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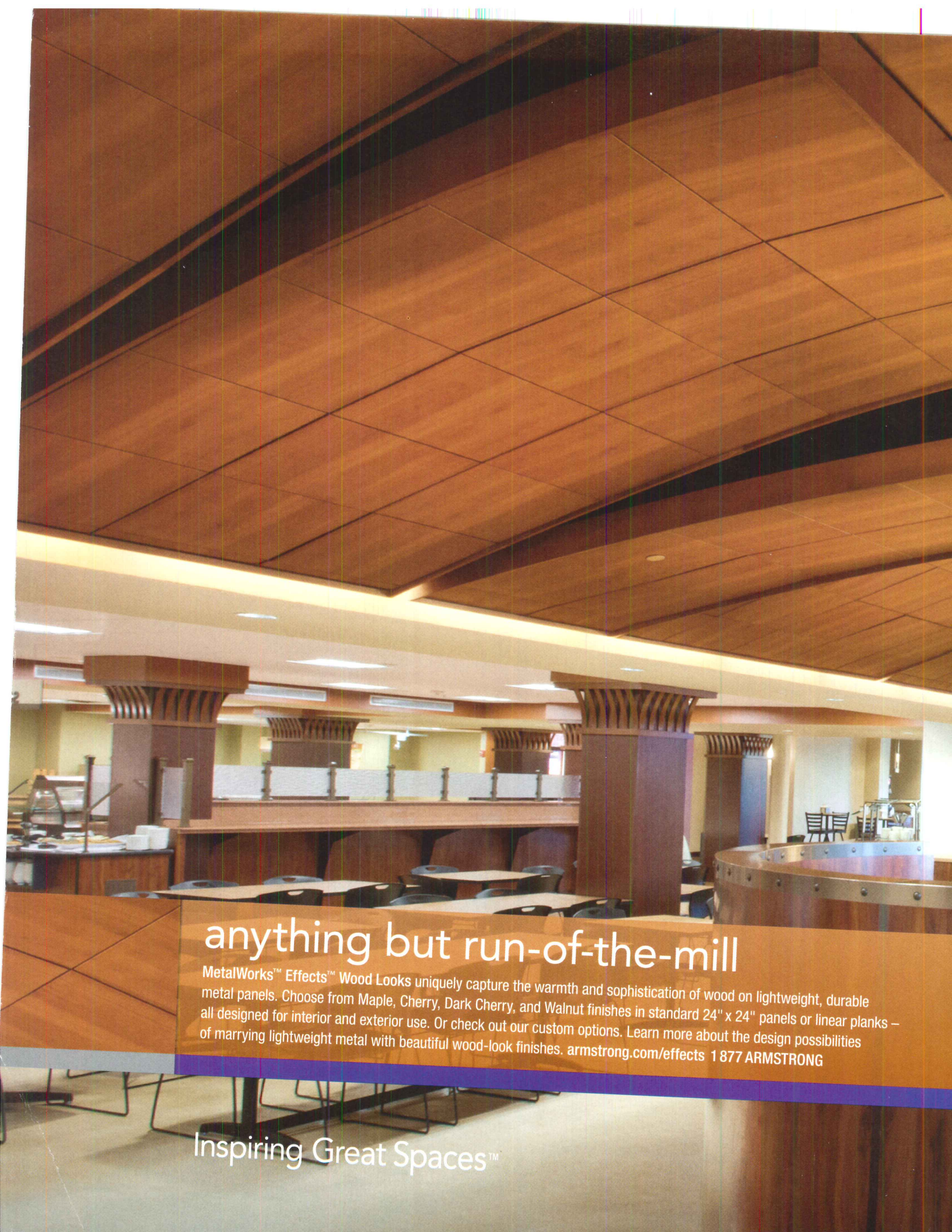
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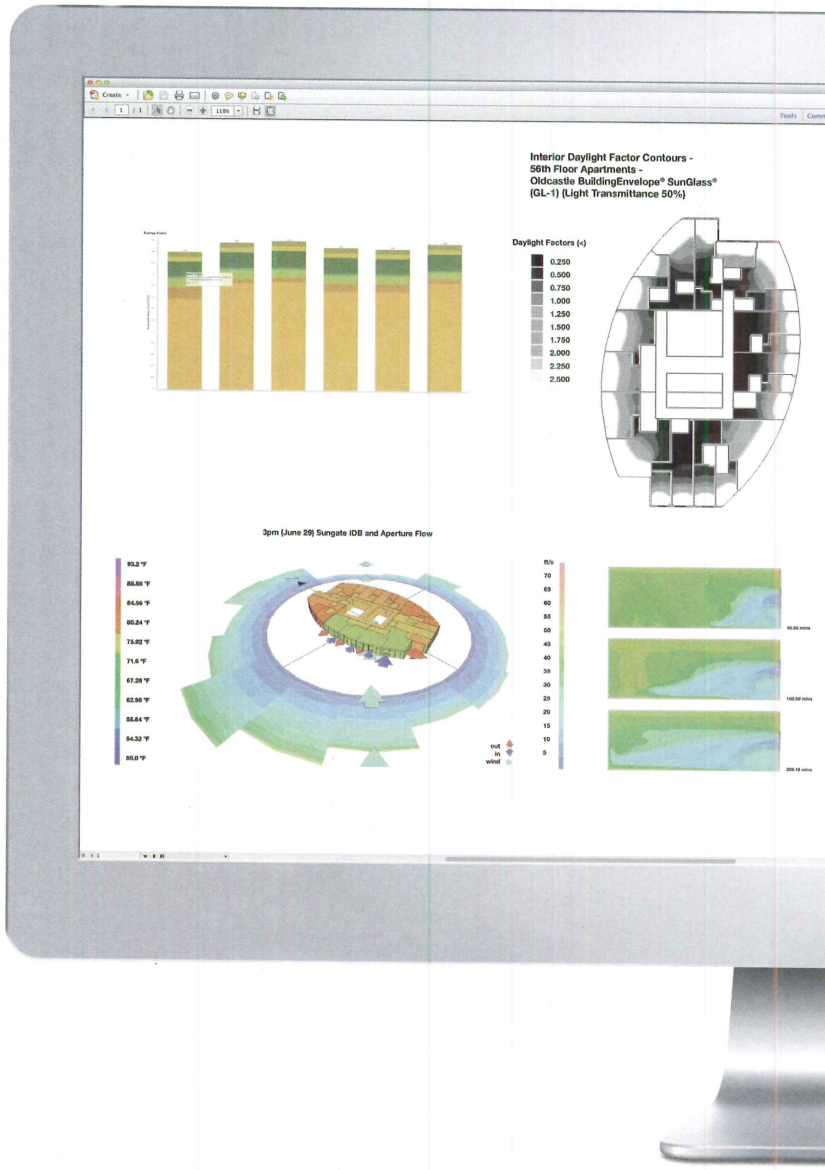

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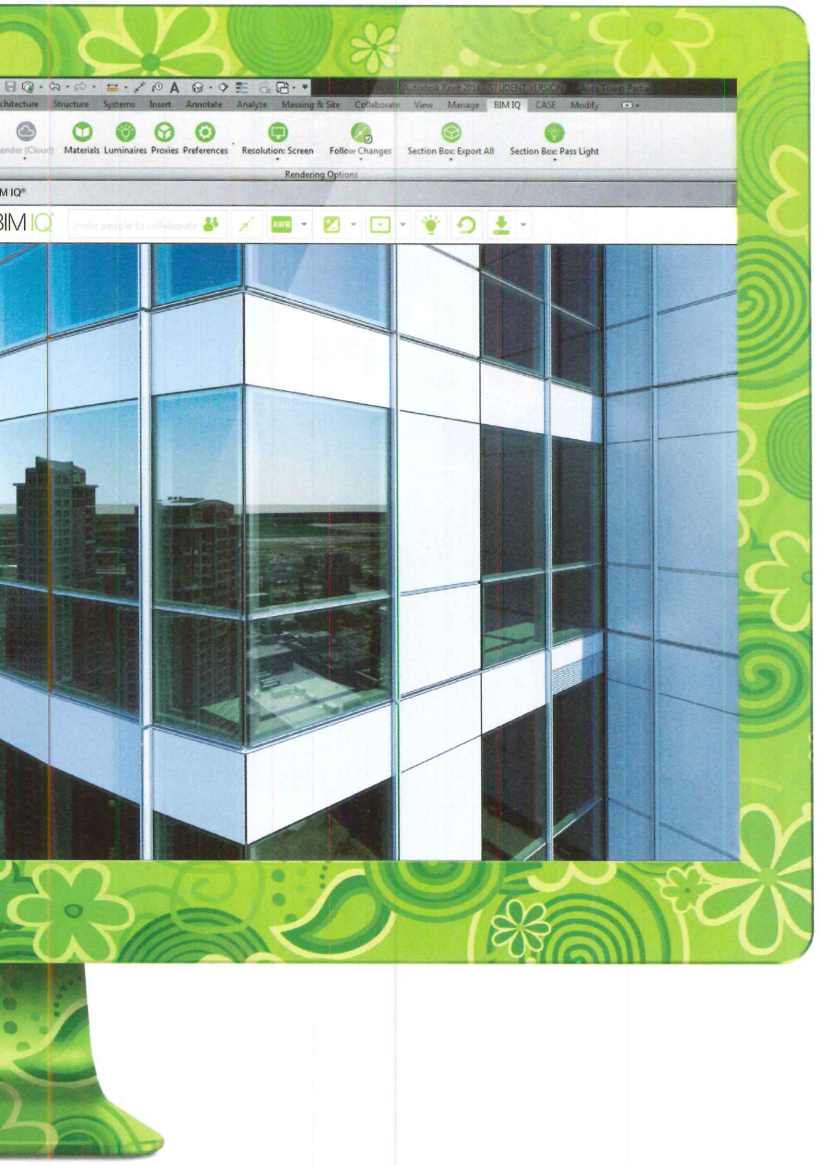

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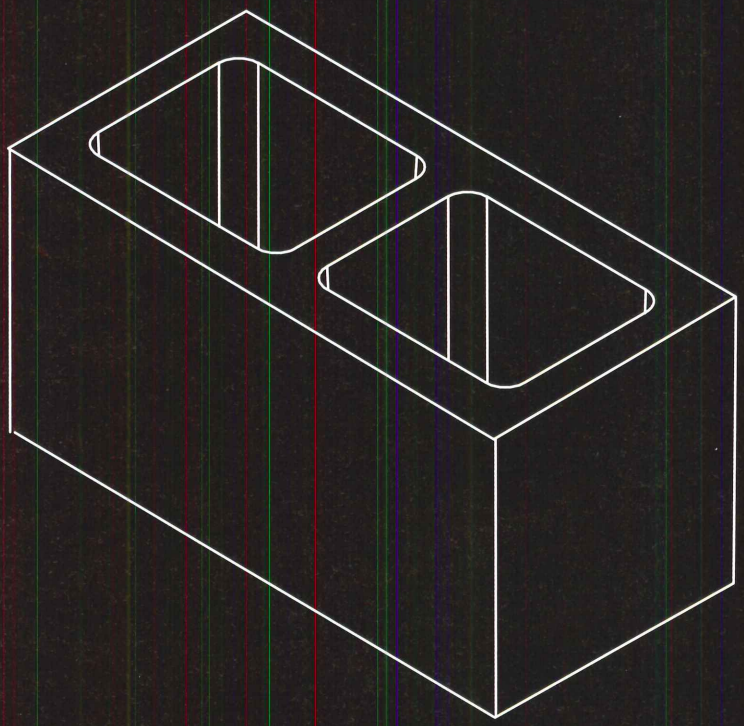

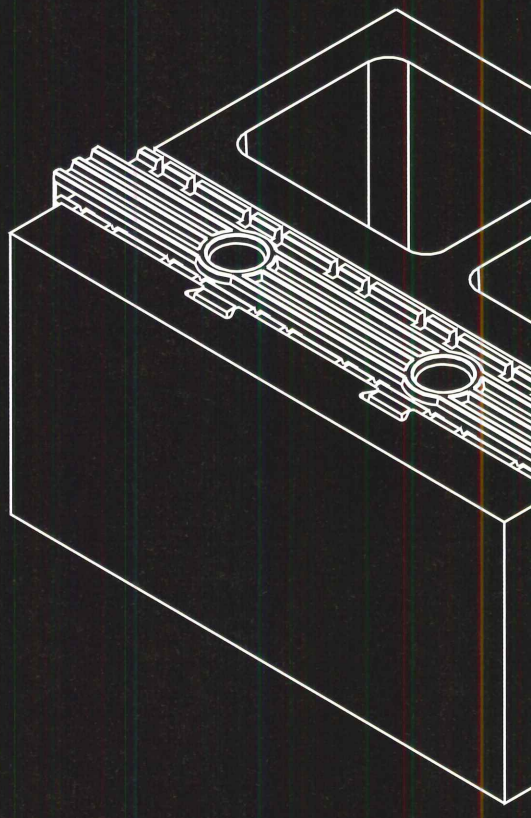

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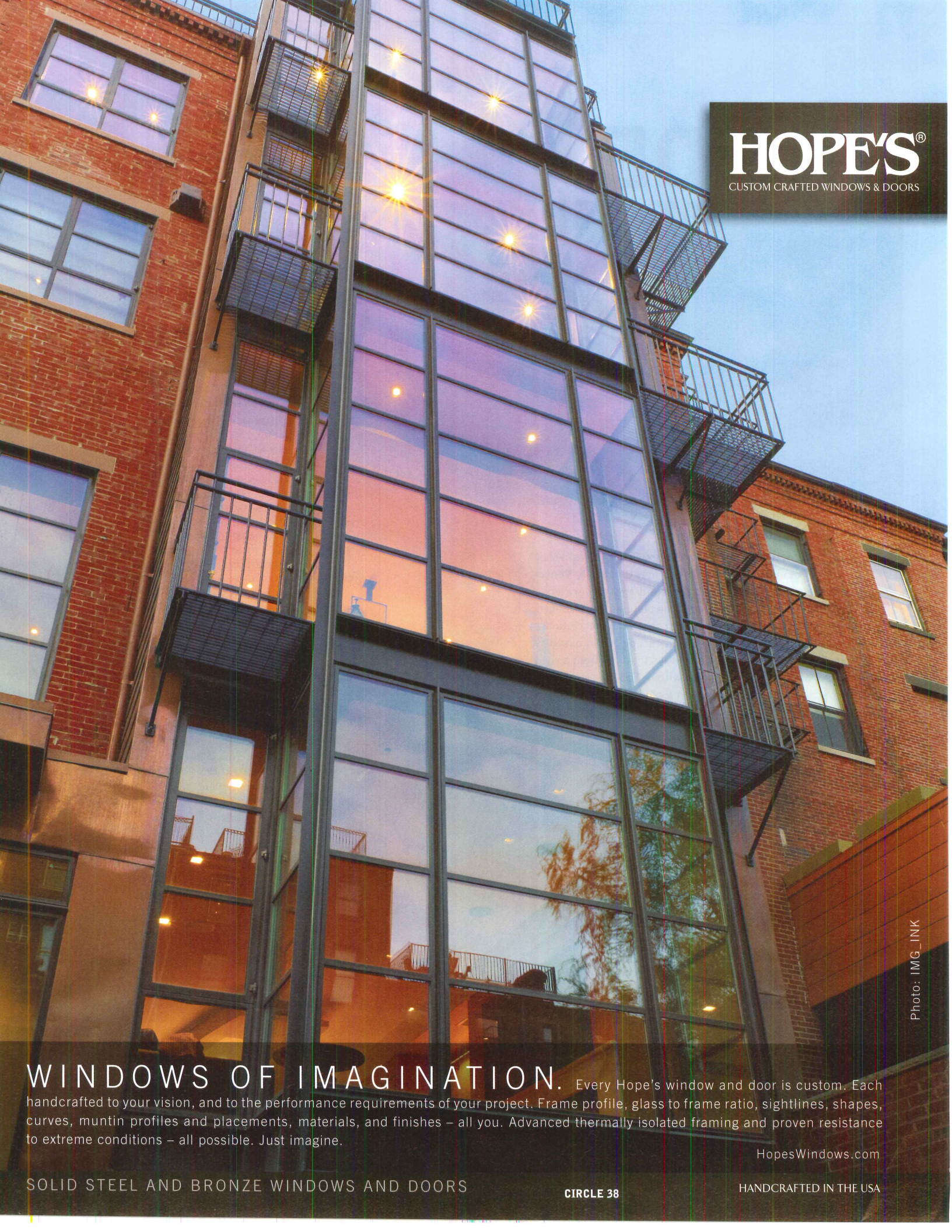

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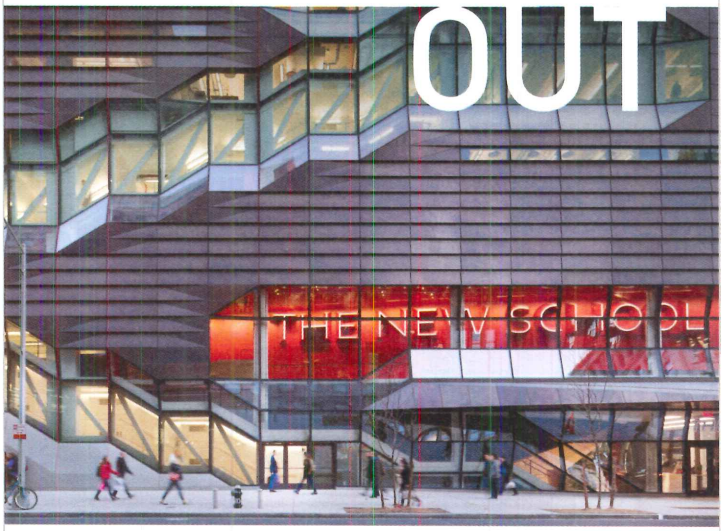

Want to know what goes on at the **New School**? Passersby need only glance at the institution's new **University Center** in Greenwich Village to understand that progressive design education happens here. The building by **Skidmore, Owings & Merrill** expresses the school's interdisciplinary approach 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.

Architect: Skidmore, Owings & Merrill
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RECORD KITCHEN AND BATH 2014

ARCHITECTURAL TECHNOLOGY

THIS PAGE: ASPEN ART MUSEUM, BY SHIGERU BAN ARCHITECTS. PHOTO BY MICHAEL MORAN

ON THE COVER: THE JANE, BY PIET BOON. PHOTO COURTESY .PSLAB

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Honors for Women

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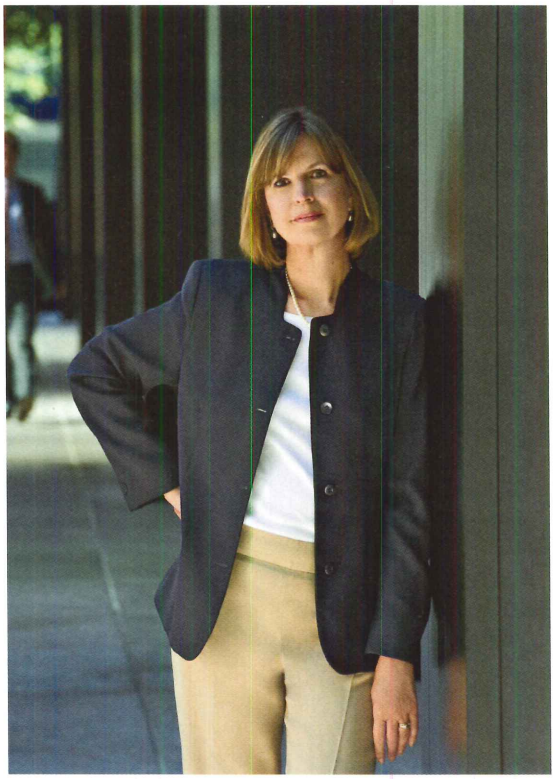


RECENTLY WE'VE SEEN, in print and online, a reprise of old debates about starchitects. The critic Witold Rybczynski complained that big-name architects don't design their best work in cities that are foreign to them, because they don't understand the context. He proposed turning to local architects, whom he called "locatects." Not long afterward, the architect and Yale professor Peggy Deamer wrote to *The New York Times*, arguing that several high-profile architects, through news coverage of various controversies, were giving architecture a bad name. (She called out Santiago Calatrava, Zaha Hadid, Diller Scofidio + Renfro, and SHoP.)

She also decried the "Howard Roarkian image" of the starchitect as the lone genius "that makes most of us architects cringe," but noted that the culture of architecture is shifting away from that stereotype toward "models of practice that do away with the egos and the glamorous buildings they are associated with." Today's ideal is one of "collaboration, open-source networking, non-hierarchical practices, entrepreneurialism, streamlined production, and profit-sharing" instead of the singular author, Deamer wrote. She's right about the trend toward a more collaborative and interdisciplinary approach to architecture, especially among younger firms.

And her point about the collaborative nature of design has been central, as well, to all the discussions about women in architecture—especially where their contributions alongside those of famous men have been overlooked, as in the case of Denise Scott Brown with Robert Venturi or Natalie de Blois with Gordon Bunshaft. We explored this territory of gender in our special issue, "Women in Architecture Now" (June 2013), charting the gains made by women in the field as well as reporting on the vast gaps that still remain.

As part of our commitment to this ongoing concern, RECORD announced last month that the magazine was launching its first Women in Architecture awards. The annual honors are intended to acknowledge the increasingly visible role of women in the profession, to actively encourage firms to promote women and their work, and to celebrate women who are design leaders.

In its selection process, RECORD first sought nominations from a wide range of professionals; then we asked an independent jury to consider architects from all over the country and make the final selection. The judges were Blair Kamin, architecture critic, *Chicago Tribune*; Rosalie Genevro, executive director, The Architectural League of New York; Sarah Williams Goldhagen, architecture critic, *The New Republic*; Jill Lerner, principal, Kohn Pedersen Fox; Mary McLeod, professor, Columbia University's Graduate School of Architecture, Planning and Preservation; and Mark Regulinksi, managing director, Skidmore, Owings & Merrill.

RECORD is pleased to announce the award winners:

DESIGN LEADER, for an architect with significant built work and influence: **Merrill Elam**, of Mack Scogin Merrill Elam Architects, Atlanta.

NEW GENERATION LEADER, for an architect who is rising in the profession: **Jeanne Gang**, of Studio Gang, Chicago.

INNOVATOR, for an architect who has made a mark in innovative design, materials, or building type: **Sheila Kennedy**, of Kennedy & Violich Architecture, Boston.

ACTIVIST, for an architect who has used her skills to design for social change, affect the public realm, or perform pro bono work: **Erinn McGurn**, of SCALEAfrica, New York.

