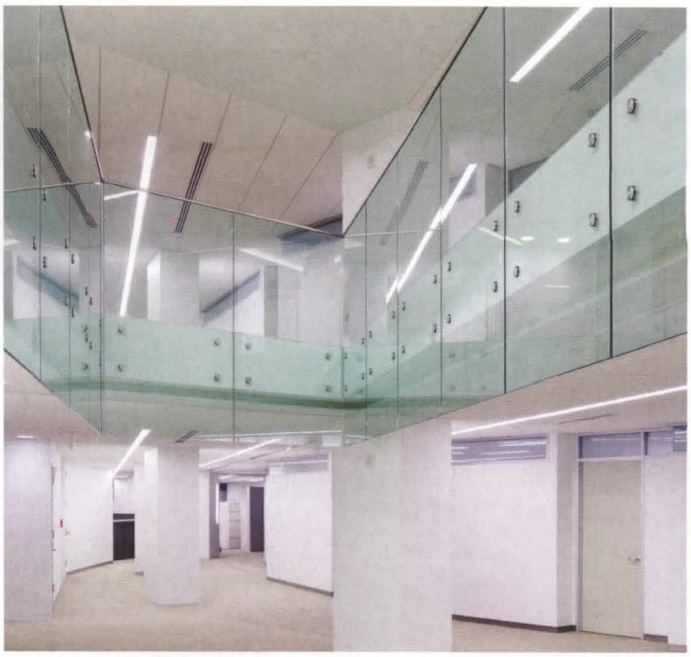
COST: withheld

COMPLETION DATE: October 2010

SOURCES

LIGHTING: Litecontrol (trading floor); Focal Point (linear wall lights); Lutron (controls)

CURTAIN WALL: Aluflam (mullions); Vetrotech-Saint Gobain (glass)



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CIRCLE 71

Microsoft Technology Center

Southfield, Michigan

SmithGroup

By Laura Raskin

SMITHGROUP HAD COMPLETED four Microsoft Technology Centers (MTC) for the software giant by the time the multidisciplinary firm was asked to design a fifth, in Southfield, Michigan. The challenge, according to Rodrigo Manríquez, senior lighting designer and head of SmithGroup's Lighting Design Studio, was: "How many different ways can you draw a circle?" Microsoft uses MTCs to meet with potential customers in strategic locations to design technology solutions. Each center offers the same services but has a unique identity. "It goes back to the essence of the target client, which gives it a regional flavor and is in sync with the values of that client," says Manríquez.

A Detroit suburb, Southfield has deep connections to the automotive industry, so SmithGroup drew its inspiration for the renovation of an existing office in a multi-tenant tower from the sleek forms and bright surfaces that emerge from auto manufacturers' production lines. "To be able to put an MTC in Southfield, knowing that the [auto] industry is

ABOVE: **Upon entering the lobby of the Southfield MTC, visitors are immediately drawn to the luminous solid-surfacing reception desk, lit with LEDs. Wooden louvers allow daylight in or block it out, as needed.**

LEFT: **The Server Display Center showcases Microsoft's powerful technology. SmithGroup worked hard to make it visible, setting it aglow with LEDs tucked into a cove in the ceiling. A translucent film with digitally printed frits along the upper edge enhances the color at the top of the glazing.**

RIGHT: **SmithGroup outlined the portal to the Envisioning Center—an auditorium-like space—with LEDs behind a translucent acrylic. A ribbon of the undulating blue wall bows in and out to mimic the curves of a car.**

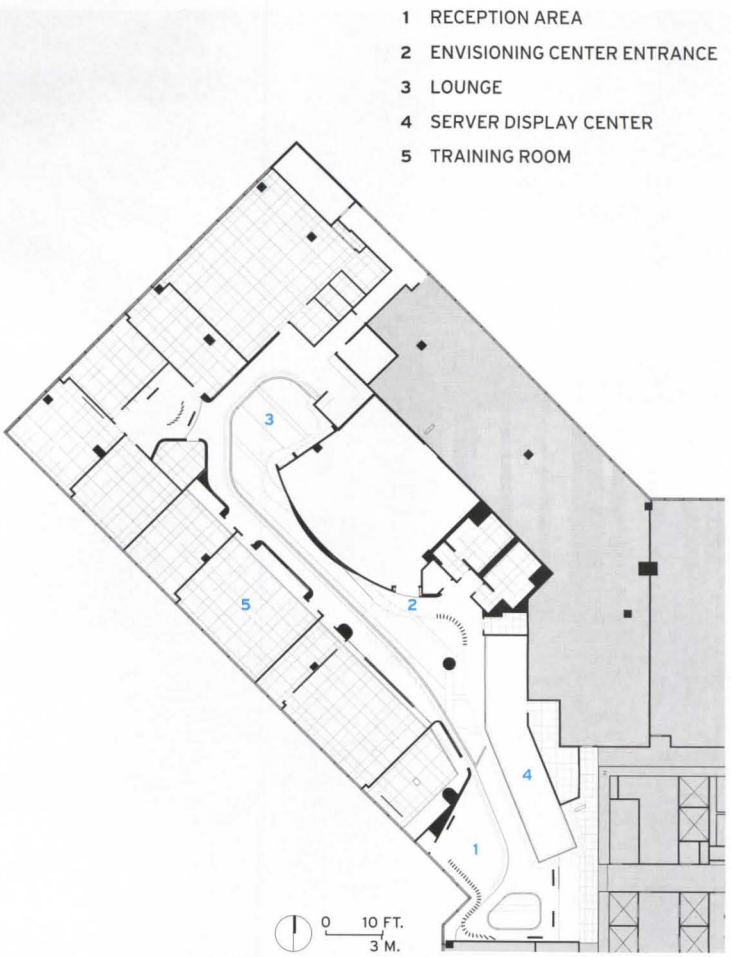
trying to come out of their flop of a few years back, is interesting," says Manríquez. "It takes a lot of foresight." His team felt a responsibility to translate this vote of confidence into the design.

SmithGroup's solution—to choreograph movement with lighting—draws people from point to point in the 16,300-square-foot space. Upon entering the office, visitors are greeted by a luminous solid-surface reception desk, backlit with LEDs. From here, the lighting team "carved" or "sculpted" elements of illumination, using this automotive language to guide the aesthetics.

Like a showroom in a showroom, Microsoft's massive server gleams behind glass in the lobby. Inside, a cove conceals LEDs embedded in the ceiling that emanate blue light, a color that can be changed for a particular client. The lighting designers applied a special translucent film to the inside of glazed walls to enhance the effect of the color. Likewise, fixtures in the floor bounce beams of light off the surface of the black server. "We provided a bright enough surface beyond the glass to create a jewelry box attitude," says Manríquez.

These effects continue along a curved hallway with a series of dropped ceilings that begin above the lobby. A linear stripe of indirect light from LEDs tucked into a cove provides a directional that guides visitors to conference rooms, offices, and a lounge. The design team then framed the doors to the Envisioning Center—an auditorium-like space that was not part of SmithGroup's scope—with LEDs set behind a translucent acrylic. An adjacent, undulating blue wall curves and gleams like a satiny sedan, bowing out to create a lit acrylic bench and turning back in again to illuminate the floor with a glow, like light spilling from an open car door.

Ultimately, SmithGroup's scheme is as sleek and efficient in form and purpose as its client's offering. "The LED technology for us, it was a no-brainer. It's easy to maintain, elegant, and fits into tight spaces," says Matthew Alleman, the project lighting designer. It's also a simple solution in this case. "[Microsoft] wanted to have a great space to show their clients, but they also wanted to be able to maintain it to keep it at its peak performance." ■



THIRD FLOOR REFLECTED CEILING PLAN

CREDITS

ARCHITECT: SmithGroup - Rodrigo Manríquez, lighting design lead; Matthew Alleman, project lighting designer; Rod Vickroy, design principal; Craig St. Clair, project architect; Kim Klingeisen, interior designer

GENERAL CONTRACTOR: Turner Construction Company

SIZE: 16,300 square feet

COST: $2.5 million

COMPLETION DATE: November 2010

SOURCES

INTERIOR AMBIENT LIGHTING: Philips Color Kinetics

DOWNLIGHTS: Zumtobel, Translite Sonoma, Pure Lighting

INTERIOR ACCENT LIGHTING: Philips Color Kinetics, ERCO, RSA

LIGHTING CONTROLS: Crestron

SPECIAL SURFACING: Newmat Newlight translucent membrane

RECEPTION DESK: Corian, Chemetal polished chrome plastic laminate

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LIGHTING PRODUCTS

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Tom Dixon tomdixon.net

BULB is an energy-efficient, oversized E26 T5 11W CFL bulb designed in reaction to the phasing out of the incandescent bulb. Featuring a blown-glass lamp cover with a chrome metallic plating, the bulb can be used in almost any light fitting either individually or as part of a chandelier frame. It has a five-year lifetime, but needs to be replaced through Tom Dixon in order to achieve the same effect. CIRCLE 205

Tandem Series

Structura structura.com

Part of a line of poles, bollards, and street furniture, the Tandem Series is a double aluminum pole with a multi-height luminaire (available from outside partners) that is configurable in three profiles up to 24'. Tandem's panel-clad base is available in custom materials such as concrete, zinc, and stainless. Shown above is the National Renewable Energy Labs in Golden, Colorado, designed by the Denver-based firm RNL. CIRCLE 206

Straight and Narrow 22 LED Luminaires

Cooper Lighting cooperlighting.com

Neo-Ray's Straight and Narrow family of products now includes an LED offering that produces slender lines of continuous light in a fully extruded aluminum housing. The series includes complementary recessed, suspended, surface, and wall-mounted luminaires for both individual and continuous run applications. It includes two light levels, three color temperatures, and an integral driver. CIRCLE 207

Ultra HD Professional Series LED Lamps

Osram Sylvania sylvania.com

Intended as a replacement for halogen in retail, hospitality, health care, museum, and high-end residential settings, Sylvania's Ultra HD Professional Series lamps offer energy savings of between 70 to 80 percent and last 10 to 20 times longer than halogen. With a color rendering index of 95 and a high lumen output, the lamps are suitable for indoor and outdoor use. Available in PAR20, PAR30, PAR30LN, and PAR38 lamp types. CIRCLE 208

NanoLED

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3M Architectural Markets 3M.com

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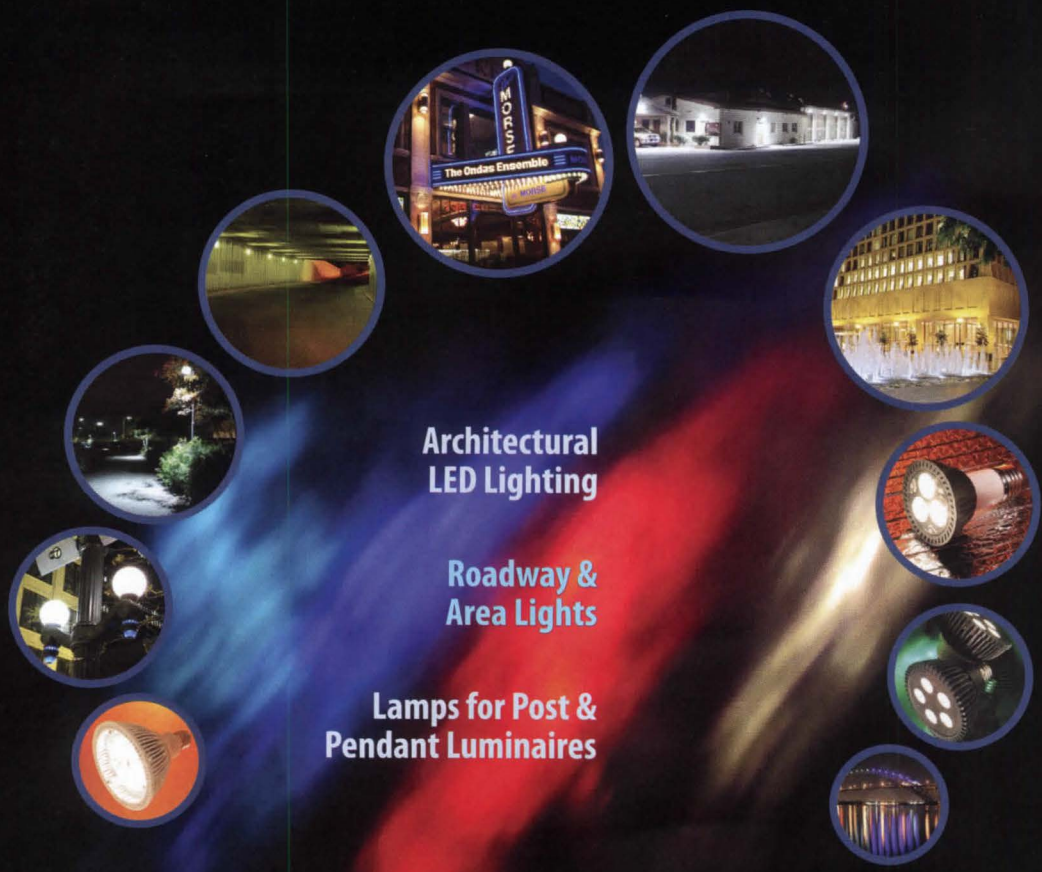
For more information, circle item numbers on Reader Service Card or go to architecturalrecord.com/products.



