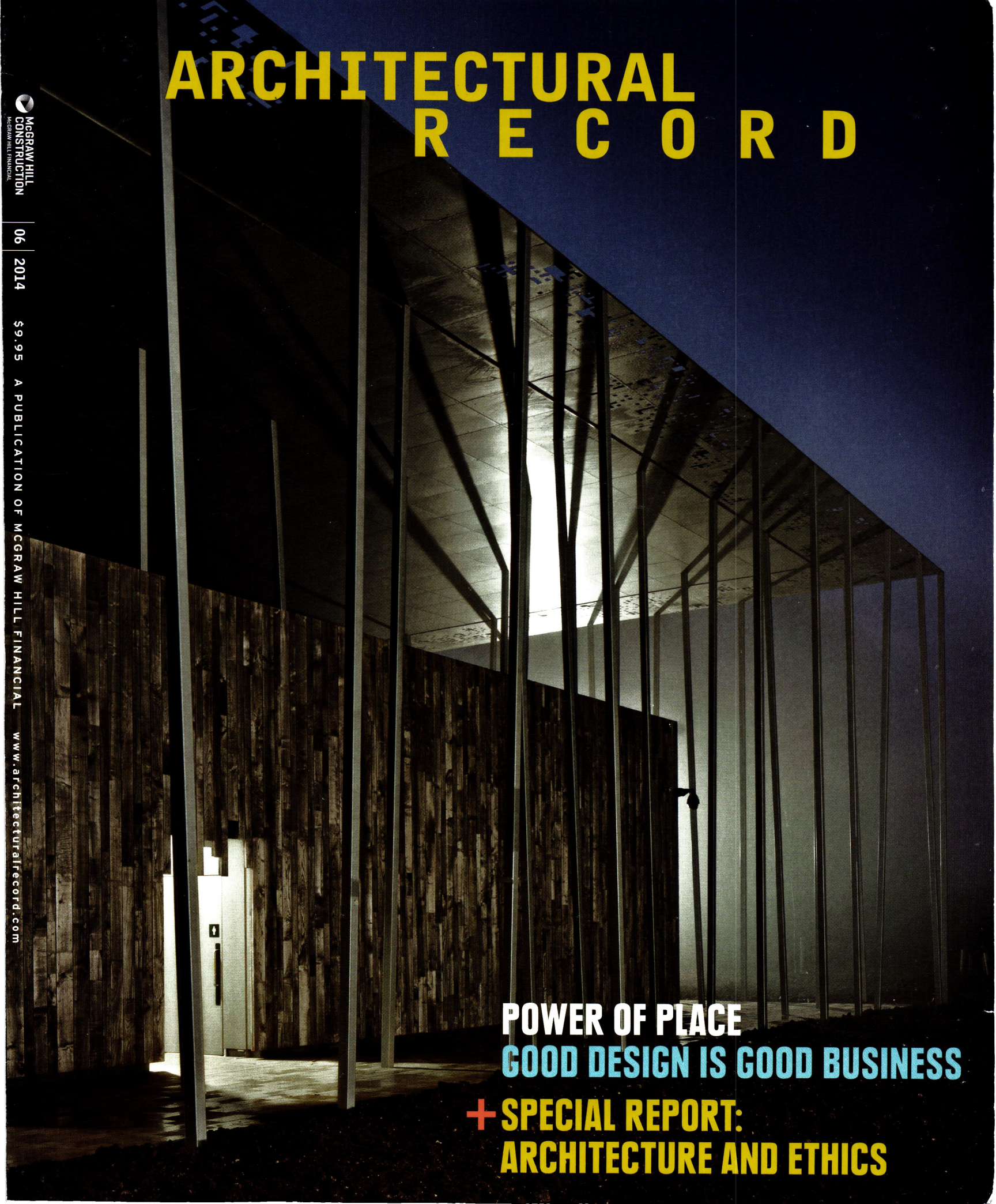

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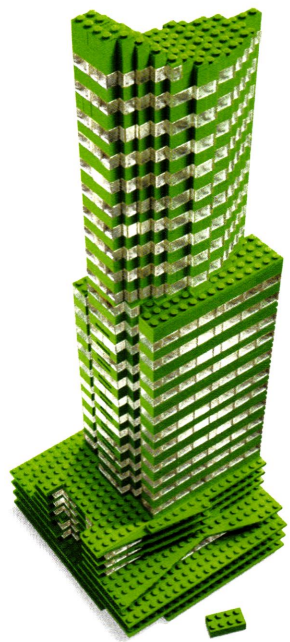

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NEW TWIST

The new ideas that poured into Lower Manhattan's rebuilding resulted in a stronger infrastructure—and some architectural gems. A key piece in the undertaking is **Pelli Clarke Pelli**'s new **Pavilion** at **Brookfield Place**, a public space serving the 35,000 commuters who use the PATH system daily. Because the system's track network runs underneath, the pavilion's soaring roof and hanging glass curtain wall could only be supported at two points. **Thornton Tomasetti** met the challenge with a pair of 54-foot-tall "basket" columns, each gathering its loads in an expressive weave of lightweight, brightly painted twisting steel tubing that spirals down to plaza level in an ever-tightening array. It is innovative design, with a twist.

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Architect: Pelli Clarke Pelli Architects
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INSIDE OUT

Want to know what goes on at the **New School**? Passersby need only glance at the institution's new **University Center** in Greenwich Village to understand that progressive design education happens here. The building by **Skidmore, Owings & Merrill** expresses the school's interdisciplinary approach through a brass-shingled facade crisscrossed by a series of glass-enclosed stairways that highlight a vivid tableau of students circulating within. The unique system encourages collaboration—and a new dialogue between campus and community that is sure to be conversation for decades to come.

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Architect: Skidmore, Owings & Merrill
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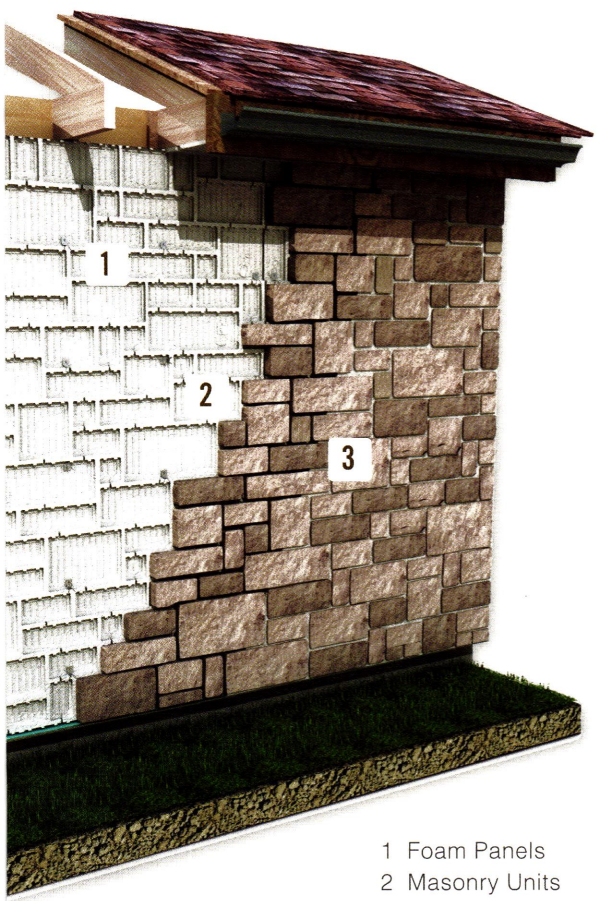

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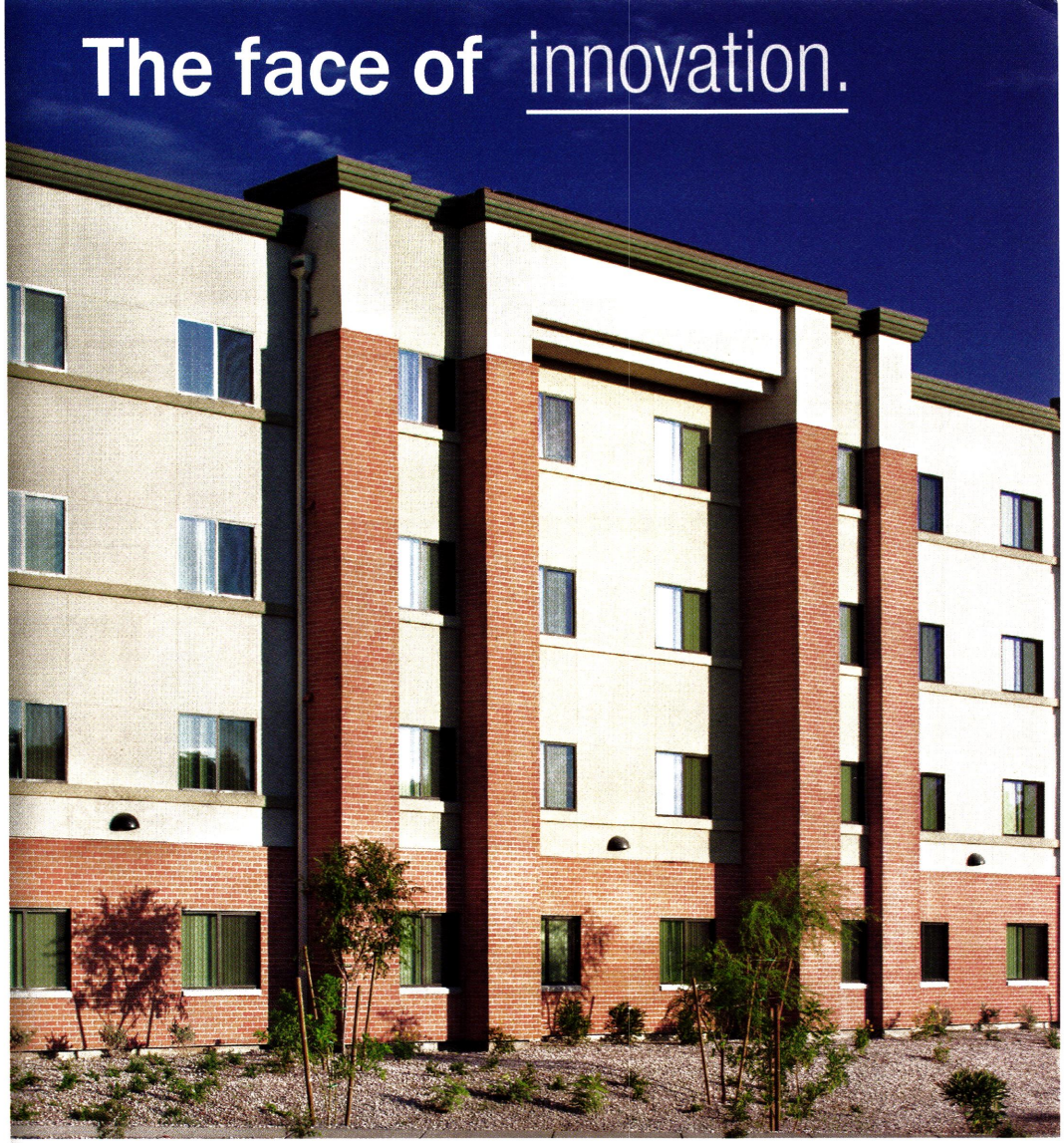

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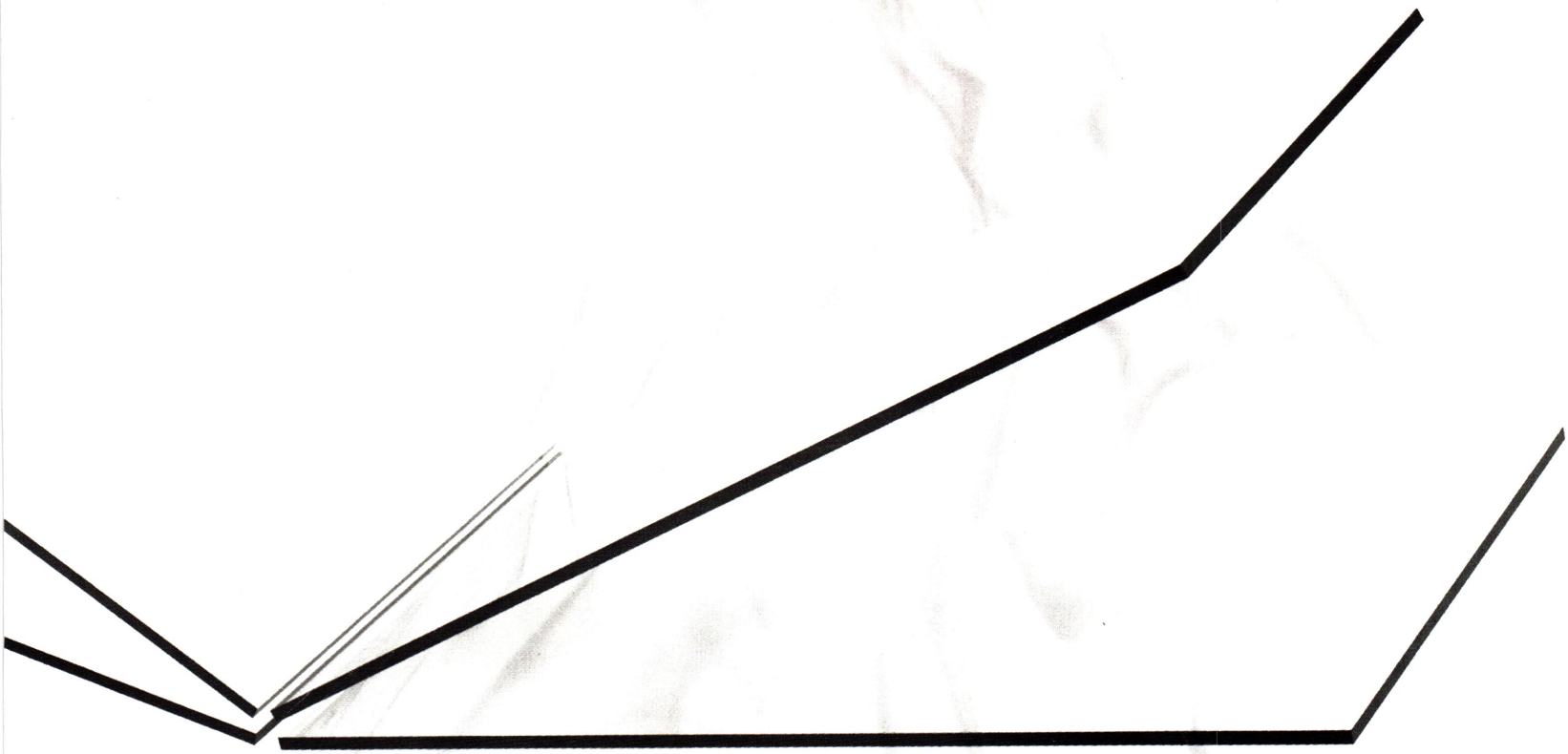

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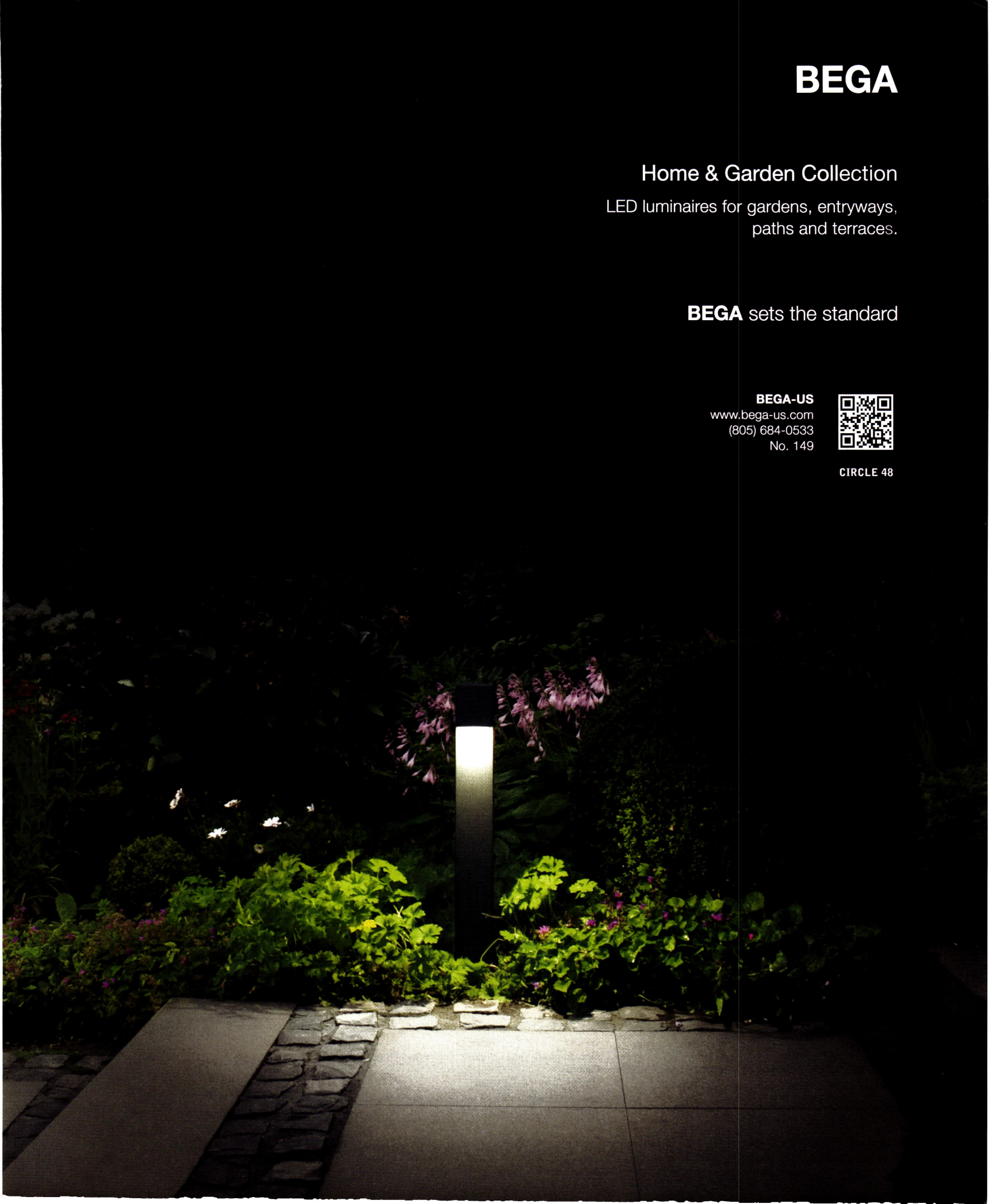

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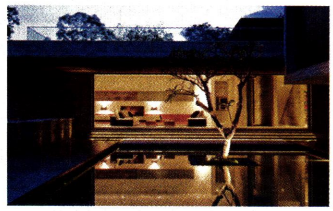

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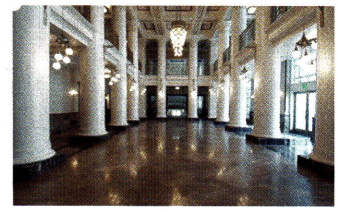

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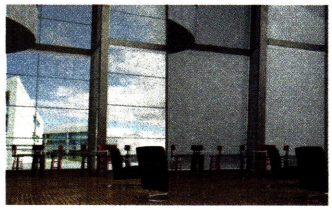

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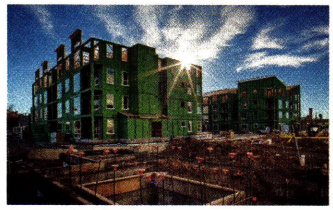

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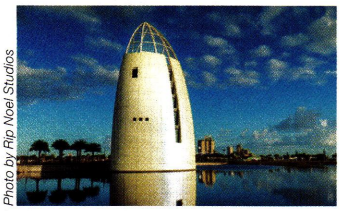

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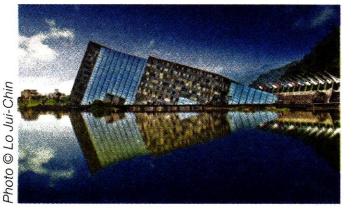

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A Plant Tour: Single-Source Glass Fabrication

Credit: 1 HSW, 1 GBCI CE Hour

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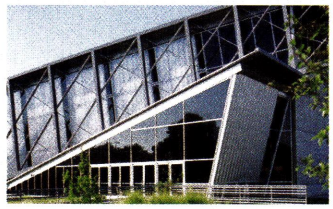

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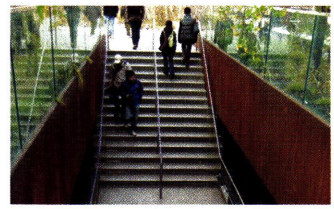

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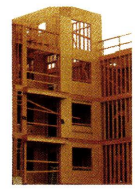

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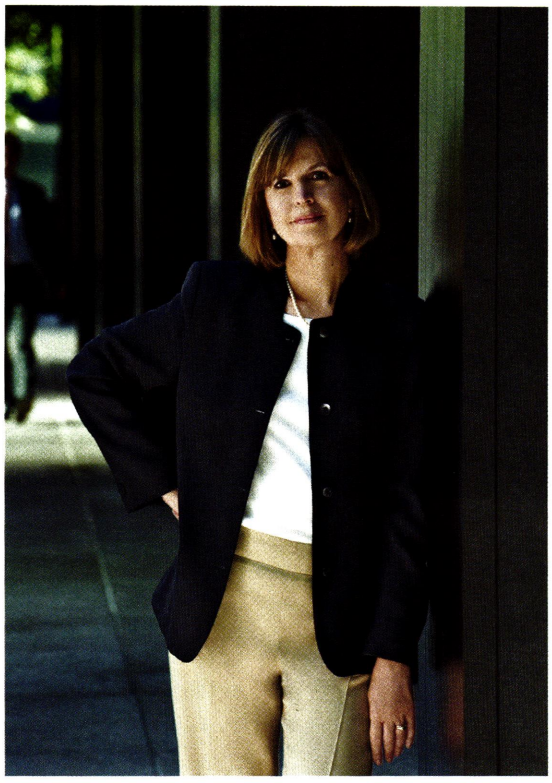
Ethics and Architecture

How many ways can architects engage with the communities and wider world around them?



HERE ARE SOME randomly selected news stories from the last month:

- Rising temperatures and climate change are already here, contributing to the current extremes of droughts, wildfires, heat waves, and floods that are devastating regions of our country.
- A botched execution by lethal injection in Oklahoma caused obvious suffering to the inmate, who then died of a heart attack.
- French economist Thomas Piketty's runaway bestseller, *Capital in the Twenty-First Century*—which posits that global economic inequality will widen with disastrous results, unless governments intervene by raising taxes—kept fueling debates on talk shows and op-ed pages.

So what do any of those topics have to do with being an architect today? Maybe a great deal, depending on your practice.

In this issue of RECORD, we feature a special report on ethics and architecture. The American Institute of Architects maintains a code of ethics for professional conduct, but we are looking at the subject more broadly—from the problems of migrant construction workers to the design of affordable housing; from refusing commissions to build prisons or execution chambers to engaging in socially activist and sustainable architecture.

On the following pages are some projects that exemplify ethical architecture. A school by Rogers Partners is sparking the revival of a derelict Baltimore neighborhood with a design that beautifully fits into its urban context (page 182). Staff housing at a remote clinic in Burundi was inspired by local conditions and labor, and supervised by New York architect Louise Braverman, mostly via Skype (page 188). A complex of appealing affordable apartments by Leddy Maytum Stacy addresses the skyrocketing rents in their hometown of San Francisco that are driving the middle class and working people from the city (page 192).

And a pioneering program for social architecture celebrates 20 years of success. RECORD's managing editor Beth Broome traveled to Hale County, Alabama, to report on Auburn University's Rural Studio and visit some of the houses and community projects designed and built over the last two decades by the architecture students in the program (page 114). Rural Studio's remarkable founder, the late Samuel Mockbee, saw its primary mission as that of educating those who came to be called "citizen architects"—and, today, there are more than 700 of them out in the world.

The tradition of citizen architects clearly applies to the New Orleans firm Eskew+Dumez+Ripple, whose practice has defined the best of social design and civic leadership in the revitalization of their city after Hurricane Katrina. This month, at the AIA convention in Chicago, the office will be honored with the AIA Firm Award for 2014 (page 28). (And this month too, the activist trailblazer Shigeru Ban will pick up his Pritzker Prize at a ceremony in Amsterdam.)

Sadly, Eskew+Dumez+Ripple's founding partner Allen Eskew, who shaped the office's values and spirit, died just before the AIA Firm award was announced last December.

Now the profession has lost yet another passionate citizen architect. Though New York's Frederic Schwartz left behind a substantial body of work—including "Empty Sky," a stunning memorial to victims of 9/11 (RECORD, September 2011, page 184)—his exceptional role as a civic activist, teacher, and relentless questioner of the status quo may well be his greatest legacy. In the months and years after the 9/11 attacks, Schwartz was a constant presence at public meetings and forums, calling for a sensitive and holistic response to rebuilding Lower Manhattan. With Rafael Viñoly, he led the THINK team, whose scheme for two open lattice-like towers was a finalist in the design competition for Ground Zero. The critic Philip Nobel, in his book *Sixteen Acres*, called Schwartz the "tragic conscience" of the efforts to rebuild.

Schwartz was active in post-Katrina New Orleans too, an engagement that began with a studio he taught and brought to the ravaged city from Harvard's Graduate School of Design in the fall after the hurricane. As one of his final acts of advocacy, he was a force behind the change last year in the AIA rules to allow two partners to win the Gold Medal—an honor he fervently believed Denise Scott Brown and Robert Venturi, his early mentors, deserve to receive together.

Architects often flourish later in their careers than those in other professions, pushing well into their 70s or 80s. Not Eskew or Schwartz, who died with many ideas and possibilities still ahead of them. But their students, colleagues, and fellow citizen architects are here to carry on. ■

Cathleen McGuigan

Cathleen McGuigan, Editor in Chief

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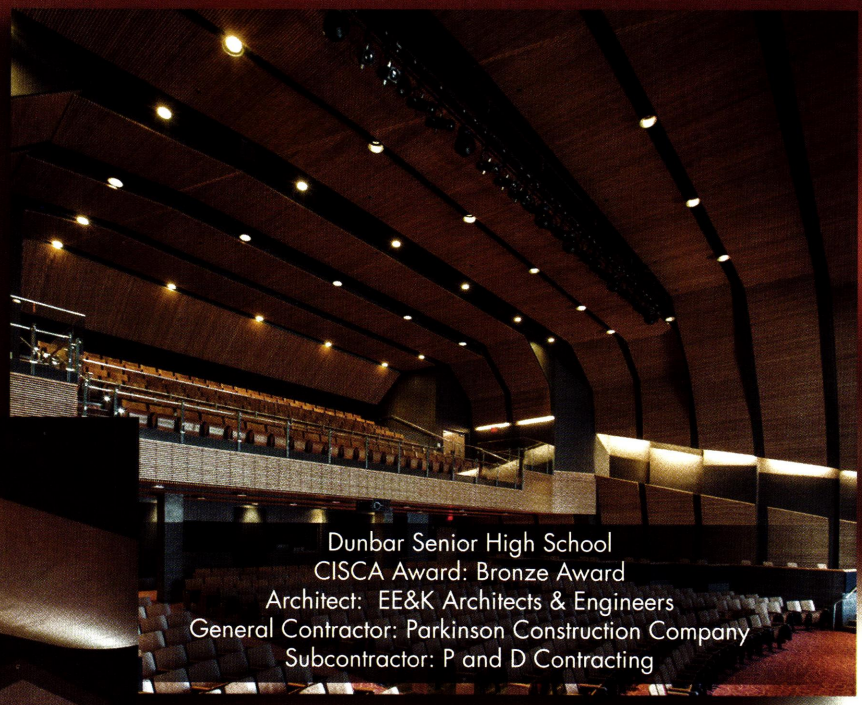
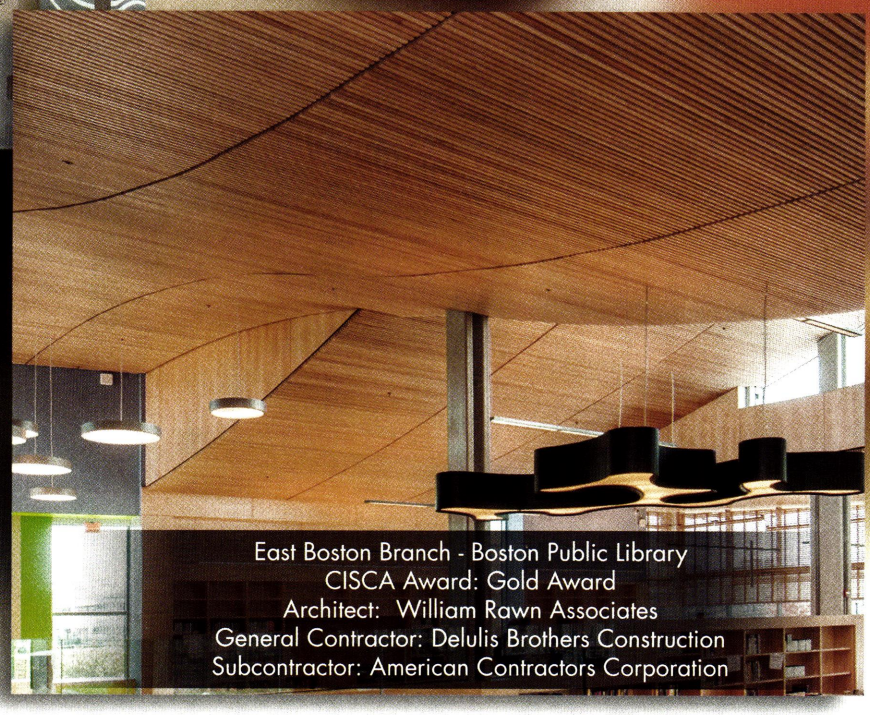
CIRCLE 87

Six Entries...

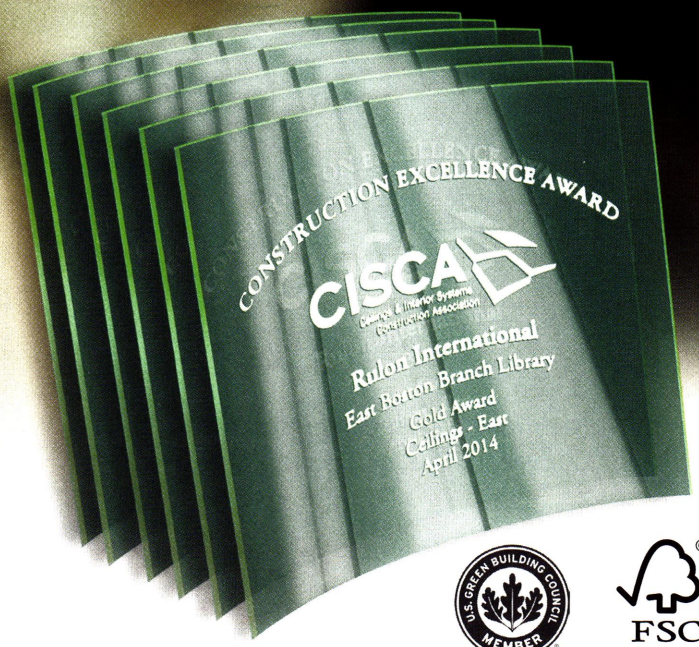


Dunbar Senior High School
CISCA Award: Bronze Award
Architect: EE&K Architects & Engineers
General Contractor: Parkinson Construction Company
Subcontractor: P and D Contracting

Gyu Kaku Japanese Barbecue Restaurant - Miami, FL
CISCA Award: Bronze Award
Architect: 2010 Architects
General Contractor: TRB Contracting
Subcontractor: Lotspeich Company of Miami



East Boston Branch - Boston Public Library
CISCA Award: Gold Award
Architect: William Rawn Associates
General Contractor: Delulis Brothers Construction
Subcontractor: American Contractors Corporation



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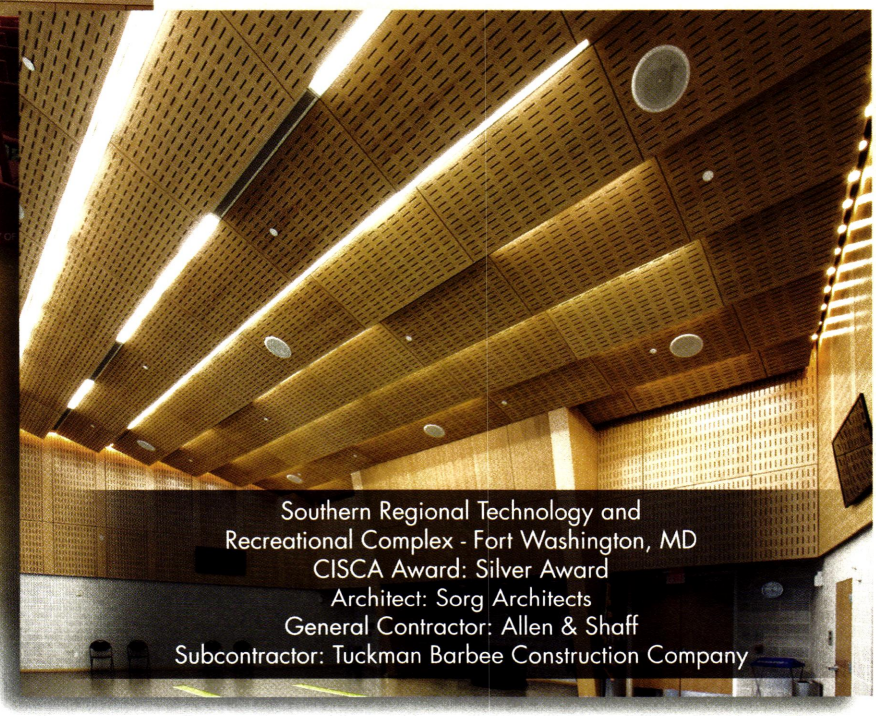
CIRCLE 89

Six Awards!

Salt Lake City Community College
Film Screening Room - Salt Lake City, UT
Architect: GSBS Architects
General Contractor: Big-D Construction Corporation
Subcontractor: Golder Acoustics Inc.

Society of the Four Arts - Palm Beach, FL
CISCA Award: Bronze
Architect: Glidden Spina & Partners
Design Architect: Harry Elson Architect PC
General Contractor: Conkling & Lewis Construction, Inc.
Subcontractor: Atlantic Interior Services Inc.



Southern Regional Technology and
Recreational Complex - Fort Washington, MD
CISCA Award: Silver Award
Architect: Sorg Architects
General Contractor: Allen & Shaff
Subcontractor: Tuckman Barbee Construction Company

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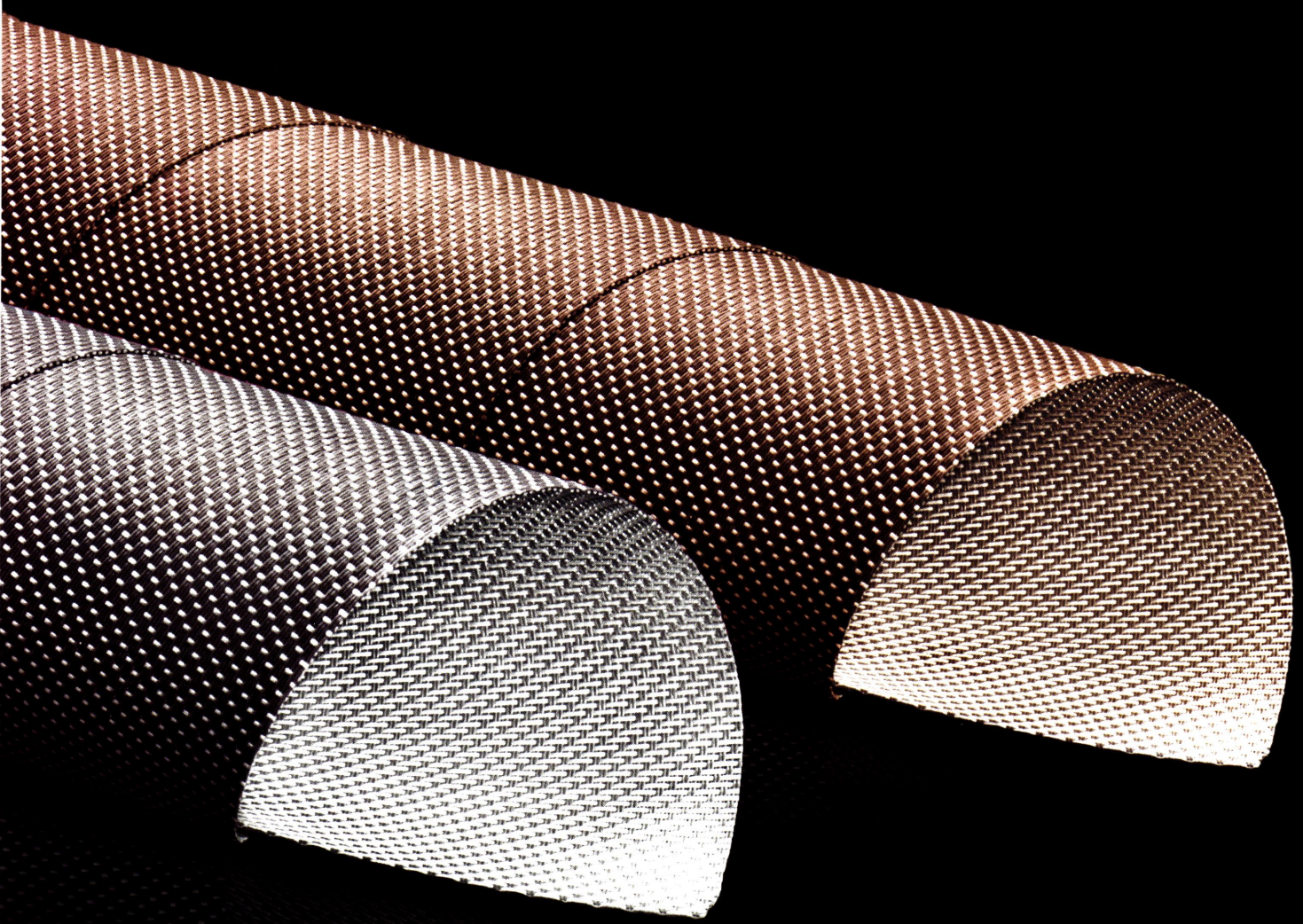

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perspective

I have always considered architecture as an art. To me, architecture is not primarily the solution of a problem but the making of a statement.

—*Hans Hollein, Pritzker Prize–winning architect. Hollein died on April 24, 2014, at age 80.*

Stacks Will Stay at New York Public Library

BY FRED A. BERNSTEIN

A controversial plan to reduce the 1911 New York Public Library main branch research facilities to fit in a lending function has been scrapped.

PHOTOGRAPHY: © HERB SCHER (LEFT); BILL HUGHES (RIGHT)

IT'S TYPICAL for a public institution to announce a big building project with fanfare. But when the same project is dropped, the institution may invoke its right to remain silent.

That's what happened with a plan to turn part of the New York Public Library (NYPL) at 42nd Street and Fifth Avenue in Manhattan into a lending library. Renderings were released in December 2012 at a press conference presided over by library president Anthony Marx and the project's architect, Norman Foster. But when the plan—which would have turned the historic cast iron and steel stacks below the library's main reading room into a circulating library—was abandoned, the library didn't say a word. A *New York Times* reporter learned of the cancellation when she called the library to ask about the project's status.

Architects, many of whom had protested the plan, expressed relief as news of the reversal spread. Barry Bergdoll, the curator and architectural historian, uttered one word, "Hooray," then added that the plan would have effaced the entry sequence intended by the building's architects, Carèrre and Hastings. (In 2013, in a timely act, Bergdoll, then chief curator of architecture and design at the Museum of Modern Art, mounted a show of the grand libraries of Henri Labrouste, whose work inspired the NYPL stacks.) Others had similar reactions. "It was overdue," said Gianfranco Monacelli, the book publisher, of the library's change of plan. Gregory Wessner, director of Open House New York, said now that the stacks, which are structural, are being preserved, he hoped that more people would get to see what made them great.

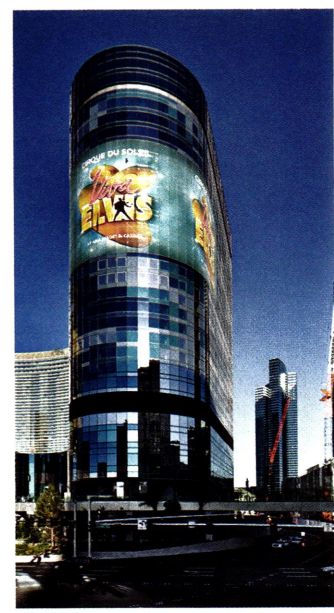
Foster + Partners had already been paid

Visit our online section at architectural.com/news.

Foster + Partners' Vegas Hotel Set for Demolition

BY TONY ILLIA

FOSTER + PARTNERS' Harmon Hotel on the Las Vegas Strip is being razed without ever opening. Owner MGM Resorts International received court approval on April 22 to demolish the unfinished oval-shaped 27-floor tower following a protracted legal battle with its contractor, Tutor Perini Corp., over building defects. The Harmon once figured prominently in the $8.5 billion CityCenter hotel-casino-entertainment complex that opened in December 2009. The blue-glass building, whose incomplete construction cost was $279 million, has since become a symbol of real estate boom excess gone bust. Its removal will leave a large gap in CityCenter's 76-acre master-plan scheme. "CityCenter consulted with experts about the fastest and safest way to resolve public-safety concerns created by the structural-defect issues at the Harmon," said MGM spokesman Gordon Absher in a statement. "Based on their expert advice, CityCenter is recommending that the structure be demolished."



The Harmon will be dismantled over the next year at a cost of $11.5 million. A Foster + Partners spokeswoman declined to comment for this article, and the Harmon has been removed from the firm's website. ■

Foster's 2012 renderings depicted a new circulating library (above) that would replace book stacks currently located underneath the Rose Reading Room.

$9 million for their work, including the 2012 designs. Those drawings showed a new atrium in a bland corporate style; making the plans public may have been a tactical error on the library's part. The renderings were an easy target for critics, including Ada Louise Huxtable, who, in an article published shortly before her death in early 2013, warned that the library was "about to undertake its own destruction."

Foster promised to address the concerns and reportedly worked with Marx to create a new plan that preserved parts of the stacks (even conferring with the Bibliothèque Nationale in Paris, which will open its Labrouste stacks to the public for the first time since they were installed 150 years ago). But the public may never see Foster's revised designs.

Now, instead of inserting a lending library into the 1911 building, the NYPL will renovate the lending library it already operates at Fifth Avenue and 40th Street. The NYPL has not yet chosen an architect for that renovation, though Huxtable, who seems to be getting her wishes granted posthumously, suggested Foster for the job.

The library plan may have been sunk by the election of Bill de Blasio as mayor. (De Blasio reportedly met with Marx to express reservations about the proposed changes to the city-owned building.) But the effort to stop the plan was multipronged: it included protests by scholars and authors, lawsuits by citizens' groups, and campaigns by architects.

Among the most effective organizers was Charles Warren, an architect and the author of a book on Carèrre and Hastings, who helped found the Committee to Save the New York Public Library. Reacting to the turnaround, Warren said the battle isn't over yet. The NYPL has already emptied the building's original stacks, putting the books in storage, and plans to keep them empty, claiming they cannot be fireproofed. To Warren, the real victory will come when the stacks are returned to their original use. "They're part of the perfect machine that is the 42nd Street library," he said. "We need to bring the books back." ■

Dumez Reflects on AIA Firm Award

BY DAVID SOKOL

AT THE 2014 AIA National Convention in Chicago later this month, Steve Dumez will be taking a bow alongside Mark Ripple as the two remaining partners of Eskew+Dumez+Ripple (EDR) accept the 51st Architecture Firm Award. The celebration will be bittersweet, Dumez says, in light of founder Allen Eskew's unexpected death just two days prior to the AIA's announcing the honor last December.

In that statement, the AIA cited deep social engagement as being among EDR's merits for recognition. Dumez, who also is the firm's director of design, credits Eskew for promoting public service at all levels. "There was always this sense that firm leaders would serve on boards, AIA committees—the variety of ways a principal gets involved in the community—and I say that Allen's legacy is that we also expect every staff member to find some means to get engaged."

Dumez emphatically acknowledges the figures he and Eskew modeled themselves on. "Both Allen and myself worked with Charles Moore, so the notion of a participatory design that listens to clients while engaging a really broad spectrum of the community is something we've been committed to for decades," he says of the 1991 AIA Gold Medal–winning architect. He also cited the immersive workshops of 1972 firm winner Caudill Rowlett Scott as another influence. Yet, unlike EDR, they never conducted their work in a setting as charged as New Orleans after Hurricane Katrina, and EDR's experience in leading rebuilding "certainly intensified" its efforts to program and design places that achieve consensus among numerous stakeholders and challenge preconceived notions of architectural expression. "I think partly the AIA is recognizing the hard work we've had to do in our community after Katrina," Dumez says.

Members of the firm in their New Orleans office.

The EDR partner notes that, in New Orleans, public participation in redevelopment and new building projects remains high, and that community activism is becoming more prevalent in the architecture profession generally. If Dumez were to assign meaning to this year's award, then "it might simply be an understanding that it shouldn't take a catastrophe to get engaged within a community." He adds: "There were many opportunities in the aftermath of Katrina where simply doing things expeditiously could have been in order. For us, design excellence and the kind of community we wanted to build was never jettisoned, and in some cases those difficult circumstances made our values stronger." ■

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CIRCLE 103

9/11 Museum Reveals the Bedrock of a Tragedy

BY CLIFFORD A. PEARSON

On the lowest level of the museum, 70 feet below grade, the slurry wall stands as a symbol of strength and resilience, with the so-called Last Column and other artifacts in front of it (left). A pair of columns or tridents from one of the destroyed towers rise through the main stair hall of the entry pavilion (below). The entry pavilion, by Snøhetta, sits on the memorial plaza (bottom).

LONG DELAYED and much contested, the National September 11 Memorial Museum at Ground Zero opened in mid-May with President Obama and First Lady Michelle Obama attending the dedication. While nearly every part of the redevelopment effort at the World Trade Center site in lower Manhattan has generated debate, the museum has been a lightning rod for particularly intense criticism and controversy. Its role as the main keeper and shaper of the 9/11 narrative made such struggles inevitable, since so many different groups were affected by the 2001 attacks.

Just as the range of "stakeholders" in the museum seemed limitless, the number of agencies with at least some control over it was mind-boggling: the city of New York, the state of New York, the Port Authority of New York and New Jersey, the Lower Manhattan Development Commission (LMDC). Even the official client for the project kept changing, starting with the LMDC, then moving to the World Trade Center Memorial Foundation, which morphed into the National September 11 Memorial & Museum.

While the memorial, designed by Michael Arad and Peter Walker, opened on the 10th anniversary of the attacks (RECORD, September 2011, page 68), the museum followed a more tortuous route, with delays caused by changes in concept and rising costs. Located between the memorial's twin pools of cascading water, the museum is entered through an angular glass-and-steel pavilion designed by Snøhetta. This pavilion houses the ticket area and lobby on the entry level and a 165-seat auditorium on the second floor. But the museum itself, designed by Davis Brody Bond (DBB), occupies 110,000 square feet of space below ground. The firm created a long "ribbon" of ramps, stairs, and overlooks to take visitors 70 feet down from the memorial plaza to bedrock. At this lowest level, visitors find the now-famous slurry wall (which had protected the 16-acre site from the Hudson River), a pair of exhibitions in the footprints of the destroyed towers, and a group of artifacts and displays. Thinc Design oversaw the exhibitions, working with Local Projects on presenting digital material.

"Where most museums are buildings that house artifacts, this museum has been built within an artifact," says Alice Greenwald, its director. ■

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PHOTOGRAPHY: © THINC (TOP 2); JEFF GOLDBERG/ESTO (BOTTOM)

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CIRCLE 147

One Year In, Bullitt Center Exceeds Energy Goals

BY PETER FAIRLEY

The 242-kilowatt rooftop PV array overhangs the edges of the building by as much as 20 feet (far left). The glass-enclosed stair (left) has a view of the downtown. Heavy timber structural components give the interiors a rich atmosphere (below).

THE DESIGNERS of Seattle's Bullitt Center have overachieved. The Miller Hull Partnership, cofounded by the late Robert Hull, set out to demonstrate that a six-story office building could generate all of the energy it needs. In fact, after one year of operation, it is sending a sizable energy surplus to the local power grid, according to data released by its developer, the Bullitt Foundation.

Consumption is simply far lower than what the Miller Hull Partnership and the m/e/p engineers, PAE, projected for the 52,000-square-foot building. Instead of using 16kBtu per square foot—half the energy-use intensity (EUI) of Seattle's best-performing office building—consumption during its first year was just 10kBtu/sf.

PAE president Paul Schwer estimates that the building's EUI will still be just 12kBtu/sf when its last unoccupied floor is leased. At that level, the energy flowing from the solar array on its cantilevered roof—sized to just offset the building's projected energy consumption—will also offset electricity use for about a dozen neighboring houses.

Denis Hayes, the Bullitt Foundation's president, says that no commercial building comes close to the Center in terms of energy efficiency. He calls that a coup for the designers, who integrated a suite of energy-saving strategies, including 14-foot floor-to-floor heights (to facilitate daylighting), triple-glazed windows, and passive climate controls. "We've figured out a way to dramatically reduce energy consumption without any sacrifices of comfort or lighting," says Hayes.

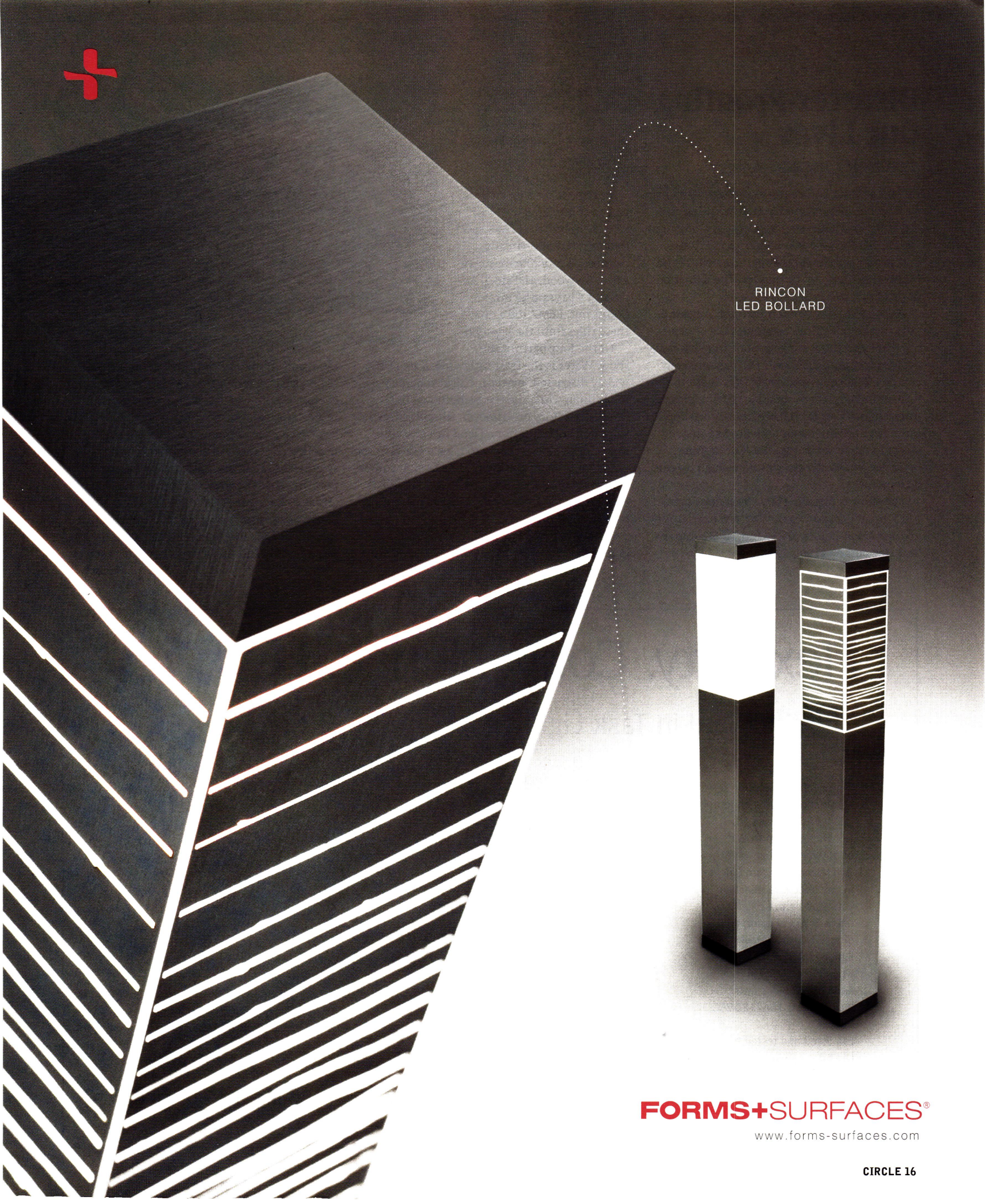
Schwer says the takeaway is that net zero energy office buildings are viable, even in overcast Seattle—which, he adds, is "literally in the cloudiest climate in the lower 48 states." And it works in less temperate climates too. He has modeled operation of the Bullitt Center in 15 other cities across the U.S., and, even in notoriously frigid Minneapolis, its energy budget zeroes out.

But Schwer and Miller Hull principal Brian Court say they must share credit for the Bullitt Center's performance with the building's occupants, whose lower-than-expected plug loads account for most of the energy surplus. Schwer says PAE, which decided two years ago that it would relocate to the Bullitt Center, has since slashed power use per workstation by 80 percent by replacing computing equipment. An incentive scheme devised by Hayes will help keep tenants engaged: each has an energy allowance and only pays for the electricity consumption that exceeds that budget.

While the Bullitt Center excels at generating energy, it has struggled to deliver on projected water savings. A rainwater purification system, for example, remains inoperative because regulators have insisted that the water be chlorinated. Hayes worked hard to overturn the order, even approaching the EPA.

But having now agreed to chlorinate the rainwater, Hayes awaits final approval to start the system. He expects to have it running well before January 2015, when the building will have been at 85 percent or greater occupancy for a year and he can file for Living Building certification. ■

PHOTOGRAPHY: © NIC LEHOUX



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CIRCLE 16

Disaster-Proofing Our Lives

BY AMANDA KOLSON HURLEY

IN THE WEEKS before the exhibition *Designing for Disaster* opened on May 11 at Washington, D.C.'s National Building Museum, a wildfire in Oklahoma forced 1,000 people to evacuate, and tornadoes ripped through the South and Midwest, killing 34. In the U.S., the threat of natural disaster is always with us.

As the exhibition (open through August 2, 2015) makes clear, our strategies for preventing disasters and lessening their impacts have evolved tremendously over the past quarter-century. The show smartly brings these to the fore and makes them tangible, letting visitors unleash gusts on miniature houses in a replica hurricane testing lab or activate expansion joints to move, as in a quake. Throughout, *Designing for Disaster* stresses how much we can do to prepare.

The show is organized by elements: Earth, Air, Fire, and Water. In the Earth room, a mock-up of stairs at California Memorial Stadium in Berkeley demonstrates how expansion joints allow the structure to roll with a temblor—a good idea, since the historic stadium sits directly on top of the Hayward Fault. (It got a full seismic upgrade a few years ago.)

In the Air section, visitors can peer into an 8-by-8-foot safe room built to FEMA specifications out of vertically reinforced concrete masonry units, plywood, and steel. As curator Chrysanthe Broikos points out, FEMA didn't have these rules until the late 1990s.

After a 2007 tornado destroyed the high school in Enterprise, Alabama, killing eight students, state officials signed a law requiring safe rooms in new schools.

Of the four parts of the show, Water is the least satisfying. Kate Orff's widely discussed "oyster-tecture" scheme gets top billing, while the less well-known but interesting story of Valmeyer, Illinois, a town relocated entirely after a flood in 1993, gets lost. Timing doesn't seem to have worked in the organizers' favor; the Rebuild by Design competition just produced 10 schemes for a resilient New York/New Jersey coastline, but these must have arrived too late to make it into the show.

The final room has a pantry equipped with emergency supplies like plastic sheeting, duct tape, and sunblock. Walking into it is unsettling—it's our generation's version of the bomb shelter. We know that disasters are getting more severe and occurring with more regularity. We can see it and feel it, in addition to hearing 98 percent of the world's climate scientists say so. Therefore it's odd and disappointing that the show makes no mention of climate change (at least none that I could find). *Designing by Disaster* is great at educating visitors about how they can be more hazard-proof. But it doesn't tell them why they have to be. ■

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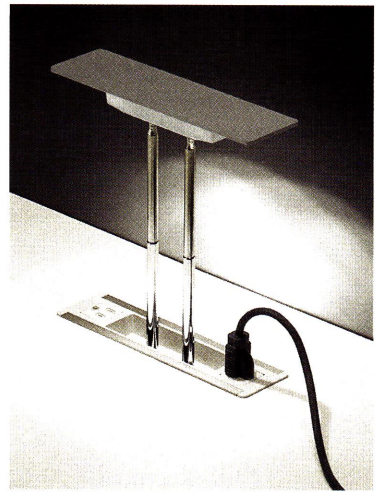

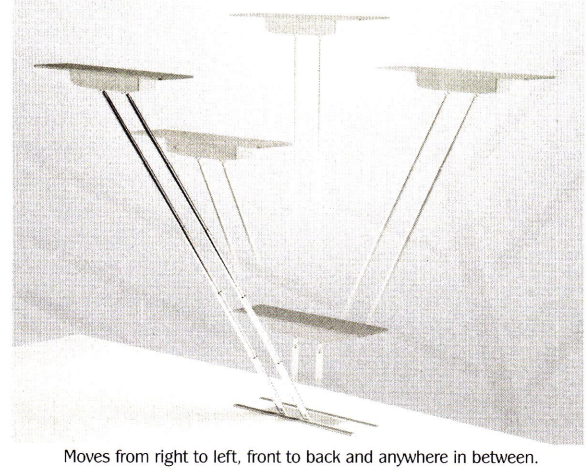

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CIRCLE 104

RECORD Honors Best Corporate Architecture

BY AMANDA KOLSON HURLEY

ON THE NIGHT of April 24, at a black-tie event in Washington, D.C., the principals of STUDIOS Architecture came up to the stage—and they just kept coming. The firm had flown in all 18 of its principals, from as far afield as Paris and Mumbai, to jointly accept ARCHITECTURAL RECORD's Good Design Is Good Business Lifetime Achievement Award, presented at the American Architectural Foundation (AAF) Accent on Architecture Gala.

Now in its third year, the award honors both architects and patrons who "consistently build the best corporate architecture," as RECORD's editor in chief Cathleen McGuigan said in her remarks. STUDIOS received the 2014 architecture award for a body of work that includes some of the most admired office spaces—like the New York headquarters of Bloomberg LP—and that stretches back to the early days of Apple (the firm's first client was Steve Jobs).

STUDIOS Architecture CEO Todd DeGarmo accepted ARCHITECTURAL RECORD's Good Design is Good Business Lifetime Achievement Award on the firm's behalf.

This year's patron award went to Novartis, the Swiss pharmaceutical company, which has quietly commissioned a fleet of world-class firms such as Weiss/Manfredi and Rafael Viñoly Architects to design its campuses around the world. Novartis's director of design, Patrick Lobdell, accepted the award, and noted that a short video shown that night had given him a new perspective on what the company had built over the years. "I was able to sit back and say: 'How impressive is this?'"

The final honor of the night, AAF's Keystone Award, went to the Chicago Architecture Foundation. But before that, Tom Cochran of the U.S. Conference of Mayors gave the Joseph P. Riley Jr. Award for Leadership in Urban Design to a husband-and-wife pair of civic leaders: Oscar and Carolyn Goodman, the former and current mayors of Las Vegas. Both have promoted the revival of the city's once-moribund downtown. Oscar Goodman, martini in hand, gave the night's most colorful speech, riffing on showgirls and mobsters. But his wife made an appeal to the crowd of architects: move to Vegas. To "those of you who'd like to start a firm," she said, "there's no state income tax." ■

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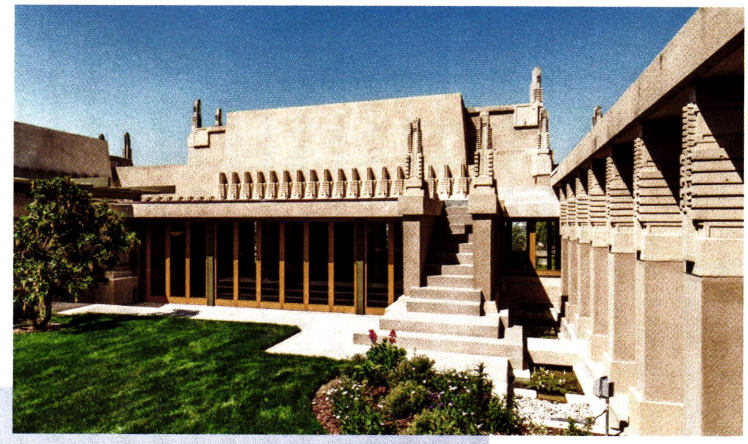
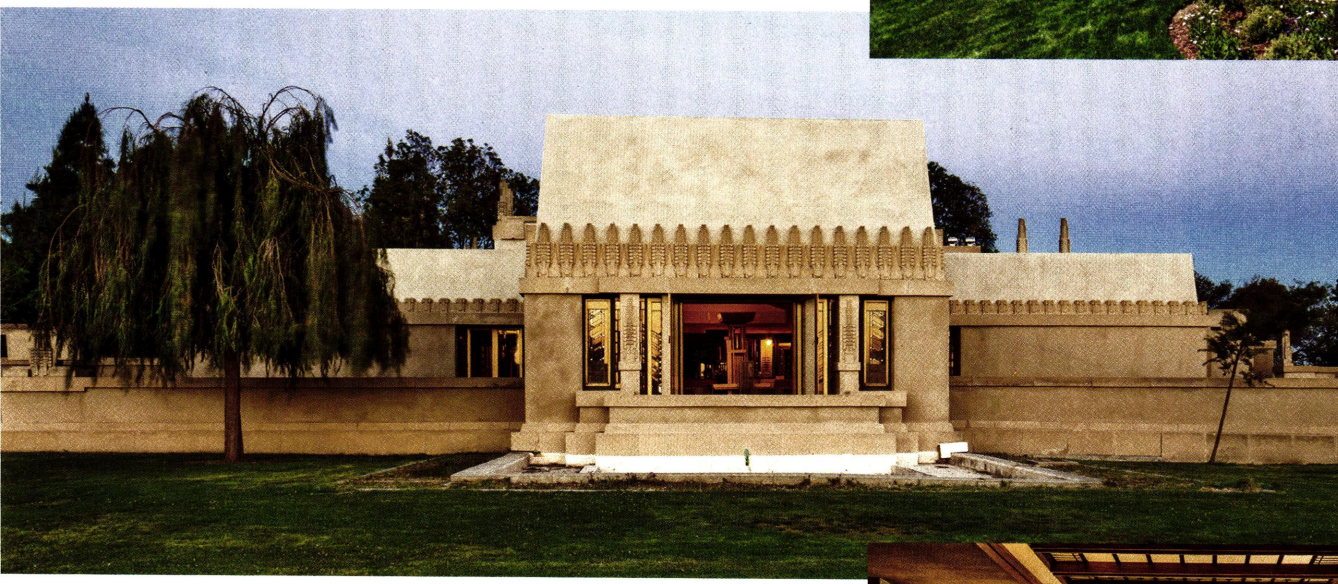
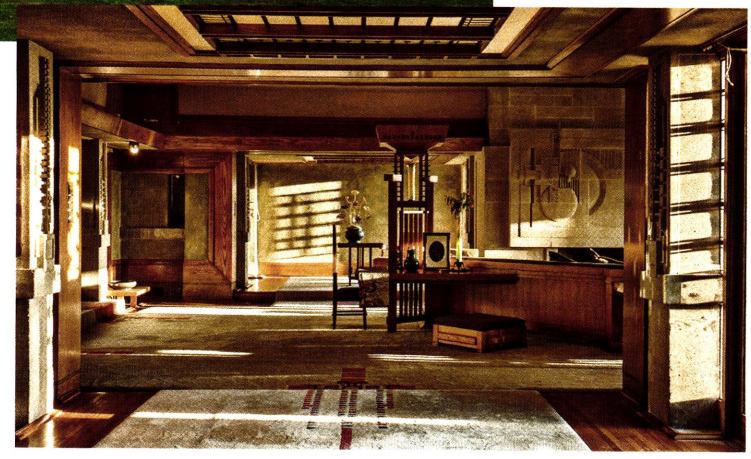
A Rebirth for Wright's First L.A. Project

BY SARAH AMELAR

WHEN FRANK LLOYD WRIGHT built the Hollyhock House, between 1919 and 1921, he couldn't have imagined it would one day appear as the Piranha Temple in the 1989 movie *Cannibal Women in the Avocado Jungle of Death*. But with this project—his first in Los Angeles—he was clearly beginning to explore the Mayan, or Mesoamerican, themes that would pervade his Southern California work. And, perhaps not coincidentally, he designed the house for a female client with an independent spirit and a passion for the theatrical.







The house surrounds a garden courtyard (above). A stylized version of the hollyhock adorns the roofline (left). The original interior walls shimmered with bronze flecks. The restorers brought back the sheen with cosmetics-grade, crushed mica (below).

She was Aline Barnsdall, an oil heiress—bohemian, feminist, champion of progressive causes, and producer of experimental theater—and a devoted patron of Wright. For the 36-acre Olive Hill site, in East Hollywood, she hired him to create a campus for avant-garde theater and include her own residence (with ornament inspired by her favorite flower, the hollyhock). But the two clashed when Wright lagged in designing her house—focusing instead on the Imperial Hotel in Japan—and handed off its construction supervision to his relatively inexperienced son Lloyd and employee Rudolph Schindler. Cost overruns mounted, and Barnsdall fired Wright in 1921, before the interior was complete. She later hired Schindler to finish it. She never made the 5,000-square-foot house her home and, in 1927, donated the property to its current owner, the city of Los Angeles. But the Hollyhock's tumultuous history continued as it endured neglect and earthquakes.

The house is now a museum, the centerpiece of the Barnsdall Art Park and a National Historic Landmark. By the time it closed for its recent renovations, in 2011, it needed more than a face-lift. Its leaks were serious, and the exterior, slathered in beige paint, had acquired "the texture of cottage cheese," recalls the house's curator, Jeffrey Herr. Clues to Hollyhock's past have since emerged, and, when it reopens to the public later this summer, many vanished features will be revived.

The $4.39 million renovation uncovered original wall surfaces that Griswold Conservation Associates analyzed and replicated. The newly restuccoed exterior matches Wright's sandy-textured, earthy green pigment. "Suddenly, with the authentic color, the house begins to blend with the landscape," says Herr, "just as you'd expect of Wright."

The restorers found and recreated a subtle range of interior colors and application techniques. They removed 1970s can lights and reproduced the ceiling moldings Wright used to define rooms even where no walls exist. A row of 14 oak-framed doors was reconstructed, now integrating art glass that Wright drew but never executed. The elaborate water feature that once flowed beneath the house—into pools outdoors and, indoors, beside the living room hearth—has been partially reinstated. The house's leakage has been remedied, its skewed living room resquared, and its seismic reinforcement upgraded.

After it reopens for tours and other programs, the Hollyhock will probably receive a further honor: jointly with 10 other Frank Lloyd Wright structures, it is expected to attain UNESCO World Heritage designation in 2015. ■

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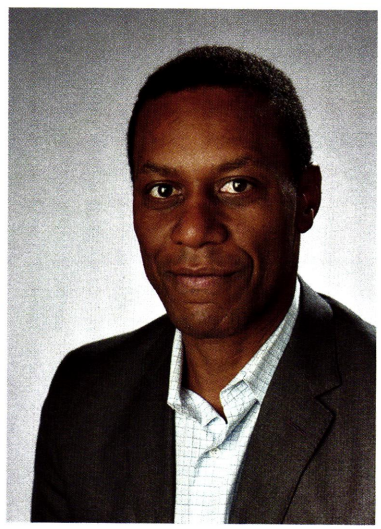
[NEWSMAKER]

Marc Norman

BY FRED A. BERNSTEIN

MARC NORMAN has been the director of UPSTATE: A Center for Design, Research, and Real Estate at the Syracuse University School of Architecture since 2012. The program was created by former dean Mark Robbins to, in Norman's words, "tie faculty and students to real-world projects in the city and the region." Norman studied political economics at Berkeley and urban planning at UCLA and spent four years as a project manager for Skid Row Housing Trust, a community development corporation in Los Angeles, before moving to New York. There, he worked for Lehman Brothers, financing affordable housing, and for Deutsche Bank, providing loans to organizations serving low-income populations, before heading to Syracuse. Norman was recently chosen to be a 2014–15 Loeb Fellow at the Harvard University Graduate School of Design.



Marc Norman

What's your biggest project right now?

There's a building in New York City called Castle Gardens, designed by Curtis + Ginsberg Architects, to reintegrate people coming out of prison into the general population. It has a shelter component, transitional units, and traditional apartments, all in the same building. It has worked phenomenally well, in terms of the recidivism rate. The New York State Department of Justice wants to replicate that model, and they picked Syracuse as the place to do that.

And what was UPSTATE's role?

I raised money to run a competition. We brought in eight firms initially; four were selected to move forward. [They were Curtis + Ginsberg Architects and Saratoga Associates; Solid Objectives-Idenburg Liu (SO-IL) with Holmes, King, Kallquist & Associates, Architects; ISA Architecture/Research with HealthxDesign; and SWBR Architects.]

Who chose the winner?

The social service provider, the developer, and the Syracuse Housing Authority made the selection: Curtis + Ginsberg.

The architects of Castle Gardens! So was the process for naught?

Not at all. The whole idea was for us to bring in firms that wouldn't otherwise be at the table. The next time [the agencies] do a deal, they'll be thinking in terms of more innovative architecture.

What is the status of the project?

Curtis + Ginsberg is negotiating with the developer right now. The site is secured, and construction should begin next year. It's called Freedom's Gate.

What did you like about the Curtis + Ginsberg proposal?

They really thought through, architecturally, how you move from public to semi-public, to semi-private, to private space, because one of the big issues here is how you make the reentry population not feel isolated but make the apartment residents not feel intimidated by their presence. They're sharing hallways, they're sharing common areas.

Why not just copy Castle Gardens?

That's on 138th Street between Broadway and Riverside Drive in Manhattan. Our site is a mostly vacant, low-income neighborhood with no amenities whatsoever. So while we're replicating the model, we really needed architects to think about how the model could work in this context, which is a familiar context in many older American cities.

I think the reason the state chose Syracuse is to show other cities that it can be done.

What else is UPSTATE doing?

Some of our students have redesigned a field house. It's really a concrete bunker in a park called Skiddy Park. It's a cinderblock building [now], with very minimal windows. The design really opens it up, creates spaces for neighborhood groups. The Parks Department is going to build it, partly with money I helped raise. It's meant to be a prototype for the other 20 or so field houses in Syracuse parks.

How does your finance background help you at an architecture school?

I have one foot in each world. Speaking the language of finance but understanding the role of design means I can go to partners and show them how design can make their projects more financially successful. Architects think they make projects happen, but it takes a team, including financiers and other institutions. ■

noted

Jeanne Gang Opens New York Office

Chicago-based Studio Gang Architects will expand into New York with a new office in Lower Manhattan, spurred by projects such as the Solar Carve Tower along the High Line and a fire rescue facility. Design Partner Weston Walker will lead the New York team.

Cooper-Hewitt Announces 2014 National Design Awards

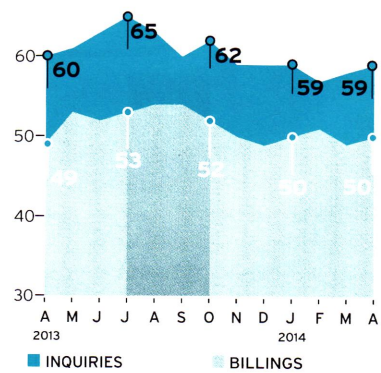
First launched at the White House in 2000, the awards are in their 15th year. Among this year's winners were Brooks + Scarpa for architecture; interior designers Roman and Williams; writer Witold Rybczynski; and Andrea Cochran for landscape architecture.

Washington Monument Reopens After Repairs

After being closed for three years because of damage suffered in an August 2011 earthquake, the Washington Monument has reopened to visitors. The $15 million repair project included adding new sealant between stones and anchors to keep slabs in the pyramidion in place.

Notre Dame Announces New Architecture Building Designer

London-based John Simpson Architects was chosen to design a new home for the Notre Dame School of Architecture, beating out other classical names including Robert Stern, Leon Krier, Tom Beeby, and Robert Adam. Construction is set to begin next year.



ABI Inches Back Up

The Architectural Billings Index (ABI) crept back up after falling below the 50 mark to 48.8 in March (any score above 50 indicates an increase in billings). The April score was 49.6, with inquiries at 59.1, up from 57.9 in March. (See architecturalrecord.com/news for a story about the AIA's new indicator for the ABI: design contracts.)

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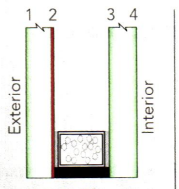

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CIRCLE 52

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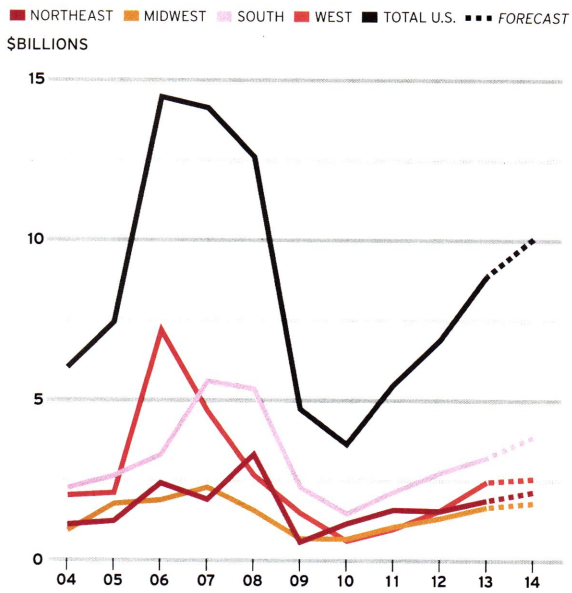
Data from McGraw Hill Dodge Analytics

MARKET FOCUS
HOTELS

Hotel construction has surged, recovering rapidly from its recession-era slump. Over the next few years, the sector should remain on an upward trajectory, thanks to strong profits and improving occupancy rates.

Hotel Starts by Region

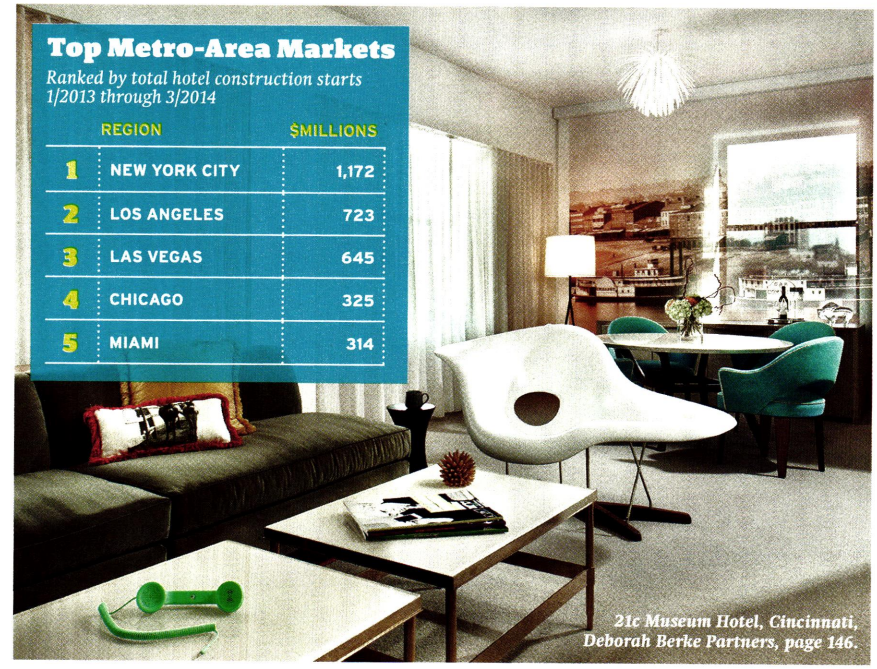
In addition to U.S. total and 2014 forecast figures



Top Metro-Area Markets

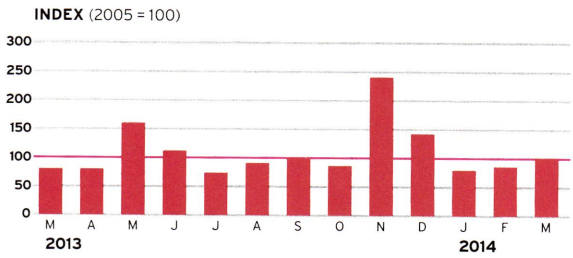
Ranked by total hotel construction starts 1/2013 through 3/2014

	REGION	$MILLIONS
1	NEW YORK CITY	1,172
2	LOS ANGELES	723
3	LAS VEGAS	645
4	CHICAGO	325
5	MIAMI	314



21c Museum Hotel, Cincinnati, Deborah Berke Partners, page 146.

The Dodge Index for Hotel Construction 3/2013–3/2014



The index is based on seasonally adjusted data for U.S. hotel construction starts. The average dollar value of projects in 2005 serves as the index baseline.

Top 5 Design Firms

Ranked by hotel construction starts 1/2011 through 3/2014

1. **HKS**
2. **Gensler**
3. **AC Martin**
4. **Cooper Carry**
5. **Lindsay Pope Brayfield Clifford & Associates**

Top 5 Projects

Ranked by hotel construction starts 1/2013 through 3/2014

$477 MILLION
PROJECT: Wilshire Grand
ARCHITECT: AC Martin
LOCATION: Los Angeles

$415 MILLION
PROJECT: SLS Las Vegas Hotel and Casino
ARCHITECT: Gensler
LOCATION: Las Vegas

$201 MILLION
PROJECT: River Spirit Casino Phase II
ARCHITECT: HKS
LOCATION: Tulsa, OK

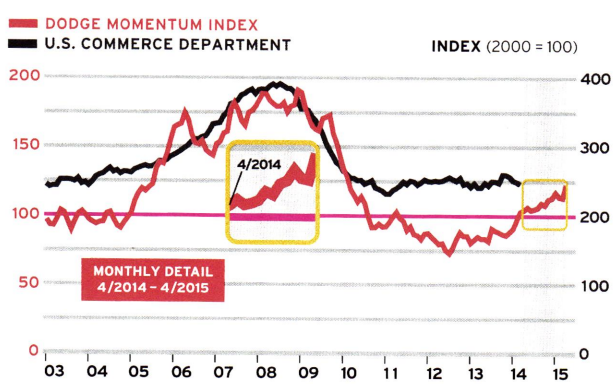
$191 MILLION
PROJECT: Choctaw Casino and Resort Expansion
ARCHITECT: Klai Juba Wald Architects
LOCATION: Durant, OK

$165 MILLION
PROJECT: The Cromwell
ARCHITECT: Leo A Daly
LOCATION: Las Vegas

MOMENTUM INDEX REBOUNDS

After retreating in February and March, the Dodge Momentum Index advanced 8.4% to 123.0 in April. With this gain, the index is again exhibiting the growth it showed for most of 2013.

The Dodge Momentum Index is a leading indicator of construction spending. The information is derived from first-issued planning reports in McGraw Hill Construction's Dodge Reports database. The data lead the U.S. Commerce Department's nonresidential spending by a full year. In the graph to the right, the index has been shifted forward 12 months to reflect its relationship with the Commerce data.



McGraw Hill Dodge Analytics tracks projects from predesign through construction to capture hard construction costs, square footage, and other key statistical information. The top projects are ranked on the basis of hard construction costs for stand-alone hotel portions of mixed-use projects.

PHOTOGRAPHY: © STEPHANIE GREENE

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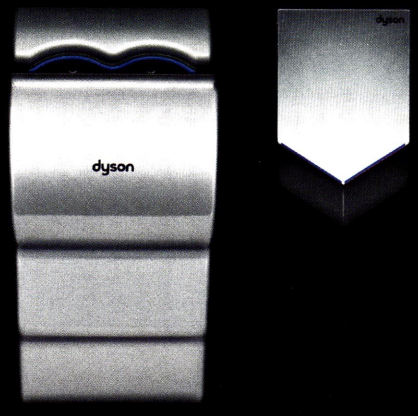

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CIRCLE 144

Where Credit is Due

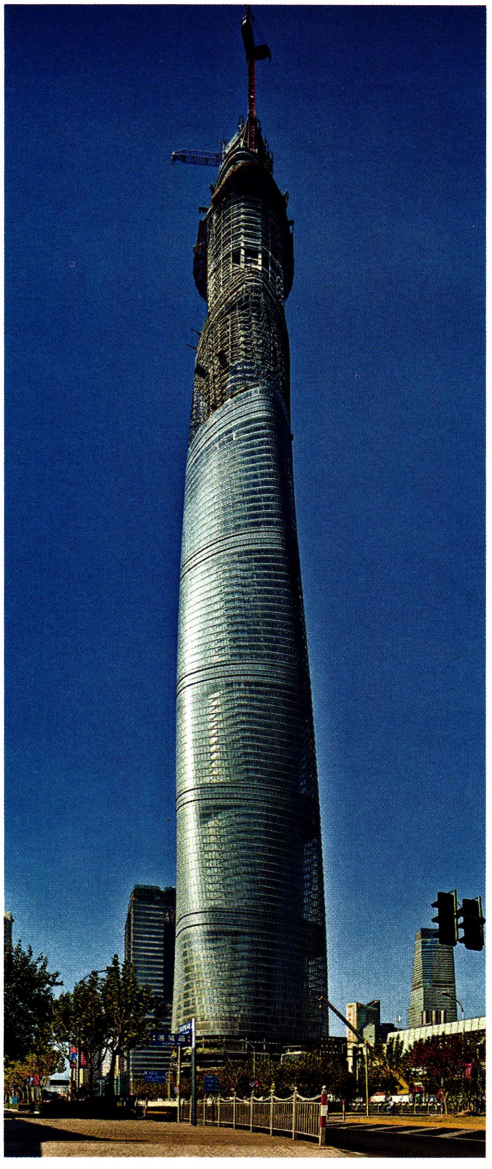
Conflict can occur when an architect departs a firm but still wants to get credit for the design.