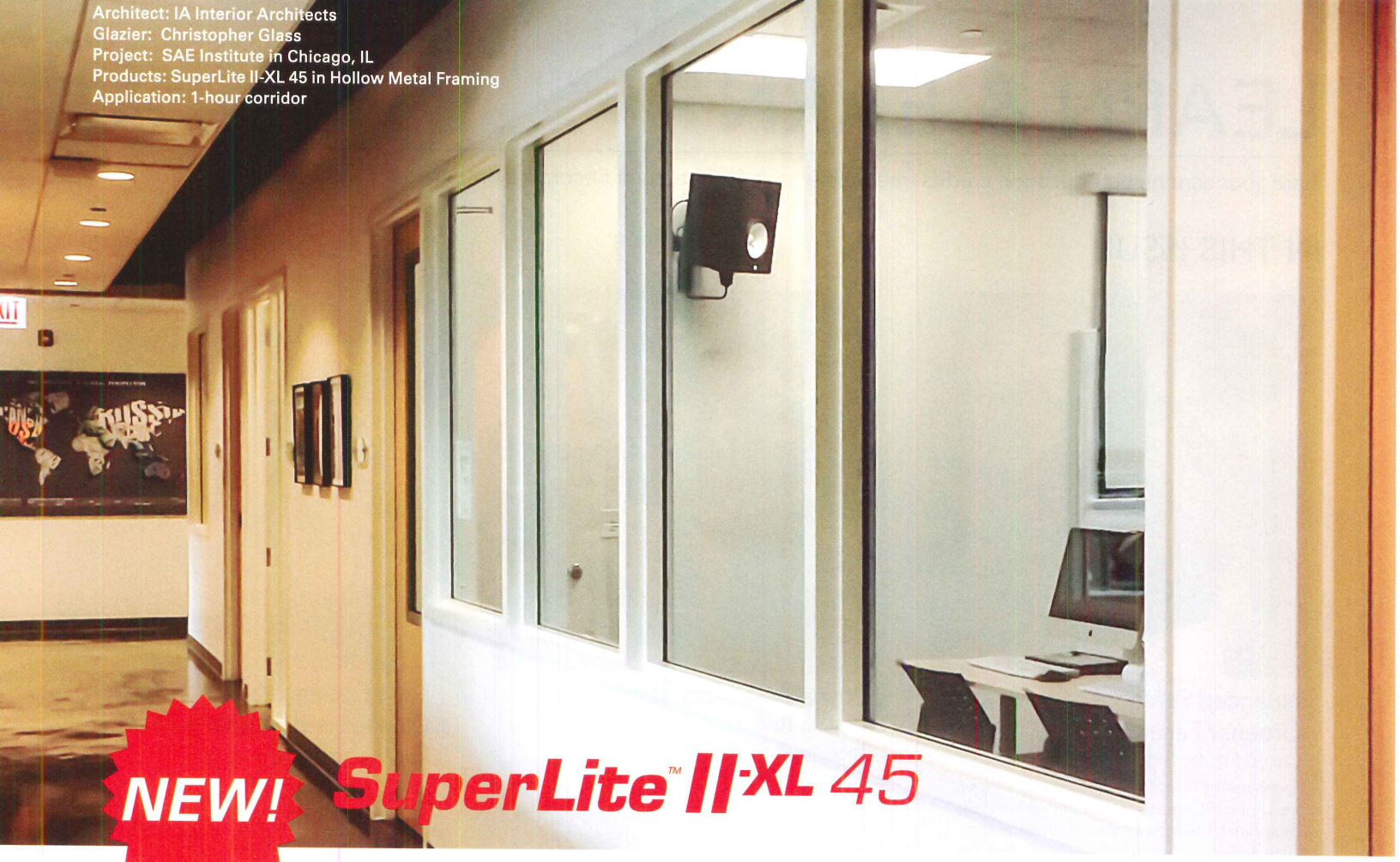
EDUCATOR, for a professional who has helped the advancement of women: **Elizabeth Plater-Zyberk**, former dean of the University of Miami's School of Architecture, Miami, Florida.

We don't mean to imply, with these awards, that any single architect is a lone genius, but rather that these architects are leaders, in partnerships and on teams, whose example and whose work is inspiring.

Congratulations to each of them. ■

Cathleen McGuigan

Cathleen McGuigan, Editor in Chief



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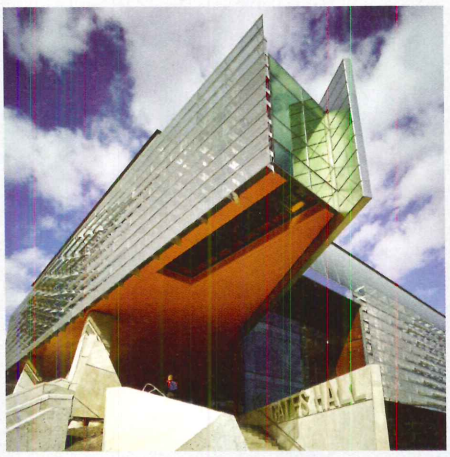

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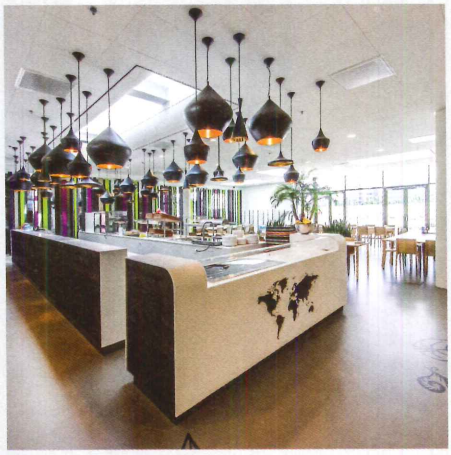

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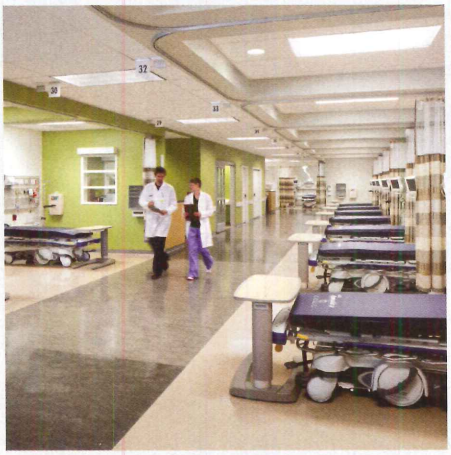

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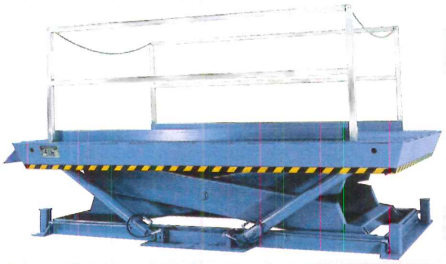

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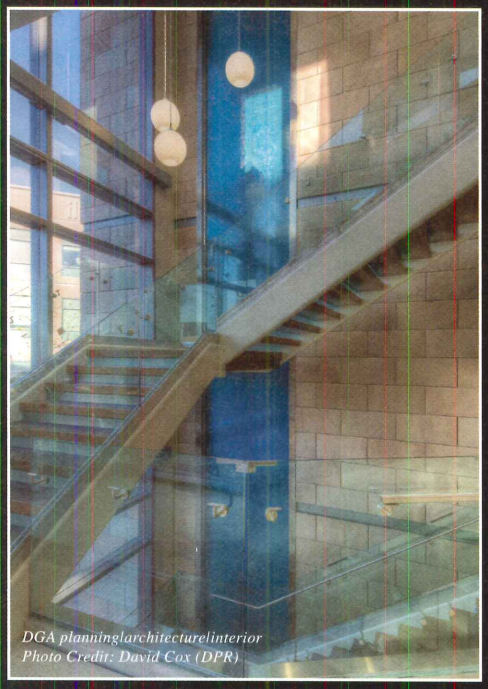

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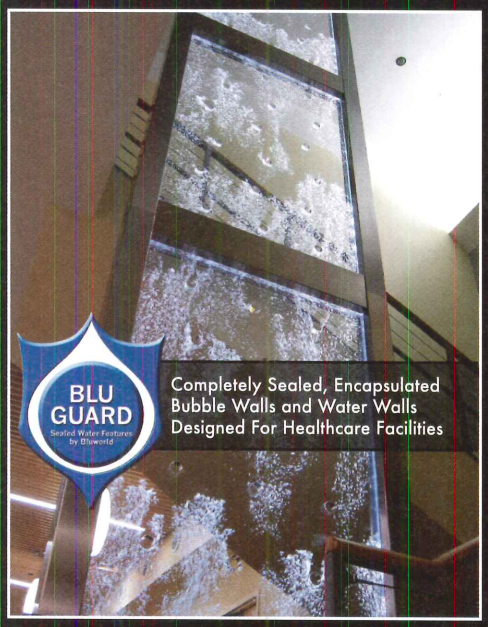

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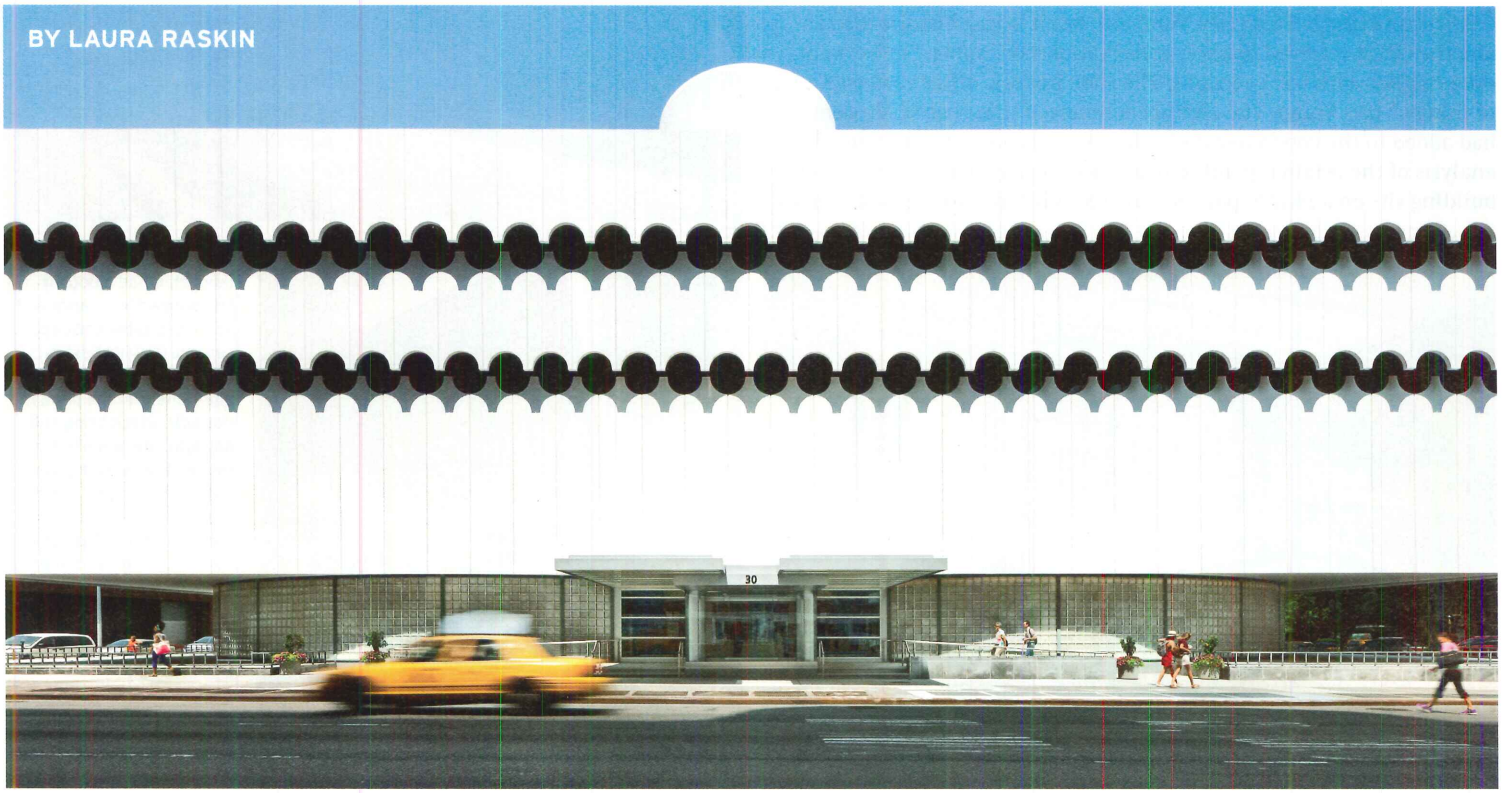
When you see your parents fighting all the time, you don't want to repeat that pattern. *–Michel Rojkind, Mexican architect, 44, on his generation of designers' willingness to collaborate,* New York Times, *Aug. 8, 2014*

Emergency Health Care Gets a New Face in New York

BY LAURA RASKIN



Perkins Eastman restored Albert Ledner's 1964 National Maritime Union headquarters in Manhattan's West Village, and inserted a stand-alone emergency department inside.

WHEN NEW YORK's St. Vincent's Hospital closed in 2010 after years of financial strife, Greenwich Village lost a beloved 150-year-old institution that had served the poor and working class and was "ground zero" when the AIDS epidemic erupted in the 1980s. While most of the St. Vincent's campus was demolished, a quirky precast-concrete building on Seventh Avenue between West 12th and 13th streets, designed by Albert Ledner and completed in 1964, remained. St. Vincent's purchased it in 1973, but Ledner had designed the building to house the National Maritime Union Headquarters—hence its sturdy rectangular form and scalloped rows of porthole-style windows on the fourth and fifth floors.

Fast-forward to July 17, 2014: the O'Toole building, as it was known during its St. Vincent's tenure, reopened its doors as the Lenox Hill HealthPlex, a stand-alone, 24-7 emergency department that is a division of Lenox Hill Hospital in Manhattan. Once again, Greenwich Village has an emergency health-care resource—the HealthPlex takes all forms of insurance and says it won't turn away the uninsured—and a lovable, weird New York building has been preserved, even as waves of new development rise around it. The facility also represents a countrywide trend. "We're seeing a transformation in health care into this ambulatory environment," says Jeffrey Brand, planning principal with Perkins Eastman's national health-care practice, which turned the O'Toole building into the HealthPlex. "We probably have about eight projects that are all like this."

By "like this," Brand means outpatient, stand-alone, one-stop shops for emergency care and day surgery, with pharmacies, imaging, labs, and sometimes cancer care all in one building. "Empirical evidence clearly points to the fact that you do better if you go home every night" rather than stay in a hospital bed, "and these are less expensive buildings to put up," he says. Like the O'Toole building, many older buildings—from bowling alleys to shopping malls—are being converted into these health-care settings because they are in downtowns, often have pre-existing parking lots, and are easy for people to get to. The Affordable Care Act (which means that hospitals are trying to process more patients) and advances in technology that allow for speedier care are aligning to spur this trend. "It's a brand-new world in health care, and it's going to be very efficient for institutions and better for the consumer," says Brand.

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(continued)

For Perkins Eastman's New York office, painstaking restoration of the building's exterior and the adaptive reuse of its interior (from "dumb" medical office building to high-tech emergency department) was a prize of a project. The architects worked to bring it back to Ledner's original vision, even talking to Ledner (now in his 90s) about their plans. "The one thing I found really fascinating was Ledner's belief in the power of the circle," says Duncan Reid, the design principal for the project. "He believed that the circle was the most democratic of all forms because there are no corners. We thought, 'Wow, that's a powerful message. Let's continue that, because the doors are open here for all. We wanted to provide the needed health care here in the Village, given what happened with St. Vincent's."

The building is not landmarked, so Perkins Eastman had an easier time retrofitting it for its new function, but it is in a historic district, and the client received historic-preservation tax credits, "so we went even further with our oversight. The state historic office reviewed a lot of things," says Brand. The architects removed tiles that St. Vincent's had added to the concrete-paneled facade and conducted a scientific analysis of the original paint to match its precise shade of white. The building sits on a plinth, part of which St. Vincent's topped with rocks.

As the O'Toole building (above), it had a podium surrounded by a fence and an inhospitable entrance canopy. Perkins Eastman replaced the 8-by-8-inch glass bricks in the podium (far left), which bring soft daylight into some exam rooms. The curved glass walls create bigger rooms too. Walls in the hub of the emergency department (left) don't exceed 5 feet in height, allowing staff to see through the nearly block-long room.

Perkins Eastman removed them, and an ugly fence, and reconstructed the original concrete platform with its checkerboard pattern, adding wheelchair ramps. The architects gutted the interiors, inserting a cutting-edge medical facility on the ground floor with state-of-the-art imaging, surgery, and emergency-medicine technology. The upper four floors will eventually house office space for physicians, ambulatory surgery, and imaging.

Those floors always sat on a pedestal of two intersecting circles, looking like a Venn diagram in plan. The pedestal was made of glass blocks, which the architects replaced (some of the exam rooms are on the other side of these beautiful walls, benefiting from soft daylight while still maintaining privacy). They added a new glass entry vestibule; small patient waiting rooms to the north and south of the entry are rarely full, explains Reid, because the HealthPlex is designed to usher patients right into exam rooms for evaluation and treatment.

The open, airy emergency department has two internal "streets" flanking nurses stations encircled by more rooms for exams and medical tests. Perkins Eastman removed a portion of a mezzanine level that was not original to the building to create higher ceilings above the emergency department. Three curved, sail-like ceiling planes above the nurse stations are faced in acoustic panels.

The architects pulled out the north wall of the circle to create more rooms for patients. To the south, they removed a shear wall so that ambulances could pull in off the street. The biggest design challenge, says Reid, was trying to "fit in little individual rooms in a circular floor, and stuffing in all the 21st-century requirements of air, water, and medical gasses." They turned an underground parking garage into a lab, staff lounge, and other services. (Across West 12th Street, an old St. Vincent's mechanical building will be razed to make way for the New York City AIDS Memorial, designed by Brooklyn's Studio a+i.)

The HealthPlex is expecting to treat 20,000 to 25,000 patients per year (it could accommodate 45,000 if necessary), according to executive director Alex Hellinger. "We don't have a 200- to 800-bed hospital above us competing for the lab and CT scan. You could wait a few hours [in that environment]," he says. The HealthPlex is not a trauma center, and when surgery is required—even though its board-certified surgeons have the capability to crack open a chest, says Hellinger—patients are stabilized and then sent to other hospitals. "As the community comes in, they start to realize, getting to a hospital bed is not important: it's getting to the first point of contact." ■

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CIRCLE 63

Fault Lines

BY FRED A. BERNSTEIN

ARCHITECTS HAVE something new to worry about. The California Supreme Court ruled that two large firms, Skidmore, Owings & Merrill (SOM) and HKS Architects, could be forced to pay damages to an association of condominium owners who claimed their apartments were too hot—years after the developer rejected the architects' recommendation to use low-E glass.

The case has yet to go to trial, but the decision may open the door to lawsuits by property owners who are unhappy about design decisions made at the request of previous owners. The case was considered so important that the American Institute of Architects California Council (AIACC) filed an amicus brief on the side of SOM and HKS, with support from the AIA in Washington, D.C. And while the ruling applies only in California, that state's supreme court influences judges in other states.

The project that led to the lawsuit is the Beacon, a four-building, 595-unit condo complex in the China Basin section of San Francisco. SOM, through its San Francisco office, was design architect; HKS, based in Dallas, was architect of record. (Together, the firms earned fees of more than $5 million, which did not escape the court's attention.) Four years after the building was completed, the Beacon Residential Community Association, unhappy with temperatures in some of the apartments, sued. "The glass recommended by SOM would have prevented the problem, but the developer substituted lower-performance glass" to reduce costs, says SOM spokesperson Elizabeth Kubany.

SOM and HKS Architects could be forced to pay damages to an association of condominium owners in San Francisco.

In prior cases, California courts had ruled that an architect owes no duty of care to "downstream" users. This time, the court held that such a duty exists, in part because architects, in the court's view, are uniquely qualified to choose the right building materials. The decision cleared the way for the six-year-old lawsuit to move forward. Says Kubany, "I am confident that SOM will be fully vindicated at trial." Perhaps. But the court's ruling will affect many other firms. R. Craig Williams, a principal of HKS (and the firm's chief legal officer), says that the decision means that HKS "should have known better than do what the client demanded." Kurt Cooknick, the Director of Regulation and Practice of the AIACC, agrees: "The architect will be put in a bad position if the current client wants him to do something that will affect the downstream owner."

Of course, not everyone is lamenting the decision. Ann Rankin, an attorney whose firm represents the residents, calls it "a big win for property owners throughout California whose buildings suffer from design errors caused by the negligence of architects and engineers." ■

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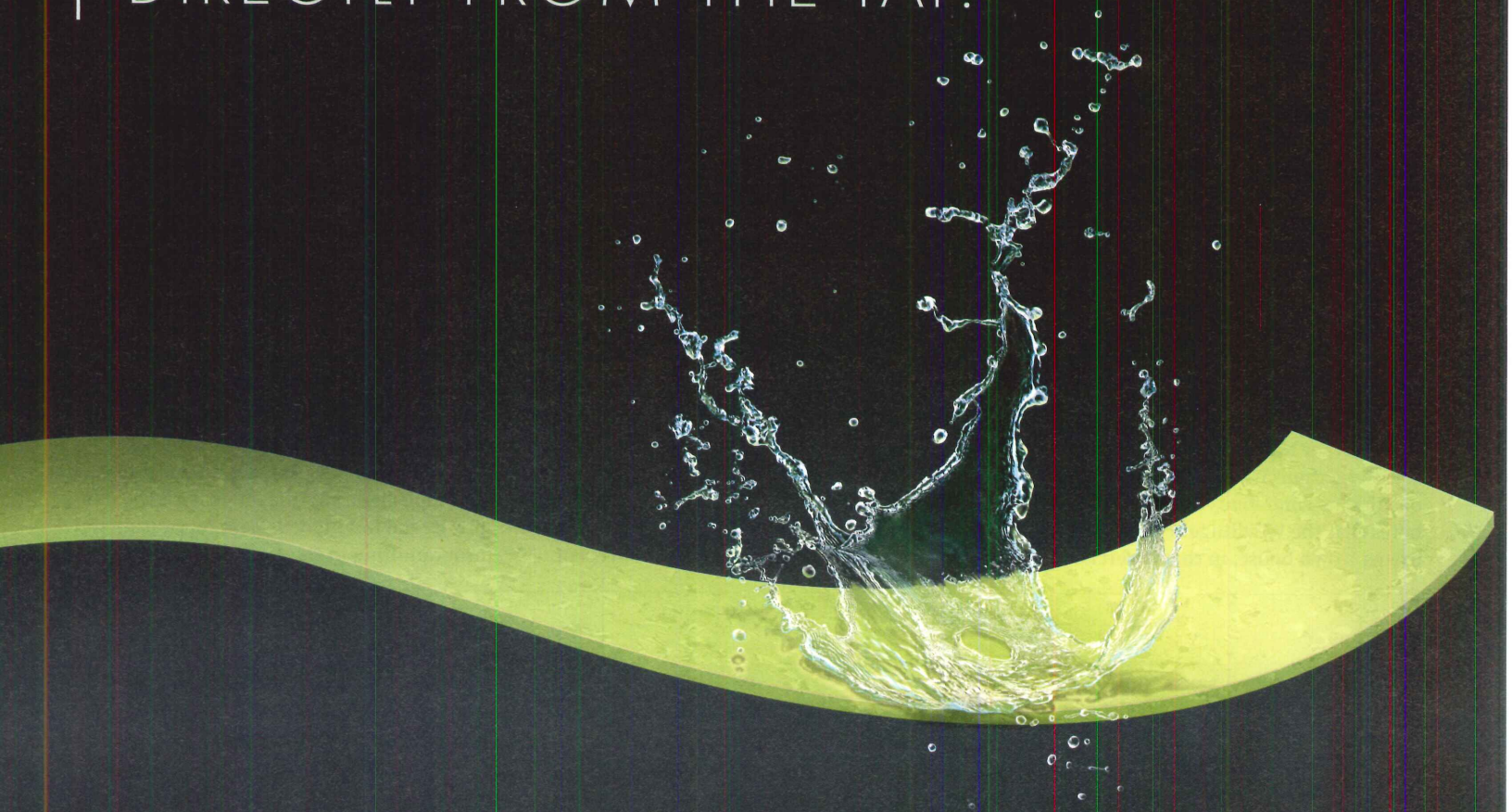

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CIRCLE 61

In Cod We Trust

BY DAVID SOKOL

RESTORATION OF renowned structural engineer Paul Weidlinger's Wellfleet, Massachusetts, vacation residence has been completed. According to the Cape Cod Modern House Trust (CCMHT), which led the preservation project, the house is unique among its counterparts. "Compared to other Modernist houses on Cape Cod, which express local building vernacular and relate to nature closely, this building is uncompromisingly rationalistic," says CCMHT founding director Peter McMahon. Weidlinger, who had an expertise in special structures and was closely linked to the pioneers of 20th-century Modernism, designed his own three-bedroom cottage, completed in 1953.

One of those famous peers, Marcel Breuer, probably introduced Weidlinger to Cape Cod. In 1948, Breuer collaborated with the engineer on St. Francis de Sales Church in Muskegon, Michigan, as Breuer was designing homes in Wellfleet for himself and artist Gyorgy Kepes. Weidlinger purchased a nearby 2.9-acre parcel on Higgins Pond four years later. McMahon notes that the Weidlinger House mimics Breuer's own house, in that it perches above the landscape, divides public from private interiors, and is also clad in midcentury Weldtex, a fir striated plywood. Weidlinger's crisp rectilinear form includes a shaded veranda that connects to the hillside via a Corbusian ramp.