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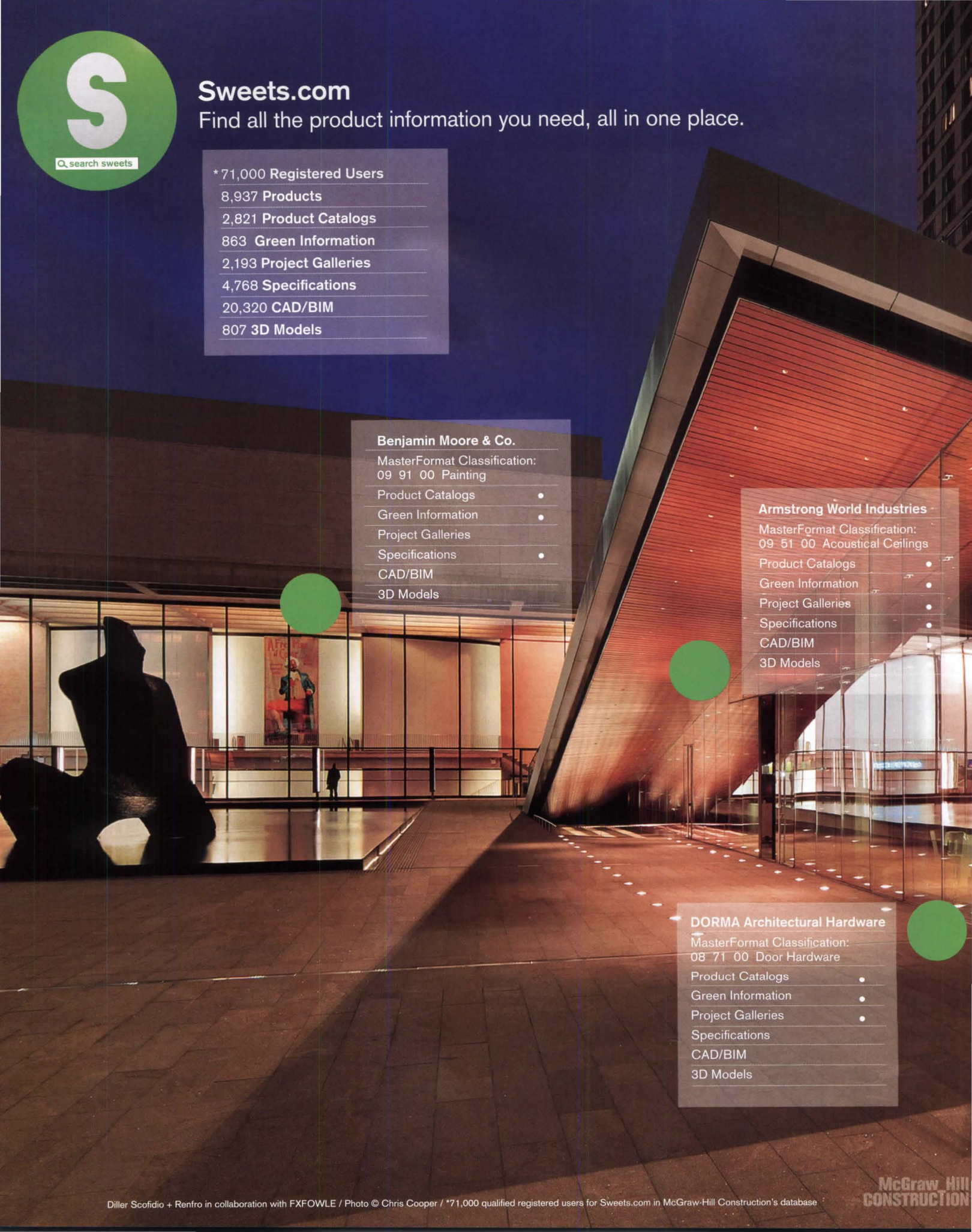
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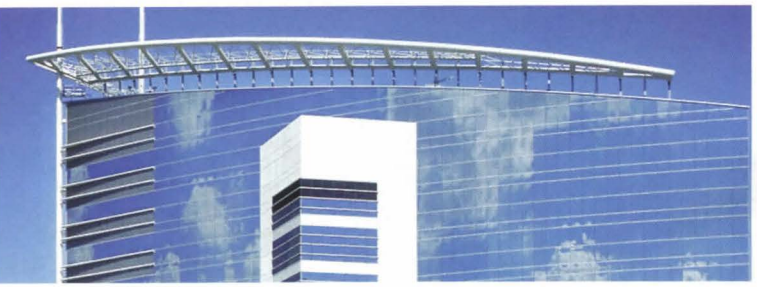

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Photo courtesy of Mitsubishi Electric

Cool VRF Technology

SPONSORED BY: **Mitsubishi Electric**

Cool new Variable Refrigerant Flow (VRF) technology reduces HVAC energy consumption. Read how VRF technology, relatively new to the U.S., delivers energy-efficient comfort, saves space and is less expensive to maintain than conventional HVAC systems.

CREDIT: 1.00 HSW/SD

page 123

Photo courtesy of www.naturallywood.com

A Natural Choice

SPONSORED BY: **U.S. WoodWorks, Canadian Wood Council and Forestry Innovation Investment**

Wood contributes to sustainability's triple bottom line. After considering various definitions of sustainability, this course focuses on materials efficiency and examines the relevance of wood to sustainable design in the context of environmental, social and economic factors.

CREDIT: 1.00 HSW/SD, 1.00 GBCI CE HOUR

page 129

BIM Interoperability and Relational Databases

SPONSORED BY: **Building Systems Design, Inc. (BSD)**

Architectural project coordination can be greatly enhanced by intelligently linking drawings and data using relational databases. This course details the basic concept and uses of relational databases as compared to alternative file types and data structures, as well as highlighting time and cost efficiencies.

CREDIT: 1.00 AIA/CES

page 135

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COOL VRF TECHNOLOGY

New Systems For Reducing HVAC Energy Consumption

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Use the learning objectives below to focus your study as you read **Cool VRF Technology: New Systems For Reducing HVAC Energy Consumption**. To earn one AIA/CES Learning Unit, including one hour of health safety welfare and sustainable design credit, answer the questions on page 127, 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 Variable Refrigerant Flow (VRF) zoning technology and how it differs from conventional heating, ventilation and air conditioning systems (HVAC).
- Describe the energy-efficient features of VRF technology.
- Evaluate the energy efficiency and environmental impact of VRF systems.
- Identify the ways VRF systems can contribute to LEED® points.

By Karin Tetlow

hoto courtesy of
itsubishi Electric

One of the major focuses of green construction is delivering energy-efficient buildings. A mastery of HVAC design is, therefore, critical for design professionals engaged in the growing demand for LEED®-certified structures.

Most buildings have some type of heating, ventilation and air conditioning system. Yet, until relatively recently in the U.S., HVAC systems were aptly characterized as "horse and buggy" technology, having changed little over past decades. Now available on the market are state-of-the-art solutions employed and proven elsewhere in the world. One such new system that was developed in Japan, and widely used in Asia, Europe and South America, is Variable Refrigerant Flow (VRF) zoning, an energy-efficient method of providing precise zoned comfort control to indoor environments. At present, VRF is only about one percent of the HVAC market dollar volume, but its growth potential is staggering when one considers the increasing volumes in the past five years alone of the education, government/military, healthcare, lodging, multifamily and office sectors and their growing requirements for green construction. Other potential markets include churches and public buildings such as museums, civic centers and performing arts facilities.

HVAC OVERVIEW

Generating approximately $15 billion a year, the HVAC industry has been the subject of numerous analyses on the significant role it plays in U.S. energy consumption. According to the U.S. Department of Energy's Buildings Data Book, 22 percent of the nation's energy is consumed by HVAC in commercial buildings and 18 percent by the residential sector (transportation consumes 28 percent).

The most common types of HVAC equipment are unitary air conditioners and heat pumps. "Unitary" refers to the fact that all of the components necessary to heat, cool, dehumidify, filter and move air are included in one or more factory-made assemblies. "Heat pumps" refer to an air-conditioning system that is capable of reversing the direction of refrigerant flow to provide either cooling or heating to the indoor space.

Light commercial and residential HVAC types include packaged terminal air-conditioning units (PTACs), unitary units, window units, wall-mounted units, radiant heaters and ductless systems.

For large commercial and industrial applications, HVAC options fall under one of three categories:

Packaged Systems: The HVAC system is contained in one unit. This type of HVAC system can include traditional boilers, chillers, water-source heat pumps and multi-zone rooftop units—basically any system that is based on water or direct expansion (DX). Typically, conditioned air is ducted from the system to the indoor space through ducts.

Split Systems: The system has two parts, usually an indoor air-handling unit and outdoor unit housing the compressor. Again, the components of this system can include boilers, chillers and water source heat pumps, etc. A split ductless system is comprised of a remote outdoor condensing unit connected by refrigerant pipes to a matching, non-ducted indoor air handler. Special cases for introducing fresh air may call for limited ducting to the air handler from outside.

VRF Systems: A flexible version of both of the more traditional options, with the key difference being that VRF reacts to changes in cooling and heating requirements by varying the *flow of refrigerant* to individual zones as opposed to moving cooled or heated air through ductwork to those spaces.

WHAT IS VARIABLE REFRIGERANT FLOW?

Variable Refrigerant Flow (VRF) technology is an energy-efficient method of providing precise comfort control to indoor environments. Varying the refrigerant flow to each zone or indoor unit servicing that zone allows the system to constantly monitor and control the amount of cooling or heating that is being delivered through each unit. This allows the temperature of that area to be more precisely controlled.

By utilizing a branch circuit controller, the system can simultaneously cool some zones while heating other areas, thus providing the ultimate in zoned comfort. (Zones are single or multiple room spaces that are conditioned to a set temperature and are operated independently from other rooms within the same structure.)

Inverter-driven compressor
VRF technology is accomplished through the use of an inverter-driven (variable speed) compressor housed in the outdoor unit, which responds to indoor temperature changes. Because an inverter compressor can vary its motor rotation

Image courtesy of Mitsubishi Electric

VRF systems include a central variable capacity outdoor unit connected to multiple variable capacity indoor units.

Photo courtesy of Mitsubishi Electric

Exposed VRF system for a café demonstrates flexibility of placement and installation.

speed and capacity and the indoor units can vary their capacity, the system delivers the capacity to precisely meet the load in each zone. Power consumption is therefore reduced because the system operates only at the levels needed to maintain a constant and comfortable indoor environment.

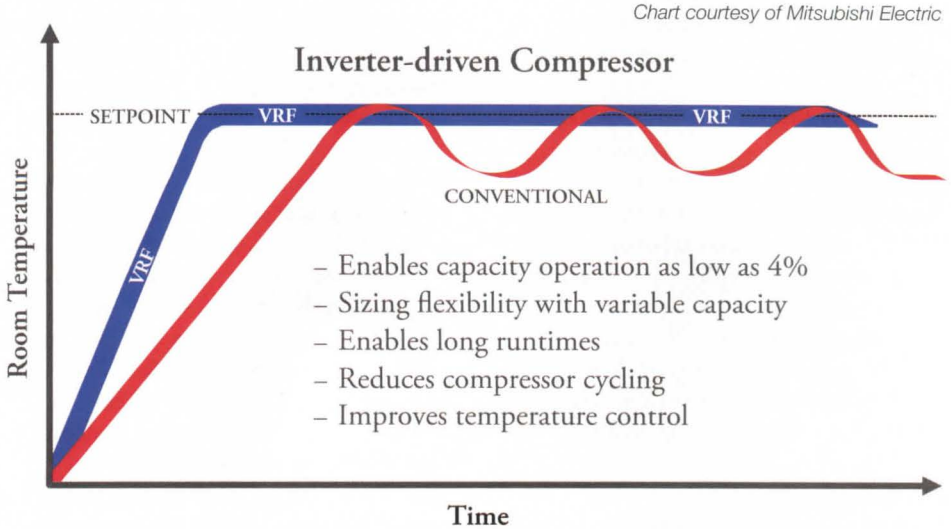
Inverter compressor technology is highly responsive and efficient. The technology allows for compact, quiet units; flexibility of placement; and gives architects and owners more design freedom with integrated, simple to use controls.

A typical system is made up of a central variable capacity outdoor unit connected to as many as 50 variable capacity indoor units.

Inverter technology can be compared to an automobile's cruise control. Just as the driver sets the velocity in a car, the facility manager or building occupant determines the temperature *setpoint*. The cruise control works to maintain the car's velocity as it goes up and down hills and around curves. Similarly, inverter compressors ramp up to achieve the desired setpoint. Once the setpoint has been achieved, the indoor units operate with long runs at a low level in order to maintain the temperature setpoint. Conversely, traditional HVAC systems use more energy to maintain the temperature setpoint because of short cycling or from the need to turn the compressor fully off and on. This use demands the maximum energy output each time the system starts.

Energy can be lost in other ways in traditional ducted systems. Moving air throughout a building requires long runs of ductwork and the use of larger fan motors to move the air. This wastes a significant amount of energy when compared with a VRF system, which

Chart courtesy of Mitsubishi Electric

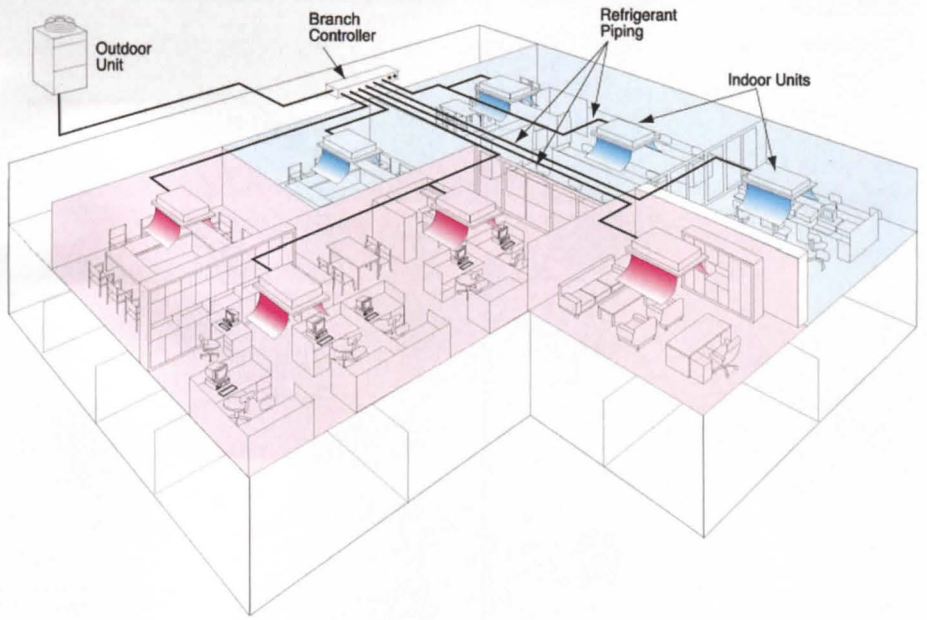


Inverter-driven compressors maintain room temperatures at a steady setpoint.

Part-Load Operations

As of January 1, 2010, the Air Conditioning, Heating and Refrigeration Institute (AHRI) has established a new procedure yielding an Integrated Energy Efficiency Ratio (IEER) rating. This is a great improvement over the unitary-only IPLV (Integrated Part Load Value) method because it covers all units even if they are single stage. To obtain IEER ratings, the systems are tested at four different capacity levels and outdoor temperature conditions to provide a very accurate part-load measure. IEER should be the gold standard for part-load systems in the near future. Those manufacturers of VRF systems with inverter technology are well positioned to achieve high IEER ratings.

Image courtesy of Mitsubishi Electric



Simultaneous cooling and heating (heat recovery) system includes an outdoor unit, a branch controller and indoor units.

moves refrigerant to the indoor unit—the unit is either inside or in close proximity to the space—and then uses a small fan motor to move air.

VRF SYSTEMS ARE ENERGY EFFICIENT

Energy modeling software has been used to compare inverter-driven VRF split-systems with other types of systems, applying the design conditions for several major U.S. cities. VRF systems were consistently 25 percent or more efficient than traditional systems at start-up. There are several factors that contribute to energy efficiency. These include low capacity operation, ramp up speed, zoned capabilities, heat recovery technology and heat pump technology.