BY CHERYL L. DAVIS, ESQ., AND SUZANNE STEPHENS

A DISPUTE about credits for the design of the almost-complete 2,073-foot-high Shanghai Tower, the world's second-tallest building, has ended in a lawsuit—and a lot of angst for the involved parties. The plaintiff is Gensler; the defendant is a former design director at Gensler, Marshall Strabala. The lawsuit raises a conundrum: to what extent can a lead designer who departs a firm claim credit for his or her work on a high-profile project he or she leaves behind?

The disagreement also brings up the question of intellectual property with regard to the definition of "design" for a complex project—especially whether a team of collaborators should share the credit, or whether they even agree there is a "first among equals." Architects' websites can heighten the ambiguities in the ways they list credit for a project's design. In addition, the media can mislead by abbreviating credits, since the press often singles out an individual "creator" to credit for the design.

Here we present three case studies reflecting different approaches to the problems of attributing design credit, with advice on potential ways for avoiding conflict given by Cheryl L. Davis, a lawyer with Menaker and Herrmann LLP in New York.



Shanghai Tower, in the city's Pudong district, opens at the end of year. When Gensler won the competition in 2007 for the megatall skyscraper—the world's second-highest at 2,073 feet—it beat the usual Cloud Club suspects: Foster + Partners, Kohn Pedersen Fox, and Skidmore, Owings & Merrill.

PHOTOGRAPHY: © ROGAN COLES; NICK MERRICK/HEDRICH BLESSING (OPPOSITE)

SHANGHAI TOWER
→CASE STUDY 1

In 2011, Gensler filed a lawsuit alleging that Marshall Strabala, an architect with Gensler from 2006 to 2010, falsely stated he was the designer of the Shanghai Tower and other Gensler projects, including the Houston Ballet Center for Dance (2011). Strabala, who graduated from Harvard's Graduate School of Design in 1988, had worked for Skidmore, Owings & Merrill (SOM) for 19 years, designing projects including megatall buildings, when he was hired by Gensler to join its Houston office as the design director. In 2007, Gensler—which arguably had an impressive reputation for corporate office interiors but had not yet designed a building higher than the 54-story L.A. Live Tower in Los Angeles (RECORD, May 2012, page 156)—won the competition for the supertall Shanghai Tower. In doing so, it beat out Foster + Partners, Kohn Pedersen Fox, and SOM. Strabala began working on the Shanghai Tower but left Gensler in 2010 to open his own office, 2Define Architecture, in Chicago, Shanghai, and Seoul.

Strabala's new firm put Shanghai Tower on its website and on the Flickr website. Gensler's suit says the defendant "repeatedly and willfully misrepresented the true origin and source of certain architectural and design services, falsely claiming to be the designer of a number of projects that were, in fact, designed by Gensler."

While the suit was dismissed the following year on procedural grounds, Gensler is appealing the case in a higher court. Adding to Strabala's woes, SOM decided to sue as well. The suit, filed in New York state in June 2011, alleged that Strabala had engaged in "copyright infringement, unfair competition, and false advertising." Strabala, as associate partner at SOM, had been a studio head under Adrian Smith for Burj Khalifa in Dubai (2010) and the Nanjing Greenland Financial Center in China (2010), among other projects. The SOM suit was moved to Chicago, where it was settled out of court in December 2012. According to the agreement, neither party can talk about the case, but SOM's suit had contended that most of Strabala's work on Burj Khalifa, for example, "occurred in the construction-document phase" following design completion.

Oy, you don't want to be in Strabala's shoes. While Strabala has not actually lost the Gensler suit, he has spent a lot of time and money defending his right to claim credit. According to Gensler's managing principal, Dan Winey, "[the firm] does not comment on pending litigation," but he states it is confident that "the U.S. Court of Appeals for the Seventh Circuit will agree with Gensler" that Strabala's claims "mislead clients and the public and violate federal unfair-competition and false-advertising laws."

How could Strabala have avoided this conflict? Currently Gensler includes the Shanghai Tower on its website and makes no mention of Strabala, even as a past design director for the tower. Gensler's Winey states that "large and complex projects typically include multiple design directors under oversight of a design principal and managing principal. For the Shanghai Tower, Jun Xia and Dan Winey served those roles, respectively." Regarding drawings, Gensler's website states, "Copyright 2014 Gensler. All rights reserved." On his own website, Strabala makes no reference to Gensler for Shanghai Tower, giving as a credit "images © 2012 2Define Architecture." His animated short of the Shanghai Tower

depends on images and music to present the work, with no names, his or Gensler's.

CHERYL DAVIS COMMENTS

First, a few words about the copyright law: copyright exists when a work is put in a tangible form, such as when a design is put down on paper. You don't have to register your work to have a copyright on it. (If you want to bring a lawsuit, that's another story.)

As a general matter, when you create a design, you own the copyright on that design—unless you're an employee and it's your job to create that work. The copyright for designs created by an employee of an architectural firm belongs to the firm (rather than the employee) under the principle of "work made for hire." However, if you're a very senior employee, or not an employee at all (such as a partner), you may be able to negotiate as part of your agreement with the firm that you can own or at least continue to use particular designs, even after your departure from the firm. Of course, the firm would have to agree to such a provision.

The U.S. copyright law states that the owner of a copyrighted work has the exclusive right to copy the work or to create what are known as "derivative works" based upon the copyrighted work (for example, creating modifications of the work). Essentially, the owner has the right to control how its intellectual property is used.

Where architects and designers are concerned, the copyright law can prevent a former employee from using the firm's designs on a website or copying them to include in a personal portfolio, since only the copyright owner has the exclusive right to copy or use the design. Even if a firm does decide to allow a former employee to use the designs (for marketing purposes, for example), the question of how to credit the designer's involvement may (and often does) still remain.

The Strabala case (or, more accurately, cases) is an example of how far a credit dispute can go. It's usually wisest to attempt to settle these issues while hashing out the other aspects of an architect's departure from the firm. While the courts are still addressing the question of whether an architect claiming credit for work that belongs to another is a violation of the law against false designation of origin (which is separate from the copyright law), the AIA has already attempted to provide some guidance.

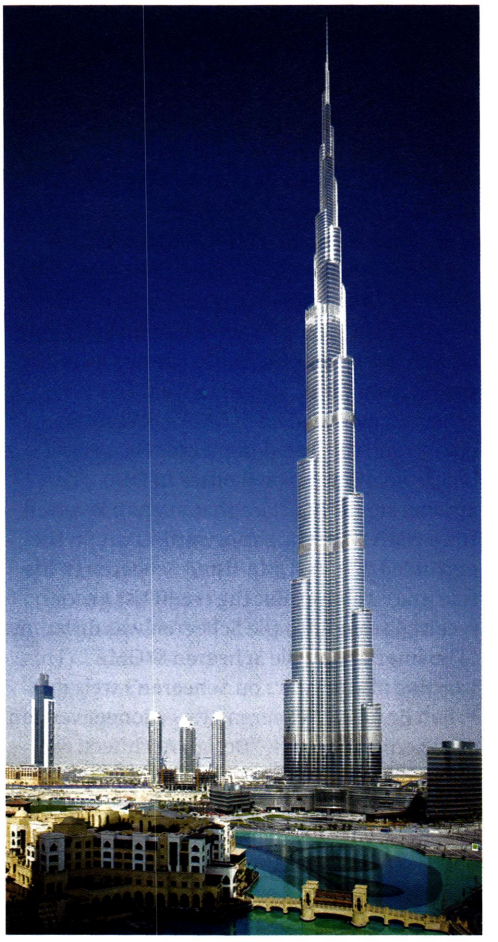
Even where there is no explicit agreement between the firm and the designer with respect to credit, Rule 4.201 of the AIA Code of Ethics provides that "Members shall not make misleading, deceptive, or false statements or claims about their professional qualifications, experience, or performance and shall accurately state the scope and nature of their responsibilities in connection with work for which they are claiming credit." The AIA code goes on to state, "This rule is meant to prevent Members from claiming or implying credit for work which they did not do, misleading others, and denying other participants in a project their proper share of credit."

Whichever way the Gensler case is decided, it has served to highlight an important issue for both architecture firms and their employees. It's only when these (and other) concerns are brought to people's attention that they can be addressed in advance and perhaps stave off litigation.

BURJ KHALIFA
→CASE STUDY 2

Let's look at a case that was resolved seemingly amicably and, more important, without lawsuits. When Adrian Smith left SOM in 2006, he and a former SOM colleague, Gordon Gill, started their own firm in Chicago. Smith, a design partner and then consulting design partner, had been at SOM for 39 years and was widely acknowledged to be the creative force behind the 2,717-foot-tall Burj Khalifa in Dubai, the tallest building in the world, completed in 2010. On the Smith Gill website, the buildings executed for SOM are included under "Work," but in a special folder designated "Prior to Adrian Smith and Gordon Gill." In all cases, SOM is credited as "Architect."

SOM considers the AIA ethical standards to be sufficient guideposts. According to managing partner T. J. Gottesdiener, "Our policies are consistent with the AIA's ethical standards on this topic." He also adds that the firm's "projects are all created by large teams made up of many talented individuals," which might explain why the firm does not give individual credit for the specific projects on its website. As Gottesdiener explains, "SOM's approach to architecture has always been a collaborative model. Listing individual team members on our site would be at odds with this philosophy." So if you go out on your own, take a tip from Gottesdiener: "If someone is leaving a firm and wants to promote themselves, the right thing to do is to talk with legal counsel at the firm and get a clear agreement about the parameters for describing any individual's role in a given project." In addition, you should think twice about posting, without permission and copyright, a drawing you did for the previous firm. Gottesdiener reminds us that "SOM copyrights its renderings and other such work products, and credits photographers." Ironically, journalists and historians seeking full listing of teams for the SOM projects Smith was involved with can turn to *The Architecture of Adrian Smith, 1980–2006, SOM* (2006).



Burj Khalifa, in Dubai, the world's tallest building at 2,717 feet, was designed by Skidmore Owings & Merrill, with Adrian Smith as the design partner. He now has his own firm, Adrian Smith + Gordon Gill Architecture.

Even if you have worked things out with your previous firm, Smith warns, "Based on the AIA Code of Ethics, there is an obligation for people leaving a firm and starting new offices to indicate accurately their roles at the previous one." It is important to determine precise terminology about credits to preclude later conflict. "There is too much abuse by some architects who are deceptive with regard to proper attribution," Smith says. "The lead firm should always get the credit."

CHERYL DAVIS COMMENTS

Smith and Gill seem to have gotten out in front of a potential credit dispute by reaching an agreement with their former employer and creating a credit that satisfied both parties. Both ownership of the designs and attribution of design credit appear to be addressed. They have taken their cue from the AIA Code of Ethics and taken care not to overstate or misstate their roles in connection with the designs.

INTERLACE AND WYLY THEATER
➜CASE STUDY 3

Rem Koolhaas's firm, Office of Metropolitan Architecture, based in Rotterdam, is a powerhouse of design, and noted for the talented progeny who have gone off on their own. Recently ARCHITECTURAL RECORD featured the OMA housing complex, Interlace, in Singapore (March 2014, page 90), and requested a credits listing from OMA, as well as from Ole Scheeren, who had been OMA's partner in charge and the lead designer for the project before opening his own office in 2010. The attribution for Interlace that RECORD received from OMA was straightforward: OMA. In the expanded credits, OMA listed Scheeren in his role (stated above). But the credit list RECORD received from Buro Ole Scheeren was different: "The Interlace by Ole Scheeren © OMA." (This wording also appears on Scheeren's website.) When Buro Ole Scheeren gives a longer version of the credit, it reads, "Design Architect: Ole Scheeren/OMA, Beijing." RECORD chose to go with just the OMA version, but for this article contacted both parties for statements about the credit differences. Representatives of both firms declined to comment.

The combined Ole Scheeren/OMA, Bejing credit reminded us of another OMA project—the Dee and Charles Wyly Theater in Dallas (February 2010, page 60). For this the credit reads "REX/OMA" in print and on both REX's and OMA's websites.

REX is the name that another former OMA partner, the American architect Joshua Prince-Ramus, gave the company in 2006, when he bought out Rem Koolhaas's 50 percent share of the New York office. His situation, however, was quite different from that of the usual departing designer or partner. According to Prince-Ramus, he owned 50 percent of OMA New York and was the office's sole principal. When he changed the name to REX, he says he went through all the credits with Koolhaas regarding attribution. "I own the intellectual property for Wyly," he adds. "But Rem has complete license to publish it or use it for promotion, and we both must properly credit the work as REX/OMA, or, in the long version, "REX/OMA, Joshua Prince-Ramus (Partner in Charge) and Rem Koolhaas." This obviously makes his situation quite different from the normal designer who leaves a firm. As Prince-Ramus says, "It's one of an owner naturally presenting his work, with proper attribution."

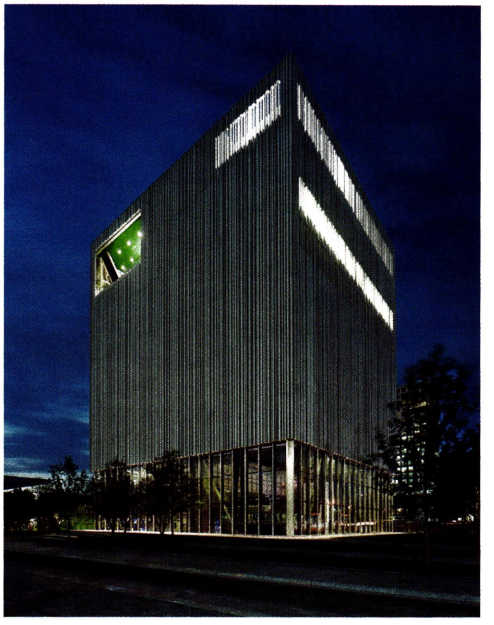
CHERYL DAVIS COMMENTS

The larger a firm is, the more likely that it will have employees who eventually go off on their own. In those situations, it becomes more pressing to address the question of credit as early as possible. This answer should be in writing. That's very important.

The distinction Prince-Ramus makes between owning and licensing intellectual property may come as a surprise to most designers. An architect can own the copyright on his or her designs while still licensing others (such as the owners) to use the designs. It's much like owning a building but renting out space to tenants; you have the ultimate right of ownership but can permit others to use your property, on your terms. According to Prince-Ramus, the agreed-upon terms are the precise wording of the credit. In other situations, permission to use designs might be conditioned upon payment (such as where an architect, rather than transferring copyright in his designs, licenses them to the owner).

Scheeren's credit includes a statement that the copyright in the designs belongs to OMA ("© OMA") and a credit attribution, "The Interlace by Ole Scheeren." The statements are not necessarily contradictory, but the fact that the attributions on the two websites don't appear to match creates the impression that the parties haven't agreed on the precise credit for the project.

SUMMATION Agreements create (or should create) clarity. The very act of spelling out expectations in an agreement often helps clarify them and can compel parties to deal with issues they might otherwise have neglected to address. They need not be complex legal structures; they need only state the terms to which the parties have agreed, and to be signed by the party against whom the term is sought to be enforced. For example, if an employer has signed an agreement permitting an employee to use designs and a particular credit on the employee's website, that agreement may be enforced against the employer. ■



Interlace (top) in Singapore, (2013) was designed by OMA with Ole Scheeren as the lead designer. He now has his own office. The Wyly Theater in Dallas (2009) was designed by REX/OMA (above). Joshua Prince-Ramus, REX founder, bought out OMA's NYC office.

Cheryl L. Davis, Esq., is a litigator specializing in intellectual property law with Menaker and Herrmann LLP in New York. She is also a published playwright.

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CIRCLE 54

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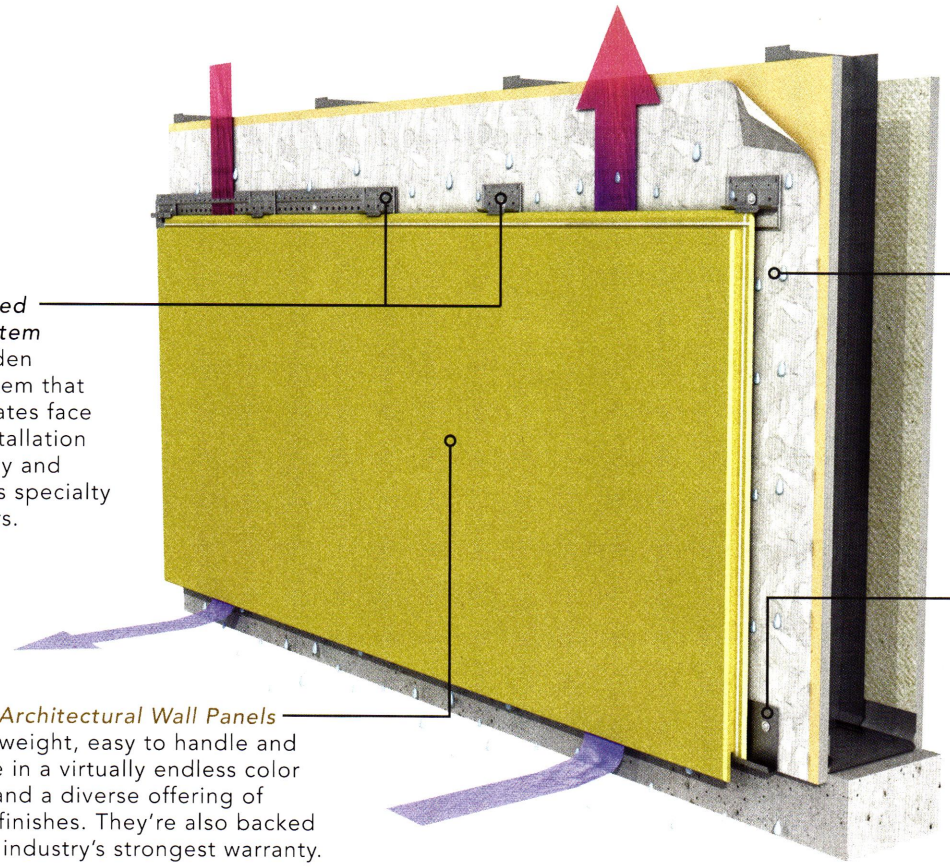

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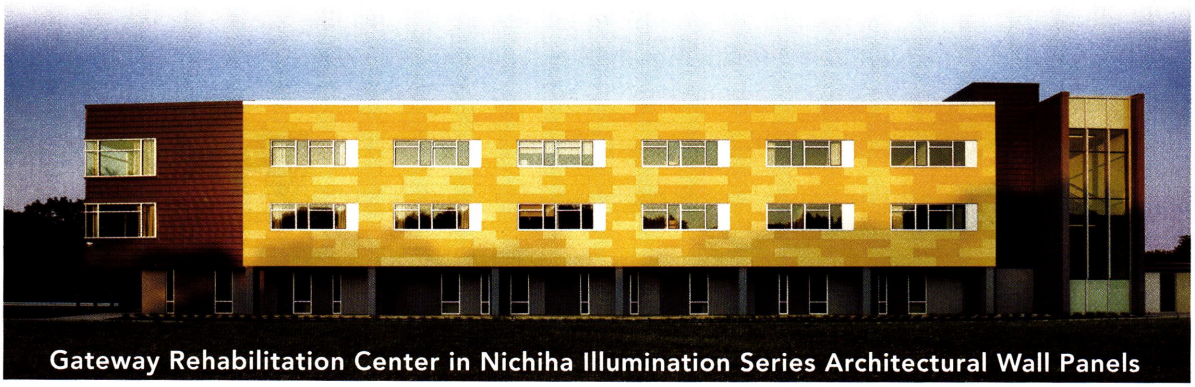

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CIRCLE 18

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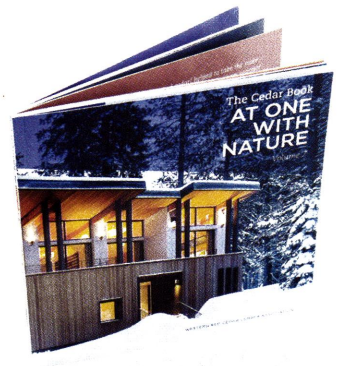

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CIRCLE 55

The Legacy Project

Carrying a firm on after the founders are gone requires planning but isn't right for every practice.

By Fred A. Bernstein

BJARKE INGELS, who is only 39, would like to have one, soon. "The reason succession plans don't work," he says, "is that people start to think about them much too late."

By contrast, Daniel Libeskind, 68, says he doesn't need a succession plan. He sees his architecture firm as the equivalent of an artist's studio—one that could well expire when he does.

But most architecture firms are more than artist's studios—they are companies with payrolls to meet and projects to complete; keeping a firm going when a founder dies can be an economic and practical necessity—as well as a tribute to a mentor and creative force. Eskew+Dumez+Ripple, of New Orleans, had three partners, seven principals, and 48 employees last December when its founding partner, Allen Eskew, died unexpectedly. Just two days later, it was named firm of the year by the AIA (see page 28)—based in part on its commitment to encouraging young talent.

That commitment paid off: six months after Eskew's death, the firm is thriving and "building on the legacy Allen created," says partner Steve Dumez, 55. It helps, he says, that Eskew+Dumez+Ripple was never balkanized. "In terms of client contact," Dumez says, "we had found ways to overlap, or double-team, if you will, on most key projects."

But if the firm's collaborative nature helped it survive beyond Eskew's lifetime, there was a contractual aspect to the firm's succession plan as well. The three partners had agreed to sell their shares back to the firm in increments, starting at age 65 and ending at 70, to ensure that none of them controlled the company into his dotage. The partners could continue working, but as employees of the firm. Eskew, having turned 65, had begun divesting himself of his shares shortly before he died. The firm was able to purchase his remaining shares from his estate. That's because it had "key man" insurance—a life insurance policy on Eskew, with the firm as the beneficiary, written precisely for this purpose. Otherwise, the shares could have passed to Eskew's heirs, complicating control of the company.

Succession is one of the trickiest questions for architects, even in an era when collaboration is touted as being more important than individual genius. Few of the 20th century's big-name architects formed firms that lived on after them. Some architects care, while others seem fatalistic. Libeskind, who made his living teaching until he won the competition, in 1989, for what became the Jewish Museum Berlin, says, "Since I had no plans to have an architecture office, I have no plans not to have an architecture office."

Gene Kohn, a founder of Kohn Pedersen Fox (KPF), has observed the dissolution of two important firms. Early in his career, Kohn worked for Welton Beckett, the architect of some of California's most important midcentury buildings. When Beckett died, his firm dissolved. "There was a succession plan; it wasn't followed, because of a conflict between family members," said Welton's son, Bruce Beckett, himself an architect in California. "It was a tragedy."

Later, Kohn worked for John Carl Warnecke, who in the 1970s ran one of the largest firms in the United States. But Warnecke, who reportedly felt that his firm shouldn't survive him, purposely downsized as he approached retirement.

Kohn left Warnecke in 1976 to start a new firm with Bill Pedersen and Sheldon Fox. "One of the first things we discussed," says Kohn, "was that we wanted to create a firm that would continue beyond our time. That was a goal from day one."

And while Kohn, who is 83, and Pedersen, who is 76, are still working full-time (Fox died in 2006), Kohn says he is confident that "someday I can sit back in a rocking chair and read about the great things KPF is doing."

To achieve that, the founders devised a plan under which each KPF principal—there are now two dozen—would own stock in the firm, with the number of shares of each tied to various metrics. The firm doesn't have a sell-back policy, like Eskew+Dumez+Ripple; Kohn says he will continue to own stock for the rest of his working life. But if he dies, the shares will be bought back by the firm—which, like Eskew+Dumez+Ripple, has key-man policies on its principals. The value of the shares doesn't fluctuate—you have to sell them at the price for which you bought them, says Kohn—a rule meant to discourage principals from retiring when share prices are high.

There may be some firms that no succession plan can save—it's hard to imagine Zaha Hadid Architects without Zaha Hadid, now 63. Principal Patrik Schumacher, 50, says, "We have been discussing this issue internally and recognize this as a challenge in a firm or brand with a charismatic founder-leader-celebrity." Or Gehry Partners without Frank Gehry. Gehry, 85, told RECORD, "My vision for succession is that the talented people who work with me will spread their wings." When asked if his successor architects might use his name, he replied, "I would hope not. I would hope they would get their own identity. If they wanted to use [the Gehry name] for continuity, until they got started, that would be fine."

Other architects try to establish practices

Bjarke Ingels (standing at center, bottom) surrounded by his seven partners in BIG.

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CIRCLE 19

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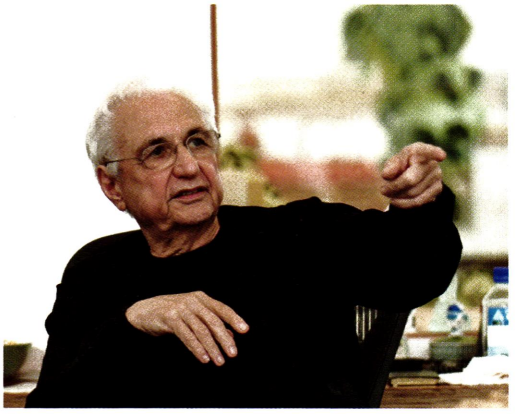
Exhibit Designer: Gallagher & Associates

that will carry on after them. But does it work? Last year, Foster + Partners resigned the commission to design an expansion of the State Pushkin Museum of Fine Arts in Moscow; Moscow's chief architect, Sergei Kuznetsov, said the relationship might not have ended had Foster, now 79, been more involved. "Norman Foster must himself work on the project and defend it, face-to-face, personally, or he must turn down this project," Kuznetsov told reporters last August.

Foster, in a phone call from London, rejected Kuznetsov's allegation, saying, "I was really on top of this particular project." He said there are some projects he handles personally—the Pushkin was one of them—while others are assigned to his 17 senior partners and more than 200 partners and associate partners. "Do I regularly see every client?" Foster asked. "Of course I don't. And there's no reason I need to. If you're talking about succession, I have a lot of very satisfied clients who relate to younger members of the practice, and they're very happy. I feel I've been very successful in devolving responsibility. Succession is being very well addressed."

He added: "I think I would be missed if I weren't around. But am I indispensable? I think I'm not."



Frank Gehry hopes his partners will continue on their own.

Some "name" architects feel obligated to make way for their younger partners. Steven Holl Architects, for example, makes a point of crediting the firm's projects to both Steven Holl, 66, and partner Chris McVoy, 50. Richard Rogers, 80, changed the name of his firm to Rogers Stirck Harbour + Partners, in 2007, to recognize Graham Stirck, 57, and Ivan Harbour, 51, who had been with him for more than 20 years. Meanwhile, Robert A.M. Stern, 75, has begun calling the firm RAMSA (rather than the more personal Robert A.M. Stern Architects). He brought on a managing partner in 1988 when he was just 49, then added three design partners in 1989, and today has a total of 15 partners. "While I expect to live forever," he wrote in an e-mail, "just in case I don't, the show will go on, led by my great partners, most of whom once were my students and learned their lessons well."

But even the best-prepared firms may suffer when the only eponymous partner dies. The Peabody Essex Museum, in Salem, Massachusetts, dropped Rick Mather Architects as the designers of a planned 175,000-square-foot expansion after Mather died in 2013, at 75. The museum then awarded the commission to Ennead, but only over the protest of Mather's partners, who felt qualified to complete the job. Stuart Cade, a partner at the firm, wrote in an e-mail: "Apart from the Peabody Essex Museum, we received the full support of our clients and continue to do so. The firm continues to grow, with existing and new high-profile projects, giving us great confidence in the future of RMA."

Ironically, the most successful transition by an American firm may be the one accomplished by Polshek Partnership Architects in 2011: the firm deleted the founding partner's name entirely and weathered the inevitable confusion. The new name, Ennead, has started to become familiar. In the meantime, the firm's 11 partners don't have to explain to clients why founder James Polshek, 84, isn't at every meeting. Polshek says it was his choice to retire from the firm, explaining, "I didn't want to end up like Oscar Niemeyer, famously trying to control everything until the end." But the name change wasn't his choice, and what he only refers to as his "legacy firm" in his recently published book *Build, Memory* no longer bears his name. ■

"While I expect to live forever," says Robert A.M. Stern, "just in case I don't, the show will go on, led by my great partners, most of whom once were my students and learned their lessons well."

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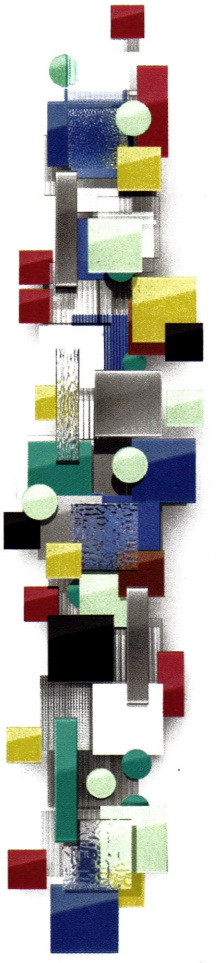

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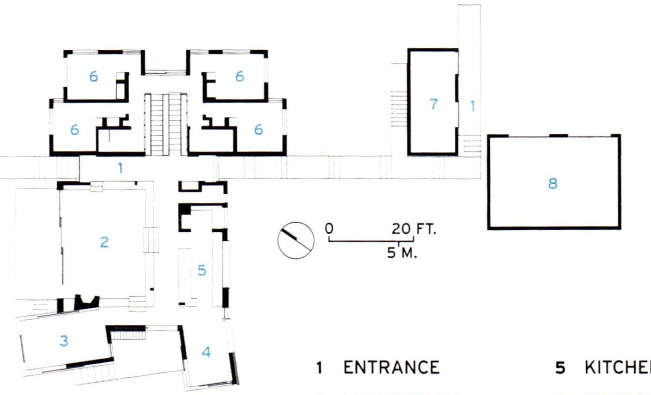
BOUND BY THE ATLANTIC ON ONE SIDE AND A SHALLOW BAY ON THE OTHER, A RETREAT DESIGNED BY PETER ROSE IS HIDDEN IN PLAIN SIGHT ON A MASSACHUSETTS ISLAND. **BY JOSEPHINE MINUTILLO**

Nestled within a richly wooded site on a narrow strip of land, the 6,300-square-foot house comprises a series of cedar-clad boxes of varying heights with large, fully operable windows (above). A dramatic stair leads to guest rooms on the lower level of the two-story bedroom wing (right). The sunken living room allows views from the kitchen (below).



GROUND FLOOR

1 ENTRANCE
2 LIVING ROOM
3 DINING ROOM
4 BREAKFAST ROOM
5 KITCHEN
6 BEDROOM
7 SHED
8 GARAGE

THERE ARE times when a site is so perfect, so breathtaking, there is nothing for an architect to do but surrender to it. Such was the fortunate predicament Boston-based Peter Rose + Partners faced when asked to design a vacation house for a young family on Chappaquiddick, an island off the Massachusetts coast. Located on a bluff, the western edge of the property faces the Atlantic while the east end looks out toward the protected Cape Pogue Bay. Between those radically different sandy borders sit four acres of thick forest.

Rose had designed two other houses on Martha's Vineyard—to which Chappaquiddick is connected—that caught the owners' attention. "His houses fit perfectly into the landscape, but there is a complexity to them," the wife explains. "They are modern, but with a warmth and a humble quality."

The architects set out to make this island retreat permeable. Clad in cedar but built with steel that is expressed inside, a series of column-free pavilions feature expansive windows that open completely, eroding the barriers between inside and outside, between architecture and landscape. Sea grasses cover the flat roofs, one of several sustainable design strategies. Local craftsmen constructed the windows and the 11-foot-long teak dining table Rose designed.

The plan is organized around two axes perpendicular to each other. The longer one separates the bedroom wing from the public living spaces and extends outside to the garage in one direction and a beach stairway in the other. "The house feels infinite," says Rose. The shorter axis divides the kitchen from the living room and culminates in an outdoor terrace between the dining and breakfast rooms—each slightly askew from the house's orthogonal geometry to better capture views. On the opposite end, a dramatic stair leads to lower-level bedrooms built into an existing hollow.

Rose worked with landscape architect Michael Van Valkenburgh to delicately wind the driveway between the oak and pine trees. According to Rose, "We wanted to set something on the site that takes advantage of views and breezes with a light a touch." ■

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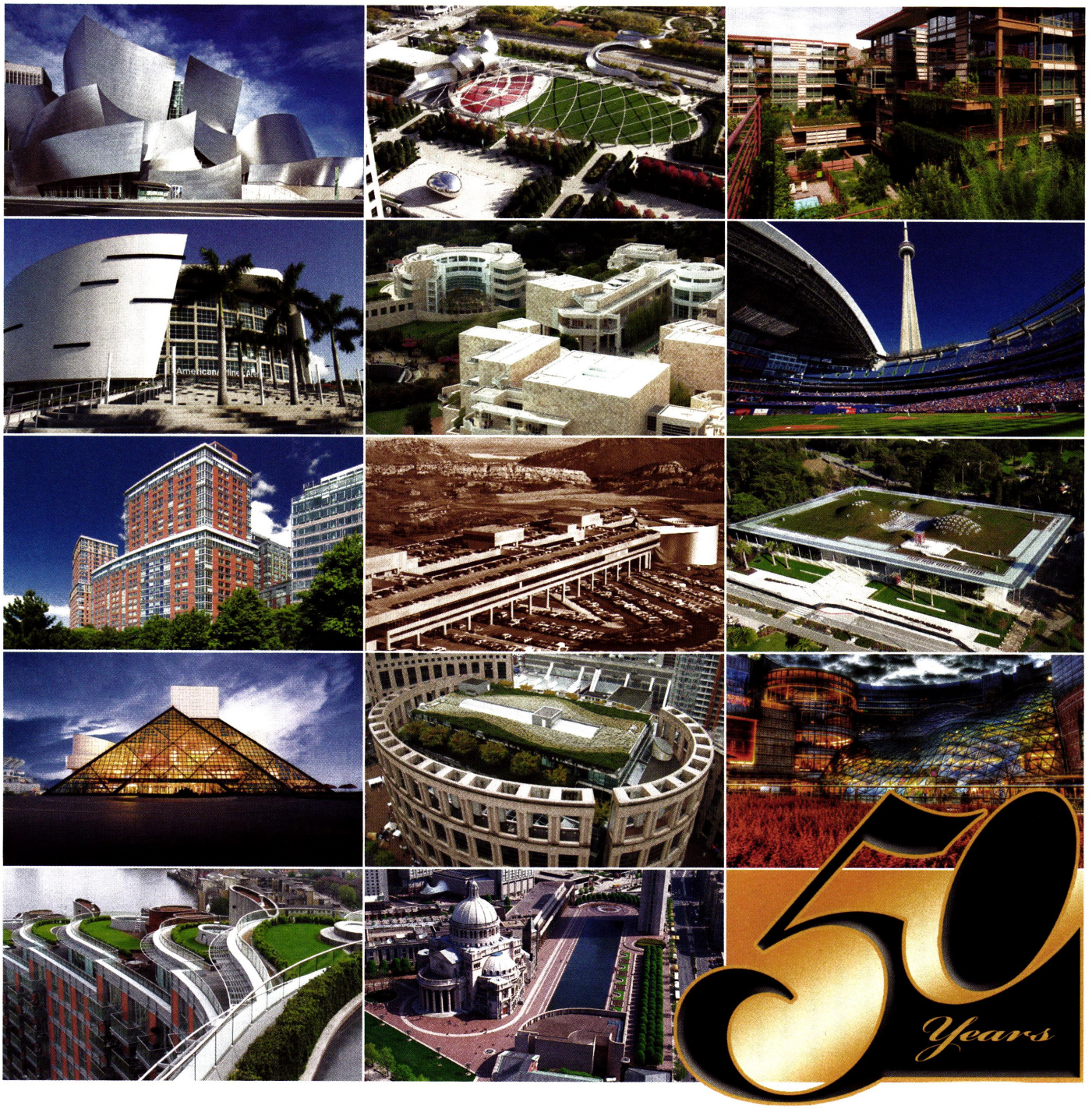

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If This is Architecture, It's My Calling

Looking back, designers remember the '64-65 World's Fair and its fantastical pavilions as a wonderland of architectural inspiration.

BY FRED A. BERNSTEIN

FIFTY YEARS AGO in April, an architectural wonderland opened in Queens, New York: the 1964–65 World's Fair that Robert Moses created to bring millions of visitors to Flushing Meadows–Corona Park and raise money to build a permanent park there. Unlike several earlier fairs, notably the 1893 Chicago exposition, with its all-white neoclassical confections, Moses's effort had no architectural through-line; 140 exhibitors did pretty much what they pleased. That meant the sprawling fair lacked visual coherence, but also that companies and countries competed to attract visitors—if not with high architecture, then with garish architectural gimmickry, including bright colors, odd shapes, and novel materials.

Critics—which is to say, adults—were almost universally dismissive of the effort. In a *Life* magazine article titled "If This Is Architecture, God Help Us," Vincent Scully wrote: "I doubt whether any fair was ever so crassly, even brutally, conceived as this one." For her part, Ada Louise Huxtable, writing in *The New York Times*, called the fair "disconnected, grotesque, lacking any unity of concept or style," though she added that it is "just those accidental juxtapositions and cockeyed contrasts built into the fair that give it its particular attraction and charm." She called much of it "trick-or-treat architecture."

But for children, especially children interested in design, the experience was very different. Ask a 50-something architect about visiting the fair, and you will see eyes light up as detailed descriptions of long-ago buildings emerge: the Tower of Light, whose base resembled Superman's Fortress of Solitude; the petal-like structure embracing SC Johnson Wax's Golden Rondelle Theater; the Kodak pavilion, with its moonlike roof; and General Electric's lightbulb-studded Carousel of Progress. (They also remember the exhibitions inside, which included George Nelson's witty displays for the Chrysler Pavilion.)

"I was in disbelief, thinking I was seeing something from the future," recalls Ann Marie Baranowski, a principal at Jacobs KlingStubbins, of her first glimpse

Architect Alexander Gorlin saved the crayoned pavilion drawings he made as a child. His depiction of the New York State Pavilion (top, left) bears a striking resemblance to the real thing (above), designed by Philip Johnson. The Golden Rondelle Theater was SC Johnson Wax's pavilion (top, right).

IMAGES: COURTESY QUEENS MUSEUM, EXCEPT AS NOTED; ALEXANDER GORLIN (TOP, LEFT)

Ask a 50-something architect about visiting the fair, and you will see eyes light up as detailed descriptions of long-ago buildings emerge.

of Philip Johnson's New York State Pavilion. James Sanders, an author and architect, recalls the flared entry area of the General Motors Futurama—"this great big swoopy thing"—and the forest of steel girders (with thousands of Plexiglas leaves) supporting IBM's egg-shaped arena. The Tower of Light, composed of 600 aluminum prisms bracketing a 12 billion–candlepower beam aimed skyward, made a powerful impression on Alexander Gorlin, now head of his Manhattan firm. "The fair's phantasmagorical architecture," he says, "freed my mind from our tiny apartment and enabled me to imagine a future."

For some kids, the fair became a kind of obsession. "I was mesmerized by a documentary about the making of the Unisphere," says Barry Goralnick, who runs his own firm in Manhattan. Gorlin, 9, kept detailed diaries of his trips to the fair, illustrated with crayon drawings of the buildings. "It was the confirmation not just that architecture was my calling," he says, "but that architecture could be something amazing." Baranowski notes, "I'm surprised by how much I remember. It was a formative experience for me."

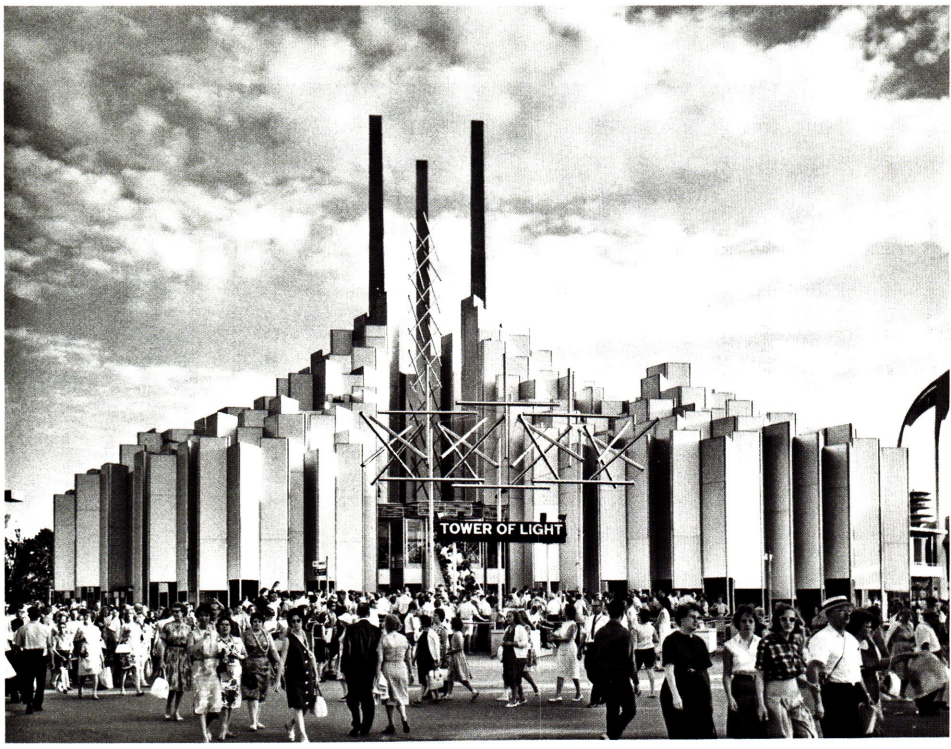
Richard Olcott, an Ennead partner, who was 9 when he visited the fair, recalls GM's pavilions as "mind-blowing." Sanders visited the fair more than 20 times, even celebrating his 10th birthday there. "The nature of it being these slightly showy, gaudy things wasn't lost on me. It wasn't serious architecture," he remembers. "But that didn't make it any less fun." Jonathan Marvel, owner of the Manhattan firm that bears his name, was only 4 when he visited the fair, but he says he remembers it as the "most exciting thing that had ever happened to me."

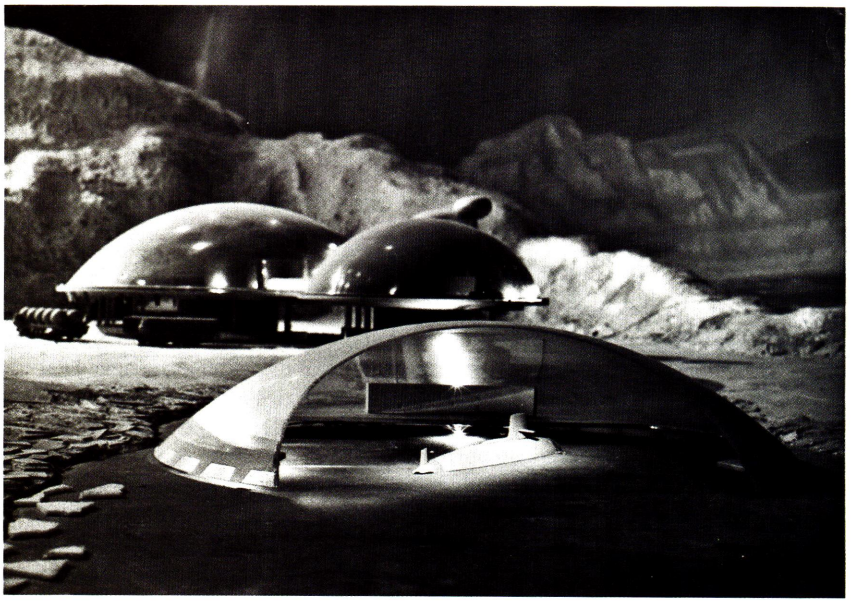
Whether they came from suburbs or small towns (like Baranowski, who remembers Chicopee, Massachusetts, as architecturally bland), or from nearby Rego Park, Queens (Gorlin), or from Manhattan (Sanders), they experienced the fair as a taste of the future. And, in a way, it was the future.

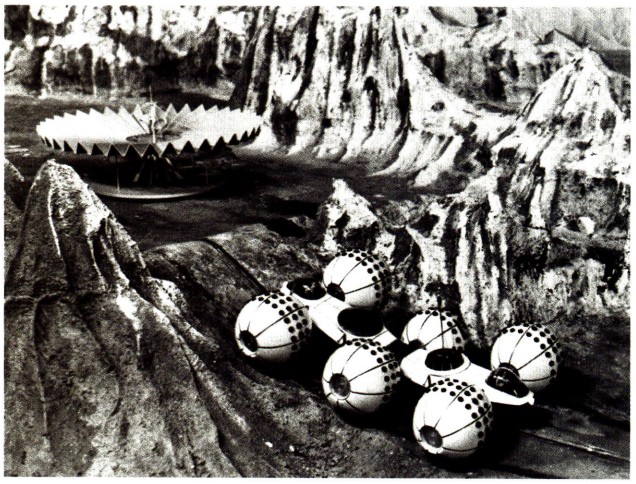
The IBM Pavilion (above) was designed by Eero Saarinen Associates. The Tower of Light (below) was composed of 600 aluminum prisms bracketing a 12 billion-candlepower beam aimed skyward.

The fair's most daring buildings, in many cases, didn't explore new construction methods so much as pretend to explore new construction methods, using jerry-rigged carpentry and tacked-on Sheetrock to simulate the kinds of things that architects like Frank Gehry and Zaha Hadid would create with CAD systems and more time and money, decades later. Put another way, the fantasies of the fair came back with a vengeance in the "starchitect" era of the 1990s and early 2000s, when technology caught up to the vision.

In books and articles about the fair, it is remembered as an anachronism—an attempt to put a bandage on an America that was coming apart at the seams. The news in the months leading up to the opening of the fair included John F. Kennedy's assassination, race riots, and Kitty Genovese's murder in another section of Queens. But Sanders remembers it differently, as "the end of an age of innocence, the last time people could believe the future was going to be better, and architecture would very much be part of it." Thomas Balsley, the landscape architect, was a college student and recalls the fair as "this marvelous place in which everything seemed possible. I distinctly remember seeing for the first time how planning, landscape architecture, and architecture could fuse into what felt like, at the time, a better world." Youthful idealism? Maybe, but the same idealism has guided many architects who visited the







General Motors' Futurama exhibit envisioned a city 10,000 feet under the ocean, reached by atomic submarines (above and left). The Kodak Pavilion's roof was meant to evoke the surface of the moon (bottom, left and right).

fair through careers rooted in public service.

There were some buildings that adult aficionados admired. Huxtable lauded the Spanish pavilion, designed by the Madrid architect Javier Carvajal with the help of New York firm Kelly & Gruzen, for its "somber palette of muted earth colors in tile floors and walnut ceilings." Another critical favorite was the Japanese pavilion, a mast-hung, stone-faced edifice by Kunio Maekawa. Several Scandinavian offerings garnered praise, as did the Hall of Science, a cathedral-like triumph by Wallace Harrison. The IBM pavilion was showy, like all the corporate displays, but at least it had pedigree: the building, an egg-shaped structure into which a steeply raked grandstand was raised on hydraulic lifts, was designed by Eero Saarinen's firm and contained exhibitions by Charles and Ray Eames in a multiscreen format that remains influential to this day. And some critics, including Huxtable and Scully, liked Johnson's New York State Pavilion, with its poured-concrete observation towers and tensile roof protecting a vast, mosaic map of New York State.

Virtually all of the pavilions were torn down or removed when the fair closed. But Johnson's pavilion has remained in place, a disintegrating symbol of the fair's dismaying denouement. Slammed by government leaders for failing to meet its financial goals and viewed with cynicism ever since, the 1964–65 World's Fair has suffered more than its share of indignities. But in the minds of the children who experienced it as an architectural land of Oz, it remains a triumph.

Maybe the highest praise for the fair, as a springboard for childhood architectural fixations, comes from Scott Specht of the New York and Austin firm Specht Harpman. Born in 1963, "I was too young to have seen the fair," says Specht. "But my parents made the trip, and when I was about 6 or 7, I found an official souvenir map that they had packed away. I remember being completely obsessed with that map for years. It was highly detailed, full color, and drawn in axonometric projection. I researched every building, and, in those pre-Internet times, tried to gather as much information as I could."

These days, the Internet makes gathering information about the pavilions a cinch. But no Google image search can capture the excitement of those incipient architects who, as children, were lucky enough to visit the real things. ■

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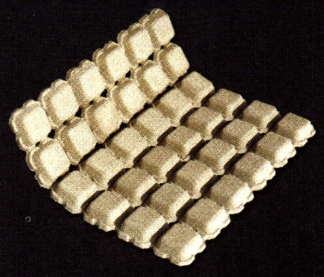

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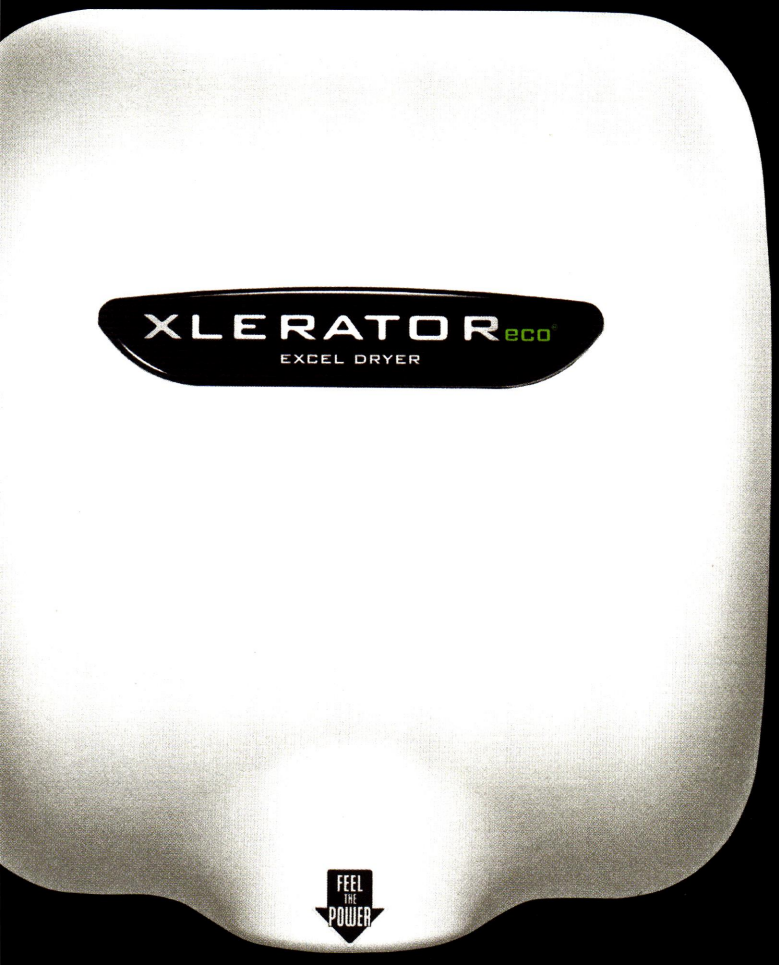

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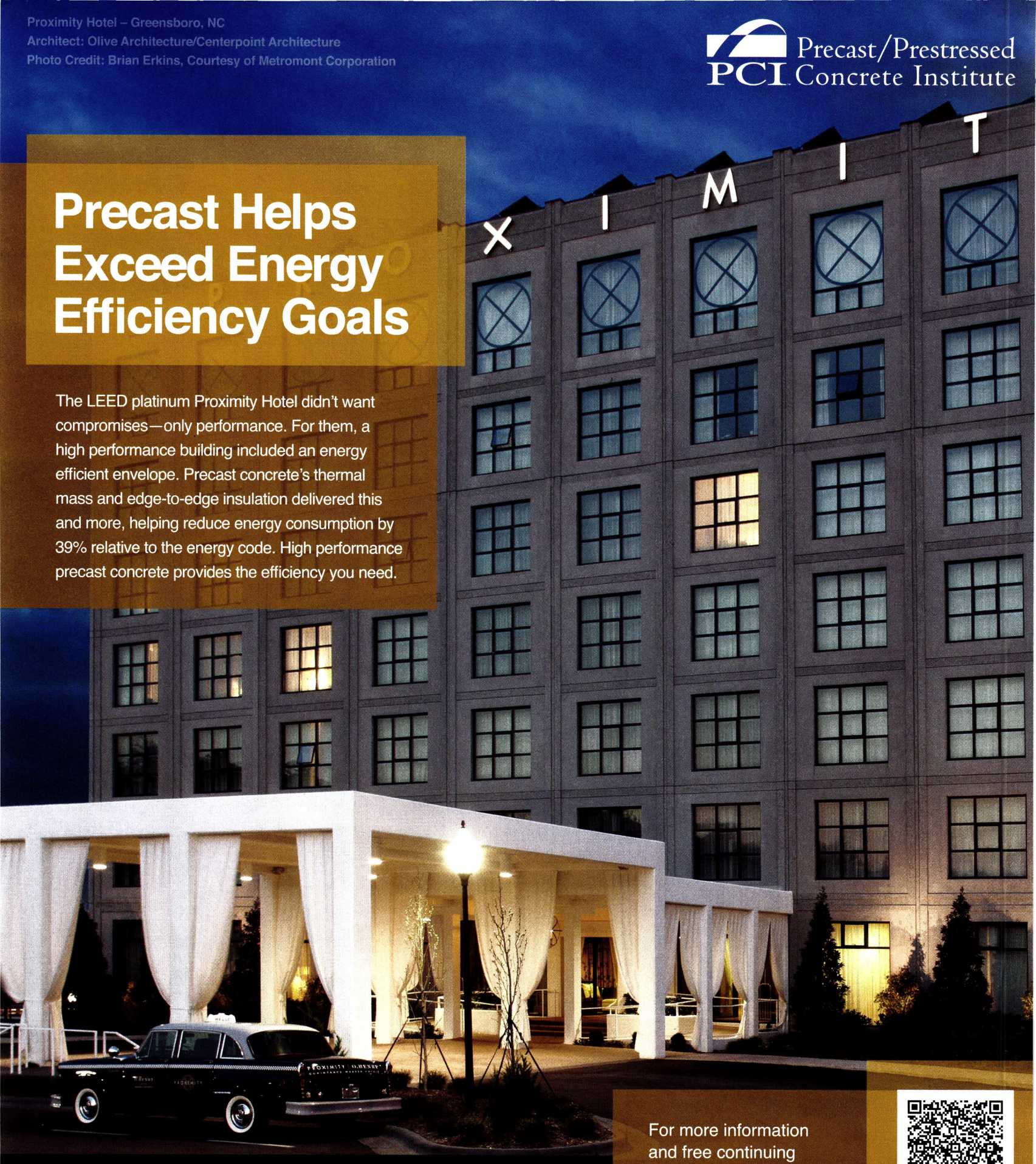

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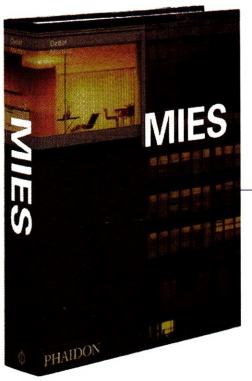
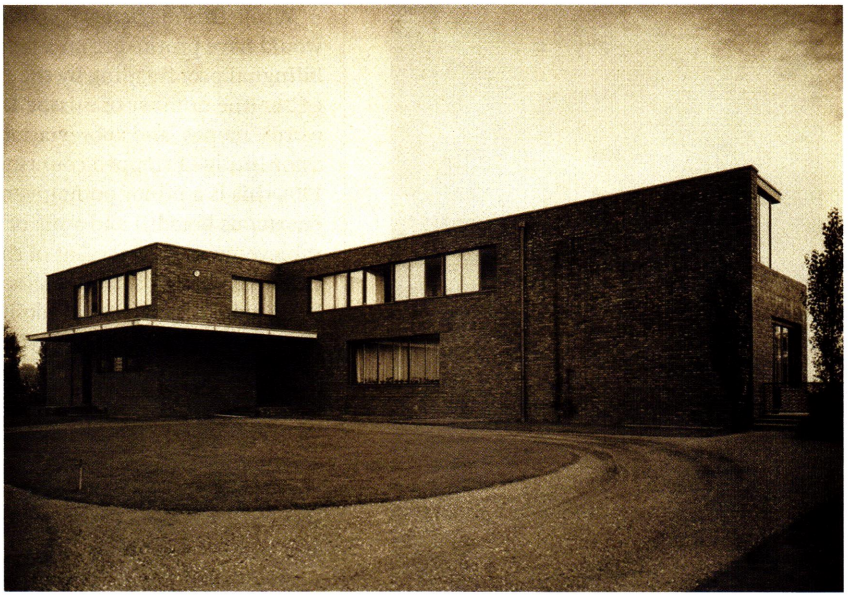


Mies, *by Detlef Mertins. Phaidon Press, March 2014, 542 pages, $150.*

Reviewed by Dietrich Neumann

THE NEWEST and—according to its publisher, Phaidon—"most definitive" monograph on Ludwig Mies van der Rohe weighs 6½ pounds, has 542 pages, and 600 illustrations, and, at a size of 12 by 9⅜ inches, will fit only horizontally into most bookshelves. It is a monument to the architect's enduring legacy and appeal, but also a fitting tribute to its author Detlef Mertins, eminent Mies scholar, former chair and professor at the Department of Architecture at the University of Pennsylvania, who sadly passed away in January 2011 at the age of 56. Several of his friends and colleagues, among them Barry Bergdoll, Ed Dimendberg, and Felicity D. Scott, together with his partner Keller Easterling, helped to see the manuscript through to publication.

The elegantly produced volume traces the arc of Mies's work from conventional suburban villas in Berlin to his visionary designs and few executed European buildings in the 1920s, and then the North American work in Chicago and New York in the postwar era. Each of the book's 21 chapters centers on one of Mies's projects or buildings as the starting point for an exploration of broader themes and related structures. It introduces us to his early work and first encounters with philosophy via the Riehl House, offers a view of the Weimar Republic's art and architecture through his unrealized skyscraper and office building projects in a chapter called "New Beginnings," and uses the Barcelona Pavilion as an example in "Spiritualizing Technology." We hear about IIT in the chapter "Open Campus," Chicago's Lake Shore Drive Apartments in "High Rise," Detroit's Lafayette Park in "City Landscape," and finally the "Event Space" of the National Gallery in Berlin—all of them among the most influential building projects of the 20th century. Numerous drawings from MoMA's vast holdings are published here for the first time, and even the well-known illustrations look fresh and immediate, thanks to their size and quality of reproduction.



Mies in 1933 when he was 47. He designed and oversaw work on the Esters House (above right) in Krefeld, Germany, in tandem with the adjacent Lange House (not shown) for a pair of executives of a silk-weaving mill from 1927 to 1930.

Despite its many images, this is a text-heavy book with a clear agenda. While Mertins conceded that "Mies was by no means a philosopher or even a writer," he stayed "close to Mies's own preoccupations with philosophical and cultural issues" and drew "more extensively than previous monographs" on what Mies read.

Mies did indeed leave a substantial and eclectic library of 800 volumes at the time of his death—not just books on architecture (15 on Le Corbusier, much fewer—three—on Gropius, and many on urban planning), but rich holdings in philosophy, religious studies, and the complete 42-volume works of long-forgotten Hungarian botanist, biologist, and philosopher Raoul Heinrich Francé, whose inquiries into the "technical achievements of plants" dovetailed with Mies's interest in the relationship between structure and form. The most heavily used and annotated book is Catholic priest and philosopher Romano Guardini's *Letters from Lake Como*, which provided Mies with compelling thoughts on modernity, technology, and abstraction. Mertins carefully studied these books, and his detailed analyses of Mies's projects are interspersed with erudite and often lengthy sections on philosophers such as Riehl, Spranger, Guardini, Adorno, and many others. Speculative, provocative, and far-ranging, these excursions are well worth the patience they require.

But they also raise important questions about architectural agency and the nature of the design process. Mies said and wrote so little that it is hard to know how deeply he engaged with what he read and marked and if it, consciously or not, influenced his design decisions. It is easy to underestimate the complexities of architectural production—the legal, financial, collaborative constraints that, often invisibly, force an architect's hand and limit his freedom. While Mies would, occasionally, quote Thomas Aquinas, and his terse statements might echo Guardini, he styled himself a builder-craftsman, not an intellectual. He cared deeply about materials,

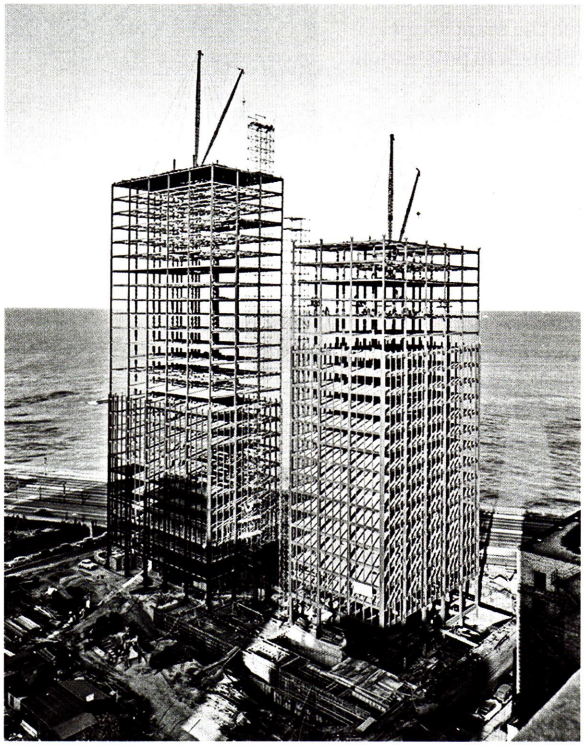
PHOTOGRAPHY: COURTESY PHAIDON PRESS

structures, and their assemblage ("Architecture starts when you put two bricks together") and had a keen eye for proportions and spatial sequences. He also nonchalantly ignored blatant contradictions between his buildings and writings: for example, as soon as he had declared, in 1923, "Form is not the goal but the result of our work" and "all formalism we reject," he went on to become the most stubborn and glorious formalist of the 20th century. His longtime associate Joseph Fujikawa speculated that Mies read in order "to confirm ideas which he himself had . . . it reinforced his own convictions"—which might help explain the single-mindedness and radicalism of his pursuits.

While this magisterial volume would have profited from a final, bilingual proofreading by the editor (the number of misspelled words, names, and abbreviations is astonishing—I stopped counting at 100), this is a minor point given the enormous breadth and scale of this achievement. It rivals that of the two multi-author volumes *Mies in Berlin* (edited by Barry Bergdoll) and *Mies in America* (edited by Phyllis Lambert) from 2001 that accompanied exhibitions at MoMA and the Whitney. It also complements the recent, more frugally illustrated but cheerfully nonhagiographic *Mies van der Rohe* by Franz Schulze and Edward Windhorst.

Mies stated in 1964 that "true architecture is always objective and is the expression of the inner structure of our time . . ." He was disappointed toward the end of his life that his architecture and its level of quality had not become the time's standard: "We showed them what to do. What the hell went wrong?" Whatever Mies had in mind as the "inner structure" of his time, that structure surely must have changed since. His work though, as this volume demonstrates, is as appealing, timely, and thought-provoking as ever. ■

Dietrich Neumann is a professor of the history of modern architecture and urbanism at Brown University.



Mies's love of structural clarity can perhaps be best seen in projects during construction, for example, Crown Hall at IIT from 1956 (above) and 860–880 Lake Shore Drive in Chicago from 1951 (below).

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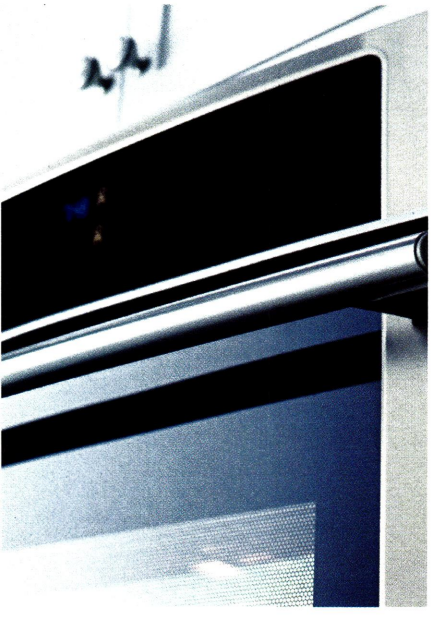

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Smart Skins

Kinetic Architecture: Designs for Active Envelopes, *by Russell Fortmeyer and Charles D. Linn. Images Publishing, April 2014, 224 pages, $78.*

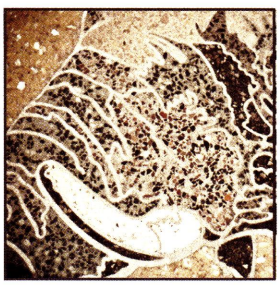
Reviewed by Joann Gonchar

DESPITE ITS TITLE, *Kinetic Architecture* is not a book about buildings with components that literally move. Instead, its authors, Russell Fortmeyer and Charles D. Linn (both former editors at ARCHITECTURAL RECORD), investigate projects with envelopes that dynamically respond—in ways both visible and invisible—to their surroundings in order to modulate the interior environment, conserve energy, and enhance the comfort of occupants.

Linn, an architect and director of communications for the University of Kansas School of Architecture, and Fortmeyer, an electrical engineer and sustainable-technology specialist at Arup, put dynamic facades in context, examining their historical roots in a series of essays. But the meat of the book is a set of case studies investigating projects from around the world that have been completed in the last decade or are under way—buildings that have benefited from relatively recent developments in modeling and analysis tools, control systems, and glazing and other materials.

The projects featured vary from the widely publicized, like Renzo Piano's California Academy of Sciences, in San Francisco (completed in 2008), with its hilly, living roof, to the less well-known, such as Pei Cobb Freed & Partners' Milstein Family Heart Center (completed in 2010), in New York. The latter project has a transparent "climate wall" that helps control interior temperatures while providing views of the Hudson River. The book includes self-consciously iconic buildings, like the towers of Aedas's Abu Dhabi Investment Council Headquarters, with their operable shading screens inspired by traditional Arabic *mashrabiyas*. But it also features more subdued projects like William McDonough's Ames Research Center on the NASA campus in Moffett Field, California, which has an exoskeleton that doubles as an armature for shading devices and solar panels (see article on page 135).

For each of the 24 case studies, Fortmeyer and Linn go to great lengths to explain how the building enclosure is part of a system of interrelated subsystems. They describe how the envelopes work in concert with other building systems—systems for lighting and daylighting, active and passive cooling, and natural and mechanical ventilation—to create a high-performance ensemble. In short, although *Kinetic Architecture* is a book that focuses on facades, its analysis is more than skin deep. ■



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The City Observed

Harlem: The Unmaking of a Ghetto, *by Camilo José Vergara. University of Chicago Press, December 2013, 364 pages, $55.*

Reviewed by Anna Shapiro

THE SOCIOLOGIST, photographer, and MacArthur Fellow Camilo José Vergara, known for his website Invincible Cities and his heartfelt documentation of devastated urban neighborhoods, says in this, his ninth, book that there are many Harlems he has been photographing since 1970. While that could mean the various populations he mentions—the early Jewish and Italian immigrant Harlemites, the big wave of African-Americans, the nearly as big influx of Latin Americans, the recent Senegalese and Malians—the pictures are primarily of built Harlem, its street life (concentrating on black people), and what could be called real-estate Harlem, new developments for the latest immigrants, middle-class whites.

The author brings his explorations of New York's premier ghetto up to date; 2038 Fifth Avenue (above) in '96.

The pictures of structural decline are heartbreaking. Whereas in western Harlem, block after block of exquisite row houses are largely intact, in eastern Harlem or on the commercial streets, the buildings photographed look denuded. For instance, in 18 shots, the facade of 65 East 125th Street, from 1977 to 2011, loses its 19th-century moldings piecemeal to alterations until finally even its framing Doric columns are gone.

The text is characterized in urban historian Timothy J. Gilfoyle's foreword as "part history, part sociology, and part memoir." But, if so, the tone is dreamily free-associative for social science and uninflected for memoir, if studded with gemlike researched data. When Vergara started out, he took pictures as an aspiring artist; later, as he became more a documentarian of poverty and transformation, he remained visibly guided by impulse rather than agenda. One suspects that, precisely because his pictures of people capture life on the wing, they will, like Eugene Atget's or Jaques Henri Lartigue's, gain with time, losing their prosaicism to be seen as art, even as buildings here have lost artistic charm to become prosaic. What comes strongly across about this author, however, is a reluctance to comment, a wish to let things stand for themselves. Vergara photographs a billboard that—without its message to join the NAACP, which gives it punch—could be his motto: Much Has Changed . . . Much Has Not. ■

Anna Shapiro is the author of four books and reviews for many publications.

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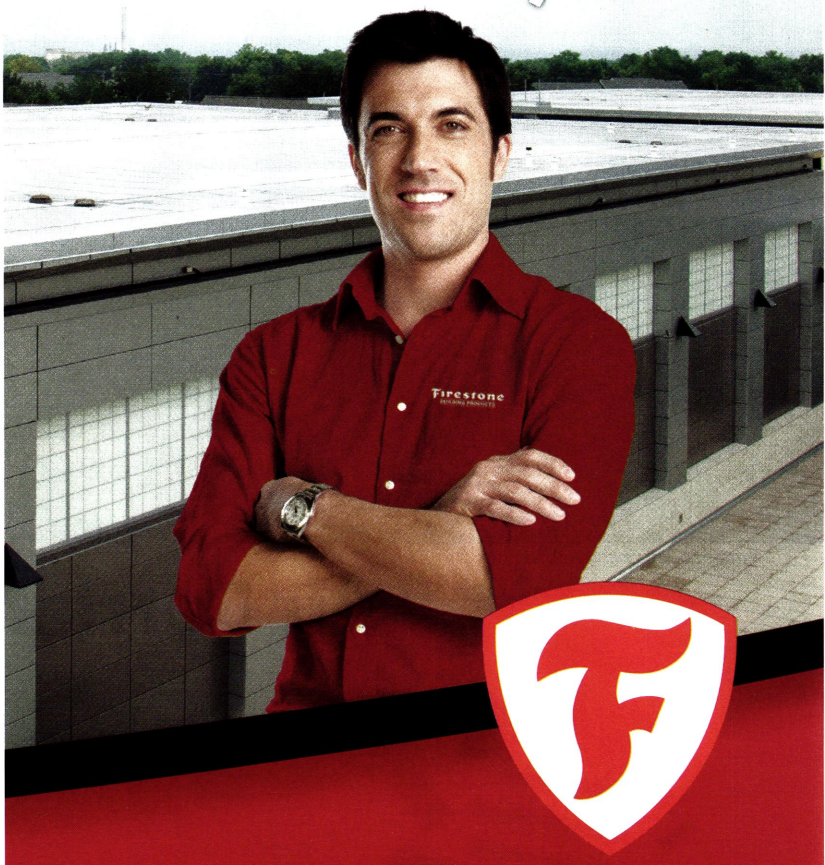

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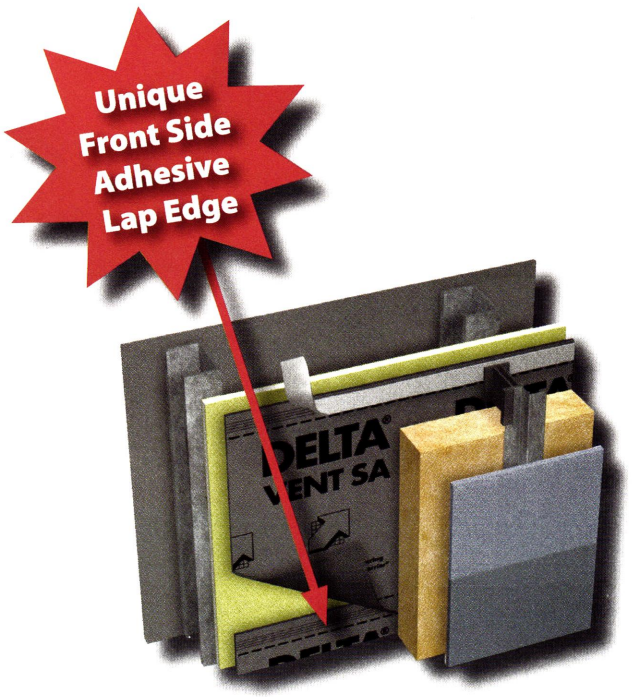

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European Lessons for Living

10 Stories of Collective Housing: Graphical Analysis of Inspiring Masterpieces, *by Aurora Fernández Per, Alexis Oltero, and Delia Argote. ATA Research Group, June 2013, 495 pages, $65.*

Reviewed by Richard Dattner

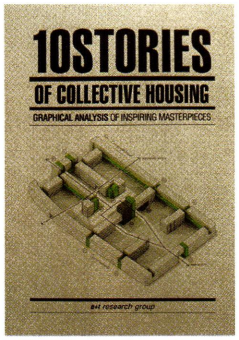
THIS HANDSOME and valuable compendium of social housing projects in Europe is actually three books: a chronological presentation of 10 projects tracing the development of architectural concepts for collective housing from 1919 to about 1970; a superlative example of how well-organized and stunning graphics can allow for comparisons between projects; and a manifesto for promoting humane high-density living.

The authors, who are also the publishers, are members of a group formed in Spain in 1992 to promote architecturally distinguished high-density housing. In this book, they "tell 10 stories" so as not to allow "these works and their architects to go unnoticed by recent generations," selecting the projects "as one chooses one's friends. Faults and all, they make everything worthwhile."

Each project occupies a chapter that begins with a brief description, the "characters" involved (architect, collaborators, influences, politicians or administrators affecting the final outcome) and "references" (other earlier or contemporaneous projects treating similar problems). The projects are then presented in a consistent graphic format covering almost every scale, from the overall layout to detailed unit plans and rendered isometrics. Historic and construction photos and other archival images place each work in its time, while recent color photographs give a good sense of the experience of living in the eight surviving ones.

The examples range chronologically from the 1919–22 Justus Van Effen complex in Rotterdam by Michiel Brinkman—a courtyard project with a "street in the air"—to the 1970–75 Jeanne Hachette complex in Paris by the Communist architect Jean Renaidie—a Habitat-like structure with a terrace for each unit. Of special interest to me were the chapters on the 1955–83 Barbican project in London (described by the authors as "an exquisite ghetto" for the wealthy) and Ralph Erskine's 1969–82 Byker Regeneration in the UK (which had community participation built into its design process).

The authors are frank about the social outcomes of these projects and how economic, political, and social forces ultimately affected or overwhelmed them. Erskine's was damaged by poor maintenance, and, most tragically, the 1931–34 Cité de la Muette in Paris (an early example of industrialized high-rise construction) was used in 1942 to house 76,000 French Jews being deported to extermination camps and was subsequently demolished.



10 Stories is a valuable reference, a condensed history of collective housing, and a demonstration of outstanding graphics and commentary. While there are no American examples, I was struck by how many of the projects are part of my generation's collective memory, and what a debt my firm's Via Verde project (designed with Grimshaw) owes to its predecessors. This book is, ultimately, a paean to architects who labored in search of that essential goal still beyond our reach: "a home for everyone, affordable to everyone." ■

Richard Dattner is the founding partner of Dattner Architects in New York.

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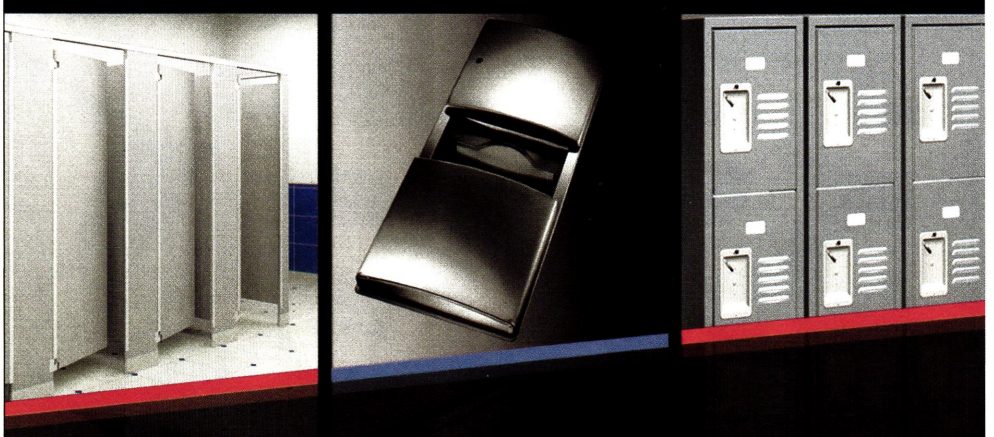

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The answer to the May issue's Guess the Architect is Charles Rennie Mackintosh, who designed the W. W. Blackie House (Hill House) in Helensburgh, Scotland, in 1902–06. For more details, including the winner, go to archrecord.com.

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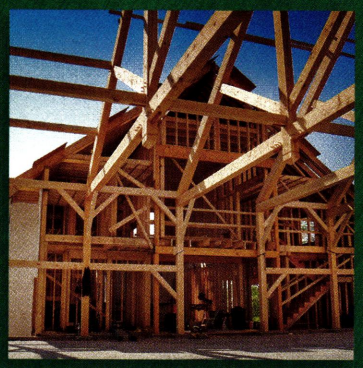

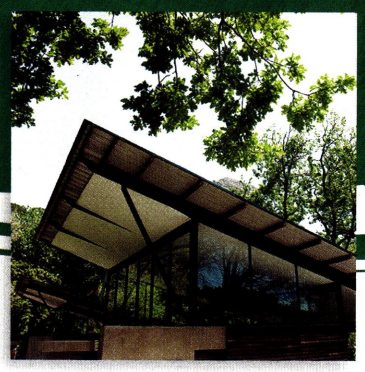

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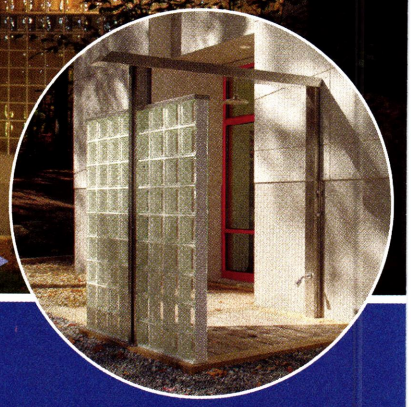

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Milan's Salone del Mobile

Architects take center stage at the biggest furniture show of the year.

BY JOSEPHINE MINUTILLO

Housed within the Massimiliano Fuksas-designed fairgrounds in Rho (left), near Milan, the 53rd annual Salone del Mobile recorded more than 357,000 visitors. 2014 Pritzker Prize laureate Shigeru Ban, Daniel Libeskind, and Kartell CEO and Salone president Claudio Luti among journalists at the *Where Architects Live* exhibit opening (below).

TOO BIG. Too frequent. Too spread-out. Those are some of the complaints heard again and again about Milan's over-the-top furniture fair, which consumes Italy's second-largest city for one week every April. Yet design aficionados keep flocking to the annual event in ever-larger numbers. The 53rd edition of the Salone Internazionale del Mobile attracted more than 357,000 visitors, up 13 percent from last year.

While new and unexpected exhibition venues continue to crop up throughout the city, the fairgrounds in the north-western suburb of Rho seem to finally be taking back some of the spotlight from those fringe events. British designer Tom Dixon exhibited there for the first time this year. "I decided it is more radical to be conventional," Dixon said. For years, his unique presentations—sometimes incorporating pop-up restaurants—anchored the once-important Tortona district. More recently, he became a mainstay at the city's Museum of Science and Technology, last year transforming spaces throughout the museum into a temporary design hub

PHOTOGRAPHY: © SAVERIO LOMBARDI VALLAURI (TOP); ALESSANDRO RUSSOTTI (BOTTOM)

past which groups of schoolchildren walked to visit the permanent collection. "The fair became more about entertainment than commerce," Dixon explains. "I've been coming to Milan for 25 years, and entertaining people for most of that time, but now I'll do some commerce."

While the fairgrounds served as the commercial meeting point for the furniture world's major players and their partners—Vitra, Knoll, Kartell, Moroso, and the Poltrona Frau Group—it hosted a very anti-commercial exhibit. *Where Architects Live* provided an intriguing peek into the domestic spheres of world-renowned architects Mario Bellini, David Chipperfield, Massimiliano and Doriana Fuksas, Zaha Hadid, Marcio Kogan, Daniel Libeskind, Bijoy Jain of Studio Mumbai, and 2014 Pritzker Prize laureate Shigeru Ban.

The 17,000-square-foot exhibition, housed between the pavilions of EuroCucina—the biennial kitchen show that this year took the place of the lighting show Euroluce—combined multimedia presentations and discrete constructions. Video interviews with the architects played within spaces designed to resemble aspects of their respective homes.

For Ban, videos of Tokyo were projected onto oval-shaped podiums that mimicked the ovoids of his Hanegi Forest apartment building, designed to avoid cutting down a single tree. Bellini's space featured a large bookcase-staircase like the one in his home in a centuries-old building in Milan's Brera neighborhood. Water figured prominently for Jain, both in the design of his own home in the Indian countryside outside Mumbai, and in his space at the exhibit.

The work of prominent architects could be seen outside the fair as well. Grimshaw partnered with Poltrona Frau for its debut exhibition at Salone. Housed in an early-19th-century foundry building, *Elements* showcased the work of Grimshaw's Industrial Design Unit, including prototypes for an auditorium chair designed for the firm's latest project (the Patricia and Philip Frost Museum of Science in Miami), seating for transit waiting areas, and an executive table. "Grimshaw has a long-standing history of embedding industrial design components in our architectural projects," explains the

From left to right behind the *Elements* executive table (above): Kurt Wallner, managing director for the contract division at Poltrona Frau Group, and Grimshaw members Sir Nicholas Grimshaw, chairman; deputy chairman Andrew Whalley; and head of industrial design Casimir Zdanius. An aerial view of the *Elements* exhibit held in the historic Fonderia Napoleonica Eugenia building (right), where mixed-media content was presented inside prefabricated steel cases.