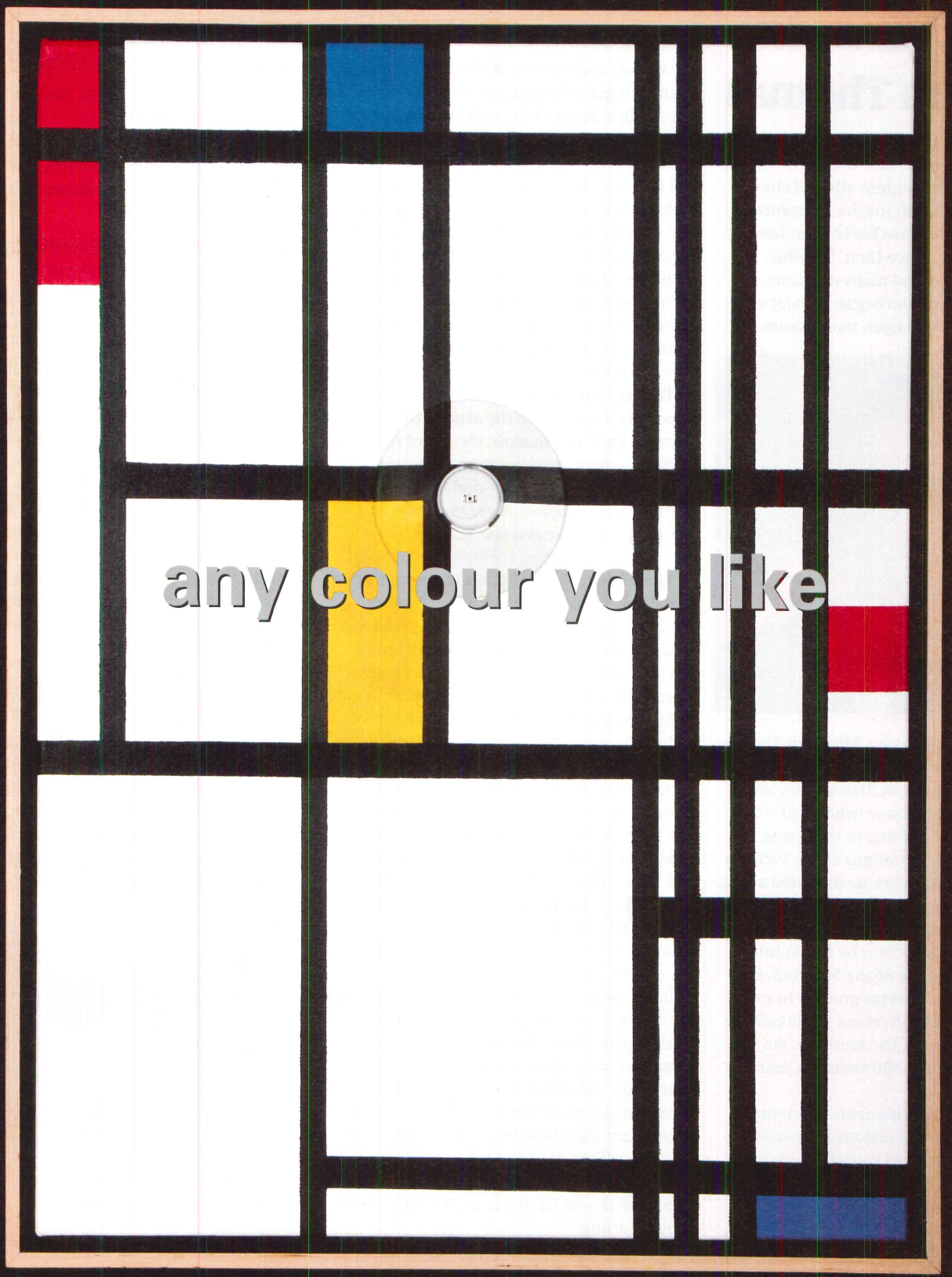
"The house is an interesting illustration of the structural thinking of one of the 20th century's most important engineers," says McMahon. Steel X braces support hybrid stud-wall and post-and-beam systems.

The house site was entirely incorporated into the Cape Cod National Seashore in 1979, and the U.S. National Park Service (NPS) used it to house seasonal staff until 1993. The federal agency lacked funds to maintain the building, and doors were boarded up. Deterioration accelerated, and a felled tree damaged the roof's southwest corner and surrounding elements in 2009.

CCMHT was established in 2007 in part to save neglected NPS-owned buildings within the Cape Cod National Seashore. In 2009 NPS leased Charles Zehnder's Kugel/Gips House to CCMHT, which restored it the same year. The organization signed 10-year leases to restore the Jack Hall–designed Hatch House and the Weidlinger House in 2012. For the Weidlinger restoration, CCMHT reused eight sheets of Weldtex from a local restaurant, and a European manufacturer donated missing sliding glass doors.

The Weidlinger house, shown here during reconstruction.

Of approximately 100 houses that most notably embody Modernism on the Cape, McMahon estimates that half stand within the National Seashore; of seven that are NPS-owned, two are leased privately and another pair is irreparable. CCMHT's restoration of the Kugel/Gips, Hatch, and Weidlinger properties accomplishes a significant goal for the nonprofit, and it will focus next on educational programming in the three houses. ■



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CIRCLE 72

[NEWSMAKER]

Abraham Thomas

BY FRED A. BERNSTEIN

IN 1833, an act of Parliament allowed the architect John Soane, an inspired interpreter of classical forms, to leave his London townhouse to the public. Since then, Sir John Soane's Museum has had many directors, including Tim Knox, who began a major renovation project that will open more rooms to

the public. Knox's successor, Abraham Thomas, 36, took the helm last December, and is as comfortable talking about 21st-century architecture as he is about Soane (who lived from 1757 to 1837). Before coming to the Soane, Thomas was curator of designs at the Victoria and Albert Museum, where he mounted a 2012 show on Thomas Heatherwick and the 2010 exhibition *1:1—Architects Build Small Spaces*, which included installations by Sou Fujimoto and Rural Studio. At the Soane Museum, in Lincoln's Inn Fields, Thomas pointed to examples of Soane's inventiveness while talking about his own plans for the museum, which receives more than 100,000 visitors a year.

Can you name some contemporary architects and designers with connections to Soane?

One practice that I particularly enjoy is Grafton Architects, which created a project for the Royal Academy of Art's *Sensing Spaces* exhibition earlier this year that was directly inspired by Soane. And Thomas Heatherwick, whose work ranges from the smallest object through to urban planning. When you walk around the Soane museum, you really get a sense of the conscious decision he made to work at all scales.

Your predecessors have shown work by Zaha Hadid, Frank Gehry, and Daniel Libeskind here. Will you continue to display contemporary architecture?

We will, and we would also like to engage with younger, emerging architects too, and to engage in a deeper way with architecture schools and students.

What would Soane be doing if he were alive?

I think he would be rather like Heatherwick, looking at city-making. A famous project of his, which was never realized, was a grand processional route through London linking Windsor all the way through to Westminster, including a series of triumphal arches. And the Bank of England, really a whole complex, was Soane's 45-year experiment with urbanism.

What's contemporary about Soane's work?

Throughout the house you see architectural experiments involving the articulation of space through light and shadow, the use of reflective surfaces—there are more than 100 mirrors in the breakfast room alone—and framing devices, whether they're apertures or doorways. It's eternally inventive and provocative.

How will you broaden the museum's appeal?

There are particular areas of the collection that allow us to engage with the world of contemporary architecture. Next spring we're going to open Soane's original model room. We are going to present 40 models, ranging from fully realized client presentation models to fascinating engineering models, exactly as he presented them, on his own three-level stand. Having this collection allows us to think about the ways models are used in contemporary practice. And in 2016, as part of our big refurbishment project, we will open a new project gallery, an agile space where we can have a faster turnaround for exhibitions. I'm keen on the museum becoming a space of debate and discussion again.

You showed me a model by Richard Rogers. What does it represent for the Soane?

It is a model for a weekend house, designed for Lord and Lady Rogers for an estate in Buckinghamshire. The idea was, you could close it up during the week, so there are flaps that go up and down. We have it next to a rare example of a client model by Soane, of Tyringham Hall, which can come apart. You can take off the roof and take out the rooms; there's a performative aspect to it. That's the type of dialogue I'd like to explore in future programming.

How important are U.S. supporters?

Very important. We have a foundation in New York. At our annual gala in September, we'll be honoring David Adjaye and Phyllis Lambert. I have been fascinated with Adjaye's museums and libraries—very appropriate topics for the Soane—and Lambert's work at the Canadian Centre for Architecture, which, like the Soane, has an extremely important collection of drawings and models. ■

For the complete interview, visit architecturalrecord.com/news.

noted

Amale Andraos Named Dean of Columbia GSAPP

Andraos, a principal at the New York–based firm WORKac, is interested in environmental, urban, and architectural concerns and hopes to build on the school's leadership on global issues, she says. The appointment is effective on September 1.

Christopher Scoates Named Director of Cranbrook

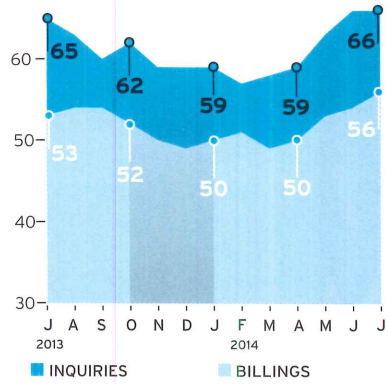
Christopher Scoates began his tenure as director of Cranbrook Academy of Art and Art Museum on August 1. Most recently Scoates served as director of the University Art Museum at California State University Long Beach. He succeeds Reed Kroloff, who stepped down after seven years as director.

Álvaro Siza Donates Architectural Archive to CCA

The Portuguese Pritzker Prize–winner donated a large number of his drawings and sketches to the Canadian Centre for Architecture, which also holds the archives of John Hejduk, Gordon Matta-Clark, and James Stirling, among others.

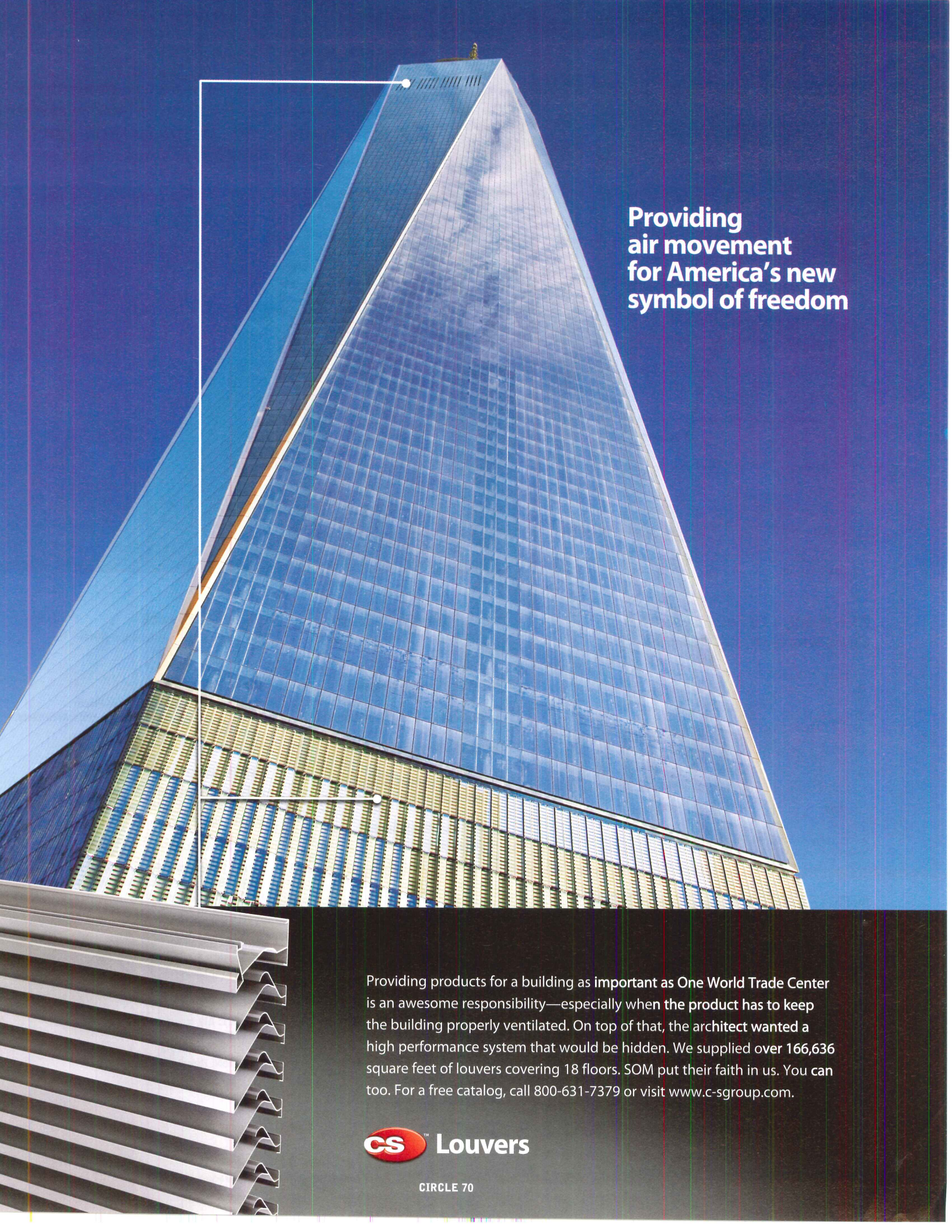
Related Companies Pursues Development of New FBI HQ

The New York–based development company announced a partnership with Renard Development to pursue a new headquarters for the Federal Bureau of Investigation in Greenbelt, Maryland, and the redevelopment of the FBI's current headquarters on Pennsylvania Avenue in Washington, D.C.



ABI at Highest Level Since 2007

The American Institute of Architects (AIA) reported the July ABI score was 55.8, up from June's mark of 53.5 (any score above 50 indicates an increase in billings). The institutional sector "is starting to exhibit signs of life after languishing for the better part of the last five-plus years," says AIA chief economist Kermit Baker.



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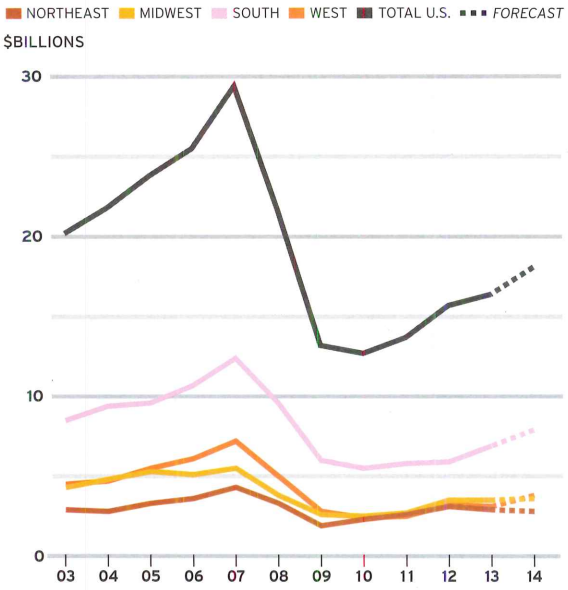
Although retail construction has experienced moderate growth over the past two years, the sector's health varies by region. In 2013, for example, the South was the only area of the country to see a gain in the value of construction starts.

Retail Starts by Region

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



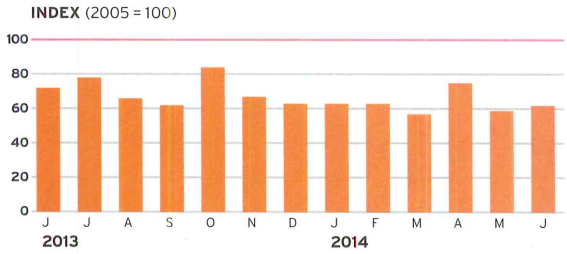
Proenza Schouler, New York City, Adjaye Associates (ARCHITECTURAL RECORD, *May 2013, page 123*).

Top Metro-Area Markets

Ranked by total retail starts 1/2013 through 6/2014

	REGION	$MILLIONS
1	NEW YORK CITY	1,145
2	CHICAGO	1,092
3	LOS ANGELES	1,003
4	DALLAS	945
5	BOSTON	769

The Dodge Index for Retail Construction 6/2013 – 6/2014



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

Top 5 Design Firms

Ranked by retail-construction starts 1/2011 through 6/2014

1. BRR Architecture
2. Harris and Associates
3. SGA Design Group
4. MulvannyG2 Architecture
5. Elkus Manfredi Architects

Top 5 Projects

Ranked by retail-construction starts 1/2013 through 6/2014

$216 MILLION
PROJECT: International Market Place
ARCHITECTS: WCIT Architecture, JPRA Architects, 505 Design
LOCATION: Honolulu

$150 MILLION
PROJECT: The Mall at University Town Center
ARCHITECT: JPRA Architects
LOCATION: Sarasota, FL

$138 MILLION
PROJECT: Mountain Grove at Citrus Plaza
DESIGN-BUILDER: Commerce Construction
LOCATION: Redlands, CA

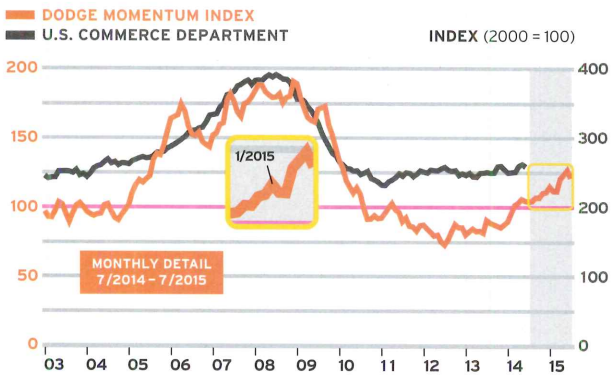
$120 MILLION
PROJECT: Tanger Outlets at Foxwoods
ARCHITECT: Design Development
LOCATION: Ledyard, CT

$103 MILLION
PROJECT: Ala Moana Center Renovation and Expansion
ARCHITECT: Callison
LOCATION: Honolulu

MOMENTUM INDEX FALTERS

In July, the Dodge Momentum Index fell 4.4% to 121.4. Although the decline erased the gains made over the past two months, the index is still 16.5% higher than it was a year ago.

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.

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CIRCLE 87

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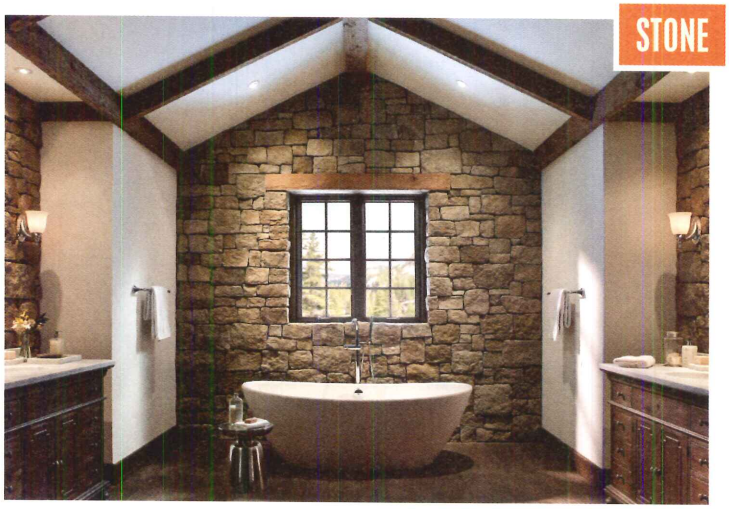

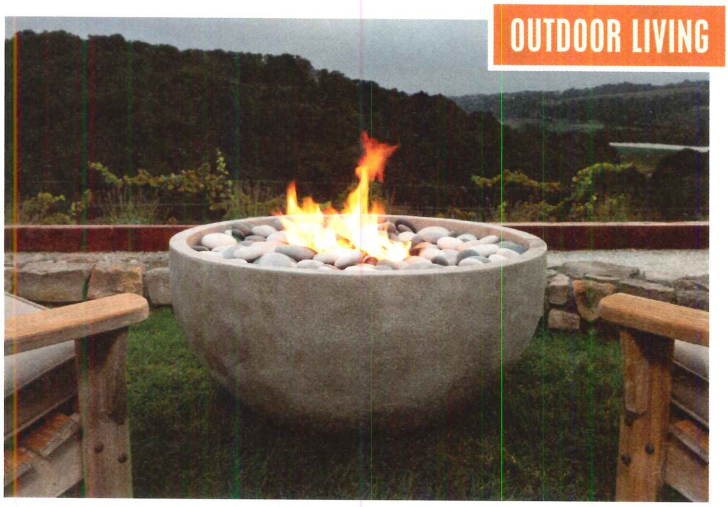

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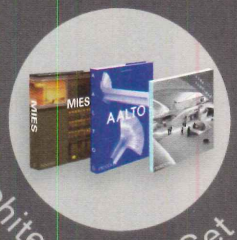
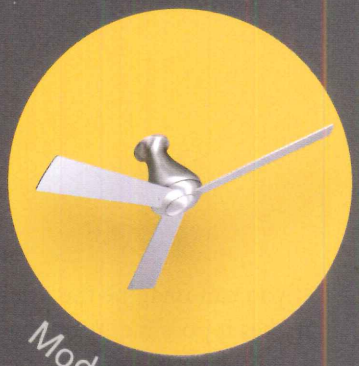