Operates at low capacity

Low capacity inverter-driven compressors permit capacity operation as low as 4 percent. Most fixed-speed compressors in traditional HVAC systems are either off or on, wasting energy when partial-load conditions prevail. Even a traditional system with two or three stages, doesn't compare to the full-range variable capacity of the inverter-driven system that fully supports part-load operation. (See sidebar Part-Load Operations above.)

Ramps up quickly

Inverter compressors ramp up quickly, providing the energy necessary to achieve the cooling or heating demand of the zone. Working in tandem with system controls and sensors, the inverter compressor varies its speed to maintain the desired comfort level. Thus, the system only uses the amount of energy required to satisfy the cooling and heating requirements of each zone.

Zoning capabilities

Inverter-driven VRF systems save energy, while providing a high degree of comfort through their zoning capabilities. Zones or rooms can be designed to exact needs, taking into account occupancy, solar gain parameters, and diversity of usage.

Intelligent indoor units have sensors to measure room air temperature at the return. If the design requires it, air temperature can be measured at a remote controller. The ability to choose the measurement location allows for better air temperature management, maintaining the set point within one degree Fahrenheit. Some VRF system indoor units feature a special sensor accessory, which senses and compares air and floor temperatures, and then adjusts the unit output as needed to optimize the comfort within the space. All indoor units feature linear expansion valves to ensure the precise amount of refrigerant and capacity are delivered to the zone.

Typical VRF systems with multiple indoor (air-handling) evaporator units connected to an outdoor compressor unit can deliver just the right amount of refrigerant to precisely meet each zone's load. Indoor units can be controlled to operate only in those occupied areas that need conditioning; indoor units in vacant areas can be turned off. By conditioning only the occupied areas, heating or cooling capacity is not wasted.

Since conventional HVAC systems are sized depending on the cooling and heating peak loads of the building, the combined capacity of the indoor units can match, exceed, or be lower than the capacity of the connected outdoor unit. Inverter-driven VRF systems, on the other hand, can be designed and sized on a zone-by-zone basis to adjust for a building's solar gain and the changing seasons. Depending on the system selected, typically up to 50 indoor units can be connected to each outdoor unit, producing a total applied capacity of up to 150 percent of the outdoor unit's rated capacity.

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See Quiz on the Next Page or
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Program title: **"Cool VRF Technology" (11/11, page 123)**. 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 2013). **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. **Variable Refrigerant Flow (VRF) is an HVAC technology that:**
- ❑ **a.** varies the flow of refrigerant.
- ❑ **b.** moves cooled and heated air through ductwork.
- ❑ **c.** is packaged in one unitary system.
- ❑ **d.** uses a traditional boiler and chiller.

2. **An inverter-driven compressor:**
- ❑ **a.** constantly cycles on and off to maintain the temperature setpoint.
- ❑ **b.** maintains a constant speed and capacity.
- ❑ **c.** can only be connected to one variable capacity indoor unit.
- ❑ **d.** varies its speed and capacity.

3. **VRF technology saves energy by:**
- ❑ **a.** using large fan motors.
- ❑ **b.** operating at high capacity.
- ❑ **c.** only using the amount of energy required to satisfy the cooling and heating requirements of each zone.
- ❑ **d.** ramping up slowly.

4. **Typical VRF systems have zoning capabilities which employ:**
- ❑ **a.** sensors that measure room air temperature.
- ❑ **b.** indoor units featuring linear expansion valves.
- ❑ **c.** indoor units controlled to operate only in occupied areas.
- ❑ **d.** All of the above

5. **A VRF heat recovery system that has the ability to simultaneously heat and cool:**
- ❑ **a.** saves energy by using the exterior temperature.
- ❑ **b.** includes an outdoor unit and a branch circuit controller.
- ❑ **c.** uses the compressor to re-direct heat.
- ❑ **d.** always has a connected capacity that is less than the outdoor unit's rated capacity.

6. **Compared with a 2-pipe system, a 3-pipe heat recovery system requires:**
- ❑ **a.** more branch selectors but less required pipe fittings.
- ❑ **b.** more indoor units but less branch selectors.
- ❑ **c.** fewer branch selectors and fewer indoor units.
- ❑ **d.** more required pipe fittings and more branch circuit controllers.

7. **Compared with traditional HVAC systems, VRF systems have more design and installation flexibility because:**
- ❑ **a.** the outdoor unit can be mounted above or below indoor units.
- ❑ **b.** all components are located within a single assembly.
- ❑ **c.** they often use T-branches and headers.
- ❑ **d.** both a. and c.

8. **Because VRF systems are lighter than chilled water systems:**
- ❑ **a.** structural loads can be distributed across the existing structure.
- ❑ **b.** indoor units must be sited together in one location.
- ❑ **c.** the outdoor unit must be mounted on the building.
- ❑ **d.** they weigh an average of 41 lbs/ton less.

9. **Compared with other HVAC systems, VRF systems have lower life cycle costs because they have:**
- ❑ **a.** fewer but heavier components to maintain.
- ❑ **b.** less installation time for ductwork and large-diameter piping.
- ❑ **c.** built-in logic which constantly modifies and maximizes performance during normal operation.
- ❑ **d.** robust indoor and outdoor units that require more maintenance.

10. **VRF systems can contribute to LEED points in the following categories:**
- ❑ **a.** Materials & Resources and Indoor Environmental Quality
- ❑ **b.** Water Efficiency and Indoor Environmental Quality
- ❑ **c.** Energy & Atmosphere and Water Efficiency
- ❑ **d.** Indoor Environmental Quality and Energy & Atmosphere

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Use the learning objectives below to focus your study as you read **A Natural Choice: How Wood Contributes to Sustainability's Triple Bottom Line**. To earn credit, answer the questions on page 133, 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 accepted definitions of sustainability.
- Discuss ways in which wood contributes to sustainable design.
- Explain the trends behind the increased use of wood as an environmentally sound building material.
- Evaluate the impact of building rating systems and codes on environmentally sound design.

Photo courtesy of www.naturallywood.com

Wood wave panels were designed to create a one-of-a-kind roof from pine beetle wood at Richmond Olympic Oval, Vancouver, British Columbia, Canada; Architect: Cannon Design

This article originally appeared in the September/October 2011 issue of GreenSource.

Sustainable building is increasing, and will constitute a growing sector in the construction industry in years to come. According to a 2011 McGraw-Hill Construction report entitled *Green Outlook 2011: Green Trends Driving Growth*, the value of construction starts for environmentally sound buildings was up 50 percent from 2008 to 2010, from $42 billion to $71 billion, and green building accounted for 25 percent of new construction activity in 2010. According to the report, as owners realize a competitive edge, reduced costs and bigger profits, this market is estimated to reach $135 billion by 2015.

But what actually constitutes a sustainable project? While sustainable practices and technologies are constantly evolving and may differ from region to region, certain areas of focus are widely accepted as being fundamental to sustainable building: siting and structural design; energy efficiency; materials efficiency; indoor environmental quality; operations and maintenance; and waste reduction. After considering various definitions of sustainability, this article will focus on materials efficiency and examine the relevance of wood to sustainable design in the context of environmental, social and economic factors. As the most forward-looking building philosophies allow a range of options, the article will also discuss how innovative designers are finding creative solutions for improved environmental performance.

TRUE SUSTAINABILITY

The dictionary provides half a dozen meanings for the word "sustainable." Yet since the 1980s, the term has come to refer to human sustainability on earth, with the most widely quoted definition being that of the United Nations, which was set out in a report of the Brundtland Commission of 1987. It stated, "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Over the years, this definition has evolved, with many groups adding their own perspective about what sustainability is, what its goals are and how they should be achieved.

At the 2005 World Summit, it was noted that sustainability requires the reconciliation of environmental, social and economic demands, the "three pillars" of sustainability. According to the U.S. Environmental Protection Agency, "Sustainability has many definitions but the basic principles and concepts remain constant: balancing a growing economy, protection for the environment, and social responsibility, so they together lead to an improved quality of life for ourselves and future generations."[1] According to the American Institute of Architects (AIA) Sustainability Discussion Group's definition of sustainability and carbon reduction, "Sustainability envisions the enduring prosperity of all living things. Sustainable design creates communities and buildings that advance enduring public and environmental well-being." While the Discussion Group endorses the broadest definition of sustainable design, it seeks action on a critical, focused, measurable and achievable priority: carbon neutral buildings and communities by 2030.[2]

WOOD AND THE ENVIRONMENT

Life cycle assessment (LCA) is accepted worldwide as a means of evaluating and comparing the environmental impacts of building materials, products and complete structures—from resource extraction through manufacturing, transportation, installation, building operation, decommissioning and eventual disposal. Defined by the International Organization for Standardization, it allows building designers to compare different building designs based on their true environmental impacts and make informed choices about the materials they use.

LCA studies have consistently shown that wood is better for the environment than either steel or concrete in terms of embodied energy,[3] air and water pollution, and carbon footprint. Research worldwide indicates that concrete construction is preferable to steel-frame construction in terms of energy use, but inferior to steel in generation of carbon dioxide (CO_2) and other greenhouse gases. For example, a Swedish study of concrete and wood-framed buildings found higher energy and CO_2 balances for the concrete structures.[4] A New Zealand comparison of cradle-to-grave energy use and greenhouse gas emissions associated with four versions of an office building found that, as the amount of wood products increased versus concrete and steel, the amount of greenhouse gas emissions decreased.[5] A U.S. Forest Service-sponsored life cycle assessment found that harvesting, transporting, manufacturing and using wood in lumber and panel products yields less greenhouse gases than other common building materials, such as concrete and steel. The study also found that wood-based wall systems can require significantly less total energy for manufacturing than thermally comparable steel or concrete structures.[6]

Skidegate Elementary School, Haida Gwaii, Queen Charlotte Islands, British Columbia, Canada. Acton Ostry Architects Inc.

It may be that these studies will begin to inform public policy. Already, based on the third study above, the U.S. Forest Service recently announced that it will "preferentially select wood in new building construction and actively look for opportunities to demonstrate the innovative use of wood as a green building material for all new structures of 10,000 square feet or more using recognized green building standards such as LEED, Green Globes or the National Green Building Standard." The U.S. Department of Agriculture, the parent agency, will commit to greater use of wood as it fulfills President Barack Obama's Executive Order on Federal Leadership in Environmental, Energy, and Economic Performance.[7] USDA Secretary Tom Vilsack directed all other USDA divisions to incorporate the Forest Service policy of using domestic sustainable wood products as the preferred green building material for all USDA facilities and buildings.

Carbon Footprint. Because trees absorb CO_2 from the atmosphere as they grow, forests are considered a means of offsetting climate change. Wood products continue to store carbon absorbed during the tree's growing cycle even after the products are in use. The amount of carbon dioxide removed from the atmosphere could be quadrupled in 100 years by harvesting regularly and using the wood instead of steel and concrete, which, though they don't produce carbon dioxide directly, have fossil fuel-intensive manufacturing processes that result in large amounts of greenhouse gas emissions.[8] "Every time you see a wood building, it's a storehouse of carbon from the forest. When you see steel or concrete, you're seeing the emissions of carbon dioxide that had to go into the atmosphere for those structures to go up," says Bruce Lippke, University of Washington professor emeritus of forest resources and lead author of a paper that appeared in the June 2011 issue of *Carbon Management*. Trees have a two-way flow of carbon dioxide—they breathe it in during their growth cycle, storing it in their trunks, leaves and roots, until the tree rots or burns, at which point it is released back into the atmosphere. Using timber for construction locks much of the carbon into flooring, wall framing, and other wood elements, while the regenerating forest once again begins absorbing CO_2.

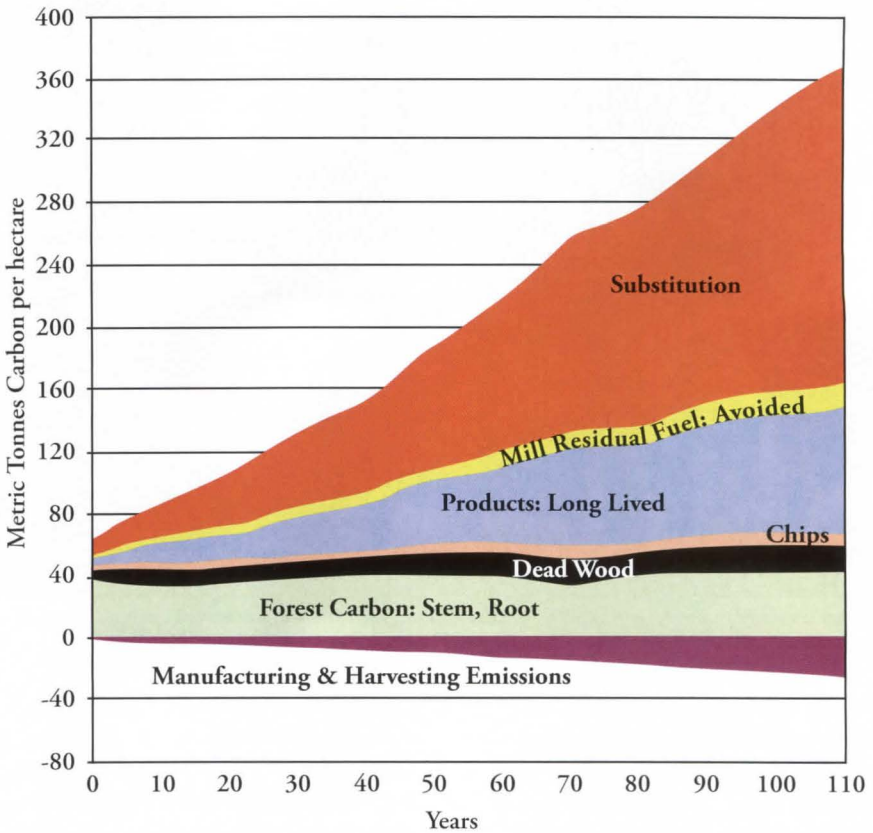
In building materials there is always a choice—wood studs or steel studs, wood floors or concrete slab—that affects a structure's carbon footprint. Using life cycle assessment, Lippke and his team estimated that replacing steel floor joists with engineered wood joists reduces the carbon footprint of the joists by almost 10 tons of carbon dioxide for every ton of wood used. Utilizing wood flooring instead of concrete slab flooring was found to reduce the carbon footprint by approximately 3.5 tons of carbon dioxide for every ton of wood used.

The paper also noted that, to maximize the carbon benefits, the best approach is to harvest before tree growth begins to taper off, and then use the wood in place of products that are most fossil fuel-intensive. However, this does not mean that all forests should be harvested this way. "While the carbon in the wood stored in forests is substantial, like any garden, forests have limited capacity to absorb carbon from the atmosphere as they age," writes Lippke. "And there's always a chance a fire will sweep through a mature forest, immediately releasing the carbon dioxide in the trees back to the atmosphere." Older forests provide immense value, though their ability to absorb carbon dioxide slows down.