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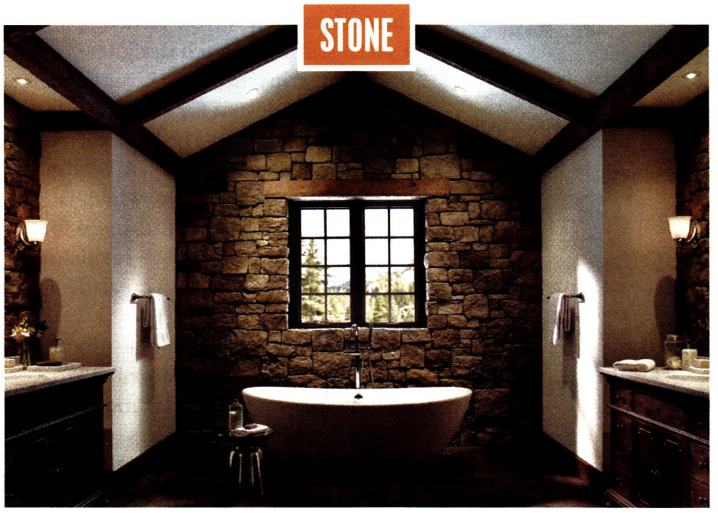

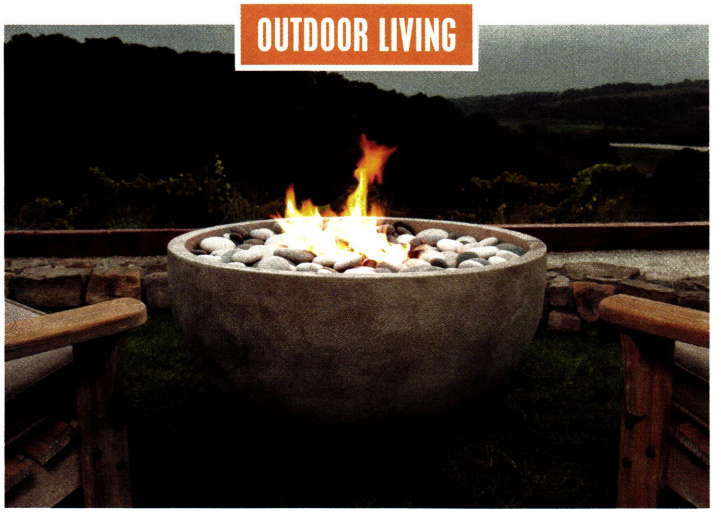

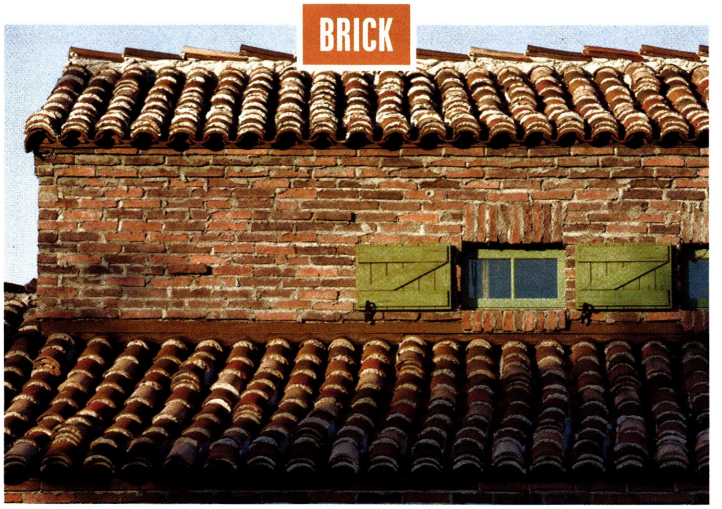

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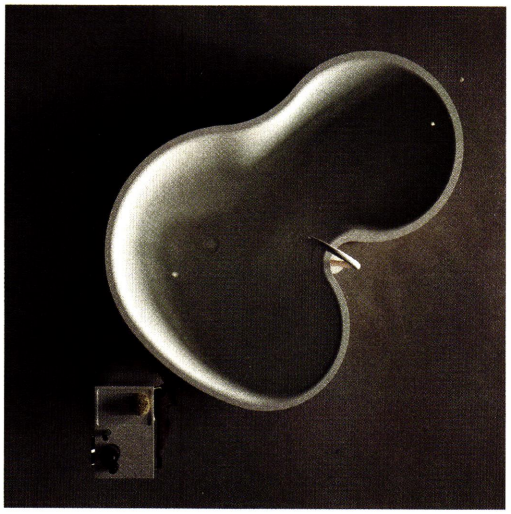
In addition to being included in *Where Architects Live*, Marcio Kogan unveiled his first design for Italian bathroom-fixture manufacturer Agape. Accommodating more than one person, DR is a sinuous bathtub clad in bent wood. Although an off year for Euroluce, Artemide presented new lighting from Herzog & de Meuron, Libeskind, Bellini, Michele de Lucchi, and Jean Nouvel.

One does not have to be an architect to recognize that the spaces surrounding objects are just as important as the objects themselves. Vitra displayed a seating line by Dutch designer Hella Jongerius: her East River Chair is based on a design for the North Delegates' Lounge at the United Nations headquarters in New York. According to Jongerius, "In a lounge, which is primarily used as a neutral space for spontaneous meetings, the furnishings play an important role in creating a lively setting."

For its presentation of new products, Dutch furniture brand Moooi incorporated photographs by Massimo Listri, who was granted rare access to the Vatican Museums in Rome and the Palazzo Pitti in Florence to take them. "In a world that is dominated by the new," says Moooi art director and cofounder Marcel Wanders, "we like to see our works in the context of eternity." ■



In his first collaboration with Agape, Brazilian architect Marcio Kogan designed the DR bathtub (above) as a friendly, sensual object. Large-scale images by famed architectural photographer Massimo Listri served as a backdrop to Moooi's presentation of new designs, including the Zio lounge chair and footstool by Marcel Wanders (left). The East River Chair by Vitra (below) is based on a design Hella Jongerius developed for the North Delegates' Lounge at the United Nations in New York.

PHOTOGRAPHY: COURTESY AGAPE (TOP, 2); © NICOLE MARNATI (CENTER); COURTESY VITRA (BOTTOM)

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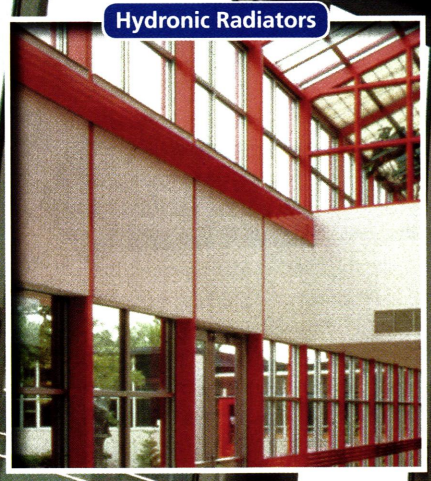

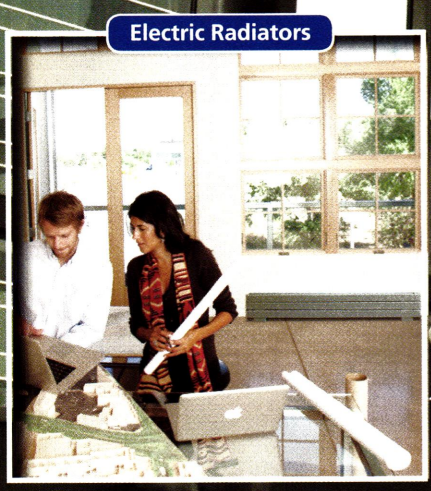

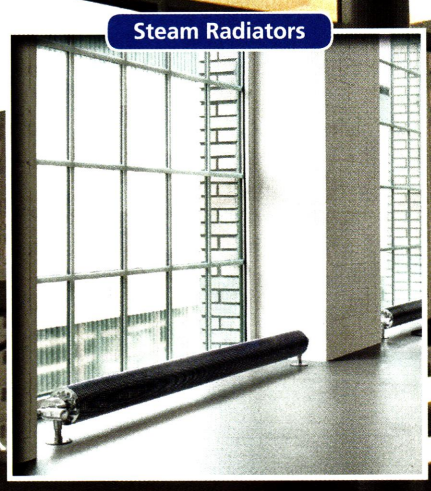

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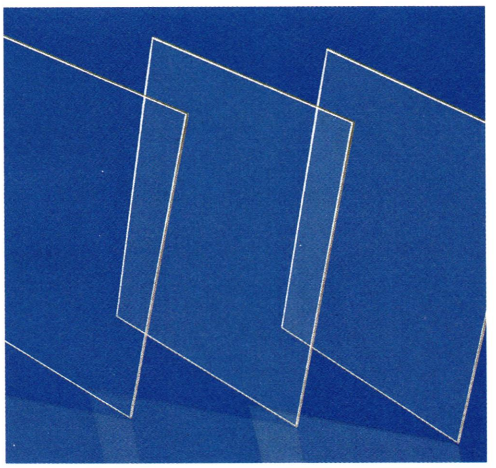

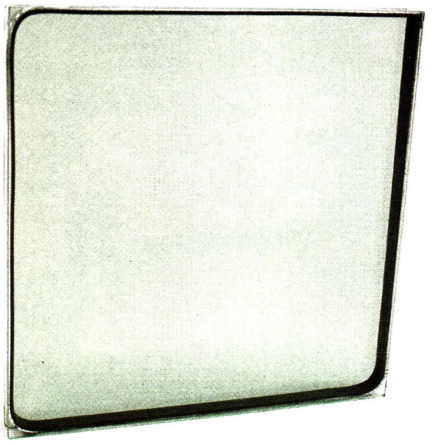

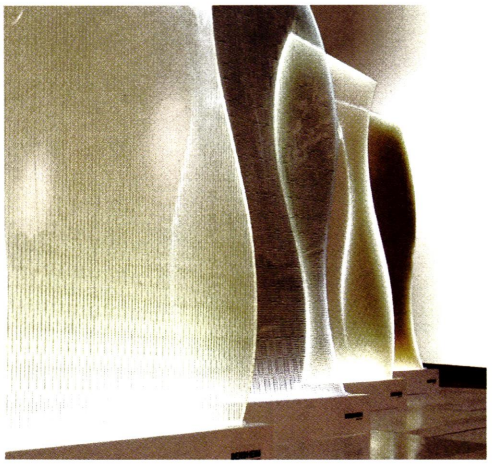

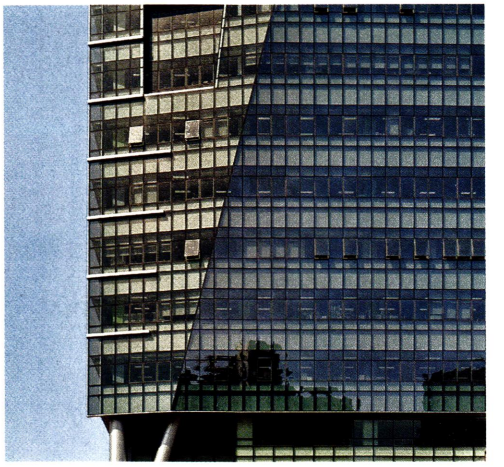

Keralite Select Fire-Rated Glass

Vetrotech Saint-Gobain vetrotechusa.com

Keralite Select is a new fire-resistant glass ceramic that has a high visible- and low UV-light transmission, as well as a low haze value (at 0.5%) and high color-rendering index (at R96a), compared to similar products, making it comparable to float glass in quality, clarity, and color. Available in two thicknesses—3/16" and 5/16"—it provides fire ratings ranging from 20 to 180 minutes. CIRCLE 200

Kova for Bendheim Collection

Bendheim bendheim.com

Kova Textiles has collaborated with Bendheim to offer four of its fabric patterns sandwiched in safety-laminated glass. Constructed from vinyl-coated polyester yarn, the woven textiles feature degrees of openness for different levels of privacy while still allowing light to filter through when used as interior walls, partitions, doors, and balustrades. The panels measure 60" wide x 120" high x ¼" thick, and can also improve sound attenuation. CIRCLE 205

LC Privacy Glass

Innovative Glass Corp. innovativeglasscorp.com

LC Privacy Glass uses a film with scattered liquid crystals that create a frosted appearance; when voltage is applied, the crystals align to render the glass transparent. Now liquid crystal–switchable glass is clearer and available in larger sizes, making it more acceptable in commercial designs—such as this New York office by Ted Moudis Associates—and it changes transparency instantaneously. CIRCLE 201

View Dynamic Glass

View viewglass.com

Recently installed at the Henderson Architectural Group–designed Clovis Community Medical Center in California, View Dynamic Glass uses an electrochromic coating on the float-glass surface to transition among four tints. The glass—ideal for reducing solar heat gain and glare—can be specified for control via wall switches only or switches and a mobile application, and can also be programmed to adapt automatically. CIRCLE 204

SunGuard SNX 51/23

Guardian sunguardglass.com

Developed to meet stringent energy codes, SunGuard SNX 51/23 architectural glass uses a triple silver-layer technology to generate a solar heat gain coefficient of .25 and low reflectivity, while allowing 51% visible light transmission. With a slightly more neutral blue tone, it is offered in six of the company's float-glass substrates, such as clear, UltraWhite low-iron, CrystalGray, and green. CIRCLE 202

Solarban z75

PPG Industries ppgideascapes.com

This latest introduction to the Solarban low-E glass line possesses a cool-gray tint, offering architects a new color option to work with in glazed building designs while aiming to meet LEED V4 energy standards. Shown on a building in South Korea by SD Architecture Partners, z75 has a visible light transmittance of 48% and solar heat gain coefficient of 0.24, making it ideal for commercial buildings that require higher cooling loads. CIRCLE 203

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Aqua Lounge (Los Angeles, CA) - Designed by Duncan Design Group (Dallas, TX) | Photo by: Michael Britt

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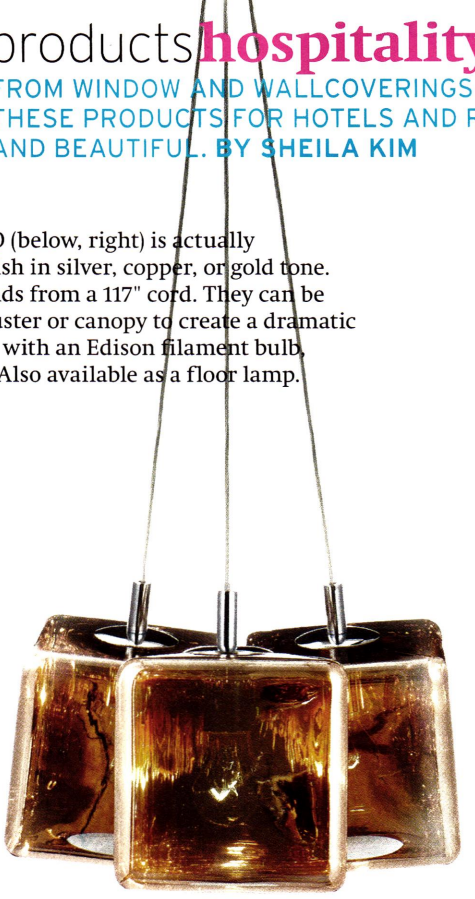
products hospitality

FROM WINDOW AND WALLCOVERINGS TO BATH AND LIGHT FIXTURES, THESE PRODUCTS FOR HOTELS AND RESTAURANTS ARE FUNCTIONAL AND BEAUTIFUL. BY SHEILA KIM

H2O

Resembling a perfectly shaped ice cube, Viso's H2O (below, right) is actually made of polycarbonate with a semi-metallized finish in silver, copper, or gold tone. Each diffuser measures 8" or 12" cubed and suspends from a 117" cord. They can be specified as single pendants or customized in a cluster or canopy to create a dramatic effect. While the semitransparent design is paired with an Edison filament bulb, it can also be fitted with LED lamping on request. Also available as a floor lamp.
visoinc.com CIRCLE 206



Coil Drapery

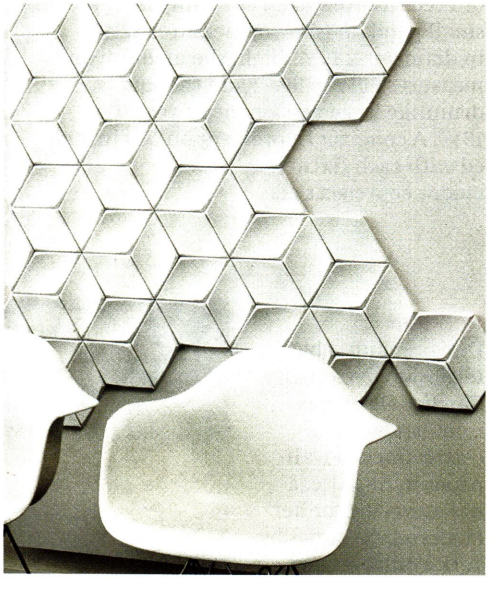
Cascade Coil's flexible round-weave drapery (left) is a metallic mesh material that can be used to cover windows and walls or divide spaces to create privacy. A range of sizes, gauges, and finishes—from copper and brass to aluminum and galvanized steel—are available. Inside Aria, a restaurant in Toronto, Stephen Pile Architect installed the company's 3/32", 21-gauge stainless-steel window coverings.
cascadecoil.com CIRCLE 210

Vola RS10 Electronic Soap Dispenser

Danish manufacturer Vola has introduced RS10 (above), a discreet in-wall dispenser that complements the brand's iconic modernist faucets. Usable with liquid or foam soap, the unit measures 7¼" in diameter, runs on 110–230V power or batteries, and features soap-level indicator lights. Its ring is offered in polished chrome, natural brass, brushed chrome, brushed stainless steel, or 14 colors including light blue and bright red. Available through Hastings Tile & Bath.
hastingstilebath.com CIRCLE 207

Flame in New Colors

Following the success of its 2012 collaboration with fashion and home-decor company Missoni, flooring manufacturer Bolon has revamped the color palette for one of its Missoni-collection patterns. Flame is an abstract take on the fashion house's classic zigzagging peak design, now produced in four earthy hues: rust, pine, wood, and stone. Made of 100% phthalate-free vinyl, the woven flooring is well suited to high-traffic zones, and is offered in 6'6" x 82' rolls.
bolon.com CIRCLE 209



Swoon

Swoon (above), newly added to Studio by 3form's Profile series, is a dimensional diamond-shaped tile with skewed bevel edges and a subtly concave face, affording designers the ability to create intriguing geometric or organic compositions on the wall. The tiles are CNC-machined in MDF and can be specified unfinished, primed and ready to paint, or wrapped in PET or PVC. Each unit measures approximately 5" x 6⅓".
3-form.com CIRCLE 208

PHOTOGRAPHY: © JOY VON TIEDMANN (TOP, LEFT)

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Laika

Blu Dot puts a modern spin on rattan in its Laika lighting pendants (above). The collection features white or natural-colored paper rattan handwoven onto a white powder-coated steel frame that is left exposed at the top and bottom. Laika is offered in three sizes: the slim-and-tall small pendant (shown) measures 12½" in diameter x 19¾" high; the medium one measures 20½" x 18⅞"; and the squat, drumlike large version measures 30" x 15¾". A compact fluorescent bulb is included with each fixture.
bludot.com CIRCLE 215

Cyprum-Finish Fixtures

Trends indicate that rose gold is making a comeback, and Dornbracht is embracing this, introducing the colored-gilt finish to its most iconic sink and tub fixtures. Cyprum (right)—a name derived from "cuprum," the Latin word for copper—is an 18-carat-gold and copper alloy mix with a noncorrosive electroplated surface available on Dornbracht's MEM bath line, as well as the Tara kitchen series.
dornbracht.com CIRCLE 211

Stripe Sliding Doors

Italian furniture and interior-door manufacturer Rimadesio has introduced Stripe, a sliding-door system with slats that create a graphic look. Black or brown aluminum frames on both sides sandwich lacquered glass that can be specified in a number of tints as well as reflective options. The doors can be customized up to 5' wide x 9'6" high. Available through Dom Interiors.
dominteriors.com
CIRCLE 212

Impulse

Designer and cable-television personality Candice Olson has reinterpreted the classic flocked wallpaper in Impulse, a new covering for her Modern Luxe series by York Wallcoverings. Here the plush pattern is more geometric and set against a vertical ombre-stripe field with a frosted sheen. The nonwoven wallcovering comes in 20½"-wide rolls and is available in four colorways.
yorkcontract.com
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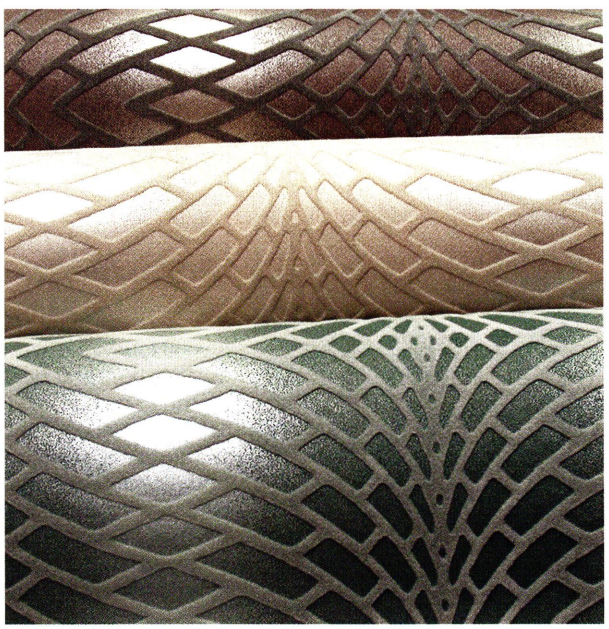

Carnegie by Lumicor

In a collaboration with textile house Carnegie, Lumicor has transformed five of the company's offerings into decorative resin panels that enable the textiles to be used in new ways—on horizontal surfaces and as wallcoverings, for lighting and partitions. Available in ⅛"- or 1"-thick panels, the material comes in standard sizes of 4' x 8' or 4' x 10', and is easily cleanable using just warm water and mild soap. Lumicor can also create custom panels with Carnegie's other designs.
lumicor.com CIRCLE 213

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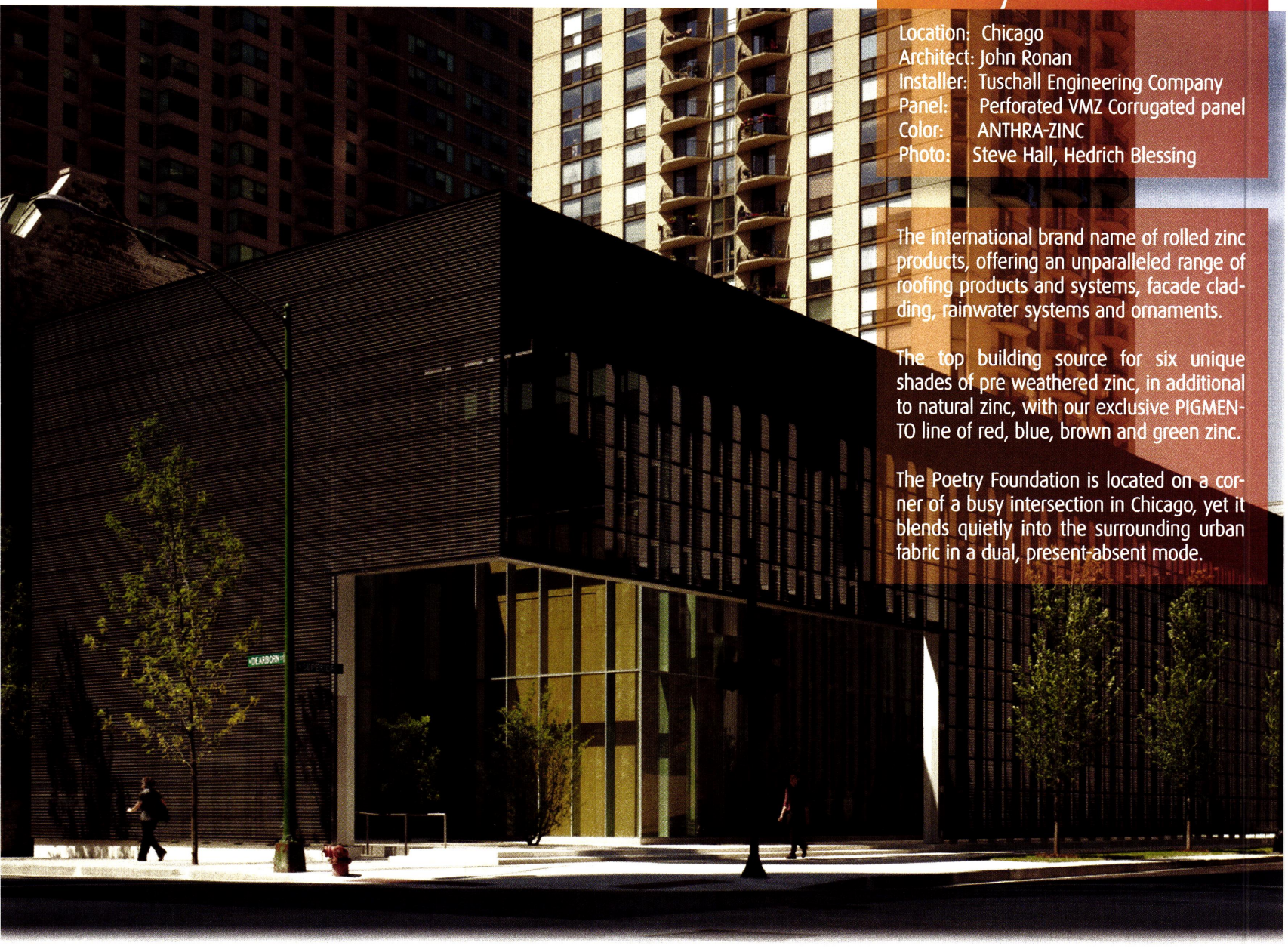

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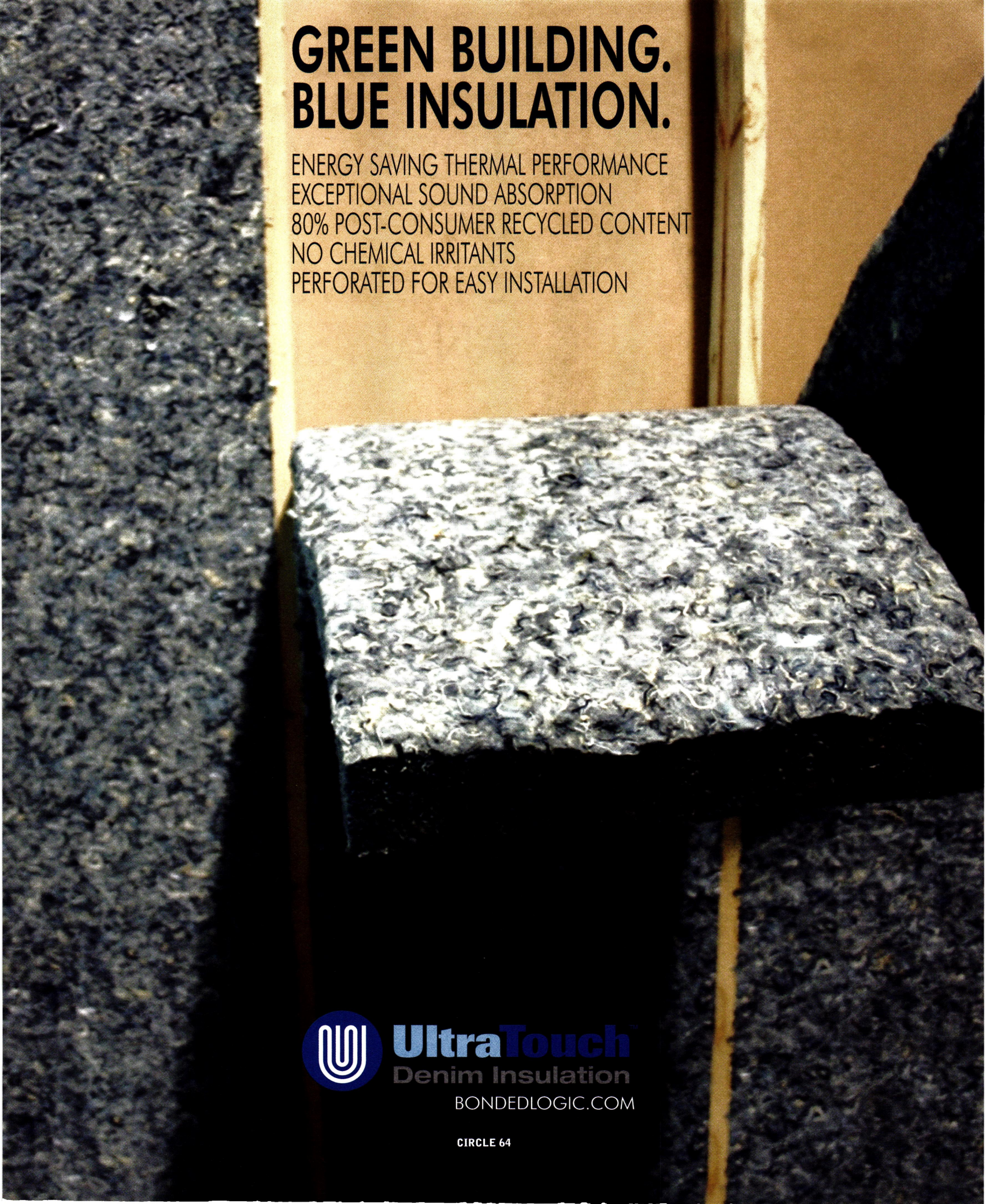
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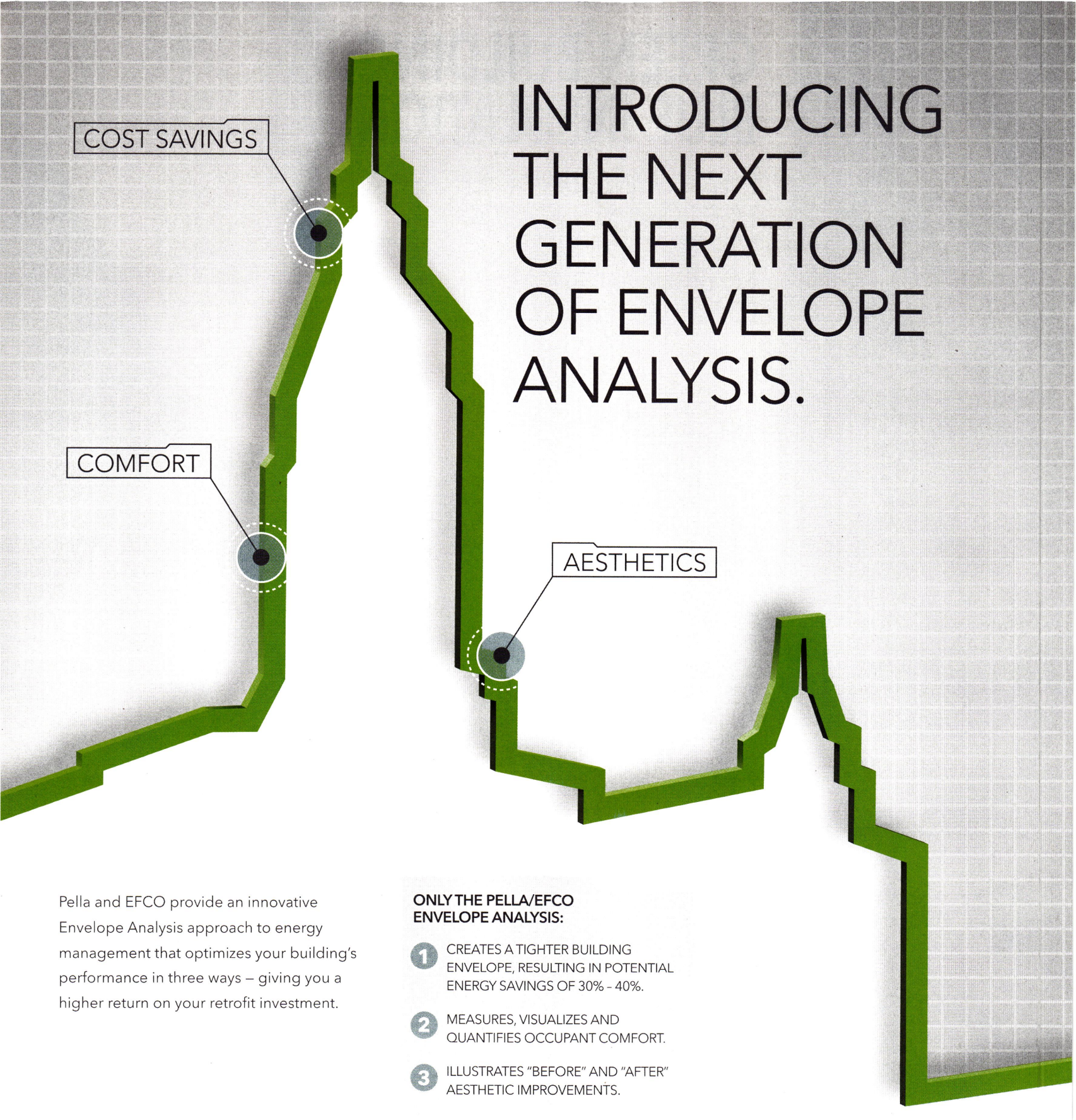

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CIRCLE 135

DESIGN. CULTURE. CRAFT.

Bringing It All Back Home

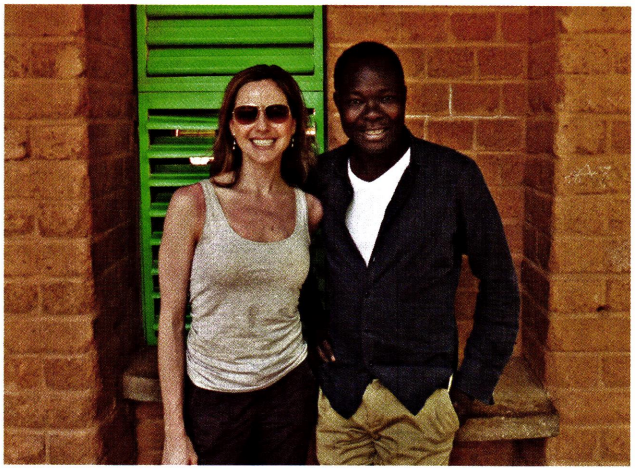
A firsthand look at how Diébédo Francis Kéré has used his architecture to transform his rural village.

BY JENNA M. MCKNIGHT

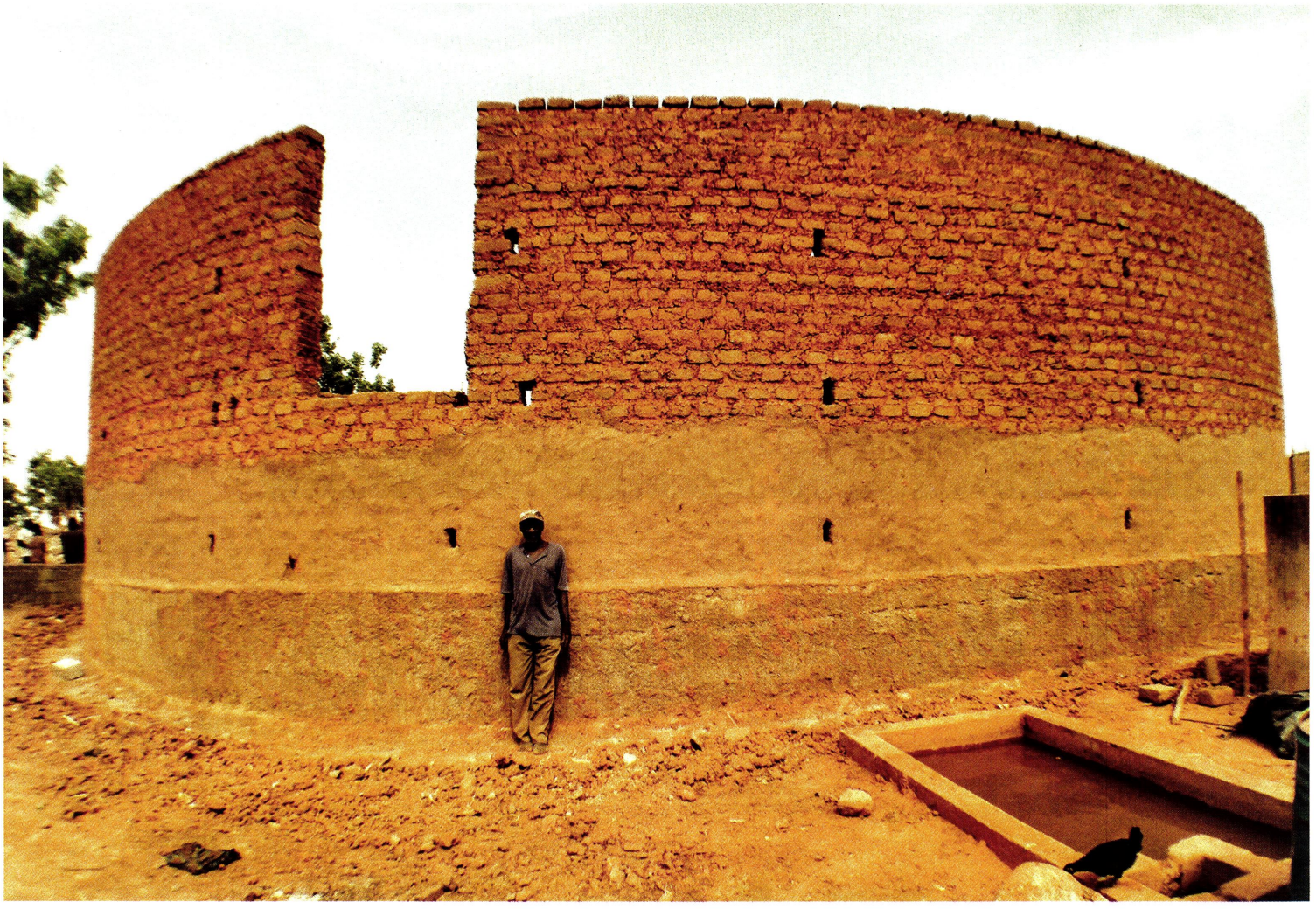
IT WAS late morning in Gando, a rural community in the West African country of Burkina Faso, and the fierce sun was beating down on the arid, ochre-colored landscape. Despite the heat, a throng of villagers was busily constructing a new building. Women in colorful skirts and sandals—some with babies strapped to their backs—walked to and from the site, steadily carrying clay bricks on their heads. Men shoveled dirt and mixed mortar. One laborer stood on scaffolding held up by thin tree trunks, laying bricks as they were passed up to him.

"The place has been packed with people, coming to help and see the progress," said Abdoul Galbané, a cell phone dealer from Ivory Coast who was in Gando visiting family. The tall young man had extended his stay just so he could be a part of the construction process. "I've never seen such a unique design," he said. "Everyone has been talking about Gando and its nice buildings."

I was in this dusty, remote village in mid-February, at the peak of the dry season, to see the work of Diébédo Francis Kéré, a charismatic architect whose remarkable personal story and well-designed, sustainable, and low-tech buildings have earned him widespread acclaim. On this particular



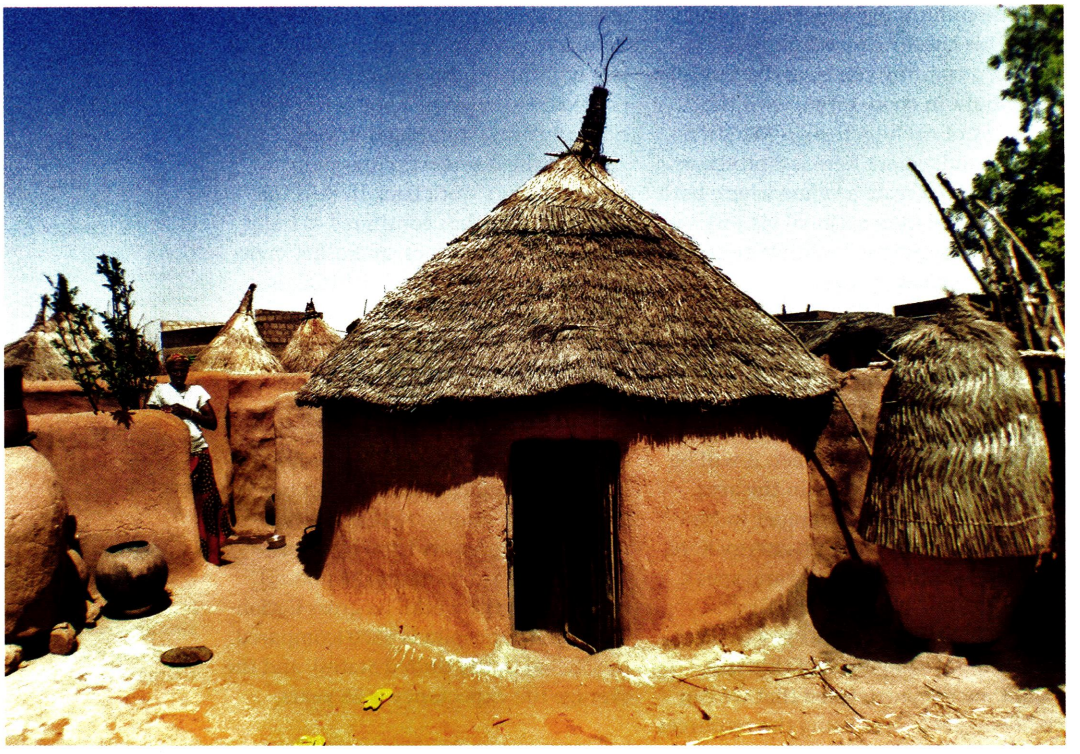
The author with the architect (above) in Gando.



PHOTOGRAPHY: © JENNA M. MCKNIGHT, EXCEPT AS NOTED; JAMIE KEATS (TOP)

Atelier in Gando

Construction is now under way on the Atelier, a training center and dormitory being built in cooperation with the Academy of Architecture in Mendrisio, Switzerland. The design refers to the traditional round huts found throughout the region (right). The 6,000-square-foot building will consist of three circular volumes made of sunbaked mud bricks (below). Rising nearly 22 feet (opposite), it will be the tallest clay structure in the area. The goal of the project is to provide a place where local residents and international visitors can work together to develop imaginative building methods using indigenous materials.



day, the community was helping construct his latest undertaking: the Atelier, a training center and dormitory being built in cooperation with the Academy of Architecture in Mendrisio, Switzerland, where Kéré is a professor. His goal is to create a venue where both residents and international visitors can develop imaginative building methods using indigenous materials.

The building itself exemplifies the Atelier's mission. Inspired by the round mud huts ubiquitous in the region, the center will consist of three connected circular volumes. Totaling 6,000 square feet and rising nearly 22 feet, it will be the tallest clay structure in the area. "It's like building a skyscraper in New York!" exclaimed the high-energy Kéré, who tends to move quickly and speak emphatically. "It will be the first time in Burkina Faso's history to have a traditional compound of this size. I want my people to learn that we can create bigger spaces using the resources we have available: clay and the power of the community."

Gando, with its subsistence economy and lack of plumbing and electricity, is not a place where aspirations are easily achieved. Kéré, now in his 40s, grew up here. As the eldest son of the chief, he was sent off to attend primary school in a neighboring town at the age of 7. He went on to win a scholarship to study carpentry in Germany and later enrolled in an architecture program at the Technical University of Berlin. In 2001, while still a student, he completed his first project: a simple yet elegant primary school in Gando made with local materials and labor. An exemplary fusion of modern and vernacular design, the project won an Aga Khan Award in 2004 and put Kéré (and his village) on the world map.

Today, the tireless architect spends much of the year in his native country while maintaining a small firm in Berlin, enabling him to take on the occasional project in Europe. He just won first place in a competition to reimagine military barracks in Mannheim, Germany, for instance, and in 2013 he completed a permanent exhibition for the International Red Cross and Red Crescent Museum in Geneva. Kéré has also held teaching positions at several universities (Harvard's GSD among them), and he frequently speaks at schools and design events around the globe. During his rousing lectures, it's not uncommon for the exuberant architect to jump off the stage or pound on the floor to illustrate a point. His talks typically draw standing ovations.

All of these undertakings help support Kéré's work back in Burkina Faso, where he has continued to build schools, health clinics, and other civic-minded projects since finishing his architecture studies in 2004. Most recently, he has completed a medical center in Léo, a town of 30,000 near the border with Ghana. His projects are largely funded through a nonprofit foundation he established, Building Blocks for Gando. Constantly on the hunt to raise money, Kéré relies on donors and sponsors from overseas, as Burkina Faso is one of the poorest countries in the world. Its gross national income per capita is $670 (compared to $52,340 in the United States), and the average life expectancy is 55 years, according to the World Bank. "You hear of people living on less than a $1 a day. This is where they do it," Kéré said as we passed through a lively market just outside of Gando, where balls of fried dough were being sold for a penny apiece.

Through architecture, Kéré is providing jobs, educational opportunities, and models for future development in a place where progress seems elusive. "We have nothing. We rely on Diébédo to help," says Zémane Gampoko, a village elder who leads the Gando Women's Association. Kéré's transformative power is clearly evident in the primary school he completed over a decade ago. He has since added six houses for teachers and a second classroom building, and has almost finished a library and a separate complex for secondary students. Each school day, hundreds of girls and boys arrive at the campus on foot or by bicycle—and, sometimes, by donkey.

Health Clinic in Opera Village

The Center of Health and Social Advancement (below) is a 13,000-square-foot medical clinic in Laongo, a rural town in Burkina Faso. The clinic is part of the Opera Village, a 14-hectare mixed-use complex designed by Kéré for the late German filmmaker Christoph Schlingensief. The infirmary's outer walls are made of concrete bricks coated in clay, while its inner walls are made of compressed-earth bricks. Windows frame views of the outdoor scenery while ushering in natural light. The area around the clinic was paved with laterite, a local stone.

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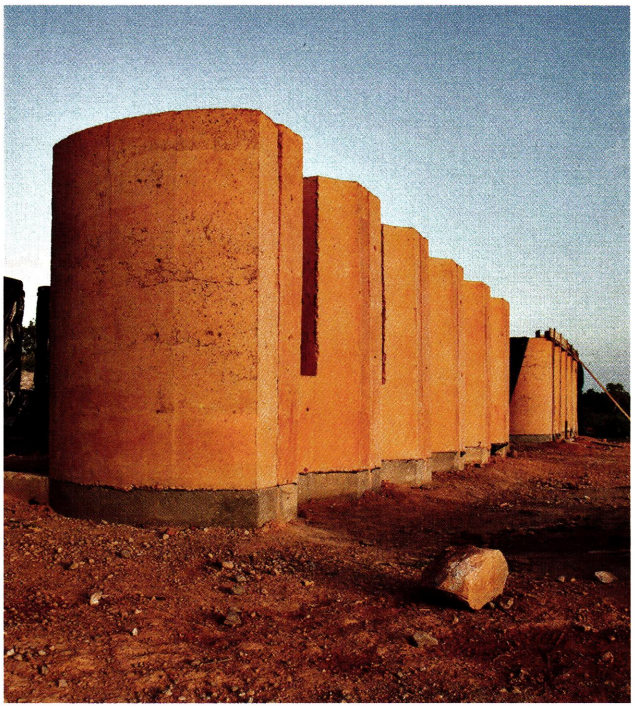
"Everyone loves it because we can have kids coming from neighboring villages, which is good," says Sosthene Sawadogo, a 39-year-old teacher. "The more kids we have, the better—the more who will be successful later." Already, three graduates have enrolled in college—a triumph, given that fewer than 20 percent of Burkinabe children even attend secondary school, a percentage even lower in rural areas.

As I toured the school with Kéré, instructors and administrators eagerly approached him, and youngsters often bowed in his presence. The buildings were well cared for; even the brightly painted window shutters were not chipped or faded. "Seeing all of these kids being happy and coming out of all the classrooms, it makes me very proud," Kéré told me as we took a rare break, sitting in the school's shaded courtyard. "I've had a big opportunity that other people don't have: the chance to gain knowledge." Thanks to his indomitable spirit and pioneering work, Kéré is now ensuring that inhabitants in Gando and beyond are afforded the same precious opportunity. ■

Gando Secondary School

Kéré is currently constructing a 42,000-square-foot secondary school in Gando (below, all three). Deeply overhanging roofs shade clay-brick classroom buildings during the day while protecting them from hard summer rains. The facility will also feature a low-cost geothermal cooling system.



PHOTOGRAPHY: © JAMIE KEATS (TOP); KÉRÉ ARCHITECTURE (BOTTOM 2).

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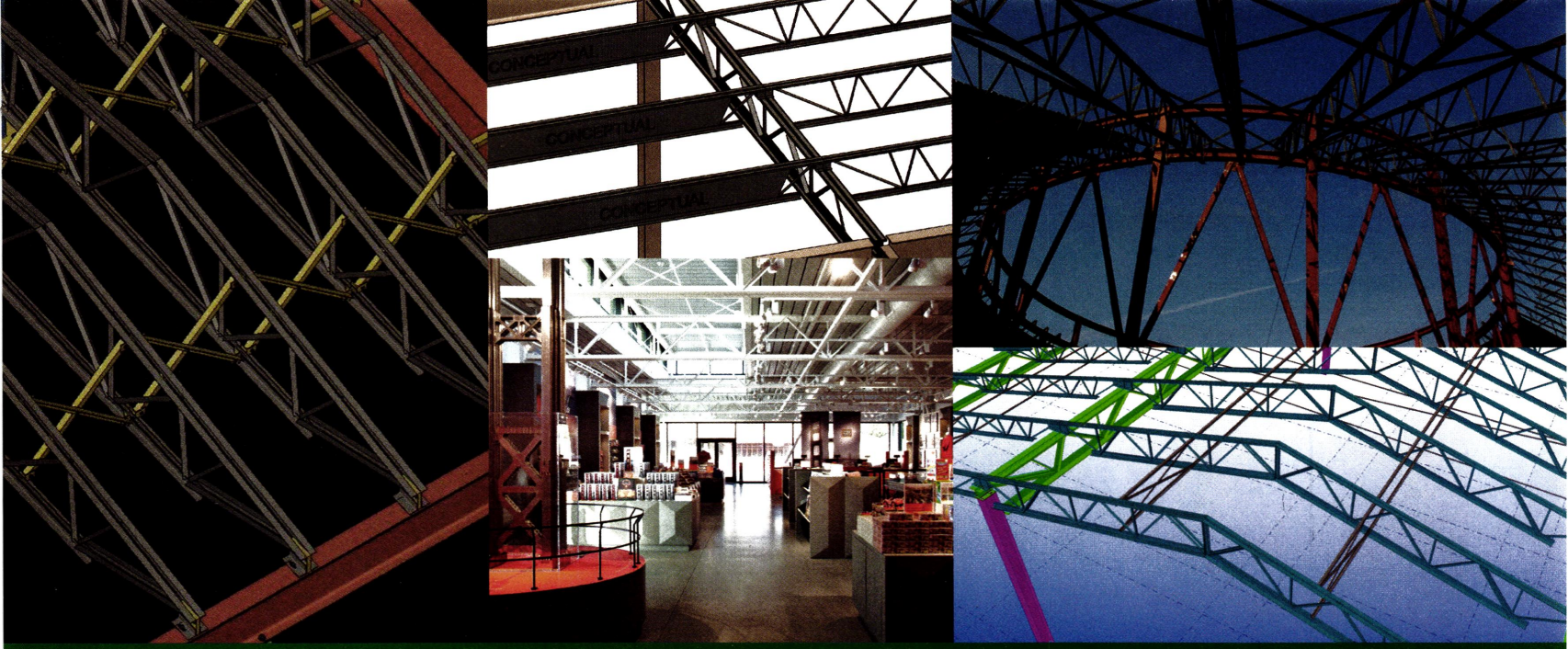
Images, listed clockwise: 1) Boulevard structural wood tiles; 2) Adjustable pedestal supports; 3) Patagonia, Ventura, CA; 4) 5) Northlakes Collection Bench with Boulevard wood.



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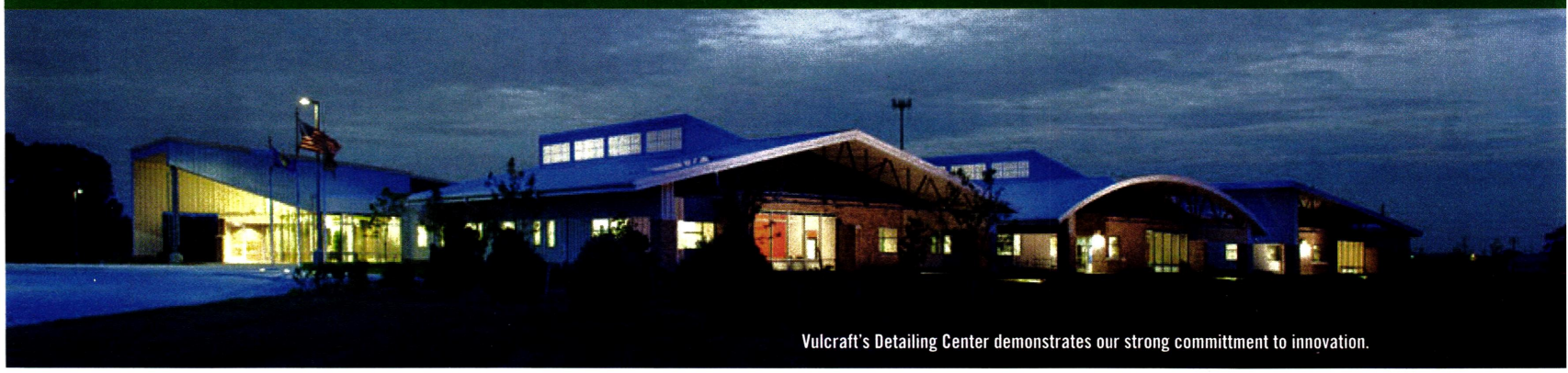

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Born and Raised in Hale County

Rural Studio's legendary program celebrates 20 years of design-build in west Alabama.

BY BETH BROOME

ON A RECENT blazing, blue-sky afternoon, a crowd of 300 assembled in Newbern, Alabama, at the former local savings bank, a 1903 brick edifice that Auburn University's Rural Studio is transforming into the town's first public library. The occasion was the kick-off of the annual Pig Roast, as the graduation-weekend celebration is called. This year, it had been amped up to recognize the legendary program's 20th anniversary. The studio's 20 faculty and staff and 47 current students were there, as were parents and acolytes of the program, established in 1993 by professors Samuel Mockbee and D.K. Ruth, and famous for fusing design-build with social activism in Hale County, one of Alabama's poorest regions. There were also dozens of alumni and former instructors, as well as members of the community, including the library board, the mayor of neighboring Greensboro, the fire chief, and the county's probate judge, commissioner, and sheriff. For Newbern, the one-horse town (population 186) that is Rural Studio's headquarters, this was no small affair.

Presiding over the weekend was Andrew Freear, the 47-year-old hyper-energized and dashing, if disheveled, director from Yorkshire, England, who assumed the mantle after Mockbee's untimely death in 2001. Downplaying the pomp and circumstance, Freear told us from inside the gutted bank building, "This event is more of a mass-eating gathering, moving from one project to another to keep you awake—and then there's a guy with a drum." The festivities revolved around visits to a dozen recent and ongoing Rural Studio projects, including several "20K Houses" ($20,000 being the rough construction cost for a one-bedroom) in various stages of completion. There were also three ribbon cuttings for projects at the 40-acre Lions Park and the almost finished Greensboro Boys & Girls Club building. To cover all this ground, we traveled caravan-style, a winding procession of vehicles—moms and dads in late-model SUVs and students in vintage VWs—snaking along back roads through lush pasturelands. Heading up the parade was Freear, behind the

PHOTOGRAPHY: © TIMOTHY HURSLEY, EXCEPT AS NOTED

Fireworks marked the culmination of the annual pig roast and valediction ceremony, held at the Bodark Amphitheatre behind Newbern's Main Street (opposite). The Greensboro Boys & Girls Club (below) was one of a dozen projects presented over the course of the weekend. Clad in a brightly hued corrugated metal, it refers to the vernacular rural barn.

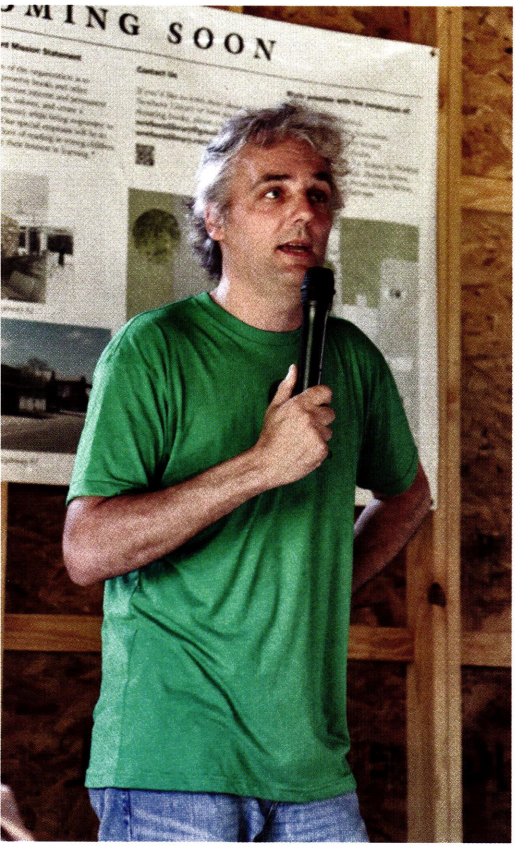
wheel of a baby blue 1966 Ford pickup with an American and an Auburn U. flag waving from the back. At the conclusion of each site visit, a student in a straw hat and reflective safety vest summoned us to our cars by beating a tin can or snare, or blasting a conch.

But behind the folksy veil of the drummer boy, blues bands, fried catfish, and an atmosphere of general funkiness lurks a well-oiled program notable for the discipline and rigor of both its processes and finished work. While much has changed over the years, the program's mission is as Mockbee originally envisioned it. Sambo, as he was known, believed that architecture has a moral charge, and that architects have an obligation to affect social and environmental change. He found his laboratory in Hale County, with its fragile rural economy based on catfish, logging, and farming, where 28 percent of residents live below the poverty line. There, he taught his students to become "citizen architects" and left an abundance of idiosyncratic buildings and a flourishing program as his legacy.

But Freear—who just coauthored a book with his colleague and wife Elena Barthel, *Rural Studio At Twenty*—brushes off any indulgence in nostalgia. "Pig roasts and anniversaries are fine, but I'm slightly awkward with the sentimentality of it all," says the director, often described as having charisma equal to his expressive and quirky Southern-born predecessor but with a more precise and refined approach. Still, this moment marked the program's apex. With more than 150 projects to its credit in Hale County (and nearby Perry, Marengo, and Dallas) and 10 more in the works; with a star-studded roster of 70 guest lecturers this school year alone—including Tod Williams and Billie Tsien, Glenn Murcutt, and Deborah Berke; and with 700 graduates who have carried forward the program's ethos (many of them through nonprofits and design-build studios across the world), Rural Studio has a lot to celebrate. "This is exactly what Sambo wanted: to be sustainable," Mockbee's widow, Jackie, said on Saturday evening as the merrymakers lined up for their traditional barbecued pig. One of the granddaddies of socially activist design-build, the program has made an indelible mark on the field and beyond.

The core principles behind the studio's successes have remained constant since its early days. Cultivating deep roots in the community has been a key to responding to local needs. "We don't believe in the helicopter model," says Freear. "What's most important is this idea of staying in one place: building relationships, becoming a trusted neighbor—a resource—and learning from your screw-ups and your victories. When the toilets don't work at Lions Park, we get the call."

The slow pace of Hale County is suited to a program based on incremental rather than revolutionary change. "I have the patience, and the plodding nature of the studio is in sync with life here," says Freear. "If we could go faster, I don't think it would work," he continues, pointing out that the tempo allows the program to adjust to challenges as well as take advantage of opportunities that arise midstream. "You build something with baby steps," he says, mentioning Lions Park, where Rural Studio started work in 2006 and now has built a playground, playing fields, and a skate park, and where, just the day before, three new projects were unveiled: landscape improvements, gleaming red fitness equipment, and an



elegant log scout hut. "It doesn't have to be this instant plan or instant success."

This aging in place, you could say, has allowed the program to mature organically. "It's very fluid," says Freear. "I would argue that there's never really been a plan." Maybe so, but the non-plan has become the plan—and a part of Rural Studio's DNA. Though the studio may continue to improvise, it backs every project with strong organization, painstaking research, intense collaborations with consultants and community partners, a deep commitment to design and craft, and eternal energy and optimism. The team pulls off the feat of making simple architecture with a big impact appear easy.

The studio benefits from private gifts and grants as well as property donations

The weekend included a ribbon-cutting ceremony for Lions Park's Scout Hut (top). Andrew Freear discusses plans for the forthcoming Newbern public library (left). The studio's two new 20K model Houses (above).

PHOTOGRAPHY: © BETH BROOME FOR ARCHITECTURAL RECORD (LEFT)

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CIRCLE 176

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Rural Studio is known for the impressive roster of guest lecturers it attracts. This year, 70 architects and others, including Tod Williams and Billie Tsien (top), visited Hale County and, beyond the studio, participated in a variety of daily activities. During the weekend celebration, photographer Timothy Hursley hosted a bonfire party at the silo he owns in a remote pasture (above). The deformed structure was reportedly the victim of a tornado.

from landowners, materials from product manufacturers, and hundreds of pro-bono hours from professional consultants. Since its basic costs are underwritten by the $400,000 annual commitment from Auburn University to cover salaries, rent, vehicles, and equipment, "I can say no to an idea," says Freear. "I need to chase money to support projects, but I'm not chasing money to keep the doors open. You've got to make sure that the tail ain't wagging the dog." This lets Rural Studio focus first and foremost on its role as an educator and second on best addressing the community's needs.

Under Freear, the studio's focus has gradually shifted away from one-off homes for people in need to more community-oriented projects. Today, the third-year studio is redesigning the program's Newbern properties to address issues of sustainability. The fifth-year studio is working on larger-scale civic projects, and the outreach studio, which brings together students from around the world, is focused on the 20K House project. Launched in 2005, this program aims to create a commercially viable, affordable prototype that can be replicated in rural communities across the nation as a replacement for the mobile home. On the tour, students and instructors presented eight of these houses, including two model homes at the end of a gravel road: compact, fiber-cement board and corrugated aluminum clad stick-frame structures featuring generous porches and metal roofs with deep overhangs. "Small rural communities are disappearing," points out Rusty Smith, Rural Studio's associate director and Auburn's associate chair of the architecture program. "We want to help ensure the sustainability of both community and culture."

Looking to the future, the program will continue to experiment with using local, renewable materials, like timber, says Barthel, who instructs third year. The studio also plans to further investigate how rural America should eat by promoting greenmarkets and maintaining its own garden, as well as completing a solar greenhouse made of 55-gallon galvanized blue barrels that is in the works on a site across from the headquarters building. The long-term goal is for Rural Studio to become largely "self-efficient," as they say, with students and faculty growing their own food and supplementing it by bartering with others.

On Friday night of graduation weekend, the party convened for a picnic supper at the nearly complete Greensboro Boys & Girls Club. The long shedlike building, clad in vibrant blue corrugated metal, is sliced at one end, creating a prow-like roofline. A large cut in the facade yields a covered porch that became a stage for a local children's blues band. Following dinner, photographer Timothy Hursley, who has documented the studio and its work since its inception, hosted us all at a bonfire party in a remote pasture, at the twisted and bent silo he owns (reportedly mangled by a tornado). As a fire glowed within the misshapen structure, students and their parents, alumni, and instructors socialized into the wee hours. "It's a lifestyle," says Barthel, of Rural Studio and everything that comes with it. This truth, present from the start, has helped fuel the program over the years, forming the foundation for its longstanding vision—fostered by fierce commitment and discipline—of bringing good design to all. "I hope that we take the work very seriously," says Freear, "but I also hope that we don't take ourselves too seriously." ■

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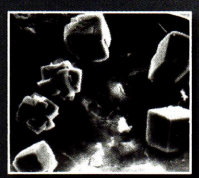

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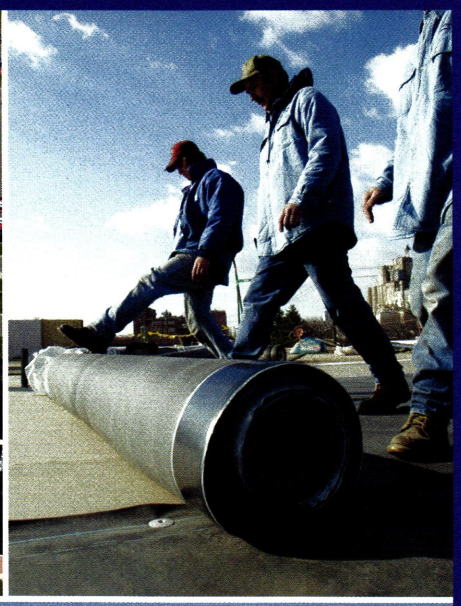
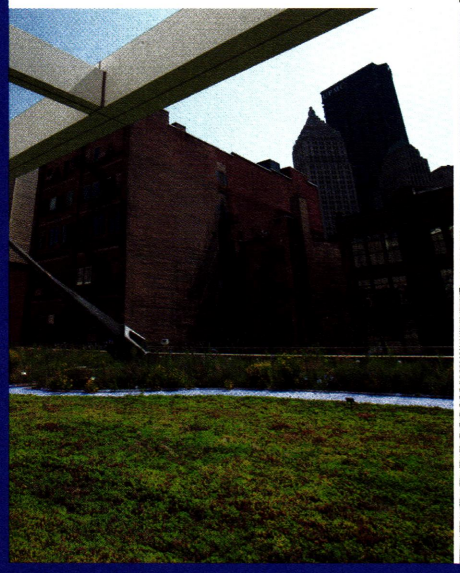

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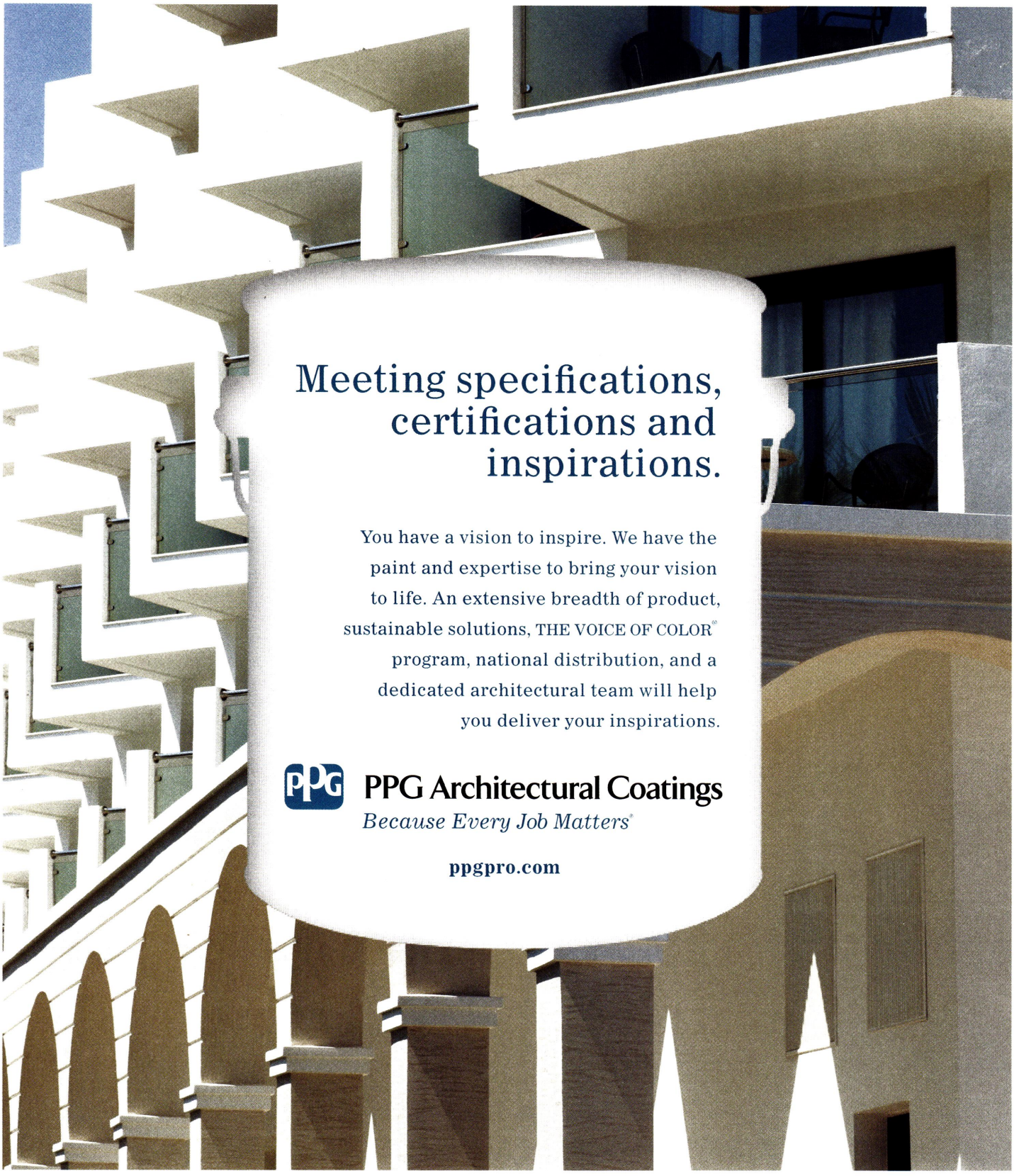

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CIRCLE 28

ARCHITECTURAL RECORD | 2014 AWARDS

good design is GOOD BUSINESS

ARCHITECTURAL RECORD has been recognizing fruitful firm-client collaborations for 17 years with its annual Good Design is Good Business (GDGB) awards to demonstrate how embracing design can benefit an organization's bottom line. This year's 10 winners include not only such singular projects as the City of Dallas Performance Hall by Skidmore, Owings & Merrill and the New Orleans BioInnovation Center by Eskew+Dumez+Ripple but also a variety of client-driven relationships that aim to reap long-term dividends. Shoe manufacturer Camper, for instance, has commissioned more than 20 top designers in over 30 years to create its imaginative shops and properties around the world; while Marc Jacobs International has been working with one firm, Jaklitsch / Gardner Architects, for the past 15 years as it's grown from start-up to stardom. Each corroborates the notion that design matters and seeks to raise the bar for its unique enterprise. We congratulate them all!

Camper Together
Various Design Teams

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Daniels Spectrum
Diamond Schmitt

Marc Jacobs
Jaklitsch / Gardner

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Dallas City Performance Hall **Skidmore, Owings & Merrill**

New Orleans BioInnovation Center
Eskew+Dumez+Ripple

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City Green Court **Richard Meier & Partners**

CAMPER SÃO PAULO STORE (2013) BY THE CAMPANA BROTHERS
PHOTOGRAPHY: © FERNANDO LASZLO

GOOD DESIGN IS good business

Camper Together
Various Design Teams Worldwide Locations

WALKING INTO a Camper shoe store, one never knows what to expect. The family-run manufacturer and retailer of casual footwear, based in Majorca, Spain, and now in its third generation, has commissioned more than 20 designers to realize a startling range of concepts for its 360-odd outlets worldwide. A furry canopy of shaggy red fringe arches over the ceiling of a store in São Paulo designed by Marko Brajovic. The walls of a New York shop by Nendo's Oki Sato are covered with a grid of projecting cast resin shoes, with a few real shoes on display among them. Konstantin Grcic combines cool green glazed tile walls and hot neon signage in a Camper shop in Paris. Anything goes; there are no fixed rules.

While other retail chains maintain brand identity by applying the same design concept in every store, Camper has built its name precisely on the theme of variety and expressive freedom. Philippe Salva, the company's head of Design Communication, explains, "It's a dialogue between Camper and the designer at an equal level. The designer is our creative guest. And this diversity makes our brand image."

The general tone of the interiors is playful—often colorful and wry. This spirit extends to designs for the firm's shoes and other products, which are developed using the same collaborative

Miralles Tagliabue EMBT / Washington, D.C.

Barcelona-based Italian architect Benedetta Tagliabue designed three Camper stores in fairly quick succession: Seville opened in 2009, Barcelona in 2010, and Washington, D.C. (top, and above), in 2011. Inspired by the company's rural Majorcan roots (the word camper is derived from *el campo*, or "countryside"), Tagliabue played with the idea of land forms and hues to shape the flexible seating-cum-display components for all three stores.

View additional images at architecturalrecord.com.

PHOTOGRAPHY: COURTESY CAMPER, EXCEPT AS NOTED

Studio Makkink & Bey / Lyon, France

The concept for designer Jurgen Bey's shop in Lyon (left), which opened in 2011, is grounded in basic walking movements, as indicated by graphic red-on-white patterning on the ceiling, floors, and walls and by a series of playful stairs in various sizes that serve as display shelves, step stools, and informal seating. Bey also designed a store in Rome in 2012.

Shigeru Ban Architects / New York

The Pritzker Prize laureate transformed a single-story 1970s building—saved from potential demolition—into a handsome "house of shoes." Crowned by a pitched roof made of Ban's signature paper tubes, the SoHo corner store (above, both) has sliding glass doors that open the shop to the street, Artek seating designed by the architect, and a supersized company logo that spans a seemingly lapped sidewall, concealing slotted shelves of shoes from passersby.

GOOD DESIGN IS good business

method, sometimes by the same people who design the stores. "Our products are high-quality," Salva maintains, "but with a relaxed attitude that is very Mediterranean."

This laid-back approach emerged in the company's first shop in Barcelona in 1981, planned by Fernando Amat with the collaboration of Oleguer Armengol and Javier Mariscal, a graphic designer known for happy Pop-Cubist cartoon imagery, like his famous Cobi mascot for the 1992 Barcelona Olympics. In 2006 the company branded its holistic design approach under the name Camper Together, turning to such architects as Shigeru Ban, Gaetano Pesce, Michele de Lucchi of the Memphis Group, and Benedetta Tagliabue. Currently, Kengo Kuma is designing venues in Paris and Milan.

Another longtime collaborator, architect Ramón Úbeda, recruits up-and-coming talents such as Martí Guixé, Alfredo Häberli, Jaime Hayon, Tukujin Yoshioka, and Neri & Hu in Shanghai. The firm has even extended its collaborative concept to hospitality with two hotels, Casa Camper

Fernando Amat and Jordi Tió / Berlin The second of two Casa Camper hotels designed by Amat and Tió, Casa Camper Berlin (above) opened in 2009, four years after the first, in Barcelona's El Raval district. Located in the city's Mitte area, the new building features 51 rooms and suites, which are illuminated at night, displaying their numbers against white drapes. Also lit like a stage is the hotel's Dos Palillos restaurant on the ground floor, designed by Ronan and Erwan Bouroullec.

Hayon Studio / Tokyo A frequent Camper collaborator, Spanish artist and designer Jaime Hayon created his first official Camper Together store in London in 2006—with subsequent European shops in Barcelona, Palma de Majorca, Milan, Paris, and Madrid—as well as a 2008 shoe collection. Taking his cues from classic circus motifs, Hayon infused the Tokyo store, which opened in 2009, with a whimsical elegance that begins on the street, where a classic glossy tile facade is offset by playful graffiti-printed glazing and giant candy cane–like door pulls.

PHOTOGRAPHY: © TAHON (TOP)

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GOOD DESIGN IS good business

Neri & Hu Design and Research Office / Shanghai

The Shanghai-based firm's first Camper collaboration is a corporate showroom, which opened in 2013, and the brand's flagship in China. Outlined in Camper red, the structure, within an existing warehouse (left), is made of locally sourced, reclaimed-wood frames and gray brick. Here tradition and modernity merge, since the building was designed to evoke a typical Shanghai alleyway, known as a *nong-tang*.

Barcelona and Berlin, designed by Amat and Jordi Tió, to incorporate ideas about comfort gathered in over 40 years of business travel by the firm's executives and designers.

Michel Campioni, who oversees Camper store designs worldwide, gives designers a few guidelines, based on a sales strategy that eliminates the large display windows of traditional shoe stores and generally sets the product out on tables within customers' reach. Camper develops a brief for each store with the shoes and bags to be displayed, the number of seating positions, and other parameters.

The lack of solemnity in the Camper formula is refreshing, as is its adventurous spirit. Campioni sums up this philosophy when he concludes, "Camper seeks to create a world of design and beauty through its stores. We don't want to be pretentious. There are plenty of serious things out there in the world, so we simply enjoy ourselves through design. It's something this brand allows us to do." *David Cohn*

credits

ARCHITECTS/DESIGNERS: Fernando Amat, Tomás Alonso, Oleguer Armengol, Shigeru Ban Architects, Studio Makkink & Bey, Marko Brajovic, Bouroullec Brothers, Campana Brothers, Juli Capella, Doshi Levien, Konstantin Grcic, Martí Guixé, Alfredo Häberli, Hayon Studio, Kengo Kuma, Isabel Lopez, Michele de Lucchi (Memphis), Javier Mariscal, Miralles/Tagliabue EMBT, Nendo, Neri & Hu Design and Research Office, Gaetano Pesce, Jordi Tió, Tokujin Yoshioka

CLIENT: Camper

COMPLETION DATE: 1981 to present

PHOTOGRAPHY: © DIRK WEIBLEN

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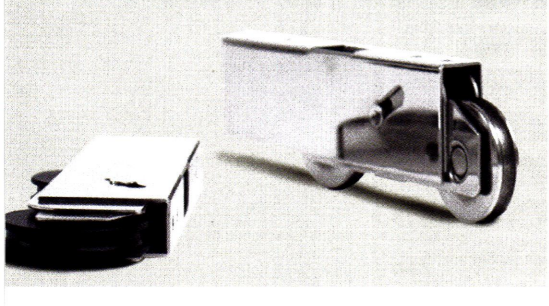

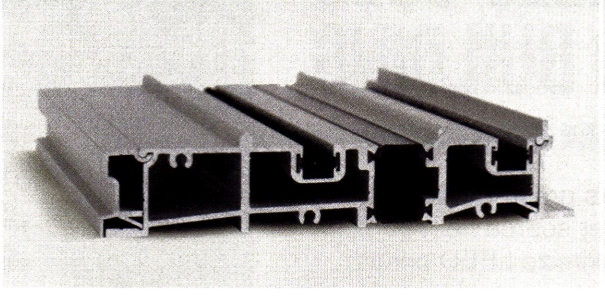

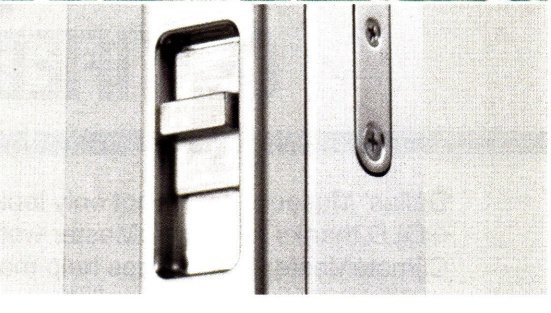

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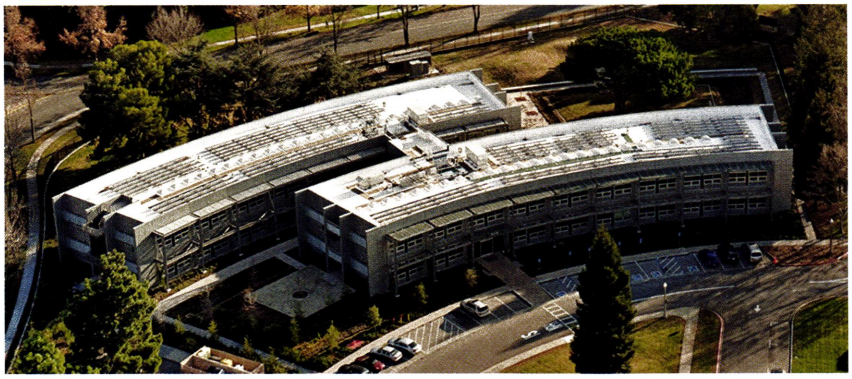
NASA Sustainability Base
William McDonough + Partners
Moffett Field, California

DESPITE LEGEND, the orange drink Tang is not among NASA innovations that benefit life on earth. But the National Aeronautics and Space Administration has pioneered such technologies as high-efficiency solar cells to support life in space. So when its Ames Research Center received a grant to build a new facility, NASA seized the opportunity to showcase its state-of-the-art sustainability achievements.

"We wanted to build the greenest building in the federal government and create a unique demonstration of NASA technology in the built environment," says Steve Zornetzer, NASA Ames's associate director.

The Center, located in the San Francisco Bay area, found a firm with like principles in William McDonough + Partners. The architects designed two curving bars with a connecting lobby. A narrow floor plate maximizes daylight and natural ventilation. As the client wanted flexible space that could be easily reconfigured over its lifespan, the design team put the structure on the outside, so no internal columns disrupt the floor plan. The two-story steel exoskeleton did not cost more than a typical structural system and doubles as a support for shading devices. Highlights of the LEED Platinum–certified building include a geothermal chilled-beam cooling system, fuel cells, forward-osmosis graywater recycling, and intelligent building-control software. The result: an extremely efficient building that "learns" over time to reduce energy consumption. (It has dropped from 2 to 1.5 watts per square foot since it opened, with a goal of 1.1 watts—typical building usage being 3 to 4 watts, according to the client.)

"The biggest innovation is the integration of all the technologies and passive strategies to get the most value," says project architect Alastair Reilly. "You don't need rocket science to build a green building, but, in this case, we were actually able to use rocket science." *Lydia Lee*



EARTH STATION Named in recognition of Tranquility Base, the first human outpost on the moon, the LEED Platinum Sustainability Base was designed to be an economic engine for built-environment technologies leading to independent, smart buildings. A pair of slender offset bars maximize daylight.

credits

ARCHITECT: William McDonough + Partners – William McDonough, principal; Alastair Reilly, Michelle Amt, design architects

ARCHITECT OF RECORD/ENGINEERS/LANDSCAPE ARCHITECT: AECOM

CONSULTANTS: Siteworks Studio (landscape); Loisos + Ubbelohde (lighting/daylighting/energy); MBDC (materials assessment); TBD Consulting (cost estimating)

GENERAL CONTRACTOR: Swinerton Builders

CLIENT: NASA Ames Research Center

SIZE: 50,000 square feet

TOTAL PROJECT COST: $27.8 million

COMPLETION DATE: December 2012

SOURCES

CLADDING: Centria (metal panels)

CURTAIN WALL: Kawneer

GLAZING: PPG (glass); Sunoptic (skylights)

INTERIOR SHADES: MechoSystems

PHOTOGRAPHY: © CESAR RUBIO, COURTESY WILLIAM MCDONOUGH + PARTNERS

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CIRCLE 131

GOOD DESIGN IS good business

Daniels Spectrum
Diamond Schmitt Architects
Toronto

HOW DOES A building improve the life of a whole neighborhood? This was the challenge for the architects of Daniels Spectrum, a 58,000-square-foot cultural center at the heart of the Regent Park district in Toronto. The area, a previously blighted late 1940s public housing complex, is in the middle of a revitalization: Toronto Community Housing and Daniels Corporation, a private developer, are replacing the old apartment buildings for the tenants, and adding market-rate housing and community facilities.

Diamond Schmitt Architects designed the Spectrum, which is run by Artscape, a Toronto-based not-for-profit organization, to house seven local performing and visual arts groups, and the Centre for Social Innovation, an incubator for emerging enterprises. The building has a strong visual presence at the center of the neighborhood. Its facade features rainbow-hued stripes, derived from the flags of the world, that stand out against the otherwise restrained architecture.

The arts are very important to the residents here, according to lead architect Donald Schmitt, especially as their homes are being rebuilt. "Regent Park is the place where many recent immigrants live, and they bring their cultures with them," he says. Music, in particular, has been knitting the community together, but had been performed in basements or in begged, borrowed, and found places.

Today the various arts groups share a lobby in the new building and access to Ada Slaight Hall, a 310-seat performance and event space that has been in great demand since opening in 2012: it was dark fewer than 10 nights during its first year. The architects brought their expertise and connections, employing the same theater consultant and acoustician that they worked with on their Mariinsky II Theater in St. Petersburg, Russia.