Architect Book Set



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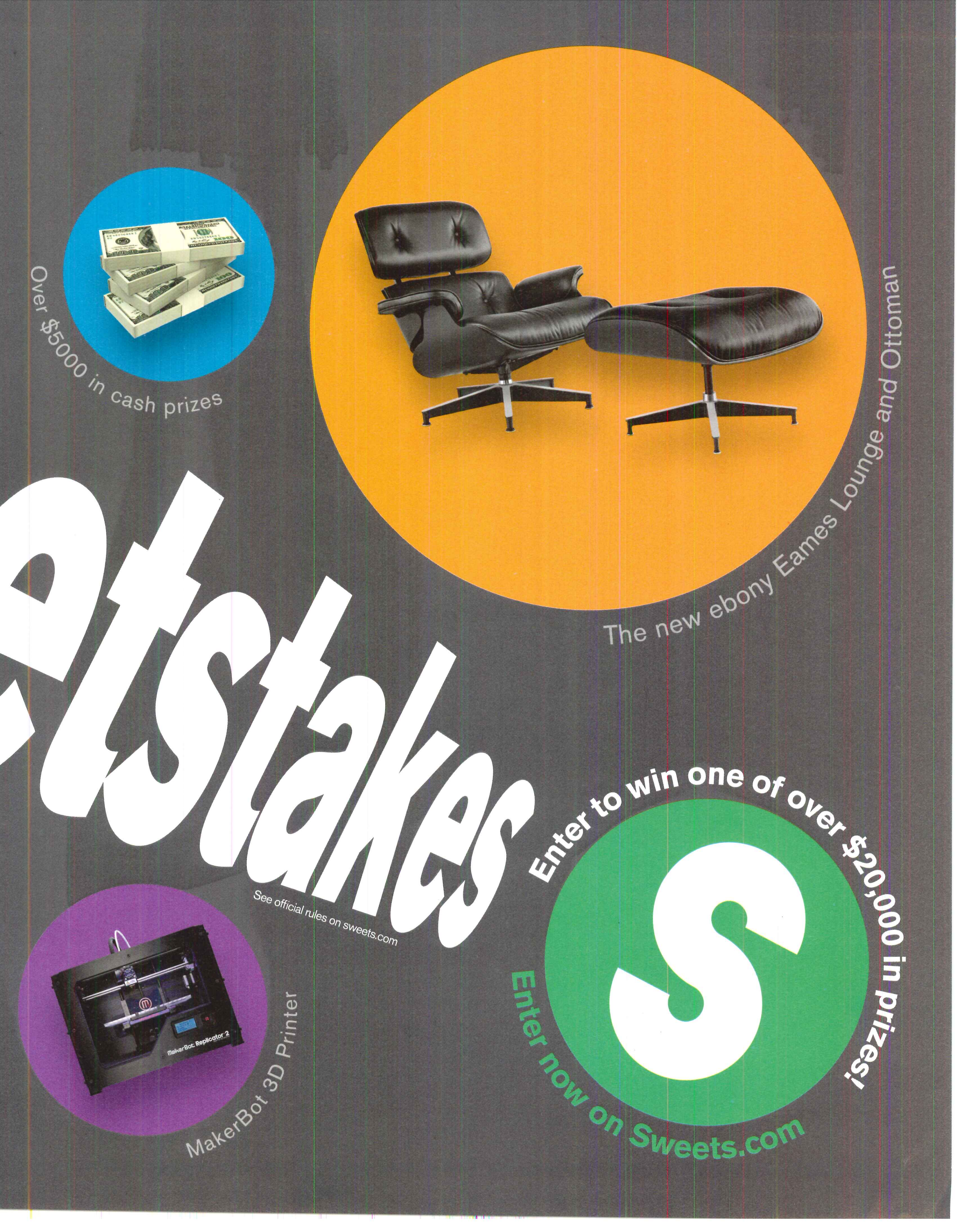
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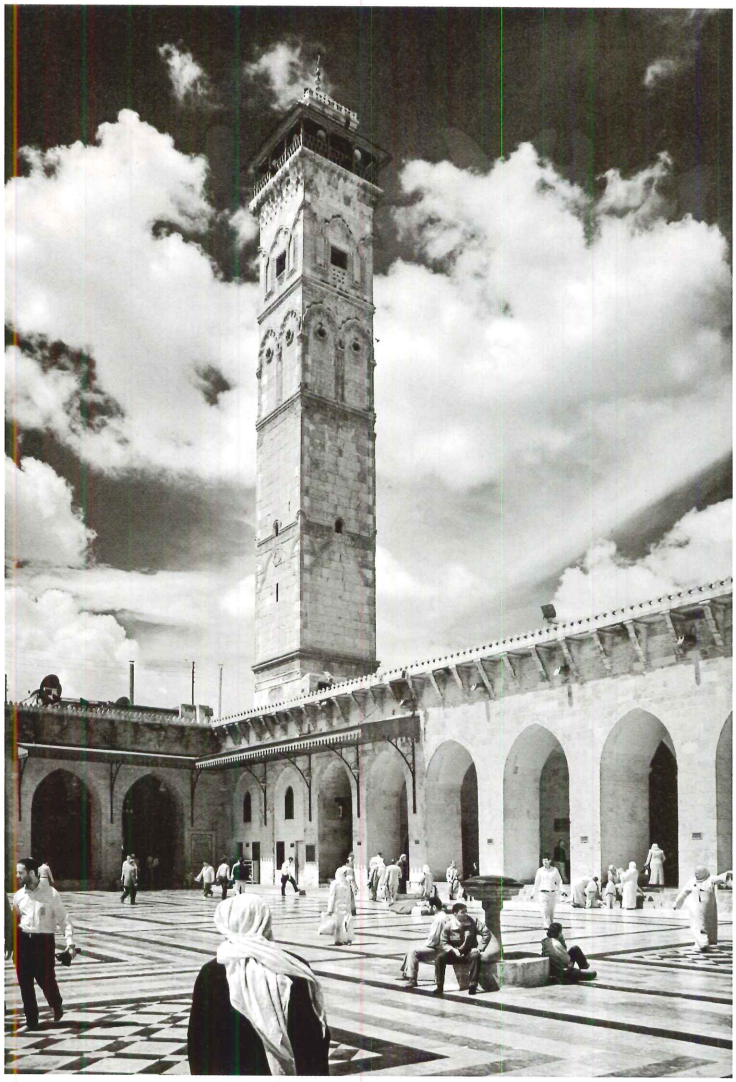
CIRCLE 36



Photos by Peter Aaron poignantly document Syria's landmarks before war destroyed them.

DURING A FAMILY vacation to Syria in 2009, architectural photographer Peter Aaron captured many of the country's landmarks—historic mosques, Roman ruins, ancient citadels. Just two years later, the violent civil war erupted between government forces and insurgents. Over the course of the crisis, the incessant fighting has torn apart a nation and its heritage. By some estimates, more than 150,000 people have died; even the United Nations has quit keeping track. Historic architectural marvels—many which have stood for more than a thousand years—have been scarred by mortar or reduced to rubble by shelling and gunfire. Aaron's lush photographs—on view at ARTspace gallery in Germantown, New York, until September 7th—are ghostly mementos of a time before the conflict. In Aleppo's Great Mosque, its stately 11th-century minaret (left) has been completely obliterated by tank fire. A medieval hilltop citadel in the same city (below) served as a fortress for snipers and has suffered damage from a barrage of shells. The images still haunt Aaron. "We got to know some people during our three weeks there, and we wonder what's happened to them," Aaron says. "Are they all still alive?" *Anna Fixsen*

For more of Peter Aaron's images, visit architecturalrecord.com.

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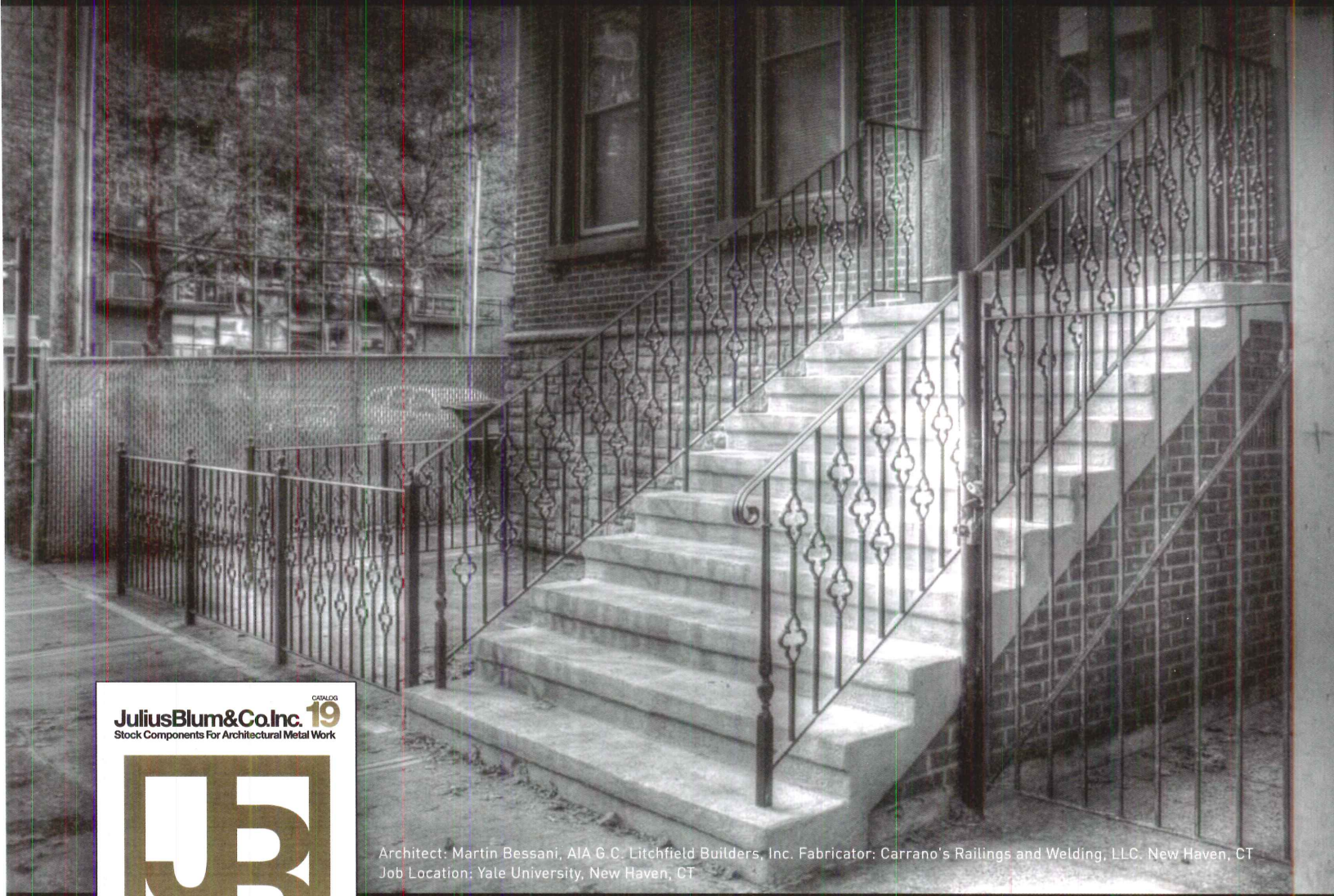

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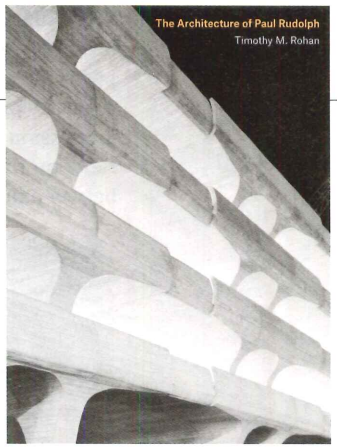
CIRCLE 98

A Shakespearean Tale Told in Buildings



Rudolph, in his Yale Art & Architecture Building, leans on a part of the project's infamous corrugated concrete (below).

The Architecture of Paul Rudolph, *by Timothy M. Rohan. Yale University Press, July 2014, 300 pages, $65.*

Reviewed by Philip Nobel

WHEN PAUL RUDOLPH'S Art & Architecture Building at Yale opened in 1963, architectural historian Vincent Scully wrote that the design "puts demands upon the individual user which not every psyche will be able to meet." The building was gutted by a suspicious fire in 1969, and, though the cause was never determined, the incident has been interpreted, in whispers and in print, as a rejection of the difficult-to-parse architecture and the difficult-to-pigeonhole architect.

Much as the mystery or grandiosity or wit of the A&A Building may have been too demanding for some student or faculty psyches, an honest assessment of Rudolph's architecture—and the complicated personality from which it came—has proven too great a challenge for most historians in the 45 years since the fire.

Rudolph died in 1997. Finally, today, we have a scholarly monograph dedicated to his life and work. Timothy Rohan's book *The Architecture of Paul Rudolph* is critical, accessible, and comprehensive, which makes the long wait worthwhile—if no less telling.

That gap of nearly two decades is a measure of the lasting effects of the nearly universal critical shunning that took place after Rudolph—once a leader of the postwar generation of American Modernists—failed to adapt his forthright Navy-bred behavior and his deeply mannered personal forms to the times. It is a measure, too, of the effectiveness of Rudolph's own mostly silent retreat in the face of this rejection. First, he turned inward to lavish interior-design projects, evincing through the 1970s a comfort with the extravagant that was out of tune with professional norms. Then he turned away from the American scene altogether, to rework old ideas in a series of large projects overseas, such as the Colonnade apartments in Singapore and the Lippo Centre in Hong Kong, completed in the 1980s for clients in a part of the world where he was still seen in terms of his early fame. But historians' neglect of this once-imperial figure is also a measure of something much more intimate and universal in architecture: the inability of our most inertial and denial-prone of professions to face its own paradoxes in anything approaching the light of truth.

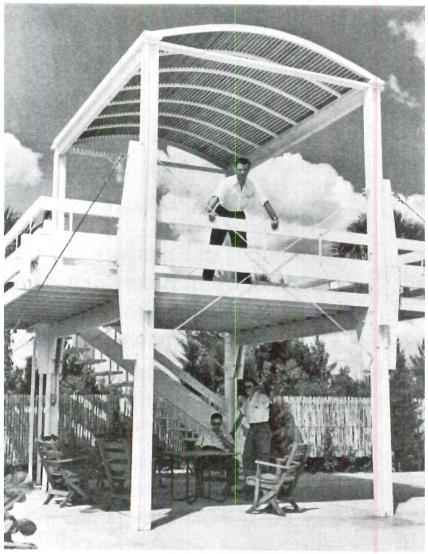
A genius? An apostate? A deservedly fallen star? To look closely at Rudolph, to examine the contradictions of his thinking and the imperfections of his work, to attempt to bring both back into the mainstream of debate—as Rohan has done here with exceptional candor and craft—is for architects, today no less than in the middle decades of the 20th century, a very demanding act of self-discovery.

How do we measure the legacy of a man who invariably thought of architecture—as Frank Lloyd Wright had done—in its impossible entirety? Who attempted in each of his buildings to rally as one all of the systems and techniques and effects available in his day? Who proposed a minutely personal style to resolve programs affected by sweeping social change? Who was raised to the very top of the field when attempting strenuous acts of synthesis, attaining for a time true cult-leader status, and who then disappeared—first from the schools, then from clients' short lists, eventually from history itself? To examine Paul Rudolph is to confront many of the unresolved questions that still bedevil the profession: questions of architecture's place in society and industry, questions of the place of the ego in this civic art.

Though he was eventually rejected for being an Establishment figure, Rudolph—as our stars still do—first came to wide attention as a rebel. In the 1950s, he rose quickly, developing a reputation as a straight-talking teacher and earning positive reviews for his work, including a suite of houses in Florida that introduced a shocking structural expressionism into the trabeated world of International Style consensus. By the end of the decade, he was appointed director at Yale. In his first talk there, he urged his students to consider four "forgotten fundamentals"—daring, anti-Modernist ideas like how a building relates to the ground and sky, how it creates and sustains a mood, how it inspires and even "delights" those who use it. Later, he would assert that the "wasted space" of a building, space that serves only the spirit, "that releasing space which dominates," was the most important for architects to get right. This was radical stuff in a functionalist age, and is still perhaps jarring to our ears.

Even in his prime, as he received commissions for large public projects—including a megastructure that stamped out a large part of Boston's West End and one for New York that would have destroyed a slice of lower Manhattan—Rudolph was still most often depicted as a maverick, a rogue. Following him through the just-opened A&A Building, a writer for *Time* referred to him as a "Young Turk." That reductive take—Rudolph-as-other—has been embraced by generations since; it allowed him to stand apart in his glory, and to be eased into ignominy when that was gone. It allows us to avoid

facing the implications of his talent and his failure—on the lingering, profession-wide irresolution of cultural purpose and personal taste; on the efficacy of celebrity practice; on the limits of expression, and integrity, in the field; on the unstable distinction between practicing architecture and being, as Rudolph so fully was, an *architect*.



Rudolph stands on a balcony of his Sanderling Beach Club in Siesta Key, Florida, completed in 1953.

This clearly written, beautifully published, and long-overdue account now makes our avoidance of Rudolph's legacy impossible. The 17 years between Rohan's book and his subject's death appear to be sufficient to place Rudolph again firmly in the flow of 20th-century architectural history, a distant enough presence that he can be approached without ideological filters or kid gloves. When Rohan writes in his introduction that the "overwrought quality" of Rudolph's architecture is among the most interesting aspects of his work, he is taking a position that will be recognized as heretical by those readers spanning the lived and historic periods in question. But the author is also signaling that he will take full advantage of the critical distance Rudolph's fade into history provides.

Rohan delivers on that promise—not only in his rigorous debriefing of Rudolph intimates (the brave ones, he notes, who did not decline to be interviewed), but in his excellent use of Rudolph's papers at the Library of Congress, which he assisted in archiving. The great strength of this book is Rohan's willingness to engage in psychological speculation in the pursuit of cultural fact. He is bold in taking on that necessary work, fearless in examining how Rudolph's demons acted to shape his designs—the heroic attitude that blinded him to changing times and the private homosexuality that may have fed, in Rohan's words, his unending "search for expression." Whether one comes to this book a Rudolphile or a Rudolphobe, we should all be grateful for the effort.

The Architecture of Paul Rudolph reveals the man, at last, to be something much more interesting than the carrot-topped imp or brusque Brutalist of common myth. In detailing Rudolph's struggles to balance individual taste with collective responsibility, to integrate technical and material novelty with timeless expression, to satisfy or suppress the imposition of will, to chase history, perhaps to make it—Rohan holds up an unforgiving mirror. To Rudolph, sure. And to every architect who cares enough to take on the full complexity of the problems a building presents, who attempts to resolve them in a synthetic whole, who may succeed and will also sometimes fail to do the seemingly impossible.

In other words, you can see in Rohan's unrelenting Rudolph—if you dare to look, if your psyche can take it—the fears and faults and dreams of every architect worthy of the name. ■

Philip Nobel is the editorial director of SHoP Architects and the author of Sixteen Acres: Architecture and the Outrageous Struggle for the Future of Ground Zero.

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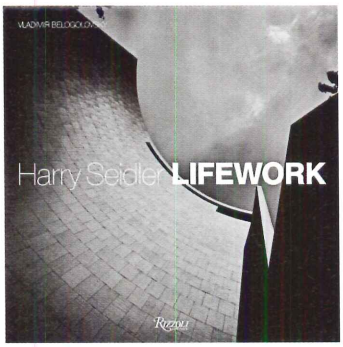
CIRCLE 57

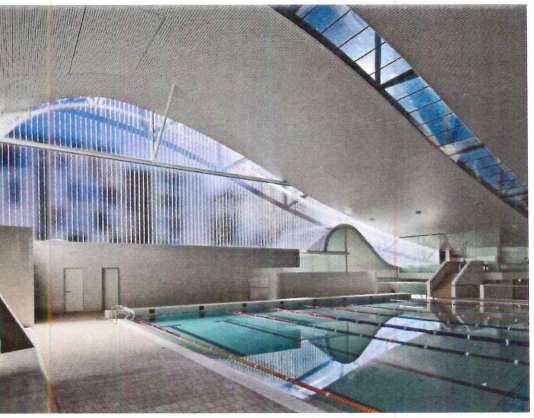
Australia via Austria

Harry Seidler: LifeWork, *by Vladimir Belogolovsky. Rizzoli, April 2014, 300 pages, $75.*

Reviewed by Jayne Merkel

THIS EXEMPLARY new monograph on one of Australia's most prominent Modern architects tells Harry Seidler's story from the points of view of various people who knew or worked with him. The author, Vladimir Belogolovsky, a Russian-born American architect who directs the International Curatorial Project, provides an insightful introductory essay, along with commentaries by Kenneth Frampton, Norman Foster, critic Chris Abel, and the late Oscar Niemeyer. Abel's comments are particularly helpful, since he began his career in Britain but was based for a number of years in Australia, so he can provide both international and local perspectives. At the end of the book, Belogolovsky's interviews with Seidler's wife, Penelope Seidler (also an architect); sculptor Norman Carlberg; painter Frank Stella; and multimedia artist Lin Utzon (who worked with Seidler on several projects) make this book more like a lively salon than a biography. There is also a well-chosen selection of Seidler's own statements.





Most of Seidler's buildings, such as the Ian Thorpe Aquatic Centre in Sydney (left), completed in 2007, are in Australia. But the book's cover shows his 1979 Australian Embassy in Paris.

The book's design by the late Massimo Vignelli—square, bold, spare, and black-and-white—matches the architect's aesthetic vision. Every project is shown in multiple views, some in color, with plans, sections, perspectives, interiors, and often contextual photographs. The illustrations are accompanied by Belogolovsky's astute descriptions of the projects and key information.

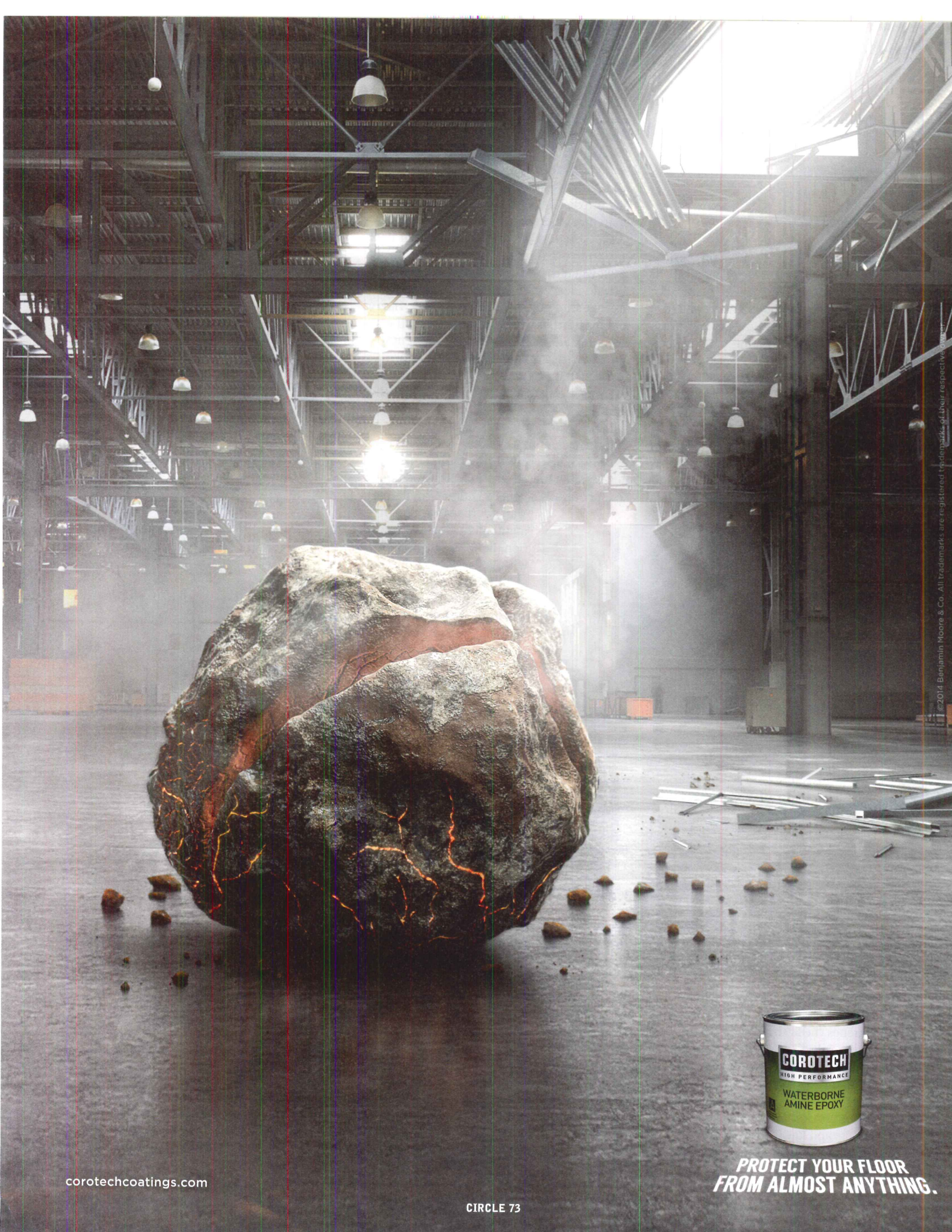
Although there are numerous books on Seidler—by Abel, Frampton, Peter Blake, Philip Drew, Wolfgang Forster, and others—this is the first since his death in 2006 at the age of 82, so it is the only one to tell his whole story. And Seidler's story is not as well known as it ought to be, because this most cosmopolitan of architects practiced largely in Australia.

Harry Seidler was born in Vienna in 1923 into an upper-middle-class Jewish family. In 1938, when the Nazis seized Austria, he was forced to leave and soon joined his older brother studying in England. In 1940, Harry and his brother were interned, with all male German and Austrian citizens, and sent to Canada with German prisoners of war. Eighteen months later, he was released and allowed to attend architecture school at the University of Manitoba, where the engineering courses were particularly rigorous—an ordeal that turned out to be helpful later in his career.

In 1945, he received his architectural license and entered the Harvard Graduate School of Design, where Walter Gropius and Marcel Breuer became his mentors. At Gropius's suggestion, he went on to study with Josef Albers at Black Mountain College. Seidler then became the first employee in Breuer's New York office in 1946.