As the design community focuses on carbon-neutral building, the carbon benefits of individual structures are being evaluated and documented. Avalon Anaheim Stadium, a luxury apartment and retail complex in California, includes more than 180,000 cubic feet of lumber and sheathing—which will

Carbon Chart

Chart courtesy of E Oneil/U of Washington



A Northwest state or private forest, harvested regularly for 100 years, helps keep carbon dioxide out of the atmosphere year after year by storing carbon in long-term wood products (blue) and by substituting wood for fossil-fuel-intensive products like steel and cement, thus avoids carbon dioxide emissions during their manufacture (orange). The chart also shows carbon that remains in a sustainably managed and harvested forest (green and black); and an "emissions" line (cranberry) at the bottom, representing the energy to harvest and process wood, which is partly counterbalanced by the "mill residual" line (yellow) that represents mill wastes burned for energy in place of fossil fuels.

For Avalon Bay Communities, which developed the Avalon Anaheim Stadium project, podium structures represent approximately 25 percent of projects nationwide and 55 percent in Southern California.

continue to store nearly 4,000 metric tons of carbon for the lifetime of the building, or longer if the wood is reclaimed and used elsewhere. By using wood instead of steel or concrete, the design team also avoided an estimated 8,000 metric tons of greenhouse gas emissions, for a total potential carbon benefit of 12,000 metric tons. These savings are equivalent to the annual greenhouse gas emissions from 2,400 passenger vehicles or the operation of 1,054 homes.[9]

End of Life. According to the U.S. EPA, building-related construction and demolition (C&D) debris totals approximately 160 million tons per year, accounting for nearly 26 percent of total non-industrial waste generation in the U.S. Combining C&D with municipal solid waste yields an estimate that building construction, renovation, use and demolition together constitute about two-thirds of all non-industrial solid waste in the U.S.—statistics that demand attention to environmentally sound strategies for a material's end of life.

Recycling and reuse are encouraged for all building materials and sanctioned by various green building rating systems. But the first step in any recycling or reuse program is effective material recovery. Wood recovery is improving, with a rapid growth in the number of companies processing recovered wood and matching salvaged timber with designers' needs. According to a study by Tim McKeever of the U.S. Forest Products Laboratory, wood product manufacturers capture 94 percent of their wood waste.[10] However, wood recovery from the municipal waste stream, 5.5 percent of which is solid wood, is less effective, as is wood recovery from the construction and demolition waste stream, which consists of about 40 percent wood.

Construction wood waste has good potential for recovery improvement because it is generally clean and easy to separate. While 25 percent is already recovered, burned or not usable, some 75 percent of this wood is available for salvage. Demolition waste is more difficult as it is highly mixed and possibly contaminated with other materials. Only an estimated 34 percent of demolition wood waste is available for recapture with standard demolition processes, which do not lend themselves to cost-effective retrieval. One solution is deconstruction, which selectively dismantles a building in order to carefully remove re-usable or recyclable parts. Wood can be reclaimed from de-commissioned buildings and directly reused, a niche market that is increasing due to strong interest in salvaged large-dimension timbers. Also, there is a large and relatively untapped store of lumber in the aging North American housing stock. Many jurisdictions have already begun to determine options to reduce waste, and are viewing wood waste reduction programs as critical to their overall waste management solution.

WOOD AND SOCIAL GOALS

Wood is a material that exudes warmth and natural beauty, and can have a beneficial effect on building users. Biophilia, a term created by German psychologist Erich Fromm, relates to the instinctive bond that exists between humans and other living systems and helps explain how wood contributes to a socially positive experience. People respond emotionally to wood; they are attracted to its visual variety and natural expressiveness.

A recent study at the University of British Columbia and FPInnovations found that the visual presence of wood in a room lowers sympathetic nervous system (SNS) activation in occupants, further establishing the positive link between wood and human health.[11] Through SNS activation, human bodies prepare themselves to deal with stress, increasing blood pressure and heart rate while inhibiting digestion, recovery and repair functions to deal with immediate threats. While necessary in the short term, prolonged SNS activation negatively impacts the body. The study supports wood's value in evidence-based design, a field that promotes health, increased productivity and well-being based on scientifically credible evidence, and is being increasingly adopted by the healthcare industry.

Continues at ce.architecturalrecord.com

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Program title: **"A Natural Choice: How Wood Contributes to Sustainability's Triple Bottom Line" (09/11, page 129)**. AIA/CES Credit: This article will earn you one AIA/CES LU hour of health, safety, and welfare/sustainable design (HSW/SD) credit or one GBCI CE hour (Valid for credit through September 2013). **Directions:** Refer to the Learning Objectives for this program. Select one answer for each question 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. **"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." This is a definition of sustainability by:**
   - ❑ **a.** the AIA.
   - ❑ **b.** Greenpeace.
   - ❑ **c.** the U.N.
   - ❑ **d.** the U.S. EPA.

2. **What is accepted worldwide as a means of evaluating and comparing the environmental impacts of building materials?**
   - ❑ **a.** Carbon analysis
   - ❑ **b.** Cost benefit analysis
   - ❑ **c.** Sustainability assessment
   - ❑ **d.** Life cycle assessment

3. **Older forests provide immense value, though their ability to absorb carbon dioxide slows down.**
   - ❑ **a.** True
   - ❑ **b.** False

4. **What percentage of construction waste wood is salvageable?**
   - ❑ **a.** 10 percent
   - ❑ **b.** 35 percent
   - ❑ **c.** 75 percent
   - ❑ **d.** 90 percent

5. **This term relates to the instinctive bond that exists between humans and other living systems:**
   - ❑ **a.** synergistic
   - ❑ **b.** biophilia
   - ❑ **c.** biomimicry
   - ❑ **d.** ecosmart

6. **According to the U.N., how many jobs could be created in sustainable forestry management?**
   - ❑ **a.** 10 million
   - ❑ **b.** 50 million
   - ❑ **c.** 100 thousand
   - ❑ **d.** 5 thousand

7. **The first U.S. code to incorporate LCA (which it includes as a voluntary provision) is:**
   - ❑ **a.** LEED.
   - ❑ **b.** New York State Building Code.
   - ❑ **c.** California Green Building Standards Code.
   - ❑ **d.** Wood First Act.

8. **Which entity recently passed a Wood First Act, which requires that wood be considered as the primary structural material for all government funded projects?**
   - ❑ **a.** California
   - ❑ **b.** British Columbia, Canada
   - ❑ **c.** San Francisco
   - ❑ **d.** Orange County, California

9. **Passive House focuses solely on:**
   - ❑ **a.** reducing energy consumption.
   - ❑ **b.** green building materials.
   - ❑ **c.** reducing water usage.
   - ❑ **d.** daylighting.

10. **Responsible forest management in North America has resulted in how many consecutive years of net forest growth?**
    - ❑ **a.** 15
    - ❑ **b.** 150
    - ❑ **c.** 5
    - ❑ **d.** 50

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Endnotes can be found in the online version of this article.

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Learning Objectives

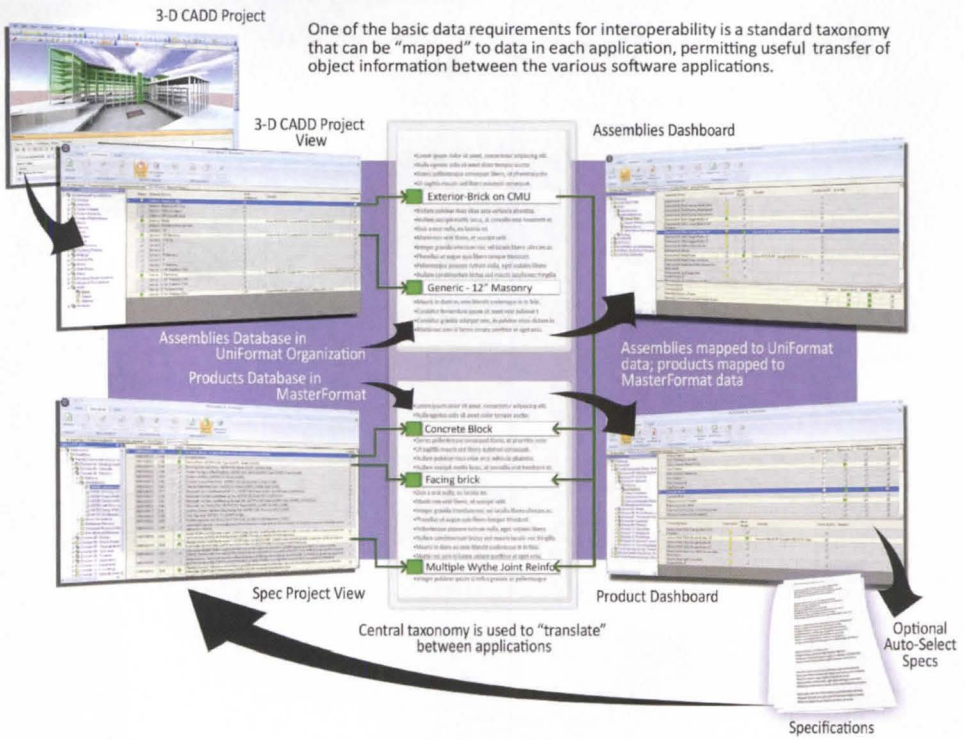
After reading this article, you should be able to:

- Explore the basic concept and uses of relational databases as compared to alternative file types and data structures.
- Investigate the improvements in project coordination that can be obtained by linking drawings and specifications through the use of relational databases.
- Determine the benefits of using relational databases in the preparation and updating of cost estimates.
- Identify the conceptual ways that dissimilar design and construction documentation software applications can achieve interoperability.

By Peter J. Arsenault, FAIA, NCARB, LEED-AP

Architectural practice continues to be increasingly influenced by and dependent on computer technology. Significant advances have been made in hardware and software that allow architects, owners and other design professionals to have ready access to an ever-increasing body of information or data from which to make decisions. Organizing that data so it is in a useful and coordinated form is the ongoing focus of many professionals. Those that take advantage of linking that data together using some fundamental principles discover that they can not only work from a base that is quite manageable, they can also save significantly on time and costs associated with some important work functions such as specification writing and cost estimating. In addition, connecting dissimilar applications is now possible, providing even greater opportunities for improved project coordination and greater efficiency.

Image courtesy of Building Systems Design, Inc.



Management of drawings, specifications and cost estimates can be greatly enhanced using relational databases.

OVERVIEW OF DATA MANAGEMENT

Most people who use computers are already quite familiar with databases that stand alone as separate files. A report or specification section created in word processing, a table in a spreadsheet, and CADD drawings are all examples of such stand-alone files. This type of electronic file is also sometimes called a "flat file" and is not conceptually unlike the common flat file drawers that designers have historically used to store drawings. Each flat file is saved and stored separately. Perhaps they are stored with related files in a common folder, but each is distinct from the other with no particular relationship of the information contained in any of them, except as gleaned and perceived by the viewer or occasionally as copied from one to the other.

By comparison, data tables that are linked together electronically create a multi-dimensional storage and retrieval system that is much more powerful than flat files. The common term for this type of electronic file is a "relational database." Simply defined, a relational database is a method of structuring data as collections of tables that are logically associated to each other by shared attributes so that the data can be reorganized, accessed and reported in a number of different ways without having to reconstruct or re-enter the data. The key advantage is the use of organized tables that have basic data entered once. The information in those tables is then connected or linked to other tables by software that allows that data to be used in different useful ways. The "relational" part of the name comes into play because of the way each table is connected, or related to the other tables. A typical relational database has anywhere from 10 to more than 1,000 tables. Each table contains a column or columns that other tables can key on to connect to the information in that table. The specific software type that keeps track of all of the data in all of the columns in all of the tables is called a relational database management system (RDBMS). Essentially, it is software that controls the storage, retrieval, deletion, security and integrity of data within a relational database.

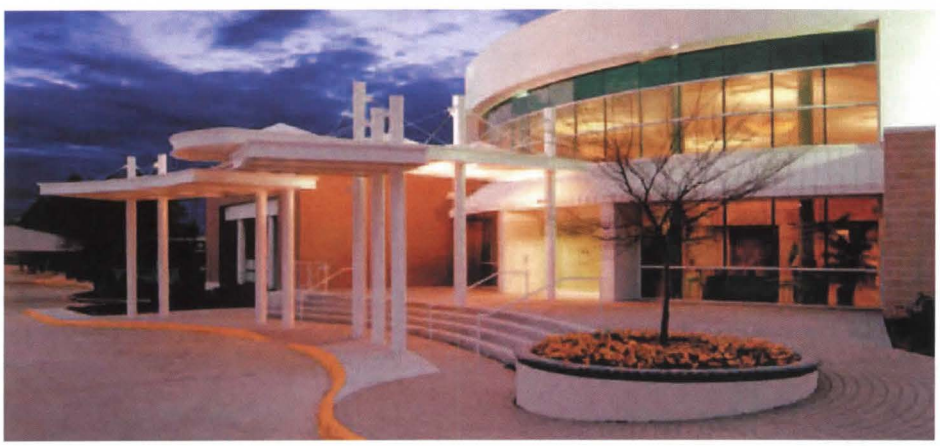
To help illustrate the nature of using a relational database, let's look at a simple example based solely on business data. Architecture firm "A" records all information related to signed contracts as data in a computer *flat file* with a single table called contracts. In this case, client data must be separately input for each project or contract listed in the table. Since most firms have repeat clients, this separate input duplicates efforts by requiring re-entry and checking of current information while increasing the possibility of errors. By contrast, firm "B" records all contract data in a *relational database* with two tables called *clients* and *contracts*. Records in the *contracts table* need contain only a reference number to a client, which is fully described only once in the *clients table*. The RDBMS can then link each contract to the appropriate client for invoicing and other records. In this way, the client information can be

updated in one place whenever needed and all affected contracts have the latest information.

Information in a relational database adds true multi-dimensional depth while maintaining the presentation advantages of word processing and the analytical powers of spreadsheets. In relational databases anyone can quickly compare information because of the arrangement of data in columns within the tables. The relational database model goes on to take advantage of this uniformity by building completely new tables out of selected information from existing tables. In other words, it uses the relationship of similar data to increase the speed and versatility of the database.