One tenant, the Regent Park School of Music, which used to operate out of a Victorian row house, now has soundproofed space with six teaching studios, and has increased its enrollment from 250 to over 1,000 students. Another, Native Earth Performing Arts, tripled its audience. But Daniels Spectrum and its tenants can claim a larger victory. They have been highly visible in local media, representing a new character for the area. "I think the project creates a sense of opportunity," says Schmitt, "and shifts the discussion from poverty, crime, and economic struggles to something much greater." *Alex Bozikovic*

ART HOUSE The three-story building (top) anchors a key intersection of the revitalized 69-acre former low-rise community, which is being transformed by Toronto Community Housing Corporation and developer Daniels Corporation. The second floor features a community art center (above, left). The lively Paintbox Bistro, located in the lobby adjacent to Ada Slaight Hall, has a youth training program and a large catering kitchen that serves the arts facility (above).

credits

ARCHITECT: Diamond Schmitt Architects – Donald Schmitt, Jennifer Mallard, Joseph Troppmann

ENGINEERS: Read Jones Christoffersen (structural); Smith and Andersen (mechanical/electrical); Sernas Associates (civil)

CONSULTANTS: NAK Design Group (landscape); Jaffe Holden (acoustics); Fisher Dachs Associates (theater design)

GENERAL CONTRACTOR: Daniels Corporation

CLIENT: Artscape/Daniels Corporation

SIZE: 58,000 square feet

CONSTRUCTION COST: $18.5 million

PROJECT COST: $25 million

COMPLETION DATE: September 2012

SOURCES

METAL PANELS: Gage

DOORS: Toro Aluminum

CARPET: Tapisom

PHOTOGRAPHY: © LISA LOGAN

View additional images at architecturalrecord.com.

GOOD DESIGN IS **good business**

Paris For the Marc Jacobs Paris store, the architect transformed a space in the historic Palais-Royal into an intimate but open boutique. "There was suspicion that we were risking altering the character of the space," says Stephan Jaklitsch, who had to work closely with Parisian agencies during the renovation. "But in the end, the ministry of culture embraced us." To supplement the original centuries-old architecture, the architect added steel reinforcement and concrete columns. Inside, he made use of rich materials such as dark, emperador marble, nickel, and sycamore. "I love this store because it's intimate," says Marc Jacobs International president Robert Duffy. "That store was fun for both of us."

Marc Jacobs International
Jaklitsch / Gardner Architects
Worldwide Locations

ASKED TO describe what his company was like 15 years ago, Marc Jacobs International president Robert Duffy says breezily, "It was teeny." Today the fashion powerhouse is heading toward $1 billion in annual sales, with two flagship stores and an IPO. "I just say the most important thing is that everybody remain calm," says Duffy.

Remaining calm in an industry where "in" can be "out" in a blink involves partnerships—partnerships that Duffy and designer Marc Jacobs have carefully cultivated for years. Back in the late 1990s, when the company was just a 10-person team and beginning its first foray into retail, Duffy enlisted New York–based architect Stephan Jaklitsch to help the label shape an architectural identity. Together they have grown the brand to 285 freestanding boutiques.

At first, Duffy and Jaklitsch, out of financial necessity, selected unique but unlikely properties—a former dentist office, a Laundromat, a rug shop—on which to sow a fashion empire. Other labels soon followed suit. Bleecker Street "sort of became a mini–Madison Avenue" after their store opened in 2002, says Duffy. In addition to its three already existing stores on that street, the company recently opened Marc Jacobs Beauty.

"Fashion is consumed very quickly," says Jaklitsch, principal at Jaklitsch / Gardner Architects. "The struggle is to design something that stands the test of time." Marc Jacobs's 2006 Paris boutique in the historic arcades of the Palais-Royal exemplifies the balance between timeliness and timelessness. From the original cast iron structure to 17th-century ax marks in the timber, "the whole palimpsest of the place's history was there," said Jaklitsch. The architect, influenced by Jean-Michel Frank's 1930's designs for Guerlain perfumes, employed a sumptuous material palette of marble and sycamore. Curved glass and nickel vitrines (inspired by an Art Deco meat locker Duffy spied at a Parisian flea market) serve

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PHOTOGRAPHY: © JEAN PHILIPPE CAULLIEZ (THIS PAGE); NACASA & PARTNERS (OPPOSITE, TOP RIGHT, BOTTOM 2); LIAO YUSHENG (OPPOSITE, TOP, LEFT)

Tokyo This boutique, completed in 2010, marked the inception of ground-up stores for the company. "This was a very intimidating project for me," says Marc Jacobs's Duffy. "The only thing I could express to Stephan was that I liked the idea of four stories and the idea of stripes." The finished store is a three-story monolith (the mechanicals are hidden in an elongated upper level) with a striated facade of glass, tile, and perforated stainless steel (left). For the exterior tile, the architects developed a galvanized aluminum clip that allowed the building to shake without falling during Japan's devastating 2011 earthquake.

GOOD DESIGN IS good business

as displays for the merchandise.

Three years after the Paris boutique opened, Jaklitsch transformed the fashion designer's 7,700-square-foot SoHo showroom and office in New York with similar custom shelves and racks (which display fall's poodle-ish fur coats), sliding mirrored panels, and furniture by Christian Liaigre. In the executive office, Jacobs and Duffy share a desk. "When we first opened, the clients were shocked because we used to have such a dump upstairs," says Duffy.

As the company prepares to go public within the next few years and preparations are made for two new New York stores, Duffy is recruiting an in-house architecture team to be overseen by Jaklitsch. "You can't replace someone who understands the DNA of the company," he says. Adds the architect, "Good architecture really depends on an intelligent and decisive client; you cannot have good design if the client isn't pulling their weight."

Both are mum on the details of the new stores, but, according to Duffy, the Marc by Marc Jacobs flagship will be located on Fifth Avenue. "Now we have to move on to where the big boys are."

Anna Fixsen

New York Showroom

Jacklitsh / Gardner Architects renovated the Marc Jacobs SoHo showroom and executive office in 2009. The 7,700-square-foot showroom has space for display and storage of the latest ready-to-wear and accessories collections, 50 employees, and an executive office suite for cochairmen Marc Jacobs and Robert Duffy.

credits

ARCHITECT: Jaklitsch / Gardner Architects – Stephan Jaklitsch, Mark Gardner, principals

ENGINEERS: **Paris** – SARRC (structural), Bureau D'Etudes Fluides (mechanical); **New York** – Hage (structural), Loring (m/e/p)

CONSULTANTS: **New York** – Cooley Monato, Axon Design; All Projects – L'Observatoire (lighting)

GENERAL CONTRACTORS: **Paris** – Schmit Tradition; **New York** – Apogee Design & Construction; **Tokyo** – Kitano Construction; D. Brain

CLIENT: Marc Jacobs International

SIZE: **Paris** – 1,700 square feet; **New York** – 7,700 square feet; **Tokyo** – 2,800 square feet

COST: withheld

COMPLETION DATE: **Paris** – February 2006; **New York** – 2009; **Tokyo** – December 2010

SOURCES

LIGHTING: **Paris** – Bartco, SIDE, I Guzzini, Luxo; **New York** – LiteLab, SJA; **Tokyo** – Lucifer

FURNITURE: Christian Liaigre

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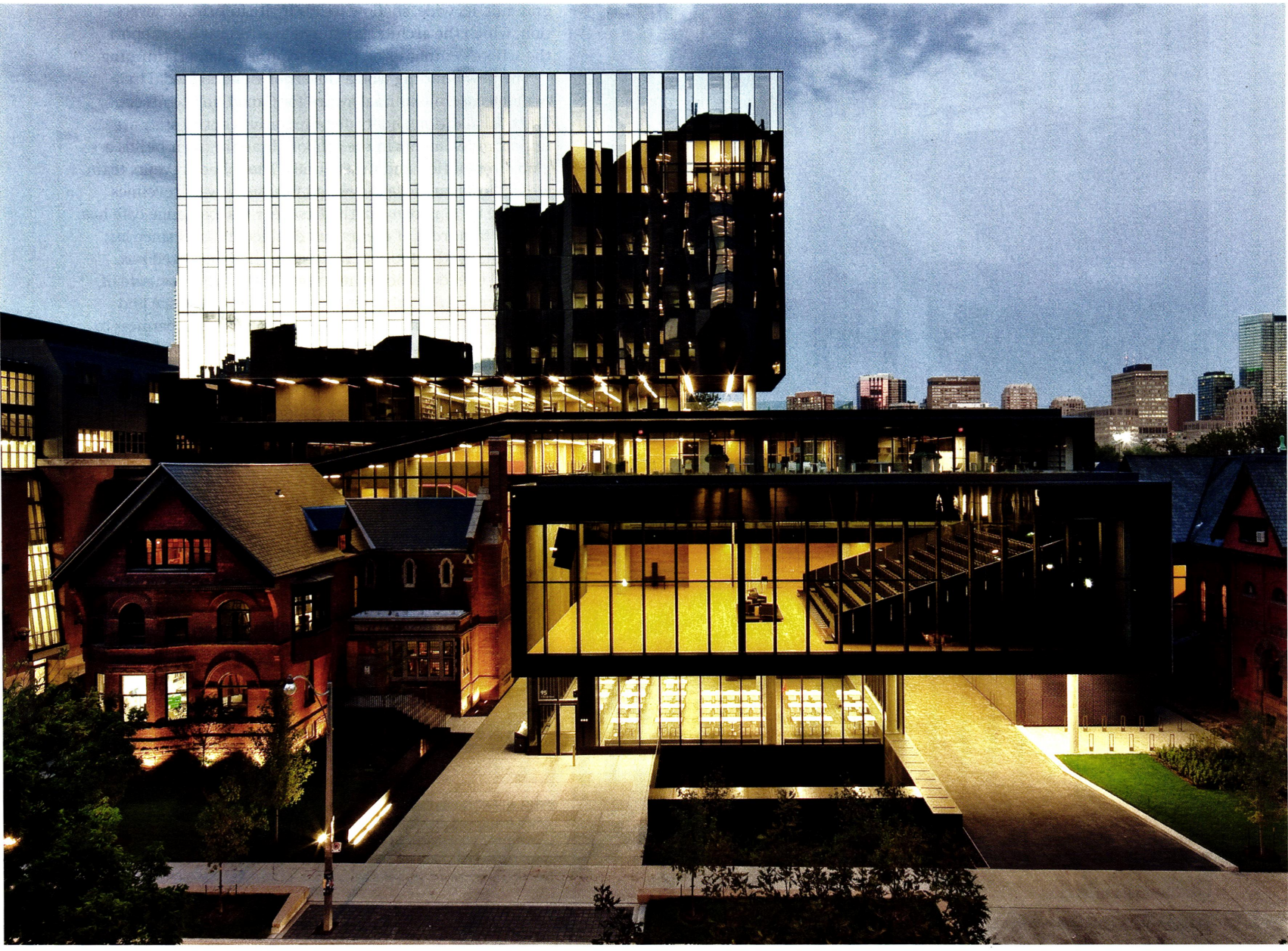

PHOTOGRAPHY: © TOM ARBAN

Joseph L. Rotman School of Management Expansion, University of Toronto

KPMB Architects
Toronto

IN 2007 the Joseph L. Rotman School of Management at the University of Toronto launched an architectural competition for an addition. It had outgrown its 1995 home located alongside historic houses, churches, and academic buildings on the university's downtown campus.

The winning submission, by Toronto-based KPMB Architects, represents the school's ideals of community and integrative thinking in physical form. The 150,000-square-foot, LEED Silver–certified vertical facility doubles the size of the school. It adds an event hall, classrooms, offices, and a library, as well as conference and hospitality areas, in a glazed four-story slab structure topped by a five-story tower.

Architects Bruce Kuwabara and Marianne McKenna tackled the complex site by fusing the addition with the existing Rotman building. They linked corridors and public areas, while adding space above and below grade, with classrooms around a sunken court. They also integrated an 1890 mansion, which remains intact, for the school's Ph.D. program.

"We're basically applying integrative-design thinking to the Rotman," Kuwabara says. "Everything we're adding is complementary to what is there." Most notably, the pre-existing building has a large atrium; the addition does not. Instead, it has a broad snaking stairway that connects to the extant atrium and serves as a gathering place for students and faculty. Punctuated by vibrant magenta sidewalls, the stair is like a bright pocket square in the building's tightly detailed

VERTICAL CAMPUS The nine-story expansion required a sensitive approach to the numerous and historically important surrounding properties. Its glazed volume is a symbol of the facility's transparency (above).

View additional images at architecturalrecord.com.

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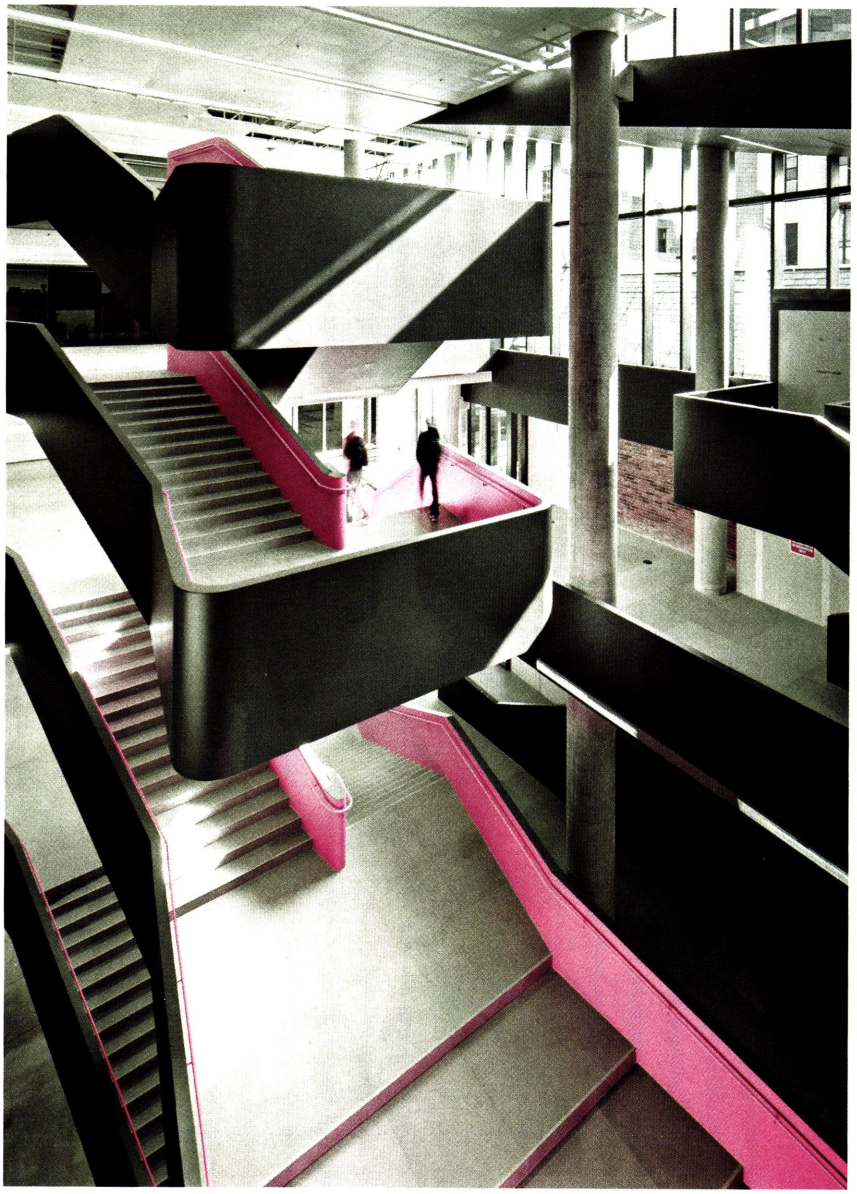

gray suit. Its wide, shallow treads invite informal conversation, which the architects wanted to encourage to support the school's emphasis on interdisciplinary, lateral thinking.

The new building won a Governor-General Medal in Architecture, a biannual award for Canadian architects. The bold addition and its demonstrative central stair are important elements in the school's branding as it builds a global reputation and raises funds. The school's events team, which hosts public lectures and forums, saw its revenues increase by 15 percent in the first year. Its Exchange café has catered hundreds of events and doubled its sales since last year. Finally, the 400-seat main event hall—a glazed box situated one level above the street—has a utilization rate of 80 percent. This highly visible venue, with a terrace and green roof, communicates the Rotman School's openness to the community. It also provides spectacular views for its occupants out toward Canada's financial capital. *Alex Bozikovic*

Alex Bozikovic is the architecture critic at The Globe and Mail, *Canada's national newspaper.*

PINK RIBBON The first four levels are organized around a central atrium which features a pink-accented serpentine stair as a symbol of Rotman's commitment to creative thinking (left and bottom). The space outside classrooms and study rooms is generous (above) and furnished to support learning in breakout sessions beyond the lecture and seminar format.

credits

ARCHITECT: KPMB Architects – Bruce Kuwabara, design partner; Marianne McKenna, partner in charge; Luigi LaRocca, principal in charge

ENGINEERS: Halcrow Yolles (structural); Smith & Andersen (mechanical/electrical)

CONSULTANTS: BVDA Group (building envelope); Janet Rosenberg + Associates (landscape)

GENERAL CONTRACTOR: Eastern Construction Company

CLIENT: University of Toronto

SIZE: 150,000 square feet

CONSTRUCTION COST: $60 million

COMPLETION DATE: June 2012

SOURCES

CURTAIN WALL: Oldcastle BuildingEnvelope

HARDWARE: Sargent

PARTITIONS: Dorma

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21c Museum Hotels
Deborah Berke Partners
Louisville
Bentonville, Arkansas
Cincinnati

MANY PLANS for reviving the neglected centers of America's small and medium-size cities involve building new museums, restaurants, and hotels to bring life to deserted sidewalks, but the architects and hoteliers behind the 21c Museum Hotel group found a winning formula in combining all three in one venue. For the flagship in downtown Louisville, the art collector-owners Laura Lee Brown and Steve Wilson hired New York–based Deborah Berke Partners to design a unique project that is equal part hotel and contemporary art museum, anchored to the street by a destination restaurant.

Bentonville

The only 21c built from the ground up, the Bentonville, Arkansas, location (left) mimics the low-rise scale of the town with a street-side volume containing public spaces—including the Hive restaurant, a reception area, and 12,000 square feet of gallery spaces, one (below, right) showing Serkan Özkaya's *A Sudden Gust of Wind in Bentonville* (2013). Windows set into successive angles make a sawtooth-shaped brick wall (below, left) enliven the walk to the Crystal Bridges Museum of Art. The structure steps up to a second, larger, four-story volume containing guest rooms (bottom).

"We had been going to Basel and to Bilbao, and we saw how art and travel played a role in the commerce and vitality of other communities," says Wilson. "We wanted to do the same thing in Louisville."

The concept has created its own ecosystem, with the hotel bringing new people to the neighborhood throughout the day, locals arriving to eat and drink at the restaurant, and everyone exploring Brown and Wilson's collection in the public spaces and dedicated galleries, which all are free to enter. The model was successful enough that Berke and 21c went on to collaborate on projects in Cincinnati, completed in 2012, and in Bentonville, Arkansas, which opened early last year. All of the hotels had occupancy rates exceeding 60 percent in 2013 and revenues per available room (a key

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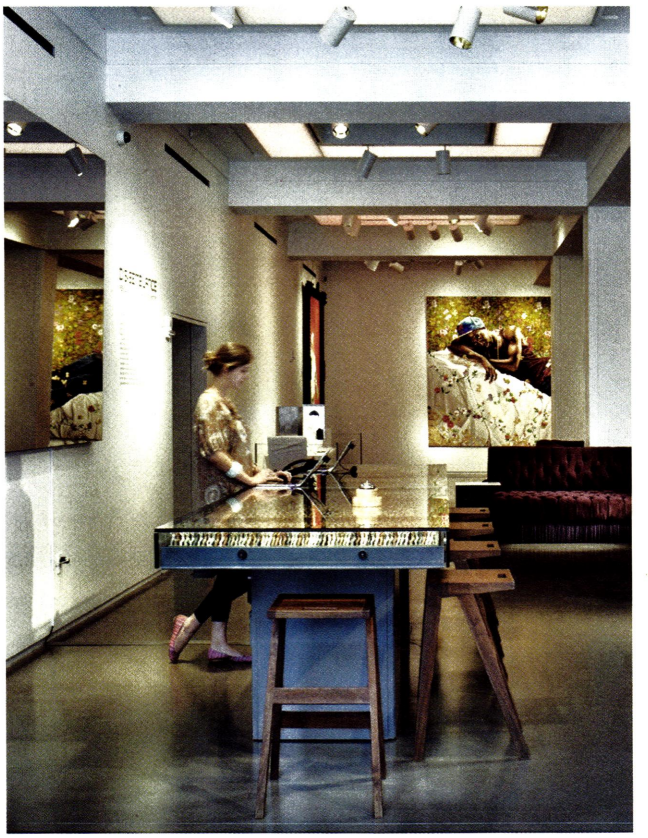

Cincinnati With the Cincinnati 21c, Deborah Berke Partners revived the century-old Metropole Hotel, restoring masonry on the facade (above, left), tile floor in the restaurant (left), and other details. The architects also preserved an original light shaft lined with reflective glazed white brick, which is now hung with a work by Astrid Krogh, *Lightmail* (2012)—tapestries handwoven with fiber-optic strands that illuminate the space at night. Off a reception area (above), the hotel has 8,000 square feet of gallery space. Throughout the building, 47-inch-tall plastic sculptures of penguins by the Cracking Art Group stand like outsize toy sentries; de facto icons of the 21c brand, each hotel contains an iteration of the work in a different color.

credits

ARCHITECT: Deborah Berke Partners

ARCHITECT OF RECORD: **Louisville** – K. Norman Berry Associates

EXECUTIVE ARCHITECT: **Cincinnati** – Perfido Weiskopf Wagstaff + Goettel; **Bentonville** – Polk Stanley Wilcox

ENGINEERS: **Louisville** – Stanley D. Lindsey (structural), Richard Moore (civil), Kerr-Greulich (m/e/p); **Cincinnati** – Atlantic (structural), Kohrs Lonnemann Heil (m/e/p); **Bentonville** – SCA (structural), Crafton Tull Sparks (civil)

OWNERS: Laura Lee Brown and Steve Wilson

SIZE: **Louisville** – 100,200 square feet; **Cincinnati** – 159,200 square feet; **Bentonville** – 99,900 square feet

COMPLETION DATE: **Louisville** – 2006; **Cincinnati** – 2012; **Bentonville** – 2013

SOURCES

MASONRY: **Bentonville** – Endicott Clay (modular brick)

WOOD-FRAME WINDOWS: **Louisville** – Marvin, Kentucky Mill & Casework

METAL-FRAME WINDOWS: **Bentonville** – Kawneer

RESTAURANT LIGHTING: **Louisville** – Niche Modern; **Cincinnati** – Orion Chandelier

PLUMBING: **Louisville** – Dornbracht Faucets; all locations – Kohler, Lacava, Watermark

GOOD DESIGN IS good business

Louisville For the first 21c Museum Hotel, Deborah Berke Partners carved an atrium into a cluster of five 19th-century warehouse buildings to bring light into interior rooms and a large gallery space (right). The colossal work, *David Inspired by Michelangelo* (2012) by Serkan Özkaya, marks the location of 21c on Main Street (top). The restaurant Proof on Main (above)—shown here with Johnston Foster's *What the Flock?* (2012) on view—quickly became a destination in its own right when the hotel opened.

measure of a hotel's success) at the top of their markets. The owners now plan to expand on the model, opening three more Berke-designed projects in the next two years. "We like downtown sites, and that's where 21c really works," says Berke. "It brings a youthful energy on lots of different levels: the cooking, the art, the attitude."

The pairing of Berke's sophisticated minimalist aesthetic with the owners' taste for colorful, sometimes confrontational, and frequently playful contemporary art ties the projects together, but each responds to a unique set of urban conditions. In Louisville, Berke's firm combined five 19th-century warehouse structures into a single hotel with a two-story gallery space at its heart. In Cincinnati, Berke renovated the century-old Metropole Hotel, restoring its facade and foregrounding its most interesting architectural space, an original light well lined with glazed white brick. And a newly constructed Bentonville building picks up the low-slung scale of the town square and connects the streetscape to a path that leads to the Moshe Safdie–designed Crystal Bridges Museum of Art.

With the next crop of hotels, Berke is working with a pedigreed set of existing buildings. Early next year, 21c will open in a converted Durham, North Carolina, bank building (originally designed by Empire State Building architects Shreve, Lamb, and Harmon). Her firm is also currently renovating a McKim, Mead, and White bank in Lexington, Kentucky. And in Oklahoma City, the firm is taking advantage of the massive spans inside an Albert Kahn automobile plant for another 21c. "We're planning to show really big artwork that you can walk around in the hotel spaces," she says. "We're also playing with rubber and automobile belts."

Though 21c has found success in smaller cities, Wilson thinks the formula will work in bigger markets as well, though, so far, no plans have been announced. "Lots of hotels in coastal cities use art as decoration, but no one is incorporating it the way we are," says Wilson. "We now think we're ready for those cities." *William Hanley*

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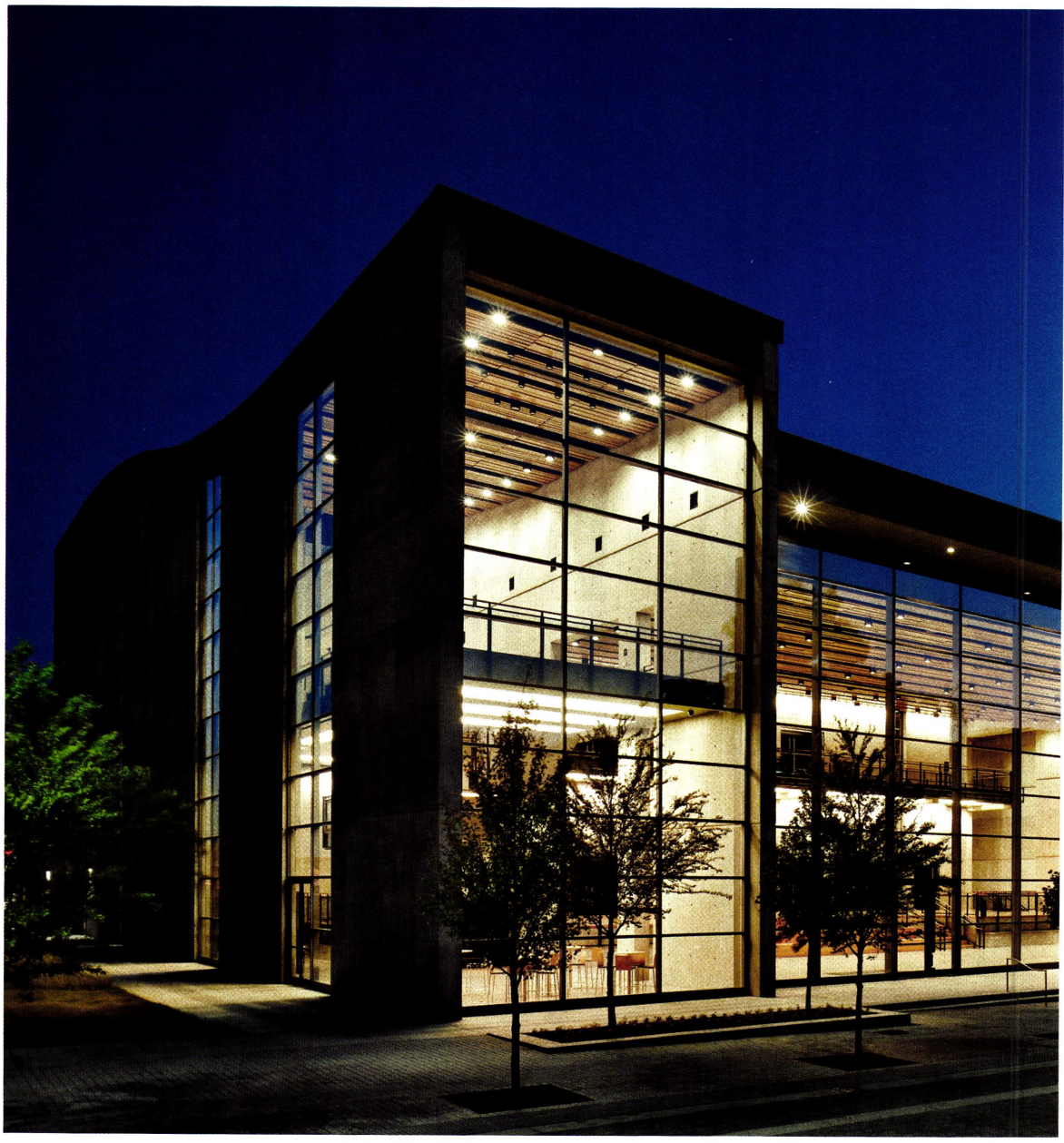
CIRCLE 130

GOOD DESIGN IS good business

Dallas City Performance Hall

SOM

Dallas



THE DALLAS Arts District—a 68-acre area in the city's downtown master-planned by Sasaki Associates—is dense with architectural gems devoted to the visual and performing arts. Its anchor is Edward Larrabee Barnes's Dallas Museum of Art, completed in 1984. Over the next 20 years, up went I.M. Pei's Symphony Center (1989), Renzo Piano's Nasher Sculpture Center (2003), and Allied Works' expansion of the Booker T. Washington High School for the Performing and Visual Arts (2008), among other new buildings and renovations. A Foster + Partners performing arts center followed in 2009, as did the REX/OMA Wyly Theatre. James Burnett's Klyde Warren Park was completed in 2012, along with Morphosis's Perot Museum of Nature and Science.

What was missing from this mix was a place for smaller, local performing arts groups—everything from the Dallas Black Dance Theatre to the Dallas Asian American Youth Orchestra and the Uptown Players, a community theater company. So the city put out a $38.2 million bond in 2006 for the construction of just such a home, and commissioned Skidmore, Owings & Merrill (SOM) to design it. "It had been a long-irritating thing that all of the well-funded groups were getting buildings, but no one was addressing the nonprofit neighborhood groups," says Nancy Abshire, project manager, from SOM's Chicago office. "Dallas felt it had to incorporate them."

Before proposing any schemes, SOM interviewed 70 local groups, toured the inadequate spaces where they were performing (church basements and abandoned bathhouses), and studied a complicated matrix of data on ticket sales and performance numbers. "The city said that we should listen and give the organizations what they are asking for," says Abshire. "The scope exceeded the bond, because no one had talked to these groups before. When that was determined, we said let's build it in two phases." In September 2012, the first phase of SOM's City Performance Hall was complete: a 59,000-square-foot poured-in-place concrete and steel rectangular volume in the northeast corner of the Arts District, adjacent to the Wyly and the performing arts high school. Phase two—a pair of black-box theaters—will be added at a later date, yet to be determined.

The performance hall contains a 750-seat two-level theater, a proscenium stage with an 80-foot-high fly tower, an orchestra pit, offices, and a loading dock. The multilevel lobby serves as another adaptable performance and event space, and is on elegant display from the street, thanks to a completely transparent northwest facade. The board-formed concrete walls of the theater work well acoustically and complement the hall's muted palette. The concert shell is lined with movable oak-paneled walls and tilt-and-fly ceiling panels that can accommodate various types and sizes of performances, addressing a key challenge.

Each of these aesthetic decisions has a distinct purpose, like the tapestries of double-layer wool serge that hang down the theater walls and absorb sound. Instead of a fabric stage curtain, SOM installed a programmable LED screen—yet another space for artists to curate.

The flexible rental hall has surpassed expectations. "It's the hottest ticket in

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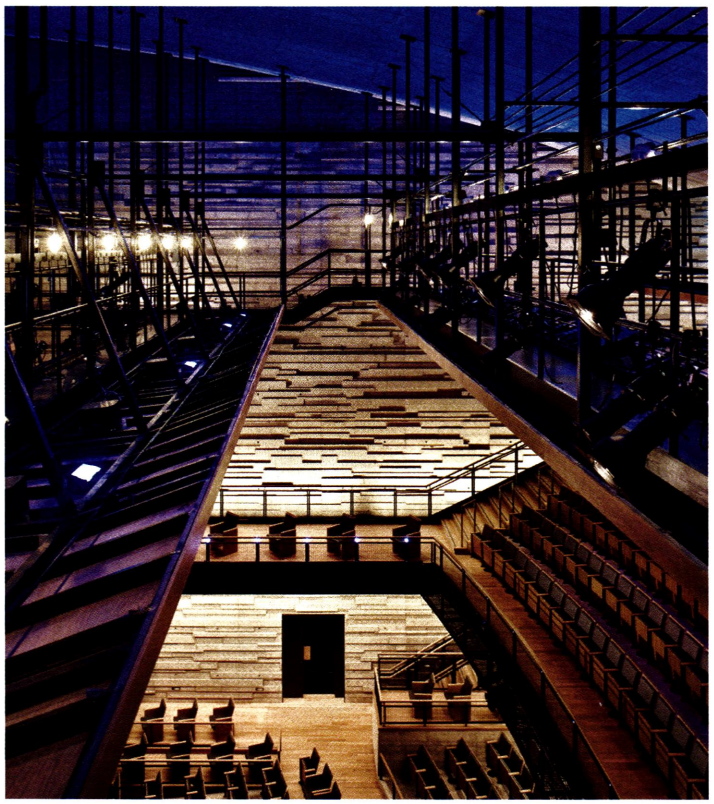

PERFECT CASTING The glass curtain wall on the performance hall's northwest facade creates an inviting 9,000-square-foot lobby (above), which doubles as a flexible performance space. The curved roof of the poured-in-place concrete structure follows the contours of the theater's fly space (opposite). A catwalk system above the audience chamber allows access to lighting equipment (left).

town," says Abshire. Before it opened, the city projected that it would host 100 events and hoped to attract 36,428 patrons. But in its inaugural 2012–13 season, 162 events were attended by 51,388 people. For the 2013–14 season, 184 events are scheduled, with bookings already made for 2015. Russell Dyer, the performance hall's general manager, calls the building a "workhorse theater" and says its beauty is in its functional simplicity. "Yet it's state-of-the-art," he adds. Dyer says that SOM truly listened to—rather than just paid lip service to—local groups' needs. An example he likes to cite is the fact that the loading dock floor is level with the stage floor, which

GOOD DESIGN IS good business

is level with the lobby floor, making it easy for groups to move in and out. SOM also built in ample storage space, so that the hall could hold onto chairs, platforms, music stands, and other things that need to be within reach. The hall is user-friendly, says Dyer, and able to accommodate groups with a lot of production experience as well as those with none. One of the highest compliments the building has been paid, he says, is that the Dallas Symphony Orchestra has been eager to book it, even though its home is the acoustically marvelous Morton H. Meyerson Symphony Center nearby.

For SOM, known for supertall towers and feats of engineering, a project like the Dallas City Performance Hall might seem to be a diversion, but partner Jeff McCarthy says that's exactly why it was an important project for the firm, which had a good relationship with the city after completing an expansion of the convention center in 2002: "I think the things that truly made it interesting were the budget, the profile of performances, and the mission—that it would be an inspiring venue for emerging artists who might be stepping on a stage of this sort for the first time." *Laura Raskin*

MASTERPIECE THEATER
The performance hall has a proscenium stage and a two-level audience chamber (above). Board-formed concrete walls help amplify performances.

credits

ARCHITECT: Skidmore, Owings & Merrill – Jeffrey McCarthy, partner in charge; Leigh Breslau, design partner; Nancy Abshire, project manager; Gabriel Wong, technical coordinator; D. Stanton Korista, structural engineer

ARCHITECT OF RECORD: Corgan Associates

ENGINEERS: L.A. Fuess Partners (structural); URS Corporation (civil); Aguirre Roden (m/e/p)

CONSULTANTS: Schuler Shook (theater planning, lighting design); Jaffe Holden Acoustics; Caye Cook & Associates (landscape)

CLIENT: City of Dallas, Public Works Department

OWNER: City of Dallas, Office of Cultural Affairs

SIZE: 59,000 square feet

COST: $40.8 million

COMPLETION DATE: August 2012

SOURCES

STRUCTURAL SYSTEM: Nucor, Gerdau

METAL PANELS: Alcoa, Alucobond

CURTAIN WALL: Technical Glass Products

LED "CURTAIN": RGB Lights

LINEAR-WOOD CEILING: Architectural Components Group

SKYLIGHTS: Oldcastle BuildingEnvelope

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CIRCLE 169

New Orleans BioInnovation Center
Eskew+Dumez+Ripple
New Orleans

THE SUCCESS of a building is not often measured in quantifiable terms. But when Aaron Miscenich, the executive director of the New Orleans BioInnovation Center, embarked on a new building laden with energy-intensive labs on a former brownfield site in a depopulated area of the city's downtown, he needed hard numbers to make the gamble pay off.

Begun in 2007—two years after Hurricane Katrina—the center was conceived as an incubator for biotechnology start-ups. "There was a stigma to the city," says Mark Ripple, partner at New Orleans–based Eskew+Dumez+Ripple. "It was seen as contaminated goods, both literally and figuratively. Graduates from our universities were moving to other cities. We needed to entice the best and the brightest to stay."

The architects were given free rein to design a building with just the "wow" factor to do the job. The facade of the mostly glazed four-story structure features sunscreens to provide occupants comfortable levels of daylight. Interior amenities include a flexible 100-person conference center.

Recognizing that 50 percent of research takes place in the lab while the other half occurs in hallways or during a coffee break, the architects created spaces to encourage interaction among tenants, including balconies on every floor, a retail and food-service area, and an outdoor courtyard. As for the labs, they developed a universal module to easily morph into any type of lab, wet or dry, depending on the eventual tenant.

The LEED Gold facility—the first of its kind in Louisiana—takes steps to manage water, a particular challenge in a humid climate prone to flooding. Stormwater is collected and detained in a 60,000-gallon-capacity crushed-stone sub-base beneath the parking lot. Up to 25,000 gallons per week of air-conditioning condensate is funneled into the courtyard's water feature and used for irrigation. "The tenants are young entrepreneurs with a value system they wear on their sleeves," explains Ripple. "They want sustainable buildings."

Those young entrepreneurs have flocked to the building, open since 2011. Within six months, the facility exceeded occupancy goals; currently it houses 35 companies. One tenant has grown from five employees in one lab suite to 50 employees in seven suites. "The goal is to nurture start-ups, but the expectation is that they move on," says Ripple. "We're having active conversations to build a graduation facility." *Josephine Minutillo*

credits

ARCHITECT: Eskew+Dumez+Ripple

ASSOCIATE ARCHITECT: NBBJ

ENGINEERS: Morphy Makofsky (civil and structural); Newcomb & Boyd (m/e/p)

CONSULTANTS: Daly-Sublette (landscape architect); Adams Management (project manager)

GENERAL CONTRACTOR: Turner Universal; Gibbs Construction

CLIENT: New Orleans BioInnovation Center

SIZE: 65,500 square feet

PROJECT COST: $38 million

COMPLETION DATE: August 2011

SOURCES

CURTAIN WALL: Kawneer

GLASS: Viracon

SUNSCREEN: Element

METAL PANELS: Centria

ROOFING: Johns Manville

FLOORING: Armstrong

ELEVATORS/ESCALATORS: Schindler

SHADY BUSINESS Playfully deployed louvers allow the main, southwest-facing facade to be 63 percent glass yet have the summer solar gain of a facade with only 20 percent glass (top, left). A ground-floor retail area opens to Canal Street, a major New Orleans thoroughfare (top, right). The interior atrium leads to a courtyard that is visually accessible from the street, as is typical in the French Quarter, but used only by building occupants (bottom).

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CIRCLE 70

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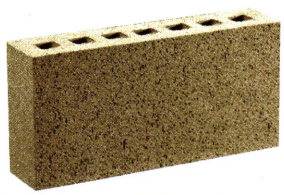
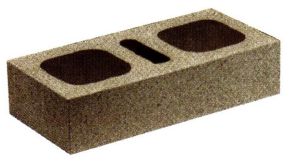
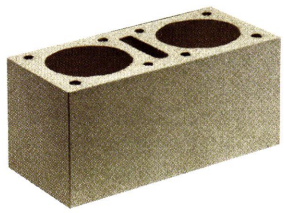

Double Monarch - 3-5/8" x 7-5/8" x 15-5/8"


6" Thru-Wall - 5-5/8" x 3-5/8" x 15-5/8"


8" Double Thru-wall - 7-5/8" x 7-5/8" x 15-5/8"

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GOOD DESIGN IS good business

Convene 101 Park
Gensler
New York

WITH A build-it-and-they-will-come zeal, Millennial entrepreneurs Christopher Kelly and Ryan Simonetti developed a new kind of conference center in 2009—one based on a full-service hospitality model (think boutique hotel). The goal, says Kelly: to support the needs and aesthetics of both young start-ups and traditional businesses "from Google to Goldman."

Three years later, with three Manhattan locations—all retrofits of existing office space—the New York–based venture (at the time called Sentry Centers) reported a growth rate of 3,463 percent, with revenues exceeding $15 million in 2012. Poised to expand after securing $10 million in financing last year, the partners renamed the company Convene, to better convey its mission, which, Kelly explains, "is to bring people together."

They also tapped Gensler to create their first branded facility at 101 Park Avenue—a prototype, with a "kit of parts" that could be adjusted to suit future leased properties. Taking advantage of the generous glazing and street-level entrance of the largely sub-grade 20,000-square-foot site, the architects devised an inviting open lounge up front, with a concierge, café tables, and bold circular light fixtures that echo Convene's logo. The circular pattern continues on glass partitions that allow borrowed daylight to penetrate the various-sized meeting rooms throughout the deep space.

Designed for their use to be understood intuitively, these rooms feature state-of-the-art technology, modular furniture, and reconfigurable built-ins outfitted with necessities such as coat closets, printers, and office supplies, to help enhance occupant productivity. Nearby, self-service Nourish bars provide on-trend food and beverages prepared by Convene's staff in its small commercial-grade kitchen.

Fully booked during its soft launch, Convene 101 Park adds a level of human-centered design to an already successful formula. Recently named New York's fastest-growing company by *Crain's New York Business* and one of America's 100 most promising by *Forbes*, Convene opened its first branded facility outside of Manhattan this March in Virginia—built on Gensler's prototype. *Linda C. Lentz*

CIRCLE TIME To support Convene's emphasis on an environment that fosters collaboration, Gensler created a stylish contemporary facility with broad appeal. Key components include a spacious lounge for dining or ancillary work and after-hour gatherings (top); state-of-the-art meeting rooms (center); and well-stocked Nourish bars (above).

credits

ARCHITECT: Gensler – Mark Morton, design director; Rocco Giannetti, principal; Amanda Carroll, strategist; Beth Novitsky, design director, branding and graphics

ENGINEERS: WB Engineering (m/e/p); Dubinsky Engineers (structural)

CONSULTANTS: HDLC (lighting); Drive 21, Designtex (environmental graphics)

GENERAL CONTRACTOR: JRM Construction

CLIENT: Convene

SIZE: 20,000 square feet

PROJECT COST: withheld

COMPLETION DATE: November 2013

SOURCES

FURNITURE: Haworth, Davis, Cumberland, Datesweiser, Chairmasters, USM

CEILINGS: Armstrong (acoustical); Newmat (PVC stretch ceiling)

LIGHTING: Artemide, Winona, Skydome, Versalux, Zumtobel; Douglas (controls)

PARTITIONS: Dorma (glass walls, pivot doors)

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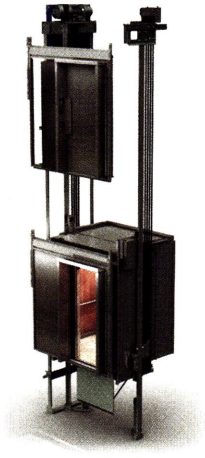

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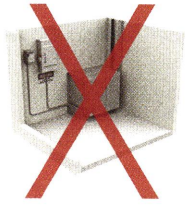

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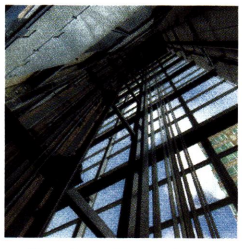

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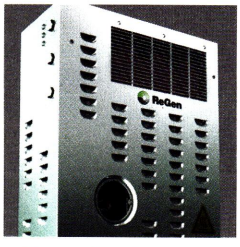
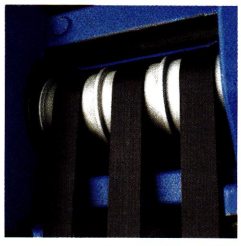


Green Technology



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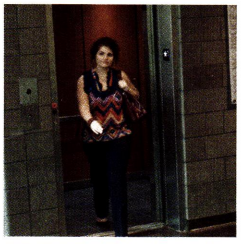

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CIRCLE 32

GOOD DESIGN IS **good business**

City Green Court
Richard Meier & Partners
Prague

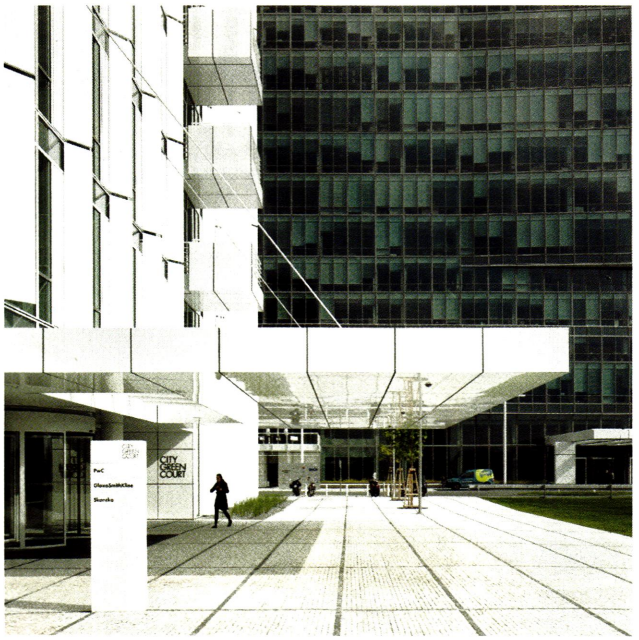
IN PRAGUE, global business is largely conducted in the central historic district of Nove Mesto, but a superblock in nearby Pankrác Plain has long promised to become its modern high-rise counterpart—the Czech equivalent of Pudong or Canary Wharf.

Skanska's $10.8 million purchase of the City Green Court project from the real estate investor ECM in 2010 was a milestone in the Pankrác Plain transformation. As part of the sale, ECM included a schematic design and zoning permissions for the eight-story office building it had commissioned from Richard Meier & Partners (RMP). Yet Skanska's vision, which embraced sustainability, was in marked contrast to ECM's brief.

"We essentially had to start from the ground up in terms of structure, mechanicals, and the module," says Dukho Yeon, RMP associate principal. "The massing is the same, but the approach is completely different." RMP reworked the 175,500-square-foot building's systems. The south and west facades feature a Cubism-inspired composition with stainless-steel fins, angled to minimize thermal gain. A stair-lined atrium is central to the building's natural ventilation strategy, guarantees daylight, and fosters healthy, interactive movement between floors.

The Czech Republic's first LEED Platinum building, City Green Court is 56 percent more energy efficient than required by code, and consumes one-quarter less water than comparable facilities. Equally important from a business standpoint, Skanska leased 80 percent of the building's rentable space to PricewaterhouseCoopers (PwC), before it was completed. Besides increasing the size of its office, the LEED-certification goals also embodied PwC's corporate sustainability mission.

When construction ended in 2012, with the building 95 percent occupied, Skanska sold City Green Court to Deka Immobilien for $74.5 million. Skanska did conduct two more transactions, however: it rented the remaining space for its own satellite office—creating a LEED Platinum–certified interior—and it tapped Richard Meier & Partners to design a property next door. *David Sokol*



NEW WAVE Inspired by Czech Cubism, City Green Court is one of a group of Meier-designed projects in Prague's Pankrác neighborhood (top, right). It is the city's first LEED Platinum-certified building and features angled fins for sun control (above) and an airy, daylit atrium (right).

credits

ARCHITECT: Richard Meier & Partners – Richard Meier, Dukho Yeon, design team

ARCHITECT OF RECORD: Cuboid Architekti

ENGINEERS: TOBRYS (structural); Optimal Engineering Spol (m/e)

CONSULTANTS: AO5 (landscape)

CLIENT: Skanska Property Czech Republic

SIZE: 175,500 square feet

CONSTRUCTION COST: withheld

COMPLETION DATE: November 2012

SOURCES

GLAZING: Guardian (glass, skylights)

CEILING: Knauf, Ecophon

TILE: Rako

RAISED FLOORS: ProInterior

DOORS: Blasi, HSE

HARDWARE: FSB, Geze

LIGHTING: Zumtobel, Bega, Erco

FURNITURE: Herman Miller, Vitra, Steelcase, Arper

ELEVATORS: Schmitt+Sohn

BUILDING MANAGEMENT: Siemens

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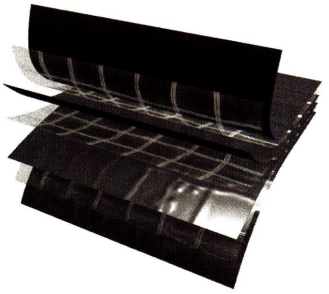

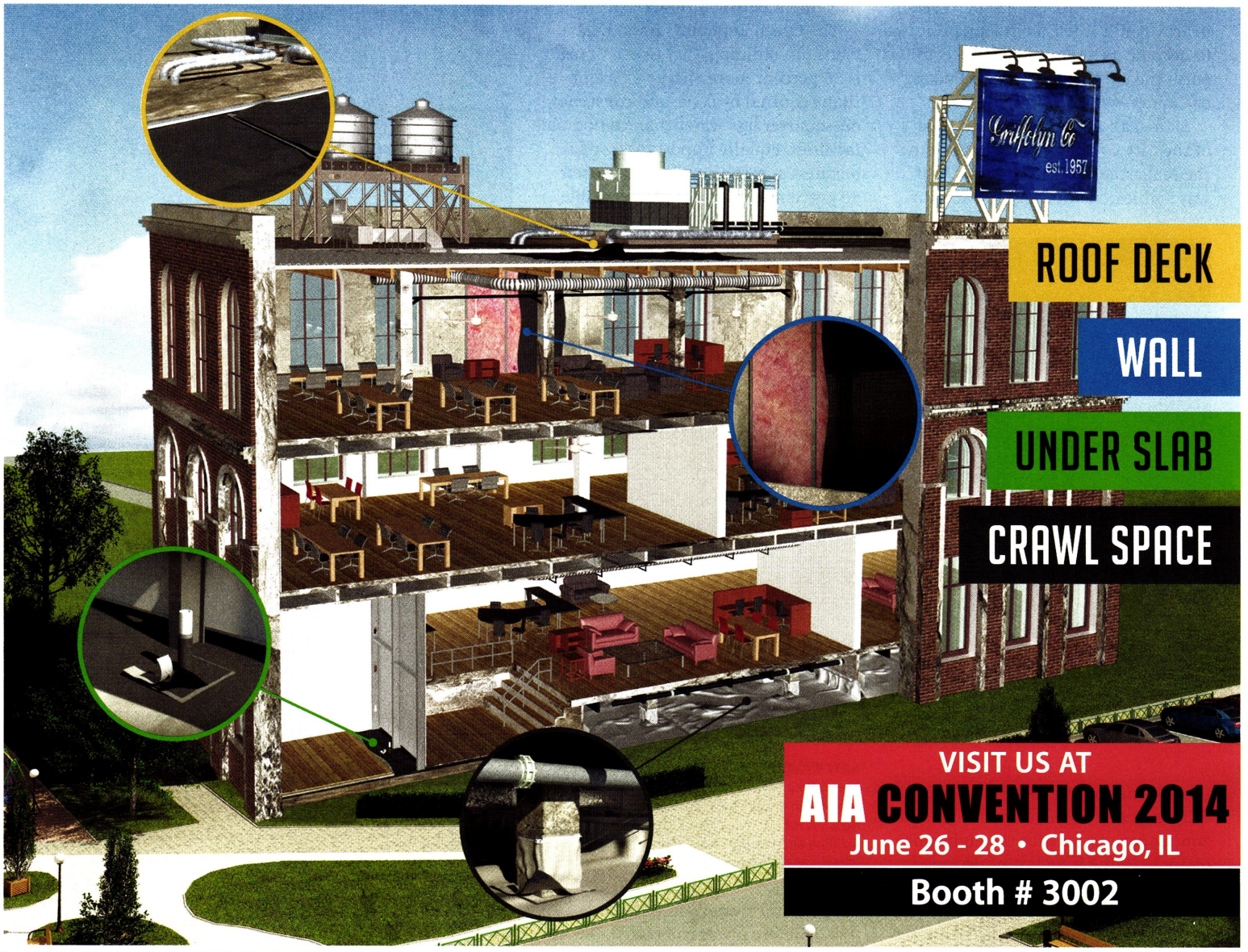

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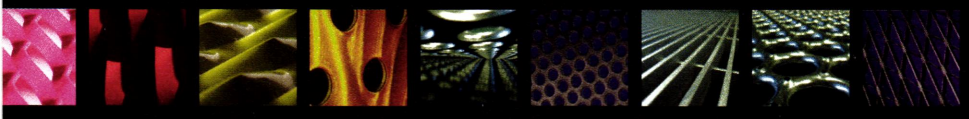

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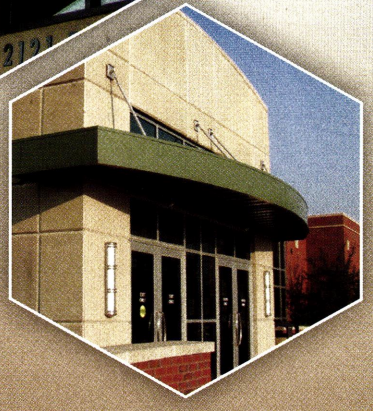

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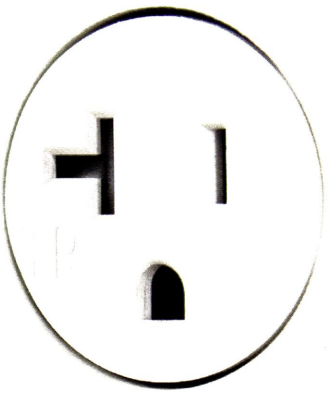

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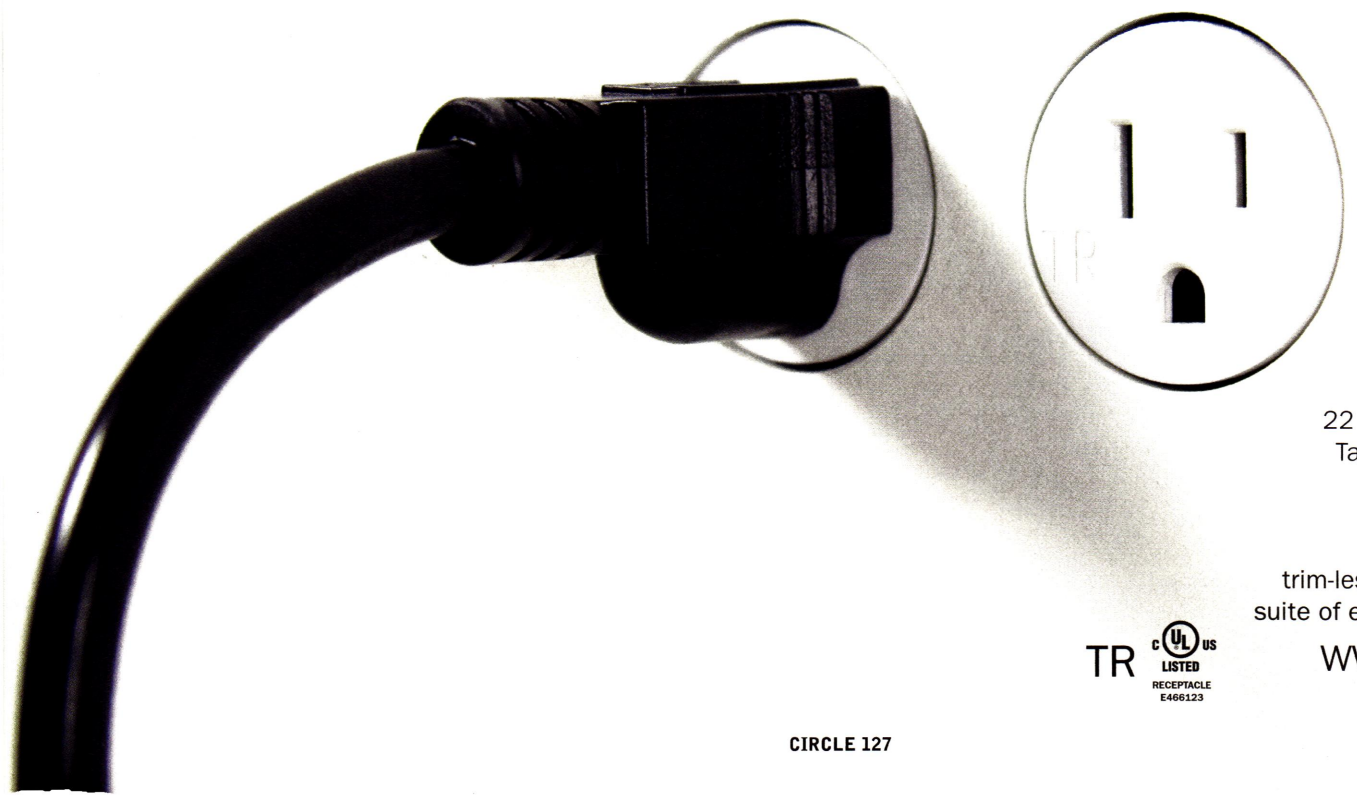

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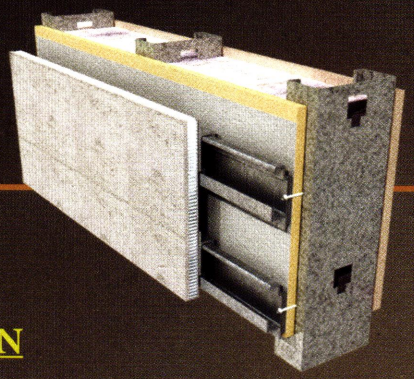

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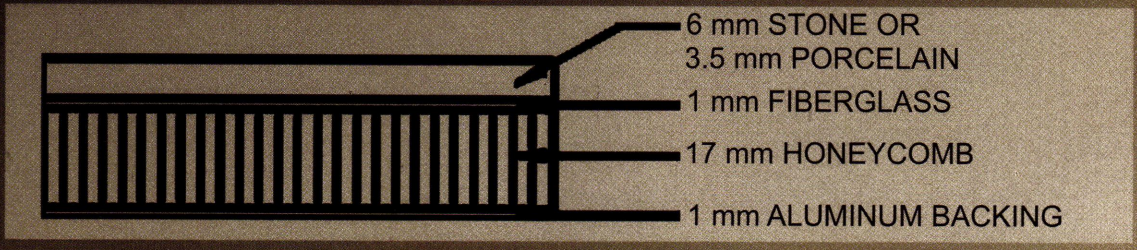

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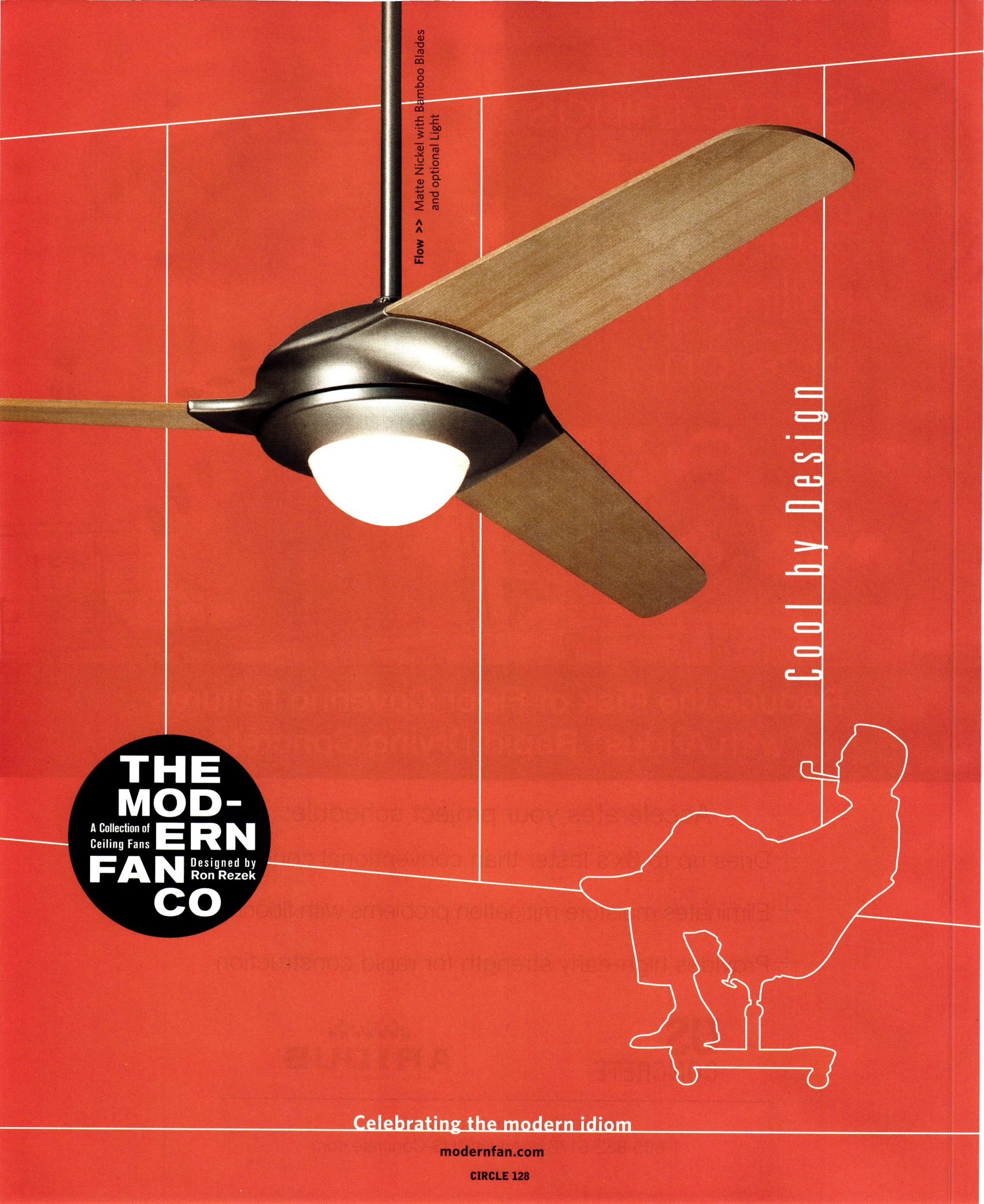
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ARCHITECTURE AND ETHICS

Architecture has never been a purely aesthetic pursuit. Architects have long straddled the lines among creativity, pragmatism, and civic responsibility. But in an era of catastrophic natural disasters, growing income disparity, and serious human rights violations, where does an architect's accountability begin and end? In the following pages, RECORD addresses some of these issues and presents a range of inventive models for effective ethical design.

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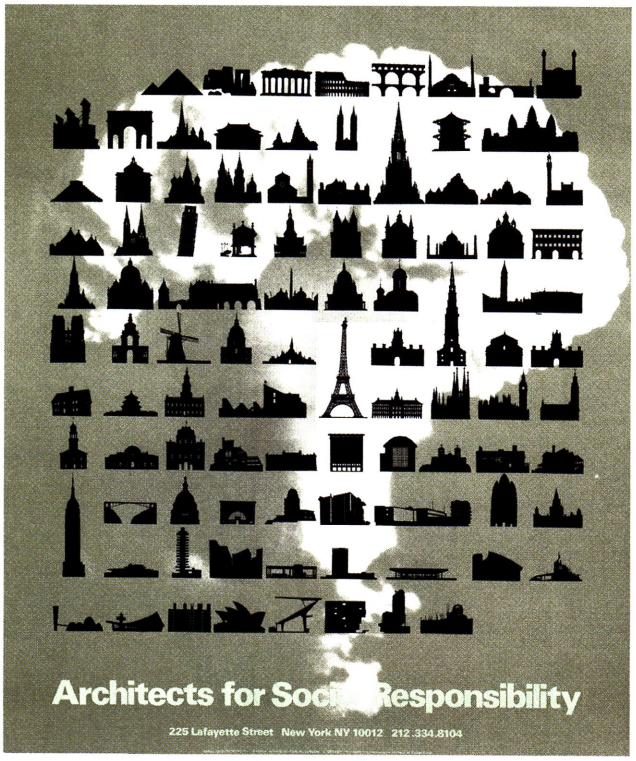
THE CHILDREN'S ACADEMY, HAITI. BY BAR ARCHITECTS

PHOTOGRAPHY: © DOUG DUN/BAR ARCHITECTS

ACTIVIST DESIGN

In a time of growing humanitarian crisis, climate change, and mounting income inequality, socially engaged architects and the groups they have organized are no longer relegated to the field's fringes.

BY LAMAR ANDERSON



A 1983 poster designed by Architects for Social Responsibility, which advocated against nuclear proliferation.

Architecture takes up social causes in cycles. Since the 1970s, engagement has tended to rise when the NASDAQ falls and to correspond, roughly speaking, with the presence of solar panels on the White House. When President Jimmy Carter installed 1600 Pennsylvania's inaugural photovoltaics in 1979, the decision came at the tail end of an activist era. Federal money flowed to affordable housing, and community design centers (CDCs), like C. Richard Hatch's Architects' Renewal Committee of Harlem, founded in 1964, helped low-income residents influence planning in their own neighborhoods. "In 1968, when revolutionary activities took place at Columbia and Berkeley and the Sorbonne, it was the architecture students out front," recalls James Stewart Polshek, founder of Polshek Partnership Architects (now Ennead Architects) and dean emeritus of Columbia's Graduate School of Architecture, Planning, and Preservation.

But by the late 1980s, President Ronald Reagan had slashed community development funding. The solar panels went away, not to be seen again until the Obama Administration. Architecture schools turned back to formalism and theory. "There were some professors who had been involved in the '70s, but I think they were all embarrassed about their bell bottoms and didn't want to bring it up," says Bryan Bell, founder and executive director of the nonprofit Design Corps, who was getting his master's at Yale University's School of Architecture at the time.

Social concerns stayed alive in the 1980s and '90s through organizations like Architects for Social Responsibility (now known as Architects/Designers/Planners for Social Responsibility), an anti-nuclear-proliferation advocacy group Polshek founded in 1981 with the late architect Sidney Gilbert. CDCs did not altogether disappear, though their numbers diminished.

In our own time of growing humanitarian crisis, global climate change, and mounting concern over income inequality, activist architects are no longer relegated to the field's fringes. April marked the fifteenth anniversary of Architecture for Humanity (AFH), which has grown from a shoestring outfit founded by Cameron Sinclair and Kate Stohr in 1999 to an international organization with 59 chapters in sixteen countries. The San Francisco–based nonprofit Public Architecture, now 12 years old, tracked nearly $50 million in pro bono design services given in 2013 through its influential 1% Program. Last year, the Portland State University School of Architecture launched a public-interest-design research center, and the University of Minnesota College of Design will follow suit this year with new undergraduate and master's certificates in public-interest design. If the National Design Services Act makes it out of committee and passes in Congress, architecture students will be able to reduce the balance owed on their loans by going to work in CDCs.

All this activity has bubbled up to the higher echelons of the American Institute of Architects, which in 2011 awarded the Latrobe Prize to a study of public-interest practices, and, of course, the Pritzker jury, which this year honored Shigeru Ban more, it is said, for his innovative paper-tube post-disaster structures than for the deflated-mushroom form of his Centre Pompidou outpost in Metz. At this month's

IMAGE: © HEIDI HUMPHREY, JULIAN NESKI, PHOTOGRAPHY: COURTESY ROLLIE RISTINE; COURTESY ARCHITECTURE FOR HUMANITY: MARK WARREN (OPPOSITE, TOP); DARREN GILL (OPPOSITE, MIDDLE); ANA RAMOS (OPPOSITE, BOTTOM).

architecture for humanity

Since 2008, Architecture for Humanity has collaborated with the Fédération Internationale de Football Association (FIFA) and the nonprofit streetfootballworld to build 20 soccer fields and community centers in 16 African countries. The initiative, Football for Hope, uses soccer as a draw for education and health programs such as HIV prevention. For the Baguinéda center (top), which opened in Bamako, Mali, in 2010, architects Michael Heublein and Quarc Design used local stone and earth block to recall traditional Malian adobe and mud-brick buildings. At the Manica, Mozambique, center (above), designed by Alina Jeronimo and Paulo Fernandes and completed in April 2013, broad overhangs shelter all-weather courtyards. The Tarrafal center in Cape Verde (right), designed by Ana Reis and Ana Ramos, opened in June 2013.

RdlR Architects

RdlR Architects renovated an early-1980s tilt-up concrete warehouse for the Houston Food Bank, reinvigorating the facade with green steel panels (left). The 308,000-square-foot facility, which offers job training to prisoners, opened in the summer of 2011 and last year won a Social Impact Design merit award from Public Architecture and AIA San Francisco.

included

The nonprofit INCLUDED builds community centers for migrants living in urban slums, which often lack legal status. Last year in Shanghai, INCLUDED used shipping containers to build a community center (middle) that can be disassembled and relocated if the settlement ever faces slum clearance. Movable walls create flexible classroom space (right), and custom-designed benches can change height to seat either children or adults.

PHOTOGRAPHY: © SLYWORKS PHOTOGRAPHY (TOP); JENNIFER HA/INCLUDED (BOTTOM, 2); MASS DESIGN GROUP (OPPOSITE)

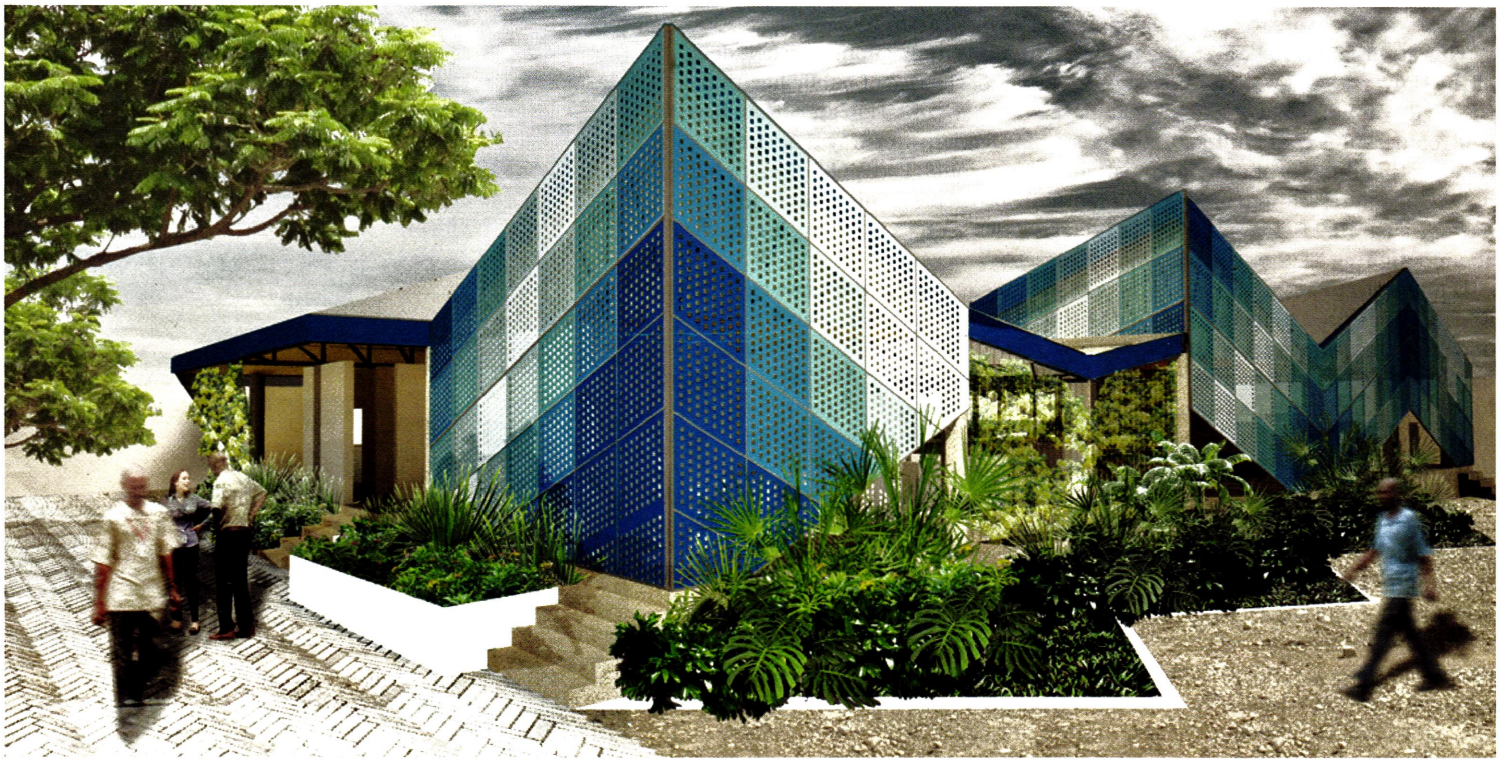
national convention in Chicago, the AIA will launch the AIA Foundation, a new philanthropic branch that will offer training in disaster-resilient building techiques and underwrite projects incorporating them—the first time in the AIA's history that it will fund the construction of anything. A century and a half after the birth of the field of public health and 50 years after the institution of public defenders, architecture is beginning to move beyond the old-fashioned patronage model and grope its way toward a truly public architecture.

Since founding Public Architecture in 2002 and launching the 1% Program—which asks firms to dedicate 1 percent of their annual billable hours to pro bono projects—John Peterson has seen this type of participation become the norm, not the exception. "Now we're hitting a purely financial barrier," he says.

Funding remains the core problem of turning socially conscious architecture into a self-sustaining discipline. In purely mathematical terms, 1 percent of the resources that serve the minority of the population who can afford an architect do not go far in addressing the needs of the majority. But Peterson views pro bono as a sales pitch directed at the nonprofit sector, which, he says, tends not to see architecture's relevance to its humanitarian mission. "Pro bono is a gateway drug," he says. "If we do a good job serving that community, they'll start paying for it."

mass

In September MASS will complete the Cholera Treatment Center (below), a collaboration with the health-care provider GHESKIO, in Port-au-Prince, Haiti. A wastewater purification system will keep cholera from spreading to the water table by piping sewage through a three-chamber anaerobic digester and percolating liquids into a landscaped surface bed, where they will evaporate. The architects employed Haitian metalworkers to assemble the center's perforated-steel skin, which recalls their vernacular craft of cutting old oil drums into ornamental signs and artworks. MASS used parametric modeling software to design the facade's folds and optimize the openings for daylight, natural ventilation, and privacy.



For the nonprofit Architecture for Humanity, which coordinates long-term disaster responses in addition to funneling grants to smaller, community projects through its chapters, the perennial question is how to address humanitarian crises at a meaningful scale. "The forces of mass urbanization and climate change are on a collision course," says Eric Cesal, director of AFH's reconstruction and resilience studio. "We're trying to change our philosophy so that we're preventing the effects of disaster, disinvestment, and poverty, as opposed to reacting to crisis."

As a first step in this direction, the new AIA Foundation, in partnership with AFH and Public Architecture, among others, is forming five regional resilience design studios in the United States. With a staff architect based at each one—in New York; Washington, D.C.; Biloxi, Mississippi; the San Francisco Bay area; and a Midwestern city to be announced—the initiative will help communities identify weaknesses in their disaster infrastructure and build teams of local architects to work on projects. The studios will recruit volunteers from the rosters of Public Architecture, AFH, the AIA, and architecture schools. "Between the three organizations, we have most of the architects covered in the U.S., and we can benefit from each other's reach," says Sherry-Lea Bloodworth Botop, executive director of the AIA Foundation.

This emphasis on building a network of architects whose local expertise can be tapped for civic-minded projects reflects a broad shift among nonprofits from the full-service mode of traditional practice. In its early years, Public Architecture operated more like a typical firm. The architects designed a sheltered gathering place for day laborers and, in San Francisco in 2005, exhibited a house built entirely from castoffs, repurposing phone books as insulation and fire hoses as wall panels. But Peterson and his staff soon realized that substantial impact would always elude them if they kept approaching social issues with a portfolio mindset. Now they influence more projects by helping foundations and nonprofits develop concepts and select and manage design teams, which then carry out the work. Under the guidance of Public Architecture, WRNS Studio and GLS Landscape | Architecture

recently developed prototype strategies to help Alameda County, California, adapt underused space in fire stations as neighborhood health clinics.

Increasingly, public-minded architects are thinking like economists, widening their focus beyond buildings themselves to the communities they support. In Ishinomaki, Japan, which lost 1,800 businesses in the 2011 earthquake and tsunami, AFH's program coordinators realized they could have the greatest impact by rebuilding the town's food markets and fish-processing plants.

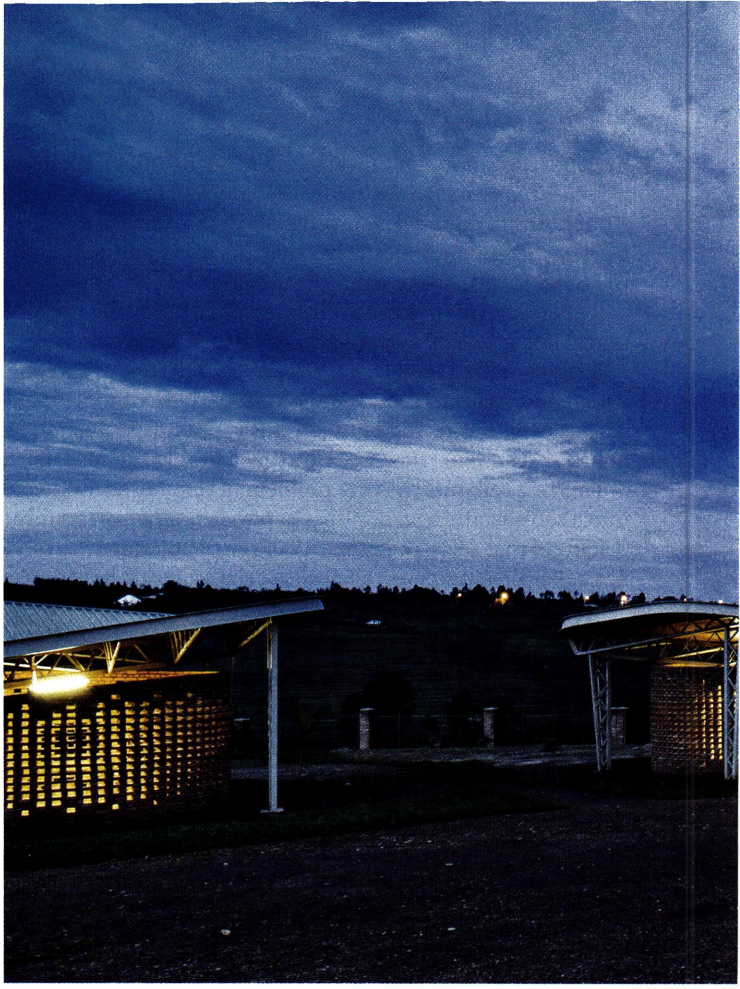
Restoring livelihoods gave residents a way to stick around long enough to rebuild the rest of the community. "People asked, 'Why are you working on businesses when so many people are homeless?'" says Cesal. But AFH's analysis found that aiding businesspeople through training programs and reconstruction would help draw investment back to a town that some considered too far gone to save. Three years on, he adds, "the coolest effect we've noticed is young people moving to Ishinomaki."

In the Rwandan village of Kayonza, the nonprofit Women for Women International adopted a similar approach in a recent collaboration with Sharon Davis Design. The new Women's Opportunity Center, which opened in June 2013, teaches war survivors to cultivate and market agricultural products.

This attention to the well-being of populations reminds Thomas Fisher, dean of the University of Minnesota College of Design, of the rise of public health in the Civil War era, when doctors began to realize that sanitation and other disease-control measures could mitigate the spread of infections in a way that simply treating the illnesses of individual patients never would. Like public health before it, "public-interest design is going to eventually break off from architecture to become a parallel field," he says. "It's not about designing a building. It's maybe about designing a system or a mass-customizable process."

If public architecture is becoming part social science, it will find its legitimacy in data. Many practitioners warn that without post-occupancy research to demonstrate the return on investment from good design, the field will have a hard time attracting funding. But research itself costs money. AFH received grants to study the impact of its rebuilding programs on construction quality in Haiti, for instance. But in general, says senior program manager Michael Steiner, "We don't have the funding to pay for research."

Fitting, then, that the first architects to crack this catch-22 work in health care, a sector that already collects data on its outcomes. The nonprofit practice MASS Design Group is well known for reducing infection rates in its Butaro District Hospital in Burera, Rwanda, by designing the building around airflow. But when MASS cofounders Michael Murphy and Alan Ricks began working on the project for the health-care nonprofit Partners in Health in 2008, their methods were unproven, so they donated their design services. Patient data supported their approach, and the firm added doctors' housing to the Butaro campus in January 2012, as well as an ambulatory cancer center in August 2013. Now MASS has ongoing projects in 10 countries, including a cholera treatment center that will open in Haiti this fall. The firm is working on ways to test design's effect on other outcomes, such as maternal mortality rates or economic development. "There's a whole field of evidence-based design emerging," says Murphy. For Peterson, research data are the key to social design's staying power. "What we need to do is provide real, hard identifiable value," he says, "or we'll be subject to the swings of public opinion." ■



sharon davis design

The Women's Opportunity Center, in Kayonza, Rwanda, helps war survivors learn to support themselves as farmers and craftspeople. Working with the nonprofit Women for Women International, Sharon Davis Design conceived the center, which opened in June 2013, as a mini-village of rounded, perforated-brick pavilions (opposite, top). Women practice commercial-farming techniques and sell their products—including potable water from rooftops—in a public market (right). Bricks used in the structures were handmade by the women (opposite, bottom).

PHOTOGRAPHY: © IWAN BAAN

SITE UNSEEN

As pressure mounts in the Persian Gulf for migrant-labor reform after scores of worker deaths, architects should consider the broader impact of their designs. BY ANNA FIXSEN

"It's not my duty as an architect to look at it," Zaha Hadid told *The Guardian* in late February. Her comment came after the news organization revealed that more than 500 Indian and 382 Nepalese workers had died in the last two years' preparations for the 2022 FIFA World Cup in Qatar, an event for which she has designed a stadium. "I have nothing to do with the workers," Hadid said.

Activists and the media pilloried Hadid for her aloof stance. But her comment underscores an issue that architecture firms with international practices often encounter but rarely discuss. In a global economy, as the process of making is increasingly alienated (and physically removed) from design, an architect's duty to safeguard workers' rights becomes perplexed. The AIA's ethical standard on this—"Members should uphold human rights in their professional endeavors"—is not a mandatory dictum. But activists believe architects have more responsibility than professional codes dictate.