After his family emigrated to Australia and asked him to design houses for them, Seidler moved there too, in 1948. At first his work was Breueresque, but influenced by Le Corbusier and Niemeyer. Eventually, he became a truly original architect, drawing on ideas from contemporary artists as well as from Francesco Borromini. Another important influence was Pierre Luigi Nervi, with whom he collaborated on his most important early buildings, such as the cylindrical Australia Square Tower of 1967 and the octagonal MLC Centre of 1975, both in Sydney.

It is ironic that this most international of architects never became better known. Most of his work is in Australia, and most people, during his lifetime, did not travel as much as he did. Frampton notes that "it is unlikely that [Seidler's] career would have taken the form it did anywhere else." Australia was growing when he arrived, and its architecture was just taking form. With his international experience, Seidler was the perfect figure to make this faraway place cosmopolitan. ■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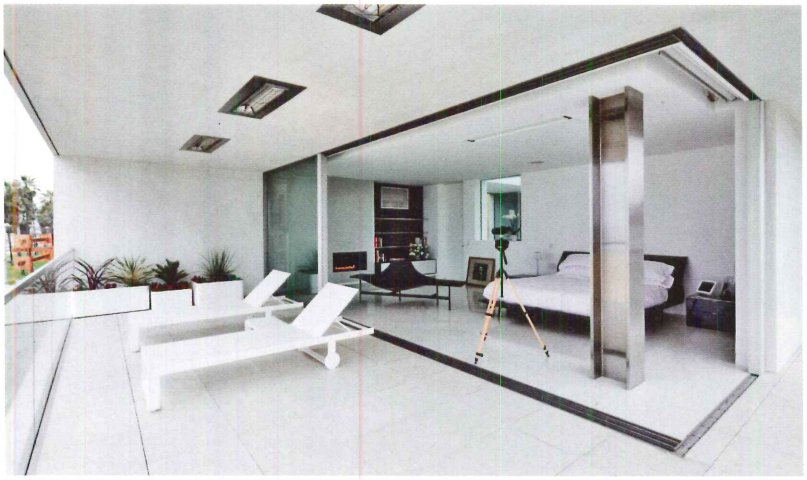
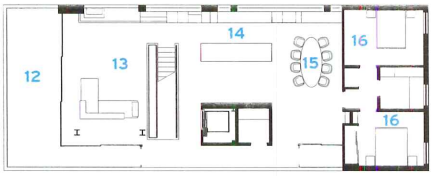
CIRCLE 73

perspective**house of the month**

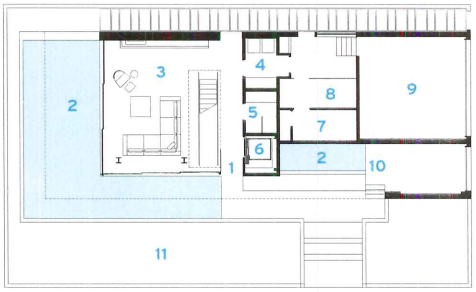
ON A BEACHFRONT LOT IN VENICE, CALIFORNIA, ARCHITECT DAN BRUNN'S FLIP FLOP HOUSE IS SO CALLED FOR ITS PIVOTING TOP-FLOOR WALLS AND INDOOR-OUTDOOR QUALITIES. **BY SARAH AMELAR**



1 ENTRANCE
2 REFLECTING POOL
3 FAMILY ROOM
4 PANTRY
5 BATHROOM
6 ELEVATOR
7 SERVICES
8 WINE CELLAR
9 GARAGE
10 BEACH SHOWER
11 GARDEN
12 SUN DECK
13 LIVING ROOM
14 KITCHEN
15 DINING ROOM
16 BEDROOM



SECOND FLOOR



GROUND FLOOR

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3 M.

THE STORY of the Flip Flop House began with a chance encounter in a camera shop. A young architect, who hadn't yet built anything from the ground up on his own, casually met one of the store's owners—and, within minutes, she asked if he'd be interested in designing a beachfront house for her and her husband in Venice, California. It was a dream commission: a prime corner lot, a 5,700-square-foot house, a $4 million budget, and a client willing to give this architect, Dan Brunn, creative freedom. Soon her friends were asking, "How can you hire an unknown architect for such a big job—what else has he done?" But she stayed the course.

She and her husband, who own several camera stores, had just three requests: an elevator (for medical reasons), wraparound decks, and a master shower with beach views. They left the rest to Brunn.

The result is a sleek, white three-story house: a minimalist backdrop for the owner's exceptional photo collection. It's called Flip Flop for the beach sandal, as well as for its pivoting facade panels, which allow for views and breezes while providing extra wall space for less valuable artworks.

Inspired by the Bauhaus buildings of Tel Aviv, where Brunn grew up, he created a house that's clean-lined, inside and out.

The exterior, edged by reflecting pools, is clad in smooth plaster, with expanses of glass, shaded by deep overhangs. Inside are terrazzo floors, glass-faced cabinets, and a stair that seems to float between panes of clear glass.

Brunn designed the stair with "camera-like tech precision," he says, referring to its articulated stainless-steel components. Seamlessly clad in the same metal, the building's structural-steel columns also have a sculptural presence.

Completed in 2013, the house has already led to other major work for the same client—and inspired the next-door neighbors to hire Brunn for an ambitious house of their own. ■

The minimalist three-story house is punctuated by movable walls on the top floor and deep overhangs (top, left). A central glass stair maintains an airy feeling in the living room (top, right). The master bedroom has ocean views, enhanced by window-walls (bottom, left).

View additional images at architecturalrecord.com.

Obdurate by Design

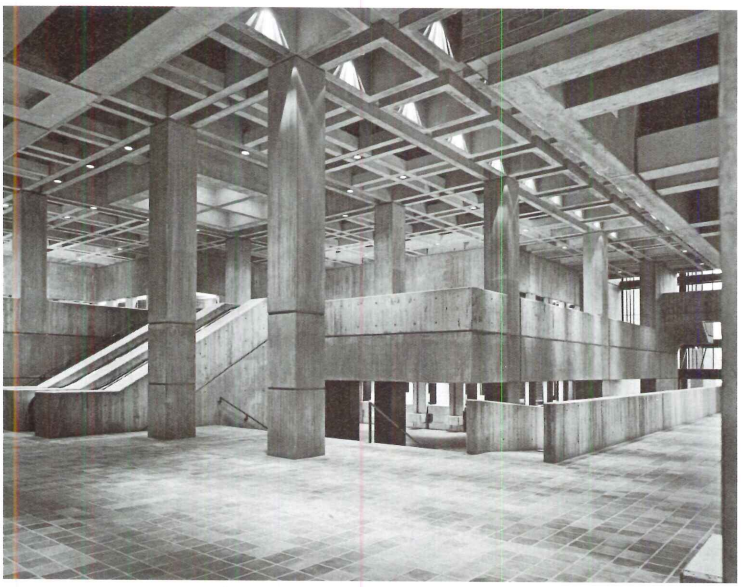
The difficult cause of willful buildings that demand heroic efforts to preserve.

By James S. Russell

The American Folk Art Museum in New York, by Tod Williams Billie Tsien, invited visitors to explore its many levels with narrow atriums and stairs lined with display niches.

THOUGH IT WAS indisputably a significant work of architecture, New York's American Folk Art Museum, designed by Tod Williams and Billie Tsien, is being demolished. Its fate was sealed when Diller Scofidio + Renfro, which is designing the Museum of Modern Art's latest expansion, concluded that it could not be usefully incorporated into the project. "To save the building and allow it to be productive," Elizabeth Diller explained in a public presentation last January, "we found it would lose its heart and soul." She later added, "It's so regrettable that the building proved so obdurate."

Though the shortness of the Folk Art Museum building's 13-year life is startling, it reignites an uncomfortable question for adventurous architecture: how particularly should architects hew to an idea, a program, or a personal artistic agenda if, in the future, it might demand heroic efforts to maintain and adapt? Highly expressive modernist buildings have proven especially obdurate: Paul Rudolph's 1971 Orange County Government Center stands abandoned in Goshen, New York (see book review, page 41). Boston mayor Thomas Menino spent two decades railing against Kallmann & McKinnell's 1968 Boston City Hall. (He failed to get it replaced, but the current mayor, Martin J. Walsh, also favors demolition.) Commercial redevelopment has doomed two important buildings by John Johansen: the 1970 Mummers Theater in



Though the public spaces of Boston City Hall (above) choreograph a theatrical itinerary of light and shadow, many citizens and politicians find the building intimidating. Boston University's former president John Silber was an enemy of highly expressive architecture and deemed Frank Gehry's Stata Center at MIT (below) "absurd."

Oklahoma City (being dismantled at this moment) and the 1,700-seat Morris Mechanic theater (1967) in Baltimore.

Buildings of the Brutalist era have proven to be particularly obdurate. Their beefy structures cast programmatic conceptions of the 1960s literally into concrete boxes—limiting flexibility as program needs grow, shrink, and disappear. Their pioneering aesthetic may not be widely appreciated, yet businesses and taxpayers must decide whether or not to invest in the costly renovations they now need. The Government Center in Goshen looks intimidating, even aggressive in exterior photos, but Rudolph created a palace of democracy intelligently attuned to a suburban era. You were supposed to pass through a veil of trees, then stroll into the government offices or courtrooms through a lush hidden courtyard, entering soaring atrium spaces that made paying a traffic ticket or attending a zoning meeting a celebratory experience. Now clumsy retrofitted ramps and wheelchair lifts blight its terraced levels. It has 80 separate, neglected roofs, many of which leak.

Obduracy concerns more than aging buildings. The Folk Art controversy would seem to vindicate critics of contemporary architectural spectacle, who see a Frank Gehry or Thom Mayne building as ego-driven personal statements indulged by spineless clients in thrall to the architect's Svengali spell. These will be tomorrow's white elephants, they argue.

John Silber, who built 13 million square feet of dour buildings while president of Boston University, received much attention in 2007 for a book-length screed whose sole purpose was to excoriate works that he deemed ugly and dysfunctional by his own fact-challenged lights, taking particular aim at Gehry's Stata Center at MIT. He tapped into a question often asked, however: why do buildings have to be weird?

Many people love gutsy, strange, idiosyncratic buildings. The stone and brick hulks covered with floral Victorian exotica that Philadelphia architect Frank Furness built for railroad barons were knocked down with abandon only decades after completion. Now almost everyone treasures Furness's remaining, wondrously strange (and hard to adapt) buildings, like the University of Pennsylvania's Fisher Fine Arts Library and the Pennsylvania Academy of the Fine Arts.

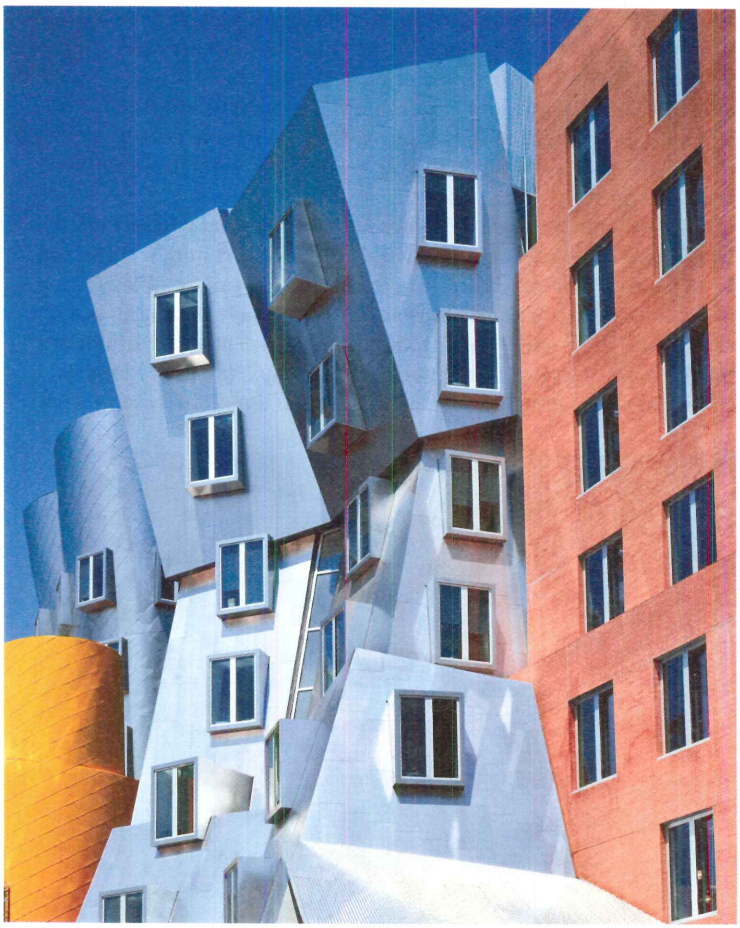
Preservationists point to the rise and fall and rise again of talents like Furness to defend buildings where public taste has not caught up with that of architects. Yet the easy out for many clients is to build aspiration-free buildings that seem neutral and flexible. The results, too often, are buildings that achieve nothing. Silber's dreary legacy at Boston University is the norm, not the exception.

Which buildings of extraordinary idiosyncrasy can be saved? There was no groundswell to restore Rudolph's 1963 Art and Architecture building at Yale, observed the architecture dean Robert A.M. Stern. It was "the most hated building" at the school, he said. Nevertheless, Stern says he was able to convince the university "that the building had inherent value—that it was irresponsible and unsustainable to tear it down." A painstaking renovation by Gwathmey Siegel in 2008 revealed a generosity of space and light in Rudolph's design concealed by ill-considered infill, so that generations of students had labored in squalor.

Preserving obdurate buildings must be decided case by case. The answers to some hard questions suggest what's possible—and offer guidance to those designing adventurous buildings today.

Does the building find a broad constituency? The Sydney Opera House thrives as a globally beloved icon even though its symphony hall and opera house have always been acoustically challenged and technically inadequate. The Folk Art Museum building, which closed in 2011, failed to find that broad constituency. Architects rallied to save it, but many in the art community thought its idiosyncratic display areas (in stairway niches, for example) did the artifacts no favors.

Can the building be adapted? Advocates could not get Edward Durell Stone's crumbling Huntington Hartford Gallery of Modern Art in New York restored, a 1964 building that had been closed for years because its tiny split-level galleries weren't thought usable—an argument rejoined

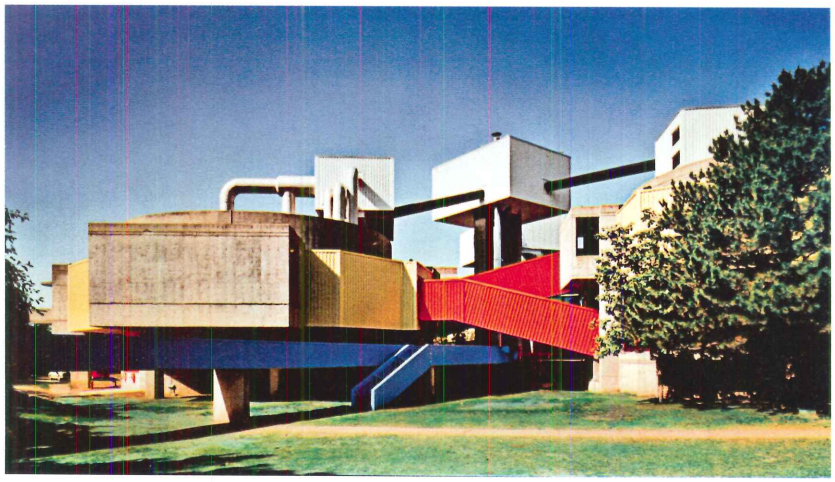


Paul Rudolph's Orange County Government Center (above) was abandoned after a flood. John Johansen's Mummers Theater (below), three concrete-framed auditoria linked by metal ramps and stairs, is in the midst of a demolition to make way for new commercial development in Oklahoma City. Preservationists failed to save the crumbling neo-Venetian marble facade of New York's 2 Columbus Circle (right, pictured in 1964), designed originally as the Huntington Hartford museum by Edward Durell Stone.

in the Folk Art Museum controversy. Preservationists prefer to focus the argument on aesthetic and cultural significance rather than on functionality, since what feels useless to one generation (SoHo lofts in the 1960s) can become extraordinarily valuable to future ones. Yet the public gets impatient with buildings boarded up as they await a savior.

Can the building make a compelling case in aesthetic terms? Architectural expression alone can be the toughest preservation case to make, especially for individualistic designs. Chicagoans long fought to save the sensuous exterior of Bertrand Goldberg's 1975 Prentice Women's Hospital at Northwestern University. There was little defense of its ordinary institutional interior, even though its quatrefoil plan was once deemed groundbreaking. Northwestern University demolished the building last October, planning to replace it with an overbearing research tower.

Does the building have an owner with passion who will hire an architect of extraordinary sensitivity? Rudolph's Art and Architecture building survived because Yale takes its architectural patrimony seriously and raised the money to renovate it thoroughly, thanks to a significant gift from philanthropist Sid R. Bass. These conditions are much harder to create under public ownership. Though Rudolph's Orange County Government Center has been temporarily saved from the wrecking ball, a plan to demolish part of the building, restore the rest, and build an addition by an architect of no distinction and no obvious sensitivity to Rudolph's design (Clark Patterson Lee of Rochester, New York) is only temporarily on hold. There is no local leader championing a restoration, no expertise to approach the building in the spirit with which it was designed, and no procurement process that would attract architects of talent. Similarly, it will not be easy to figure out what adaptations Boston City Hall needs as long as the mayor is hostile to a renovation.



Spectacular design need not become obdurate, but happy longevity seems to depend on certain conditions clients and architects don't always fully consider. Is the owner thinking about the long-term needs of a unique design? Is she prepared to be a patron, a custodian, even an art director? Does the building create extraordinary value, transforming a neglected site and invigorating the organization it houses?

Given the experience with the Folk Art Museum, Elizabeth Diller says she now has a heightened sense of the need to reconcile expressiveness with adaptability in the MoMA expansion. Working with the museum curators, who know they won't be there forever, Diller says, "We're all thinking how best to support flexibility." And yet, she confesses, "We don't know where culture is headed in the future." ■

James S. Russell is author of The Agile City: Building Well Being and Wealth in an Era of Climate Change. *He blogs at jamessrussell.net/blog.*

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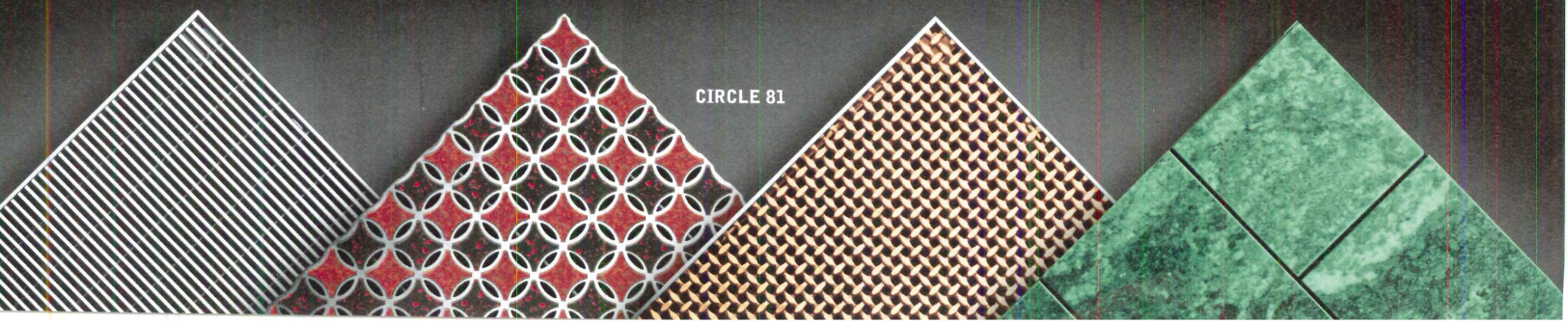

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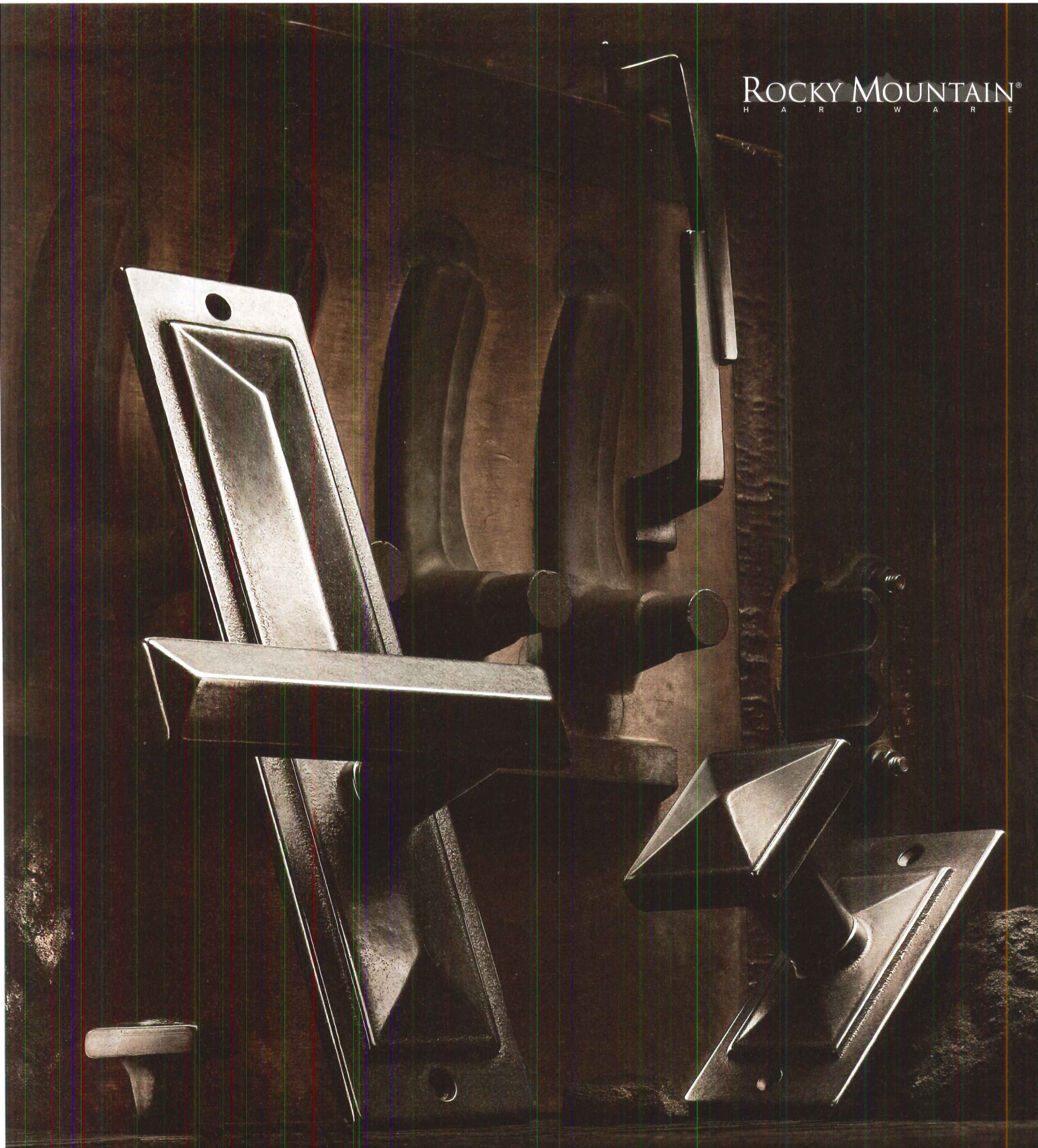

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CIRCLE 37

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CLUE: A DESIGNER-ARCHITECT CREATED THE MODERNIST THREE-STORY TOWNHOUSE FAMED FOR ITS GLASS-BLOCK FACADE, STEEL FRAME, MOVABLE PARTITIONS, AND RUBBER FLOORING.

The answer to the August issue's Guess the Architect is Luis Barragán, who designed the Cuadra San Cristóbal (aka the Egerstrom House), in Los Clubes, Mexico City, in 1968 as a residence and equestrian compound. For more details, including the winner, go to archrecord.com.