So, how does all of this data management relate to the design process? Well, it relates in more ways than most people may realize. Modern CADD and so-called Building Information Modeling (BIM) programs employ RDBMS for optimal storage and retrieval of data related to design elements. Every element in a BIM model comes with editable attributes that are stored as data in a table. The relationship and linkages between the data in different elements of a BIM assembly are managed by RDBMS. Similarly, specifications can be created using RDBMS to allow intelligent text linking and sophisticated updating either as a stand-alone specification writing process or by linking to related information in other programs. Cost estimating can also benefit by linking products and assemblies with associated equipment and installation costs in a RDBMS to achieve greater efficiency and speed. Although each of these processes separately can be improved by the use of relational databases, a major leap in productivity and improved coordination can be achieved by using software programs and databases that are easily able to share information with each other. Before looking in detail at database management between dissimilar applications, let's look at the specifics of how relational databases can relate to preparing specifications.

Small to Mid-Size Firm Case Study: Bledsoe Architects



Bledsoe Architects, located in Shreveport, Louisiana, is a partnership of Benjamin Bledsoe, AIA and Richard Bryan Yeates, AIA, MBA.

The firm's experience includes a wide range of architectural design and other detailed client-specific services. They provide services such as strategic and master planning, site planning, project scheduling, new building design, and existing building renovation and restoration. Their projects include healthcare and educational facilities, religious buildings, and restaurants. They understand that different types of projects demand different levels of need and attention.

The Need: Bledsoe Architects understands how important it is to meet client requirements. However, in 2004 they realized they had an internal need that was not being met. The commercially available, flat file based, word processing specification program they were using, was not working for them. Formatting and editing were cumbersome. Checking reference standards took a long time. The whole process of creating specifications just took too long. They wanted to find something that would better meet their needs. What they found was relational database specification writing.

The Solution: Once he saw how easy it was to edit and format within the relational database system, Ben Bledsoe, AIA, Principal with Bledsoe Architects, was sold on the idea. He says, "What do I like best about the system? It is easy to use—and to re-use. By using the relational database office master, I am able to edit project specifications much faster. I especially like having all choices intact—in case changes are required during project development." Bledsoe estimates his firm is creating specifications in half the time it took with their previous system. He continues, "With the relational database system, it is much easier to make the necessary specification modifications. The global page formatting, headers, footers–everything is much better than the way we used to do it."

The Outcome: In addition to the formatting features, Bledsoe also likes how the relational database system helps keep information such as reference standards up to date. And he says that coordination notes have helped to make their documents even better.

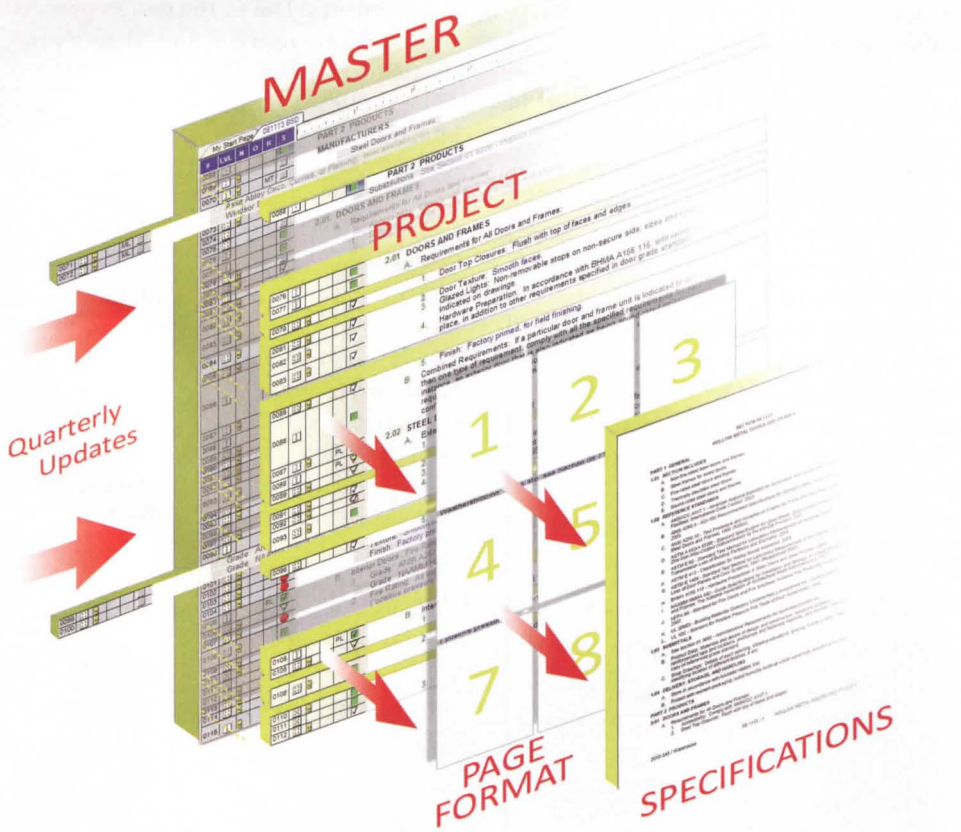
Not long ago, Bledsoe had two projects he was working on. He recalls, "I recently completed specifications for two separate projects, totaling over $9 million in construction costs. The projects were very similar, yet quite different. I completed them in less than a week. It used to take us weeks to get that much work coordinated and printed." Bledsoe's closing comment, "We would not go back to a flat file system if you paid us."

CREATING SPECIFICATIONS WITH RDBMS

Traditional construction specifications in word processing are organized into individual flat files labeled "sections" that are numbered sequentially. This means that data must be duplicated from section to section, increasing the likelihood of errors. It also means that relationships between sections cannot be readily established and maintained. Specifications for a project are therefore typically organized as a collection of flat files in a folder, with no other actual or virtual relationship. Commercial master guide specifications delivered as flat word processing files require periodic replacement of whole sections, rather than incremental updating of individual text data records, greatly complicating the merging of updates with text that has been edited. Because all text is part of a flat record, instead of individual paragraph records in a relational database, there are no opportunities for linking text intelligently. The flat file structure also means that functions such as data formatting and administrative reports require special "markers" to be embedded in the text, for inefficient sequential processing. In short, traditional specification production using word processing is considered obsolete by many specification writing professionals.

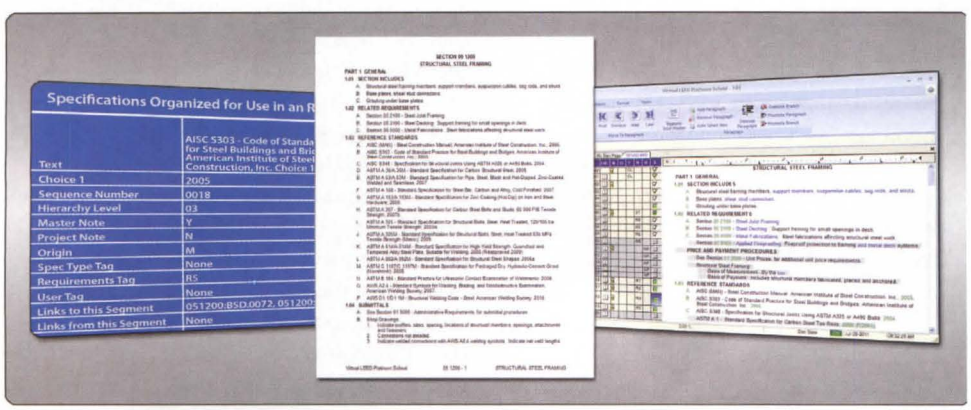
A typical office master specification may contain as many as 600 standardized "guide" specification sections, so managing and coordinating that many individual flat files can be a real challenge. The advantages of a relational database program over one that is based on word processing are significant. The text of each paragraph is one field in a record that can include other information, such as the text hierarchy and connections to explanatory notes that are stored in other tables. The text records can also include links to any other text record in the database, allowing related information to be activated, highlighted or suppressed. Preparing specifications in a relational database system also has the distinct advantage of organizing all the specification data into a single output file, allowing close coordination of the many sections and the individual paragraphs within those sections. In addition, the single project file can be formatted for page and text appearance in one location and can be expanded or collapsed to provide outline, short form and full construction specs without the need to start over at each phase of a project.

Image courtesy of Building Systems Design, Inc.



Concept diagram of specifications creation and formatting from a relational database to output.

Image courtesy of Building Systems Design, Inc.



Specifications preparation using a relational database. Data in a table is shown with options on the computer screen and generates a consistent printed result for a given project.

Continues at ce.architecturalrecord.com

Peter J. Arsenault, FAIA, NCARB, LEED-AP, is an architect and sustainability consultant based in New York State.

See Quiz on the Next Page or
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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: **"BIM Interoperability and Relational Databases" (11/11, page 135)**. AIA/CES Credit: This article will earn you one AIA/CES LU hour (Valid for credit through November 2013). **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. **Examples of stand-alone electronic files, also sometimes called a "flat file" include:**
   - ❑ **a.** a report or specification section created in word processing.
   - ❑ **b.** a table in a spreadsheet.
   - ❑ **c.** CADD drawings.
   - ❑ **d.** All of the above

2. **A key advantage of a relational database is:**
   - ❑ **a.** the use of tables that are all exactly the same.
   - ❑ **b.** the use of organized tables that have basic data entered once.
   - ❑ **c.** the use of up to 1,000 tables that are all created automatically.
   - ❑ **d.** None of the above

3. **A Relational Database Management System (RDBMS) is:**
   - ❑ **a.** hardware that includes a central server and many computers.
   - ❑ **b.** a proprietary product available only to a few computer professionals.
   - ❑ **c.** software that creates database tables.
   - ❑ **d.** software that controls the storage, retrieval, deletion, security and integrity of data within a relational database.

4. **Modern CADD and Building Information Modeling (BIM) programs employ RDBMS for optimal storage and retrieval of data related to design elements.**
   - ❑ **a.** True
   - ❑ **b.** False

5. **Preparing specifications in a relational database system has the distinct advantage of organizing all the specification data into a single output file, allowing:**
   - ❑ **a.** only one person to work on the specification.
   - ❑ **b.** less use of computer memory.
   - ❑ **c.** close coordination of the many sections and the individual paragraphs within those sections.
   - ❑ **d.** only one way to edit the specification content.

6. **Benefits of creating specifications using a relational database management system include:**
   - ❑ **a.** intelligent text linkage within and between sections is possible.
   - ❑ **b.** modification of key terms, units of measure, publication dates, etc. can be made globally across the entire project.
   - ❑ **c.** page formats for the entire project are established once and carried through all sections automatically.
   - ❑ **d.** All of the above

7. **A functional characteristic of using a relational database for cost estimating is:**
   - ❑ **a.** the RDBMS keeps all data in a single table.
   - ❑ **b.** the RDBMS maintains one table for all product data, another table for all assembly data, and installation crew data in yet another table.
   - ❑ **c.** the cost estimating software has spreadsheet capability.
   - ❑ **d.** the database can only be maintained by professional cost estimators.

8. **In a fully functioning relational database cost estimating program, parametric models can be constructed that automatically update the cost estimate as the building size is changed.**
   - ❑ **a.** True
   - ❑ **b.** False

9. **A common *misperception* about a Building Information Model (BIM) is that:**
   - ❑ **a.** it is a shared knowledge resource for information about a facility.
   - ❑ **b.** it forms a reliable basis for decisions during its life-cycle; defined as existing from earliest conception to demolition.
   - ❑ **c.** all the information about a project must be included in the 3-D model generated by CADD software.
   - ❑ **d.** it is a digital representation of physical and functional characteristics of a facility.

10. **Interoperability can be defined as:**
    - ❑ **a.** the ability of two or more design professionals to work together with open exchange of design information.
    - ❑ **b.** the ability of two or more systems or components to exchange information and to use the information that has been exchanged.
    - ❑ **c.** the ability of different computers to be connected together and share information.
    - ❑ **d.** the ability of a Building Information Model to share data with other designers.

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Building Systems Design, Inc. (BSD) has been developing software applications for the A/E/C industry since 1983 and is currently the only company in the U.S. offering specifications, cost estimating and interoperability software for design professionals. All BSD products are based on relational databases.
www.bsdsoftlink.com

CIRCLE 11

New and Upcoming Exhibitions

No Object Is an Island: New Dialogues with the Cranbrook Collection
Bloomfield Hills, Michigan
November 11, 2011–March 25, 2012
This exhibition reopens the expanded and renovated Cranbrook Art Museum at the Cranbrook Academy of Art. Inside and around the landmark building designed by renowned Finnish architect Eliel Saarinen, the exhibition will pair the work of 50 leading contemporary artists and designers with an equal number of objects from Cranbrook's outstanding permanent collection of 20th- and 21st-century art and design. For more information, visit cranbrookartmuseum.org.

Guided Architectural Tours of the Kreeger Museum
Washington, D.C.
November 19 and December 17, 2011
Designed in 1963 by Pritzker Prize–winning architect Philip Johnson along with Richard Foster, the Kreeger Museum is now offering a guided architectural tour of the building, which is the former residence of David and Carmen Kreeger. Completed in 1967, the Kreeger is an excellent example of Johnson's classical Modernism, filled with 19th-, 20th-, and 21st-century paintings and sculptures, a concert/recital hall, and a sculpture terrace overlooking a pool and colonnade. For more information, visit kreegermuseum.org.

Ongoing Exhibitions

Designing the Whitney of the Future
New York City
In this exhibition, renderings and a model reflecting the Whitney Museum of American Art building's innovative design are paired with artist Lawrence Weiner's language piece *HERE THERE & EVERYWHERE*. Piano's design and Weiner's words suggest that while art can be specific to a particular site, it also represents a human cultural achievement that is ephemeral, everywhere, and universal. At the Whitney Museum of American Art. For more information, visit whitney.org.

The Critical Moment: Architecture in the Expanded Field
New York City
Through November 5, 2011
Graduates of the Master of Architecture II program at the Cooper Union have their innovative 2011 thesis projects on display at this exhibition in the Irwin S. Chanin School of Architecture. Without prescribed boundaries, the projects address a myriad of critical issues shaping today's architectural discourse, ranging from urban theory to the present condition of globalization and the continual emergence of new scientific developments and technologies. Visit cooper.edu.

Talk to Me
New York City
Through November 7, 2011
This exhibition at the Museum of Modern Art investigates communication between people and objects, and it features a wide range of objects from all over the world—from interfaces and products to diagrams, visualizations, and furniture by designers, students, and scientists—all designed in the past few years or currently under development. For more information, visit moma.org.

Breaking Borders: New Latin American Architecture
Brooklyn
Through November 30, 2011
Held at the Hazel and Robert H. Siegel Gallery, this exhibition highlights contemporary architecture of the past 10 years from 45 firms representing more than 10 countries in Latin America, and it includes both built and proposed projects in which scope has been influenced by a history of political and social instability, invasive use of environmentally sensitive regions, rapid urbanization, social displacement, and unique climate conditions. Visit latinpratt.org/breakingborders.html.

Odile Decq Benoît Cornette, Architectes Urbanistes: Anisotropy
Los Angeles
Through December 4, 2011
Odile Decq's installation in the SCI-Arc Gallery explores the way we move through space and challenges our mental perception. The project creates a series of spaces, each unique, though the physical environment stays the same. Visit sciarc.edu.