"The key thing is, under international standards, businesses have a responsibility to respect human rights, even if those abuses are not directly connected to their work," says James Lynch, a researcher for Amnesty International who has investigated migrant conditions in Qatar. "If you have a business footprint and there are abuses that result from that, you have a responsibility to take steps to prevent those abuses or mitigate their effect."

Unquestionably, labor abuses exist on every part of the globe. A report by the Worker's Defense Project, a nonprofit that advocates for fair employment, found payment for more than one in five construction workers in Texas was routinely delayed. More seriously, in the Persian Gulf, glitzy megaprojects—prominent western cultural institutions designed by architects such as Frank Gehry, Jean Nouvel, and Hadid, among others—are built by the hands of migrant workers who are dying at a rate of more than one per day.

The migrant-laborer system in these countries, called the *kafala* system, affords few legal protections for workers by placing the employer in control of their visas. This arrangement prevents workers from switching jobs or leaving the country without the employer's permission, essentially indenturing them. Late last year, Amnesty International released a report that painted a grim picture of life for World Cup construction workers in Qatar: the laborers toiled 12 hours or more a day in temperatures exceeding 110 degrees Fahrenheit and went home to squalid camps. Many were not paid for months—if at all. These conditions contribute to the high rate of death, often from heart attacks or workplace accidents. In 2009 and 2012, Human Rights Watch documented similar conditions on Saadiyat Island, a $26 billion luxury development off the coast of Abu Dhabi, where institutions including the Louvre and Guggenheim museums will have outposts. Human Rights Watch has since been banned entry into the country.

PHOTOGRAPHY: © SAMER MUSCATI/HUMAN RIGHTS WATCH (ABOVE; OPPOSITE, BOTTOM); GULF ULTRA LUXURY FACTION (OPPOSITE, TOP)

Amnesty International spent time in the camps for the employees of PSCI Specialties Qatar, a company subcontracted to work on a few projects in the area. This company, among others, was hired by two larger entities to build the Sidra Medical and Research Center in Doha, a state-of-the-art 1.5 million-square-foot facility designed by Pelli Clarke Pelli Architects. "They use Nepalese workers like donkeys," a 27-year-old Nepalese employee said of the miserable living conditions while working for PSCI. The company's employees were also routinely denied their own identification documents and, therefore, the ability to leave Qatar.

Many architects claim that distance from their projects prevents them from exerting influence. A spokesperson from Pelli Clarke Pelli said the firm was not aware of the Amnesty International findings: "As the design architect, our involvement with the project ended after it transitioned from design development to the design-build phase."

Adrian Smith, a founding principal of the firm AS+GG, has designed the world's tallest buildings, including the Burj Khalifa in Dubai when he was at SOM (2010), and the even taller Kingdom Tower in Saudi Arabia, to be finished in 2017. The majority of his firm's projects are in construction markets that rely on a migrant-labor force. "If we dabble into issues of who is constructing the building and take that as a serious component to our business, we'd probably not have any work," says Smith. "And neither would anyone else in the United States."

Smith asserts that the labor force behind the firm's building is strictly the contractor's responsibility. "If something's wrong with the building, you are responsible for that," he says. "We're responsible for what's on the drawings.

"Is it a shame [the laborers] are not getting the income that Americans would get? As Americans, would we like to see that? We would sure like to see that." He adds, "All we can do is use our expertise to help them to achieve a better world for themselves."

Other firms view labor as a serious consideration in how they conduct business. Bill Sharples, principal at SHoP Architects, says labor practices factor into the choice of where the firm takes on projects. SHoP is currently building a 5,000-acre technology hub in Kenya and an innovation center in Botswana, projects in which the firm's in-house construction division, SHoP Construction, relies on technology and 3-D modeling to coordinate with local workers for execution of the design. "Two of our guys will be working with the local laborers on the site," he says. "When issues come up, you work them out. You don't sit there and use the excuse that it's a long-distance relationship. You really engage."

"For someone to say 'that's not my problem' is nonsense," says Sharples. "For us, making the building is as much a part of the process as designing it."

Change may soon be coming to the Gulf. In late April, the United Nations Human Rights Council called upon Qatar to abolish the *kafala* system. But change could also stem from a collective paradigm shift in the field of architecture, analogous to the way in which sustainability standards have been adopted. To accomplish this, there needs to be a clearly defined labor section in professional codes of ethics, an architectural-education system that teaches architects to value labor, and more engagement with construction sites. One New York–based group, Who Builds Your Architecture? is organizing a series of interdisciplinary workshops for architects, scholars, and activists to develop a guidebook that could start a field-wide conversation about these issues. Most critically, says cofounder Mabel O. Wilson, prominent architects need to take action. She reverts to Hadid's *Guardian* quote: "Zaha does have some leverage, precisely because she is a highly visible person."

For now, business-as-usual practices persist, but some advocates are already holding architects and institutions accountable. In late March, protestors from the satirically named Gulf Ultra Luxury Faction (G.U.L.F.) took to the atrium of the Solomon R. Guggenheim Museum in New York and dropped a ticker-tape parade's worth of multicolored fake dollar bills in protest of the museum's Frank Gehry–designed branch under construction on Saadiyat Island. On the verso of the bills is a sketch of Gehry's design and the words Welcome to Global 1%. ■

CRITICAL DISTANCE
On March 29, activists rained fake dollar bills onto the floor of the Guggenheim (left) in protest of the institution's Gehry-designed branch on Saadiyat Island. A migrant construction worker rests at the end of his shift there (opposite), where, in addition to the Guggenheim, institutions including the Louvre and New York University are building outposts. Most workers have a long commute to the job site and at the end of the day (bottom), are bused back to labor camps, where they often live in miserable conditions.

THE ARCHITECT'S DILEMMA: WHEN TO SAY NO

What are the factors—political, social, or environmental—that architects should consider when deciding if they should turn down or resign from a job?

BY MICHAEL SORKIN

RENDERING: COURTESY ZAHA HADID ARCHITECTS

The al-Wakrah stadium by Zaha Hadid will be one of the featured venues at the 2022 World Cup complex in Qatar. Since January 2012, almost 900 workers have died during construction on the complex, according to *The Guardian*.

THE THREE American hikers captured in 2009 by the Iranians and held in jail for two years (for allegedly straying over the border from Iraq) have written a book about the experience. Now making the rounds of talk shows, they describe solitary confinement as one of its horrors and cite a UN report on torture declaring such treatment—if lasting more than 15 days—cruel and unusual and liable to cause severe mental distress, sometimes irreversible. In fact, while there's no question about the cruelty, it's hardly unusual. In the U.S. there are at least 80,000 prisoners being held in isolation, and many of them have been there for years.

Following an earlier effort to persuade designers to refuse prison work altogether, Architects/Designers/Planners for Social Responsibility is now conducting a campaign to have the AIA revise its code of ethics to enjoin architects from designing spaces for the worst aspects of our penal system: execution chambers and solitary-confinement cells. The San Francisco, Portland, and Boston chapters have voted in support of this, but New York just said no and proposes instead a subcommittee be appointed to develop "Best Practice Guidelines: Design for Humane, Effective, Segregation," which sounds like a classic bureaucratic way of evading the issue, at least for the time being. But prisons are just one egregious instance of architecture's moral dilemma. The act of building—which is directly engaged in setting and supporting virtually everything we do—is implicated on every side by choices about our own participation and complicity with evil.

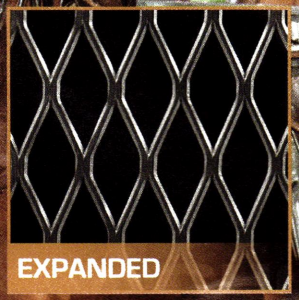
The web recently has gone viral with a statement by Zaha Hadid in which she dismisses any collateral responsibility for the huge number of worker deaths—nearly 900, according to *The Guardian*—on World Cup construction sites in Qatar, where she is building a stadium. She claims, "It's not my duty as an architect to look at it . . . I have nothing to do with the workers." Her partner, Patrik Schumacher, has taken this stance even further, arguing for a narrowed notion of architecture's conceptual and operational autonomy that simply excludes such social and political concerns. Schumacher has been advocating what he calls "free market urbanism" as an ethical touchstone and writes, "architects are in charge of the form for the built environment, not its content." Setting aside the weaselly notion of what it means to be "in charge," does anyone actually believe this evasion? Certainly not the many artists who have been boycotting the new Abu Dhabi Guggenheim over the issue of worker exploitation and who launched a series of protests at a recent opening at the New York museum. Certainly not the authors of the professional codes of ethics that charge architects with upholding standards of health and safety in their buildings. Certainly not the families of the dead laborers.

Many of us have made our peace with working on projects in countries that do not fully conform to our stan-

The Hole Story

HOLE Inspirations

Well Done



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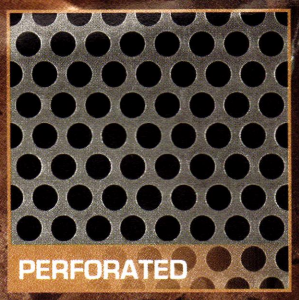

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dards of democracy and human rights, and most of us, I think, try to make some ethical distinctions, just as we do here at home. My own office works extensively in China and—as everywhere—there's always a double decision to be made: first about the project itself, and then about its political setting. Of course, we'd no more do a prison camp in Mongolia than we would in Montana, but there's no doubt that Chinese labor practices—including the employment at low wages of huge numbers of a floating population of "illegals" who come to the cities without proper papers (another issue)—are far from what a union worker would expect in New York. There's also endemic corruption, a very fraught relationship to intellectual property, and plenty of questionable environmental practices. But having made the decision to enter this arena, our policy is the physician's: first do no harm.

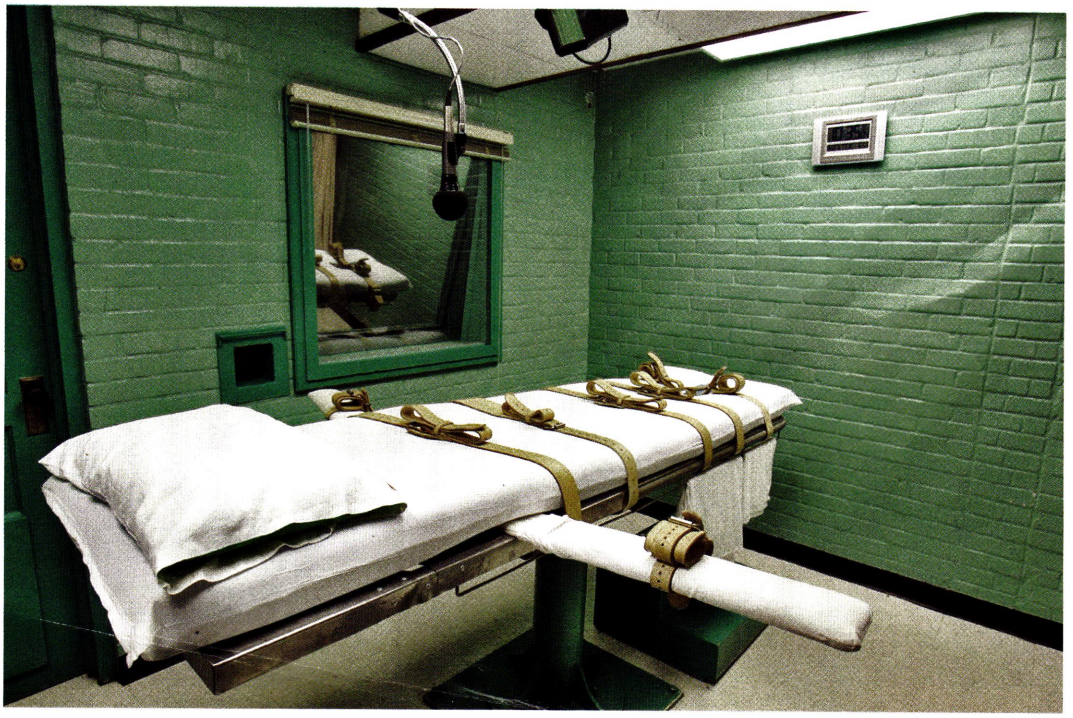
Some architects do enjoy playing it closer to the edge: Rem Koolhaas offered an explicitly political rationale for his CCTV building in Beijing, claiming that what is, in effect, the ministry of propaganda (in a country without a free press) is actually a likely conduit to a more democratic flow of information, citing its broadcasts in English. While this disingenuous contention is typical Koolhaasian tightrope-walking naughtiness, it can be difficult to distinguish what pushes boundaries and what defends them. Are there societies in which one should never work? Sure—Nazi Germany. But what about slum improvements for a black community group in apartheid South Africa? I'd do a project in Israel, but not an Israeli project in the West Bank, although I'd undertake a Palestinian one there. There are those who'd call this a sellout.

China—given the astonishing complexity of the scene and its actors and remarkable pace of change, and given my many friendships and students there—is not an issue for me, especially since my colleagues there are as frank in their criticism and analysis as my cohort here is of our own failings. In a terrain of porous ethical boundaries, one turns to the example of moral authorities: Ai Weiwei teamed with Herzog & de Meuron to design the Bird's Nest, the highest-profile building at the 2008 Beijing Olympics, on behalf of a government that later jailed him. (He disavowed the project afterward, but not other work he had done in China.) For me, working in Xi'an or Wuhan isn't just compromise with moral hazard: I am thrilled by several Chinese commissions we've had for urban projects that demand thinking at a scale and a level of sustainability almost never sought elsewhere in the world.

If I call out Zaha and Rem for the slipperiness of their positions, rather than assail the heads-down professionals who actually specialize in prison design, nuclear installations, or bomb factories, it's because we look to our most talented and public representatives to lead. They have both the platform and the duty to speak out—especially since neither is reticent about exploiting their stardom to make a fortune. Their exacting myopia—the sealing off of architecture from its program, mode of production, and circumstances of use—is an old dodge (*It's not my department, says Werner von Braun*). But ambiguity at the margins is no excuse for evading responsibility at the clear center. Raise your voices!

As our collective environment degrades, we all must take a planetary view of architecture's impact. This requires not just an ethical compass but knowledge, commitment, and nuance: architecture is part of a distributive system that assigns spatial and material resources and creates the physical circumstances for both public and private life. We are among the leading stewards of the health of the planet, and we're derelict if we fail to educate and persuade our clients to do what we know to be the right thing.

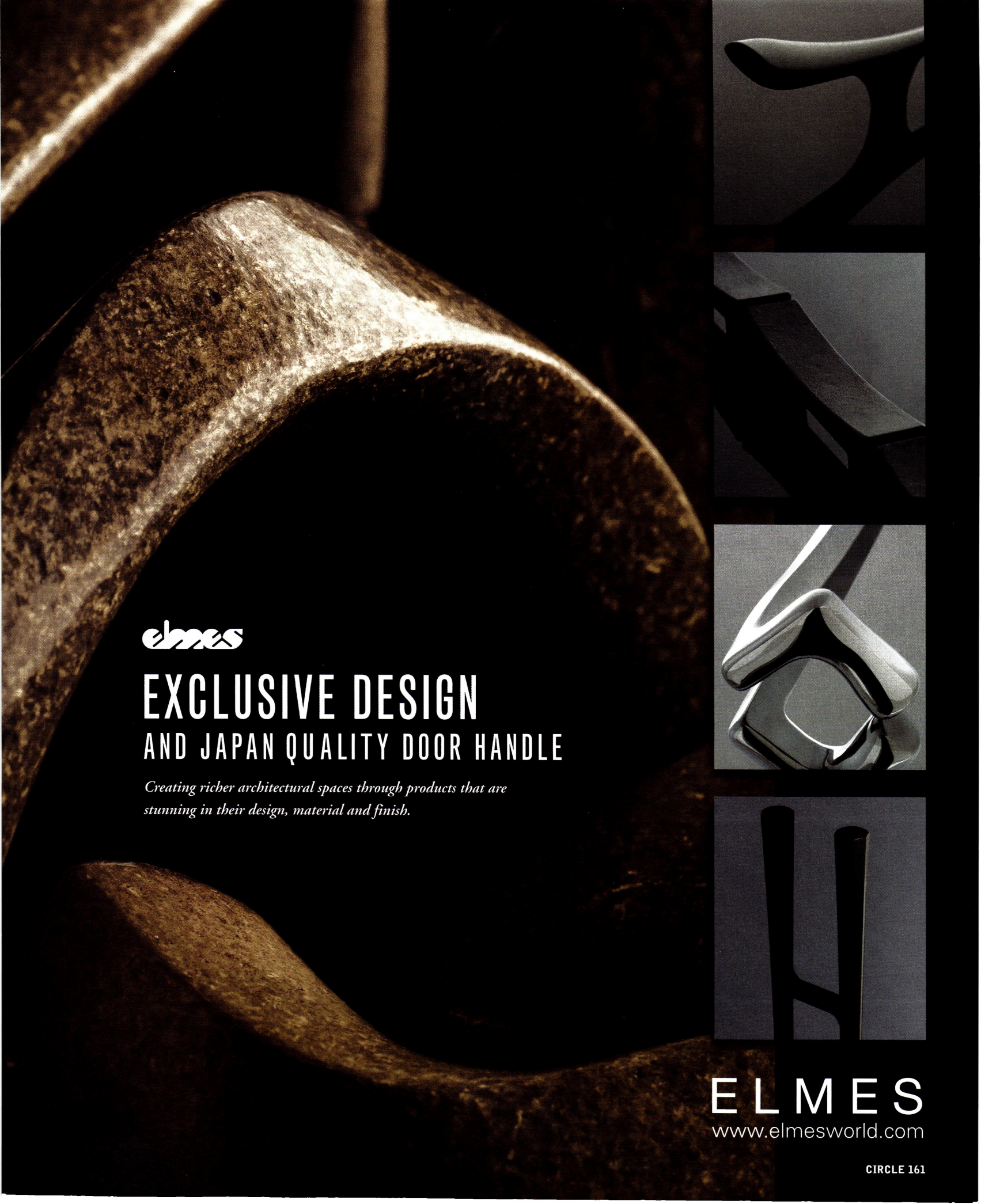
Zaha's imperious statement begs the question of how far down the line our obligation lies. While there should be no difficulty in refusing to design a death chamber or Guantanamo, it does get a little harder thinking a few links along the chain: about the scarcity of materials, the cruelties in their production, the energy they embody, the risk to users, and other architectural "externalities." And, yes, labor conditions and construction safety are part of the remit. It's callow or cowardly not to speak out or walk off the job if the situation is acute. ■



The death chamber at the Texas State Penitentiary at Huntsville was the site of an execution in May 2008. Some organizations are asking architects to refuse jobs that involve designing death chambers and solitary-confinement cells.

The act of building is implicated on every side by choices about our own participation and complicity with evil.

PHOTOGRAPHY: © AP PHOTO/PAT SULLIVAN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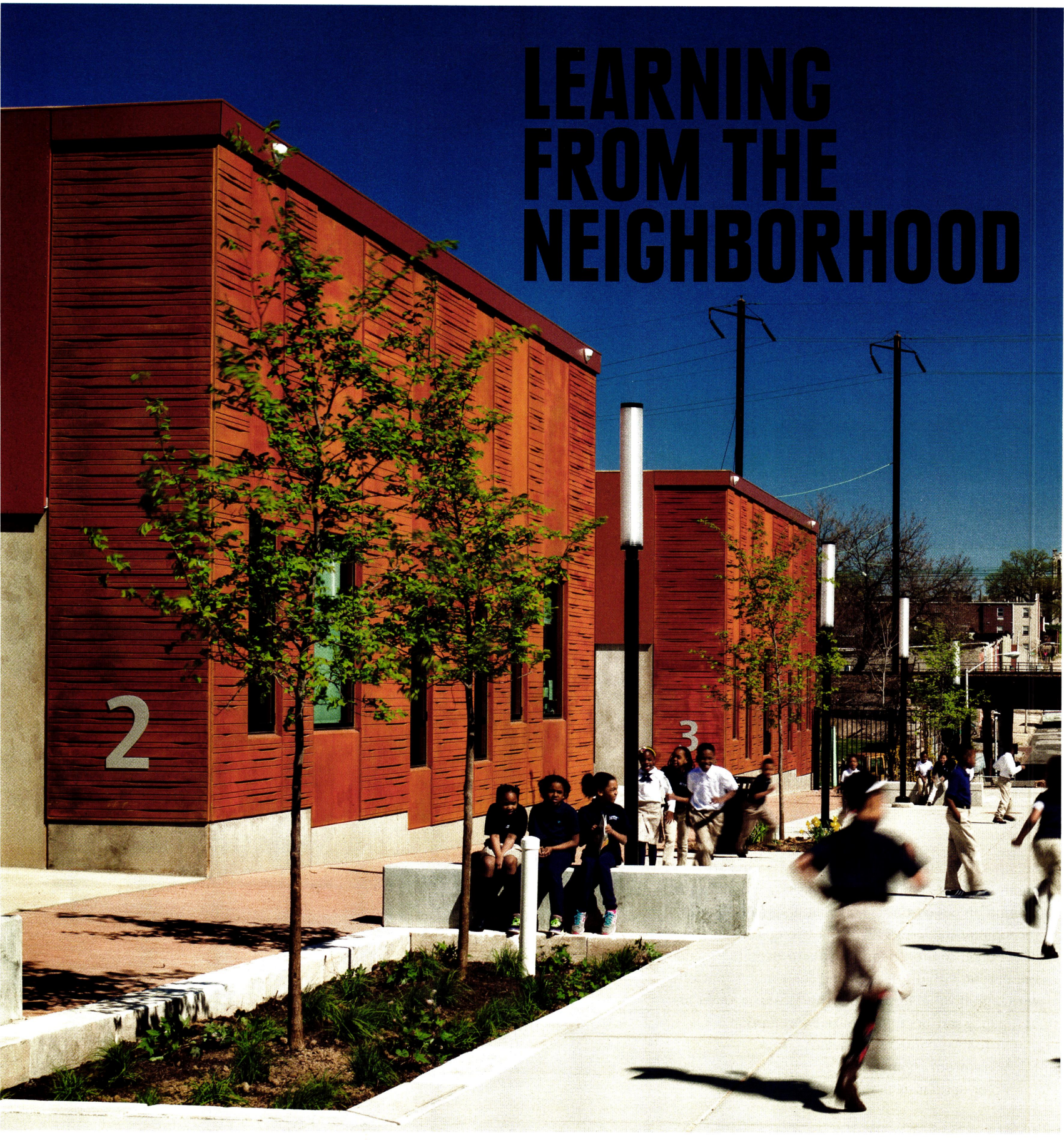
Henderson-Hopkins | Baltimore | Rogers Partners

LEARNING FROM THE NEIGHBORHOOD



Henderson-Hopkins, the first new public school built in Baltimore in decades, embraces the rich architectural fabric of a struggling community on the upswing.

BY LAURA MIRVISS

PHOTOGRAPHY BY ALBERT VECERKA/ESTO

In East Baltimore, the storied Johns Hopkins University School of Medicine campus, emblematized by its castle-like Queen Anne–style brick Billings Administration Building, stands in striking contrast with its environs. Around it is one of the city's most dangerous neighborhoods, where crime and poverty rates are double the city average, and street after street is lined with mostly vacant, ghostlike row houses with boarded-up windows and doors.

Henderson-Hopkins, a gleaming new $53 million early childhood and K–8 public school operated by Johns Hopkins, now sits on two of those formerly derelict blocks. Designed by New York–based Rogers Partners following an invitational-competition win, the 125,000-square-foot, state-of-the-art facility is the first new public school building to go up in the city in more than 20 years.

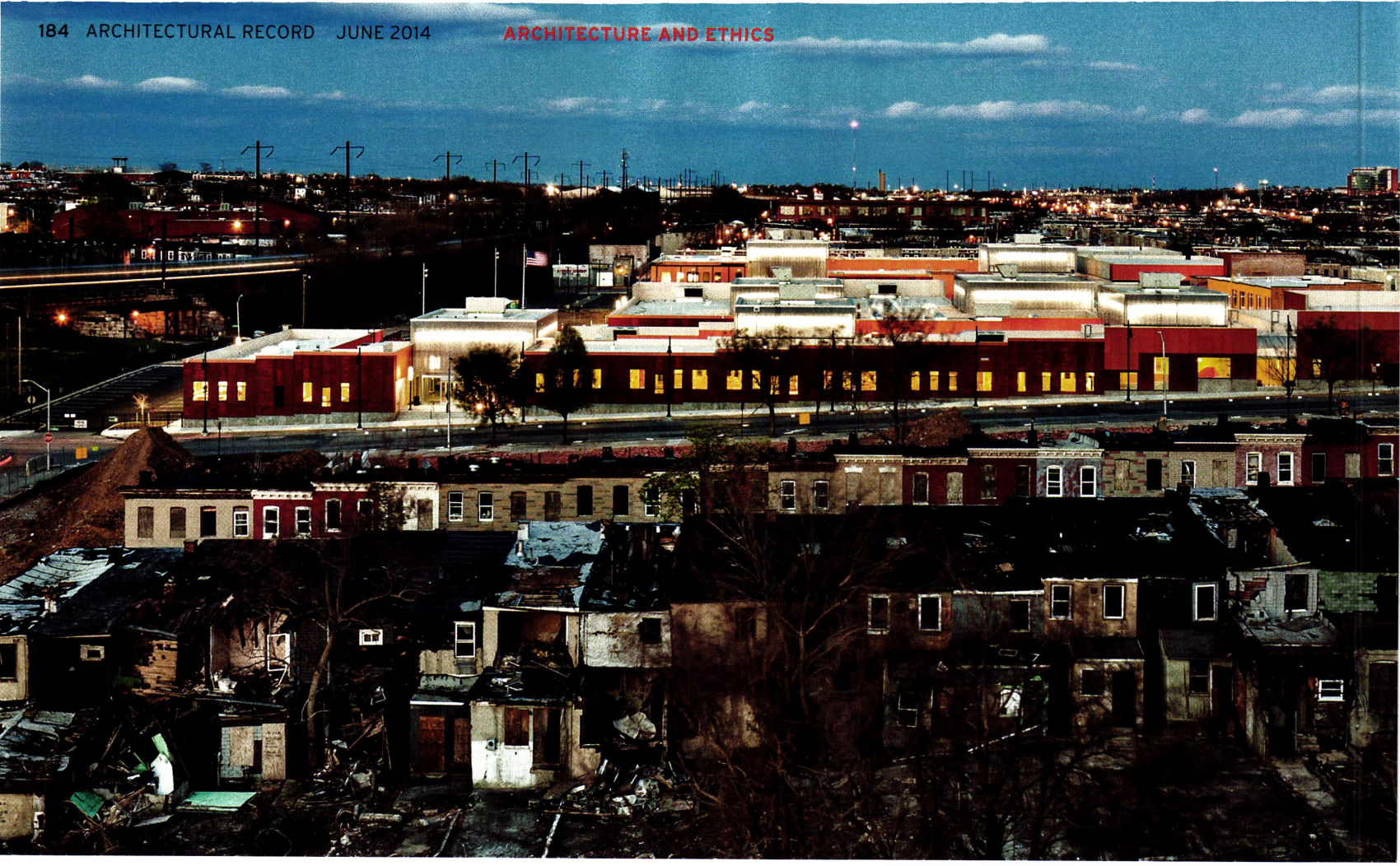
The nonprofit East Baltimore Development Inc. hopes that the new school—part of an 88-acre, $1.8 billion mixed-income residential and commercial redevelopment it is managing—will attract young families to the neighborhood, raise real estate values, and further drive development. Johns Hopkins contributed $15 million toward school construction and is offering subsidies to its employees who move to the neighborhood. "The school is an important way for Hopkins to show a different side of itself to the community," says Ronald J. Daniels, who made Henderson-Hopkins a priority when he was named university president in 2009.

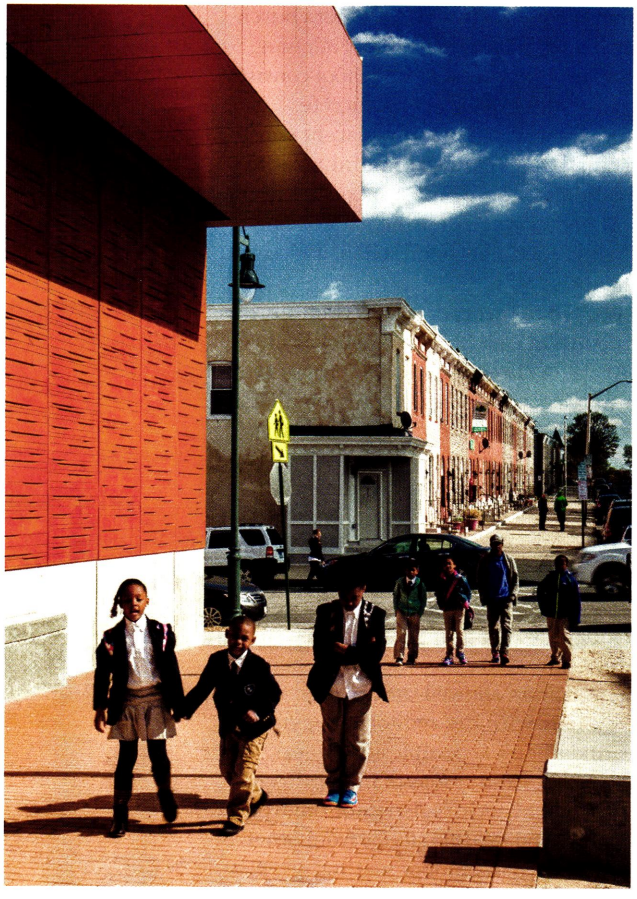
Rogers's scheme draws from the neighborhood's existing architectural fabric, characterized by two- and three-story brick and formstone row houses interspersed with beefier landmarks—the Italianate St. Wenceslaus church, dating to 1914; the recently renovated American Brewery building built in 1887; and Shimek's Bohemian Hall, a former church-organ factory that is now itself a Baptist church. Following the silhouette of the surrounding streets, the school consists of long rows of squat, copper-colored precast concrete facades that echo the formstone veneer of the adjacent houses, interrupted with tall translucent volumes containing large communal spaces. "We didn't want to land a spaceship in the middle of this neighborhood," says firm principal Robert M. Rogers. "It was about being a neighborhood school and an urban school, unabashedly."

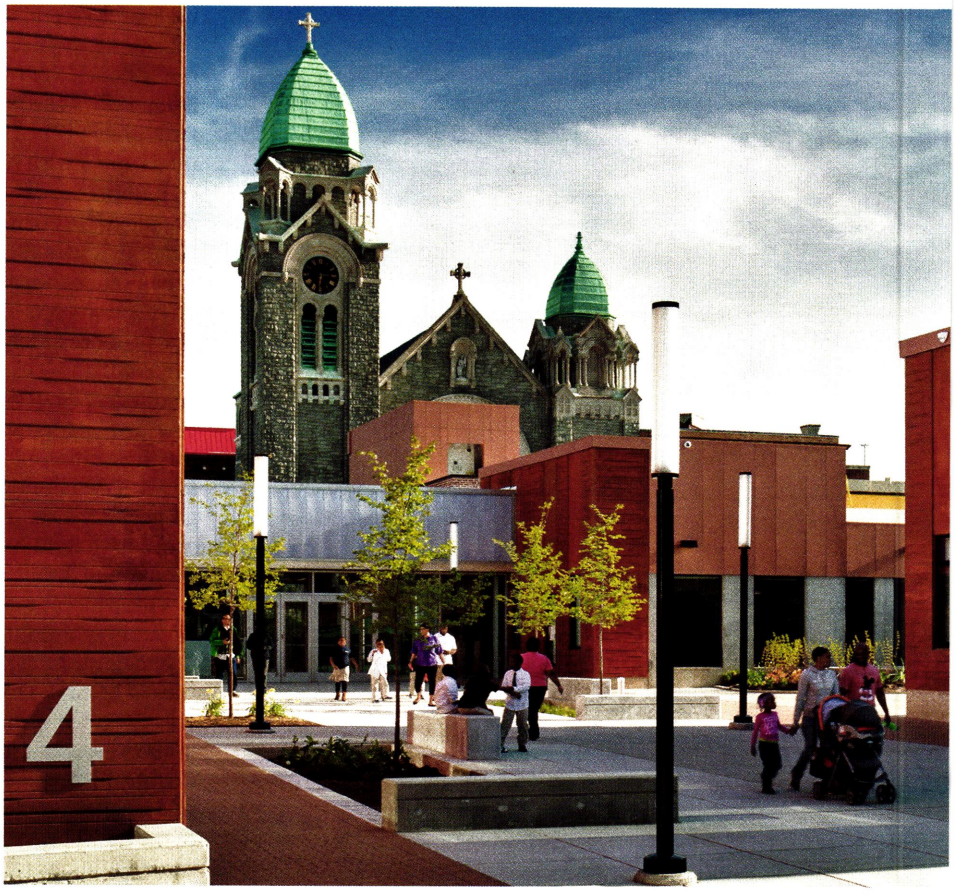
The architects also wanted to incorporate the traditions of Baltimore neighborhoods. In East Baltimore's heyday in the 1940s and '50s, the two- or three-step marble stoops that front every row house were social centers, where neighbors gossiped and hung out; the street bonhomie was central to life in Baltimore. "There were 900-square-foot houses on this lot with two families in them, so the street had to be the gathering space," says associate partner Vincent Lee, who grew up in Baltimore. "We wanted to reinforce that community idea of public space."

This concept made its way into the school. Henderson-Hopkins's community amenities are grouped along the spine of a major thoroughfare, Ashland Avenue, with the school tucked behind. This organization allowed the architects to create a gated security system, with the auditorium, gym, family-resource center, and library accessible after hours. The architects preserved the facades and stoops of nine historic row houses, listed on the state historic registry, for the front of the new library along Ashland. Marble stoops from other razed buildings were repurposed as outdoor seating.

LOCAL VOCABULARY
The 125,000-square-foot school, located two blocks from Johns Hopkins's Medical Campus, is sandwiched between Amtrak rails to the north and Ashland Avenue, one of the area's main thoroughfares, to the south.



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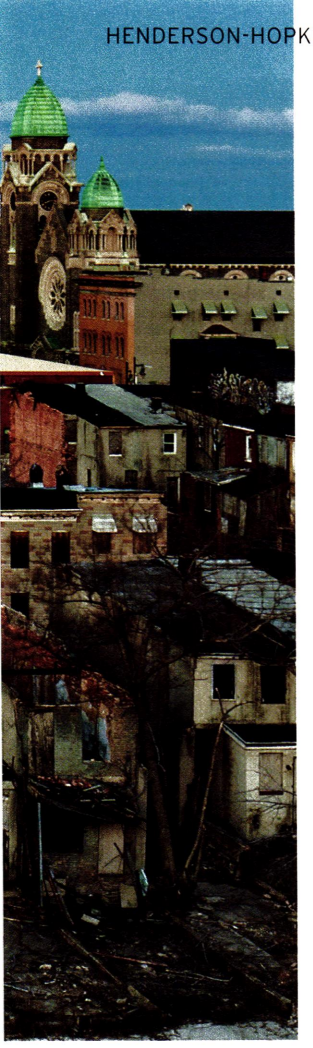
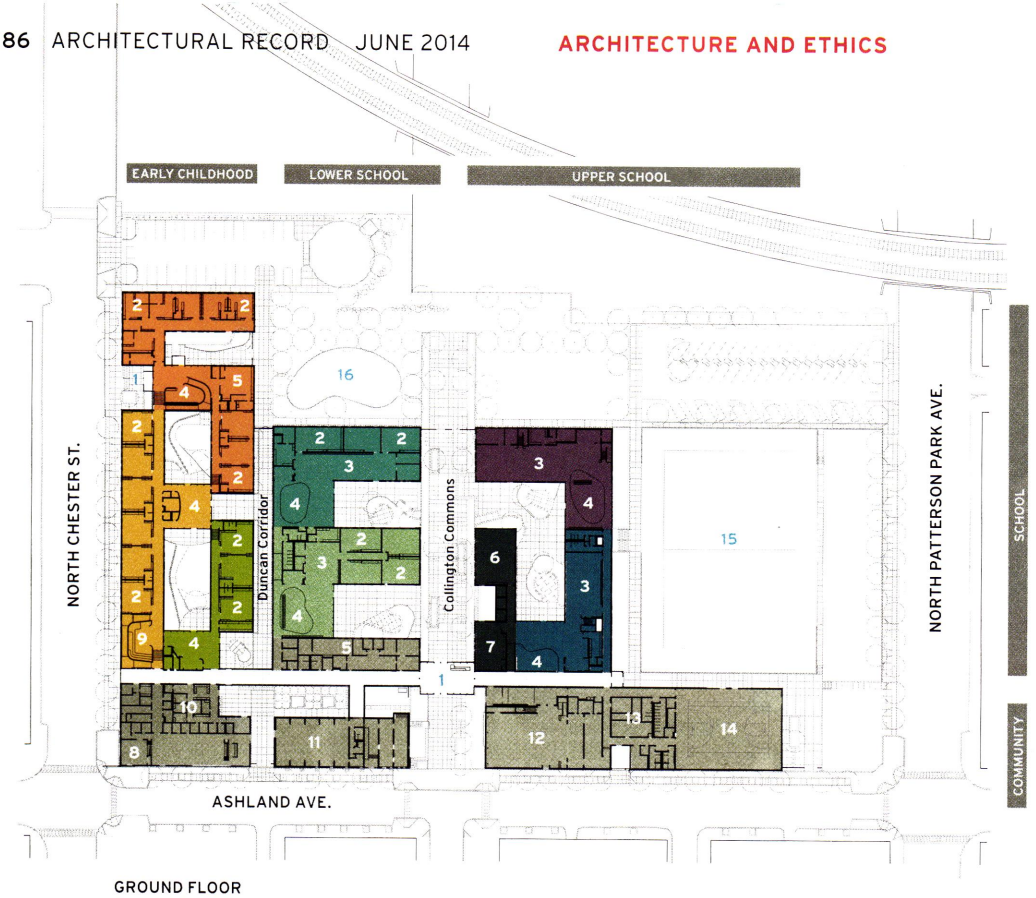
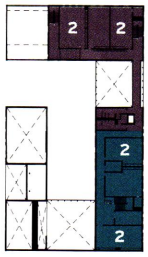


CONTEXT CLUES
Clockwise from bottom left: the school follows the contours of the neighboring townhouse rows, with views of the stately St. Wenceslaus church across the street. For natural daylight, common spaces are clad with polycarbonate panels, the same translucent material used in industrial greenhouses.





1 ENTRANCE
2 CLASSROOM
3 FLEXIBLE LEARNING
4 COMMONS
5 ADMINISTRATION
6 ART
7 MUSIC
8 FAMILY-RESOURCE CENTER
9 FAMILY-RESOURCE CENTER READING RAMP
10 STUDENT HEALTH CENTER
11 LIBRARY
12 AUDITORIUM
13 KITCHEN
14 GYMNASIUM
15 ATHLETIC FIELD
16 PLAYGROUND

CUSTOM FIT
The 7,600-square-foot gym (opposite), built at middle-school regulation size, has acoustical panels hanging from the ceiling and exposed concrete walls. In the Early Chilhood Center (left), wide hallways with windows running along both sides bring in daylight and allow for passive classroom observation.

Inside, the school has a different vibe: modern, expansive, even cool. K–8 students are grouped in five clusters or "houses," with two grades and 120 students per cluster (except kindergarten, which is by itself). Each house, containing traditional classrooms, seminar-size rooms, and flexible open learning spaces, has its own double-height (or taller) commons and an outdoor terrace. Doing away with a traditional cafeteria, each house has a servery, and kids eat in the commons. "It was a big decision to say we're not going to have a cafeteria, because cafeterias are about travel time, discipline, lining up, getting there and coming back," Rogers says, adding that it reinforced the idea that Henderson-Hopkins's design, which has only 16 traditional classrooms, needed to be radically different from a typical school.

The campus, occupied since January, is arranged in chronological order by grade, with space starting to open up and become more complex as students get older. The Early Childhood Center (ECC), which is expected to open in late summer and will accept babies as young as 6 weeks old, is inward-looking, Rogers says, designed to make kids feel secure and develop skills in spaces designed at their scale. (The windows practically reach the ground, so toddlers can see out.)

As you get farther along, there are fewer traditional classrooms, larger common spaces, and more freedom to roam the campus. Middle-schoolers have access to a roof deck looking out to the city. "Up there, you can see the neighborhood, you see the world," Rogers says. "It's the complete opposite of the insular, secure world that you started in as a 2-year-old. You get to see your own progression." ■

credits

ARCHITECT: ROGERSPARTNERS Architects+Urban Designers – Robert M. Rogers, principal in charge; Vincent Lee, design leader; Timothy Fryatt, Kip Katich, project architects

ENGINEERS: Faisant Associates (structural); Global Engineering Solutions (m/e/p, f/p); Eba Engineering (geotechnical); Phoenix Engineering (civil)

GENERAL CONTRACTOR: The Whiting-Turner Contracting Company

OWNER: East Baltimore Community School Inc.

SIZE: 125,000 square feet

CONSTRUCTION COST: $42 million

PROJECT COST: $53 million

COMPLETION DATE: December 2013

SOURCES

CURTAIN WALL: EFCO Corporation

GLAZING: Oldcastle BuildingEnvelope

FIBER-CEMENT SIDING: James Hardie Commercial

HARDWARE: Assa Abloy

Village Health Works Staff Housing | Kigutu, Burundi | Louise Braverman, Architect

CROSS-BORDER COLLABORATION

In a remote village in southern Burundi, an American architect joins forces with the local community to build a simple and sensitive dormitory for health-care staff.

BY JAMES S. RUSSELL

PHOTOGRAPHY BY IWAN BAAN

COMMUNITY SOLUTION Tucked into the mountainside and partially below grade, the 6,000-square-foot, 18-bed Village Health Works Staff Housing building in rural Kigutu, Burundi, is completely off the grid, relying on extended roof overhangs and natural ventilation for temperature control. Most of the building materials—including the bricks—were fabricated locally.

In a construction photo, dozens of men in bright yellow hard hats dig foundations in coffee-brown soil. Humpbacked mountain ridges disappear in the equatorial mist. In the remote village of Kigutu, in the densely populated but rural east central-African nation of Burundi, you see no backhoes, pickup trucks, or power tools. Just picks, shovels, and wheelbarrows. That suggests the many challenges New York architect Louise Braverman had to understand in designing a deceptively simple 6,000-square-foot dormitory for health-care workers in one of the most impoverished places on earth.

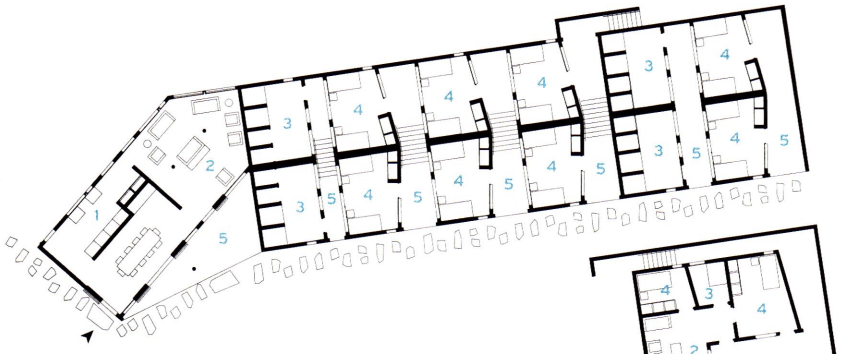
Kigutu—near Lake Tanganyika, about two and a half hours by car south of the capital, Bujumbura—found a heroic benefactor in Deogratias "Deo" Niyizonkiza. He grew up in the village but fled during a genocidal period in 1994, when Burundi was torn apart by warring Hutu and Tutsi clans, like neighbor Rwanda. He returned in 2005 an American citizen, a graduate of Columbia University and Harvard, and an expert in public health. (His remarkable story, from narrowly escaping massacre as a 24-year-old third-year medical student at a rural hospital in northern Burundi, to asylum and homelessness in New York, where a couple eventually took him in, is the subject of Tracy Kidder's 2009 book, *Strength in What Remains*.) He established the nonprofit Village Health Works in 2006 to bring care to an area that had none, where children and adults regularly died of preventable and treatable diseases.

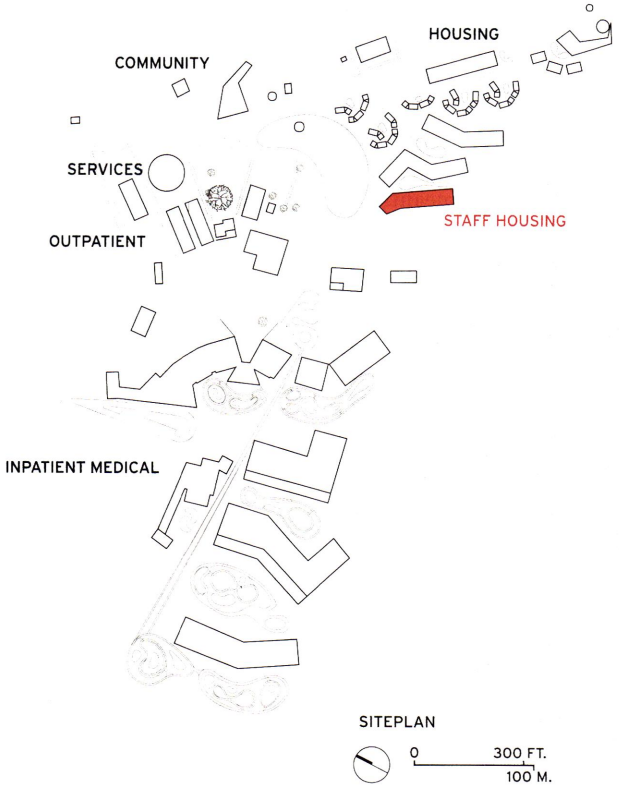
The villagers built a health clinic and a four-mile access road by hand before Braverman got the strangest cold call of her career from then-director of the nonprofit Sarah Broom. "Broom knew about my Chelsea Court housing in New York for homeless and low-income tenants," Braverman says. "After we discussed designing a women's health pavilion for awhile, she said, 'I'm leaving for Burundi in eight days. Can you come?'"

"The dignified environment at Chelsea Court was really important to me and to Deo," Broom says. "The premise is that health is beyond the medical and the physiological. It has to do with the environment: what you see and how you feel."

Enchanted by the majesty of such a tragic country, Braverman developed a master plan for the whole site that located clinical and housing facilities on terraces that open to long verdant vistas as they step up toward the top of the village's mountain, "where it's coolest," says Braverman. In the end, the women's pavilion—essentially a small hospital—had to be put off until more money could be raised, a process that continues. In the meantime, Village Health Works went ahead with the 18-bed housing to give heavily burdened medical staff a place of retreat.

To tame the equatorial heat without air-conditioning, Braverman set the structure into the hillside to harvest a cooling effect from the earth. Breezeways between pairs of dormitory rooms encourage natural ventilation, while three exposures, and low windows matched with high windows, helped induce a stack





effect to draw more air through the bedrooms. Overhangs further cut heat gain; they also form porches where, Braverman says, "all the life happens."

As simple as the dormitory looks, Braverman calls it "the ultimate design problem: How do you do the most with the least?" The project, located completely off the energy grid in a community with no modern machinery, was further constricted by policies requiring all imports to come through Dubai, making foreign materials especially costly and placing extra emphasis on local materials and labor. "We needed to create transferable job skills," she says. "It's a seismic zone that requires 21st-century expertise."

Instead of conventional construction documents, she supplied three-dimensional diagrams drawn from computer models showing how the building was to be assembled. Working with a Burundian architect, who had designed the previous structures, and a local engineer, she contrived a concrete framing system in spans small enough to be erected by hand, but seismically upgraded by Liam O'Hanlon Engineering. Through almost daily Skype calls, Braverman and the villagers worked out complications she had never imagined. Where do you find a concrete-testing firm? How do you figure out what's wrong when the samples fail?

Bricks made locally wrap the concrete framing. Because the country has largely been denuded of forests, the corrugated-metal roof is supported by metal tubes. Windows had to be imported, but the large steel-framed Eucalyptus sliding doors that open to the shared dining, cooking, and living areas were made locally. An existing PV array nearby supplies electricity only for lighting. Solar thermal tube arrays heat water.

Was it wise to hire an architect so unfamiliar with Burundi? "The people who built our earlier buildings knew some things Louise didn't know," says Broom. "But she knows about materials and how to build a foundation that won't fall apart. There was a back-and-forth that helped people here learn building techniques they can use in their own lives."

Working for a reduced fee, Braverman says she thought of herself less as a designer and more "as a resource to collaborate with local people." Her goal, she says, was to create "architecture of conscience." ■

James S. Russell, FAIA, is the author of The Agile City: Building Well-being and Wealth in an Era of Climate Change. *He blogs at www.jamessrussell.net.*

credits

ARCHITECT: Louise Braverman, Architect – Louise Braverman, design principal; John Gillham, Jing Liu, project team

ENGINEERS: Liam O'Hanlon Engineering (structural); Plus Group Consulting (plumbing)

CONSULTANTS: Gam Kagan (global procurement); Curtis Bertrand, Roy Greenwald, Matt Krupanski, Astere Niyonkuru (construction management)

CLIENT: Village Health Works

SIZE: 6,000 square feet

COMPLETION DATE: October 2013

SOURCES

METAL DOORS: Klil Industries

METAL-FRAME WINDOWS: Klil Industries

FURNITURE: Ikea

PRACTICAL DETAILS Open-air corridors are painted in bold colors (left), while shared bedrooms are naturally ventilated, with windows on three sides (above). On the second level, a large porch (below), covered by a corrugated-metal roof, has sweeping views of the mountains beyond.

474 Natoma | San Francisco | Leddy Maytum Stacy Architects

BUCKING THE TREND

An affordable-housing complex on a long-vacant site preserves part of San Francisco's rapidly gentrifying South of Market neighborhood.

BY LYDIA LEE

PHOTOGRAPHY BY BRUCE DAMONTE

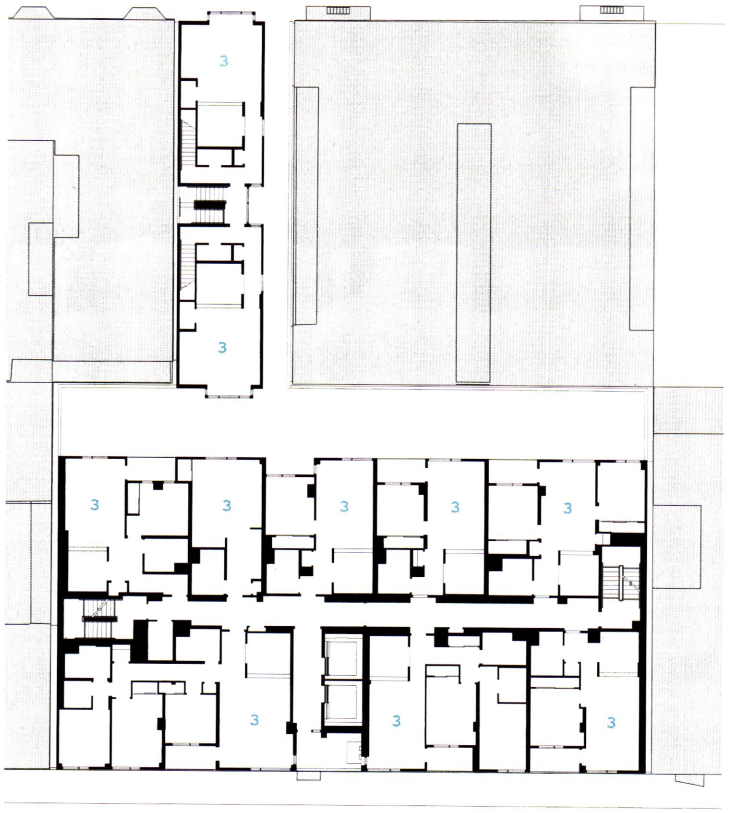
The Natoma Family Apartments, a just-completed affordable-housing complex, is in a particularly rough part of San Francisco's rapidly evolving South of Market neighborhood. It sits right next to Sixth Street, the city's skid row, with its dilapidated single resident occupancy hotels (SROs). During construction, residents of an adjacent SRO pelted workers with hypodermic needles and other trash. Soon after the project was completed, a photographer documenting the exterior was punched in the face. But the new apartment building, designed by local firm Leddy Maytum Stacy Architects (LMS), offers a vision of another world. Its colorful street presence, tranquil outdoor areas, and warm common spaces support a community on a lot that had been empty since the 1989 Loma Prieta earthquake.

LMS won the project in 2006, when the city selected the firm and its partner, the nonprofit developer Bridge Housing, to create affordable family apartments on the site. For the architects, the commission offered a chance to tackle one of the last South of Market properties earmarked for redevelopment and, at the same time, satisfy a critical need. "We are concerned about gentrification of the Bay Area, and we enjoy the challenge of creating high-quality architecture within limited means," says LMS principal Richard Stacy. The firm has completed a total of six affordable housing projects to date in San Francisco and across the bay, in Oakland.

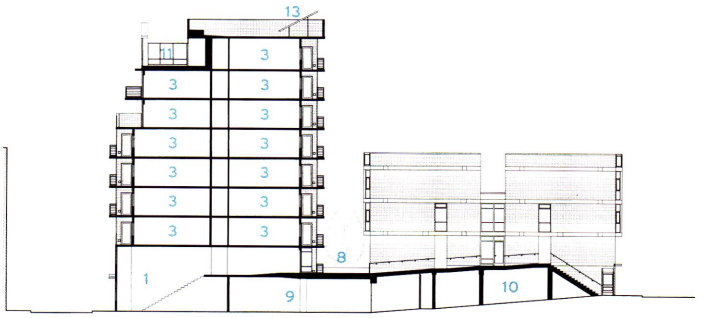
The architects developed a high-density scheme that fit 60 units of different sizes on the 12,000-square-foot property. They accomplished this despite the site's odd T-shape, with a long rectangle to the south, along Natoma Street, and a little panhandle of a lot jutting north, toward Minna Street.

To make the most of the strange configuration, LMS

PUSH AND PULL
An exposed concrete structure and staggered balconies, along with taupe- and yellow-painted fiber-cement board cladding, emphasize the recesses and projections of the building's main facade (above and opposite), creating a lively rhythm.



THIRD FLOOR



SECTION A - A

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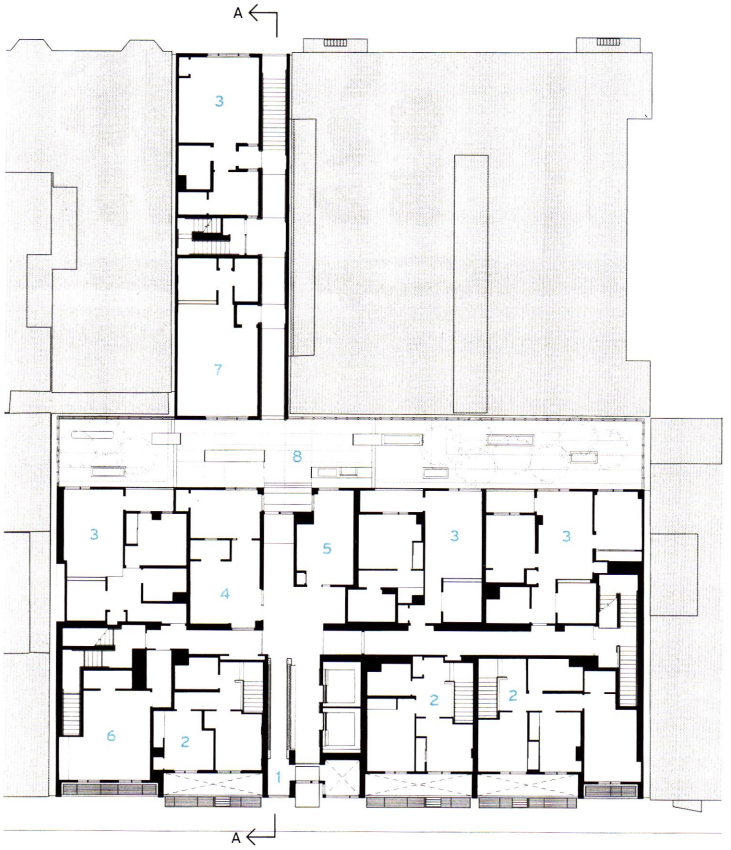
1 LOBBY
2 TOWNHOUSE
3 APARTMENT
4 OFFICE
5 LAUNDRY
6 MAINTENANCE
7 COMMUNITY ROOM
8 COURTYARD
9 PARKING
10 BIKE STORAGE
11 TERRACE
12 COMMUNITY GARDEN
13 SOLAR PANELS

TIGHT SITE
The architects made the most of what they refers to as the "panhandle," an especially skinny part of the site with narrow street frontage (opposite). On top of the entrance to the garage, they have built a community room and three apartments, including two duplexes.



SECOND FLOOR

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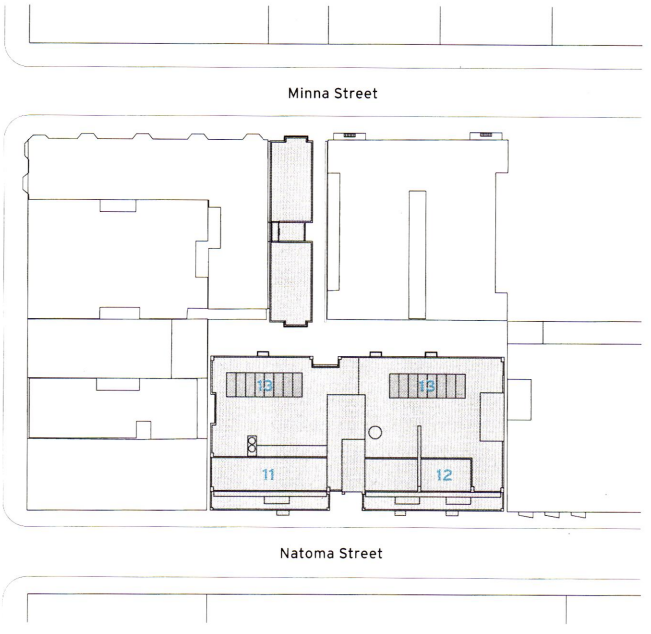
5 M.



SITE/ROOF PLAN

0 32 FT.
10 M.

CLEARANCE
8' 2"

created two separate buildings above an at-grade parking podium. The podium covers the whole site but is hidden behind ground-floor units of the nine-story structure on the Natoma side. On the Minna side, the garage ramp occupies the ground level of the narrower, four-story building. The primary building comprises 57 units along double-loaded corridors, while the smaller one has a community room and three additional units. A courtyard between the two structures provides a sheltered outdoor space. "We worked very hard to get everything to fit—it was like a Swiss watch," says principal Mimi Sullivan of Saida + Sullivan Design Partners, the project's executive architect.

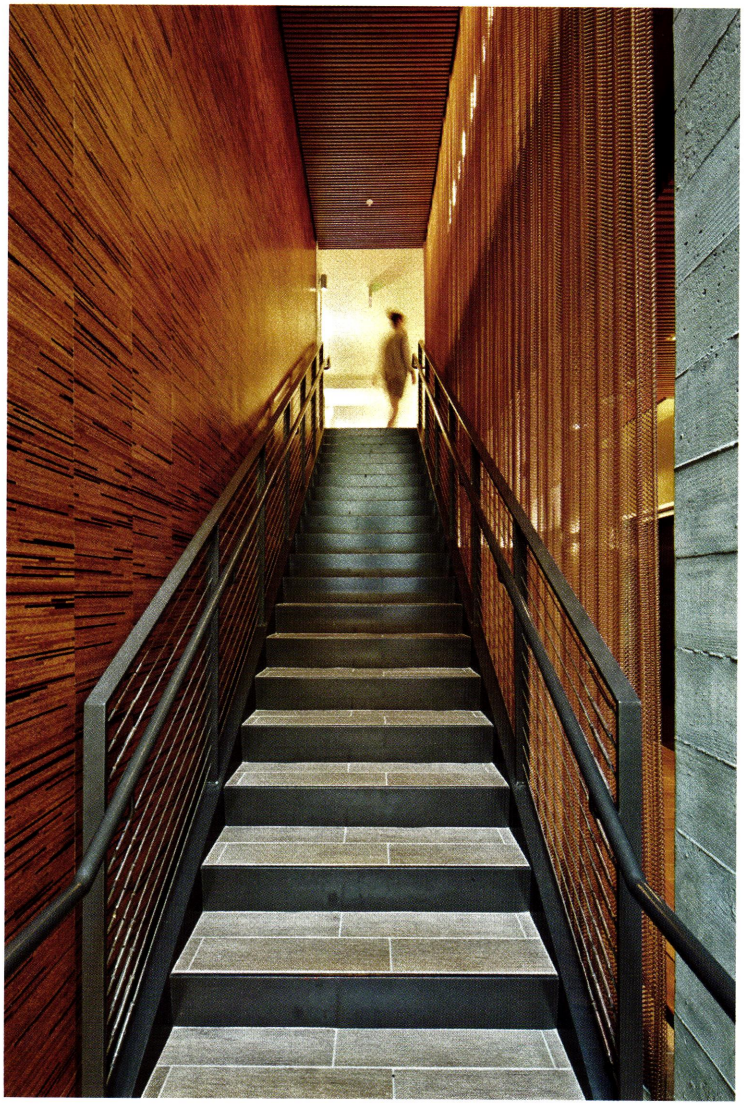
The design features an exposed concrete frame, which LMS had used to great effect at the Plaza Apartments—an earlier, supportive-housing project designed with Paulett Taggart Architects—located just around the corner. In both projects, the expressed structure showcases the buildings as a series of individual units. "The idea was to take a necessary element and make it a part of the visual architecture," says Stacy. "It is a cost-effective way to create contrast with the other finishes."

The result is a main elevation with a geometric diversity that counteracts the typical utilitarian appearance of multifamily housing. To avoid having bedrooms at the street level, the ground floor is occupied by a row of two-story townhouses, which are recessed and have screened-in courtyards. Above, staggered cantilevered balconies create a lively rhythm. To emphasize this effect, the fiberboard cladding flush with the concrete frame is painted a neutral taupe, while the recesses and projections are painted bright yellow.

The apartments are necessarily compact and efficient but still manage to feel open and inviting, in part because of the balconies and generously sized windows. Finishes, such as engineered quartz countertops, dark-stained poplar cabinets, and nylon cut-pile carpeting, were chosen with visual appeal, comfort, and durability in mind.

The rents for these units range from $711 for a studio to $1,569 for a three-bedroom. To qualify, tenants must make between 40 and 60 percent of the area's median income, which works out to about $44,000 to $66,000 for a family of four. Not surprisingly, given the heated nature of San Francisco's real-estate market, where the median monthly rent for a studio is $2,200, demand was extremely high: the

TACTILE EFFECT
Within the lobby (both photos below), cork-covered walls, a teak-slatted ceiling, and a woven-aluminum-coil curtain, contrast with the board-formed concrete structure and endow the double-height space with visual warmth.



developer received 2,800 applications for the 60 apartments.

But the building's common spaces belie this low-rent status. One example is the double-height lobby, accessed from Natoma Street, and its rich textures: there are columns of board-formed concrete, cork-tiled walls, an elegant curtain of woven aluminum coil along the stairwell, and a slatted ceiling and bench of warm-hued teak. A pocket-sized waiting room to the right of the entrance is a gracious gesture of hospitality. From the bottom of the stair, which leads to the central courtyard and the smaller building, there is a view corridor through the site to Minna Street, helping to visually link the elements together.

It is especially difficult to tell that this not a market-rate apartment complex on the building's uppermost level. Here there is a glass-enclosed terrace, a community garden, and what Sullivan calls "the nicest laundry room in the city." These spaces provide a panorama over the southern half of San Francisco—giving residents a way to enjoy the big picture, gracefully framed. ■

Lydia Lee is a San Francisco–based journalist who writes about architecture, design, and urban development.

MARKET-RATE AMENITIES Shared rooftop spaces, such as a glass-enclosed community terrace (left), give all residents access to spectacular views over the roofs of nearby buildings. Within the individual apartments (below), generous windows and balconies create an open and airy feel.

credits

ARCHITECT: Leddy Maytum Stacy Architects – Richard Stacy, principal in charge; Vanna Whitney, project architect; Mattison Ly, Elizabeth Surya, Sannihita Takkallapalli, project team

EXECUTIVE ARCHITECT: Saida + Sullivan Design Partners – Mimi Sullivan, principal in charge; Koji Saida, project architect; Chris Hunter, Scott Moon, Tsung-lin Chen, Keiko Ito, project team

ENGINEERS: KPFF Consulting Engineers (structural); Luk & Associates (civil); Bay City Mechanical; Decker Electric; Egan Plumbing

CONSULTANTS: Cliff Lowe Associates (landscape); Architectural Lighting Design; Charles M. Salter Associates (acoustics)

GENERAL CONTRACTOR: Nibbi Brothers

CLIENT: Bridge Housing

SIZE: 73,000 square feet

CONSTRUCTION COST: $22.4 milion

COMPLETION DATE: March 2014

SOURCES

FIBER-CEMENT SIDING: James Hardie

METAL SIDING: Firestone Metal Products

WINDOWS: Oldcastle BuildingEnvelope, Winco Window

CARPET: Shaw

Northwest Arkansas Free Health Center | Fayetteville, Arkansas | Marlon Blackwell Architect

CURE FOR THE COMMON CLINIC

A free regional health center embodies wellness in its refined simplicity.

BY MICHAEL COCKRAM

PHOTOGRAPHY BY TIMOTHY HURSLEY

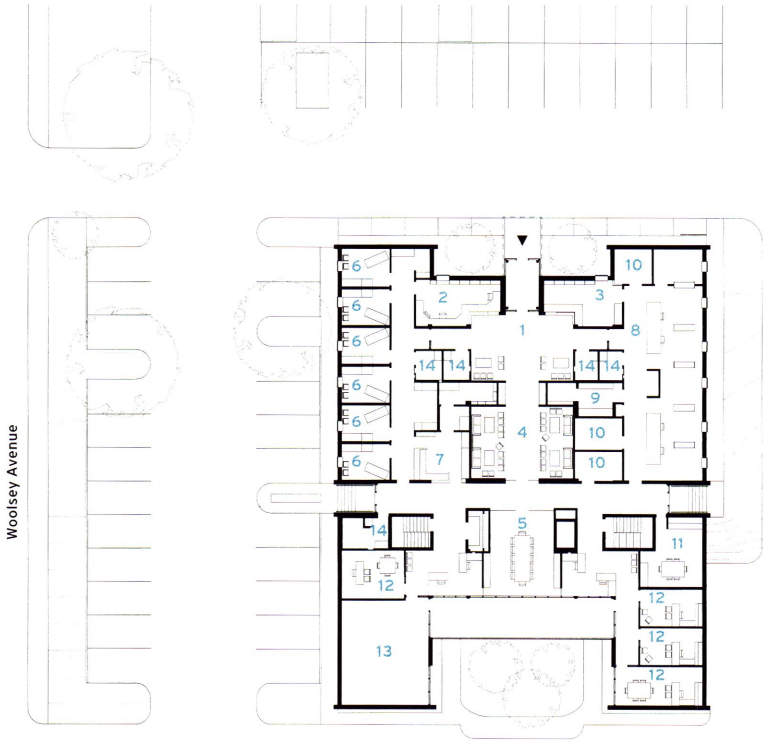
SIMPLE PLAN
The intimacy and warm color of four red oak–clad waiting areas contrasts with the bright, white, daylit circulation space that bisects the building (left). The two pods that flank the entry (above) open to the reception desk on one side and the pharmacy on the other.

Marlon Blackwell has a gift for seeing potential in the commonplace. During a tour of his latest pro bono project, Fayetteville's new Northwest Arkansas Free Medical Center, the architect veered off to a window and pointed to the eccentric form of a derelict incinerator building in an adjacent lot. "Look at that! If you leave the roof and rework the other side . . ." His voice picked up pace as he mentally renovated the structure. Blackwell's brief musing illustrates precisely the approach that his firm took in designing the clinic: bring new life and clarity to an existing but mundane building. "Our approach to adaptive reuse or renovation is to look at its DNA and extend that DNA into how the building evolves," says the architect.

Since the mid-1980s the medical center had been providing care for the region's underserved population out of an aging government building in downtown Fayetteville. Over the years, the space had become cramped and run-down. At the end of its lease agreement in 2013, the nonprofit decided to relocate to a spartan 10,000-square-foot split-face concrete-block building. The facility, part of a larger 20-acre medical campus, previously housed an exercise and physical-rehabilitation center for the elderly.

In the new building, the client sought to double the number of medical exam rooms and the number of chairs in its dental clinic, in addition to having a pharmacy, community meeting room, and administrative areas. Marlon Blackwell Architect tries to provide one pro bono schematic design every year. The timing was just right when the medical center approached the firm about the project. "Architecture can provide a sense of dignity to an experience," notes Blackwell. With this in mind, the architects chose to focus on the public spaces. One of their first challenges was to transform the building's dark interior so as to convey a sense of vibrancy and vitality. "I kept imagining a tunnel of light down the central axis of the building, so that as soon as you enter you feel a sense of wellness," says Meryati Johari Blackwell, a principal at Marlon Blackwell Architect (and Marlon's wife).

The scheme emphasizes the generous central corridor that bisects the symmetrical H-shape floor plan. On both sides of this axis, the architects placed two



GROUND FLOOR

1 LOBBY
2 RECEPTION
3 PHARMACY
4 WAITING ROOM
5 CONFERENCE ROOM
6 EXAMINATION ROOM
7 NURSE'S STATION
8 DENTAL SUITE
9 DENTAL LAB
10 DOCTOR'S OFFICE
11 BREAK ROOM
12 ADMINISTRATION OFFICE
13 CLASSROOM
14 RESTROOM

credits

ARCHITECT: Marlon Blackwell Architect – Marlon Blackwell, principal in charge; Meryati Johari Blackwell, project director; William Burks, project manager

ENGINEERS: Myers Beatty Engineering (structural); HP Engineering (m/e/p)

GENERAL CONTRACTOR: SSI

CLIENT: Monika Fischer-Massie, MBA, Ph.D., executive director Northwest Arkansas Free Health Center

OWNER: Northwest Arkansas Free Health Center

SIZE: 9,700 square feet

PROJECT COST: $630,000

COMPLETION DATE: January 2013

SOURCES

STEEL CANOPY: Fig Tree

ENTRANCES: Tubelite

GLAZING: Viracon

CUSTOM WOODWORK: Kitchen Distributors

ACOUSTIC CEILING TILE: Armstrong

RESILIENT FLOORING: Centiva Flooring

CARPET: Tandus Flooring

LIGHTING: Cooper Lighting

red oak–lined waiting rooms or "pods" that resemble open wooden boxes turned on their sides. Clerestory windows, once obscured by HVAC ducts, let in generous daylight. The focal point of this passageway is a frameless glass meeting room at the south end of the building.

This bifurcated plan neatly accommodates the two primary program elements, with medical examination rooms on one side of the central corridor and a dental clinic on the other. The wall and ceiling surfaces are white except in the wood waiting areas, which creates a balance between the intimate pods and the bright, tall circulation space.

The architects made few alterations to the existing facade, though they inserted windows along the east and west sides to bring daylight into the treatment areas. The only other addition to the exterior is a cantilevered canopy and glass vestibule at the entrance.

As with any project for a nonprofit dependent on grants and donors, keeping costs low was key. The team hunted down inexpensive finishes that fit their desired material palette. Many of them, such as plastic laminates, came from manufacturers' overruns. For the waiting areas, the contractor located a deal on locally sourced red oak that was prefinished, which saved the labor costs of sanding and coating the material on walls and ceilings.

"The clinic is about half the cost per square foot of other medical facilities we've done in the area," says Ryan Bennet, vice president of SSI, the contractor for the project. The pro bono work of the architects and SSI helped keep costs at around $70 per square foot.

The new health-care center is a study in making use of simple geometries and modest materials to create beautiful, functional architecture. "Formal logic isn't complete without material logic," Blackwell notes. And the facility seems to have a positive effect on its users: the clients treat the place with more respect than the dilapidated former clinic, says executive director Monika Fischer-Massie.

Having a strong set of design principles, Blackwell adds, allows the architect to shape rather than be controlled by circumstance. These principles, as applied at the Northwest Arkansas Free Medical Center, serve as evidence that much can be made from humble beginnings. ■

Michael Cockram is a freelance writer and the director of Bowerbird Design in Fayetteville, Arkansas.

MAKING AN ENTRANCE
The tattered entry awning (opposite) is representative of the run-down condition of the original building. The architects replaced it with a glass vestibule and I-beam-wrapped cover that cantilevers out to protect the clients as they arrive at the drop-off area (right). Once through the entry doors, the central circulation axis focuses on the transparent community meeting room and the south-facing windows beyond (bottom).

PHOTOGRAPHY: © WILLIAM BURKS (OPPOSITE)

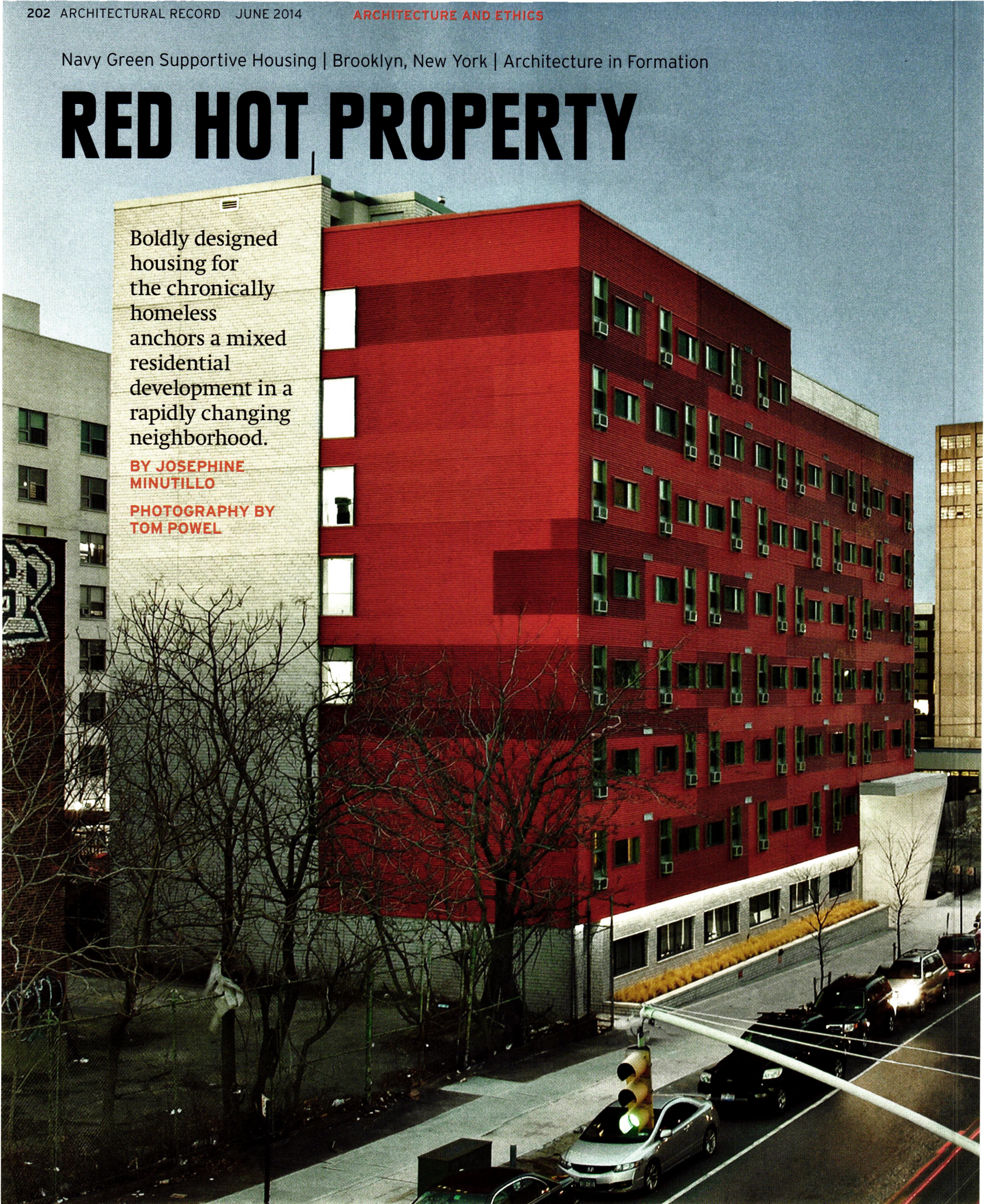
Navy Green Supportive Housing | Brooklyn, New York | Architecture in Formation

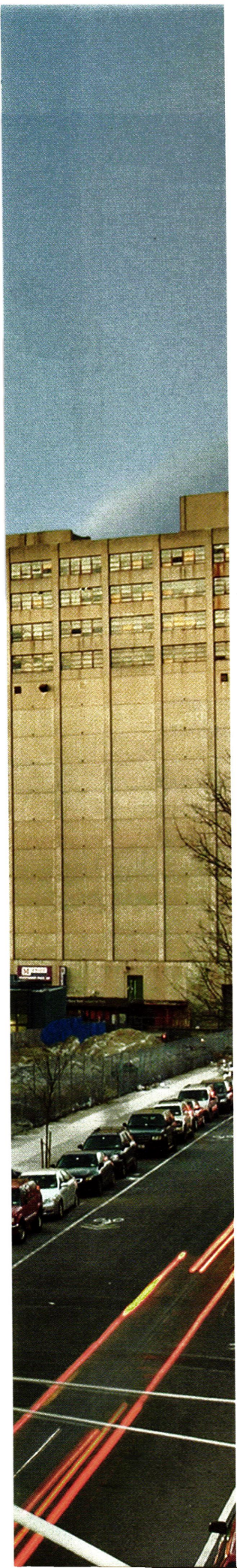
RED HOT PROPERTY

Boldly designed housing for the chronically homeless anchors a mixed residential development in a rapidly changing neighborhood.

BY JOSEPHINE MINUTILLO

PHOTOGRAPHY BY TOM POWEL



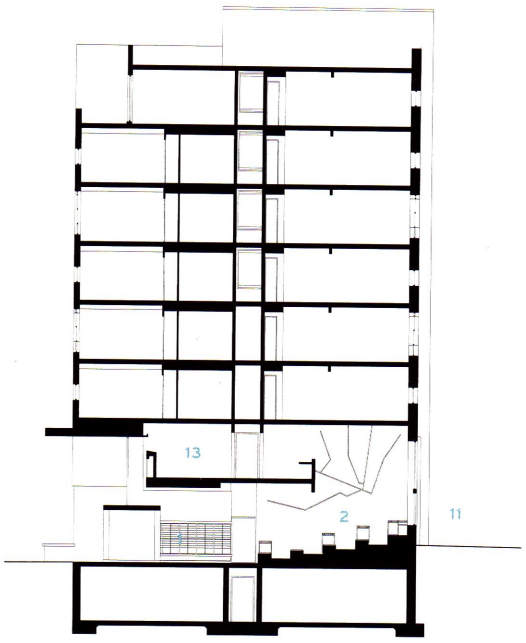


It was the scene of incredible industry and a symbol of American might: just across the East River from lower Manhattan, the Brooklyn Navy Yard turned out some of the world's most celebrated warships throughout its 150-year-history, employing 70,000 workers at the peak of its production during World War II. When the 300-acre facility closed in 1966, dozens of its buildings fell into disrepair, as did the area surrounding it. After decades of neglect, that part of Brooklyn, like much of the rest of the borough, has transformed dramatically. First it became home to artists who located their studios within the vast warehouse spaces left behind; now its skyrocketing rents are pricing the middle class out of the neighborhood.

Navy Green is a unique residential development occupying almost an entire block and rising on the site of the former Brig, a naval prison built immediately outside the Navy Yard's confines in the early 1940s and demolished in 2006. The project's mix of low- and moderate-income rental and ownership units and market-rate co-ops, dispersed across large, multi-unit buildings and small townhouses, provides affordable housing in a newly desirable stretch of land sandwiched between the elevated Brooklyn-Queens Expressway and the industrial buildings currently being adapted in the Navy Yard.

The beacon of Navy Green is a bold red eight-story building whose cheerful disposition belies its serious mission. Sheathed in a colorful patchwork of corru-

HEAVY METAL
The vivid corrugated facade is a beacon on the block (opposite), located just beside the elevated Brooklyn-Queens Expressway, and reflects the red-brick houses across the street. A double-height lobby becomes a nexus of communal activity (above).