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CIRCLE 51

Beyond Cubed

Changes in office design give new meaning to "open plan."

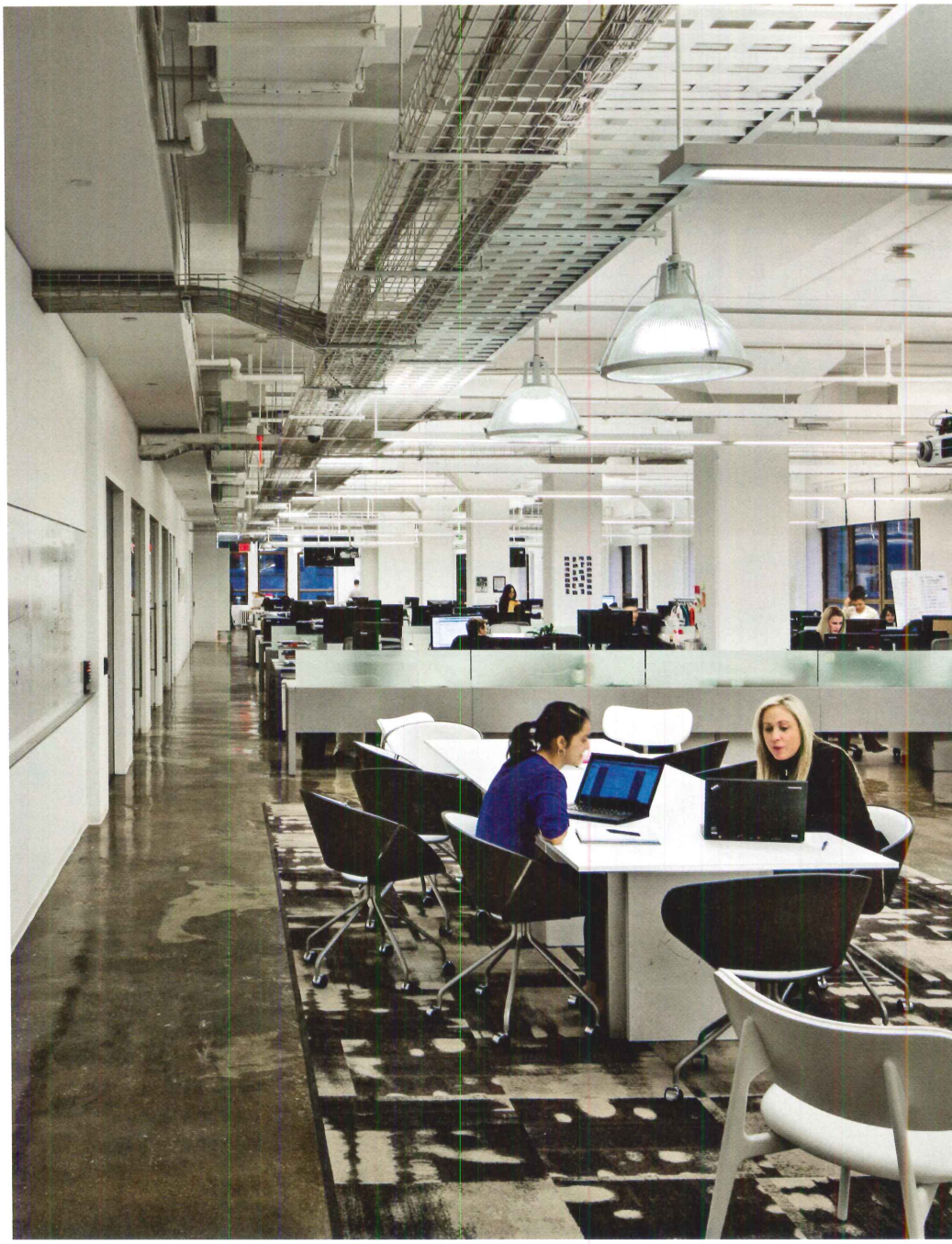
By Suzanne Stephens

SPEED, SPONTANEOUS interaction, flexibility, and collaboration describe the brief for office design today, where the "open plan" reigns. Fueled by the success of start-up tech offices, and with them media and advertising companies, casual workspace that can jolt users into fast thinking and faster acting is prompting the more sedate businesses—such as financial and law offices—to try out new kinds of flexible settings.

Open office design, as Nikil Saval points out in his lively book *Cubed: A Secret History of the Workplace* (Doubleday, 2014), has been around for at least four decades. While you could argue that even before that, clerks, reporters, and architects performed their tasks in rooms without walls, the notion of its being a design solution arrived much later. With the growth of middle management in the post–World War II period, the pressures of real estate induced corporate America—and its architects and designers—to try something different. Influenced by Germany's *Burolandschaft* (office landscape), with its open, organically arranged, and non-hierarchical layout, or Herman Miller's Action Office I and II workstations designed by Robert Probst in the 1960s, the modern office began to take shape. Action Office II, based on three panels that could be flexibly positioned at obtuse angles, became wildly influential—but not in the way conceived by Probst. Instead, a watered-down version—fabric-covered cubicles with partitions at 90-degree angles—arranged according to a grid, was adopted. It filled the bill economically. As Frank Duffy, a British architect and expert on office planning, who has studied and worked in the U.S., notes, open planning never really caught on in Germany and Scandinavia, where work councils had formed to ensure employees have control over their environment.

Ironically, now, in the U.S., the cubicle appears to be near extinction. It has largely been supplanted by partition-free desks or long tables referred to as "benching." It saves space and money, and arguably fits into the dynamic of changing modes of work. As STUDIOS Architecture principal and CEO Todd diGarmo points out, benching—the kind he designed for Bloomberg's New York office (RECORD, March 2006, page 138)—took a while to catch on. It did so, he says, "because the cubicle was expensive and needed to be upgraded with changes in technology." The digital start-up world of Silicon Valley, diGarmo says, "doesn't have time for this, or for hierarchy." Benching can lead to striking interiors: in one recent example, the offices of the Barbarian Group, an interactive marketing agency with headquarters in New York, enlisted Clive Wilkinson Architects from Los Angeles to create a 1,100-foot-long (!) serpentine table that swirls around the office, swooping up here and there to create arched portals and to shelter conference areas.

A gamut of architectural features provide alternative spaces as backups to benching. In



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PHOTOGRAPHY: © EDUARD HUEBER

CLEAR VIEW In 2013, Perkins + Will used benching—desks arranged like conference tables—for the New York offices of Vente Privée USA, a joint partnership of the French online fashion retailer and American Express. The main workspace (above) lacks walls or partitions and features casual seating clusters. The reception area (above, right) is furnished with found art and idiosyncratic furniture, to give the space the energy and insouciance it purveys in its business.

many media and design companies, the enclosed conference room has given way to glassed-in project meeting areas to encourage teamwork, add transparency, and admit more daylight. If each person's space at a long table only extends 4 to 5 feet, the individual bench area is counterbalanced by "huddle" areas where three to four people can get together, in addition to "pods" for even smaller meetings. To foster spontaneous interaction and movement, stairs of expansive width connect two or three floors internally, such as the sculptural fiberglass one at the Intercontinental Exchange (ICE) in Manhattan conceived by STUDIOS. In some cases, the stairs take the form of bleachers, providing convenient places to sit and chat or hear group presentations as well as get from one level to another. Kitchens and quick meeting/café areas abound, and the corporate kindergarten amenities that Silicon Valley made so popular in the past (Ping-Pong tables or basketball courts) can still be found.

But does this panoply of clubhouse features get in the way of actually . . . working? An active, open office might generate excitement and foment creative sparks, but surveys, studies, and anecdotal evidence reveal that too much fun can bring with it noise, chaos, and distraction. Over the last decade, complaints of lowered concentration and productivity constantly flood the internet. The Center for the Built Environment at the University of California, Berkeley, reported in 2007 that acoustical conditions were a leading source of dissatisfaction among employees: in one study of seven office buildings, as many as 72 percent of the respondents registered discomfort with speech privacy—that is, overhearing others, or being overheard. A poll of 2,060 by Harris Interactive on behalf of Ask.com in March 2013 report-

INSTANT LAB On the seventh floor of its New York offices, Gensler has created numerous places for its staff to experiment with design ideas to propose to clients. In the pinup area (above), long tables with stackable chairs encourage quick collaborations and meetings to be held on the spur of the moment. The café (below) features exposed ceilings and an end wall painted by the staff to look like an abstract painting.

ed that 61 percent of the employees in the U.S. found noise from colleagues to be the major office distraction affecting productivity. (Full disclosure: this writer is preparing this article wearing a headset in a vintage "cubicle.")

Says Douglas Burnham of Envelope Architecture+Design in Berkeley, "Some people don't like the open plan because you can't get anything done." While his architectural office employs it (as do most design studios), the firm included assorted spaces for privacy as it grew and renovated. Clive Wilkinson, who designed Google's offices Mountain View, California, in 2005, says that his firm has been addressing the backlash to too much open space "by providing a greater variety of options, like phone booths and study carrels." For the San Francisco office of IDEO, the design-strategy firm, Jensen Architects placed white rectilinear structures on its loftlike floors to contain a row of rooms for conferences and pinup sessions, as well as acoustically sealed telephone booths.

To counter the complaints about noise and distraction and generally improve upon unenclosed environments, other architects and interior designers are systematically exploring strategies to ameliorate open plans on their

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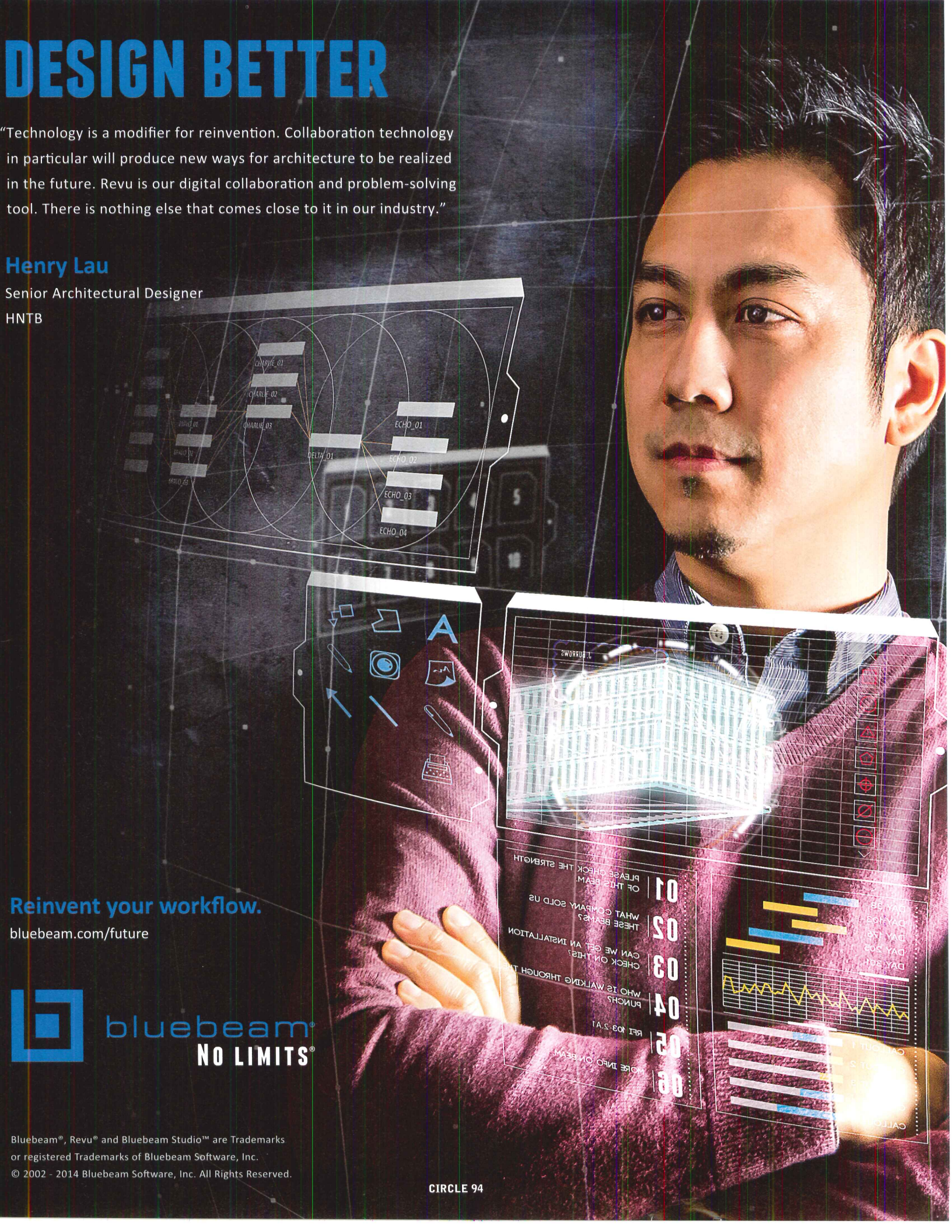

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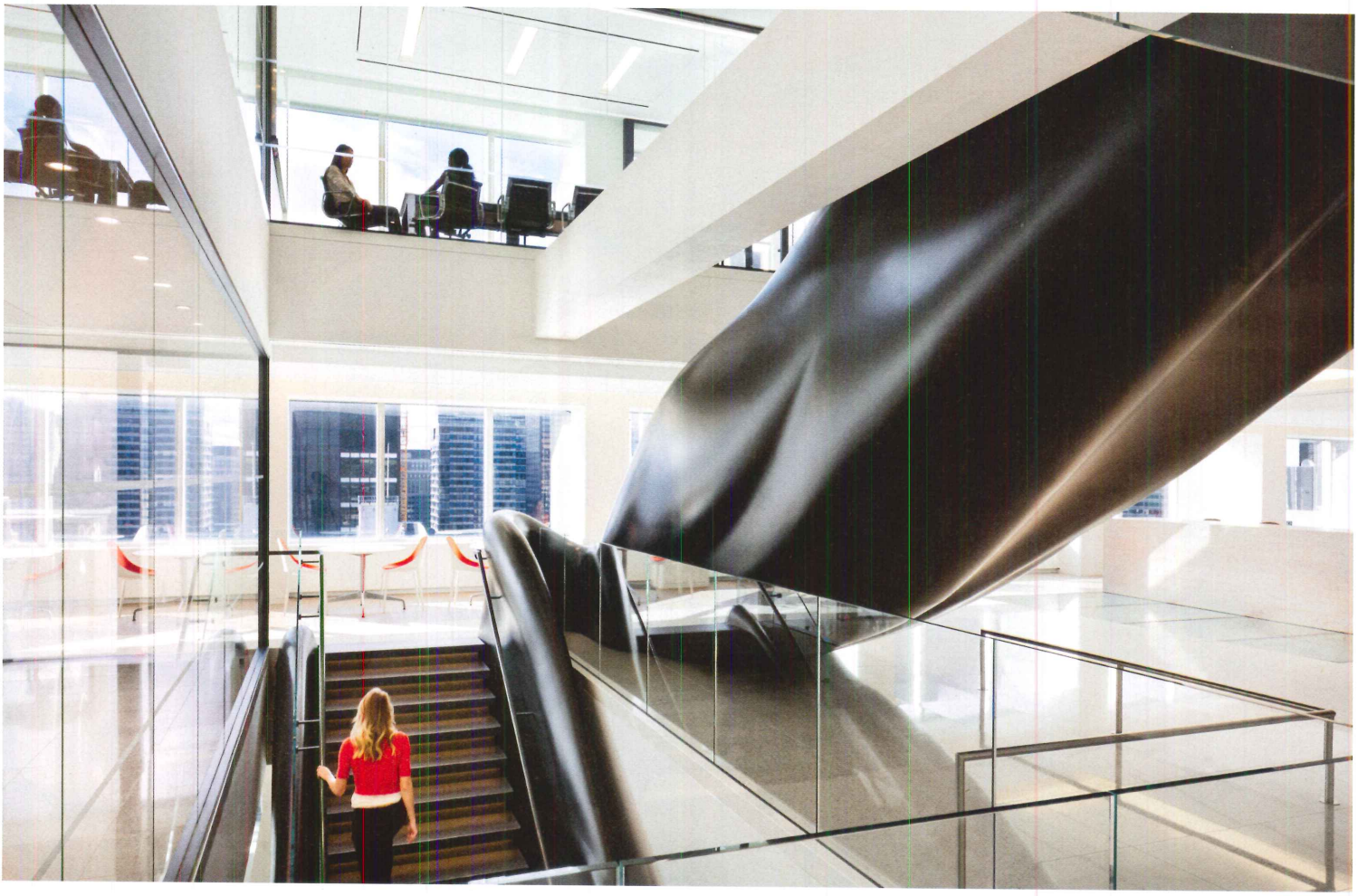
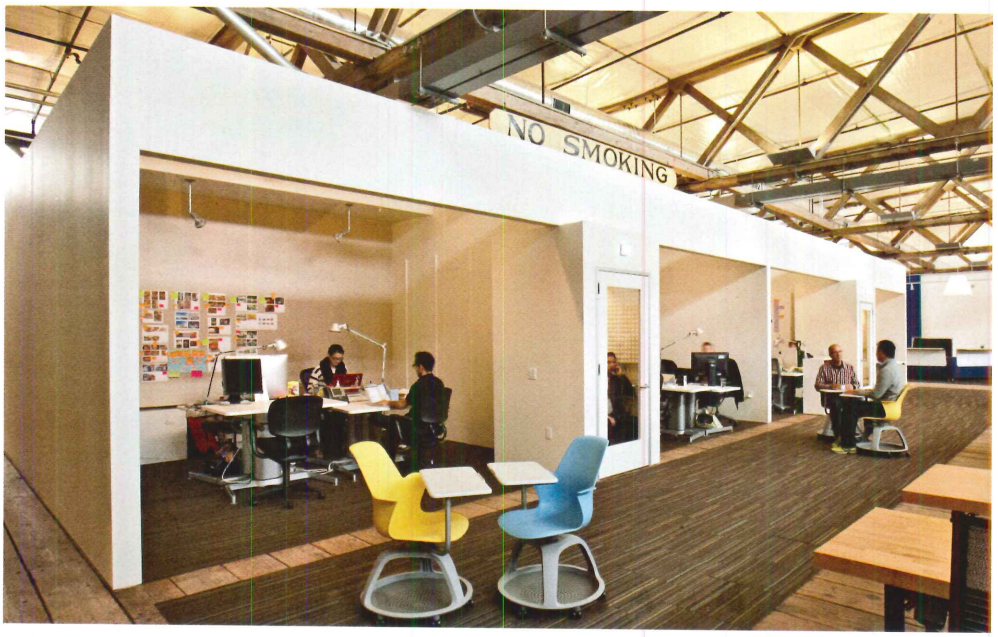


own turf. Robin Klehr Avia, chair of Gensler, notes that her firm has devoted a floor of its New York offices to experimental, changeable areas, where they can test out various ideas. The firm hopes to apply its findings to its design of interiors for such companies as Condé Nast, which is moving to New York's One World Trade Center this fall, or for Time Warner, the television, film, and entertainment company, when it eventually takes up residence in the Hudson Yards development in west Midtown.

Yet design advisors need to face certain realities. "Many say that an open-plan environment is unconditionally better than one with private offices," observes Janet Rankin, the director of Washington, D.C.–based Lehman Smith McLeish (LSM), which has just completed the interiors for Brookfield Office Properties Headquarters, a real estate firm at Brookfield Place, formerly the World Financial Center in New York. "But you have to think about what people really need to do their jobs," she warns. "It's not a one-size-fits-all." Ron Fiegenschuh, a partner in LSM, adds, "The program and the solution must jibe."



STAIRS WITH A TWIST Studios created an internal stairway of fiberglass (top) to connect the reception, café, and conference areas for Intercontinental Exchange (ICE) in New York in 2013. The fluid, organic feature dramatizes the three-level atrium; elsewhere, glass walls and floors heighten visual accessibility.

BUILDING IN A BUILDING Jensen Architects carved niches for offices and meetings, plus inserted private phone booths (above) in a barlike structure for the San Francisco offices of IDEO, a design firm. Completed in 2012, offices occupy a 1920s pier facility. "It's an armature for the work process," says principal Mark Jensen.

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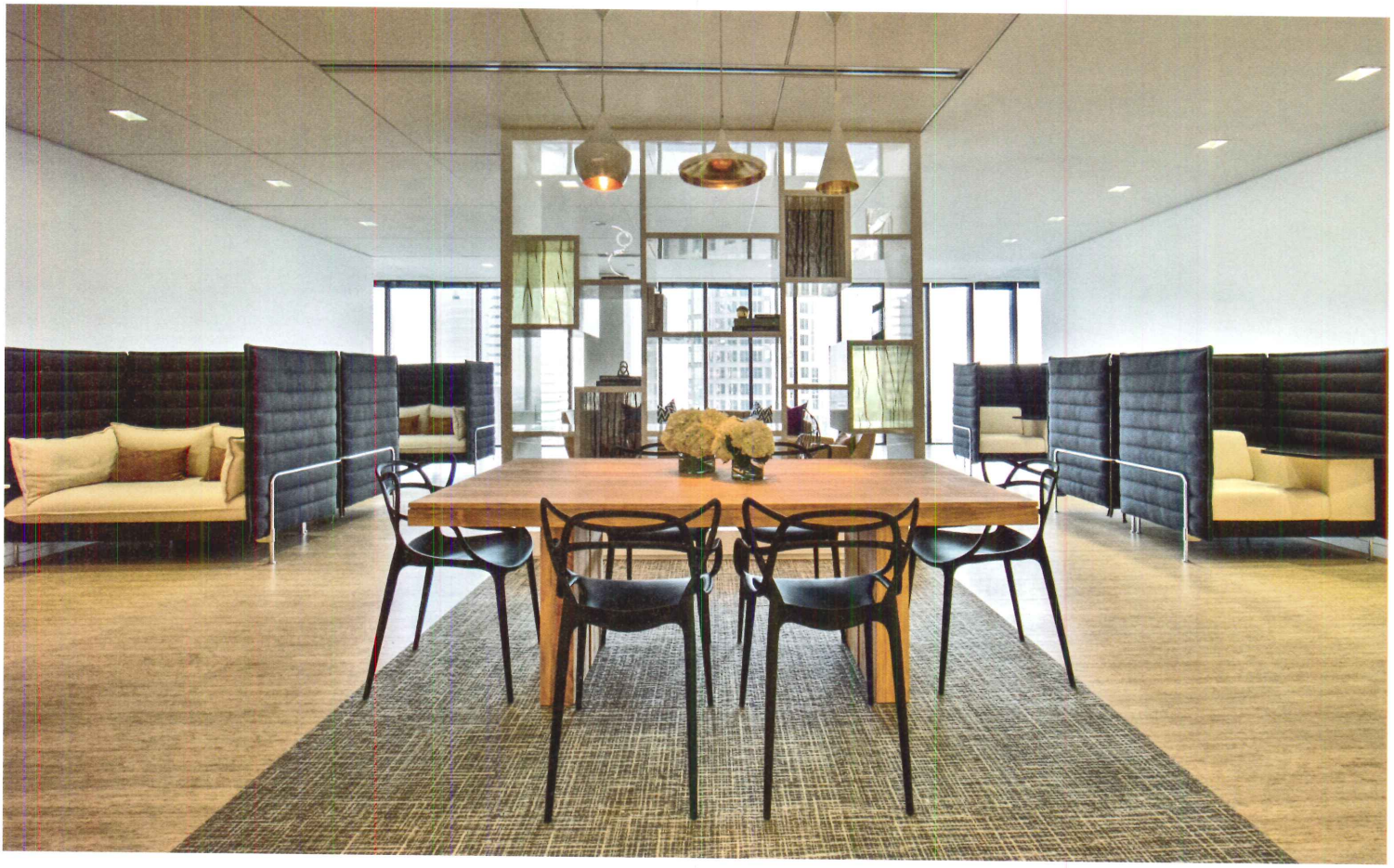
Among those who need to be sounded out are lawyers and financial executives—legendary for wanting to hold onto their enclosed spaces. However, some are thinking differently about the actual sizes and configurations of the layout: Lauren Rottet, of Rottet Studio, says that one of her clients, the Houston law firm of Seyfarth Shaw, wanted a light-filled work environment, without the hierarchy of the perimeter rooms. So Rottet pulled the offices away from the glass wall, creating "verandas" with views of the city, and added a variety of team conference areas. By tinkering with the layout, "We were able to allow a 25 percent increase in [the number of] employees for the original floor plan while keeping the offices the same size," she says.