Jim Olson: Architecture for Art
Pullman, Washington
Through December 10, 2011
At Washington State University, this exhibition explores Olson's longtime fascination with the relationship of architecture, art, and nature. The exhibition features projects from as early as 1959, presented through drawings, models, plans, photographs, and a specially built "ideal room" so visitors can experience Olson's architecture firsthand. For more information, visit wsu.edu.


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CIRCLE 78

Palladio and His Legacy: A Transatlantic Journey
Pittsburgh
Through December 31, 2011
Andrea Palladio, one of the most influential architects in the Western world, designed buildings that incorporate classical design elements while exploiting Renaissance advances in engineering and construction. Through rarely seen drawings and books, modern bas-relief models, and specially commissioned models, this exhibition at the Carnegie Museum of Art documents his thinking. For more information, visit web.cmoa.org.

Design with the Other 90%: CITIES
New York City
Through January 9, 2012
This is the second in a series of themed exhibitions that demonstrate how design can be a dynamic force in transforming lives. The exhibition will explore design solutions addressing the challenges created by rapid urban growth. At the United Nations. For more information, visit cooperhewitt.org.

Architecture as Environment
New York City
Through January 22, 2012
This exhibition highlights Kevin Roche's contributions to the fabric of New York City, including the Ford Foundation building and more than four decades of master planning, design, renovations, and new additions at the Metropolitan Museum of Art. One of America's most influential and prolific architects, Roche is acclaimed for his skillful integration of man-made and natural environments. At the Museum of the City of New York. For more information, visit mcny.org.

Landscape Futures: Instruments, Devices and Architectural Inventions
Reno
Through February 12, 2012
This exhibition travels the shifting terrains of architectural invention, where new spatial devices on a variety of scales—from the inhabitable to the portable—reveal previously inaccessible dimensions of the built and natural environments. Guest-curated by Geoff Manaugh—the man behind BLDGBLOG—the exhibition is on view at the Nevada Museum of Art. Visit nevadaart.org.

Picturing the City: Downtown Pittsburgh, 2007–2010
Pittsburgh
Through March 25, 2012
Nine Pittsburgh photographers turn their lenses toward Pittsburgh's downtown to document changes in the natural and built environment. The exhibition features works created by Melissa Farlow, Jim Judkis, Kenneth Neely, and others. At the Carnegie Museum of Art. For more information, visit web.cmoa.org.

Building Blocks: Contemporary Works from the Collection
Providence
Through March 25, 2012
Building Blocks features contemporary sculpture, painting, photography, print, video, and collage that illuminate relationships between architecture and art and heighten our perception of the spaces around us. In some cases, artists engage with the structural possibilities of architectural form, and in others, architecture is explored and represented through a new lens. At the RISD Museum. Visit risd.edu.

California Design, 1930–1965: "Living in a Modern Way"
Los Angeles
Through March 25, 2012
This exhibition at the Resnick Pavilion, as part of Pacific Standard Time, is the first major study of California midcentury modern design. With more than 300 objects—furniture, ceramics, metalwork, fashion and textiles, and industrial

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- All energy and water performance is controlled in "real time" using a building automation system to ensure the most efficient use of these resources.
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- Reusable grocery bags are sold.
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*This sign was created from sustainable resources, including bamboo, recycled plastics, and low VOC coatings and inks.

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CIRCLE 03

and graphic design—the exhibition examines the state's role in shaping the material culture of the entire country. For more information, visit lacma.org.

Pacific Standard Time: Art in LA 1945–1980
Los Angeles
Through April 1, 2012
Set to be the largest cultural collaboration in Southern California's history, Pacific Standard Time consists of exhibitions and programs that encompass a broad range of developments, including Modernist architecture and design; African-American artistic networks; Mexican-American and Chicano artists and movements; craft, including ceramics, woodwork, fabric art, and glassblowing; photography; and performance and public art. At various venues. For more information, visit pacificstandardtime.org.

Lectures, Conferences, and Symposia

Mark Foster Gage: Design Liquidity
Los Angeles
November 9, 2011
Mark Foster Gage is assistant dean and associate professor at the Yale University School of Architecture, where he has taught since 2001. The work of Gage/Clemenceau Architects has been exhibited internationally at venues including the Museum of Modern Art in New York, the Museum of the Art Institute of Chicago, the Deutsches Architektur Zentrum in Berlin, and the 2010 Beijing International Biennale. At SCI-Arc. Visit sciarc.edu.

Zoning the City
New York City
November 15, 2011
Visionary thinking meets zoning in this discussion at the McGraw-Hill Conference Center. Decision makers, scholars, and planners will explore how zoning can confront 21st-century economic, social, and environmental challenges at this forward-looking conference that includes the debate over how to chart New York City's future. Visit zoningthecity.com.

Xu Weiguo: XWG Works
Los Angeles
November 16, 2011
Xu Weiguo is a professor and head of the architecture department at the Tsinghua University School of Architecture in Beijing. Weiguo has published more than 10 books on design methodology and new digital technologies in architecture, and his papers have been included in numerous journals. He has lectured internationally, including in the U.S., Japan, France, Germany, Italy, Israel, and Russia. At SCI-Arc. For more information, visit sciarc.edu.

Workshop on Virtual Palaces (Part I. Digitizing and Modeling Palaces)
Leuven, Belgium
November 18–19, 2011
This workshop at the University of Leuven aims to create a forum for research on the late medieval and early modern European court residence or palace, with an interdisciplinary perspective. The world of the courts (1400–1700) constituted a network of truly European scale and international character. Here, the interaction between palace architecture and ceremonial elements is addressed. For more information, visit courtresidences.eu.

Future Cities 2011
London
December 15–16, 2011
Future Cities is an exciting and innovative annual conference series dedicated to the sustainable development of England's cities and urban areas. During the two-day event, more than 700 delegates from across the globe will listen to a range of presentations to discuss key issues and topics. At Westminster. For more information, visit rantrad.co.uk/rantrad-future-cities.

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CIRCLE 10

Firsts
Portland, Oregon
Through May 7, 2012
The Department of Architecture at Portland State University's inaugural lecture series includes presentations by six notable academics, artists, and professionals in architectural practice worldwide: Petra Kempf, John Ochsendorf, Gilles Saucier, Jeremy Till, Sarah Wigglesworth, and Paul Pfeiffer. The concepts of origins and beginnings, long a subject of interest among architects, will be explored throughout the series of lectures. For more information, visit pdx.edu/architecture.

Competitions

inNatur Open Ideas Competition
Registration Deadline: November 11, 2011
This open ideas competition seeks innovative proposals committed to a strategy of implementing architecture in a protected natural environment. Approaches should point to finding synergies between nature and the building itself. Projects must lead to sensitivity and commitment to the natural environment. For more information, visit opengap.net.

2012 Palladio Awards
Entry Deadline: November 23, 2011
The Palladio Awards Program is designed to honor outstanding achievement in traditional design. The program recognizes individual designers and/or design teams whose work enhances the beauty and humane qualities of the built environment through creative interpretation or adaptation of design principles developed through 2,500 years of the Western architectural tradition. For more information, visit palladioawards.com.

Strategies for Public Occupation: Call for Ideas
Submission Deadline: December 1, 2011
Storefront for Art and Architecture is making a call for submissions for projects and strategies that offer new, creative, and productive ways of spatial occupation for public demonstrations and actions in cities throughout the world. Gathering expertise from the various acts of civil occupation throughout the world during the last months, architects, artists, and citizens at large can offer their ideas for enabling acts of communication and action between civil society and the structures of economic and political power. Visit storefrontnews.org.

E-mail information two months in advance to recordevents@mcgraw-hill.com. For more listings, visit architecturalrecord.com/news/events.

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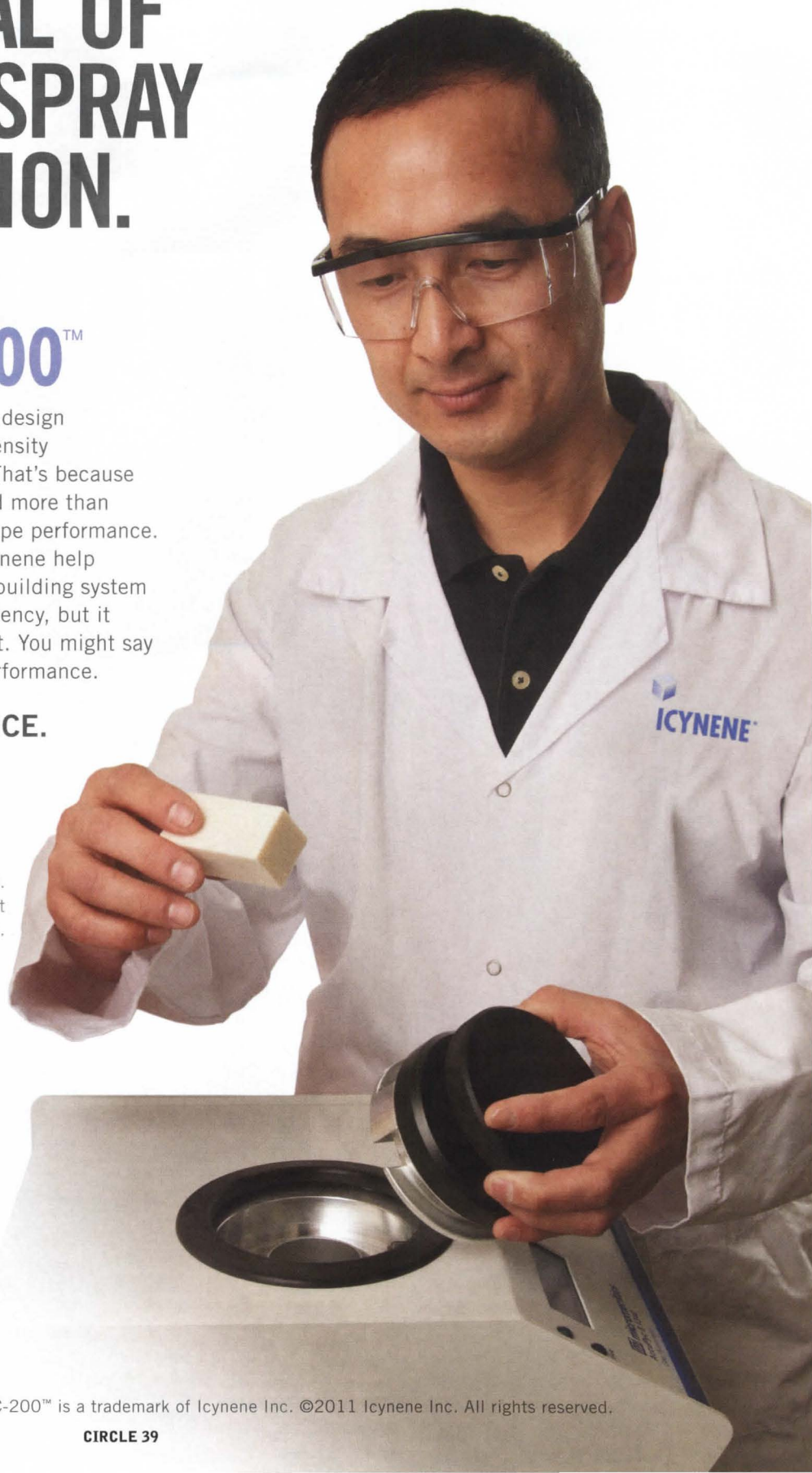

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*Please note that completion in a year is dependent on individual progress within the program, including the number of courses taken per quarter.

CIRCLE 56

AMERICAN DESIGNED, AMERICAN BUILT

project profiles

Illustration: Jason Treat/Spoolia Design

AMERICAN DESIGNED, AMERICAN BUILT

USGBC HEADQUARTERS

Washington, D.C.

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For nearly a decade, the XLERATOR® high speed energy efficient hand dryer has been a featured green product at USGBC headquarters. "Restroom fixture technology has evolved significantly in the last 10 years," said Ken Wilson, principal, Envision Design. "XLERATOR continues to be the specified hand dryer of choice at USGBC headquarters because it meets the aggressive energy and waste reduction objectives for designing state-of-the-art green restrooms." XLERATOR completely dries hands 3 times faster (in 10-15 seconds) and uses 80% less energy than conventional hand dryers. XLERATOR also delivers a 95% cost savings when compared to paper towels. Made In USA Certified.

Excel Dryer and Sloan Valve, a manufacturer of water-efficient solutions for the plumbing industry, recently collaborated on the launch of "Next Generation Green Restroom Design," a featured continuing education course in the USGBC's new virtual tour program. Excel Dryer features a number of AIA/CEU endorsed courses on its website, www.exceldryer.com/education.

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- Chicago Center for Green Technology
- Northwestern Memorial Hospital
- U.S. Department of Agriculture (USDA) Headquarters DC
- US DOT Volpe Center
- DOD, GSA, Army, Navy, Air Force and Marines
- Coast Guard and National Guard
- U.S. Department of Energy (DOE)
- U.S. Department of the Interior (DOI)

CIRCLE 29

AMERICAN DESIGNED, AMERICAN BUILT

ORLANDO VA MEDICAL CENTER

Orlando, Florida

Glazing Offers a Clear, Fire- and Hurricane-Rated Solution for America's Veterans

Glazing has long been celebrated to bring light and transparency to any space, but what happens when it must also protect against fire, hurricane and improve energy performance? Such was the case for the New Orlando VA Medical Center, a revolutionary medical facility serving America's veterans. SAFTI*FIRST*, a leading USA manufacturer of fire-rated glazing and framing systems, worked with the architect and the contractor to meet the design and performance requirements of this monumental project.

Energy-efficient, fire- and hurricane-rated SuperLite II-XL in SAFTIfire Hurricane Framing was used in exterior fire-rated locations that were exposed to the elements. These assemblies were rigorously tested and certified for fire and radiant heat protection for up to 2 hours, large missile impact, air and water infiltration and cyclic wind loading. The assemblies also have a 0.29 U-value and a 0.23 SHGC. Per the contractor's request, SAFTI*FIRST* shipped the SAFTIfire Hurricane Framing System partially assembled and in unitized sections for easier installation.

SuperLite II-XL in SAFTIfire GPX Framing was also used in the interior, providing transparency in several 1- and 2-hour fire-rated locations, ensuring that natural light penetrates further in the building.

Image courtesy of RLF

All the energy-efficient, fire- and hurricane-rated assemblies that combine transparency and safety in various locations throughout the New Orlando VAMC are proudly made in the USA, at SAFTI*FIRST*'s state-of-the-art manufacturing facility in California. SAFTI*FIRST*'s products are listed with UL and/or WHI.