SECTION A - A

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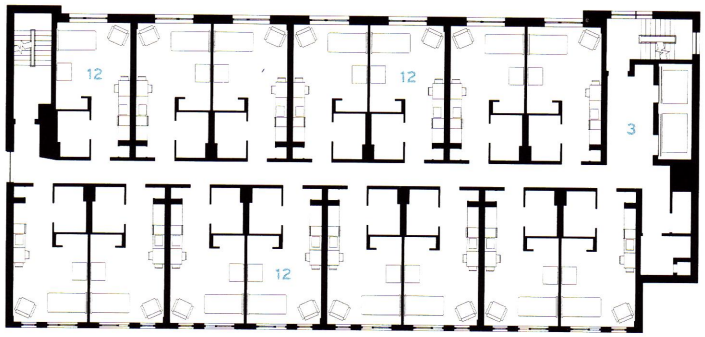
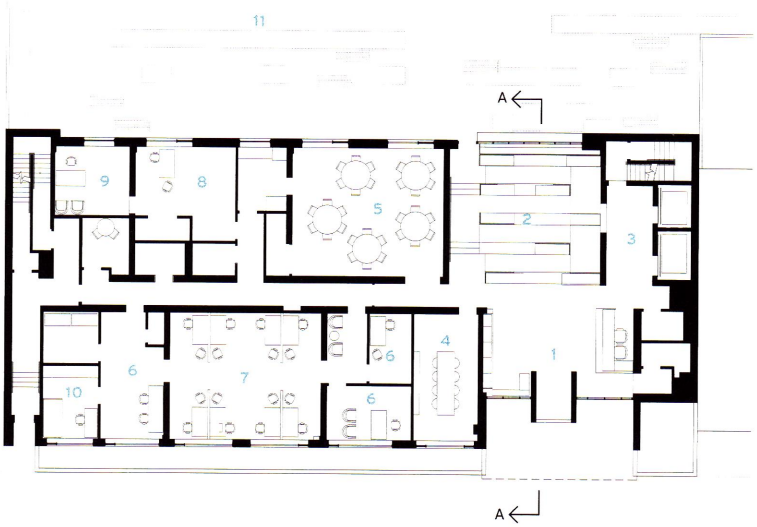


TYPICAL RESIDENTIAL LEVEL

1 LOBBY
2 "RAMPHITHEATER"
3 STAIR/ELEVATOR LOBBY
4 CONFERENCE ROOM
5 COMMUNITY ROOM
6 SOCIAL SERVICES
7 CASEWORKERS' OFFICE
8 MANAGEMENT OFFICE
9 FACILITIES MANAGER
10 NURSE
11 SHARED COURTYARD
12 STUDIO APARTMENT
13 RESIDENTS' LOUNGE



GROUND FLOOR

0 20 FT.
5 M.

credits

ARCHITECT: Architecture in Formation

ARCHITECT OF RECORD: Curtis + Ginsberg Architects

ENGINEERS: Gace Consulting Engineers (structural); Rodkin Cardinale Consulting Engineers (m/e/p)

CONSULTANTS: Todd Rader + Amy Crews (landscape architect); Filament33 (lighting); Steven Winters Associates (energy, environmental)

GENERAL CONTRACTOR: Mega Contracting

CLIENT: Pratt Area Community Council

SIZE: 56,000 square feet

CONSTRUCTION COST: $16.8 million

COMPLETION DATE: May 2012

SOURCES

METAL PANELS: Atas International

ROOFING: American Hydrotech

GLASS: Oldcastle BuildingEnvelope

RESILIENT FLOORING: Marmoleum

FURNISHINGS: Ikea, Blu Dot, Knoll, Emeco

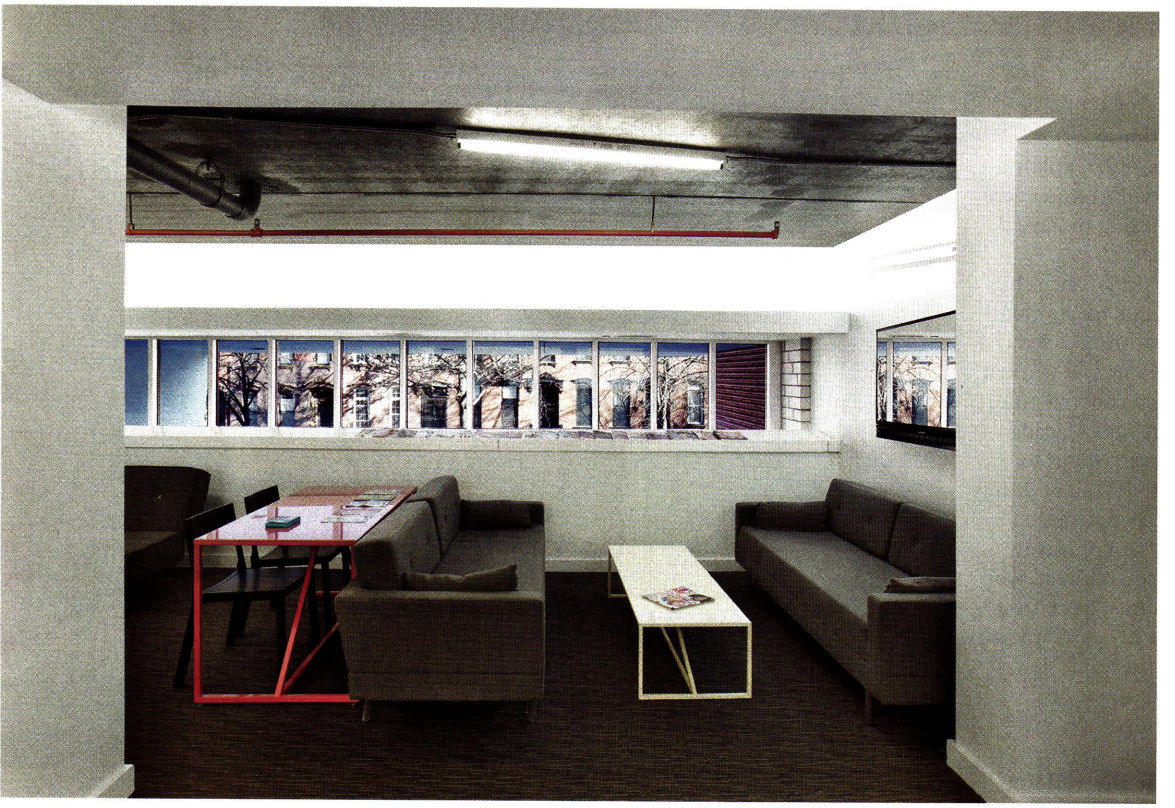
INTERIOR AMBIENT LIGHTING: Legion Lighting

gated metal panels, it is a supportive-housing facility for chronically homeless people with mental illness and substance dependence. "Life's too short for subtlety," explains Matthew Bremer, principal of New York–based Architecture in Formation. "We designed a billboard building to have a presence from the highway and on the street."

This is the largest project Bremer and his small firm has done to date. FXFowle Architects, Navy Green's master planner and designer of some of its buildings, recommended the young Texan, who oversaw design development and worked with architect-of-record Curtis + Ginsberg on construction documents. Bremer's choice of metal for the main facade reflects the gritty nature of the area, but it also helps to inexpensively achieve his design statement: for the building to stand proud. The simple block-and-plank construction allowed the structure to go up quickly and economically, "like a cheap airport hotel," according to the architect, who says the building was put together with "clumsy precision." Owned and operated by the nonprofit Pratt Area Community Council (PACC) and built in part with funding from New York City under the supervision of its Department of Housing Preservation and Development, budget was obviously a concern.

Despite that, Bremer found ways to infuse the building, affectionately known as Big Red, with thoughtful design to help provide its long-term residents with a home, not just a shelter. Each of the 97 single-occupancy studios, many of which were awarded through a onetime lottery, is furnished with simple contemporary pieces. Beds, dressers, and lighting fixtures, as well as conference room furniture on the

STARK STATEMENT The rear facade is visually quieter than the front, though it also features a playful window configuration (opposite). The lobby "ramphitheater" incorporates an accessible ramp to mitigate the 42-inch grade change from the entrance to the garden (top). Studios include spare, contemporary furnishings (above).



COMMON GROUND The first-floor community room is a cheerful space for classes and tenant meetings, featuring a mural by local artist Kenneth Murphy (top). The residents' lounge, located on a bridge over the double-height lobby, is a light-filled space in which to read, play cards, or watch television (above).

first floor, were acquired well below retail price with the help of the manufacturers.

The 285-square-foot identical studios line double-loaded corridors, painted a different sunny hue on each floor and punctuated with bold graphics. On the ground floor, a gracious double-height lobby provides a daylight-filled meeting area. To mitigate a 42-inch grade change from the lobby entrance to the courtyard behind the building, Bremer designed what he calls the "ramphitheater." The innovative gathering spot incorporates bench seating around a snaking concrete ADA-compliant ramp. Creeping up the wall and ceiling around this feature is a vine of T8 fluorescent tubes that illuminate it at night. A bridge spanning the double-height space contains a small informal lounge for residents, which Bremer fought to include.

Past the lobby are offices for caseworkers from the Department of Social Services, with whom the residents must regularly check in. A community room accommodates classes and more formal tenant meetings. The controlled environment restricts guests and also limits units to single residents without children, but the building's position within the larger Navy Green development offers occupants access to the shared central courtyard. "That is uncommon for an American paradigm," explains Drew Kiriazides, PACC chief real estate development officer. Landscape architects Todd Rader and Amy Crews designed this coveted amenity as an open tree-lined plaza.

"This was not a top-down development," Kiriazides points out. "It was planned in full by the community, which came together years ago to decide on best uses for this location." As the Brooklyn Navy Yard draws upon its illustrious past to restore and rebuild, collaborative, mixed-use, nonexclusionary projects like Navy Green—and, in particular, design-conscious pursuits like Big Red—point to the neighborhood's promising future. ■

Josephine Minutillo writes about design, architecture, art, and real estate for numerous online and print publications.

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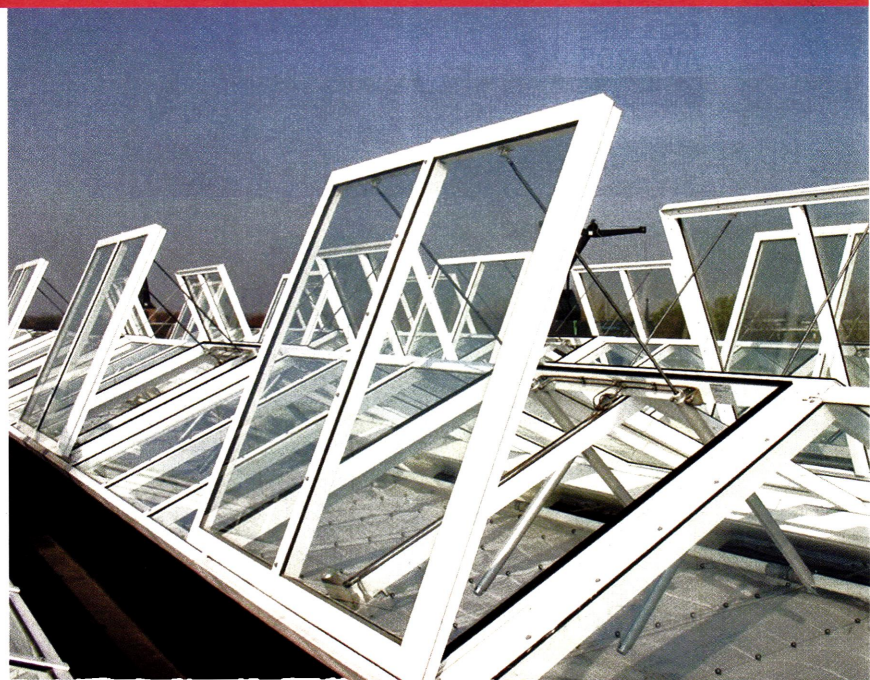

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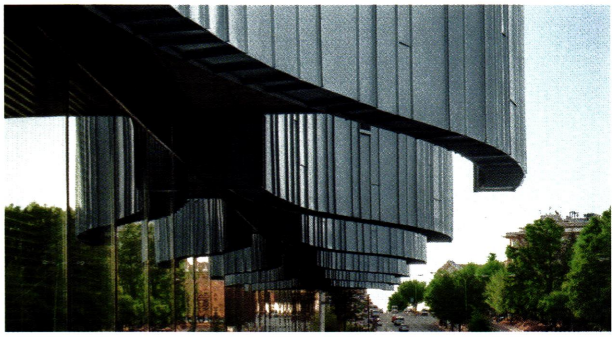

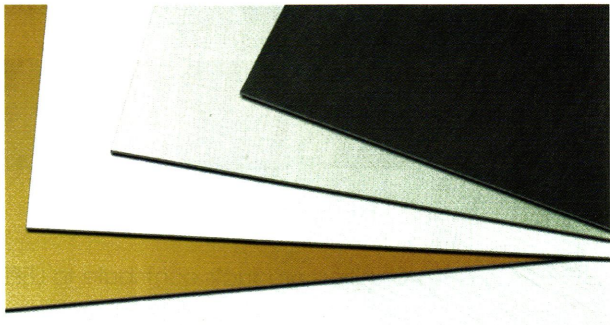

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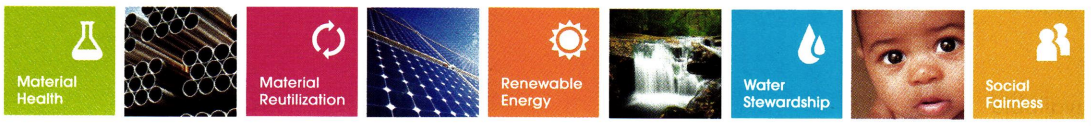

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Portal to the Past

Shrewton, England

Denton Corker Marshall created a forest of columns for the Stonehenge Exhibition and Visitor Centre that respects the ancient monument it serves.

By Chris Foges

Photography by Peter Cook

Visiting Stonehenge in 1829, the photographer William Henry Fox Talbot was dismayed to find the scene "wholly destroyed" by five carriages and 30 picnicking sightseers. Things were to get much worse. By the 21st century, the attraction drew a million visitors a year, who were corralled within close sight of parked tour buses and heavy traffic on two public roads passing north and south of the stone circle.

Numerous improvement schemes ended in failure, but relief has finally come with a radical reorganization of access to and through the 96,500-acre World Heritage Site. A new entrance at Airman's Corner, 1.5 miles west of the stone circle, is marked by an elegant visitor center designed by the Australian architecture firm Denton Corker Marshall (DCM). From there, visitors travel to the monument on foot or by shuttle service along the now-decommissioned road north of the stones, allowing greater appreciation of the site's extensive earthworks. The section of road east of the monument is being returned to grass, as is the site of the old gift shop and ticket office next to the stones.

When DCM was appointed in 2009, it already had substantial experience with the site's sensitivities, having won an earlier competition for a subterranean visitor center, which was canceled along with a related road tunnel that was deemed too expensive. The firm's second take on the project applies a very different approach: instead of digging into the earth, the 17,000-square-foot building sits lightly on it and echoes the gentle folds of the landscape.

A forest of slender, raking columns lifts an undulating roof over three visibly separate pavilions. An outward-looking glass-walled box contains a café, shop, and classroom, while an inward-looking pod clad in weathered sweet chestnut houses an interpretive exhibition created by Leicester-based Haley Sharpe Design. Between them is a smaller zinc-clad ticket booth. The disaggregated composition subtly prefigures the permeable character of the stone circle, and keeps the landscape in view. As they approach the building, visitors can see the hilly horizon through the gap between the pavilions and the roof.

DCM partner Barrie Marshall made his first sketches before the final site had been selected, and took inspiration from one of the alternative locations, a lightly wooded spot closer to the stones. Airman's Corner is more exposed, but new planting will allow the center to be seen in its intended arboreal context and further soften the distinction between building and topography. The allusion is already apparent: the 211 close-spaced steel columns resemble a stand of saplings, and perforated patterns in the blade-like eaves allow sunlight to dapple the limestone pavement below, as if through a leafy canopy.

Because the building sits in a slight depression, it is not visible from the stones. Nevertheless, its size has been rigorously constrained so as not to detract from the experience of the monument. The tallest standing stones determined its maximum height, and although early calculations showed that the program required a building 330 feet long, this was reduced to 255 feet by removing mechanical equipment and offices to a discreet chestnut-clad structure nearby.

The generous amount of space given to on-site treatment of water and waste was the product of another of the project's central concerns: to tread lightly on the archaeologically rich site. To eliminate the need to dig trenches for utilities connections, the building uses water collected from the roof to flush toilets or drawn from the aquifer for drinking and underfloor heating. A shallow concrete raft foundation can be removed without trace at the end of the building's life.

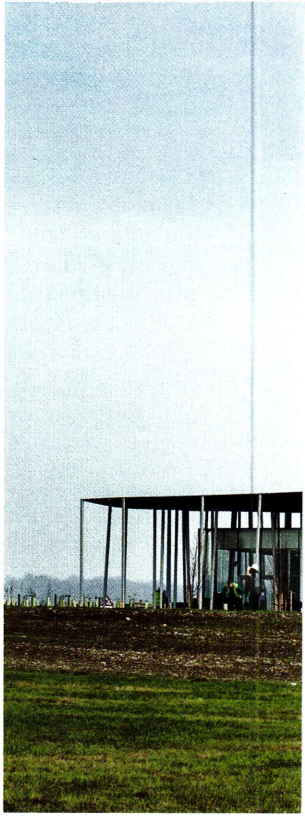
The architects further lightened the project's environmental footprint by using geothermal heating and mixed-mode ventilation, and by limiting the amount of tempered internal space. External circulation, exposed to wind and rain, is also consistent with the outdoor experience of Stonehenge says Stephen Quinlan, director of DCM's UK office. It means that visitors can choose the order in which they visit the facilities, or skip them altogether. The decision not to impose a prescribed route also had a practical purpose: two-thirds of visitors arrive in tour buses, often in convoy, and "anything that worked like a normal building would have difficulty catering for that mass arrival," says Quinlan.

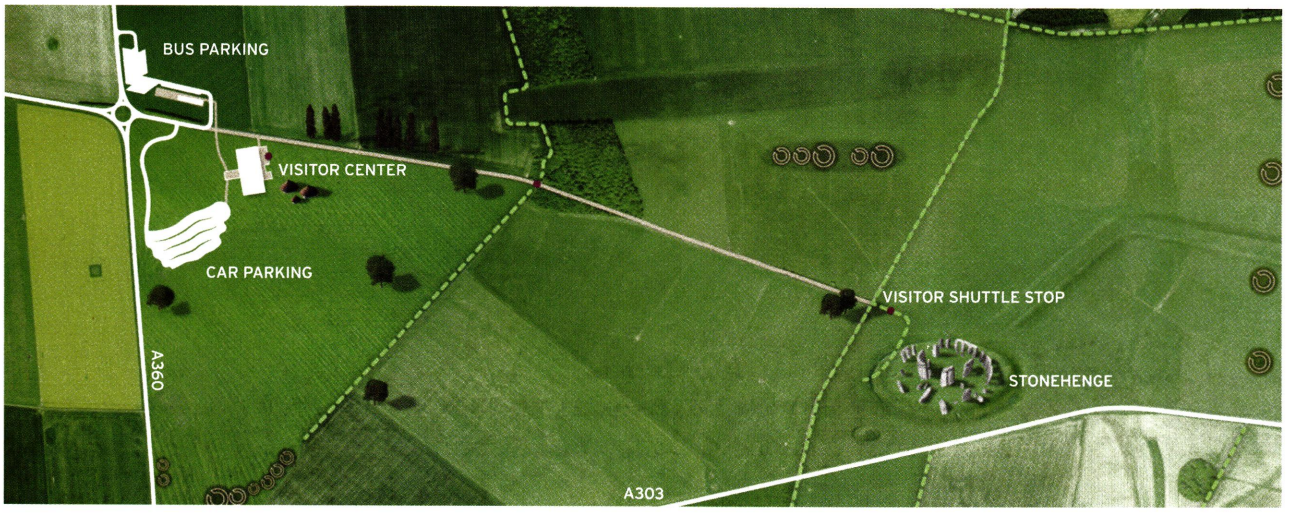
The slightly skewed placement of the pods is one measure undermining any impression of sterile rationalism, and details such as irregular timber "teeth" around windows in the chestnut pavilion show a playful quality. Children enjoy twirling around the eccentric columns.

The project's success is evident both in the fact that the site is busier than ever—visitor numbers are up by a fifth, and the duration of the average visit has doubled—and in the feeling that it is more orderly and dignified. Much of the harm suffered by Stonehenge over time has resulted from heavy-handed treatment by archaeologists, public authorities, and landowners claiming special responsibility for its protection. Denton Corker Marshall's lightweight, lighthearted building shows what can be done with a lighter touch. ■

London-based Chris Foges is the editor of Architecture Today.

LIGHT TOUCH
To establish a clear contrast with the heavy stones of the historic circle, the architects designed the visitor center so it would sit lightly on the ground (this spread). The building's roof floats above 211 slender steel columns (opening page).





DAMAGE CONTROL English Heritage, which administers Stonehenge, removed an old gift shop and a road running through the site near the monument (photo, middle, left, and rendering, middle, right). The new 17,000-square-foot visitor center (top and above) is now located 1.5 miles away (rendering, bottom) and is set in a slight depression, so it cannot be seen from the stone circle.

1 TICKETS
2 RETAIL
3 EDUCATION
4 KITCHEN
5 DINING
6 INTERPRETATION
7 OBJECT CHAMBER
8 NEOLITHIC HOUSES DISPLAY

SITE PLAN

0 30 FT.
10 M.

credits

ARCHITECT: Denton Corker Marshall – John Denton, Barrie Marshall, Stephen Quinlan, partners; Angela Dapper, project associate

ENGINEERS: Jacobs (structural); Norman Disney Young (building services)

CONSULTANT: Chris Blandford Associates (landscape)

GENERAL CONTRACTOR: Vinci Construction

CLIENT: English Heritage

SIZE: 17,000 square feet

CONSTRUCTION COST: $21 million

PROJECT COST: $45.4 million

COMPLETION DATE: December 2013

SOURCES

TIMBER STRUCTURAL INSULATED PANELS: Glosford Timber Solutions

COMPOSITE PANELS: VMZINC

GLAZING: Pilkington

MOISTURE BARRIER: DuPont Tyvek

ACOUSTICAL CEILINGS: Sto

PRE-WEATHERED CHESTNUT TIMBER: Associated Timber

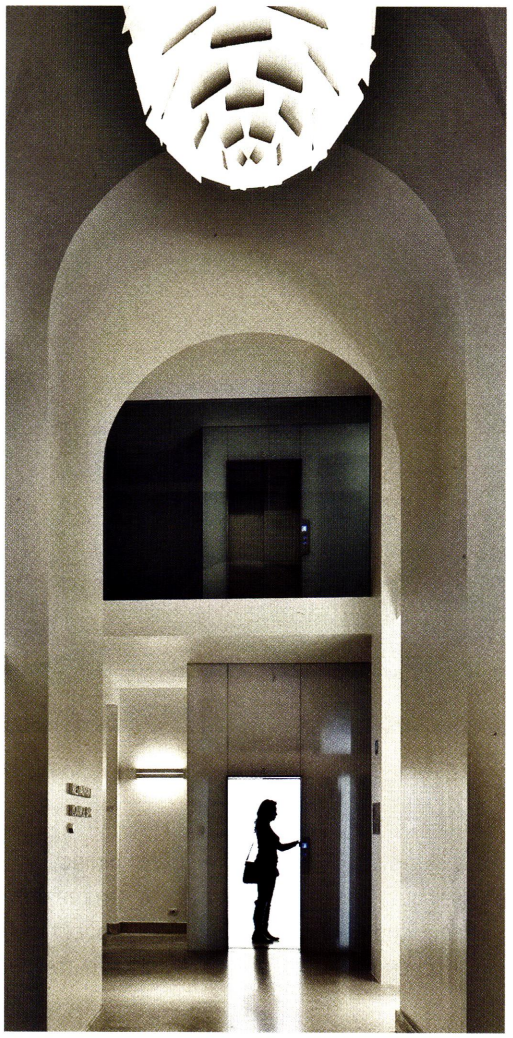
ELASTOMERIC ROOFING: Alwitra

Roman Holiday

Rome

At the Palazzo Montemartini, a small hotel in a renovated transportation building, King Rosselli Architetti provide a quiet, luxurious refuge with modern interiors.

By Suzanne Stephens

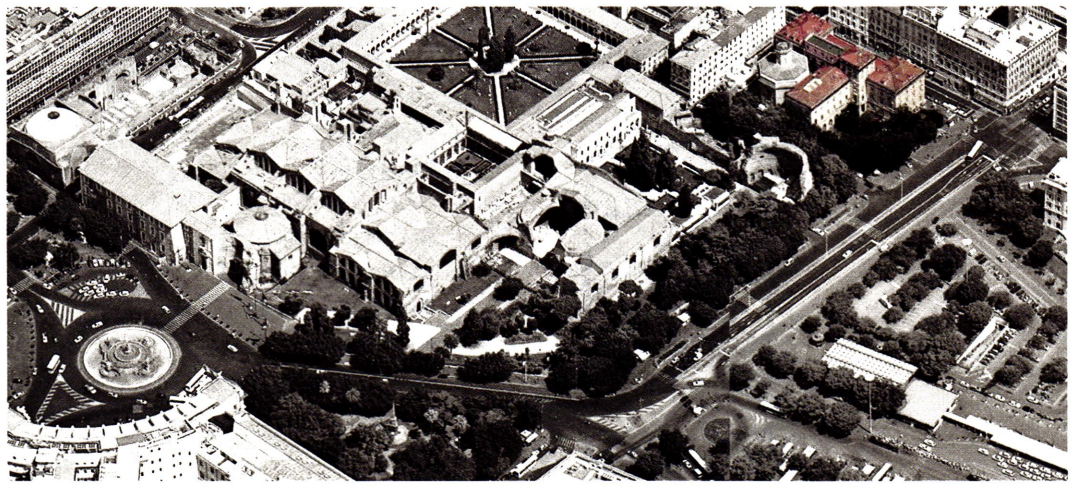


BOUTIQUE HOTELS have emphatically advanced the notion of modern design in the hospitality market. Evolving in reaction to file-box chain hotels of the 1950s and '60s, these smaller lodgings, each with a distinct ambience, often arrive at a formula: minimal architecture, arty furnishings, and loud piped-in music aimed at a young crowd.

Still, the boutique hotel concept is thriving and even maturing—as seen in the conversion of a turn-of-the-20th-century local transport building into the 82-room Palazzo Montemartini in Rome. Here is an effort to create a more serene setting—one where adults in search of contemporary architectural surroundings don't have to step into a high-design playpen. In this case, serenity is particularly desirable, since the late-classical-style hotel next to the Baths of Diocletian sits on a busy street across from the Piazza del Cinquecento and the Roma Termini, Rome's railway station.

Palazzo Montemartini, built and expanded from 1885 to 1920 as a headquarters for the local bus and streetcar lines, has been knit together by King Roselli Architetti to create a modern caravansary inside an older shell. Working with Ottaviano Architetture, which specializes in restoration, engineering, and project management, the Rome-based practice of Jeremy King and Riccardo Roselli (RECORD, Design Vanguard, December 2005, page 84) took charge of designing guest rooms and suites, a restaurant-lounge, conference room, spa, and lobby. Given King Roselli's extremely futuristic Sheraton Milan Malpensa Airport Hotel (RECORD, December 2011, page 85), it is not

SHIMMERING SURFACES
Entering the 82-room hotel, visitors find the elevator lobby (above) an exercise in abstraction. White frosted glass over prismatic film adds to its sheen. In the reception area (left), onyx panels mounted on wood frames are backlit to add a sensuous glow to the small space, which is optically enlarged by mirrored-finish aluminum stretching across the ceiling and continuing behind the reception desk.



PAST PRESENT
The palazzo was built as a local transportation headquarters between 1885 and 1920 (top, left), and includes part of a Roman wall in its front court. The hotel sits next to the Roman brick arches of the Baths of Diocletian (above) and across the piazza from the Roma Termini (not shown). Inside, the 1885 lobby and waiting room has been restored and renovated for a lounge-restaurant. At its center is a large epoxy-coated black steel and fiberglass basin.

PHOTOGRAPHY: COURTESY KING ROSELLI ARCHITETTI

surprising to find here some of the streamlined curves and shimmering surfaces that glamorize that building's public spaces.

As visitors enter the Palazzo Montemartini, they encounter a small lobby enclosed by white planes of frosted glass. At the reception area, a mirror-finished aluminum soffit merges with the back wall. Onyx panels, attached to wood frames and lit from behind, offer a sensuous counterpoint to the planar quality of the space. Between the onyx panels, faint rivulets of water trickle down the grooved, solid-surface walls on which the luminous blocks are mounted—an aqueous theme that repeats itself throughout the hotel. "The idea of water informs the spaces to refer to the Baths of Diocletian next door," says King.

Also on the ground floor is the large restaurant-lounge that occupies the former lobby and ticket office in the public transport facility. The grandly scaled fluted columns, ceilings, and other architectural ornamentation of this landmarked space needed to be restored. To give a sense of intimacy to the room, the architects placed a table-height rectangular fountain in the center. Its steel structure, surfaced in black fiberglass with a gelcoat finish (like the long buffet bar along one side), forms a basin for water trickling down vertical mylar cords above it.

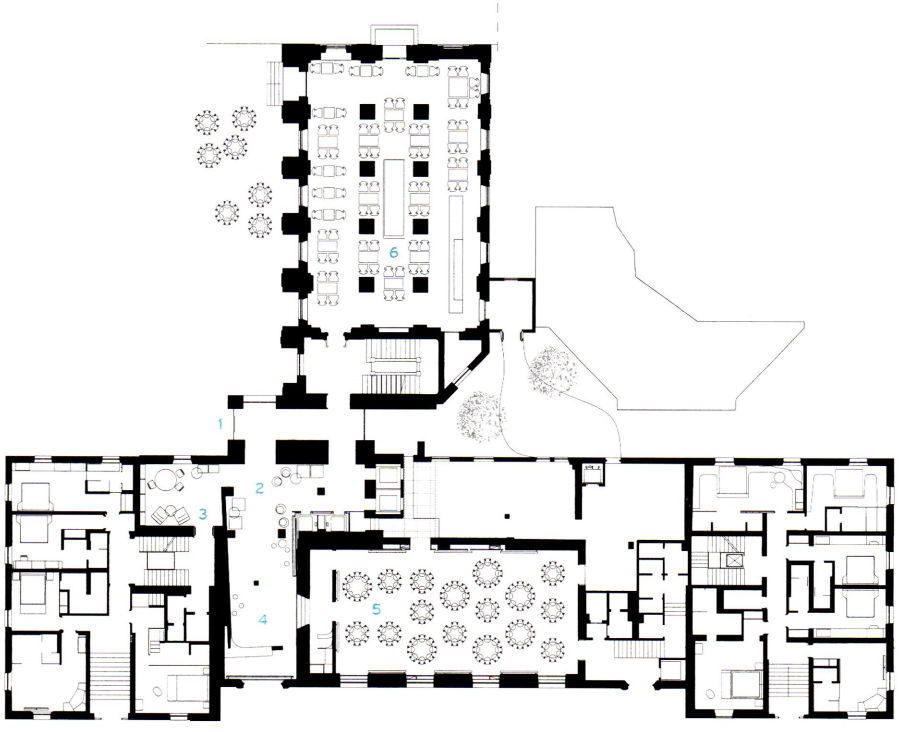
On the lower level, King Roselli developed a version of modern-day baths for a lushly sedate, subterranean spa, where three pools are atmospherically lighted in pale shades of rose, blue-green, and yellow. Even upstairs, one line of guest accommodations includes small swimming pools.

Overall, the architects generated seven types of guest rooms, largely to solve changes in floor levels and other quirks that come from tucking hotel space into an existing structural frame of reinforced concrete and brick walls.

Some junior suites on the second floor retain the original

View additional images at architecturalrecord.com.

THIRD FLOOR



GROUND FLOOR

wood and glass doors, ornamented ceilings, and other painted and carved traces of the past. But most guest rooms make the connection to history through the use of natural materials: smooth surfaces of sandstone (especially for bathroom fixtures and counters); terrazzo floors; oak cabinetry; and leather for chairs, armoires, daybeds and bedsteads, designed by King Roselli. While the architects collaborated with local tradespeople for fabricating their designs, when it came to lighting, they searched for fixtures and lamps created by such modern stalwarts as Gio Ponti, Ingo Maurer, and Achille Castiglioni.

Clearly, this hotel, with its total-design approach, discourages duplication, as attested by the guest rooms with small pools and split-level plans. It serves an affluent market of visitors who shun the bold and the trendy, on one hand, and large, grand baroque piles with overstuffed furniture on the other. The people whom the client, the Ragosta Hotels Collection, hopes to attract, are seeking the imaginative and experimental in design—but without sacrificing a sense of *luxe*, *calme*, and *volupté*. ■

credits

ARCHITECT/INTERIOR DESIGNER: King Roselli Architetti – Riccardo Roselli, partner in charge; Katia Scarioni, project architect; Valeria Alfonsi, Daniele Del Prete, design team

ARCHITECT OF RECORD: Ottaviano Architetture – Gennaro Ottaviano, site management, restoration, and project manager

CONSULTANTS: Alessandro Grassia, Diana Verde (lighting)

GENERAL CONTRACTOR: FAPA

CLIENT: Montemartini (Ragosta Hotels Collection)

SIZE: 97,000 square feet

CONSTRUCTION COST: $24 million

COMPLETION DATE: January 2014

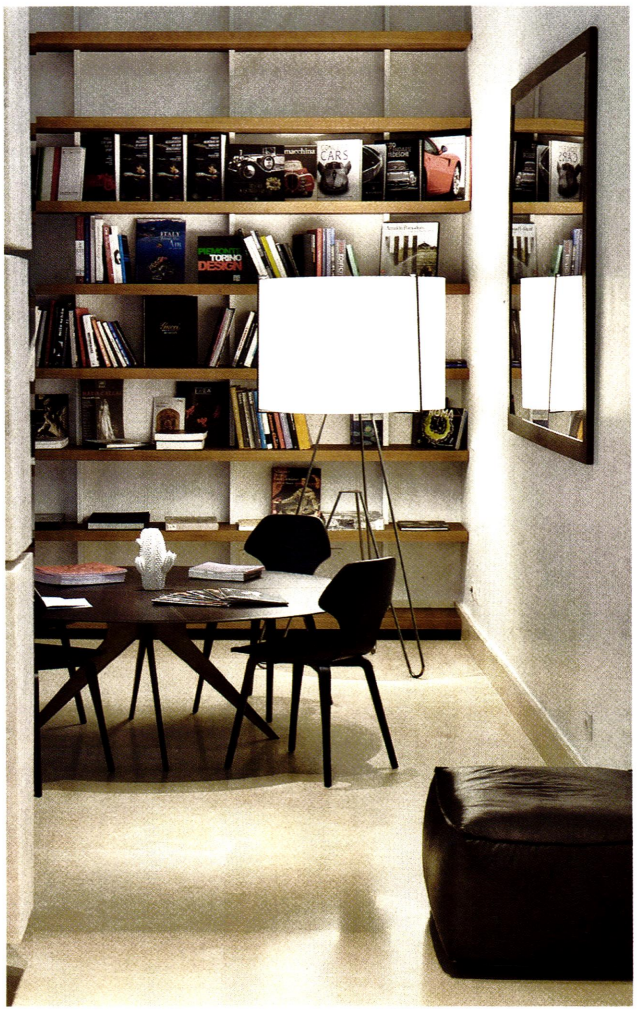
SOURCES

WINDOWS: Secco Sistemi (metal frame); De Carlo (wood frame)

GLASS AND SKYLIGHTS: Il Vetro

FURNISHINGS Tino Sana (for King Roselli's deisgns)

PAINTS AND STAINS: Sandtex



SO MODERNISMO King Roselli designed the built-in furnishings, along with daybeds, bedsteads, armoires, and chairs for hotel guest rooms such as the "boudoir" (top, left); the "attic," with large pillows around the perimeter (top, right); and the "island," with the bed and daybed combined (above). Next to the lobby is a small reading room (left) featuring chairs designed by the architects, and a 1930s lamp.

Taken with the Spirits

Lawrenceburg, Kentucky

As it courts a new clientele, the Wild Turkey distillery opens a visitor center by De Leon & Primmer Architecture Workshop that pays homage to the landscape that gave birth to bourbon.

By William Hanley

YOUR TOUR GUIDE, Boomer, doesn't look like a bourbon snob. Dressed in shorts and a golf shirt, he has a deep ruddy suntan except for a pale mask around his eyes left by the wraparound sunglasses, now perched on his shock of white hair. But—as he leads you through the Wild Turkey distillery in rural Lawrenceburg, Kentucky—he knows his product. "From the Reserve, you're going to get a lot of vanilla and toffee with a nice oaky finish," he recites with a practiced tone. A second variety offers "a dry smokiness," while another, "I use that in my chili," Boomer announces, switching out of his connoisseur's affectation. "But the rest of the recipe is a secret."

Boomer's dance between studied aficionado, with tasting notes at the ready, and regular guy (albeit one with an apparently phenomenal chili recipe) mirrors the ambition that Italian liquor giant Gruppo Campari has had for Wild Turkey since acquiring the distillery in 2009. Popular in Southern states and known for the no-nonsense potency of its 101-proof bourbon, the Wild Turkey brand finds its devotees among "good old boys," in the words of Campari America marketing head Umberto Luchini. But the company is working to broaden the spirit's appeal in coastal cities, without alienating its rural-leaning core audience. "It's not pretentious. It's not about luxury," says Luchini. "It's about being warm and authentic, but with a modern twist."

To advertise the brand's evolution on Kentucky's distillery tourism circuit, known as the Bourbon Trail, Campari held a competition, inviting five architects to design a new visitor center for Wild Turkey's 800-acre campus. The company selected Louisville firm De Leon & Primmer Architecture Workshop, one of Record's Design Vanguard winners (RECORD, December 2010, page 76). The firm designed a 9,000-square-foot building that contains a reception area, gift shop, exhibition space, and tasting room in a long, gable-sided form with full-height windows on one side. Picture an elongated Monopoly house on a steep hillside above the Kentucky River, where the distillery gets its water.

The abstracted gable has become something of an architectural trope, a stock strategy for nodding to a homy vernacular while invoking a prim, clean-edged modernism. Architects Roberto De Leon and M. Ross Primmer have turned to the form in previous projects, inspired by the region's tobacco barns. With the Wild Turkey visitor center, the designers used it to court both longtime drinkers and new converts. "We were after something that could be familiar and unfamiliar at the same time," says de Leon.

The building's sharp profile and distinct coloration set it off from its neighbors, including the distillery itself and the large rick houses, where barrels of aging bourbon are stored. The firm clad the structure with black-stained cypress, hung in a chevron pattern that continues in a lattice shading the upper part of the window walls. "From a distance, it's a banal box," says Primmer. "But then you get up close and see the shifting lines."

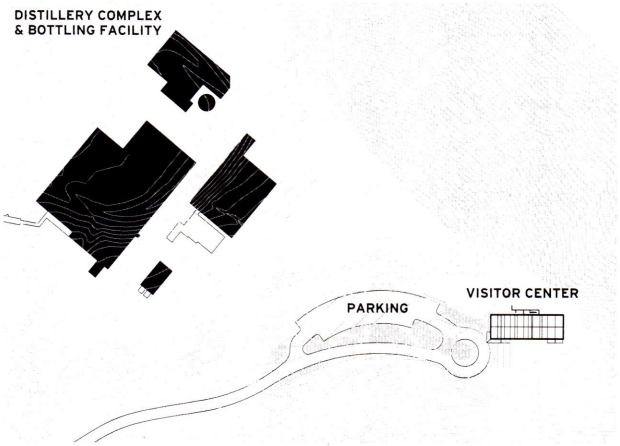
The firm designed the interior to host several moments in the sequence of a distillery tour inside one open volume. At the main entrance, visitors encounter an airy space with trusses in the hybrid steel-and-wood frame structure exposed overhead. A barn crossed with a cathedral, it's a fitting point of departure for a bourbon pilgrimage. They are greeted at a reception desk—watched over by three stuffed turkeys roosting in perpetuity on a high shelf—and can sign up for tours of the distillery and immediately begin browsing in the adjacent gift shop. The firm used natural wood throughout the interior, including a handsome rough-cut ash; the tasteful finishes fight with kitschy memorabilia and some country-cute decorating touches,

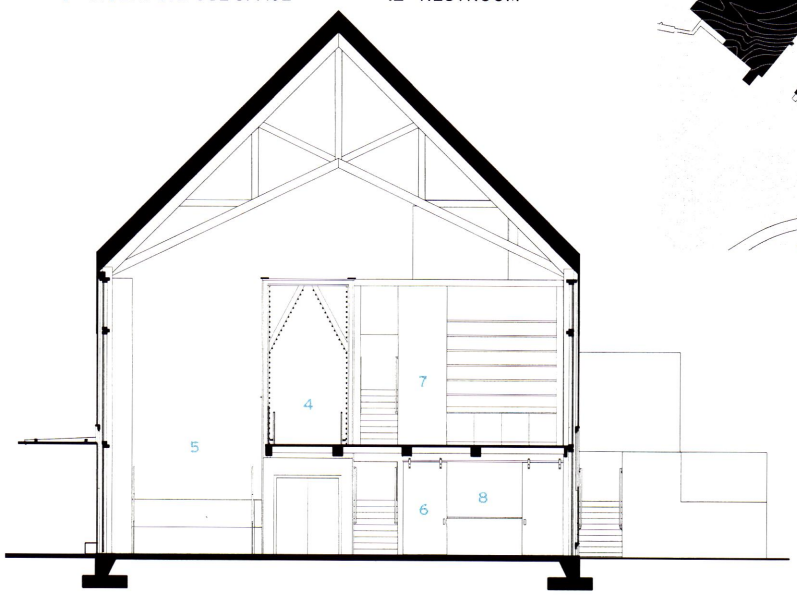
LOCAL COLOR
For the cladding and shading lattice on the visitor center (opposite), De Leon & Primmer chose cypress stained a rich black to mimic the charring on the inside of bourbon barrels. A loftlike tasting room (below) has spectacular views of the Kentucky River.

View additional images at architecturalrecord.com.

PHOTOGRAPHY: © DE LEON & PRIMMER ARCHITECTURE WORKSHOP, EXCEPT AS NOTED

1 ENTRY
2 RECEPTION DESK
3 GIFT SHOP
4 TASTING ROOM RAMP
5 EXHIBITION RAMP
6 MULTIPURPOSE SPACE
7 TASTING ROOM
8 CATERING PREP
9 STORAGE
10 OFFICE
11 MECHANICAL
12 RESTROOM





SECTION A - A

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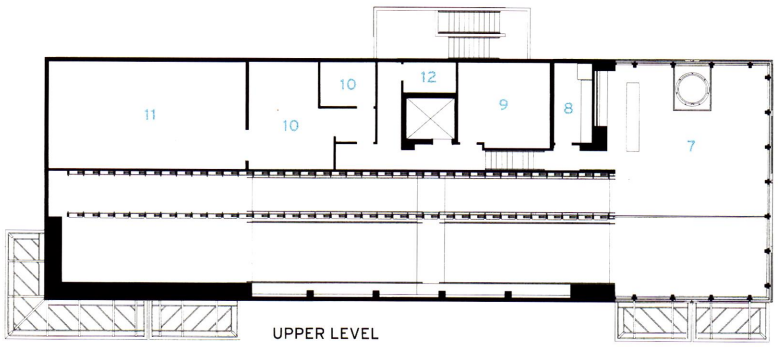
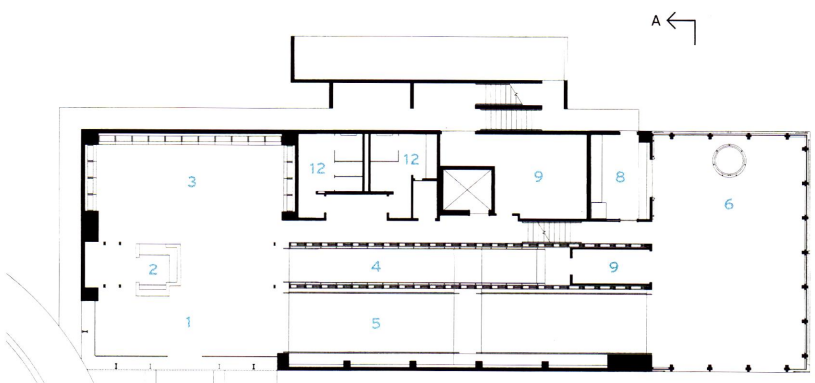
5 M.



UPPER LEVEL



MAIN LEVEL

0 20 FT.
5 M.

SHOWY PLUMAGE
The architects designed the chevron pattern of the wood cladding (right) to give visual interest to the otherwise simple form, basing the scheme on the quill structure of a turkey feather. Perched on the edge of a steep slope, just downhill from the distillery (opposite, bottom), the visitor center's bold geometry makes it a focal point on the Wild Turkey campus.

credits

ARCHITECT: De Leon & Primmer Architecture Workshop – Roberto de Leon Jr., principal in charge; M. Ross Primmer, project architect; Lindsey Stoughton, project manager; David Mayo, project team

ENGINEERS: Stanley D. Lindsey and Associates (structural); Kerr Greulich Engineers (m/e/p); Evans/Griffin (civil)

CONSULTANT: Conspectus (specifications)

GENERAL CONTRACTOR: Lichtefeld

CLIENT: Gruppo Campari

SIZE: 9,000 square feet

CONSTRUCTION COST: $3.4 million

PROJECT COST: $4 million

COMPLETION DATE: October 2013

SOURCES

WOOD LATTICE RAINSCREEN: Lichtefeld

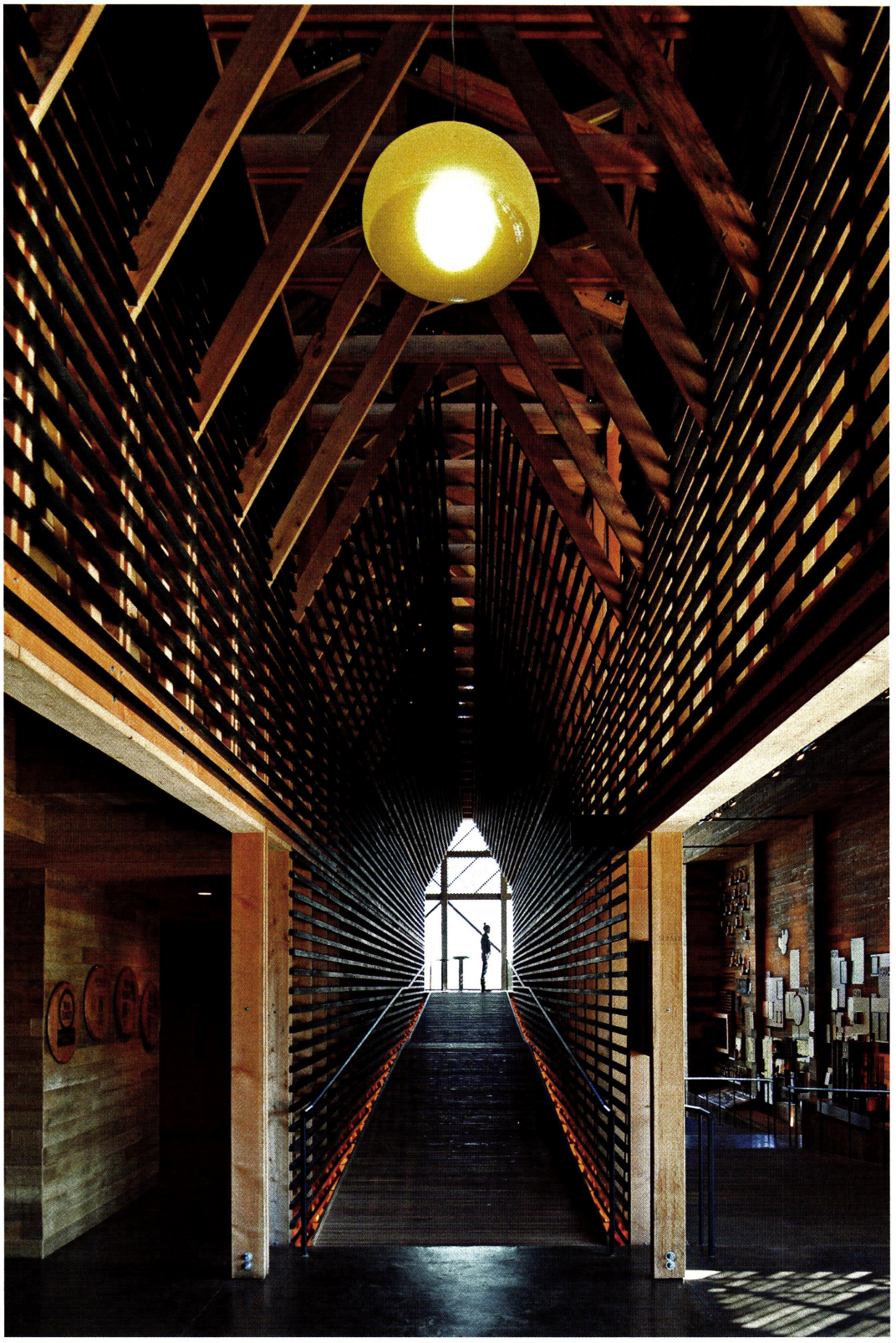
WOOD-FRAME WINDOWS: Cunningham Door & Window; Kolbe Windows & Doors

GLASS: Doors Etc. Glass & Glazing

CORK FLOORING: Duro Design Floating Clic Cork

ELEVATOR: Schindler Elevator Corporation

PHOTOGRAPHY: © ARCHITECTURAL RECORD (RIGHT)

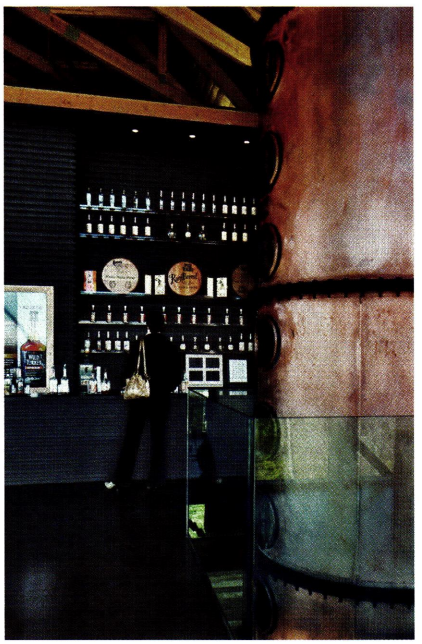


but ultimately reach a livable détente.

Moving down a ramp, visitors pass an exhibition wall that presents the brand's history. At the bottom, they arrive among a cluster of reconfigurable display kiosks and a 20-foot-tall antique copper still. Here, visitors wait for a bus to take them to the distillery.

After touring the whiskey-making facility, visitors return for a culminating ritual. A ramp, partially enclosed by wooden louvers, ascends through the heart of the interior. Part church vault, part bourbon barrel, it opens triumphantly onto a lofty mezzanine level with sweeping views of the Kentucky landscape. There visitors sample Wild Turkey's products while gazing over the river. "The tour is a kind of procession," says de Leon. "There's never really a moment of stasis until you get to the tasting room."

Waiting for Boomer's tour, two men in head-to-toe camo and sporting *Duck Dynasty* beards browsed the history exhibition, while an urbane 30-something chatted with his father, and a suburban couple with two young daughters compared the facility to others they had visited—very different groups, united by bourbon. Whether the building reads as a savvy update of a heritage brand or as an affirmation of Wild Turkey's connection to rural America is in the eye of the beholder. And with that ambiguity, De Leon & Primmer precisely fulfilled their mission. ■



PAST AND PRESENT An exhibition wall (above) narrates the distillery's history and honors noteworthy Wild Turkey drinkers—Evel Knievel, Hunter S. Thompson, and Harry S. Truman, among them—while a ramp leading to the tasting room echoes a nearby railroad trestle visible from the windows above. Distillery tours culminate in a whiskey-tasting in the shadow of an antique copper still (right).

THIN IS IN

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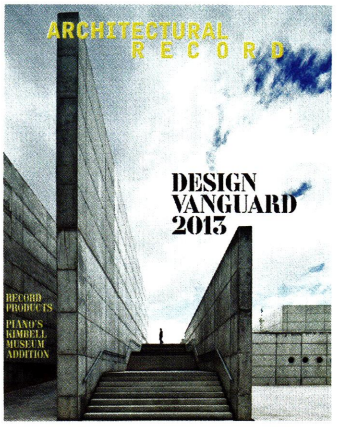
CIRCLE 75

2014 CALL FOR ENTRIES
Design Vanguard



We are looking for the best emerging architecture firms from around the world to feature in our **Design Vanguard** coverage. Although we do not have an age limit, we try to select architects who have had their own practices for less than 10 years.

To enter the competition, send a low-resolution PDF (no larger than 8 MB) with a portfolio containing five to eight projects (both built and unbuilt), CVs of your firm's partners, and a short statement of your firm's design philosophy.

Submit your portfolio by August 11, 2014.
Send it to ARCallForEntries@mhfi.com (put ***Design Vanguard*** in the subject line).
There is no fee to enter.

2014 CALL FOR ENTRIES
Record Products

The editors of ARCHITECTURAL RECORD are currently accepting submissions for the **2014 Record Products** competition. Manufacturers and designers are welcome to submit new building products for the December issue, which will present the best and most innovative offerings available to architects, specifiers, and designers. Winning entries will be featured in the December 2014 issue.

For more details and to enter online visit http://app.wizehive.com/apps/recordproducts2014.
E-mail questions to ARCallForEntries@mhfi.com. (Please indicate ***Record Products*** as the subject of the e-mail.)
Submissions are due September 5, 2014.

Smoke Containment Solutions

MUSEUM RENOVATION

SMOKE GUARD, INC.

Slated to open to the public in November 2014, the Harvard Art Museums project in Cambridge, Massachusetts, is a state-of-the-art facility uniting the Fogg, Busch-Reisinger, and Arthur M. Sackler museums and their collections under one roof for the first time. Working with Cambridge Building Officials, Arup Fire Protection Engineers, and The Pappas Company, architects at Renzo Piano Building Workshop (Architect of Record: Payette) utilized Smoke Guard smoke containment systems (M600 and M1500) at both the passenger and freight elevators to conserve valuable space and open the area surrounding the six-story stairwell and historic courtyard space.

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PRODUCT APPLICATION
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CIRCLE 100

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CIRCLE 36

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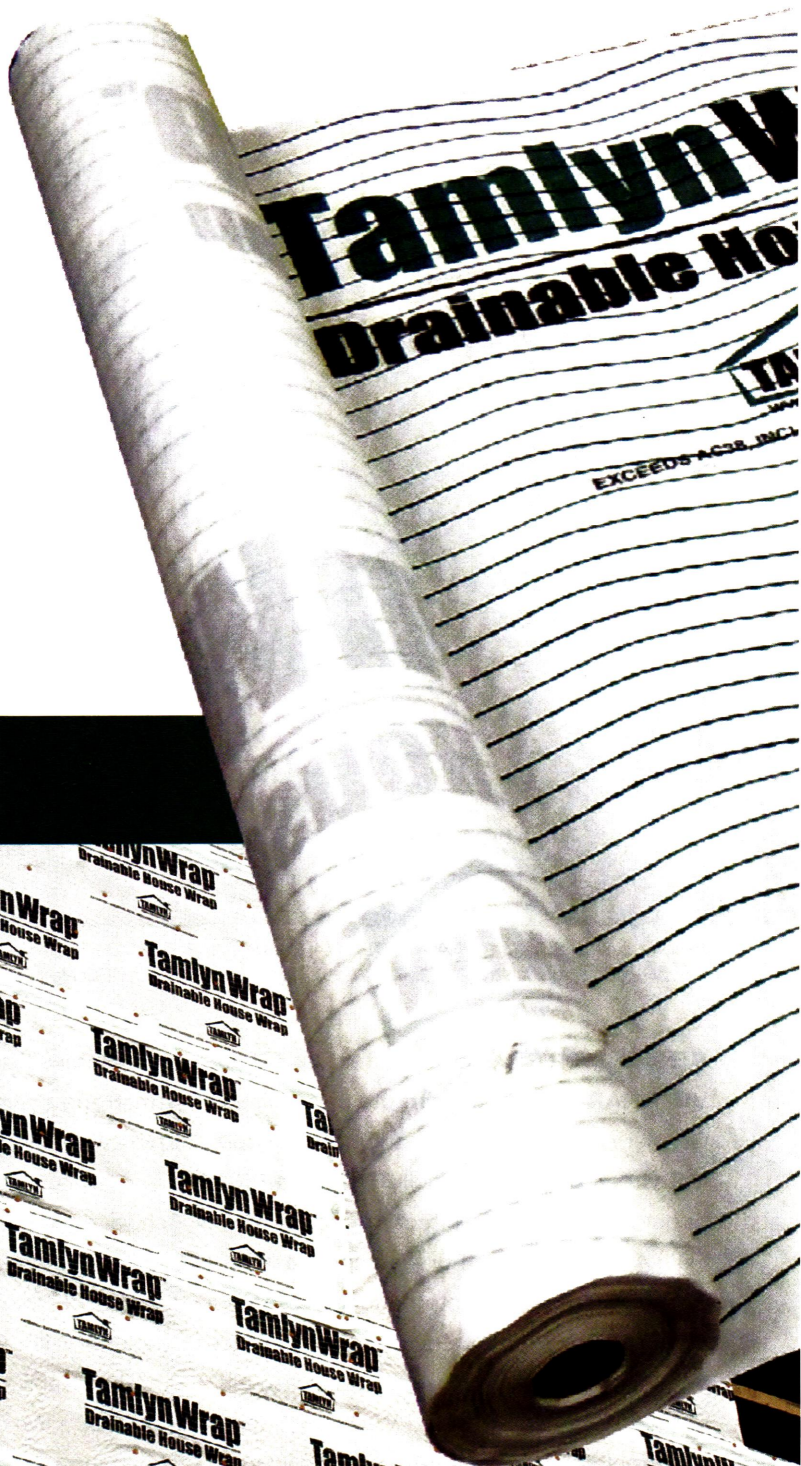

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Helene Combs Dreiling, FAIA, 2014 AIA President, joins AAF Regents Bryce Pearsall, FAIA, LEED AP, and Ted Landsmark, M.Env.D., J.D., Ph.D., Assoc. AIA, D.F.A. (Hon.), and AIA Executive Vice President and CEO Robert Ivy, FAIA, in reflecting on the past 25 years of the Accent on Architecture Gala.

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Going with the Flow

From coast to coast, design professionals deploy innovative strategies to manage water and enhance sustainability.

By Michael Cockram

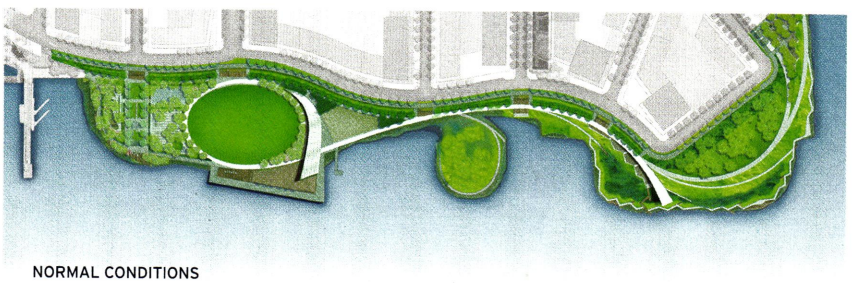
In landscape architect Thomas Balsley's view, it's time to rethink common notions about the role of parks and open space. "Often considered a luxury, parks should be viewed as providing an essential service—as infrastructure that makes communities more resilient," he says. Balsley is among a group of designers whose work demonstrates how public space can do more than serve as an amenity for recreation. It can play a critical role in managing stormwater and in mitigating the impact of coastal storm surges and inland flooding. The strategies that the following architects, landscape architects, and engineers are exploring have applications in a variety of climates and at many scales.

GREENING THE EAST RIVER

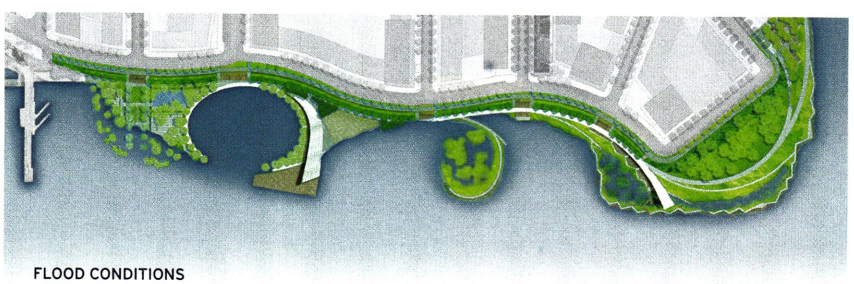
In New York, two new community parks along the East River serve as case studies in water management and in making coastal areas resilient.

Looking at the Hunter's Point South Waterfront Park in Queens on a sunny day, with children playing on its elliptical sports field and people lounging on its benches or seeking shade under the delicate arcing pavilion that flares toward the Manhattan skyline, one might never suspect it was built with a torrential downpour in mind. But the 11-acre park, designed by Balsley's firm and architects Weiss/Manfredi, incorporates several strategies aimed at helping manage the runoff created during such storms. It includes elements such as permeable paving and bioswales (planted channels that slow, filter, and infiltrate stormwater flows).

The primary goal of this so-called "green infrastructure" is to keep runoff out of the city's sewer system, explains Gillian Blake, a principal at the engineering firm Arup, the project's prime consultant and its infrastructure designer. This function is critical, because New York has a combined sewer system—one that carries both stormwater and sewage together, in the same pipe. Under dry conditions, the contents of the combined sewer are carried to a treatment facility. But heavy rainfall can easily overload the system, and, in those instances, the runoff-sewage mix is dumped directly into the city's waterways, untreated.



NORMAL CONDITIONS



FLOOD CONDITIONS

The park also has features that help it weather the effects of the East River's overflowing its banks during a storm surge like the one caused by the 2012 "superstorm," Hurricane Sandy. But instead of creating artificial barriers to prevent such incursions, the team decided to let areas like the playing field flood. Since the salt water of the East River (which is actually a tidal strait) can damage vegetation and be corrosive to buildings and infrastructure, it was important to grade the park's terrain so that the storm surge would flow easily back to the river rather than to the overburdened sewers. Other areas that would collect water, such as the bioswales, were designed to help it percolate into the ground quickly. They were also planted with hardy native vegetation that can withstand occasional doses of salt water, explains Balsley.

This "catch and release" approach is more akin to the way nature buffers costal areas and helps protect upland communities, says Marion Weiss, Weiss/Manfredi principal. "We try to bring natural systems and infrastructure closer together," she explains.

HUNTER'S POINT SOUTH

An 11-acre park at the water's edge in Queens, New York, includes an elliptical playing field (opposite) and pedestrian gardens (top) that have planting beds interspersed with low gabion walls. The playing field floods when the river overflows its banks (above).

IMAGES: © ALBERT VECERKA/ESTO (TOP AND OPPOSITE); COURTESY THOMAS BALSLEY ASSOCIATES AND WEISS/MANFREDI (2)

ONLY
ONLY

The park at Hunter's Point South, which officially opened in August 2013, was approaching completion when Sandy's surge washed over it and put the design to the test. After the waters receded, there was no significant damage to the park's structures or landscape.

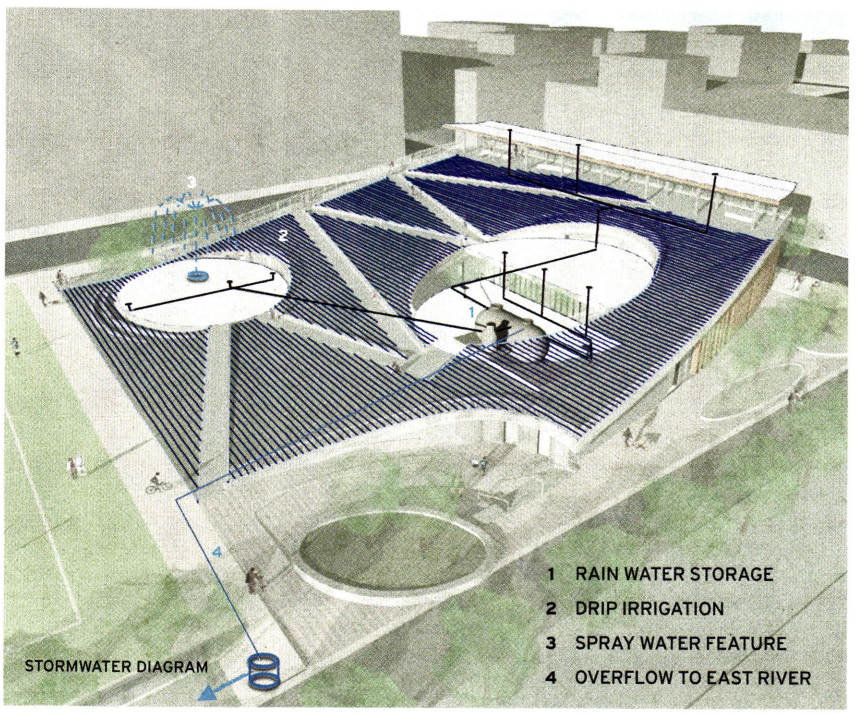
TOUGH TURF

Just to the south of Queens, Bushwick Inlet Park, designed by Kiss+Cathcart Architects, and Starr Whitehouse Landscape Architects, is part of an ongoing transformation of a formerly gritty section of the Brooklyn waterfront. Conceived as a blanket of greenery that folds up to cover the roof of a wedge-shaped community building, the three-acre site includes parkland at the water's edge and a playing field.

Sitting on top of a capped brownfield that was most recently a parking lot, the site's longitudinal section works on a number of levels to manage stormwater and ensure that no runoff is directed to the city's combined sewer system. The building meets the street with a glass and concrete facade, its roof sloping down to converge with the site at the playing field and finally descending to the river. The planted roof absorbs some of the flow of stormwater, and then an area of gravel fill under the playing field detains it while it infiltrates the ground. Any surface runoff that reaches the river is first filtered through a swath of native plants at the river's edge.

"Extensive" green roofs—those designed with just a few inches of growing medium and not intended for foot traffic—typically don't require much maintenance or irrigation. However, Bushwick's "intensive" green roof, which also acts as a grandstand, has a foot of topsoil and requires some irrigation. Toward that end, a portion of the site's stormwater is captured and used as a resource: along with graywater from a playground fountain, it is stored in a 15,000-gallon tank that supplies the roof's underground drip irrigation system.

And like Hunter's Point South, the nearly complete project was inundated with salt water when Sandy struck. Water came about 80 feet onto the site, then receded with no real damage to the landscape, according to Stephen Whitehouse, Starr Whitehouse principal. Since the building was located away from the water on the street edge, it was well out of harm's way.



BUSHWICK INLET PARK The three-acre park (middle) on the East River waterfront in Brooklyn is designed so that no stormwater is sent to the city's sewer system. It was conceived as a blanket of turf that folds up to cover the roof of a wedge-shaped community building (top).

IMAGES: © MALCOM PINCKNEY/NEW YORK CITY, NYC PARKS (TOP); COURTESY KISS + CATHCART ARCHITECTS/NEW YORK CITY, NYC PARKS (MIDDLE AND BOTTOM)

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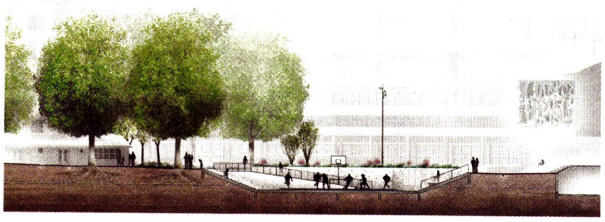
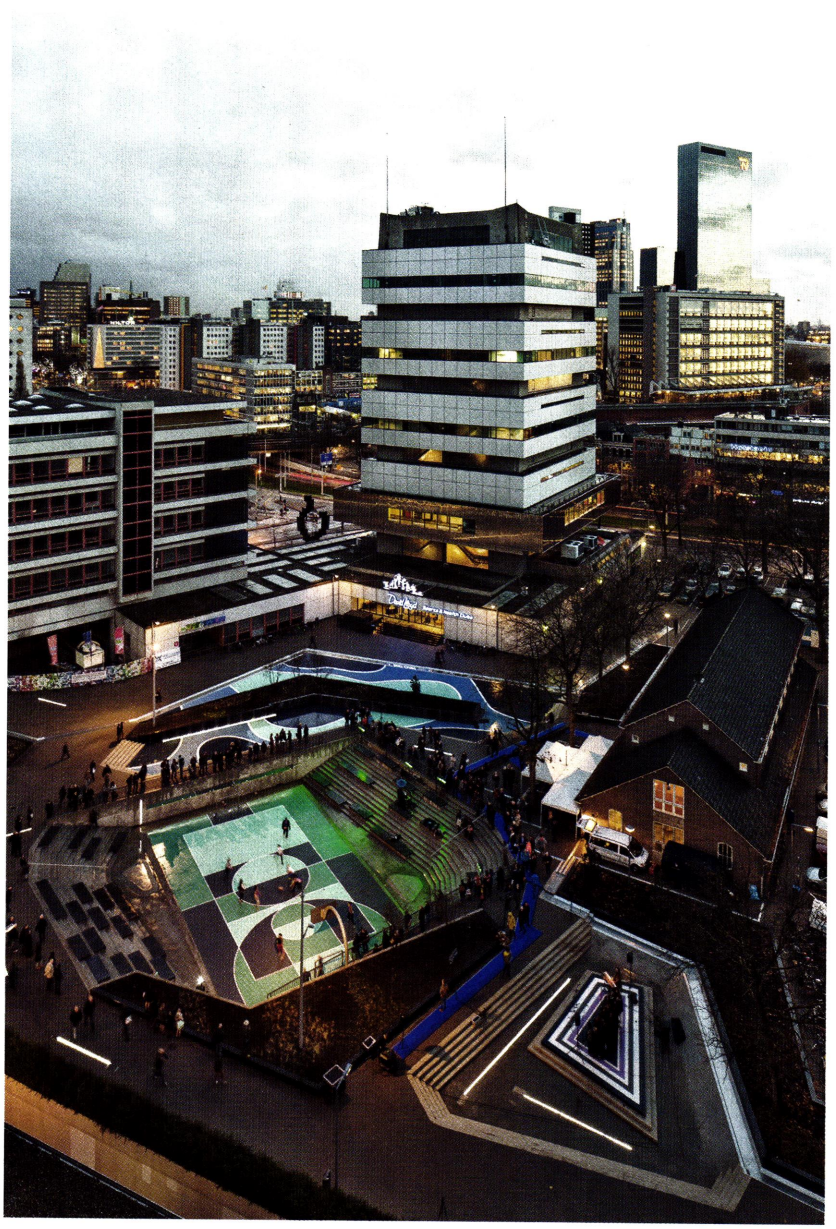
Ponds with a Purpose

Bioswales, vegetated detention ponds, or other devices that mimic natural processes, are not the only ways to slow the flow of water into the landscape. The Dutch, who have a long history of managing water systems, are exploring a different approach, especially for intensively used urban spaces that call for hardscape ground surfaces. The Benthemplein Water Plaza, a pilot project in Rotterdam, is one such environment. It is designed to capture stormwater by allowing recessed paved areas for socializing and recreation to flood during heavy rainfall. Since portions of the city have a combined sewer system, just like New York's, one goal of the project is to mitigate the impact of runoff on existing stormwater infrastructure. But the plaza is also designed to celebrate water, says architect Florian Boer, founder of the local firm De Urbanisten. Stainless-steel troughs wind through the plaza and during downpours send water cascading into stepped concrete basins. Because local health regulations stipulate that standing water be drained within 36 hours, the system is designed to send water to smaller basins that gradually filter runoff, through infiltration, into the water table. A larger basin, which collects runoff from the surrounding area, employs pumps to direct water to nearby canals once these waterways have receded sufficiently.





BENTHEMPLEIN WATER PLAZA These stepped plazas (above and right) in Rotterdam have been intentionally designed to flood when it rains heavily. During dry weather, they provide space for recreational activities, including basketball and skateboarding.

WATER IN THE WEST

Although Arizona's arid Maricopa County gets a mere 7 inches of precipitation a year, when it rains there, it often falls in torrents. In conceiving the George "Doc" Cavalliere Park in Scottsdale, planners envisioned a precedent-setting facility that would help manage this stormwater while relying primarily on green infrastructure elements. Due to these strategies, when the park was completed in 2012, it earned three out of a possible four stars from the Sustainable Sites Initiative (SITES), a LEED-like rating system for landscapes. At the time, it was the highest SITES rating any project had earned.

The park's location was a challenging one because it sits at the confluence of two seasonal stormwater "washes." This condition required that designers from the landscape architecture firm Floor Associates integrate detention for a volume of water equal to nearly 50 acre feet into the design (one acre foot is equivalent to an area 66 feet by 660 feet by 1 foot deep).

They satisfied this requirement by locating playing fields and a pavilion in a natural depression and allowing the area to flood during extreme downpours. This part of the site acts as a detention basin that temporarily holds the water, then releases it to a lower basin and, ultimately, into the area's drainage system. Because local health regulations, similar to those in place in other jurisdictions (see sidebar above), limit how long standing water can be contained, the site and its soils are engineered so that water drains within 36 hours.

The slopes above the basin are laced with staggered gabion walls that slow stormwater sheet flow and form small catchment areas, fostering desert vegetation. A primary advantage of using these native plantings is that, once estab-

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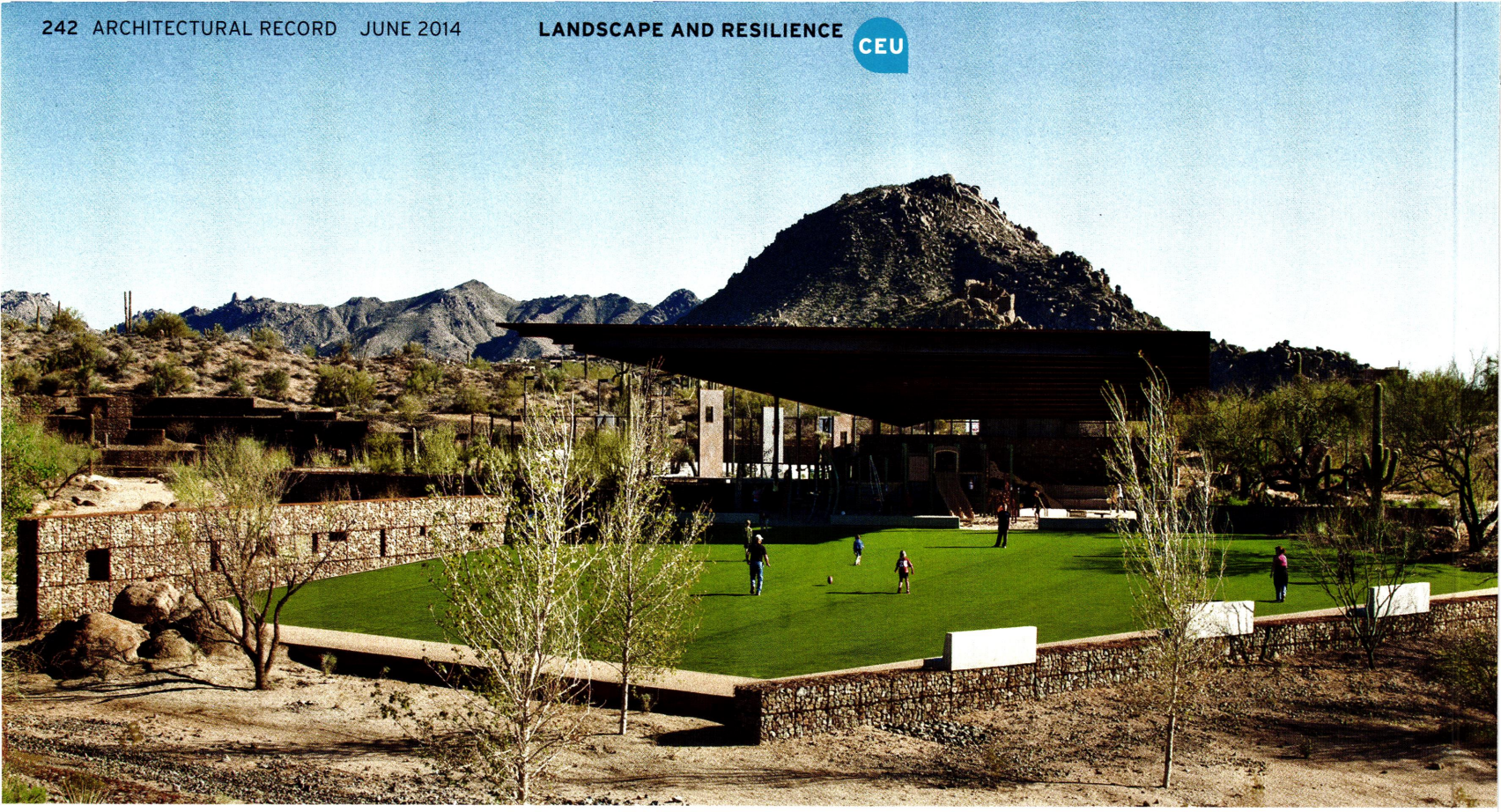

GEORGE "DOC" CAVALLIERE PARK
A playing field in this Scottsdale, Arizona, park is positioned so that it floods during heavy rainstorms and acts as a temporary detention basin.

lished, they don't require irrigation and need little maintenance. "Maintenance is an aspect of sustainability that is often overlooked," says Chris Brown, a Floor Associates partner. Similarly, the project's palette of architectural materials—weathering steel, local stone, and concrete—requires little upkeep.

The project also includes a permeable paving material made from site-salvaged decomposed granite, a granular ground cover that's a common feature of the desert surface. The decomposed granite is stabilized with a liquid co-polymer and then compacted, but remains permeable to stormwater runoff. It also helps combat the heat island effect. A stabilized-granite parking lot, for example, can feel 20 degrees cooler than an asphalt-paved lot, says Brown.

WATER AND POWER

With its so-called "Mediterranean" climate—one distinguished by warm, wet winters and hot, dry summers—the Los Angeles basin gets twice as much rainfall as central Arizona. But, because of the enormous population and lack of nearby reservoirs, water management in the Los Angeles region is just as critical.

Since 2008, the utility Burbank Water and Power has been involved in transforming its Magnolia Power Plant into an "ecocampus" highlighting water management. "The idea was to turn an industrial complex into a garden," says Evan Mather, a principal at AHBE: Landscape Architects. The firm's vision included interpreting and restoring a woodland and riparian environment in an industrial context, he says.

The most recent addition to the campus is the Centennial Courtyard, a decommissioned substation that AHBE transformed into an outdoor dining area sheltered by a vine-covered trellis. The project received SITES accreditation in 2012.

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Learning Objectives

1 Describe the elements in a combined sewer system and explain why such systems are prone to overflows.

2 Identify landscape features that are considered green infrastructure.

3 Explain how green infrastructure can help prevent combined sewer overflows and coastal and inland flooding.

4 Explain how green infrastructure strategies can be adapted for different climates and regions.

AIA/CES Course #K1406A

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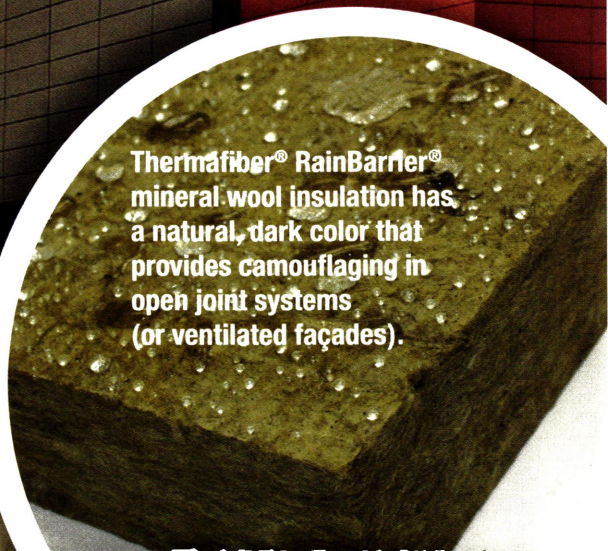

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CIRCLE 76

The centerpiece of the ecocampus stormwater management system is an old utility tunnel that designers converted into a filtration trench. The surface water and that of an adjacent building's green roof is fed into this trench, which is filled with gravel salvaged from the site and topped with plants that harmlessly absorb toxins from the runoff through a process called phytoextraction.

In addition, the designers incorporated tree bio-filter boxes. These devices embed a tree's roots in a stormwater catchment basin to help filter pollutants that can accumulate in stormwater from cars, refuse, and other sources. The design team also used pavers supported with a modular rigid frame. The system provides a permeable surface while preventing soil compaction, so that tree roots can spread.

Plantings are mostly native and do not require irrigation. But those that do need irrigation rely on wastewater treated and reclaimed from the power plant's operations, including its generators and its cooling towers. That saves up to 100,000 gallons of potable water a day.

The Burbank Water and Power project, and the new parks in Scottsdale and New York, demonstrate that green infrastructure can play critical water-management roles in diverse settings and climates. These projects showcase strategies that could help communities become more sustainable and resilient in the face of disaster. ■

Michael Cockram is a freelance writer, and director of Browbird Design in Fayetteville, Arkansas.

BURBANK WATER AND POWER This California utility's ecocampus includes a former substation that his been turned into a trellis-covered terrace (below). Stormwater management features include an old utility trench now filled with gravel and toxin-absorbing plants (above).