Other firms, such as American Express or Unilever, are trying out "mobility" programs, where seats (and desks) are not necessarily assigned, says Joan Blumenthal, interior design director of Perkins + Will in New York. Often, as part of this mobility, only about 80 seats are available for every 100 people, based on whether members of a group spend much of their time elsewhere.

As a variant of such mobility, "co-working" venues strike many as the most flexible solution available—at least for small businesses. In New York, NeueHouse, founded by Joshua Abram and Alan Murray and designed by David Rockwell with NeueHouse Studio in 2013, has proved successful enough that the group plans to open another one in Los Angeles in 2015. NeueHouse, like many other co-working establishments (numbering about 800 in the U.S. at the moment) is membership-based, with subscription fees for the different types of spaces: a lounge-like main-floor "gallery" with library and café, where you can drop in and work on your laptop; and—on floors above—"studios," glass-enclosed rooms with open tables for a handful or more people, or "ateliers," totally in the open, for which you have an assigned desk. To address sound control, architect Anthony Fieldman, a former occupant whose firm, Raft, outgrew the space, is advising NeueHouse on modifications, such as inserting more acoustical materials into the studios or increasing the thickness of glass. As Duffy points out, the co-working space offers the same rubbing-shoulders benefit of 18th-century gentlemen's clubs in England, with its similar membership admission and fee arrangement.

The past still guides the future.

The only problem with the whole spate of imaginative solutions to make the open office appealing and productive is money. Telephone booths, pods, huddle rooms, project spaces, bleachers, even large enclosed sofas for small spontaneous conversations, all add costs that go beyond the benching desks. Innovative tech firms with geyser-like cash flows need not worry. But will the typical corporate firm buy into all the extras? In years to come, we may well be looking at the cube—reviled for its lousy acoustics and its uniformity, but endowed with its own storage bins, shelves, counters, and a smidgen of visual privacy—as an object of nostalgia and longing. ■



LEGAL LIVING For the law offices of Seyfarth Shaw in Houston (2014), the Rottet Studio designed lounges to function as meeting or study spaces, since the firm does not have a library. The high-backed settees allow private conversations.

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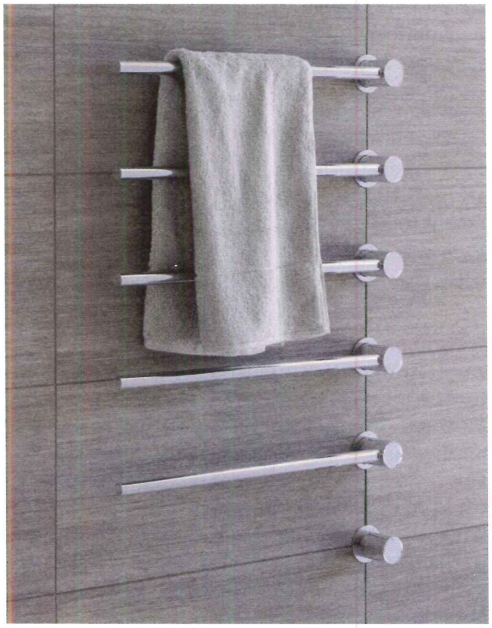
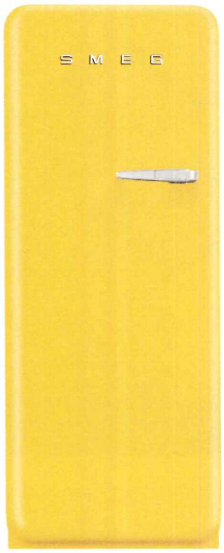
Home Coffee System

Wolf Appliance has introduced its first built-in system (above) for preparing espresso and other professional-quality coffee brews right at home. To complement most of today's modern kitchen settings, the machine is offered with two different face options: sleek black glass or stainless steel. A simple touch of the button activates a self-cleaning steam process that requires no disassembly. An integrated cup-warming drawer is currently in the pipeline. subzero-wolf.com CIRCLE 200



Vola T39EL Towel Warmer

Like all other Vola fixtures, the T39EL Towel Warmer (left) is minimalist and sculptural in design. It consists of three to 20 bars that can be spaced 4" to 12" apart on the wall, has an auto-shutoff timer, and regulates the temperature from 68 to 120°F. Available through Hastings Tile & Bath. hastingstilebath.com CIRCLE 203



Fab28 New Colors

Italian manufacturer Smeg brought '50s-style refrigerators to the U.S. seven years ago, but in a limited color palette. Now it's expanded to include white, sunflower yellow, and a retro-cool Union Jack (right). smegusa.com CIRCLE 204

Touchless Toilet Technology

Sensor-based flushes have made their way from commercial to residential bathrooms. Kohler's touchless toilet technology differs from light beam–triggered actuation, instead using an electromagnetic field to detect the user's hand above it. Located on top of the tank lid, the battery-powered sensor is available on the Cimarron model (below), or as a kit that easily installs on most single-flush toilets. kohler.com CIRCLE 201

Stone Grey Kitchen

The latest neutral color to trend in home decor, gray is appearing in everything from paint to casework. Luxury kitchen manufacturer Poggenpohl has responded to the demand with a Stone Grey cabinet finish (below). It complements most kitchen surfaces, and can be specified in melamine resin or hydro or high-gloss varnish. poggenpohl.com CIRCLE 202

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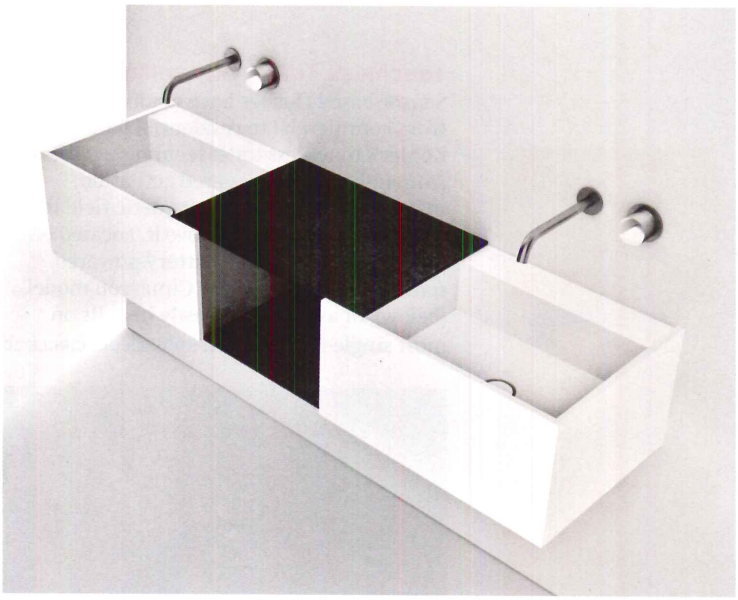
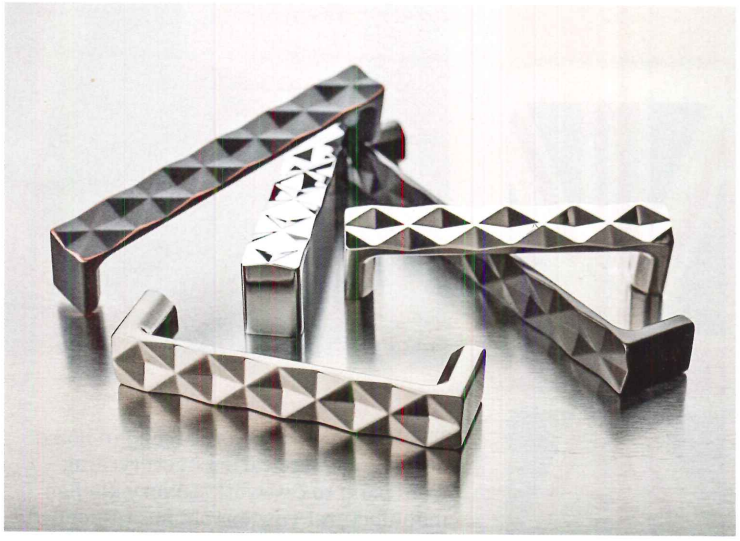


DueC

A streamlined washbasin and storage combination, DueC (left) was designed for Boffi by architect Victor Vasilev. The double-sink version positions an open shelf between the basins, while the single can be specified with storage on the left or right. The basin is composed of white solid surfacing, and the storage is resin-impregnated recycled paper and cardboard. boffi.com
CIRCLE 205



Planar 8

Franke has introduced the Planar 8 Series (above), its newest line of kitchen sinks and faucets to offer both functionality and high-end aesthetics. Options include a premium 18-gauge stainless-steel undermount sink that features sound-dampening pads and a solid-brass Flex Semi-Professional faucet, which utilizes a ceramic cartridge to prevent leaks, with a covered stainless-steel spring hose to facilitate manual control of the spray head.
frankeksd.com
CIRCLE 206

Xleratoreco

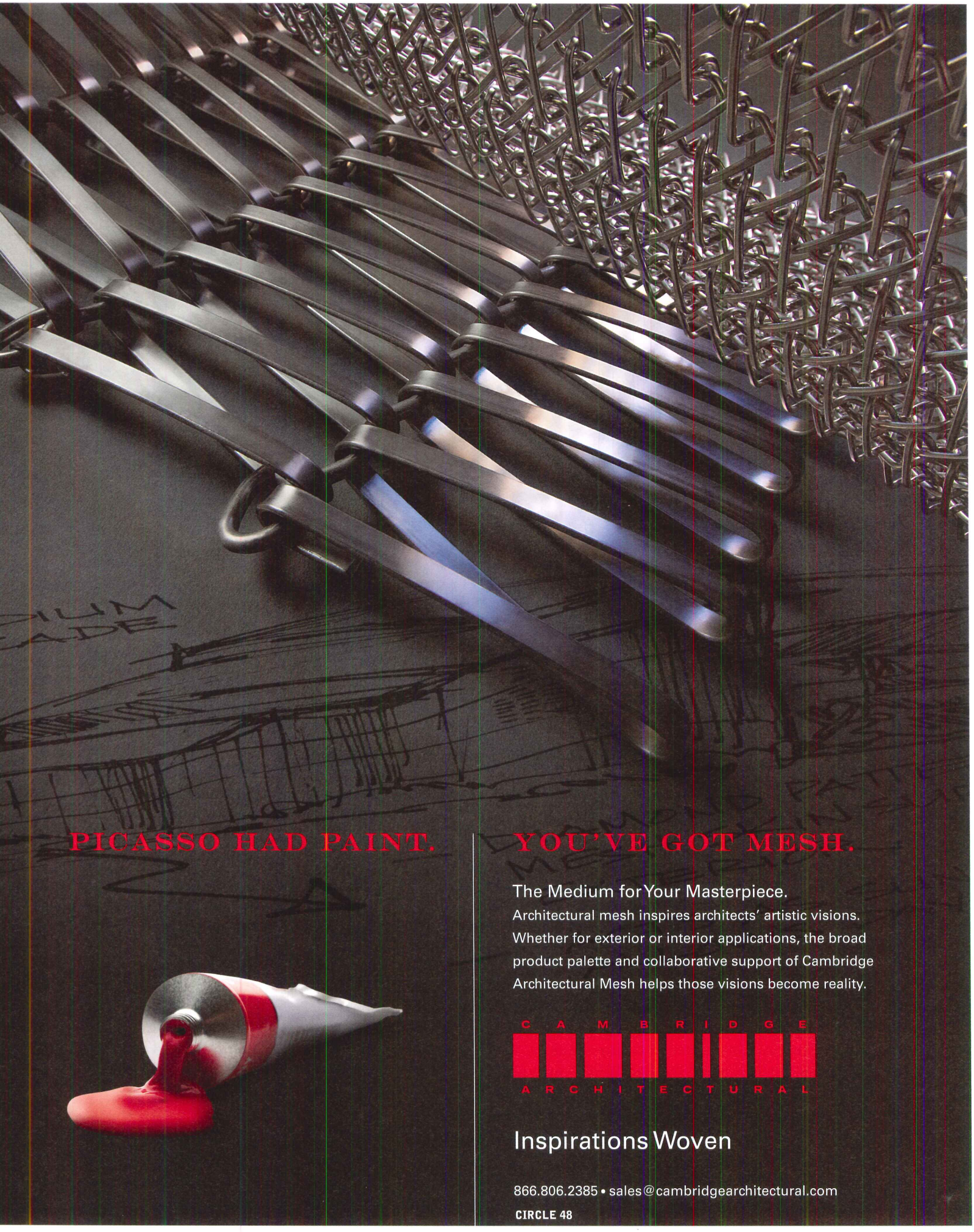
Exceeding the efficiency of Excel's original Xlerator dryer, this newer eco model (above) uses just 500W and a no-heat air-blowing technology while still drying hands in 15 seconds. Optional HEPA filtration can be added to kill germs.
exceldryer.com
CIRCLE 207

Quilted Series

Top Knobs has recently added an edgy, dimensional kitchen-cabinet hardware style to its Mercer Collection—the Quilted Series. With a pattern that complements both traditional and contemporary doors, the series offers one knob and three pull sizes, and finishes in brushed-satin nickel, polished nickel, polished chrome, sable, or Umbrio. topknobs.com CIRCLE 209

Classtone Compact Surface

Another marble-emulating surface product to hit the market, Neolith's Classtone (left) is a ½"-thick sintered compact surface that can be applied as kitchen countertops, but also to floors and interior walls. It is composed of a cocktail of natural materials—clay, feldspar, silica, and mineral oxides—and has nearly zero porosity, rendering it a low-maintenance hygienic surface. Four color options are available.
neolith.com CIRCLE 208



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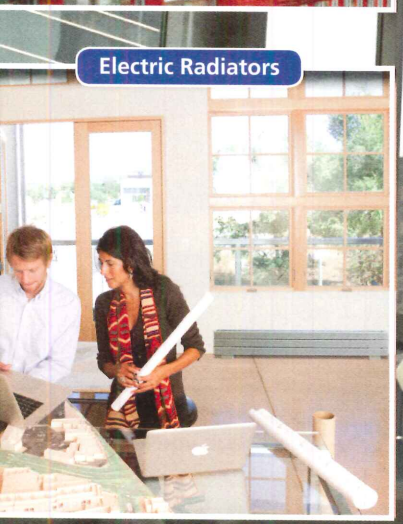

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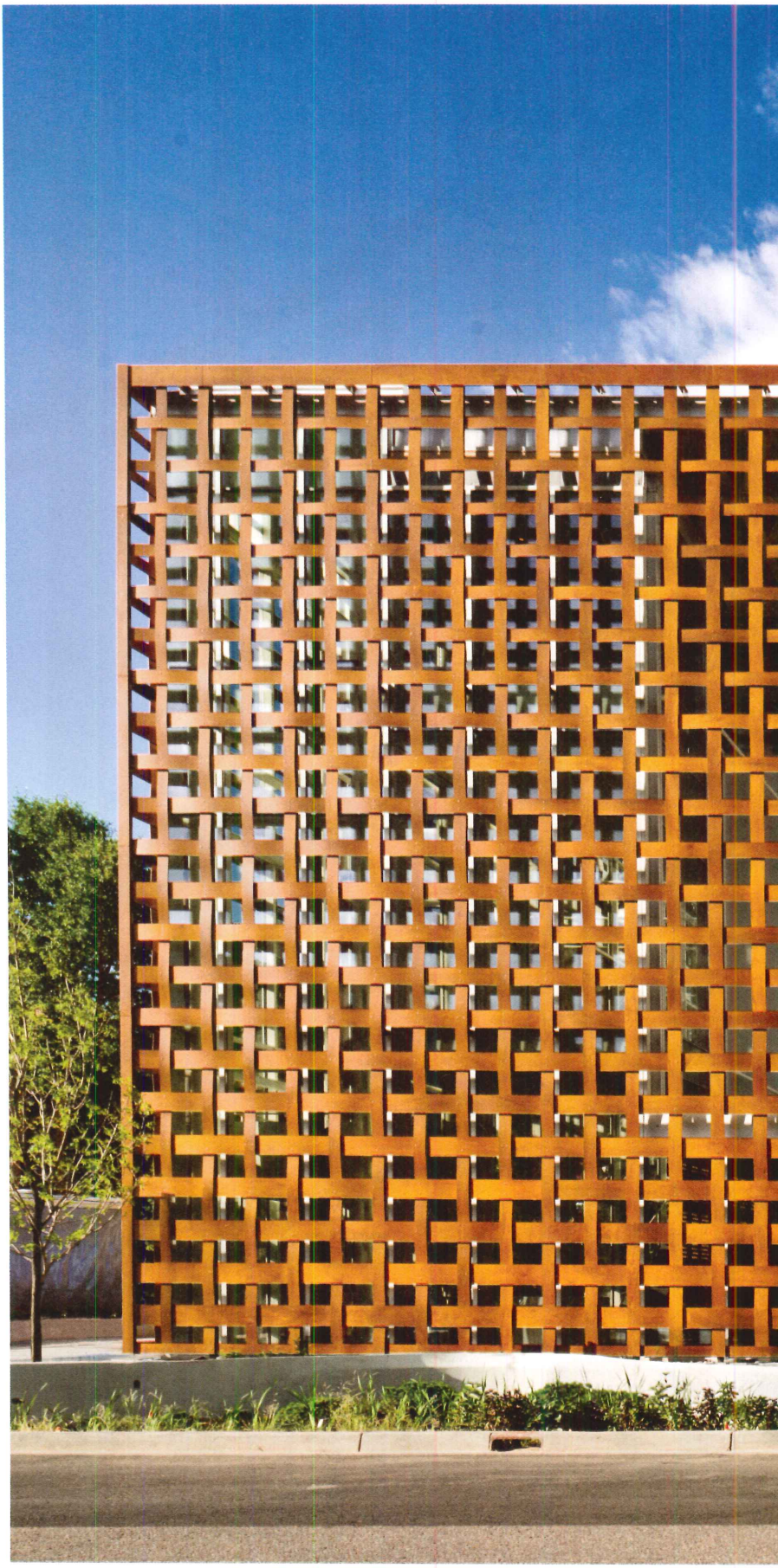

BASKET CASE A lattice screen (above) made from a wood-covered mixture of paper and resin wraps the street-facing elevations of the Aspen Art Museum. Shigeru Ban Architects chose its brown color to evoke the bricks found on nearby buildings in downtown Aspen. On the sidewalk in front of the building (opposite), in a parklike "commons" area, are two wavy wooden benches.

Stand on the corner of South Spring Street and East Hyman Avenue in downtown Aspen, Colorado, and you see two entrances to Shigeru Ban's box-like Aspen Art Museum, his first completed project in the United States since winning the 2014 Pritzker Architecture Prize. To your right is the main entrance, a recessed section in the building's striking woven-lattice exterior. To your left is a smaller cutout leading to a 10-foot-wide grand staircase, sandwiched between the woven screen and a glass curtain wall. Walk up the stairs, and you'll find yourself in the rooftop sculpture garden, with its spectacular views of Aspen's ski slopes and 12,095-foot-high Independence Pass.

If Ban had his way, this is how all visitors would enter the museum. "I wanted to make something very site-specific," he says. "You go to the rooftop first, enjoy the beautiful view, then come down one floor at a time to see the art. It's the same kind of experience as skiing. You take the ski lift up, enjoy the view, and then ski down the mountain."

Museum director and chief curator Heidi Zuckerman Jacobson sees things differently. "When I take people through the museum," she says, "I do the opposite, because I feel like it becomes increasingly spectacular as you go up. I like the big 'mega moment' at the end."

No matter how the museum experience connects to its context, it's fitting that Ban's first American museum is located in Aspen, which has a rich history of forward-thinking architecture—even if several of its most significant works are now lost. Structures by Eero Saarinen, Herbert Bayer, Harry Weese, and Buckminster Fuller, to name a few, have come and gone. These days, the city is better known for its luxury vacation homes, and, if you know where to look, you can spot houses by John Lautner, Peter Gluck, and Antoine Predock, as well as one by Renzo Piano (RECORD, April 2014, page 104).

The 33,000-square-foot, $45 million project adds to that architectural legacy, and replaces the Aspen Art Museum's longtime home, a former power plant near the banks of the Roaring Fork River. Zuckerman Jacobson, who took the