ARCHITECT
RLF / Ellerbe Becket Joint Venture

OWNER
United States Department of Veterans Affairs

CONTRACTOR
Harmon, Inc.

PRODUCTS USED
Fire-and Hurricane-Rated SuperLite II-XL 60 and 120 in SAFTIfire Hurricane Framing (Exterior); SuperLite II-XL 60 and 120 in SAFTIfire GPX Framing (Interior)

PERFORMANCE DATA
- For Fire Performance: Fire rated up to 2 hours meeting ASTM E119/NFPA 251/UL 263 with hose stream.
- For Hurricane Performance: TAS 201,TAS 202, TAS 203, ASTM E1996, ASTM E330, ASTM E1886, ASTM E283-99, ASTM E331-00 and AAMA 1304-02

OTHER USA PROJECTS
- US Marine Corps Bachelor Enlisted Quarters in Camp Pendleton, CA
- United States Central Command Headquarters in MacDill Air Force Base, FL

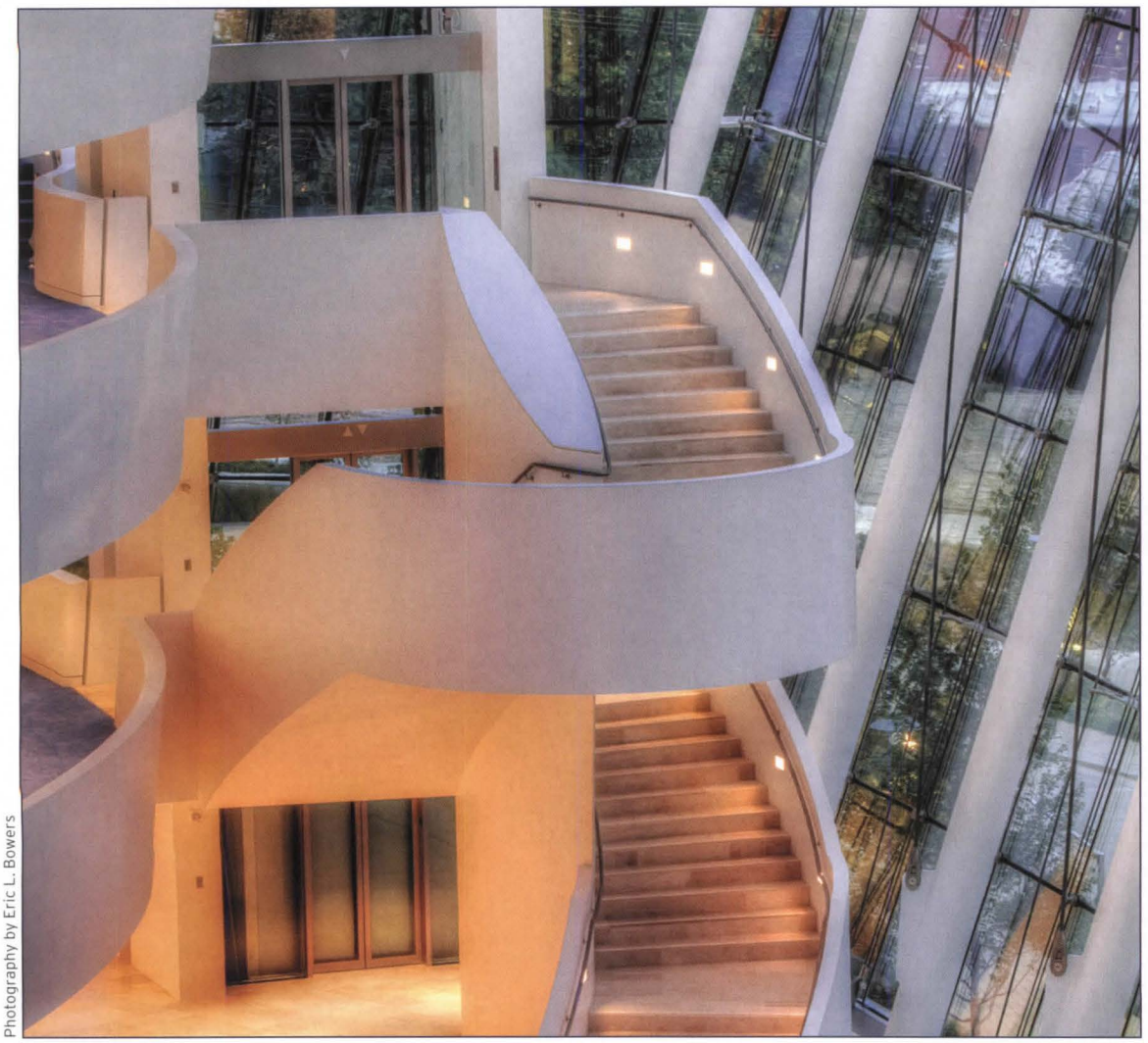
SAFTI*FIRST*
FIRE RATED GLAZING SOLUTIONS
www.safti.com

CIRCLE 69

AMERICAN DESIGNED, AMERICAN BUILT

KAUFFMAN CENTER FOR THE PERFORMING ARTS

Kansas City, Missouri



Photography by Eric L. Bowers

Cast, "Hole In The Wall" fixtures are incorporated into the wall structure of the stairs to softly illuminate the walkway. Once installed, they appear to be part of the wall and look like a custom formed drywall "light niche."

Stunning Glass, with Sweeping Stairs Softly Illuminated, Fill the Brandmeyer Great Hall

Unique, cast GRG "Hole In The Wall" luminaires unobtrusively illuminate stairs throughout the breathtaking Brandmeyer Great Hall with soft uniform illumination. The voluminous open hall joins two impressive theaters and offers an expansive view of Kansas City. The dynamic architecture is showcased and accented with subtle lighting that blends in with the architecture. ELP provided the cast luminaires that once installed, become one with the surface and appear as a custom drywall "light niche" blending with any interior motif. ELP offers the "HITW" in numerous aperture openings and lamping options including custom styles to satisfy the most discriminating designer and to beautifully enhance and add drama to any space.

ARCHITECT
Moshe Safdie / Safdie Architects

CONTRACTOR
J.E. Dunn Construction

LIGHTING DESIGNER
Lam Partners, Inc., Cambridge, MA

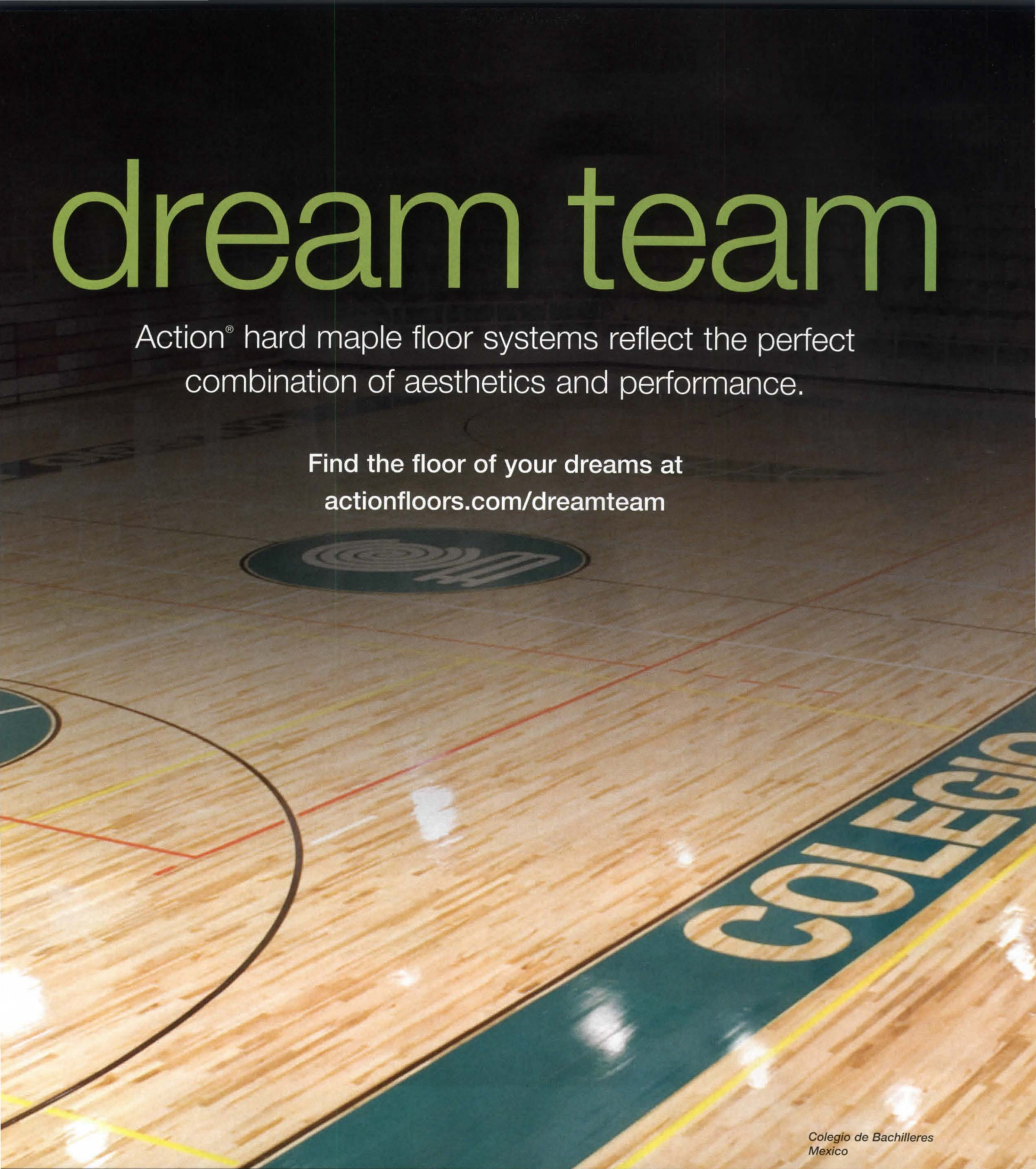
PRODUCTS USED
Hole In The Wall,
cast GRG luminaires.
Models: #109 PL-HITW-4x9,
#140HAL-HITW-8x8 and
#132TT-HITW-6x13

OTHER USA PROJECTS
- Baptist Hospital NICU
- Asbury United Methodist Church
- Lincoln Triangle Lobby
- Monrovia Library

ELP ENGINEERED LIGHTING PRODUCTS

www.elplighting.com

CIRCLE 28



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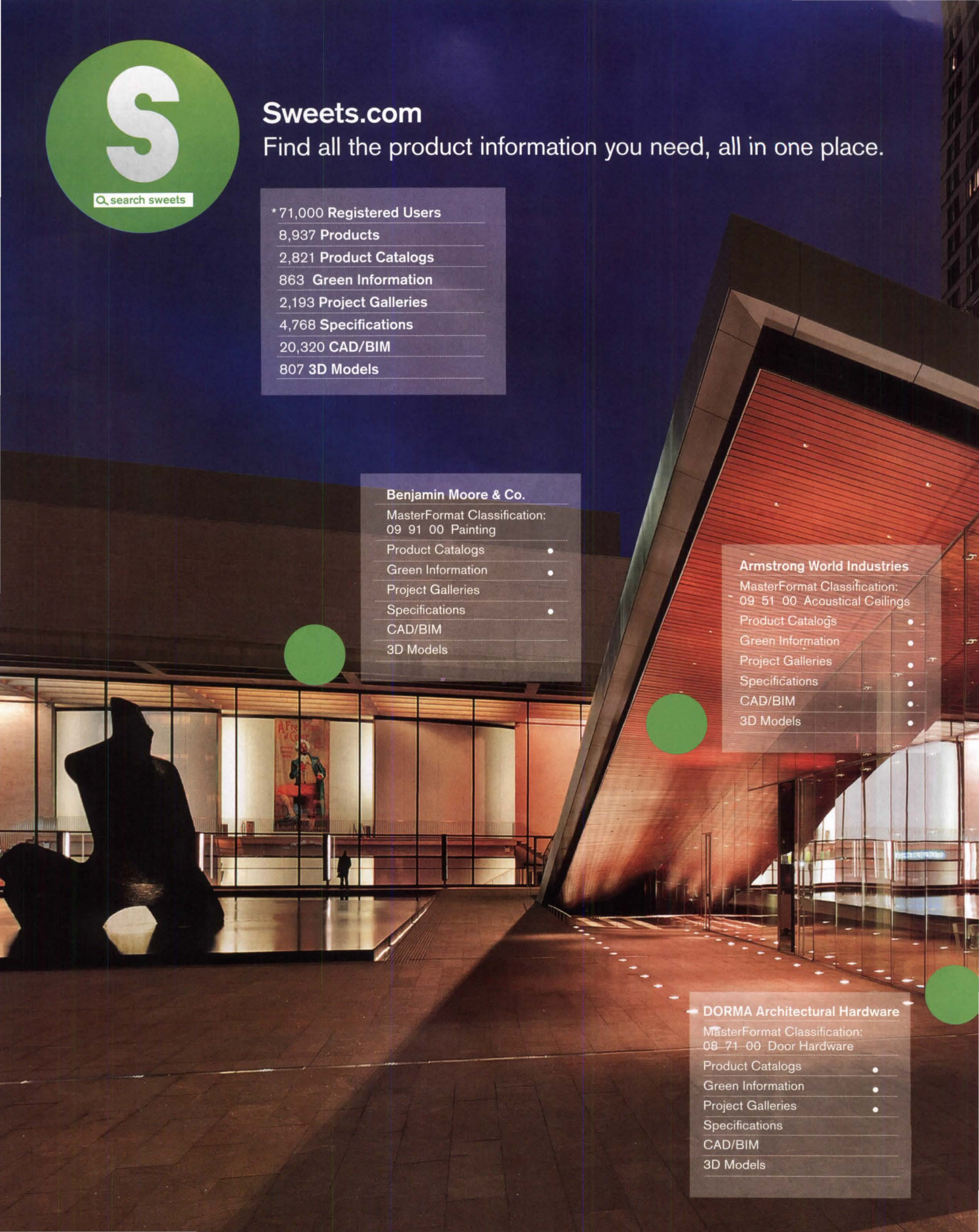
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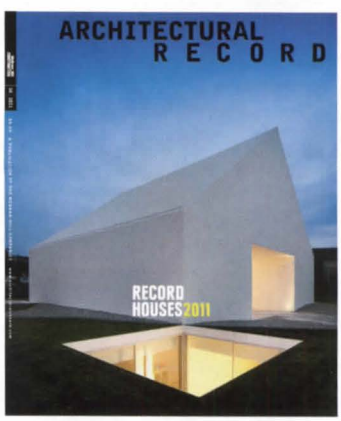
2012 CALL FOR ENTRIES Record Houses



The editors of ARCHITECTURAL RECORD announce the 2012 Record Houses awards program. Entry is open to any architect registered in the U.S. or abroad. Of particular interest are projects that incorporate innovation in program, building technology, materials, and form. Projects must be built and inhabited. They may be new construction or renovated and adaptive reuse projects.