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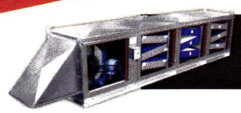
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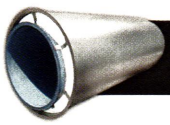
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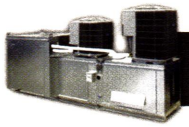
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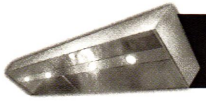
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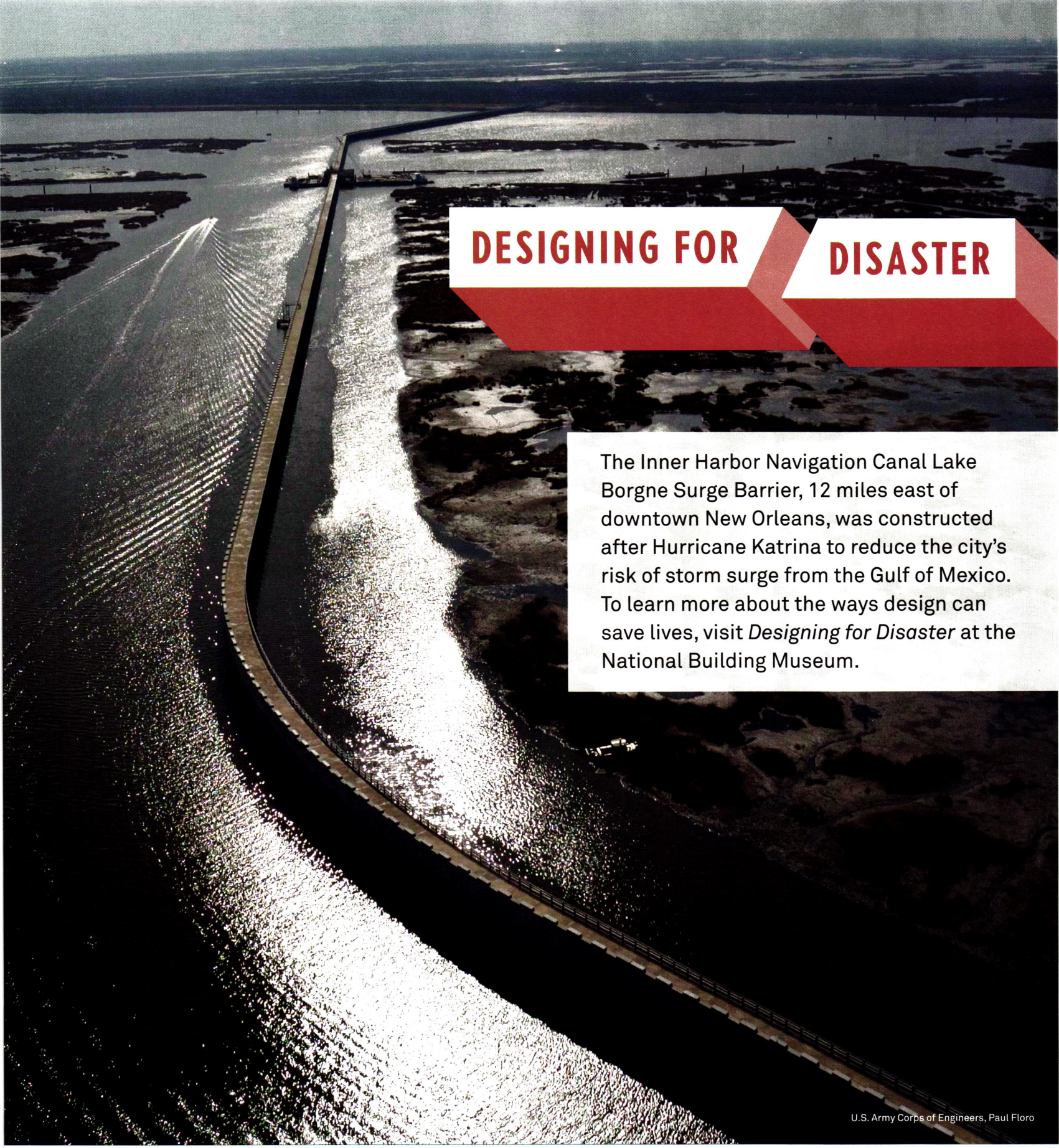

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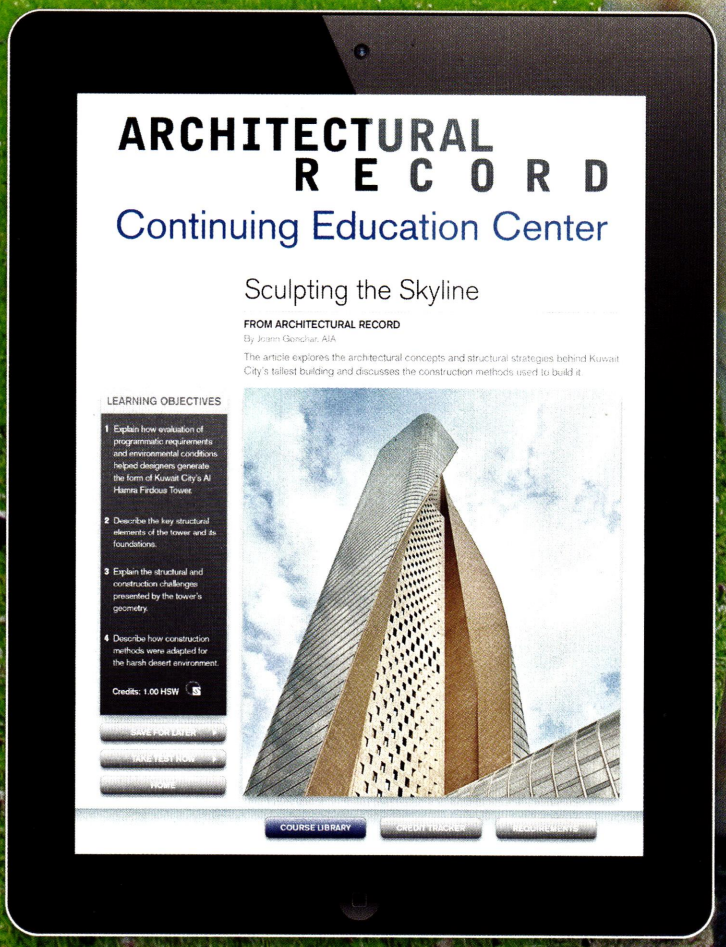

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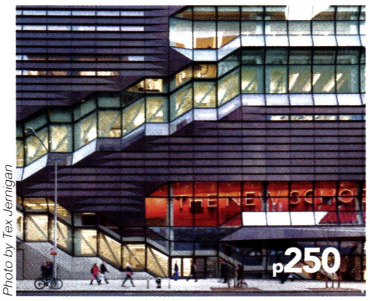

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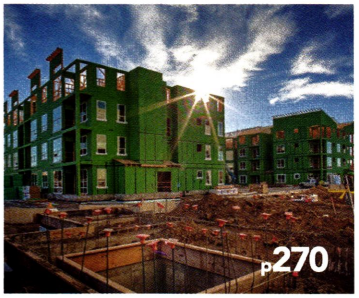

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Circulation Notice: Stair Design Gets People Talking

Ornamental stairs create spaces for circulation, gathering, and artistic expression throughout New York City

Sponsored by the Ornamental Metal Institute of New York

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

Interior stairs are a common element in any multistory building. Beyond meeting basic requirements for pedestrian circulation they must also meet the full array of code requirements for safety and public welfare. But once these conditions are mastered, architects can configure stairs in such a way that they transcend their circulation function and become truly unique and appealing features in their own right.

VERTICAL CIRCULATION—CONNECTING PEOPLE NOT JUST FLOOR LEVELS

We often think of the basic purpose of stairs as connecting vertical floor levels in a building. Indeed, building codes require such stairs for safe passage out of a building and dictate minimum requirements to achieve that safety in terms of size, details, enclosure, the presence of guardrails and handrails. While all of these things are clearly important and deserve proper attention, the real day-to-day use of stairs can be to make it easy for people to connect to other people within a building, not just creating a floor by floor exiting path. Three buildings in particular that have taken this approach are great examples of using stairs to make people feel more connected to each other.

The New York Times Building

When designing the 52-story, 1.6-million-square-foot headquarters for The New York Times Company, Pritzker prize-winning architect Renzo Piano and designers at New York-based FXFOWLE Architects sought to infuse the building with a sense of lightness and transparency, in part for purely aesthetic reasons, but also to communicate the idea of transparency at The New York Times. This thought process carried through on the interior of the building as well. In a city where the corner of a building is usually given over to an executive office, the New York Times building used the corner to create an open intercommunicating stair between floors. This stair was designed to serve the singular purpose of helping people work and communicate better—together.

This building represents a significant commitment to this interconnected approach to the workplace. First, these stairs are separate from the fully enclosed fire stairs, meaning there is an extra expense involved in adding these interconnecting stairs. However, this was seen as an investment by the owner that was critical for the successful operation of a very vertical workspace. Second, it took some ingenuity to meet New York City fire codes that don't allow more than two floors to be connected together due to smoke control. In order to be code-compliant, the architects designed a horizontal fire shutter on every other floor level. The handrail and guardrail are interrupted creating a slot for the shutter to close during an alarm event. This would have been rather difficult with any other material, but the steel products used could be designed and fabricated to accommodate the shutters cleanly and elegantly.

The stairs are constructed of conventional metal pan and shaped flat steel stringers. The railings are in-filled with brightly painted sheet metal to serve both as guards and visual elements. The stairs are enclosed with mullion free glass to enhance the connectivity approach and still meet code requirements. All of this represents a significant design effort filled with ingenuity. But it was all justified by the owner's requirements and desire to change the way people work by using the built environment

ABOVE: The uncoiled stair profiles are expressed on the exterior of the New School University Center and are equally inviting on the interior as a place to gather (see page 253 for project details).

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Learning Objectives

After reading this article, you should be able to:

1. Identify and recognize the necessary and building code-related characteristics of stairs for safe vertical circulation.
2. Investigate the design potential and innovative opportunities to create gathering spaces within buildings using stairways while maintaining fire safety.
3. Assess the ability of stairs to act as a design focal point or feature within the context of the larger building including smoke evacuated atriums.
4. Explore the ways that stairs can be designed as an artistic element in their own right within a building and still meet structural and code requirements.

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Photo by Tex Jernigan

to demonstrate transparency and encourage human connections.

Albert Einstein College of Medicine

When the Albert Einstein College of Medicine began planning for its first major research facility in two decades, the administration decided it wanted to create a uniquely collaborative environment that would foster interaction and cross-pollination among the facility's 40-odd research teams. In response, Payette—the architectural firm selected to design the Michael F. Price Center for Genetic and Translational Medicine—conceptualized an L-shaped building with wet labs in the two wings and a dramatic glass-enclosed atrium and core at their juncture. The atrium, with its light and airy common spaces, is specifically designed to draw scientists together for the sharing of ideas, while a dramatic two-story steel spiral staircase invites vertical circulation within the core of the building.

It is the stairway that ties it all together, literally and figuratively, encouraging the desired interaction. "Not only do you have cross-pollination happening on the floors but also between floors," explains Chris Baylow, the project manager for Payette. Salvatore Ciampo, the senior director for facilities management at the college, says, "I love that it looks like DNA. It has relevance to what we do here. It's almost like a sign." Like DNA, the stair acts as the catalyst for the research that takes place inside by connecting to a series of lounges on each floor where researchers congregate to eat, socialize, and relax. And because the stair is located in the building's inviting atrium, the hope is researchers and doctors will prefer it to the elevator. "This way, not only will the scientists on the same floor be bumping into each other and sharing ideas, but it will happen throughout the entire facility."

Though it looks like a unified spiral, the stair is composed of two distinct flights, one connecting the second and third floors, another

connecting the third and fourth with each flight fabricated off-site in three pieces. "It was originally planned to deliver each flight in one piece," explains Richard Wolkowitz, vice president at Tishman Construction. "However, due to the fabrication schedule, the building façade glass could not be left open. Each flight was fully fabricated in the steel shop and then cut down into the three sections for delivery." Upon delivery, the pieces were welded and ground smooth in place. Steel plates were embedded in the concrete floor slabs to receive the stringers. These connections were then welded and concealed by a wood fascia.

The structure of the stair system is a steel box stringer made of a series of ½-inch AISC architecturally exposed structural steel (AESS) built-up plate sections with continuous ¼-inch partial penetration fillet welds. Payette fitted the stairs with a glass handrail to mimic the atrium curtain wall, utilizing 18-inch-deep, ½-inch-thick monolithic low-iron glass. The glass is recessed into the stringer and held in place with non-shrink grout. It is also fitted with a mahogany railing that echoes the wooden motif found throughout much of the interior. The railing is then fitted to the glass with stainless steel brackets. The stair's steel plate treads, which were welded to the stringer, were fitted with wood treads and screwed in place. The end result is an elegant and inviting means to draw people together and connect their working thoughts and ideas.

Photo by Adam Friedberg

The stair at the Museum of Arts and Design fulfills the architect's vision of a transparent, floating structure that allows visitors to move between floors with ease (see the online version of this course for project details).

Medgar Evers College Academic Building 1

Far from your average brick-block campus building, the Academic Science Building 1 of Medgar Evers College, City University of New York in Brooklyn, is an elegant glass and steel centerpiece for a campus poised to become a neighborhood hub. A joint undertaking between the City University of New York, the Dormitory Authority of the State of New York, Ennead Architects (formerly Polshek Partnership), and Leslie E. Roberts Associates (LERA), the new six-story academic facility features four teaching laboratories, a hospital simulation room, and five laboratories for molecular biology, anatomy, physiology, microbiology, and general biology. All of these facilities are linked by a pair of feature staircases on its eastern and western facades and capped at the north end by a crystalline floor-to-ceiling glass curtain wall pavilion.

Tasked with opening campus activities up to the community at large, while still fulfilling the exacting functional requirements demanded by the lab facilities, the architects at Ennead turned to structural steel to achieve a balance between form and function. "These days academic buildings have shifted away from fixed spaces," says Todd Schliemann, lead architect for Ennead. "They're a little more flexible and there's a desire to expose the faculty to the students more, so that there's more interaction."

It was this use of steel that played a pivotal role in showcasing the feature stairs on the building's eastern and western facades. Commonly relegated to secondary structural roles and confined to enclosures, the science building uses open feature stairs that appear to float like bridges between the floors, further emphasizing the project's goal of transparency and community inclusion. "Often times in a multi-storied building you just live in a slice on a floor, unaware that you're part of a larger community," says architect Schliemann. "These stairs link the whole building together in such a way that you can see people moving through this big volume all the way up the building. It's part psychological and part circulation, but you're aware that you're a part of this bigger academic community."

To achieve the long vertical spans between floor levels without adding too much bulk, the designers framed each flight with a single 36-foot-long HSS 24x2x½ spanning member, bent in plane and elevation, and spliced together at the kink points via full penetration butt welds made in the shop. The stair structure is also used in resisting the effects of wind load on the glass and aluminum curtain wall, which is braced back to the stair by a series of 2½-by-10-inch split aluminum tubes that bear on the top of the foundation wall at ground level and laterally brace at the floor slabs and stair stringers. While the floor slab connections are hidden, the curtain wall and stair connections engage the tube mullions via a series of tuning fork-shaped aluminum extrusions with bolted connections that allow for thermal expansion and contraction.

GATHERING SPACES—TAKING TIME TO COLLABORATE

As the previous three examples demonstrate, stairs can link people on different levels in a building, but what about linking people in the stair areas directly? Let's turn to three examples that looked at stairs not only as a place for people to pass through but a place to stop, meet, rest, refresh, or just talk.

John Jay College of Criminal Justice

The team of architects and engineers who designed the recent expansion of the John Jay College of Criminal Justice faced an array of challenges when designing a new tower sited on 11th Avenue between 58th and 59th streets. The tower design, envisioned by architecture firm Skidmore, Owings & Merrill (SOM) as a vertical campus, is essentially a stacked academic program that seeks to offer the same opportunities of random encounter and collaboration common to more traditional campuses. The final design called for double-height spaces and 50-foot clear spans through the center of the building. In the words of Jason Stone, associate at structural engineering firm LERA, "Steel was the obvious choice because it's lighter than reinforced concrete and keeps the loads down. It was also the only option for the project's long span areas."

The tower and a 500-foot-long podium that connects the addition to John Jay's existing facilities on 10th Avenue make up a 620,000-square-foot expansion at the college. SOM took advantage of this long, low podium space, as well as the nearly two-story grade change between 10th and 11th avenues, to solve one of the problems of urban campus design. "One of the greatest challenges in city colleges is how to move a multitude of students who have to go from class to class in 10 minutes over various floors," says Mustafa Abadan, the SOM partner in charge of the project. In the podium, the architects arranged classroom functions around a cascading circulation corridor that descends from the top of the podium down three flights to the first floor of the college's existing building.

As such this podium space or "pedestrian cascade" as it has been called, acts as both a corridor and a segmented stairway that defines the organization of the spaces around it. "The corridor creates sectional cutouts across three floor plates," continues Abadan. "It looks like Broadway cutting through the Manhattan grid and creating public squares." Those public squares have become places for people to gather, collaborate, and interact in ways that otherwise would not be commonplace in a more conventional design.

Photo by Eduard Huber

The interconnecting corridor at the John Jay College of Criminal Justice includes large meeting areas and food service facilities.

Recessed glass handrail shoes hidden by painted aluminum fascias and custom stainless steel railings and stand-offs maintain the stair's weightless appearance in the atrium at the Rockefeller University Building (see project details online).

Photo by Adam Friedberg

New School University Center

The 375,000-square-foot New School University Center on Manhattan's Fifth Avenue and 14th Street is a mixed-use LEED Gold facility that includes seven stories of academic space for classrooms, an 800-seat auditorium, library, labs, another nine stories above for a 600-bed dormitory, and most importantly, spaces throughout for students to interact spontaneously. "One of the primary programmatic requirements was to create opportunities for students to socialize," says Lia Gartner, vice president for design, construction, and facilities management for The New School. Before the University Center was built, the New School had neither a student union, nor a college green or quad, for chance encounters. "The streets of New York were our campus," says Gartner.

Continues at ce.architecturalrecord.com

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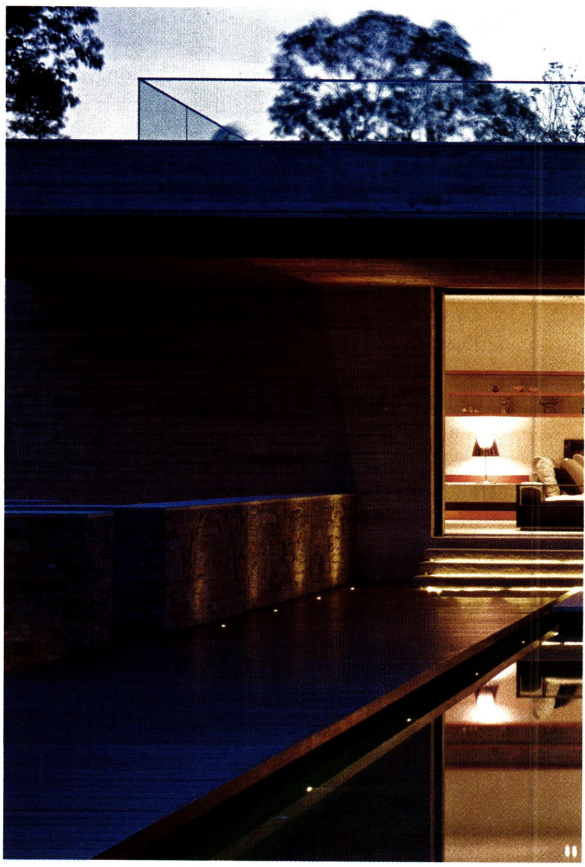


Multi-Slide Glass Doors

Bringing indoors and outdoors together through design and performance

Sponsored by LaCantina Doors | *By Peter J. Arsenault, FAIA, NCARB, LEED AP*

Creating a visual connection between indoors and outdoors has long been a design goal in both commercial and residential buildings. Going beyond the visual and creating an actual physical connection between the two has often relied on a series of doors with interrupted access at the spaces between those doors. However, new product offerings using multiple sliding door panels that stack or store in wall pockets now make it possible to fully connect indoor and outdoor spaces, without the interruptions. When open, the indoor spaces extend outward to create an outdoor living experience with all the benefits of fresh air and daylight. When closed, attention to details and performance characteristics assure that the multi-slide doors provide the needed protection from the weather and climate conditions.

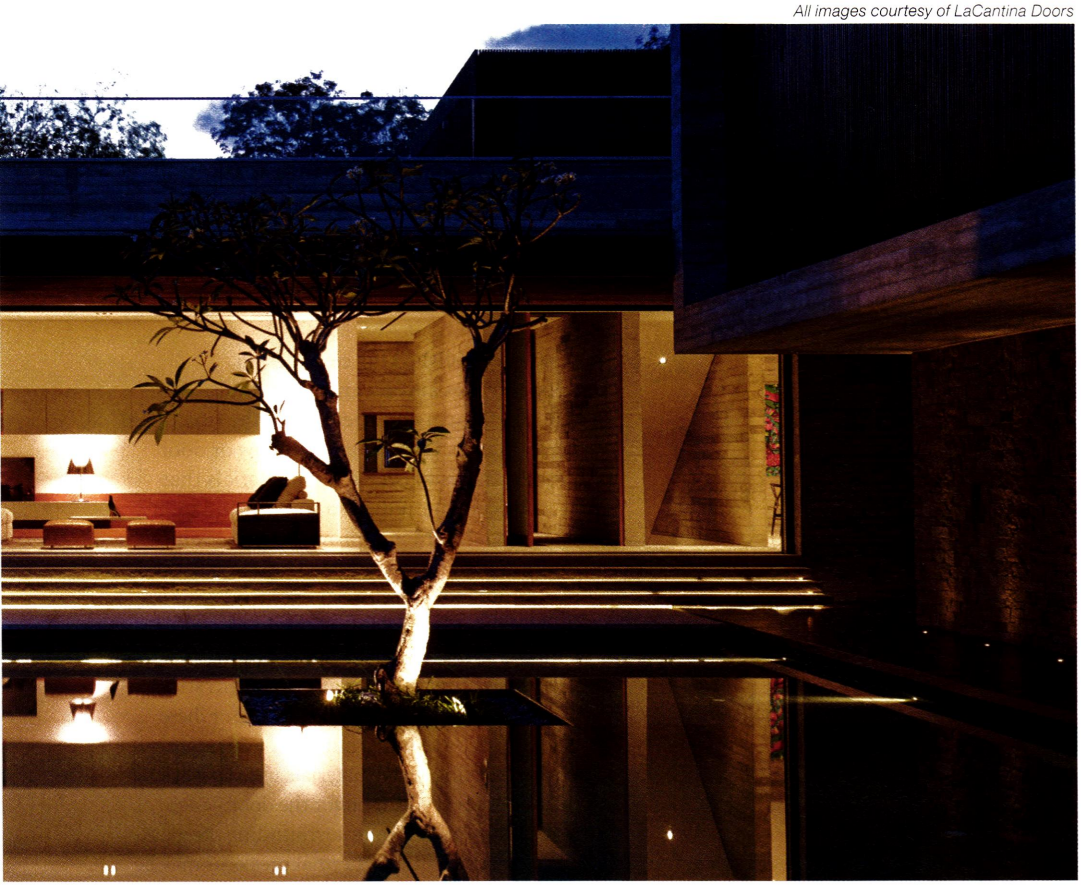
DESIGNING FOR OPEN SPACES WITH MULTI-SLIDE GLASS DOORS

Many building designs seek to capture outdoor spaces as part of the overall usable space related to a particular building. In commercial building designs, restaurants, office buildings, and apartments all can benefit when outdoor weather conditions make it more compelling to function outside rather than indoors. In residences, rooms that flow into patios, decks, or natural outdoor areas such as beaches or wooded areas, give residents a direct connection to those outdoor spaces. In all cases, it is the interaction between indoors and outdoors that becomes the key design focus—how to create the transition space or mechanism to allow the enjoyment of the outdoors but still access the functional needs of the indoor spaces.

Many 20th century architects worked with this concept of connecting indoors to outdoors but were limited by the technology and products of the time. The glass houses of Phillip Johnson and Mies van der Rohe created the celebrated visual connections but relied on conventional swinging doors to make the physical connection. Frank Lloyd Wright often used a series of double swinging french-style doors that opened out against the sides of a column or pier, making the whole assembly appear as a colonnade with the doors visually disappearing. All of this was contemporized into the mainstream home construction market through the use of sliding patio glass doors that typically provided one fixed and one movable sliding panel of framed glass at the same head height as other swinging doors.

Architects today who are looking to use this same design concept of connecting indoors and outdoors have more options and better choices than those who preceded us. In particular, designing with multi-panel sliding glass doors provides an opportunity to create a seamless connection between indoor and outdoor spaces while blending fully into the total building design. As a product, multi-slide glass doors are typically comprised of a number of individual sliding door panels that are guided on a head track above and ride on a floor sill below with bottom mounted rolling hardware. When open, they can either stack in one or more parking bays along the plane of the opening or recess into a pocket designed for that purpose. Similar to

All images courtesy of LaCantina Doors



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EARN ONE GBCI CE HOUR FOR LEED CREDENTIAL MAINTENANCE

Learning Objectives

After reading this article, you should be able to:

1. Identify and recognize the characteristics of high-performance multi-slide glass doors as defined by national standards.
2. Investigate the design potential and innovative opportunities to create buildings that allow direct connection to the outdoors.
3. Assess the functional contributions of multi-slide glass doors as they contribute to green and sustainable design.
4. Specify multi-slide glass doors in a variety of green and conventional buildings and formulate appropriate selections related to specific applications.

To receive 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 for free.

AIA/CES COURSE #K1406H
GBCI COURSE #910000377

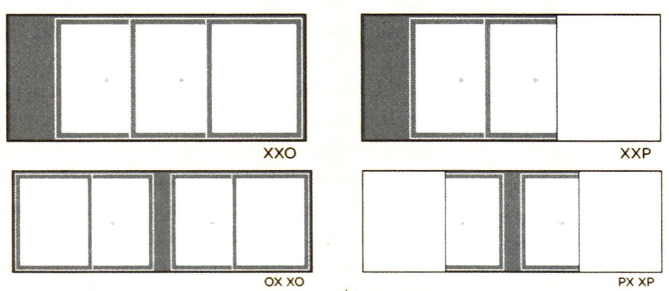
TOP LEFT: Buildings of all types and designs can benefit by incorporating multi-slide glass doors to enlarge the perceived usable space.

TOP RIGHT: Multi-slide glass doors seamlessly connect indoor and outdoor spaces when open while quality fabrication assures proper performance when closed.

systems that use a series of panels that fold, the sliding operation also offers flexibility in terms of space requirements and configurations. Other notable features of sliding systems are discussed further as follows.

Typical Applications

Multi-slide glass doors are being used in a full range of building types and functional applications. Residential buildings are able to open up entire walls and connect main living areas with outdoor spaces. Multifamily developments use them to help create the feel and appeal of a larger living unit by extending to outdoor balcony and common spaces. Restaurant and retail buildings can cater to customers who prefer to relax in outdoor spaces while still being directly connected to the indoor facilities available. Resorts and hotels similarly can provide their guests with a convenient and inviting indoor/outdoor experience for individual rooms or for common lobby, restaurant, or function areas. Educational buildings that need to have the ability to expand a space to accommodate gatherings can use multi-slide glass doors that extend to adjacent outdoor areas. Offices that open to a central atrium or courtyard can use them to provide open access when desired or be closed off when needed. In short, their use is only limited by the imagination and creativity applied by the building designer.



Multi-slide glass doors can be configured to stack to one side or two sides or can be designed to disappear into wall pockets.

Typical Sizes and Configurations

Multi-slide glass doors are generally used to create large openings in walls or to take the place of an exterior wall altogether. The size of the panels and the total door unit can vary and is usually custom fabricated to suit a particular building project. As a practical matter, the glass in an individual multi-slide panel is generally limited to 60 square feet in size with the caveat that the height is generally limited to 12 feet while the width is generally limited to 8 feet. The number of individual panels can vary to suit the overall opening size but there is generally a maximum of six panels that can be stacked up in each direction as a practical matter. Note that while these products are commonly used in door sizes, they can also be designed and used in shorter window sizes such that they function as multi-slide windows resting on a wall portion below and above them.

The configuration of the panels can be designed so they all stack behind each other on one side of the opening or be split to stack on both sides of the opening. Either way, there are two basic options in terms of the way the sliding panels stack. The first is to keep one glass panel fixed or stationary and slide the adjacent panels to stack evenly behind the stationary one. When

LEFT: When the building is designed for it, natural daylight is a dominant design benefit from the use of multi-slide glass doors.

stacked, some manufactured designs appear as a single panel when viewed from the inside or outside. The other option is to conceal the sliding panels in a wall pocket. In this case the sliding panels disappear altogether, giving the appearance of a full opening in an otherwise solid wall area.

When laying out the multi-slide doors, keep in mind that they are not limited to a single wall plane. Manufacturers have developed methods to allow doors to meet at a corner location such that a post or other element is not needed. That means that when open, the corner virtually disappears, allowing a full visual and physical three-dimensional connection between outdoors and inside. When closed, the door panels come together to form either an inside or outside corner again.

Design Coordination

As noted, multi-slide glass doors can be incorporated into a wide range of building types in a number of ways. They can be fully integrated with the building construction to create a seamless and flush appearance so they seem to disappear altogether when open. In other cases, they can create a large feature in a façade by allowing for a distinctly defined opening. In short, they can be used to work with the overall building design to enhance or even define a particular aesthetic.

When it comes to coordinating the visual appearance of the multi-slide doors with the other doors in the building, it is appropriate to pursue a visual balance with all of the other doors. In that regard, architects often seek doors that can provide clean and even sight lines between different functioning doors to create a consistent daylight opening and complete overall design.

At the basic architectural design level, multi-slide door sizes and proportions can be chosen to match other doors in the building both in proportion or actual size. This can create the desired coordinated appearance at one level. Taking that a step further, it is also possible to select multi-slide doors with stile and rail sizes to match other doors in the building, particularly if all of the doors are sourced from the same manufacturer. This helps to create a complete matching door package with a consistent look that is more refined than having competing visual door components.

The frame elements surrounding the glass on multi-slide glass doors are available in a range of aluminum profiles that can be thermally broken or not and can be treated with wood.

PERFORMANCE CHARACTERISTICS OF MULTI-SLIDE GLASS DOORS

Having established the clear design opportunities and advantages of multi-slide doors, let's turn our attention to the functional performance. Overall, any window or door product needs to use quality materials that are fabricated to provide a smooth and tight operation. In order to provide a good value to the owner, they must be durable enough to continue to operate well over the life of the building. And they must meet the thermal demands of the climate where they are installed in terms of heat transfer and air infiltration.

Multi-slide glass doors achieve all of these performance needs in a number of ways. Let's start by looking at the materials used to fabricate them. It is most common for the door panels to use aluminum frames surrounding the glass either with or without thermal breaks as may be needed. A unique design innovation based on a traditional wood clad door is an aluminum and wood combination system that is available from at least one manufacturer as well. This aluminum wood frame uses a low-maintenance aluminum exterior combined with a natural wood interior to enhance or blend with the interior design scheme of the building.

With any of these choices, the frame supports and holds the glass itself which can be selected from a typical range of single, double, or triple glazing options. Overall U-factors in the door panels can be achieved at or near the common fenestration target of 0.30 or better depending on specific glazing selections made for low-e or other coatings. The glazed door panels fit into a track running along the door head that the doors are guided along and are commonly made of extruded aluminum with thermal breaks as needed. The track depth will vary to suit the number of door panels used in the multi-slide door. The door sill is also extruded aluminum available in a variety of flush or raised profiles and designed to allow the door to rest and slide along it. The wheels that allow the door panels to slide are commonly made either from nylon for smoother, quieter operation in lighter-weight panels or from stainless steel for heavier-weight door panels. Altogether, the door panel assembly is intended to be more rigid, more durable, and longer lasting than conventional residential sliding glass doors with full customization of the overall door size.

LEFT: The performance of multi-slide glass doors is based on testing to simulate high wind and water pressure conditions to assure that they are appropriate for a variety of climate and weather conditions.

Structural and Weathering Performance

Structural integrity is clearly needed in all window and door units to maintain proper fit and operation of the products under conditions of wind, rain, and other weather stresses. Structural Load Deflection testing is routinely carried out by manufacturers under ASTM E-330. This test is used for multi-slide doors as well with the results directly dependent on the size of the panels.

The American Architectural Manufacturers Association (AAMA) publishes the primary standard for commercial windows and doors in its document AAMA/WDMA/CSA 101/I.S.2/A440-08, "North American Fenestration Standard (NAFS)/Specification for windows, doors, and skylights." This standard defines four (4) different Product Performance Classes namely R, LC, CW, and AW. It also identifies the minimum Performance Grade (PG) that is required to satisfy the criteria of each class. The defining criteria is the minimum design pressure (DP) that a unit must resist such that class R must withstand 15 pounds per square foot (psf) of pressure, class LC 25 psf, class CW 30 psf, and class AW 40 psf.

In addition, each class must meet minimum water resistance test pressures ranging from 2.9 psf for Class R, 3.75 for Class LC, 4.50 for Class CW, and 8.0 for Class AW. Water penetration is tested by ASTM E-547 with the sill configuration routinely having a direct influence on the results. Clearly water entering through a closed multi-slide door wall would be disconcerting at least and damaging to the building at worst. Since such water penetration must not occur, water must either be sealed out completely or managed so that if it does penetrate any part of the system, it will drain away harmlessly. Multi-slide glass doors have been tested using these ratings and standards and have been found to meet overall DP ratings of up to 45 with additional structural up to 90 psf and no water leakage at up to 6.8 psf.

Thermal Performance

Identifying the true thermal performance of fenestration systems and products has been the focus of a not-for-profit trade association known as The National Fenestration Rating Council (NFRC). Since 1989 they have championed the process of fairly and comprehensively rating windows, doors, and skylights including multi-slide glass doors. Prior to the formation of NFRC, window manufacturers used different tools to measure and report the energy efficiency of their products. In 1993, NFRC developed the first consensus method for evaluating the thermal transmission of windows. NFRC 100 "Procedures for Determining Fenestration Product U-factors" is now the accepted standard for rating windows, doors, and skylights for U-factor. This standard establishes standardized environmental conditions, product sizes, and testing requirements, so that architects and others can make informed choices by comparing the performance of different products fairly and accurately.

One of the most important improvements NFRC 100 offered the industry was that the determination of heat loss of the entire window unit, not just the glazing. A multi-slide glass door that is tested and subsequently rated in accordance with NFRC 100 gets credit for all of the energy-efficient features including low-e glass, thermally improved frames, and even the spacer used between layers of insulated glass. However, if a manufacturer is deficient in any of these areas, the testing will reveal that as well. Therefore, when comparing performance between different manufactured systems it is advisable to always look for products that have U-factors determined in accordance with NFRC 100.

Continues at ce.architecturalrecord.com

Peter J. Arsenault, FAIA, NCARB, LEED AP, *practices architecture, consults on green and sustainable design, writes on technical topics, and presents nationwide on all of the above. www.linkedin.com/in/pjaarch*

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LaCantina Doors is a pioneer in designing and manufacturing folding door systems. Its focus on developing and refining these products has resulted in the most innovative and comprehensive range of folding doors available. Dedicated to creating products that open spaces, the company has evolved its product line to include a new class of multi-slide door systems and a complete range of swing doors.

Whether folding or sliding, LaCantina Doors creates dramatically expanded interiors filled with natural light and open air, completely transforming space from the inside out. From door and window combinations, zero post corners, integrated screening solutions, and hurricane ratings, its experience specializing in products that open large spaces and forward thinking allow the company to offer the most unique, functional, and high-performance options of any folding or sliding door. Using the same signature door profiles used in its folding systems, its new products provide a perfect match for a complete door package. **www.lacantinadoors.com**

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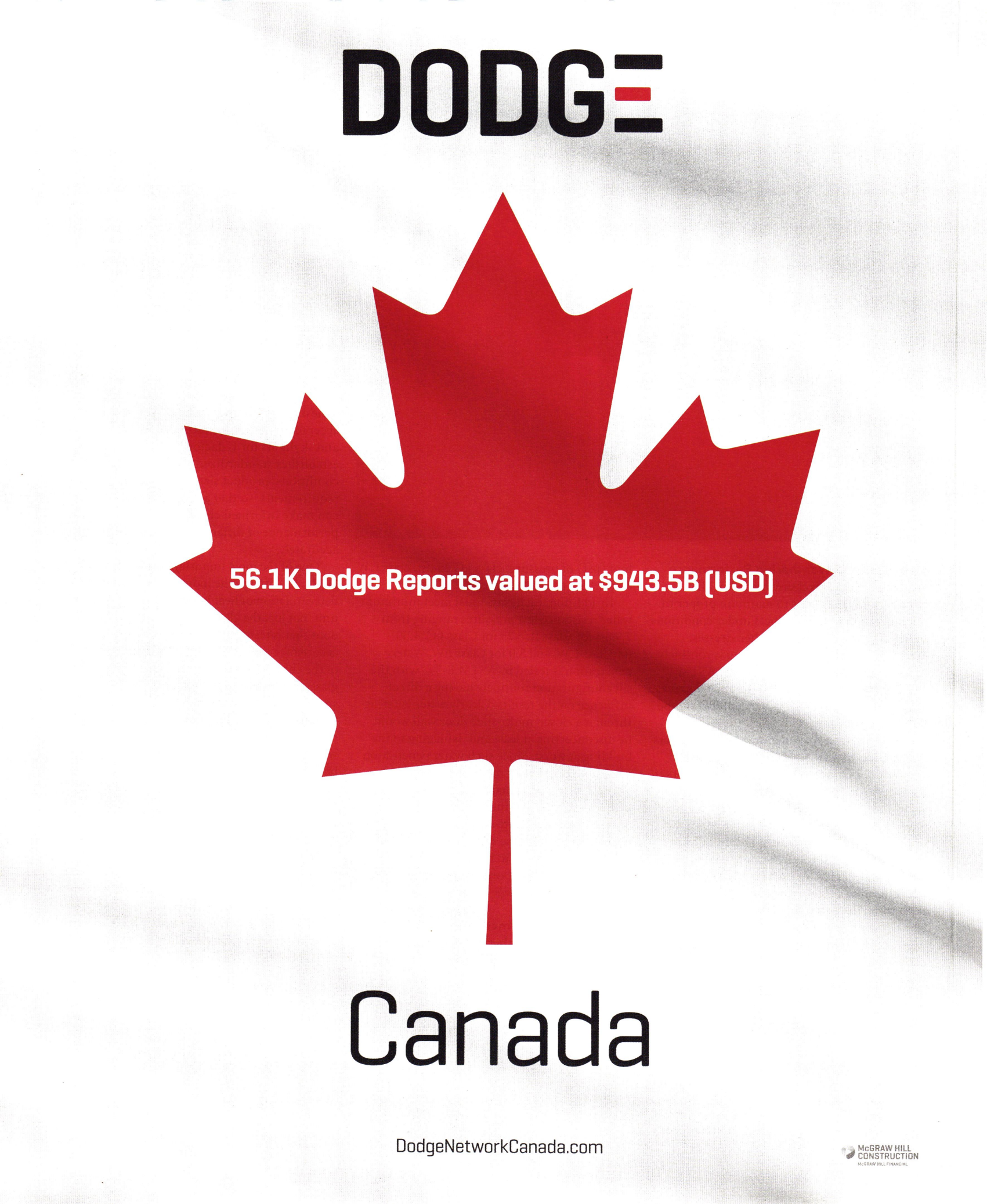
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Wood Products and Green Building

Rating systems increasingly recognize wood's environmental advantages

Sponsored by reThink Wood

With growing pressure to reduce the carbon footprint of the built environment, building designers are increasingly being called upon to balance functionality and cost objectives with reduced environmental impact. Wood can help to achieve that balance.

The choice to use wood as a green building material is intuitive. It's abundant, renewable and recyclable, and has a lighter carbon footprint than other construction materials.[1] Wood is also the only structural building material with third-party certification systems in place to verify that products have come from a sustainably managed resource.

In addition to its environmental benefits, wood's natural beauty and warmth have a positive effect on building occupants. In one study, for example, the use of visual wood was shown to lower sympathetic nervous system (SNS) activation, which is responsible for physiological stress responses in humans.[2] As a result, an increasing number of architects are incorporating wood in their designs as a way to achieve goals such as improved productivity and performance in schools and offices, and better patient outcomes in hospitals.[3]

With all of these attributes, wood is well positioned as a key component of environmentally superior structures. Yet, early efforts to promote green construction resulted in highly variable treatment of wood in green building rating systems—which, at the time, were largely based on long lists of prescriptive standards, typically focused on single attributes such as recycled content. Such variability can still be seen in many of the green building programs in use today. However, these systems are increasingly moving away from prescriptive standards and toward reliance on systematic, multi-attribute assessment of building products, assemblies, and completed structures through life cycle assessment (LCA). The result is greater uniformity between programs and far greater robustness in evaluation, both of which serve to leverage the environmental advantages of wood.

This continuing education course examines key green building rating programs and how wood building materials and components are rated within each. Increased reliance on LCA

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EARN ONE GBCI CE HOUR FOR LEED CREDENTIAL MAINTENANCE

Learning Objectives

After reading this article, you should be able to:

1. Discuss the sustainable aspects of wood products.
2. Describe how wood contributes to credits under various green building rating systems.
3. Articulate the importance of life cycle assessment and how it can be used to evaluate the environmental performance of buildings at the design stage.
4. Describe how green building certification, sustainable forest certification, and Environmental Product Declarations complement each other to provide a more complete picture of a building's environmental performance.

To receive 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 for free.

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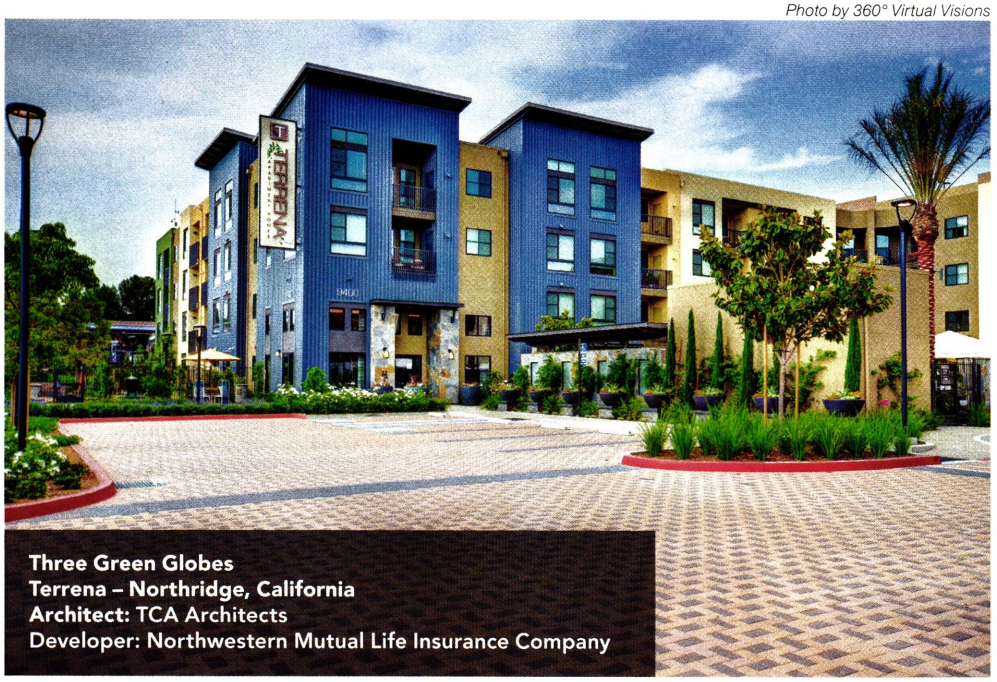
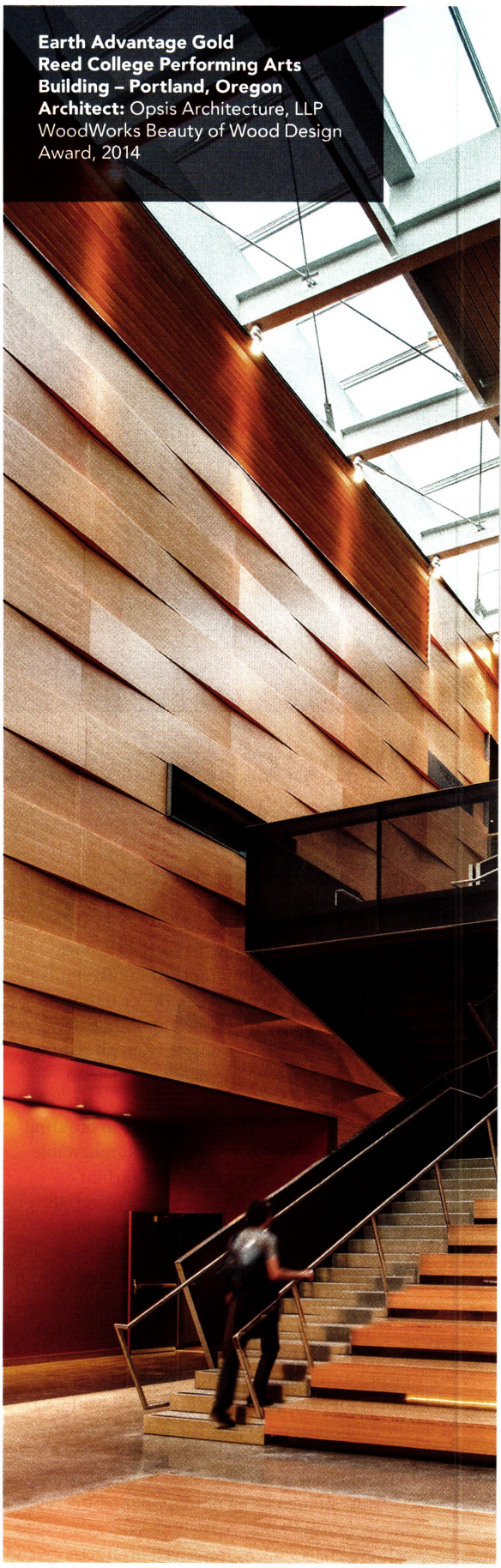
Photo by 360° Virtual Visions



Three Green Globes
Terrena – Northridge, California
Architect: TCA Architects
Developer: Northwestern Mutual Life Insurance Company



Earth Advantage Gold
Reed College Performing Arts Building – Portland, Oregon
Architect: Opsis Architecture, LLP
WoodWorks Beauty of Wood Design Award, 2014

and environmental product declarations (EPDs), and the implications for wood construction, are also explored.

GREEN RATING SYSTEMS, CODES, AND WOOD

Of the 42 distinct green building programs currently in use in the United States and Canada, 12 of the most prominent are examined in this article; the UK BREEAM program—the world's first comprehensive green rating system and basis for many systems worldwide—is also included.

Approaches to Rating Green Buildings

Early green building rating initiatives in North America were based on lists of prescribed measures for reducing energy consumption and various environmental impacts. Among these were Built Green, Earthcraft, Leadership in Energy and Environmental Design (LEED), and the NAHB Model Green Home Building Guidelines—precursor to the National Green Building Standard. Arranged within categories such as Energy, Water, Indoor Air Quality, Materials and Resources, and Site, prescriptive lists of recommended or required measures outlined the path toward environmentally better buildings. Each measure typically addressed a single concern or attribute such as recycled, recycled content, rapidly renewable, and sourcing. Recommendations for improving environmental performance of buildings and construction practices varied among the initiatives, as did recommendations for the use of wood and wood products.

There has been a noticeable shift away from prescriptive measures and toward systematic, performance-based assessment using LCA. This shift is reflected in the latest version of LEED, Green Globes and several other rating systems, and is discussed later in this article.

Green Building to Code

Given broad interest in reducing the environmental impacts of buildings and their construction, it is not surprising that provisions of voluntary green building rating systems are beginning to find their way into building codes. The State of California became the first state to codify green building provisions with its *California Green Building Standards Code* (CALGreen), which applies to all occupancies within the state. Model code language has also been developed in the form of ASHRAE 189.1 and the *International Green Construction Code* (IgCC). Washington, D.C., for example, has adopted the 189.1 standard as part of its city building code, while Florida requires compliance with the IgCC in the construction of state-owned buildings. Other states and municipalities, such as Maryland, Rhode Island, Phoenix, and Scottsdale, have endorsed the use of the IgCC on a voluntary basis.

CALGreen provisions and model code language within the ASHRAE and IgCC standards are similar to those in voluntary green building rating systems. However, a comparison of all three shows greater incentive for wood use under the IgCC than CALGreen or the ASHRAE standard. For example:

- The Materials Selection section of the IgCC standard specifies that at least 55 percent of the total materials used in each building project (based on mass, volume, or cost) must be any combination of used, recycled-content, or

Photo by Christian Columbres Photography

recyclable materials, or bio-based materials, where the bio-based content is not less than 75 percent and where wood materials are environmentally certified.

- ASHRAE 189.1 contains a similar requirement, specifying that at least 45 percent of materials must be low-impact materials, with low impact defined as recycled content, regional, or bio-based materials; bio-based materials are required to comprise a minimum of 5 percent of the total cost of materials.
- CALGreen awards voluntary credits for the use of bio-based materials.

All of these initiatives emphasize use of rapidly renewable materials, defined as materials that renew in 10 years or less, rather than 11 years or more (i.e., they favor materials other than wood), although they also reward the use of certified wood. None of these programs require comprehensive environmental certification of rapidly renewable materials or of any construction material other than wood.

NEW DEVELOPMENTS IN GREEN BUILDING RATING SYSTEMS & CODES

The following developments within major green rating systems demonstrate the shift toward LCA-based tools and data.

LEED v.4. In the Materials and Resources category of LEED v.4 (2013), prescriptive measures that were part of the previous version of the system—for material reuse, recycled content, and rapidly renewable materials—have been replaced with optional credits related to LCA, LCA-based environmental product declarations (EPDs), material ingredient verification, and raw material extraction (see sidebar in the online version of this course). EPDs need only be collected to gain credit; there is no requirement that they be understood or acted upon, though such requirements will presumably appear in a subsequent version of LEED. Prescriptive elements also remain.

According to Dr. Jim Bowyer, director of the Responsible Materials Program at Dovetail Partners, "The two rating systems that have long incorporated systematic assessment into their programs—BREEAM and Green Globes—have more robust LCA provisions."

Green Globes v.1.3. The newest version of Green Globes (version 1.3, 2014) offers two paths to satisfying material selection requirements. One option is to conduct LCAs in the conceptual design phase of at least two building designs (core and shell including envelope), with selection of the lowest impact option. Alternatively, EPDs that comply with standards put forth by the International Organization for Standardization (ISO), third-party certifications to multi-attribute consensus-based standards, and/or third-party-certified, ISO-compliant life cycle product analyses focused on appropriate characteristics for the building system or application must be used as a basis for selection of specified products.

BREEAM. Within the Materials section of BREEAM, credits are awarded on the basis of a building's quantified environmental life cycle impact through assessment of the main building elements—i.e., exterior walls, windows, roof, upper floors, internal walls, and floor coverings and finish. Impacts can be quantified either through use of an ISO-compliant LCA tool (wherein building designers must demonstrate that they know how to use the LCA tool and document how the building design has benefitted from its use), or through selection of building components based on either an LCA-based Green Guide developed and maintained by BRE, and/or ISO-compliant EPDs. Life cycle greenhouse gas emissions (in kilograms of carbon dioxide, or CO_2 equivalent) for each element must also be reported based on a 60-year building life.

The shift toward performance-based assessment is also reflected in ASHRAE 189.1, the IgCC, and CALGreen.

The ASHRAE guidelines provide alternative prescriptive and performance pathways. The performance option requires that LCAs be

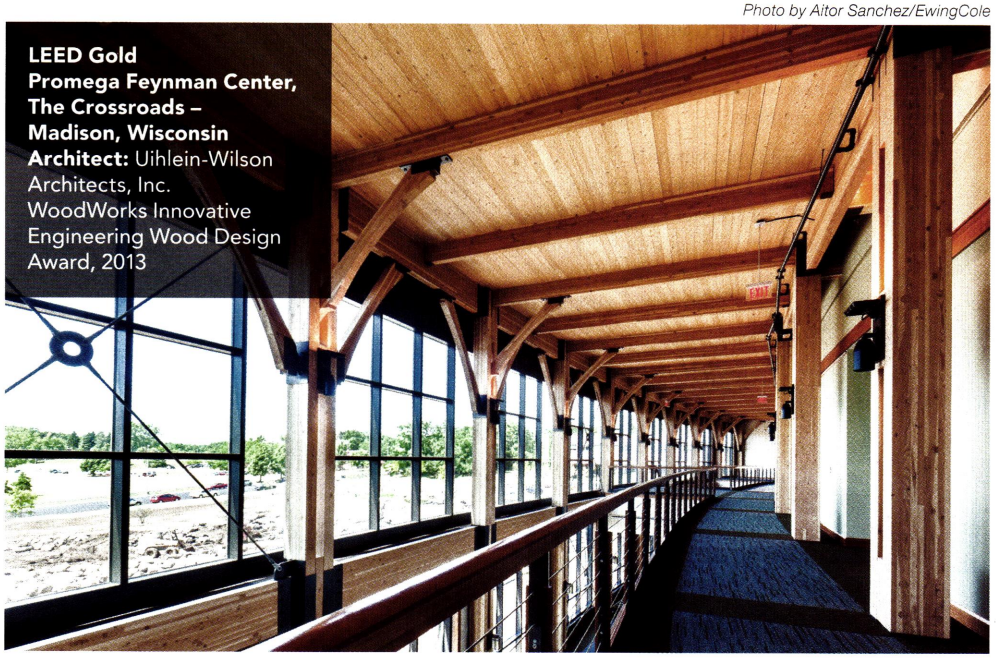
SUSTAINABLE FOREST CERTIFICATION

There are four primary forest certification programs operating in North America today: Forest Stewardship Council (FSC), Sustainable Forestry Initiative (SFI), Canadian Standards Association's Sustainable Forest Management Standards (CSA), and American Tree Farm System (ATFS). All but FSC are endorsed by the Programme for the Endorsement of Forest Certification (PEFC), an independent, non-profit umbrella organization that supports sustainable forest management globally by assessing and endorsing national forest certification standards. Certification in all cases requires third-party verification against a published, transparent standard.

Certification under these programs is separate from the green rating systems that require their use, and different also from the Environmental Product Declarations discussed in this course.

While green building programs encourage the use of certified wood products, there is no such requirement for rapidly renewable materials or products such as steel, concrete, or plastics.

Photo by Aitor Sanchez/EwingCole



LEED Gold
Promega Feynman Center, The Crossroads – Madison, Wisconsin
Architect: Uihlein-Wilson Architects, Inc.
WoodWorks Innovative Engineering Wood Design Award, 2013

conducted for a minimum of two building design alternatives. Assessment must demonstrate at least a 5 percent improvement in at least two categories, including land use (or habitat alteration), resource use, climate change, ozone depletion potential, human health effects, ecotoxicity, eutrophication, acidification, or smog. Completion of an LCA eliminates the need to adhere to prescriptive low-impact material requirements outlined earlier.

Similarly, the IgCC guidelines also offer the option to pursue either a prescriptive or performance path. Here, choice of the performance pathway requires a whole building LCA and demonstration that a given project achieves not less than a 20 percent improvement in environmental performance as compared to a reference design of similar usable floor area, function, and configuration that meets the minimum energy requirements of IgCC and structural requirements of the *International Building Code*. Environmental performance improvement is required in global warming potential and at least two of the following impact measures: primary energy use, acidification potential, eutrophication potential, ozone depletion potential, and smog potential. As in the ASHRAE program, fulfillment of this requirement eliminates the need to document adherence to a number of prescriptive elements related to material selection. CALGreen contains a similar provision.

LIFE CYCLE ASSESSMENT: GETTING TO A MATERIAL'S REAL GREEN QUOTIENT

Life cycle assessment is sometimes described as mysterious and complicated. Yet, what is involved is simply a thorough accounting of resource consumption, including energy, and emissions and wastes associated with production and use of a product. For a "product" as complex as a building, this means tracking and adding up inputs and outputs for all assemblies and subassemblies—every framing member, panel, fastener, finish material, coating, and so on. Further, to ensure that results and data developed by different LCA practitioners and in different countries are comparable (i.e., that results allow apple-to-apple comparisons), LCA practitioners must strictly adhere to a set of international guidelines set forth by the International Organization for Standardization.

Tracking products and co-products through a supply chain and properly allocating resource use, emissions, and wastes to various outputs can indeed be complicated and expensive. However, a growing number of LCA tools have made LCA a viable option for any designer. User-friendly, low-cost (in most cases free) tools, such as the Athena Impact Estimator for Buildings (IE), provide life cycle impact information for an extensive range of generic building assemblies, or designers can choose to undertake full building analyses. LCA-based data is also available in the form of standardized, easy-to-understand EPDs for a wide range of products.

The wood industry has been an early adopter of EPDs, undertaking research and developing life cycle information that verifies the environmental impact of wood building

WOOD AND GREEN BUILDING RATING SYSTEMS

Generally, every prescriptive-based rating system offers a certain percentage of credits that can be achieved with the use of wood or wood products. In most cases, wood is recognized in the following areas:

Certified wood. Credits are awarded for wood that has been third-party certified as coming from a sustainably managed forest. Different rating systems allow for different certification programs, with some more inclusive than others. While rating systems commonly reward projects that use certified wood, they do not require any demonstration that competitive materials such as concrete, steel, or plastic have come from a sustainable resource.

Recycled/reused/salvaged materials. Many rating systems give credits for the use of products with recycled content. Wood products that qualify include finger-jointed studs, medium-density fiberboard, and insulation board.

Local sourcing of materials. A number of systems place special emphasis on the use of local materials as an approach to reducing the environmental impacts of construction projects, rewarding materials sourced from within a certain radius—commonly 500 miles. However, simply tracking transportation distances ignores such critically important factors as mode of transportation and the type, efficiency, and impacts of manufacturing processes.

Helen Goodland, an expert in green building and principal of Brantwood Consulting Partnership, explains that "rather than focusing solely on transportation distances, rating systems should look at life cycle assessment methodology, which quantitatively analyzes not just transportation impacts, but the total environmental footprint of all materials and energy flows, either as input or output, over the life of a product from raw material to end-of-life disposal or reuse."

Materials efficiency. Many rating systems, such as BREEAM, Built Green Canada, and Earthcraft, reward use of lower quantities of building materials. An example is credit availability for employing advanced wood framing systems.

Waste minimization. Credit is often awarded for avoiding or diverting construction waste—e.g., through jobsite protocols that include pre-cut packages or off-site production of building modules.

Indoor air quality. Most rating systems limit or prohibit added urea formaldehyde and have strict limits on the use of products that contain volatile organic compounds (VOCs). Many wood products are available that verifiably meet or exceed these guidelines.

Photo by Jim Roof Creative Photography

LEED Silver
Willson Hospice House – Albany, Georgia
Architect: Perkins+Will
WoodWorks Institutional Wood Design Award, 2011

products. EPDs on wood products are available from the American Wood Council and Canadian Wood Council websites along with transparency briefs summarizing the most critical data presented in each. (For more information on EPDs, see the continuing education course *Wood and Environmental Product Declarations.*[4])

Increased use of LCA in the evaluation of building design alternatives and material selection greatly favors wood in all types of construction, since environmental impacts across the full spectrum of indicators tend to be significantly lower for wood products than alternative materials.[5] Scientific comparisons of functionally equivalent buildings, components, and subassemblies have been remarkably consistent in this regard, with wood almost invariably found to be the low-impact option.

As an example of the environmental performance of wood structures in comparison to those constructed of other materials, a highly regarded and commonly used LCA tool, the Athena Eco-Calculator, was used to evaluate three alternative configurations of a simple building. Designed for the Atlanta geographical area, the building footprint was 20,000 ft^2 (100 ft x 200 ft). Two stories in height, the structure was 20 feet tall with 40,000 ft^2 of total floor area. To simplify analysis and comparison of materials in particular, the theoretical building was analyzed without windows, doors, or internal partitions. Of the three configurations, one was wood, one steel, and one concrete. All were assumed built on a concrete foundation and slab.

See endnotes in the online version of this article.

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reTHINK WOOD

The reThink Wood initiative is a coalition of interests representing North America's wood products industry and related stakeholders. The coalition shares a passion for wood products and the forests they come from. Innovative new technologies and building systems have enabled longer wood spans, taller walls and higher buildings, and continue to expand the possibilities for wood use in construction. **www.rethinkwood.com**

CIRCLE 92

Photo courtesy of Sherwin-Williams

Technologically advanced high-performance coatings bridge the gap between traditional architectural paint and coatings formulated for heavy industrial applications.

High-Performance Coatings for Commercial Applications

A new generation of coatings is engineered to protect assets, enhance appearance, and maximize long-term value for your clients

Sponsored by Sherwin-Williams | *By Cathy Brugett in collaboration with Joe Kujawski, Director of Wholesale Marketing, Sherwin-Williams*

Every job is unique. Each has specialized requirements, client demands, and environmental compliance issues that must be considered. Of the many challenges facing the design community, one of the most demanding is specifying the right coating for commercial spaces. Just as all jobs are not created equal, all paints are not created equal. Standard latex architectural wall paints typically found in MasterFormat section 099123 for Interior Paint are fine for some light-duty commercial applications but are inadequate for areas that experience higher traffic or frequent cleaning. And heavy-duty industrial coatings such as the epoxies and urethanes typically found in section 099600 for High-Performance Coatings are usually reserved for harsh industrial environments such as manufacturing and processing plants.

What about all those busy, high-demand spaces that fall between light commercial and heavy industrial? Often referred to as Light Industrial or Heavy-Duty Commercial, these "in-between" spaces could include commercial

CONTINUING EDUCATION

EARN ONE AIA/CES HSW LEARNING UNIT (LU)

EARN ONE GBCI CE HOUR FOR LEED CREDENTIAL MAINTENANCE

Learning Objectives

After reading this article, you should be able to:

1. Distinguish between the features of a high-performance coating and a traditional architectural coating.
2. Describe why high-performance coatings are well suited for applications with stringent environmental considerations.
3. Recognize the basic differences between the five primary types of high-performance coatings and identify potential applications for each.
4. Explain what factors determine a coating's sustainability.
5. Evaluate the impact of a coating's life cycle on long-term product costs and the environment.

To receive 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 for free.

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kitchens, locker rooms, school classrooms, fitness centers, healthcare facilities, animal hospitals, natatoriums, school cafeterias, transit terminals along with many other high-traffic, high-profile commercial spaces that are all around us.

Specify standard latex wall paint for these areas and it could result in premature failure of the coating, excessive maintenance cost for the owner, and a greater consumption of resources as a consequence of frequent repainting. Yet, if you specify a heavy-duty industrial-grade epoxy for these areas, you are limited in colors and sheens, the application requires a specialized painting contractor, and the finish quality can be substandard for a commercial space that will be seen by customers, employees, or the public.

A stippled, glossy finish might be acceptable for a concrete block wall in a beverage plant, but would not pass inspection for a school hallway. So, what is the solution to this dilemma? Fortunately, there's a new breed of high-performance wall paints designed to address the need for durable coatings in these types of environments. These technologically advanced coatings are available in virtually any color and all of the popular sheens, provide a smooth, elegant finish, comply with stringent environmental standards, and can be applied by a standard painting contractor. Additionally, high-performance commercial coatings deliver the hard-wearing durability a commercial space demands, without compromising the client's expectation for a beautiful finish that's easy to apply and inexpensive to maintain.

Because they represent a wide range of advanced formulations to satisfy specific needs, knowing how to choose the right high-performance commercial coating for the job will not only ensure the long-term success of your project, it can save money over the life cycle of the coating.

THE ROLE OF A HIGH-PERFORMANCE COATING

Generally speaking, a high-performance commercial coating must fulfill two basic functions. The first is to protect the substrate from whatever ambient conditions threaten its integrity. Abrasion, impact, stains, moisture, and frequent washings are some of the extreme environmental conditions often found in active commercial spaces.

In addition to protecting the substrate, the coating's second fundamental purpose is to meet the customer's aesthetic demands. There was a time when "industrial-strength" coatings were reminiscent of Henry Ford's famous line, "you can have any color, as long as it's black." In other words, they were only available in very limited package colors and a single sheen.

Photo courtesy of Sherwin-Williams

Engineered for long-lasting beauty and durability, advanced high-performance coatings deliver the highest performance standards for the widest variety of commercial and light industrial environments.

Those days are long gone. Today, advanced coating technology offers customers a full range of colors, multiple sheen options, and an attractive finish that equals the appearance of any premium architectural coating—without compromising high-performance standards. It is this blend of beauty and durability that is the essence of a high-performance commercial coating. And unlike most "industrial-grade" coatings, often characterized by strong odor and high VOC content, advanced high-performance formulas have a lower odor in comparison and comply with the most stringent environmental regulations. But with so many options available, how do you choose a high-performance coating that fulfills your client's expectations?

Space Considerations

Start by considering how the space will be used. Invariably, coatings for commercial projects must be strong enough to withstand a higher degree of abuse. For example, commercial kitchens and natatoriums need protection from moisture and chemicals, whereas abrasion is a constant problem in school hallways and hotel service corridors. Nursing homes and hospitals use powerful disinfectants and harsh cleansers that degrade the paint film and lead to frequent repaints. High-traffic public spaces such as universities, restaurants, car dealerships, and airport terminals, will have higher aesthetic considerations than a warehouse or manufacturing facility. These are just a few of the conditions that must be considered when selecting a high-performance coating.

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Cathy Brugett *is a freelance writer and producer with over 20 years' experience producing technical and instructional materials for the construction industry, architecture and design community, and professional trades.*

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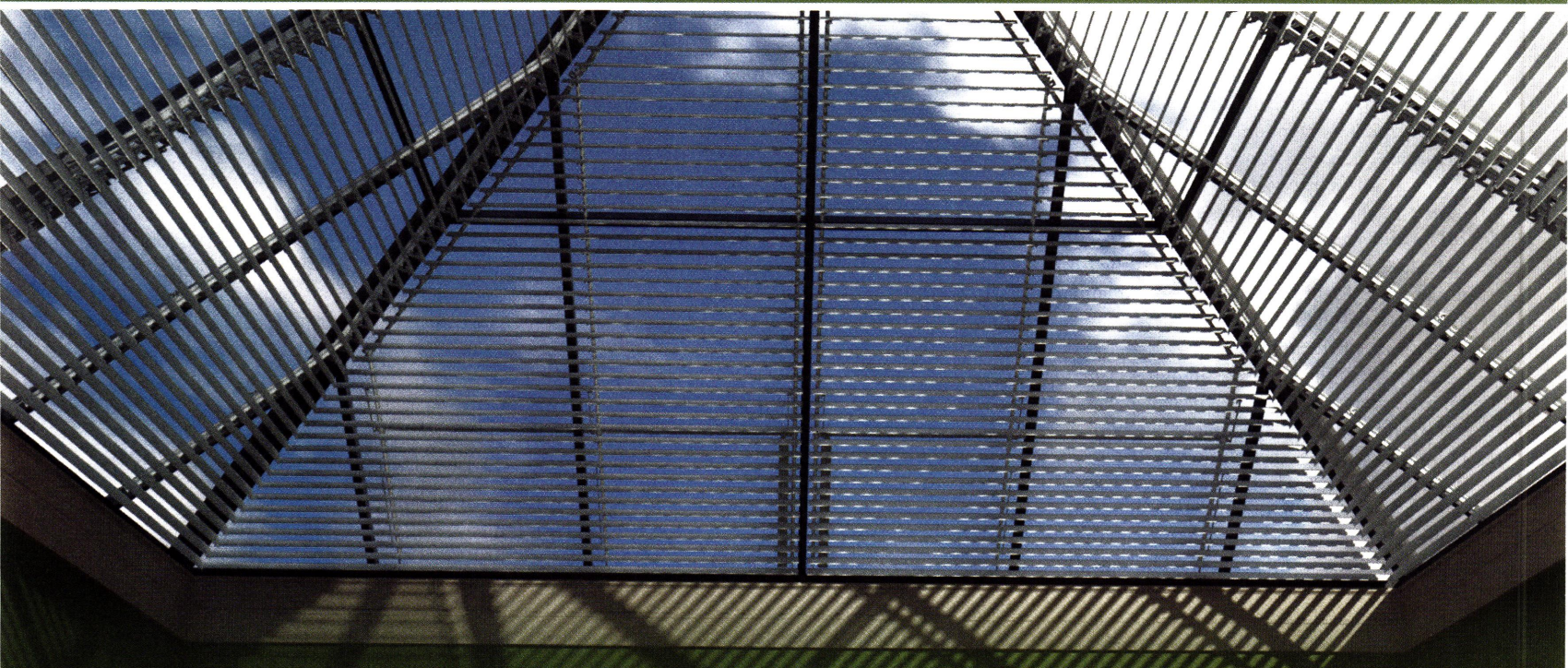
CIRCLE 93

Solar Control Solutions™



Draper's Solar Control Solutions provide precision control over the natural daylight entering the building, excellent energy savings and interesting façade design options. A wide range of custom products complements our traditional window coverings to meet all your needs for interior and exterior shading.

Exterior shading is the most efficient way to keep solar heat gain outside the building envelope. Draper can help develop a system that utilizes both interior and exterior shading to maximize efficiency and occupant comfort, and reduce energy consumption. Each custom solution we provide has specific benefits and features to enhance your overall building design and daylighting needs.

Draper Solar Control Solutions:

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- Exterior FlexShades™
- s_enn® Shading System
- s_onro® Daylighting Shutter System
- FlexWave™ Light Shelf

FlexLouver™ Rack Arm System in closed position.

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CIRCLE 159

Image courtesy of Draper, Inc.

Exterior shading systems offer enhanced user comfort and reduced energy costs, contributing to greater overall project sustainability.

Managing Heat and Light Through Exterior Shading Systems

The advantages of solar control from the outside

Sponsored by Draper, Inc.

Who hasn't enjoyed the feel of the sun streaming through a window, bringing a warm glow to the building inside. Unmitigated sunlight, however, comes with problems of its own, notably unwanted heat and glare, a situation that, particularly in large commercial structures, requires a well-thought-out solution. While American designers and architects generally opt for interior devices to shade rooms from the sun, for years their European counterparts have embraced another method: exterior shading systems. An aesthetic solution that can add up to superior energy savings, exterior shading systems reflect and absorb solar energy outside the building, before it penetrates the window, which is a key advantage over interior shading devices. This article will cover the dynamics of solar control as well as options in exterior shading

CONTINUING EDUCATION

EARN ONE AIA/CES HSW LEARNING UNIT (LU)

EARN ONE GBCI CE HOUR FOR LEED CREDENTIAL MAINTENANCE

Learning Objectives

After reading this article, you should be able to:

1. Discuss the key aims of solar control and how they influence energy costs of a building.
2. Explain the reasons why exterior shading systems are more effective than interior shades in controlling unwanted heat gain and thus improving energy costs and occupant productivity and well-being.
3. Enumerate the factors that influence the choice of a shading system that will add to a building's sustainability profile and user comfort.
4. Explain the benefits of using exterior venetian blinds to control solar gain through vertical glazing, and the benefits of using the rack arm system to control solar gain through skylights and sloped glazing.

To receive 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 for free.

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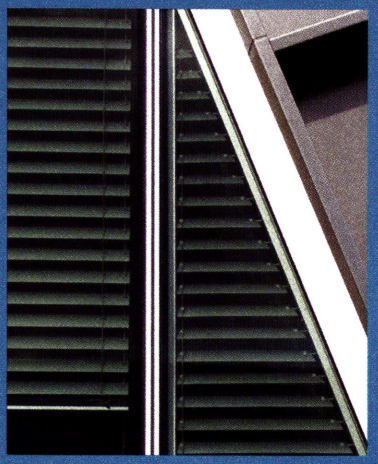
Photos courtesy of Richard Wilson

CASE STUDIES: SOLAR CONTROL SYSTEMS

Designers facilitated solar control and glare control using venetian blinds—an exterior shading system—on the following three projects in different climates:

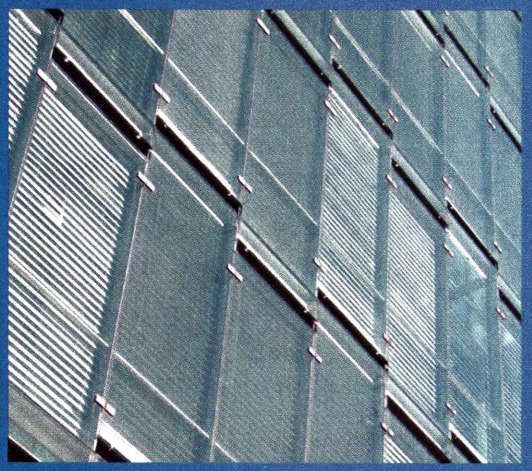
An office building in Metawa, Illinois, uses interior venetian blinds to provide effective light control. Motorized blinds in the upper clerestory glazing incorporate 4-inch slats and are automatically operated. The slats are reversed from the standard configuration with the concave side facing upwards. This, combined with a high-gloss white finish on the upper surface of the slats, allows light to be effectively reflected to the ceiling. The control system automatically adjusts the slat angle between a number of pre-set positions to reflect light as deeply as possible into the office while preventing any direct sun penetration. The lower blinds incorporate half-perforated 2-inch slats and are manually operated, allowing individual users to control the light in their work areas.

Architects on a project in Bishopsgate, London, specified venetian blinds on all the glazing and to maintain a consistent appearance, even with the non-rectangular glazing modules. Custom venetian blinds were designed to address the various conditions as seen in the accompanying image. The slats of these blinds can be tilted between the open and closed positions. Because of the irregular shapes, however, they cannot all be retracted. Some of the blinds are always in front of the glazing; some can be partly retracted.



Custom venetian blinds were specified to accommodate irregular shapes on a London project.

The Donnelly Centre at the University of Toronto was designed by the German architects, Behnisch, and incorporates 4-inch perforated venetian blinds in a double façade on the south elevation. The blinds, in conjunction with the ventilated façade, provide effective solar control both in the winter and summer months. They provide good light control, while still allowing outward vision as a result of the perforation, and they also assist in controlling solar gain. During the winter months, the blinds assist in heating up the façade cavity, reducing heat loss from the interior. In the summer months, the ventilation units that are incorporated in the glazing modules allow warm air in the cavity to be extracted to the exterior, reducing heat gain inside the building. Wall switches allow people to adjust the blinds to meet their needs. The blinds periodically revert to automatic operation, however, to ensure that effective solar control is achieved and to reduce HVAC requirements.



The Donnelly Centre at the University of Toronto incorporates perforated venetian blinds in a double façade on the south elevation. The blinds, in conjunction with the ventilated façade, provide effective solar control in both winter and summer months.

systems and how they affect a building in terms of energy costs, user comfort, and overall sustainability profile.

SOLAR CONTROL—WHAT IS IT?

The term solar control is often used, but its meaning is not always fully understood. Solar control is about managing the energy from the sun. The sun provides both heat and light and the aim of a solar control system is to maximize the use of natural daylight in a building while ensuring that problems do not occur as a result of excessive heat gain and glare. This sounds like a fairly straightforward exercise; getting a shading system to meet these requirements is not that easy to achieve. In the end, a combination of systems might be needed to address all three areas of concern.

It may seem obvious, but when questioned, most people cannot explain how energy from the sun turns into heat. This is a very important issue to grasp in order to understand why it makes sense to use an exterior shading system rather than an interior one.

Sunlight is made up of energy with a range of different wave lengths covering what is known as the solar spectrum. The solar spectrum can be split into three main sections—ultra violet, visible light, and infrared. All of these sections have a short wavelength. When sunlight reaches the earth and hits a surface, however, it is either absorbed or reflected. The surface might be the ground, vegetation, water, or a person. The absorbed part of the solar energy is emitted as long-wave energy which produces heat.

To get an understanding of this, consider the example of a car on a bright, sunny winter day. It is cold outside, but the inside of the car is very hot, almost like an oven. This is because the solar energy comes through the windshield of the vehicle, as glass is almost transparent to short-wave energy. The solar energy is absorbed by the surfaces inside the car (seats, dashboard etc.) and is then emitted as heat. Long-wave energy doesn't pass through glass easily and, as a result, the hot air is trapped inside the car. To deal with this issue, people sometimes put highly reflective silvered screens onto the windshield of cars on sunny days, as the screen will reflect the solar energy back out of the windshield before it is absorbed and converted into heat.

Heat Gain in Interior Systems

Let's now take this concept and apply it to an interior shading system. Effectively, it is the same situation as with the example of the car. Any solar energy that gets into the building will be absorbed and will turn into heat. An interior shading system will, to a certain extent, act like the silvered screen in the windshield of a car; it will reflect solar energy back through the glazing to the outside. Unlike a car screen, however, the shading system is

Photos courtesy of Draper, Inc.

An effective solar control system is one that maximizes the use of natural daylight while addressing the problems of glare and excessive heat gain.

not completely opaque; it is designed to allow some light into the building and to afford views to the exterior. It will therefore reflect some of the solar energy but some will be absorbed by the system and some will pass through it.

If the shading system has a light color, the amount of energy reflected will be increased and the amount of energy absorbed will be reduced. Dark surfaces will absorb more of the solar energy. A reflective surface facing the glazing is therefore important to improve the solar performance of the shading system. To try and address this, some shade fabrics, for example, have an aluminized finish applied to the side that faces the glazing to improve the amount of reflectivity. The solar energy that has not been reflected back through the glazing will either be absorbed by the shading system or will be transmitted through it. The absorbed energy will then be radiated into the building while any that is transmitted through the shading system will be absorbed by surfaces inside the building and will also be radiated as heat.

As with the example of the car, this energy is trapped inside the building and not much of it escapes to the exterior, particularly if a low E finish is applied to the glazing. The inside of the building and the occupants will heat up.

Heat Gain in Exterior Systems

An exterior shading system broadly performs like an interior one in as much as it will reflect some solar energy, will absorb some, and will allow some to pass through it and into the interior of the building. Very little of the solar energy absorbed by the shading device, however, will pass through the glazing to the interior—most of it will be dissipated outside. This is particularly the case when low E coatings are applied to the glass. These coatings will primarily prevent long-wave radiation (heat) from passing through the glazing. Solar control low E coatings, however, can also block some short-wave radiation. If the shading is on the interior, some of the reflected solar energy can be trapped inside the building and will eventually convert into heat. If the shading is on the exterior, however, all of the reflected energy remains outside. As a result of these factors, exterior shading systems are therefore much more effective than interior ones.

Solar Heat Gain Coefficients

The increased performance of an exterior shading system can be clearly seen from the accompanying graph of solar heat gain coefficients (see the online version of this course). The solar heat gain coefficient is the fraction of the incident solar radiation admitted through a window assembly, including that which is directly transmitted and that which is absorbed and reradiated inwards. The lower a window assembly's solar heat gain coefficient, the less solar heat it transmits.

If there is an opening with no glazing, all of the solar energy passes straight through it and the solar heat gain coefficient is therefore 1.00. Installing glazing will provide some solar control. Current glazing technology means that a low solar heat gain coefficient is achievable although this often results in a significant reduction in light transmittance. Performance will be improved by the introduction of an interior shade but, as shown in the graph of solar heat gain coefficients, the impact is relatively limited. To achieve effective shading performance without the need to go to very high-performing glazing it is therefore necessary to move the systems to the exterior—with an exterior venetian blind, for example, more than 90 percent of the heat gain can be blocked before it enters the building.

THREE MAIN COMPONENTS OF SOLAR CONTROL

As previously mentioned, solar control involves three factors: daylighting, glare, and heat gain.

Daylighting

Designers have given much attention to daylighting in recent years. Yet it is important to fully examine the concept in order to maximize its benefits and decrease potential problems.

As Gregg Ander, FAIA, of Southern California Edison, puts it, "Daylighting is the controlled admission of natural light into a space through windows to reduce or eliminate electric lighting. By providing a direct link to the dynamic and perpetually evolving patterns of outdoor illumination, daylighting helps create a visually stimulating and productive environment for building occupants, while reducing as much as one-third of total building energy costs."

A few phrases in this definition warrant emphasis:

- Controlled daylight. Letting as much light into the building as possible is not an effective daylighting practice.
- Dynamic illumination. People like variable daylight rather than consistent artificial light. Changing light levels give a feeling of contact with what is happening outside, irrespective of view, and can contribute towards improved productivity. To manage daylight and control glare, the shading system needs to be adjustable to take account of the sun conditions.
- Reduction of energy costs. Controlling daylight effectively can reduce the requirements for artificial lighting, giving significant cost savings.

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CIRCLE 94

All images courtesy of Huber Engineered Woods

High-performance panels feature an integrated water-resistive barrier for effective moisture management.

Air, Water, and Moisture Management in Light Commercial Building Envelopes

High-performance panels are streamlining air and moisture control

Sponsored by Huber Engineered Woods

A dry building is a durable building. Yet properly managing the movement of air and moisture across the building envelope has long bedeviled architects and builders. To effectively control the indoor environment for energy savings and occupant comfort, today's construction practices are moving to a tighter building envelope. In a tight building, heating and cooling efficiencies can be maximized and properly designed ventilation systems can effectively manage moisture levels and indoor air quality. These principles of high-performance building are common in nearly all current green building standards and construction codes, and performance improvements in air sealing and air exchanges are specifically rewarded through building codes and green rating systems such as the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program.

The traditional methods of managing moisture intrusion such as caulking, building felt, and house wrap are being replaced by high-performance panels with an integrated weather barrier that helps eliminate the risk of water becoming trapped between building wrap and sheathing, and is specially engineered to allow permeability, enabling the building to "breathe." This article will address the physics of air and moisture infiltration into the building envelope and present a comparative discussion of traditional and contemporary methods of managing air, water, and moisture.

MOISTURE MANAGEMENT IN BUILDINGS

Moisture, in all its physical forms, is commonly regarded as the single greatest threat to a building's durability and long-term performance. When moisture infiltrates the building envelope, problems can occur: mold,

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Learning Objectives

After reading this article, you should be able to:

1. Identify the four Ds of water management and how they affect the building envelope.
2. Explain the physics of air and moisture movement through the building enclosure, and give an example of solar driven moisture .
3. Discuss four pitfalls with how today's buildings are being designed and built to protect against air and moisture.
4. Describe three alternative moisture and air barrier design solutions to increase the cost-effectiveness and sustainability of the structure.

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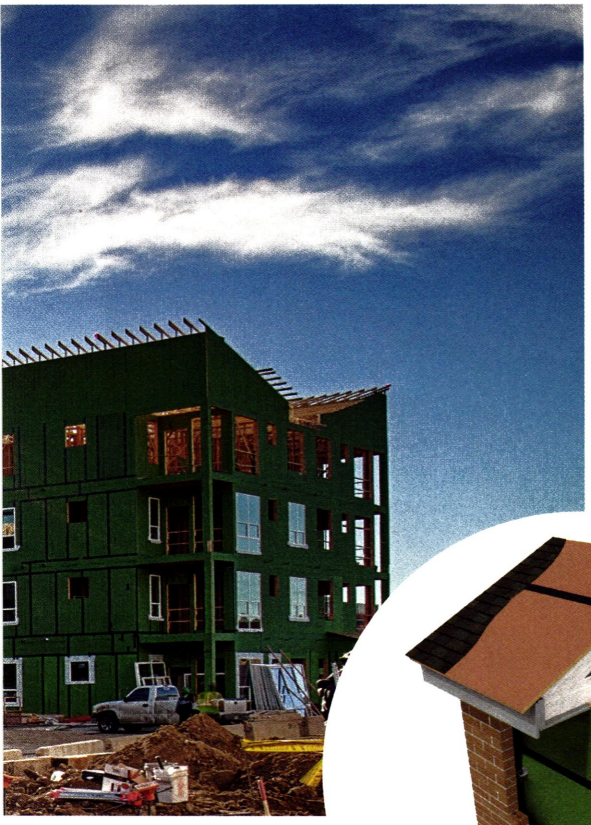

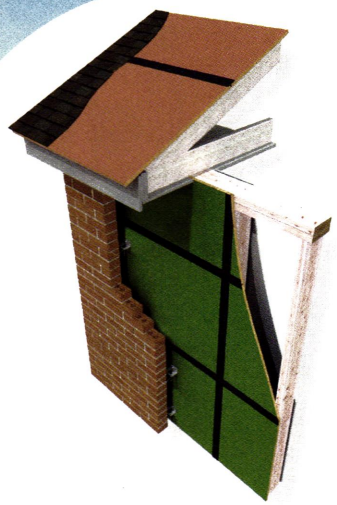

mildew, rot, and corrosion which in turn can translate to maintenance problems, poor indoor air quality, and building system failure—factors that, in a worst-case scenario, may pose liability issues for building designers and owners.

In a building, moisture is transmitted through gross or liquid water, air, and vapor, in descending order of potential damage to a building envelope. Like all substances, water can exist in three phases: solid, liquid, and gas. A substance's phase essentially depends on the average speed of molecular motion. When water is a gas or vapor, the molecules are free to move about—they "run free." In liquid water, the molecules are attached to each other; this allows liquid water to assume the shape of its container. Bulk water—rain, runoff, and other flows—is driven primarily by gravity and also by capillary action, or wicking, which is the ability of a liquid to flow in narrow spaces without the assistance of, and in opposition to, external forces like gravity. This can cause water to enter through very small gaps, e.g. between flashings and a cladding. Moisture vapor diffuses into and through a wall according to moisture and temperature gradients—that is from a region of high vapor concentration to a region of low vapor concentration, and from the warm side of a wall to the cooler side.

In terms of presenting risk to a building assembly, not surprisingly, liquid water carries the greatest risk. Driven by gravity or air pressure differences, water in liquid form can be carried into a building through holes and cracks. Air carrying water vapor moves with air, and carries a moderate risk. The lowest risk is presented by vapor, which moves through the air.

It is important to note here that walls and roof systems are very similar, and layers that make up both are essentially the same, and the concepts discussed—water, air, and vapor management—will apply to both systems.

Liquid Water Control Strategies—The Four Ds

Moisture can and will get into a structure—and fast. Liquid water can move through brick in about 20 seconds. Because water does get behind all facades, it is advisable to have a good secondary water barrier. Four key strategies, known as the Four Ds, keep moisture from getting into a building. They can be applied at the level of design and the level of detail. Essentially the Four Ds are predicated on the following two notions: The principal objective is to prevent moisture from getting into the structure in the first place (deflection); but any moisture that does get into the structure must be managed as quickly and thoroughly as possible (draining, drying, and durability).

Deflection. Keeping rainwater off the wall and other main entry points is the first line of defense. If water cannot reach a joint or junction, the possibility of leaks is greatly reduced. The first means of deflection is in the design of large roof overhangs, peaked roofs, and/or a face-sealed approach. Overhangs and peaked roofs have been shown to reduce rain deposition by 50 percent. Attention should be paid to drip edges, which help deflect water away from the structure.

Drainage. Water must be able to drain off the face of the building. In a wall assembly, drainage involves methods that move water out of the wall; any water that penetrates the exterior cladding must be drained back out via drainage paths specifically designed into the wall assembly. A typical drainable wall system controls water infiltration through kinetic energy (raindrop momentum), gravity, surface tension, and capillary action. In order to create effective drainage within a wall assembly, the following elements should be incorporated into the design: screen or cladding; a primary water shed layer (for deflection); a secondary water-resistive barrier; a drainage plane, or a water-repellent plane; a drainage gap, which is often a clear air space; and weep holes or flashing at areas of interruption and at the base. With no weep holes, water gets trapped behind the facade and can't drain out. In some cases, the water can be wicked up through the exterior cladding.

Drainage mats are also available as a method to create a clear, drainable space. As can be seen in the accompanying illustration (see the online version of this course), brick veneer should be back ventilated to flush inward-driven moisture out of the assembly. The recommendation of a drainage plane has been commonplace, but most building scientists are now pushing for an air gap as well. A clear air space should be provided that is open at both the bottom and top of the plane, the theory being that an air gap will allow for drying (through convection) should moisture penetrate the exterior cladding or allow an unobstructed space for water to drain out should there be a leak higher up the wall assembly. An air gap for brick is common, and air gaps can easily be created with furring strips for most exterior claddings. Generally, a ¼-inch gap is recommended to prevent capillary action.

Drying. Water that cannot be drained immediately should be dried as quickly as possible principally through diffusion and ventilation. The drying potential of a wall is affected by several factors including evaporation

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- A continuous, rigid air barrier decreases unwanted air leakage for greater energy efficiency.
- Seam-sealing flashing tape with specially engineered, high-performance acrylic adhesive bonds provide a permanent protective seal.

The OSB panel with integrated moisture barrier results in a streamlined installation and superior moisture management.

rate from surfaces; vapor movement by diffusion or air leakage; drainage by gravity and convection; and air movement. The key thing to note here is that when the wetting rate exceeds the drying rate, problems accrue. In order to maximize drying potential, air gaps should be utilized as should products that don't absorb water and products that let liquid water readily pass through them.

Durability. The moisture tolerance of the materials in the wall assembly is a key consideration, with architects well advised to select exterior cladding and wall assemblies that meet durability requirements of the prevailing building code. Durable materials are a fourth line of defense when the others—deflection, drainage, and drying—have failed. Some claddings, like brick veneer, are inherently durable, while others may require an exterior finish.

Most mistakes occur under the drainage category with the use of improper flashing, ineffective water-resistive barriers, and non-continuous air barriers. By this time, many designers realize that avoiding vapor barriers is important.

AIR LEAKAGE AND THERMAL PERFORMANCE

Next to stopping rain, the second most important job of a building enclosure is to stop air leaks, which can also compromise the durability of a structure. Uncontrolled air flow not only introduces moisture that can cause rot and mold, it can increase energy use and indoor air quality problems. Proper sealing between wall assembly components prevents unwanted air movement that washes through insulation and degrades the effective R-value. Without effectively sealing the building envelope, insulation cannot perform properly.

There are three different types of air flow: diffusion, in which air simply moves through the material and does not need a hole for entry; orifice flow, in which air comes in one area, follows the same paths, and moves out at the end of that path; and channel flow, in which air comes in one area, moves around, and exits in another area. With all of these types, there are plenty of areas and opportunities for air leakage, a scenario that requires an effective building envelope.

Building Envelope—A System of Many

The building envelope can be thought of as "a system of many." Many variables exist that determine its performance. There are, for example, many components—exterior walls, foundations, roof, windows, and doors—as well as many penetrations in these components and many interfaces between them. Further, building envelope performance is impacted by many subsystems, including heating, cooling and ventilating equipment, plumbing and electrical systems, and many different types of activities of the building occupants. It is important to note, however, that no one product can control air leakage Air tightness is a function of the entire building envelope, and everything must work together in order to achieve effective air tightness. Even with a great air barrier system like a peel n' stick or taped

Blower door tests are the only satisfactory way to measure air tightness and highlight areas of heat loss.

wall joints, for example, air can still flow right through improperly flashed penetrations or leaky windows and doors.

The airtightness of a building envelope cannot be overestimated, however. A building's energy efficiency, occupant comfort, and sustainability quotient depend on it.

Convective Loops

Today, the most commonly used insulation is still fiberglass batts, which offer a relatively low cost for the function it performs. As most insulation subcontractors are paid by the square foot, there is an incentive to install as much insulation as possible in a small amount of time, a scenario that leads to voids or gaps in the wall cavity that are not filled with insulation. With these voids, air can begin to travel around the insulation and sometimes within the insulation because its density is so low. If there is an effective air barrier on the outside of the building, this won't happen. The result is a reduction in the performance of the insulation or loss of R-value.

Consider the case of convection loops, which can form within wall assemblies from the warming and rising of air near the warm side of the assembly and the cooling and dropping of air near the cold side of the assembly. Uncontrolled air movement accelerates heat loss through convection. Air barriers prevent heat loss through convection.

Air flow often affects the performance of low-density fiber insulation. Air movement can compromise the thermal performance via wind washing, which occurs when wind enters and exits at different locations of the building envelope. The accompanying graph (see the online version of this course) summarizes experimental measurements showing the effect of air infiltration on the installed R-value of the fiberglass insulation: about 50 percent of the insulation R-value is lost at 5mp wind speed if the insulation is not protected by an air barrier.

Air Barrier Systems—Preventing Air Flow Through the Wall

Air sealing the building envelope is one of the most critical features of an energy-efficient building. Preventing unwanted air flow, an air barrier system is composed of materials that form and seal floors, walls, and ceilings to prevent unwanted air movement. To be effective, the system must be continuous with no holes, openings, or penetrations and resistant to air pressure differentials. Durability, strength, and impermeability are also key factors as well as sufficient stiffness to allow adhesion. To be effective air barrier system components—including panels and tape—must have passed the air tightness requirements as set forth in the stringent air barrier assembly testing standard (ASTM E 2357) by the Air Barrier Association of America (ABAA). The effectiveness of tape and tape and flashing adhesion, while of prime importance, is often discounted in articles on air barriers. As those in the industry like to joke, tapes should be used to create an air barrier that will "peel n' stick, not stick n' peel."

Testing for Air Leaks

Tests have been developed to measure how effectively an air barrier system prevents unwanted airflow. Professional energy auditors use blower door tests to help determine a structure's airtightness—these tests are the only satisfactory way to measure air tightness and highlight areas of heat loss.

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CIRCLE 95

Talking Color

New and traditional architectural coatings bring life to the built environment

Sponsored by Valspar

Color is an all-important aspect of our lives. It can affect our state of mind, inspire action, operate as a soothing influence or a call to action. In architecture, color has great potential to have a major effect on the environment and to create a unique aesthetic appeal in a particular space. Color is probably the first thing we notice about a space and sets the stage for our experience of it. For years, European architects have made good use of color in the built environment, while their American counterparts have tended to downplay it, gravitating to safe understated shades, and sometimes merely as accents or as afterthoughts rather than an integral part of the design statement.

Yet as research furthers our understanding of how color, light, and contrast affect emotion and sensory abilities, understanding how to use color has become a vital tool for architects and designers in every segment of the built

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Learning Objectives

After reading this article, you should be able to:

1. Discuss the importance of color in the built environment, and in specific industries and building types and the effect on building occupants.
2. Explain the relationship between color, pigments, and architectural coating performance in order to make proper specification decisions.
3. Identify the role of solar reflective pigments in achieving a sustainable building and earning credits from green building rating systems.
4. Describe how fire ratings apply to architectural coatings to ensure building occupant safety.

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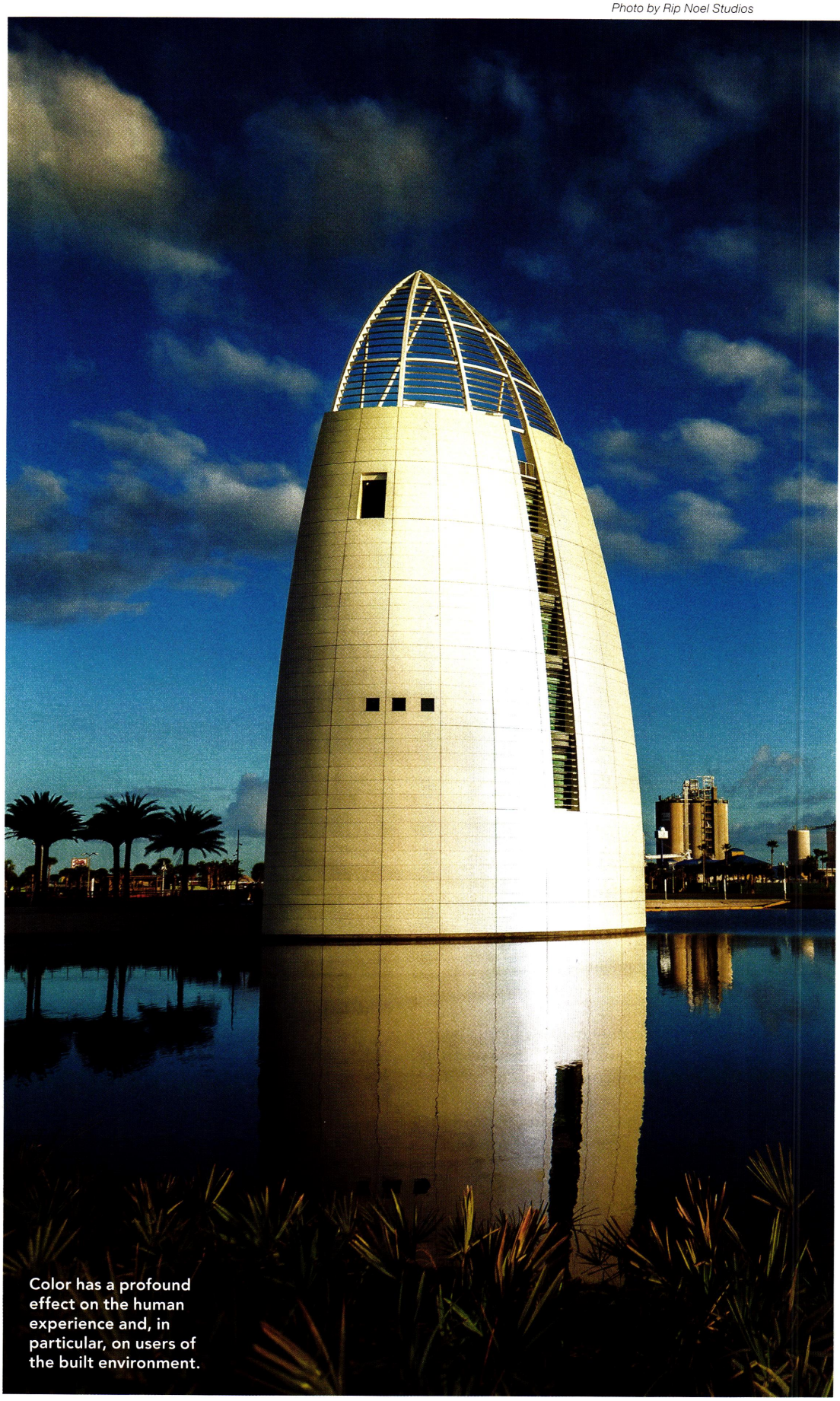
Photo by Rip Noel Studios



Color has a profound effect on the human experience and, in particular, on users of the built environment.

environment from healthcare and education to industry, retail, and commercial exteriors and interiors. How to employ color effectively in a meaningful, integrated way and select the architectural coatings that will meet these goals, however, can be challenging.

This article will continue the conversation about color in the built environment, highlighting such aspects as the chemistry of color paints, new and traditional offerings in the marketplace as well as performance considerations and answers to some of the most frequent questions architects pose to paint manufacturers. Also covered will be "paint in action," case studies of how exterior architectural paint has been used on buildings of note in the U.S.

WHY CONSIDER COLOR?

The fascination with color is longstanding and deep seated. Throughout the ages, the use and arrangement of color has led to the creation of beauty and harmony with an instinctive feel for its psychological effect. In the built environment, the colors of many structures provide unique insights into the culture and the materials available at that time in history, from the striking reds of Japan's Shinto shrines to the golden pyramids of Egypt and the multi-hued domes of St. Basil's in Moscow.

In long ago times, color was provided by readily available natural materials—red ochre, a form of iron oxide; yellow ochre, an iron silicate; black pigments from charcoal; white pigments from calcium sulfate, or gypsum; softer greens and pinks from vegetable dyes. Over the centuries, architects have created drama in buildings through color, be it derived from pigments, paints, stained glass, or mosaics. In recent history however, despite the emergence of color science, color has been the most neglected aspect of architectural design, taking a back seat to spatial dimension. Conservative choices, such as shades of whites, beiges, bronzes, metallics, and grays have remained the leading color choices for many years, arguably to create an aesthetic that will not seem quickly dated.

Still, building owners and architects are increasingly re-evaluating the power of architectural color, looking to color trends and using color to achieve certain goals. Restaurants are using color to stimulate the appetite, industrial designers to increase efficiency, relieve eyestrain, and reduce fatigue. Designers of schools are employing color to reference various developmental levels from bright primary colors for young children to more serene blues and greens conductive to study for older students. Healthcare designers use color to inspire confidence and promote the healing process, with some practitioners claiming the right colors and combination of colors can actually enable medical diagnosis and surgical performance.

There is increasing evidence that color has a profound effect on the human experience as well as in changing and improving the aesthetic appeal of particular areas. As color trends take stronger root and the power of architectural color is re-evaluated, architectural coatings will play an ever-increasing role. Accordingly, architects should become familiar with the fundamentals of these coatings and how to specify them for enduring aesthetic results.

Photo by Liam Frederick

Special coatings created a weathered look for Central Arizona College.

A WEATHERED LOOK IN SUNNY PHOENIX

The stunning 76,000-square-foot Central Arizona College, Maricopa Campus project consists of four buildings featuring classrooms, community meeting spaces, a library, and a culinary arts kitchen serving more than 15,000 students and 1,000 faculty members. Special coatings created a weathered look for the facility. The coating was applied in a three-coat process to create a unique, rusted appearance while providing the metal with advanced protection against the elements. This resulted in a desert-inspired look that embraces the campus's Native American roots. The coating, containing 70 percent PVDF (polyvinylidene fluoride) resins, provides the strongest protection against weathering, aging, and pollution and exceptional color retention to preserve the beautiful aesthetic of the facility for years to come. The project received a Metal Construction Association's Chairman's Award for Overall Excellence. The award, presented at METALCON International, an annual metal construction tradeshow, honors MCA members for outstanding building projects across the world. The $18-million project, designed by SmithGroupJJR, was also the Grand Award Winner of the 2013 Metal Architecture Design Awards.

Pigments provide the color and often determine the performance of a coating.

THE CHEMISTRY OF COLOR IN ARCHITECTURAL COATINGS

Architectural coatings are comprised of a resin and a pigment. The primary function of the resin is to provide adhesion, flexibility, hardness, moisture and chemical resistance, and resistance to UV light. Pigments provide the color and often determine the performance of a coating. It is the chemical resistance of the pigment that is key. Pigments are either inorganic or organic, and in some instances it takes both types to create a particular color space. Inorganic pigments are metal oxides and mixed metal oxides that have a high resistance to fade and are the most heat stable, chemically inert, UV- and weather-resistant pigments known. Generally, inorganic pigments are beige, tan, brown, and other earth tones.

Organic pigments, which are carbon based and often made from petroleum compounds, produce bright, intense colors; however, they are susceptible to fading and heat as UV and oxygen can penetrate organic pigments, breaking their chemical bonds.

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CIRCLE 96

Design Innovations Using Fiber Cement in Commercial Construction

Advanced commercial products affordably meet aesthetic design needs and wall performance requirements

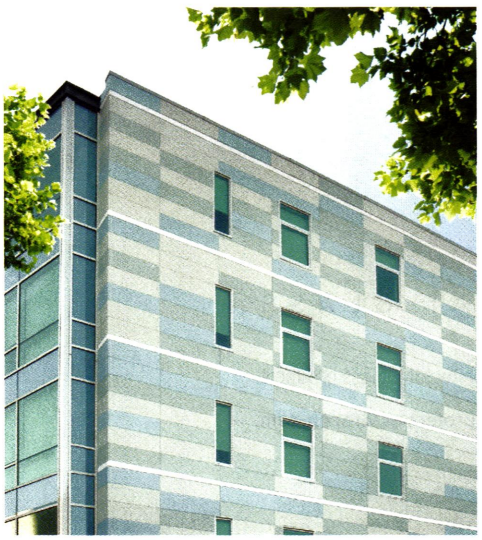
Sponsored by Nichiha USA, Inc. | *By Peter J. Arsenault, FAIA, NCARB, LEED AP*

The design of commercial buildings requires that high performance becomes married with great aesthetics. Increasingly, both must be done while containing the material, labor, and installation costs of products used. One very visible and increasingly important area that has received a lot of attention in all of these regards is exterior cladding. While many different choices abound with varying degrees of weight, thickness, and ease of installation, one product has emerged as a very appealing solution in many cases. Architectural wall panels made from fiber cement have a proven history of allowing architects to create building exteriors that are innovative, affordable, sustainable, and able to create a variety of aesthetic design appearances.

FIBER CEMENT PRODUCTS OVERVIEW

Fiber cement is, in simplest terms, a composite material that combines fibrous material with a portland cement binder to create a strong, dense product. It grew from a need to create a durable, lightweight, and affordable building product as an alternative to heavier and bulkier choices. In the early 1900s, some of the first products were developed in Europe combining paper-making technology with portland cement and asbestos. Its first application was for lightweight, fireproof roofing panels instead of the traditional terra cotta tiles common throughout Europe. In time, this technology produced siding panels and shingles that were introduced into the U.S. in the mid-20th century mostly for residential buildings. The growing concerns about asbestos, however, slowed their use until some alternatives were found. During the 1970s, fiber cement products were developed in Japan based on successes in manufacturing composite hardboard products without using asbestos-containing materials. These products

Photos courtesy of Nichiha USA, Inc.



ABOVE: Fiber cement architectural wall panels are an advanced product compared to residential fiber cement siding and offer a full range of performance, aesthetic, and cost solutions.

TOP LEFT: Fiber cement panels can be finished to be smooth or textured to provide an appearance of stone, wood, or other materials.

and those created by other manufacturers have been offered in the U.S. for several decades and have become recognized as a safe, innovative, and even sustainable green building product.

Manufacturing Process

Fiber cement products are currently created in a range of types, sizes, and styles. However, in all cases, the fundamental manufacturing process is similar and is based on combining several key ingredients:

- Wood fiber sources: Wood chips, raw wood fibers, and other wood products taken from recycled and virgin sources. The organic nature of the wood fibers provides a degree of resiliency and flexibility for the finished products, making them less brittle than some of their historical predecessors.
- Portland cement: Acting as the binder to the wood fiber, portland cement works the same way it does in masonry applications by creating a tight, secure bond within the finished product. Typically comprised of limestone, clay, and iron, it brings the inherent strength and rigidity of those elements as well.
- Silica filler: An inert filler is often desirable to use in order to reduce weight or contribute other characteristics. In certain fiber cement products, this filler is silica which is essentially just a technical term for sand which is among the most abundant materials on earth. It does not pose any health or environmental concerns unless it becomes airborne which may happen during installation when products might be cut and create dust. In those cases it can be an irritant to eyes and the respiration system while long-term exposure can cause other health concerns.
- Alternative fly ash filler: Although it's nearly impossible to eliminate, some fiber cement products contain extremely low levels of silica by using fly ash as an alternative inert filler material. Fly ash is a by-product of burning coal in electric power plants to produce electricity with about 5-10 percent of the coal left behind as fly ash. Since it is an extremely fine, lightweight powder, fly ash is captured in filters before it can escape into the air. According to the American Coal Ash Association, the majority (55 percent) of the 72 million tons of fly ash produced annually is disposed of, typically in landfills, though older plants can use surface ponds, which can create significant disposal issues. In some cases, there have been environmental problems with disposal in facilities not practicing best management techniques. This has caused the U.S. Environmental Protection Agency (EPA) to consider regulating fly ash disposal, to allow for a national guideline rather than the current, non-uniform regulation that occurs at the state level. The remaining 45 percent of fly ash is currently diverted from landfills through beneficial reuse (recycling) in a variety of applications, including fiber cement products. Recycling fly ash currently remains free of regulation, and, in fact, is encouraged by many organizations with different stakeholders. The U.S. EPA, the Natural Resources Defense Council (NRDC), and the U.S. Green Building Council have all agreed that recycling fly ash in building materials and products is beneficial and environmentally desirable. Hence, the EPA and leading environmental groups would like to see this beneficial reuse grow. Fiber cement manufacturers are helping with that beneficial growth while also finding that it improves the overall performance of the end products.

Continues at ce.architecturalrecord.com

Peter J. Arsenault, FAIA, NCARB, LEED AP, *practices architecture, consults on green and sustainable design, writes on technical topics, and presents nationwide on all of the above. www.linkedin.com/in/pjaarch*

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Learning Objectives

After reading this article, you should be able to:

1. Identify and recognize the innovative characteristics of fiber cement products used in commercial buildings.
2. Compare and contrast the differences between residential fiber cement siding and commercial fiber cement architectural wall panels.
3. Assess the performance of commercial fiber cement products as they relate to code and testing requirements.
4. Specify fiber cement products in a variety of building situations and make appropriate selections related to specific building types.

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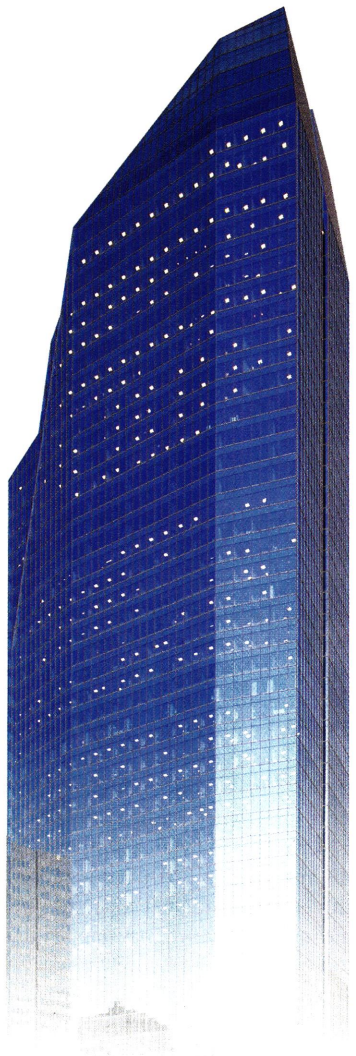
CIRCLE 97



GREAT BUILDINGS DESERVE GREAT GLASS

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Eighth Avenue Place | Architect: Gibbs Gage Architects; Pickard Chilton; Kendall/Heaton Associates, Inc.

CIRCLE 160

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Lanyang Museum
Yilan County, Taiwan
Artech Architects

A Plant Tour: Single-Source Glass Fabrication

Architectural glass offers a range of aesthetics, performance attributes, and size limitations critical to successful building design

Sponsored by Viracon | *By C.C. Sullivan*

Understanding fabrication and manufacturing improves any architect's knowledge and ability to design better buildings. In this educational article, a focus on the fabrication of glass enclosure systems provides architects and design teams with a helpful understanding of the processes involved and how they allow for specification and erection of buildings incorporating insulating glass units (IGUs) or other glazed assemblies.

An important distinction to make first is how to distinguish single-source fabrication as opposed to multiple-source fabrication in relation to complex products like architectural glass units. Simply put, with single-source production all of the processes are completed for the building product or system "inside the fence" of a plant operated by one legal entity. Following the production of the base material —float glass, for example—all the finishing, assembly, testing, and packing for the product and any related components are handled by that one fabricator. The same fabricator will typically provide both technical and design assistance to architects, glazing contractors, and glazing consultants to ensure the glass products meet the design intent. The finished

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Learning Objectives

After reading this article, you should be able to:

1. Define single-source fabrication and its impact in relation to architectural glass performance, appearance, warranty, and energy efficiency or sustainability attributes.
2. Explain two or more fabrication technologies for producing glass units, such as laminated and insulating glass units, and their impact on building energy performance and occupant comfort and health.
3. Describe one or more fabrication processes that limit the size of glass units.
4. List at least two components in insulating glass units, and their impact on green building design.

To receive 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 for free.

AIA/CES COURSE #K1406N
GBCI COURSE #920000005

Photo © Brian Savage, courtesy of Viracon

Inside a glass fabricator facility in Owatonna, Minnesota, an interlayer is applied during the laminating glass process.

item is generally warranted by one entity also.

This practice of single-source fabrication has two senses: In supply-chain management, original equipment manufacturers (OEMs) provide components to a final manufacturer or fabricator, who assembles and prepares the marketable item with OEM-made subcomponents. In the architecture field, the focus is on discrete and often important assemblies, such as the insulating glass unit, where performance and accountability are seen as critical to finished building performance.

Single-source fabrication delivers valuable benefits to the construction team. "Why single source?" asks Peter Dawson, a consultant and supply chain expert. "The pros are consistency and single-channel management." That means rigor and accountability to the building team, for one, as well as schedule and budget control by one vendor, which many corporate and institutional owners prefer. The main drawbacks, Dawson cautions, are summarized as "supply-side disruptions." For example, if there is a natural disaster that affects a project supplier, it would be preferable to have two suppliers at the ready—with matching products, meeting all specifications and ready to deliver—in the event of an unforeseen delay.[1]

This works well in the manufacturing realm, but in building construction where most products are "made to spec," the trend has been to limit the number of suppliers as a strategy to prevent project interruptions and delays.

"The use of a single-source supplier has benefits across the architectural value chain," says Kevin Anez, director of marketing and product management at Viracon, a glass fabricator. The value chain for fenestration and glass envelope systems is defined as all project stakeholders, beginning with the owner or real estate developer and its design team—architect, engineers, and façade consultant, for example—as well as the involved construction team and glazing subcontractor and, not least, the fabricators and manufacturers.

In this way, the architectural glass value chain extends to primary glass suppliers who operate float glass plants, for example, and regional glass fabricators, which cut, temper, coat, and finish the glass and assemble it into final, installation-ready products, Anez explains. There are also commercial glass fabricators of national and international scale, which provide the same types of services and hold a relatively large market share.

Savvy architects and owners who build frequently favor a single supplier or manufacturer for building systems where quality is important or where performance is essential—or both. The number one sourcing benefit and architectural concern is quality control, though reduced coordination among building product manufacturers (BPMs) is a benefit in both the design and construction phases. In addition, simplifying the supply base can help reduce transportation costs, which cuts energy use in the construction phase.

SINGLE-SOURCE AND PERFORMANCE

Single-source fabrication—not to be confused with sole-source specifications—can provide improved control of many variables that contribute to aesthetics, building durability, occupant comfort, and operational costs. The impact of recent trends in building design imply stricter requirements for glazing and IGU performance in such areas as:

- Energy control. Such advances as low-emissivity (low-E) coatings, graduated patterns, and triple insulating units have served more rigorous energy codes and green building goals.
- Larger enclosure units. Increased size capabilities have followed the trend among many architects to specify larger glazed openings to increase daylighting and views or mainly for a "glass box" aesthetic effect.
- Ceramic frit and low-E coatings. To meet a particular design vision without sacrificing performance, glass treatments can now combine low-E coatings with ceramic frit or ink options as well as silk-screening and digital printing.
- Sustainability and codes. In addition to LEED and other certifications such as Living Building Challenge, energy codes have stricter requirements for enclosure U-value, for example, complicating the design challenge.

There are other considerations, of course. For example, building design criteria begin with basic aesthetics—punched openings, for example, or ribbon windows or curtain wall. Then architect and client consider what the glass itself should look like: transparent (neutral), opaque, colored, or a combination of those? These choices may work together by coordinating a palette of glass colors for transparent and spandrel sections, as well as silk-screen patterns such as lines or dots and perhaps even the colorful

FOUR KEY METRICS FOR GLASS

There are many options and considerations regarding the four key metrics for an architectural glazing unit.

(1) U-value is the measure of heat loss through a building element such as a glazing unit. U-values are higher where poor thermal performance is found in a building envelope and, conversely, lower where there is good insulating benefit.

(2) SHGC, or **solar heat gain coefficient**, describes how much solar radiation is admitted through a window, both directly transmitted and absorbed and released into interior spaces. SHGC is a number between 0 and 1, and lower SHGC values indicate that less solar heat is transmitted.

(3) VLT, visible light transmittance, is the amount of light in the visible spectrum area that passes through a glazing material. Higher levels mean more daylight will be in interior spaces.

(4) STC, sound transmission class, measures how well a building material attenuates noise. Increasingly, the use of materials to improve building acoustics and occupant comfort is influencing the glass specification. Laminated glass may help satisfy STC performance needs, reducing how much sound moves from the outdoors into the building through a given building material.

Photo © Hoachlander Davis Photography, courtesy of Viracon

United States Coast Guard Headquarters (USCG), Washington, D.C.
Perkins+Will; WDG Architecture

graphics achievable through digital printing.

Then there are basic envelope performance requirements (see "Four Key Metrics" on the previous page). These include solar heat gain coefficient (SHGC), visible light transmittance (VLT), U-values, and sound transmission class (STC), as well as the light-to-solar-gain ratio, abbreviated as LSG, which is the ratio between the SHGC and VLT. These are among the factors that affect occupant comfort, too—heat and cold near the building perimeter, for example, and the potential for glare from direct or reflected sunlight. In general, however, glass is appreciated for bringing in the outdoors, so to speak, as well as sunlight and views.

INSULATING GLASS UNIT PERFORMANCE

In terms of IGU performance, the primary performance considerations that have led to increased reliance on single-source production are structural capabilities—especially for larger units—as well as techniques for controlling solar performance. For the former, the glazing contractor must deliver unitized glazing products in aluminum or steel frames that meet key performance standards including tests for static structural load, air and water infiltration and, for hurricane-resistant glazing systems, impact resistance and cyclic loading.

Yet even before the framed glazing is tested, the fabricated glass itself must demonstrate the proper levels of performance as either heat-strengthened or fully tempered flat glass material, as defined in the standard specification ASTM C1048, or as a laminated architectural flat glass, defined in ASTM C1172. These two specifications are important touchstones for glass used in general building construction.

- ASTM C1048 includes coated and uncoated glazings as well as spandrel glass with one ceramic-coated surface and both transparent and patterned glass, whether they are heat-strengthened (HS) or fully tempered (FT). It requires that "all fabrication, such as cutting to overall dimensions, edgework, drilled holes, notching, grinding, sandblasting, and etching, shall be performed before strengthening or tempering and shall be as specified," according to ASTM International.
- ASTM C1172 is a specification standard for the quality requirements of cut panels for laminated glass, which "consists of two or more lites of glass bonded with an interlayer material for use in building glazing." A number of interlayer materials can be used with varied numbers and thicknesses of glass plies for such applications as safety and security needs, detention facilities, resistance to hurricanes and cyclic wind loading, blast- and bullet-resistant settings as well as places requiring reduced sound transmission.

Another important test is ASTM C1376, Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass, which covers all the "optical and aesthetic quality requirements for coatings applied to glass for use in building glazing," according to ASTM International. Both pyrolytic and magnetron sputtering vacuum deposition (MSVD) coatings are used for applying low-E coatings to glass to improve building energy efficiency by reflecting or absorbing infrared light, which is heat energy. Pyrolytic coatings, also known as hard-coat, are applied during manufacturing through chemical vapor deposition (CVD). Vacuum (sputtering) deposition methods, also called soft-coat, are applied off-line by a fabricator, and are integral to single-source fabrication methods.

See endnote in the online version of this article.

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***C.C. Sullivan** is a marketing and content consultant specializing in the AEC industry.*

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CIRCLE 98

Metal Panel Claddings: Varied Expression, Consistent Performance

Insulated metal claddings offer a range of aesthetic choices with a consistent path to high performance

Sponsored by MBCI | *By C.C. Sullivan*

Metal claddings and insulated metal panels (IMPs) offer a number of advantages for architects and their clients. One of the most important is also the most evident to the naked eye: They offer a wide range of aesthetic possibilities for buildings of all kinds—yet all with consistent performance in terms of constructability, cost effectiveness, and energy efficiency. As the U.K.-based Metal Cladding and Roofing Manufacturers Association (MCRMA) put it recently, "Once the designer is committed to this route, then the creative opportunities are virtually unlimited while, at no time, compromising the fundamental construction benefits of the system."[1]

In fact, the British group—and its U.S.-based cousin the Metal Construction Association (MCA)—point out that the benefits accrue whether or not the chosen systems are insulated rainscreens, backup walls, metal profiles, or any other panel assemblies and regardless of finish selection or attachment and joinery method. In addition, they have been shown to work well over any steel or concrete structural systems and as overcladding on a range of substrates. They can provide an effective barrier to the elements, including continuous insulation (CI) across the clad areas. Through a review of industry literature and best practices, these benefits come into full view.

In this article, attention is given to four core considerations about metal panel claddings: the wide variety of products available and their integration into envelope designs; the proper engineering and application of typical exterior systems; techniques for improving building energy efficiency and performance using IMPs and other metal claddings; and special considerations about air barriers, which are increasingly mandated for today's buildings.

A LITTLE HISTORY

Metal has been used on building exteriors for thousands of years, and some of those original installations are still performing today. The white paper *Metal Roofing from (A) Aluminum to (Z) Zinc* confirms, "The oldest copper roof in the United States was installed on the Olde Christ Church in Philadelphia in 1742," according to author Rob Haddock, president and owner of the consultancy Metal Roof Advisory Group and a frequent industry educator. "In Europe, the copper cornice around the dome at the Pantheon in Rome lasted more than 1,800 years," he adds.

Today, with increasing frequency, architects are incorporating metal exteriors in building designs for practical and aesthetic reasons. From industrial, agricultural, and cold-storage facilities to educational, civic, and commercial buildings, architects are taking advantage of metal's performance and creative design benefits. In general, one can consider metal claddings in three primary categories:

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Learning Objectives

After reading this article, you should be able to:

1. Describe the wide product variety, aesthetic options, and sustainable design attributes available in panelized metal cladding systems, including fastener and joint types, panel orientation, finishes, and insulation options.
2. List the key attributes of engineering metal panel cladding systems, including exposed vs. concealed hardware, structural considerations, and relevant codes and standards that contribute to green building.
3. Discuss the benefits for energy efficiency of panelized metal construction, including contributions to sustainable design.
4. Explain how air barriers are important to selecting and detailing an insulated metal panel enclosure, in particular to ensure total building energy efficiency and sustainable design.

To receive 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 for free.

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- Single-skin panels
- Insulated metal panels, or IMPs
- Metal composite materials, or MCMs, which are sandwich systems generally with solid, plastic cores

These products are most commonly made with aluminum, but they also often feature skins of steel, copper, zinc, and terne, an alloy coating of about half tin and half zinc.

Of course, natural materials like copper and zinc, which are considerably more expensive than other materials, also have some allure for their semi-precious character. They are often chosen by architects for their aesthetics—particularly the patina that results from aging and oxidation—and also for their well-established durability. Yet there has been a move over several decades toward the less expensive, more highly durable metals that are offered in a range of specialized coatings of varied colors and performance attributes.

ABOVE: The metal enclosure system for the Bridges Center in Memphis was designed to be environmentally friendly, neighborly, and conducive to youth development, education, and team building.

The *Whole Building Design Guide*, a resource for architects maintained online by the National Institute of Building Science (NIBS), explains that "metal panel systems are generally proprietary designs in which a manufacturer adapts its system to the architect's design." They can be manufactured in a variety of shapes—including radiused and otherwise curved systems, an example of which was incorporated as a design feature on the exterior of Legacy Junior High School in Layton, Utah, designed by VCBO Architecture. Many sizes, textures, and colors are available to meet design specifications, and the panels can be installed vertically or horizontally, with exposed or concealed fasteners. Exposed fasteners, which are often chosen for aesthetic reasons, can give exterior cladding an industrial, bolt-on look. The articulated hardware can also add rhythm and depth.

Because metal is an inherently flexible product and relatively easy to work with, the wall and roof panels are compatible with other building materials and integrate well with windows and other fenestration systems. Scott Kriner, the Metal Construction Association's technical director, points out that today's metal-panel systems are a far cry from our grandparents' metal buildings—the utilitarian structures some architects may associate with nondescript industrial and agricultural facilities. In recent years, aesthetically compelling buildings like the Bridges Center in Memphis, Tennessee, a geometrically intriguing glass and metal building designed by Coleman Coker and his firm, buildingstudio, support Kriner's argument.

Lester E. Palmer Events Center in Austin, Texas, designed by Barnes Gromatzky Kosarek Architects, has a complex roof constructed using a steel panel system with an aluminum-zinc coat.

CUSTOM APPEARANCE, STOCK COST

That project and others demonstrate that metal panels integrate well with other materials. Because metal panels can be custom fabricated to meet any project's design specifications, there are few limits to the scope of a building's complexity in terms of how the metal panels interact with other building products. Despite its complex angles and contours, for example, Frank Gehry's stainless-steel-skinned Frederick R. Weisman Art Museum at the University of Minnesota has plenty of windows.

Industry professionals say metal panel systems—whether single-skin panels, IMPs, or MCMs—can be employed for almost any conceivable use. "Custom fabrication and finishing elements like concealed fasteners allow architects to hide attachment points, if they choose, and joints can be detailed in a number of ways," says Ken Buchinger, vice president of business development and research & development (R&D) for the metal claddings manufacturer MBCI. The ability designers now have to use metal panels, either vertically or horizontally, can be attributed in large part to advancements in coating and paint products that manufacturers use on the panels themselves. Those coating- and paint-product improvements have made metal-panel products and materials more resistant to fading. Industry experts say that paint applied during the manufacturing process is highly resilient and lasting.

"Improved coating and paint products have also given manufacturers the ability to mask the directional structure that's inherent to materials like aluminum," Buchinger adds. While many products in use today are coated to give building exteriors more protection against corrosion, plenty of architects choose natural metals like raw aluminum, copper, and zinc for their distinctive look. They are also favored for the ability of the metals to age very well and remain exceedingly durable for decades of building life cycle.

In fact, the factory-applied coatings "provide protection against UV rays, corrosion, humidity, acid rain, and a wide range of chemicals and other pollutants," according to an American Institute of Architects (AIA) presentation, *Insulated Metal Wall and Roof Panels for Sustainability and Energy Efficiency*. They also "provide gloss retention, and resist chalking, fading, chipping, and dirt retention." In addition to protecting metal panels, factory-applied coatings help manufacturers offer clients a wide range of aesthetic possibilities, including custom color matching, textures, and special finishes such as metallics.

"There are numerous reasons for alteration of the surface of sheet metal roofing materials," according to Haddock in his *Metal Roofing from (A) Aluminum to (Z) Zinc* white paper. "One is corrosion protection. Another is to make a metal solderable or more compatible metallurgically. Then, there are also appearance-related reasons," he adds. "In other cases, the aesthetic objective of an applied finish is not to preserve, but to mask the natural mill finish." Most manufacturers apply finishes on both metal faces of an IMP or MCM, allowing for equal protection and more options in façade detailing.

AESTHETIC OPPORTUNITIES

Treated steel sheets such as bare steel with a coating of corrosion-resistant aluminum-zinc alloy—similar to galvanized steel, which is coated in zinc—are another product that's become increasingly popular among architects for its modern look and durability as an "unfinished metal." Invented and introduced to the marketplace by Bethlehem Steel in 1972, aluminum-zinc-coated carbon steel panels provide a steel substrate that can be painted or installed as is. The award-winning Lester E.

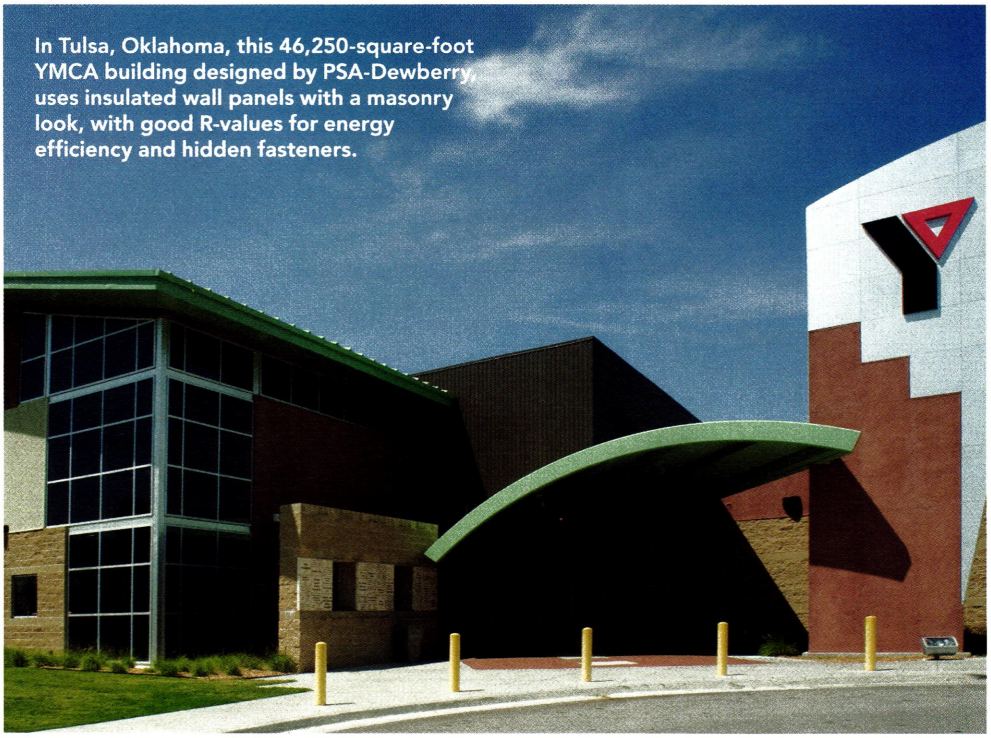
Palmer Events Center in Austin, Texas, which was designed by Barnes Gromatzky Kosarek Architects, features a sleek, contemporary tent-like roof that was constructed using a steel panel system with the aluminum-zinc coat.

On the other end of the finish spectrum are much more textured finishes on the metal panel substrates. Novel laminating techniques have been developed for metal-panel manufacturing that imbue the surfaces with a three-dimensional, cementitious quality. Unlike actual cementitious building exteriors, which absorb water that can be drawn into the building by capillary action or driven in by solar heating, these metal building exteriors perform well as barrier walls and rainscreen walls.

Just as many architects choose metal for aesthetic reasons, they also choose metal wall- and roof-panel products with an eye toward ensuring that a structure is weathertight and performs well over time. Metal roof products often come with factory-applied sealants in the panel joints, particularly products that are used on low-slope roofs, which can be installed directly over rafters and joists. Standing-seam panels have raised edges, or profiles, that attach to one another above areas where water runs off the roof's surface. For steeper-slope roofs, most projects call for metal-panel systems to be installed over strong, watertight decks. To ensure that exterior walls are also watertight, architects employ metal-panel systems that work as either rainscreens or barrier walls. The former is a system that is designed with the expectation that the exterior skin will prevent most but not all water from penetrating that surface. The latter, barrier type counts on the exterior skin keeping all moisture out.

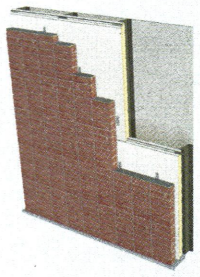
While a metal surface itself is by definition impermeable, the attachment points between panels need to be equally as watertight in order for the system to perform adequately. To that end, manufacturers design interlocking metal wall panels with factory-applied sealants. While single-skin panels are also designed and manufactured with interlocking edges, industry professionals recommend using those products as rainscreen walls or drainage assemblies, which allow water to drain off in a ventilated area between the exterior surface and an insulated backing wall.

Just as new buildings need to keep water out, existing structures need to continue to perform in that area. In fact, the retrofit market is a growing one for the metal-panel industry, according to MCA's Kriner, and architects working with metal exteriors are exploring a range of design options. For example, wall and roof panel systems can be installed over a broad range of surfaces and substrates. This makes metal panel systems an ideal choice for school building upgrades, which are needed frequently, given the great number of older schools around the country. Some of these have been *overcladding* approaches, where the metal panels or IMPs are hung on an existing exterior surface such as CMU or brick veneer.



In Tulsa, Oklahoma, this 46,250-square-foot YMCA building designed by PSA-Dewberry, uses insulated wall panels with a masonry look, with good R-values for energy efficiency and hidden fasteners.

MCA and some manufacturers say the life cycle of metal makes the material a cost-effective choice for architects, builders, and end-users, for new construction and retrofit projects alike. And as manufacturers continue to make improvements in their products, architects can expect even more versatility, says Buchinger. One relatively new product, according to industry leaders, is an IMP that serves as a backing material for an exterior brick face.



One relatively new product, according to industry leaders, is an IMP that serves as a backing material for an exterior brick face.

ENGINEERING, BY CODE AND BY PRACTICE

Suitable design and specification of metal claddings is just as important as their proper engineering, manufacture, fabrication, and application by experienced construction teams. With the range of products available, this presents a key to building design: Metal roof and wall solutions on the market today include engineered solutions such as single-skin metal panels for metal roof and metal wall applications, IMPs, and related roofing systems including the standing-seam metal systems. They can be applied extensively in the architectural, commercial, institutional, and residential markets, but also those industrial and agricultural settings that helped seed their wider use.

A number of codes and standards provide essential knowledge and minimum requirements for the use of metal envelope systems. In addition to manufacturer recommendations and their model specifications, which reference many of the key rules, the International Building Code (IBC) and standards developed by groups including the Metal Building Manufacturers Association (MBMA) are most valuable to architects.

See endnote in the online version of this article.

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***C.C. Sullivan** is a marketing and content consultant specializing in the AEC industry.*

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CIRCLE 99

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Metal Safety Flooring

Incorporating safety, sustainability, profitability, and productivity into workplace design

Sponsored by SlipNOT® | *By Peter J. Arsenault, FAIA, NCARB, LEED AP*

The choice of flooring in workplaces, particularly in industrial or high-traffic settings, has a significant impact on the safety of workers in those spaces. As a result, flooring that is safe for people to walk on can directly influence the operation and profitability of the businesses or organizations. Since there is a range of choices, it is important to select and specify the best flooring that is not only safe, but will hold up and be durable over time, provide the needed design characteristics for the work environment, and address sustainability.

SAFETY FLOORING OVERVIEW

All flooring materials are clearly intended to be walked on. However, it is usually the walking surface characteristics of those different materials that constitute the difference between them being inherently safe or notably unsafe in common work environments.

The Problem—Unsafe Flooring

Unsafe flooring and walkway conditions are defined as those that are prone to cause people to slip, trip, or fall and become injured, sometimes quite seriously so. In fact, the Occupational Safety and Health Administration (OSHA) points out that walkway related injuries constitute the majority of general industry accidents.

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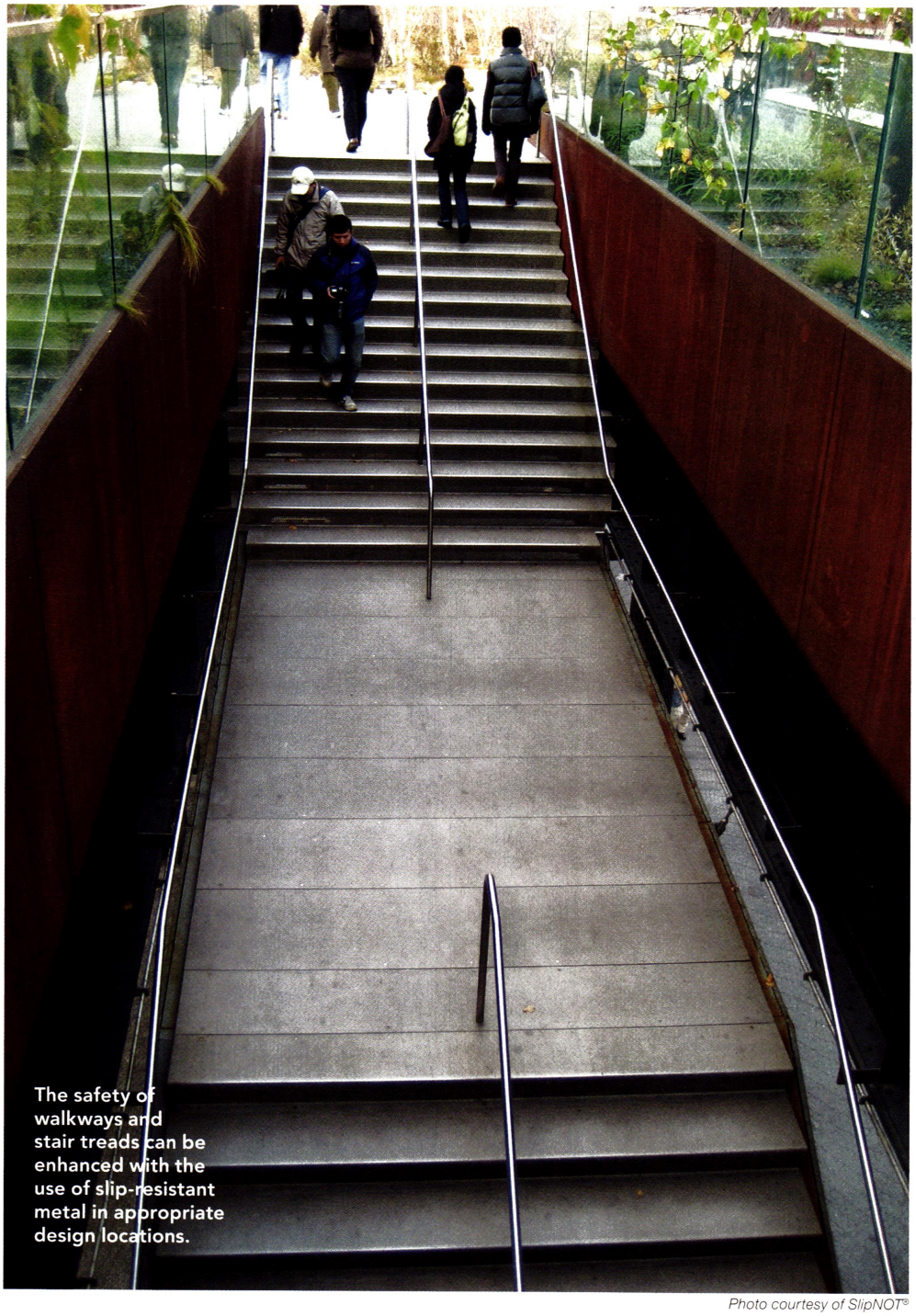

The safety of walkways and stair treads can be enhanced with the use of slip-resistant metal in appropriate design locations.

Photo courtesy of SlipNOT®

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Learning Objectives

After reading this article, you should be able to:

1. Identify and recognize the characteristics of flooring that contribute to safety, elimination of hazards, and liability control.
2. Compare and contrast the characteristics among the common choices for safety flooring in workplace environments.
3. Assess the design contributions of safety flooring, particularly when metal safety flooring is incorporated.
4. Specify metal safety flooring in a variety of green and conventional buildings and formulate appropriate selections related to specific applications.

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CIRCLE 101

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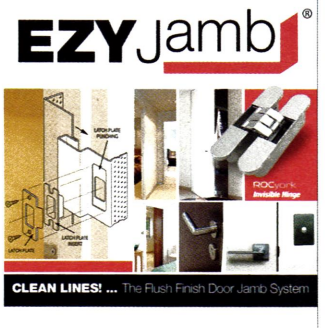

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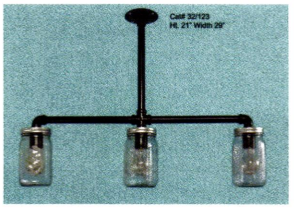

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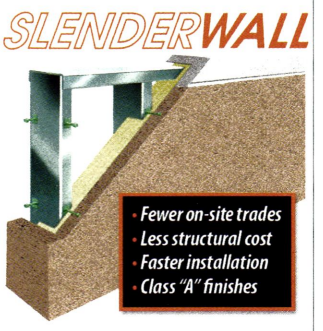

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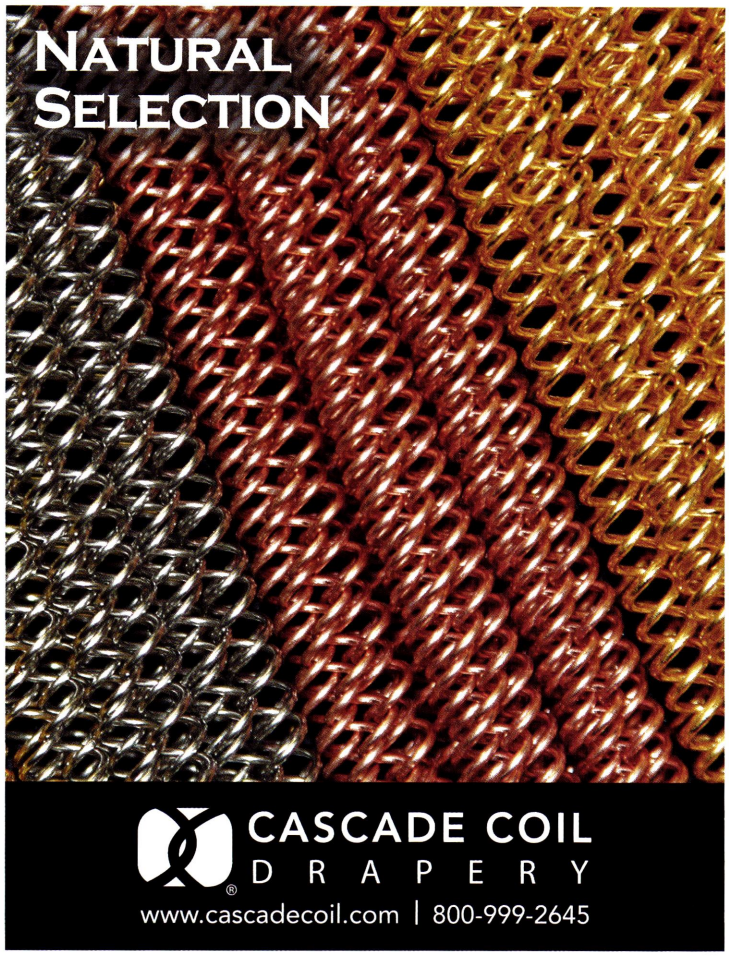

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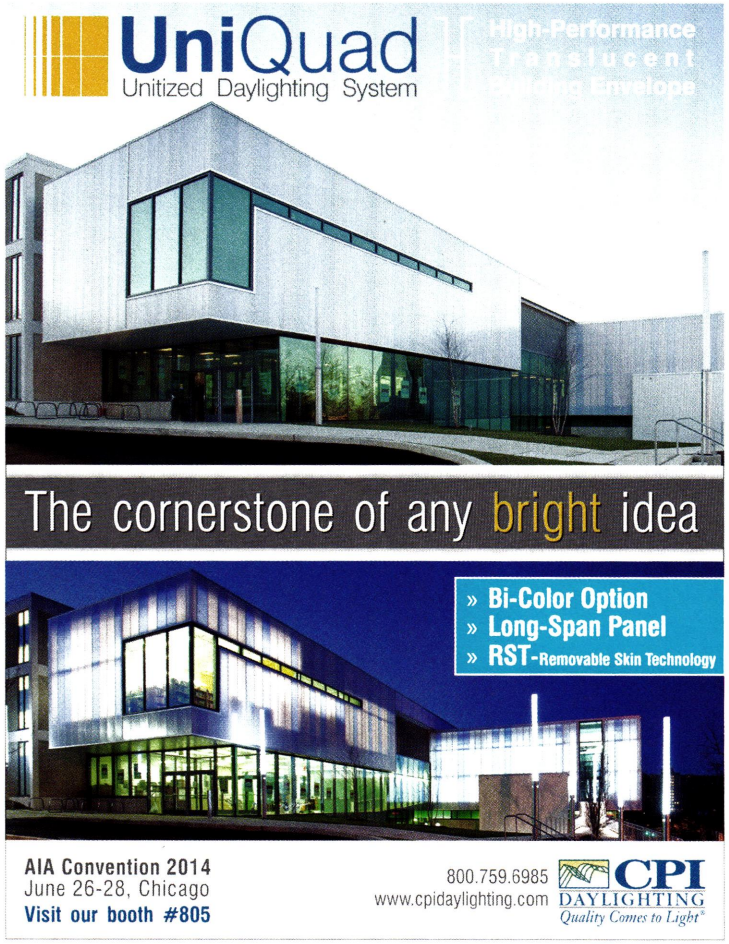

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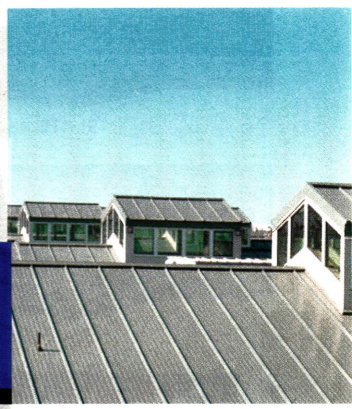

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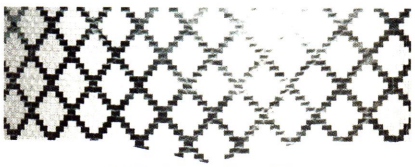

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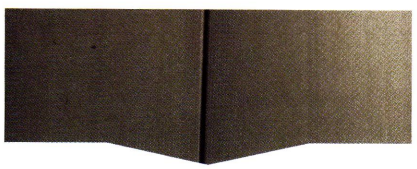

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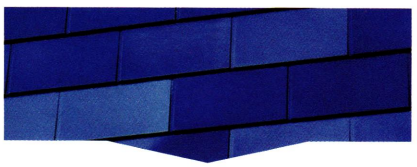

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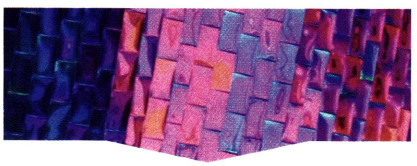

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New and Upcoming Exhibitions

Ernesto Neto: 2014 Aspen Award for Art Exhibitions
Aspen
June 6–September 2, 2014
Following the announcement of artist Ernesto Neto as the recipient of the Aspen Art Museum (AAM) 2014 Aspen Award for Art, the museum shows two new site-specific installation works spanning the upper and lower galleries of the AAM's current facility—the final exhibitions scheduled in its current home before moving to a new Shigeru Ban–designed museum. For more information, visit aspenartmuseum.org.

Fundamentals: 14th International Architecture Exhibition
Venice
June 7–November 23, 2014
Directed by Rem Koolhaas, the 14th edition of the International Architecture Exhibition at the Venice Biennale showcases pavilions from 66 countries. Titled *Fundamentals*, the research-based exhibition consists of three interlocking shows: *Absorbing Modernity 1914–2014*, *Elements of Architecture*, and *Monditalia*. For the Biennale's five-month duration, the U.S. pavilion will be converted into a temporary architecture studio. At Giardini and Arsenale. For more information, visit labiennale.org.

EXEMPLARY: 150 Years of the MAK—From Arts and Crafts to Design
Vienna
June 11–October 5, 2014
This exhibition to mark the MAK's 150-year anniversary examines how the museum, established in 1864, has developed from being a traditional educational institution for Austrian craftspeople into one of the world's most important sites for architecture and contemporary art and design. The exhibition relies on objects, books, and magazines from MAK's collection to trace the breaks and turning points of design history. At the MAK Exhibition Hall. For more information, visit mak.at.

FAPE's Original Print, Photography, and Site-Specific Collections
East Hampton, New York
June 21–July 27, 2014
The Foundation for Art and Preservation in Embassies (FAPE) mounts the first public exhibition of its collections. Curated by Robert Storr, dean of the Yale School of Art, this exhibition includes works by some of the United States' most acclaimed artists, including John Baldessari, Ellsworth Kelly, Robert Rauschenberg, and Frank Stella. In conjunction with the exhibition, FAPE is hosting a series of panel discussions where artists, diplomats, and museum and cultural leaders will discuss the importance of art, architecture, and cultural diplomacy. At the Museum at Guild Hall. For more information, visit fapeglobal.org.

Houghton Hall: Portrait of an English Country House
Houston
June 22–September 22, 2014
For the first time, a collection of paintings, sculptures, and decorative arts from Houghton Hall in England—architect William Kent's 18th-century masterpiece—travels to the United States. The exhibition brings together more than 100 objects and furniture, some designed by Kent himself, to evoke the stunning rooms at Houghton Hall. At the Museum of Fine Arts. For more information, visit mfah.org.

NYC Makers: The MAD Biennial
New York City
July 1–October 12, 2014
This exhibition spotlights the creative communities thriving across the five boroughs of New York. The exhibition showcases the work of approximately 100 makers and presents a cross-section of their work. Makers will be nominated by a pool of more than 300 New York–based cultural leaders, with final participants selected by a jury. From world-renowned cultural leaders to emergent *enfants terribles*, every maker selected demonstrates the highest level of skill in their respective field, whether architecture, furniture design, fashion, or film. At the Museum of Arts and Design (MAD). For more information, visit madmuseum.org.

Mackintosh Architecture
Glasgow
July 18, 2014–January 4, 2015
The result of a four-year research project led by The Hunterian museum at the University of Glasgow, Mackintosh Architecture is the first major exhibition to be devoted to Mackintosh's architectural work, featuring more than 80 architectural drawings, films, models, and rarely seen archival material from The Hunterian and collections across the UK. The exhibition is supported by three special displays that showcase Mackintosh's skills as a draughtsman and designer, including his travel sketches and still-life compositions. At The Hunterian. For more information, visit glasgow.ac.uk/hunterian.

Ongoing Exhibitions

Sacred Spaces: The Photography of Ahmet Ertug
Philadelphia
Long-term exhibition
A two-part exhibition fittingly presented under the vaulted ceilings of the Penn Museum's first-floor Merle-Smith Galleries, *Sacred Spaces* features 24 works by innovative, acclaimed Turkish photographer Ahmet Ertug. Through his lens and with his exceptionally large-scale prints (some as large as 6 feet wide), Ertug captures the grandeur of the ancient Byzantine churches, all designated UNESCO World Heritage sites, in crisp, bright, detailed photographs. A digital-screen slide show of exterior images of the churches and an interactive kiosk where visitors can explore the rich iconography depicted in Ertug's photographs enhance the exhibition. At the Penn Museum. For more information, visit penn.museum.

London's Growing . . . Up!
London
Through June 12, 2014
London's skyline is currently going through an enormous change. More than 200 towers are planned in the capital in an attempt to meet the needs of its growing population. Through the use of images, video, models, CGIs, and visitor interaction, this exhibition at New London Architecture will present a past, present, and future view of London's skyline. For more information, visit newlondonarchitecture.org.

Lebbeus Woods: Architect
New York City
Through June 15, 2014
Acknowledging the parallels between society's physical and psychological constructions, architect Lebbeus Woods's career showed how these constructions transform our being. Working mostly, but not exclusively, with pencil on paper, Woods created an oeuvre of complex worlds, at times abstract and at times explicit, that present shifts, cycles, and repetitions within the built environment. At The Drawing Center. For more information, visit drawingcenter.org.

Polis: 7 Lessons from the European Prize for Urban Public Space [2000–2012]
New York City
Through June 21, 2014
The European Prize for Urban Public Space aims to recognize successful examples of different applications of the democratic conception of the city. The 35 winning works of the seven editions of the prize gauge the democratic quality of Europe's urban and social fabric from Glasgow to Istanbul. The projects have been grouped under seven headings: periphery, complexity, voids, water, mobility, memory, and democracy. These issues have emerged as empirical lessons that confirm the social and political dimension of the city and that are so well reflected in the Greek term *polis*. At the Center for Architecture. For more information, visit aiany.org.

Foster + Partners: The Art of Architecture
Bangkok
Through June 29, 2014
Arranged along the themes of infrastructure, high-rise building, urban design, history, and culture—all within a framwork of sustainability—the works on display in this exhibit at the Bangkok Art and Culture Centre highlight the diversity of Foster + Partners' work. For more information, visit bacc.or.th.

Municipality Builts—Vienna Housing from 1920 to 2020
Berlin
Through July 5, 2014
The touring multimedia exhibition *Municipality Builts* shows visitors the history of municipal

housing in Vienna and its significance for its people and society overall—from the early days of Social Democrat–governed "Red Vienna" in the 1920s to the present and beyond. The exhibition, at Aedes am Pfefferberg, shows how the requirements for social-housing policy have changed over time due to changes in society, technological advances in construction, and transformations in urban planning and architecture. For more information, visit aedes-arc.de.

California Design, 1930–1965: Living in a Modern Way
Salem, Massachusetts
Through July 6, 2014
An exhibition of more than 250 Midcentury Modern design objects, *California Design* features furniture, textiles, fashion, vehicles, and more to celebrate the impact of California designers between 1930 and 1965. The output of designers Charles and Ray Eames, Richard Neutra, and R.M. Schindler, along with previously unheralded figures, is shown in the context of the creative climate of California and the period. At the Peabody Essex Museum. Visit pem.org.

Mario Botta: Architecture and Memory
Charlotte
Through July 25, 2014
Considered one of the century's most fundamental contributors to postmodern classicism, Swiss architect Mario Botta is respected particularly for his sensitivity to regional vernacular and to the building's relationship with the land. The exhibition at the Bechtler Museum of Modern Art features sketches, original wood models, and photographs for 30 of Botta's projects. For more information, visit bechtler.org.

Everything Loose Will Land
Chicago
Through July 26, 2014
This exhibition at the Madlener House explores the dynamic intersection of architecture and the visual arts in Los Angeles during the 1970s. The show demonstrates that the city's characteristic "looseness" dislodged the arts from their separate habits, realigning and ultimately redefining cultural practices and their relationship to the city. The exhibition features more than 120 drawings, photographs, media works, sculptures, prototypes, models, and ephemera from projects by Carl Andre, Archigram, Judy Chicago, Frank Gehry, and many others. For more information, visit grahamfoundation.org.

Bernard Tschumi
Paris
Through July 28, 2014
The Centre Pompidou hosts the first major European retrospective of the architect and theorist Bernard Tschumi. Since the late 1970s, Tschumi has been redefining architecture through a series of conceptual arguments rooted in film, literature, visual arts, and philosophy. The exhibition showcases some 350 drawings, sketches, collages, and models, many of them never shown previously. The installation, designed by the architect, also features archival documents and films. Visit centrepompidou.fr.

Design Revolution: Innovating for a Better World
Atlanta
Through August 3, 2014
Based on the idea that design is a way of looking at the world with an eye toward changing it, this exhibition offers a glimpse of the ways designers, engineers, students, professors, architects, and social entrepreneurs from the Southeast are designing solutions to the problems of

the 21st century. These real-world problems range from the purification of water to the provision of shelter for the homeless, and from the rethinking of transportation systems to the development of games that produce positive world outcomes by teaching, training, and raising awareness of social issues. At the Museum of Design Atlanta. For more information, visit museumofdesign.org.

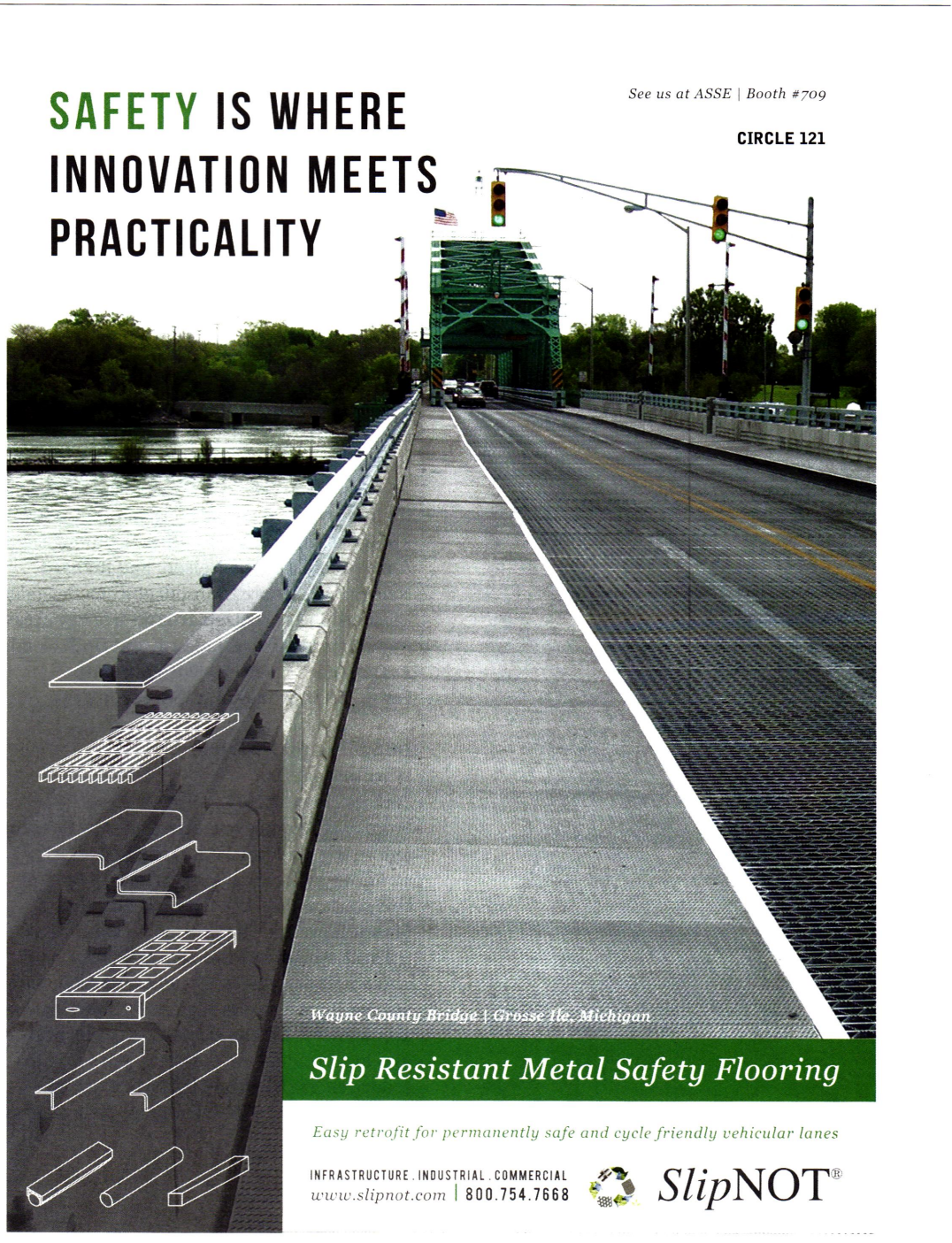
David Hartt: Stray Light
Chicago
Through August 11, 2014
David Hartt: Stray Light presents color photographs, sculptures, and a video installation by the Chicago-based Canadian artist, reflecting on the iconic headquarters of the Johnson Publishing Company in downtown Chicago. The 11-story modernist building, home to *Jet* and *Ebony* magazines starting in 1971, was heralded as the first major downtown Chicago building designed by an African American architect since the 18th century. At the Museum of Contemporary Art Chicago. For more information, visit mcachicago.org.

Hans Scharoun: Architect and Visionary
Cambridge, Massachusetts
Through August 15, 2014
Hans Scharoun (1893–1972) is known today for expressionist architecture of profound humanism. Having gained recognition for his house designs at the German Werkbund exhibitions of 1927 and 1929, his practice before World War II focused on residential projects, the most successful of which were the Siemensstadt Housing Estate in Berlin (1930) and the Schminke House at Löbau in Saxony (1932). This exhibition at the MIT School of Architecture + Planning focuses on Scharoun's graphic art, from his earliest preserved drawings of 1909 to graphics for posthumous projects. For more information, visit mit.edu.

Finland: Designed Environments
Minneapolis
Through August 17, 2014
The first major U.S. exhibition devoted to contemporary Finnish design since the 1990s, *Finland: Designed Environments* will present a holistic overview of the past 15 years in Finland, a period of rapid innovation and design breakthroughs. The exhibition, hosted by the Minneapolis Institute of Arts, will pay particular attention to young Finnish architects emerging as major international voices, including K2S Architects, Hollmén Reuter Sandman, and Verstas Architects, among others. For more information, visit new.artsmia.org.

Italian Futurism, 1909–1944: Reconstructing the Universe
New York City
Through September 1, 2014
The first comprehensive overview in the United States of one of Europe's most important 20th-century avant-garde movements, *Italian Futurism* features more than 360 works by more than 80 artists, architects, designers, photographers, and writers. This multidisciplinary exhibition at the Solomon R. Guggenheim Museum examines the full historical breadth of Futurism, from its 1909 inception with the publication of Filippo Tommaso Marinetti's first Futurist manifesto through its demise at the end of World War II. For more information, visit guggenheim.org.

Architecture in Uniform: Designing and Building for the Second World War
Paris
Through September 8, 2014
Opening to the general public at the Cité de L'Architecture et Du Patrimoine, following its presentation in Montreal in 2011, *Architecture in Uniform* investigates the consequences of the Second World War on the built environment and reveals the immense development under-

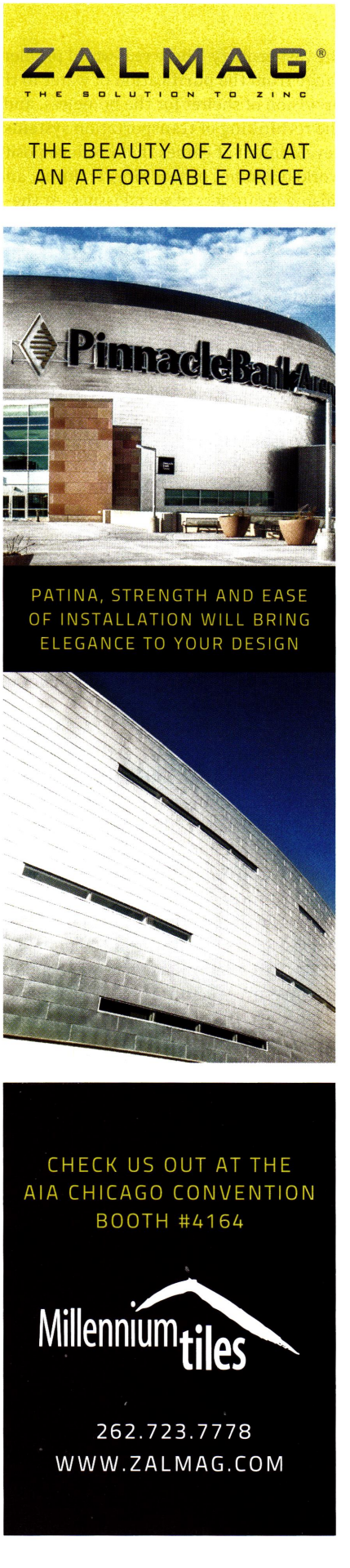


taken by architecture during these years. Curated by Jean-Louis Cohen, the exhibition features drawings, photographs, posters, books, publications, models, historical documents, and films from all sides of the conflict. For more information, visit cca.qc.ca.

Konstantin Grcic
Weil am Rhein, Denmark
Through September 14, 2014
The Vitra Design Museum is now presenting the largest solo exhibition on designer Konstantin Grcic and his work to date. Specifically for this exhibition, Grcic has developed several large-scale installations rendering his personal visions of life in the future: a home interior, a design studio, and an urban environment. These spaces stage fictional scenarios confronting the viewer with the designer's inspirations, challenges, and questions, and place Grcic's works in a greater social context. The highlight of these presentations is a 30-meter-long panorama that depicts an architectural landscape of the future. For more information, visit design-museum.de.

Designing Home: Jews and Midcentury Modernism
San Francisco
Through October 6, 2014
The first major exhibition to explore the role of Jewish architects, designers, and patrons in the formation of a new American domestic landscape during the post–World War II decades of the 20th century, *Designing Home* highlights the essential contributions of well-known designers and architects, among them Anni Albers, George Nelson, and Richard Neutra. With more than 120 objects, *Designing Home* will be organized around five key areas including furniture, Judaica, and Hollywood. At the Contemporary Jewish Museum. For more information, visit thecjm.org.

Designing for Disaster
Washington, D.C.
Through August 2, 2015
From earthquakes and hurricanes to flooding and rising sea levels, natural disasters can strike anywhere and at any time. In light of this stark reality, the National Building Museum presents a multimedia exhibition titled *Designing for Disaster*, a call to action for citizen preparedness, from design professionals and local decision-makers to homeowners and school kids. The exhibition explores strategies local leaders are currently pursuing to reduce their risks and build more disaster-resilient communities. For more information, visit nbm.org.



Lectures, Conferences & Symposia

New Cities Summit
Dallas
June 17–19, 2014
Organized by the New Cities Foundation, the New Cities Summit is the premier global leadership event on the future of cities. Fostering positive urban change, the gathering advocates cross-sector collaboration through network building, cutting-edge forums, and lively discussion. The Summit showcases the best ideas on the future of cities and generates solutions capable of being adapted and replicated across the world. The theme of this year's Summit is Re-imagining Cities: Transforming the 21st Century Metropolis. Panel topics include entrepreneurship, technology, and cultural capital. At Winspear Opera House. For more information, visit newcitiessummit2014.org.

Consense 2014
Stuttgart, Germany
July 1–2, 2014
Germany's sustainable building council and Messe Stuttgart will host this international trade fair and congress for sustainable building, investment, operations, and maintenance. The conference brings experts from all over the world for a series of intensive workshops and seminars to discuss new materials, products, and construction systems. The first day will focus on investors and communities, while the second day will highlight planners and architects. At Messe Stuttgart. For more information, visit messe-stuttgart.de.

7th Making Cities Livable Conference
Kingscliff, Australia
July 10–11, 2014
The conference will examine the challenges, opportunities, trends, and issues currently facing sector professionals. Delegates and presenters will examine how to plan for healthy, sustainable, and resilient cities. The challenges and opportunities facing Australia, as a nation and as part of a global village, will be explored. At Mantra on Salt Beach. For more information, visit healthycities.com.au.

Competitions

Pinup 2014 Design Competition
Submission deadline: June 9, 2014
This free competition invites students and young professionals to submit three digital images that showcase a collection of their studio, 3-D-printed, or unbuilt work to explore how designers harness technology and how, in an increasingly networked culture, projects can start new conversations. The competition will be judged by a panel of design professionals and editors. For more information, visit mymorpholio.com.

ISARCH Awards
Submission deadline: June 30, 2014
Architecture students are invited to promote university projects on an international scale. The competition is open to all architecture students who have graduated within the three years preceding the competition deadline. Jury members include Patrik Schumacher and Odile Decq. The three winning projects will receive prizes worth a total of €7,000. For more information, visit isarch.org.

Wine Culture Centre
Registration Deadline: June 30, 2014
Young Architects Competitions is requesting proposals to design a wine culture center for Cantina Valpolicella Negrar in Verona, Italy. Young architects should submit proposals that transform Valpolicella's old winery into a catalyst for culture, tourism, and research. At minimum, designs should include a fruit storehouse, offices, research labs, and training facilities. The first-place winner will receive an €8,000 prize. For more information, visit

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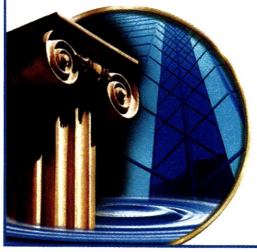

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WMF/Knoll Modernism Prize
Nomination deadline: June 30, 2014
This biennial prize is awarded to a design professional or firm in recognition of an innovative solution that preserves a modern landmark. Nominated projects should enhance a site's architectural, functional, economic, and environmental sustainability for the benefit of the community and have been completed in the last five years. For more information, visit wmf.org.

Leverano Horizon Tower
Submission deadline: July 17, 2014
This competition seeks designs for an observation tower in Leverano, a small town in Italy, to encourage tourism and to enable visitors to view the seaside landscape. The design, taking cues from the area's traditional Italian towers, should also include rest stops and retail zones. For more information, visit archistart.it.

Moriyama RAIC International Prize
Submission deadline: August 1, 2014
The Moriyana RAIC International Prize is a biennial architecture prize open to any architect or firm with an outstanding building or project. The prize recognizes architecture that reflects Canadian architect Raymond Moriyama's focus on social justice, equality, and inclusivity. The winner will receive $100,000. Three individual cash scholarships of $5,000 will be awarded to three student essays. For more information, visit raic.org.

Mud House Design 2014
Registration deadline: August 15, 2014
Nka Foundation invites students to Mud House Design 2014, an international architecture competition to demonstrate that mud architecture can be well-made and durable. Designs should be for a single-family home, and use local materials and labor. The first-place-winning entry will be built in the Ashanti Region of Ghana. For more information, visit nkafoundation.org.

vision42design Competition
Registration deadline: September 8, 2014
The Institute for Rational Urban Mobility is hosting a design competition to image an enhanced public environment for 42nd Street in Midtown Manhattan. Participants should transform the street into a world-class boulevard, complete with public spaces and a light-rail tram. Prizes include $10,000 and a feature in *The Architect's Newspaper*. For more information, visit vision42.archpaper.com.

E-mail information two months in advance to recordevents@mcgraw-hill.com.

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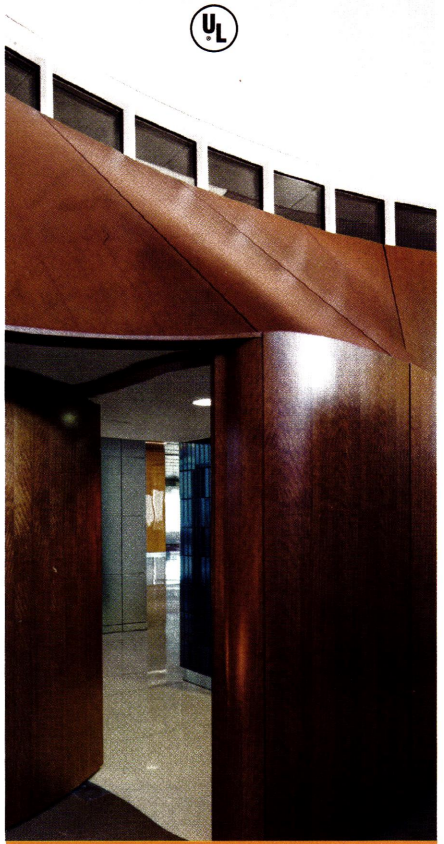

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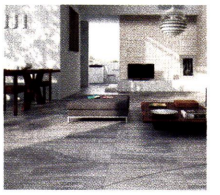
Tile Trends from Spain

Tile manufacturers find inspiration everywhere – from fashion, upholstery and wallpaper – to furniture, media and even electronics.



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