The fee is $75 US per submission; please make checks or money orders payable to Architectural Record (sorry, we cannot accept credit cards or wire transfers). Download the official entry form at architecturalrecord.com/call4entries. Email questions to recordhouses@mcgraw-hill.com. SUBMIT YOUR ENTRIES BY **12/1/2011**.

PRODUCT SPOTLIGHTS

Advertisement

DOORS, WINDOWS

SLIM LIFT & SLIDE SLIDING DOOR

$$$ | G | NEW

Panda Windows & Doors

Panda manufactures and distributes fine custom door and window systems.

Product Application:
- High-end custom residential; luxury high-rise condos, hotels, world-class resorts
- Restaurants, lounges, and nightclubs
- Education/institutional and stadium projects

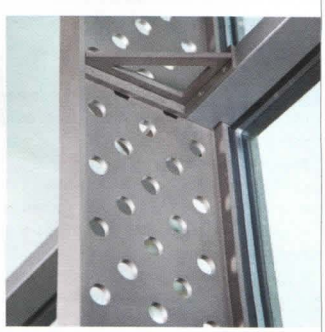
Performance Data:
- 40% slimmer profile than typical lift & slides
- May be pocketed, radius, 90- and 45-degree; low-profile track at 3/16 in. above finished floor

www.panda-windows.com
702.643.5700 | **Contact:** Cooper Buranen

Circle 150

DOORS, WINDOWS

STEEL CURTAIN WALL SYSTEMS



Technical Glass Products

The SteelBuilt Curtainwall Infinity™ System takes design flexibility even further with back mullions of virtually any profile and framing member.

Product Application:
- Trumbull High School, Trumbull, CT
- Technical Glass Products HQ, Snoqualmie, WA
- Fountaindale Public Library, Bolingbrook, IL

Performance Data:
- Supports larger glazing than aluminum systems
- Narrower frame profiles and taller free-spans

www.tgpamerica.com
800.426.0279 | **Contact:** sales@tgpamerica.com

Circle 151

ELECTRICAL, LIGHTING

ARCHITECTURAL CEILING FANS & LIGHTING

G

G Squared Art

Artemis 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.com

Circle 152

EQUIPMENT

HOME ELEVATOR SYSTEM

$$ | G | NEW

Vertechs Elevator Systems

Engineered with full automatic doors, the Veu completely eliminates the need for folding gates.

Product Application:
- New home construction
- Home renovation
- Multi-home projects

Performance Data:
- Up to five stops
- Exceeds ASME 17.1 section 5.3 (Residential Elevator Code)

www.vertechselevators.com
519.621.8443

Circle 153

INTERIOR FINISHES, FURNISHINGS

LIFE'S ALL ABOUT CHANGE

$$

Walker Display

Walker Display provides an efficient system for exhibiting artwork anywhere.

Product Application:
- Residential or commercial use
- Office buildings, shopping malls, airports, restaurants, hospitals, etc.
- Schools, libraries, museums, galleries, etc.

Performance Data:
- Versatile art hanging system, interchangeable for easy adaptation to various projects
- Not limited to art hanging

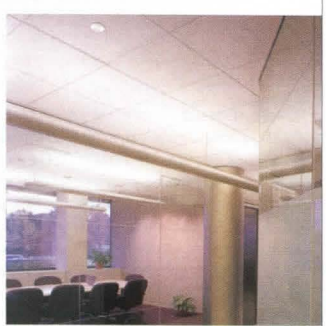
www.WalkerDisplay.com
800.234.7614 | **Contact:** Richard Levey

Circle 154

INTERIOR FINISHES, FURNISHINGS

FIBERGLASS/MINERAL FIBER CEILINGS

$$$ | G



CertainTeed Ceilings

CertainTeed Adagio ceilings combine superior noise control, beauty, and durability. They are the ultimate solution for acoustical comfort and privacy.

Product Application:
- Professional private office; medical treatment room; conference room

Performance Data:
- Unique composite offers optimum acoustical performance
- Enhanced light reflectance complements exceptional aesthetics

www.certainteed.com
800.233.8990

Circle 155

INTERIOR FINISHES, FURNISHINGS

RAISED ACCESS FLOOR PANEL

$$ | G

Lindner USA

NORTEC: a calcium sulphate panel with 99% recycled content.

Product Application:
- International Finance Center, 15 mil. ft., Hong Kong, China; Dubai Convention Center, 300,000 ft., Dubai, United Arab Emirates; Total Gas and Power North America Inc., 16,000 ft., Houston, TX

Performance Data:
- Lowest air-leakage rates, acoustic value up to 58 dB; wood, stone and terazzo factory-applied finishes available

www.lindnerusa.com
770.414.5054 | **Contact:** Francisco Santiago

Circle 156

MATERIALS

ARCHITECTURAL NATURAL STONE

$$$ | G

Vermont Structural Slate Company

Quarrier and fabricator offering select slates, quartzites, sandstones, limestones, marbles, granites and basalts.

Product Application:
LN Residence
Architect: Adjaye Associates
Gunnison Basalt
(photo credit: Lyndon Douglas)

www.vermontstructuralslate.com
800.343.1900 | **Contact:** Craig Markcrow

Circle 157

All products in this section are accessible on sweets.com. **$$$**= Premium cost | **$$**= Mid-range cost | **$**= Value-oriented cost
WR = Wide range of price points | **NC**= No charge | **G** = Product marketed as green | **NEW** = Released in the past 12 months

PRODUCT SPOTLIGHTS

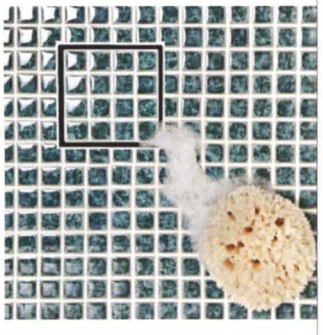
Advertisement

MECHANICAL SYSTEMS, HVAC, PLUMBING

MAKE THE DRAIN DISAPPEAR

WR | NEW

Infinity Drain



Made to obscure centrally placed waste outlets, the TileDrain makes the drain virtually disappear with a tile-inside frame.

Product Application:
- Incorporate tile into the grate frame
- Use with traditional four-way pitched floor
- Any type waterproofing, including hot mop

Performance Data:
- Stainless steel frame and channel
- Complete assembly kit in three sizes

www.InfinityDrain.com
516.767.6798 | **Contact:** info@InfinityDrain.com

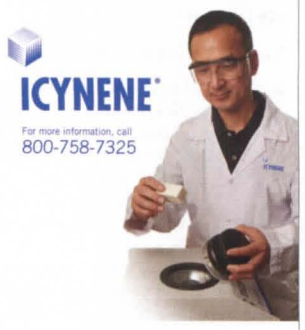
Circle 158

ROOFING, SIDING, THERMAL & MOISTURE PROTECTION

CLOSED-CELL SPRAY FOAM

$$$ | NEW

Icynene Inc.



ICYNENE MD-C-200™ is a 2.0-lb. medium-density closed-cell spray foam insulation and air barrier material.

Product Application:
- Commercial and residential applications
- Seamless integration with HVAC and other building system elements for total building performance

Performance Data:
- Validated by ICC-ES report ESR 3199
- Optimizes energy efficiency and design flexibility
- Improves durability and moisture management

www.icynene.com/icynene-md-c-200
800.758.7325

Circle 159

ROOFING, SIDING, THERMAL & MOISTURE PROTECTION

EXPANDED CORRUGATED PANEL LINE

WR | G

Petersen Aluminum Corp.

Petersen offers 1/2-in. and 7/8-in. corrugated profiles, a 7.2-in. ribbed profile and "M" and "R" panels. All profiles come in 22- or 24-gauge steel and .032 or .040 aluminum. 38 Kynar colors.

Product Application:
- Jacksonville Animal Care, Jacksonville, FL
- Sunrise Mainline Toll Plaza, Ft. Lauderdale, FL
- Heifer International, Little Rock, AR

Performance Data:
- Roofing, wall and linear panel applications
- Cost-efficient, yet architecturally attractive

www.pac-clad.com
800.PAC.CLAD | **Contact:** Blake Batkoff

Circle 160

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:
- Lowers heating costs by $1.50-$5.50 per sq. ft. of panel per year
- Converts up to 80% of solar energy
- May qualify for LEED® credits
- Payback generally within 3 to 8 years
- Heats fresh air and utilizes free solar energy

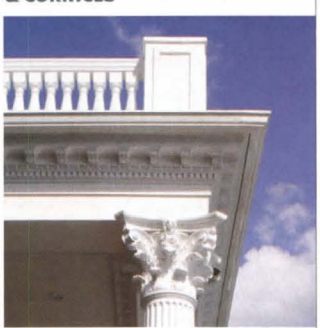
www.atas.com
800.468.1441

Circle 161

SPECIALTY PRODUCTS

ARCHITECTURAL COLUMNS, BALUSTRADES & CORNICES

Architectural Columns & Balustrades by Melton Classics



Melton Classics provides the design professional with an extensive palate of architectural columns, balustrades, cornices, and millwork. They invite you to call their experienced product specialists to assist you with the ideal products for your design, application, and budget. Columns are available in fiberglass, synthetic stone, GFRC, and wood. Their 80+ durable maintenance-free balustrades feel substantial yet have reduced weight. Also, ask about their low-maintenance fiberglass and polyurethane cornices and millwork.

www.MeltonClassics.com
800.963.3060 | **Contact:** Mike Grimmett

Circle 162

SPECIALTY PRODUCTS

COMMERCIAL BATHROOM ACCESSORIES

WR | G | NEW

Brey-Krause Manufacturing Co., Inc.

The S-4019-SS Heavy-Duty Toothbrush/Tumbler Holder is made of 18-gauge Type 304 stainless steel and 100% made in the USA.

Product Application:
- Commercial/public facilities
- Military barracks
- Government applications

Performance Data:
- Heavy-duty stainless steel construction
- Smart toothbrush hole design for various toothbrush sizes

www.breykrause.com
610.867.1401 | **Contact:** Matthew Thierer

Circle 163

SPECIALTY PRODUCTS

COUNTER SUPPORT BRACKET

G | NEW

Rangine Corporation/Rakks

Rakks Eclipse Brackets can support counters or shelves up to 18 in. deep. This attractive low-profile design is easy to install with no visible hardware. TIG welded extruded aluminum construction provides sturdy support for stone and solid surface materials. Machined aluminum end caps provide a smooth and near-seamless termination. Stocked in clear and black anodized finishes, Eclipse Brackets can support loads up to 250 lb. per pair. Contact Rangine Corporation for information on their full line of counter supports and shelving hardware.

www.rakks.com
800.826.6006

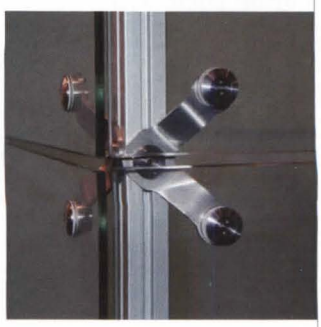
Circle 164

SPECIALTY PRODUCTS

ARCHITECTURAL GLASS SYSTEMS

$$$

Wagner Companies



Wagner Architectural Glass Systems Mini Spider.

Product Application:
- Stainless steel Mini Spider for interior use
- Suitable for use with 5/16-in., 3/8-in., and 1/2-in. tempered glass

Performance Data:
- Available in 4-arm, 3-arm, 2-arm, and single-arm designs

www.wagnerglass.com
414.214.8351 | **Contact:** Carolina Calzada

Circle 165

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SNAPSHOT

PROJECT JANE'S CAROUSEL PAVILION
LOCATION NEW YORK CITY
DESIGNERS ATELIERS JEAN NOUVEL

A JEWEL HAS been set in the emerald-necklace-like Brooklyn Bridge Park: an acrylic glass pavilion by Pritzker Prize–winning French architect Jean Nouvel. Nestled on the Brooklyn side of the East River in New York City, the $9 million steel-frame pavilion—and the colorful merry-go-round it houses—sits on a rocky outcropping with sweeping views of the Lower Manhattan skyline. The carousel, built in 1922 by the Philadelphia Toboggan Company, fell into disrepair after it was discontinued as a ride at an Ohio park. In 1984, Brooklyn-based artist Jane Walentas and her husband, property developer David Walentas, bought the derelict carousel, and Ms. Walentas worked to restore it to its original splendor. Then Nouvel designed the vitrine. "I wanted to create a fragile monument on a very violent site," the architect explains. "I see this contrast as very poetical, and I wanted to keep that contrast." Eight-foot-by-3-foot butt-glazed glass on the pavilion's northern and southern exposures, and operable accordion walls on the eastern and western facades, protects the carousel. For a cool two dollars a ride, children of all ages can board the carousel and take in the panoramic views it offers. At night, a scrim lowers from the pavilion's ceiling. Projected silhouettes of the herd gallop in an endless loop, a magic lantern on the riverbank. *Asad Syrkett*

View a video and additional images online.

PHOTOGRAPHY: © ROLAND HALBE

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AN AMERICAN OWNED COMPANY SINCE 1868

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E. Dillon & Company produces a complete and high quality line of architectural concrete masonry including our "top of the line" Reflective Series. For more information or to locate a dealer near you, please contact us at (800) 234-8970 or visit our website www.edillon.com

CIRCLE 26

Lutron® — Save Energy with Daylight Control

NEW Lutron Venetian blinds offer precision control of daylight for beauty, comfort, and energy savings.

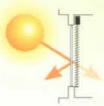
Lutron Venetian blinds

Beauty and performance

- Convenient, precise control of blind position **independent from tilt angle**
- Silent, smooth performance at the touch of a button
- Choose from more than 50 hardwoods or 14 aluminum finishes to complement your décor

Save Energy

Save 10%–30% on HVAC



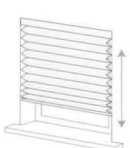
Summer Days: angle blinds to keep heat out while providing soft, even light, for visual comfort

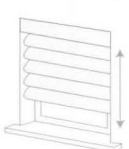
Winter Days: open blinds to let sunlight warm the room, saving heating costs

Winter Nights: close blinds to keep heat in

Lutron offers the most complete line of precision controlled window coverings.


Venetian Blinds


Cellular Shades


Roman Shades


Roller Shades


Drapery Systems


Kirbé® Vertical Drapery


Skylight Shades

For a personal consultation—or to find a dealer in your area—call **1.888.LUTRON1** or visit **www.lutron.com**.

LUTRON®

24/7 Technical Support Center 1.800.523.9466

save energy with Lutron™ ®

CIRCLE 46