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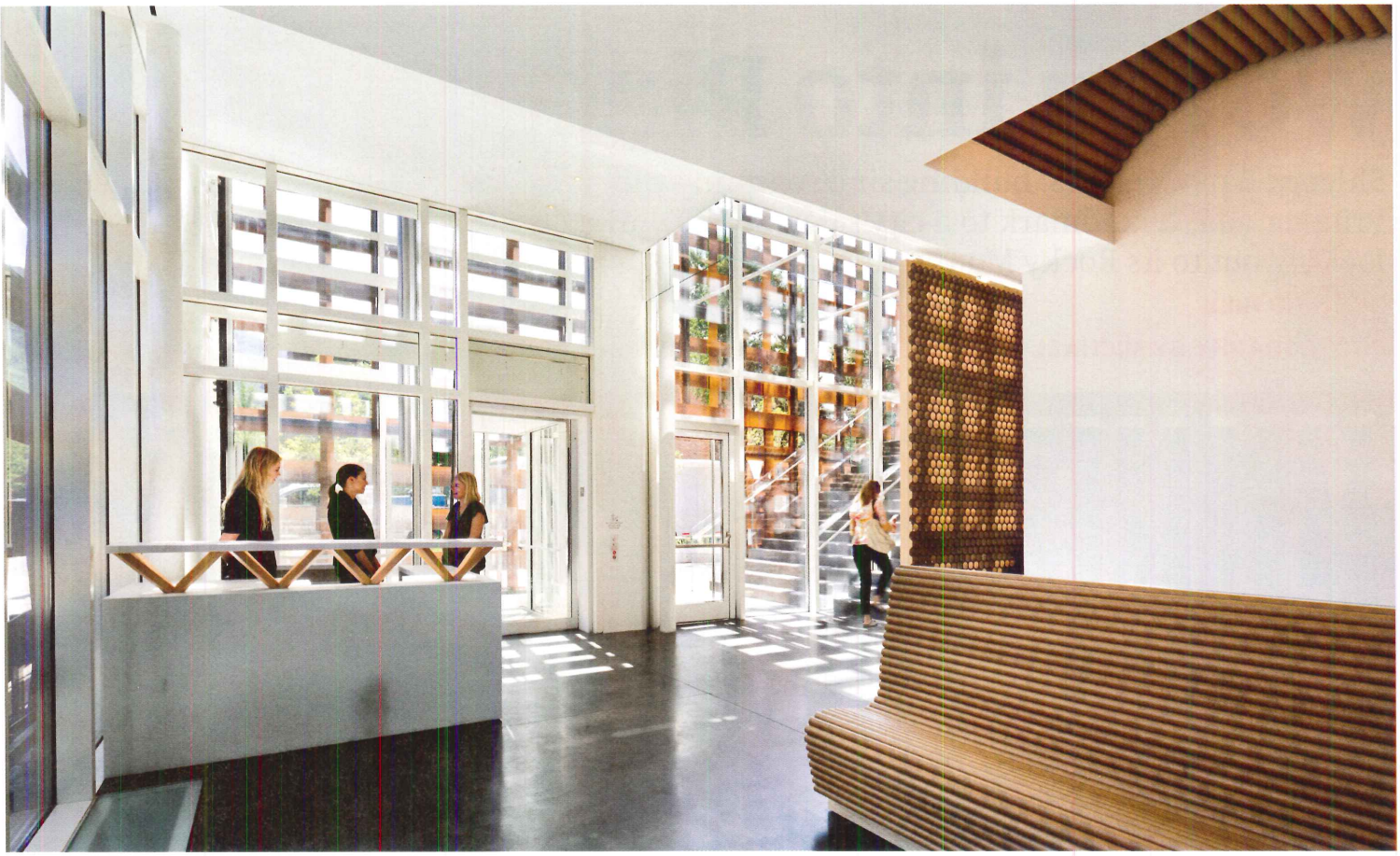
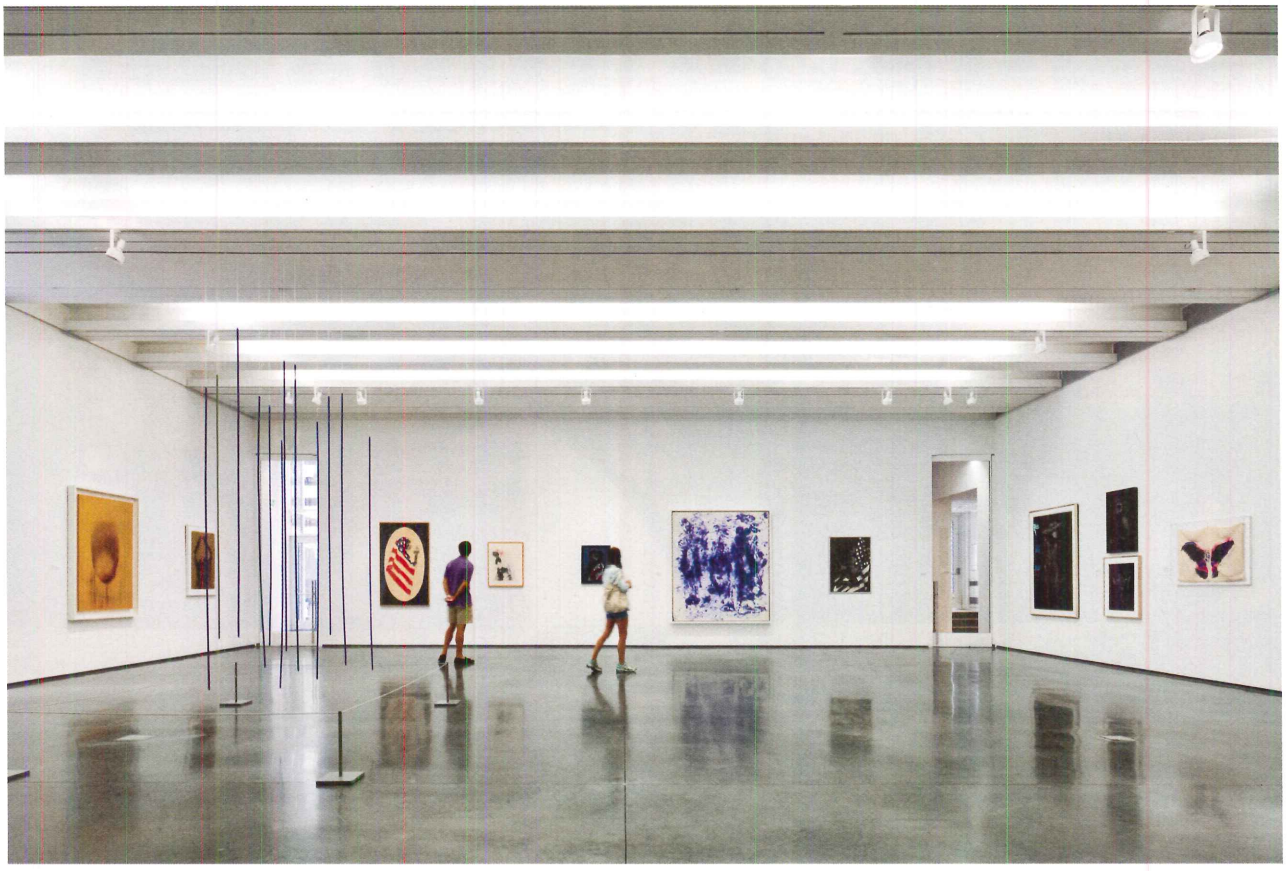
Woven into Place

Shigeru Ban's first U.S. building since winning the Pritzker adds a landmark to a city's downtown while looking out to its Rocky Mountain setting.

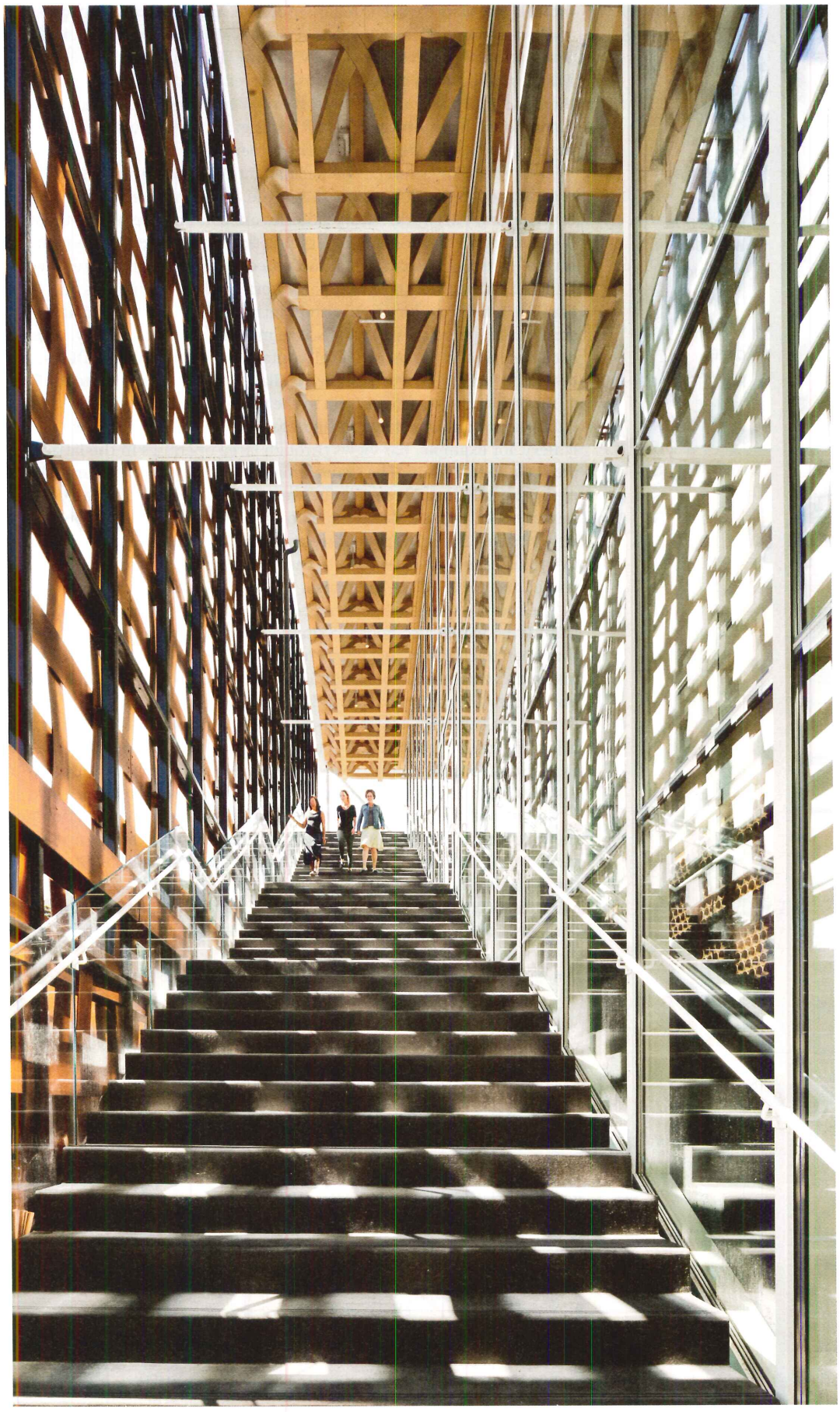
BY DAVID HILL

PHOTOGRAPHY BY MICHAEL MORAN





ART AND CRAFT
The architect used his signature paper tubes (above) in ground-floor walls, benches, and two ceilings. A grand stair (opposite) is split between the interior and the exterior of the building, running along both sides of a glass curtain wall. It climbs three stories from the sidewalk up to a roof terrace. The museum's six white-box galleries (one shown at left) not only lack columns, but light switches and sensors are all located in the ceilings and floors for uninterrupted art viewing.



museum's helm in 2005, led efforts to move to a larger facility, and in 2008, the museum announced the selection of Ban, from a list of 36 firms under consideration by the museum, to design a new building. His original scheme, for a sloping site in a five-acre swath of downtown—part of a multi-million-dollar redevelopment plan to create a new civic center—was scrapped in 2009 when voters rejected the sale of a former youth center that would have been razed to make room for the museum. After the vote, museum officials decided to look elsewhere.

For the new, far more constrained site, in the heart of downtown Aspen, Ban conceived a hybrid concrete-steel-and-wood structure enclosed on two sides by glass walls set behind the woven screen. The museum is a simple box inserted into the streetscape, but one that is open to its surroundings through a controlled series of sight lines. "I didn't just want to make a black-box building shielded from its context," Ban says.

From the exterior, the museum's main feature is the basket-weave cladding that covers its two street-facing

credits

ARCHITECT: Shigeru Ban Architects – Shigeru Ban, principal; Dean Maltz, partner; Nina Freedman, director of projects; Zachary Moreland, project architect

EXECUTIVE ARCHITECT: Cottle Carr Yaw Architects

ENGINEERS: KL&A, Création Holz – Hermann Blumer (structural); Beaudin Ganze Consulting Engineers (m/e/p, IT, AV); Sopris (civil)

CONSULTANTS: Front (building envelope); Gen3 (woven screen); Spearhead (specialty timber); L'Observatoire International (lighting)

GENERAL CONTRACTOR: Turner Construction

CLIENT: Aspen Art Museum

SIZE: 33,000 square feet

PROJECT COST: $45 million

COMPLETION DATE: August 2014

SOURCES

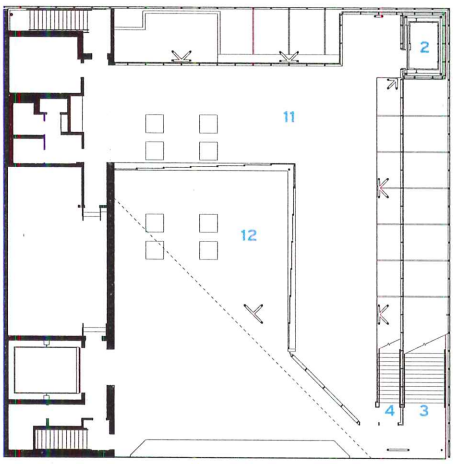
CURTAIN WALL: Harmon

GLASS: Safti First, EFCO (curtain wall); Agnora, Panda, Jockimo, Viracon (other glazing)

METAL PANELS: Elward

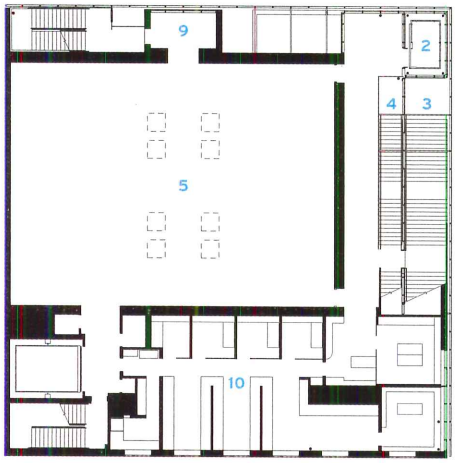
WOVEN SCREEN: Prodema

ROOF MEMBRANE: Firestone

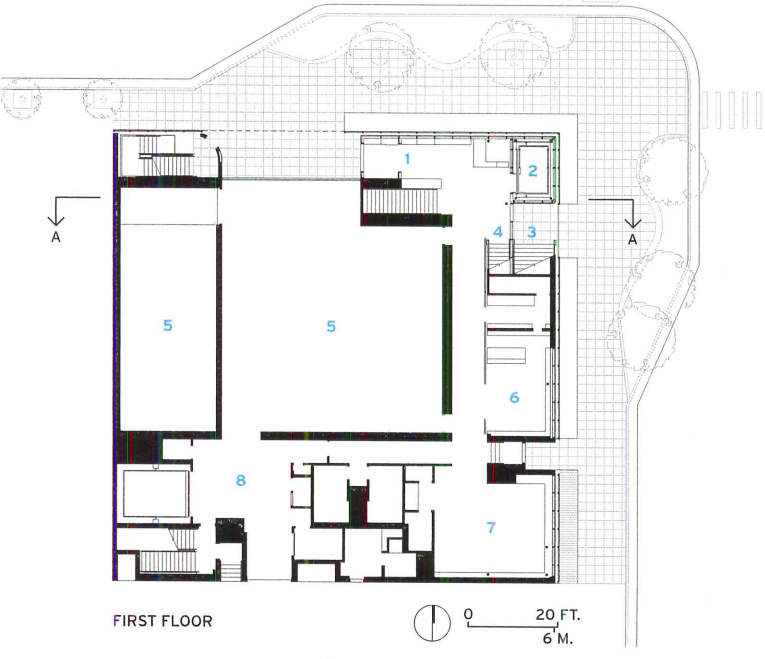


THIRD FLOOR

1 ENTRY LOBBY
2 GLASS ELEVATOR
3 GRAND STAIR (OUTDOOR)
4 GRAND STAIR (INDOOR)
5 GALLERY
6 SHOP
7 EDUCATION WORKSHOP
8 LOADING
9 LOUNGE
10 OFFICES
11 CAFÉ
12 ROOF TERRACE



SECOND FLOOR



FIRST FLOOR

facades. The slats, "woven" together on-site, are made from a paper-and-resin composite sandwiched between two thin layers of brown okoume wood protected with a UV coating. The density of the weave changes from top to bottom and as it moves away from the corner of the building. Practically, the screen provides shade from the intense Colorado sunlight. Aesthetically, it helps give the museum a craftsy, homemade quality, despite its bulky presence.

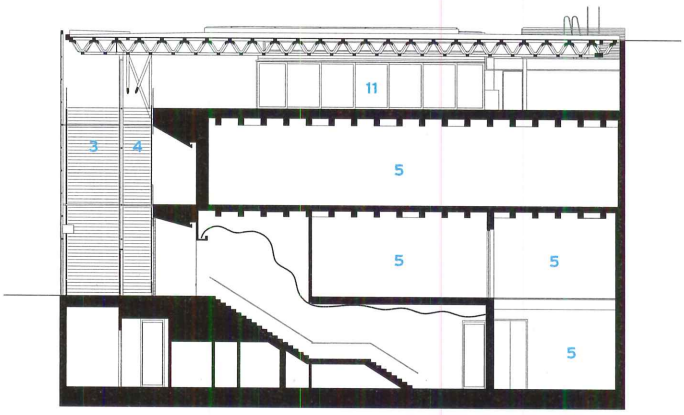
Because the museum has no permanent collection, the program called for open, flexible spaces that could accommodate a variety of contemporary artwork. All six galleries are column-free, with 14-foot-high ceilings. Ban calls them "very practical white boxes." Although several galleries are partially illuminated by skylights, they are essentially blank slates. A show that pairs work by David Hammons and Yves Klein feels uncluttered, with paintings, drawings, and prints generously spaced on stark walls. The museum's largest gallery, which occupies most of the second level, contains an exhibition of full-scale disaster-relief structures designed by Ban. It runs through October 5.

At almost every turn, visitors to the museum can look out to Aspen's stunning mountain setting. A small lounge off the second-floor gallery, for example, has views through large openings in the lattice to nearby Red Mountain. The grand staircase actually has two parallel parts: that 10-foot-wide section between the glass skin and the exterior screen, and a 5-foot-wide section running inside the building, but either route offers glimpses of treetops and surrounding mountains. Even the large public elevator, in the building's most prominent corner, has glass walls—Ban calls it a "moving glass room."

The rooftop sculpture garden occupies roughly half of the museum's third level, which also houses a small café behind sliding glass doors that open to create a spectacular indoor-outdoor space. A delicate triangular wood-truss roof, supported by discreet white steel columns, hovers over the café and part of the sculpture garden. The curvy trusses, stained with a light natural finish, were assembled without using any visible metal joints—only well-concealed screws. Like the exterior screen, the timber space frame—indeed, the entire museum—displays Ban's gift for blending craftsmanship and architecture.

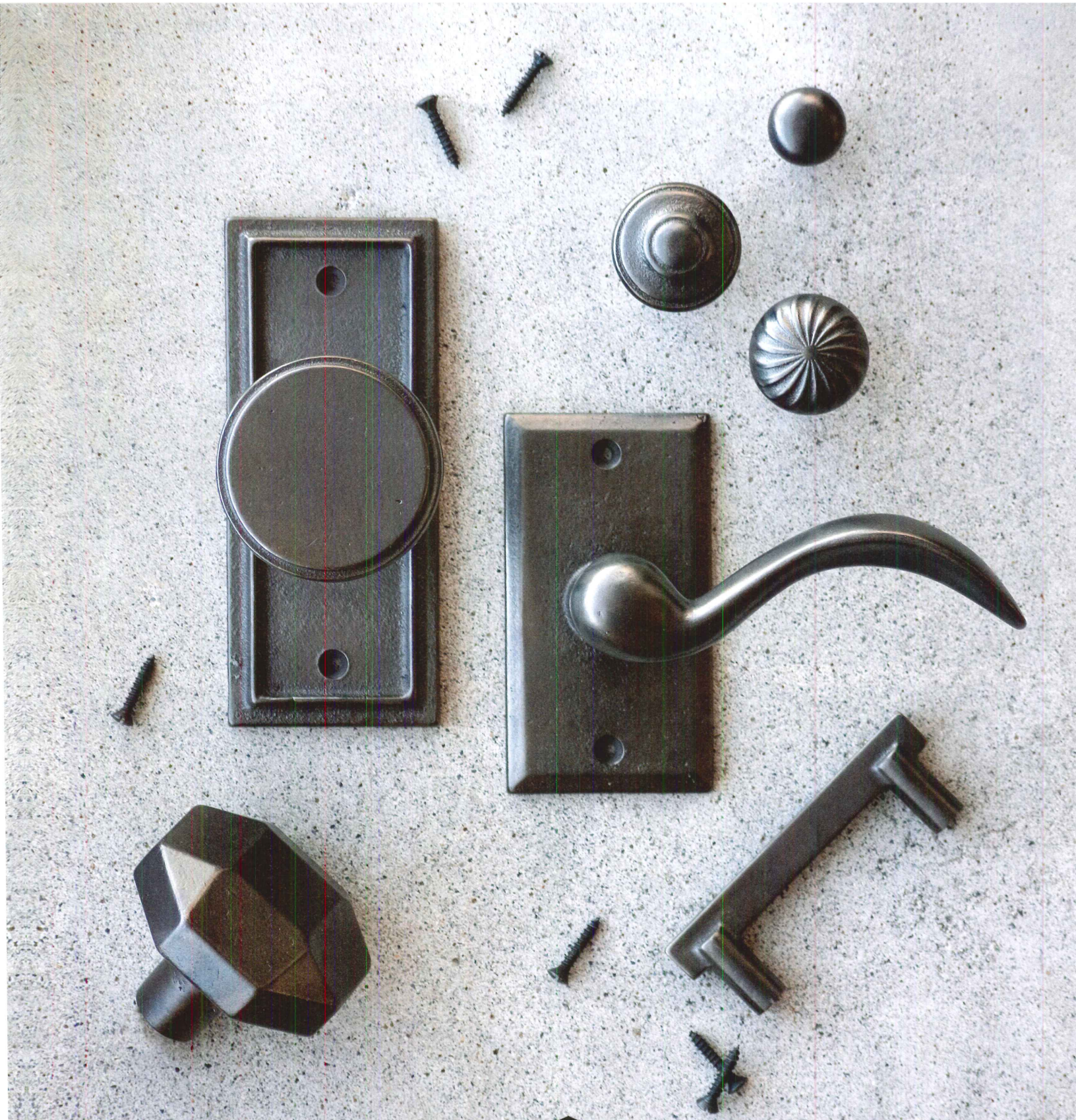
Going from the original hilly setting with an obvious connection to the topography to a tighter urban site could have led to an inward-looking building. But Ban is smart enough to know that Aspen is all about the out of doors. Here, even an art museum, with its climate-controlled galleries, needs to connect to nature. And that's what the museum does, brilliantly. In Aspen, you can't compete with the mountains. ■

Denver writer David Hill is a frequent RECORD *contributor.*



SECTION A - A

OPEN SPACE Supported by steel posts, a ceiling space frame is made from timber members designed to connect without the aid of metal joints. It covers a small café (bottom) and part of a roof deck (this image) with striking views of the surrounding mountains. Two 42-foot sliding doors allow the spaces to be combined into a large indoor-outdoor area.



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2014 PCI DESIGN AWARD WINNERS

Precast/Prestressed Concrete Institute

Polsinelli Headquarters & Hotel Sorella
Category: **Office Buildings**
Location: **Kansas City, Missouri, USA**
Architect: **360 Architecture / Gould Evans Architects**
Engineer of Record **Opus A&E / Bob D Campbell and Associates**
Precast Producer: **Enterprise Precast Concrete, Inc.**
Photo: **Jacia Phillips Photography**

La Maison Simons
Category: **Retail Buildings**
Location: **Anjou, Quebec, Canada**
Architect: **LEMAYMICHAUD Architecture Design**
Engineer of Record: **SDK & Associés Inc.**
Precast Producer: **BPDL Béton Préfabriqué Du Lac**
Photo: **Marc Cramer**

Kinder Monte Sinai
Category: **Schools (K – 12)**
Location: **Mexico City, D.F., Mexico**
Architect: **LBR&A**
Engineer of Record: **VAMISA**
Precast Producer: **PRETECSA**
Photo: **Alfonso Merchand**

Henry W Bloch Executive Hall of Entrepreneurship and Innovation
Category: **Higher Education/Universities AND Harry H. Edwards Industry Advancement Award**
Location: **Kansas City, Missouri, USA**
Architect: **BNIM / Moore Ruble Yudell Architects & Planners**
Engineer of Record: **Structural Engineering Associates**
Precast Producer: **Enterprise Precast Concrete, Inc.**
Photo: **Jacia Phillips Photography**

University of Houston Health and Biomedical Sciences Building
Category: **Higher Education/Universities**
Location: **Houston, Texas, USA**
Architect: **Bailey Architects / Shepley Bulfinch**
Engineer of Record: **Cardno Haynes Whaley**
Precast Producer: **Coreslab Structures (Texas), Inc.**
Photo: **Nic Lehoux**

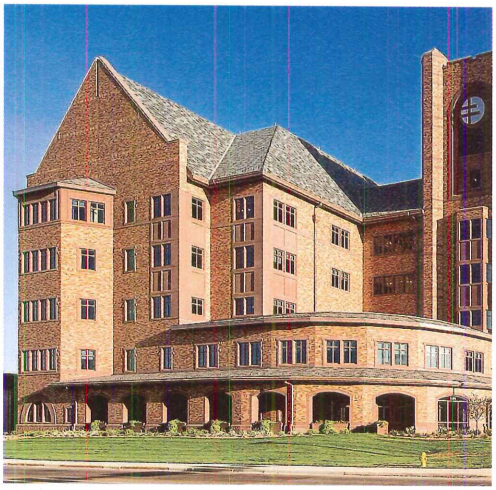
Salas Regionales del Golfo
Category: **Government and Public Buildings**
Location: **Xalaoa, Veracruz, Mexico**
Architect: **Tribunal Federal de Justicia**
Engineer of Record: **Proyecta y Edifica, S.A de C.V.**
Precast Producer: **PRETECSA**
Photo: **Luis Gordoa**

U.S. Freedom Pavilion at the Boeing Center
Category: **Government and Public Buildings**
Location: **New Orleans, Louisiana, USA**
Architect: **Voorsanger Mathes LLC**
Engineer of Record: **Weidlinger Associates, Inc.**
Precast Producer: **Gate Precast Company**
Photo: **Martin Stigsgaard**

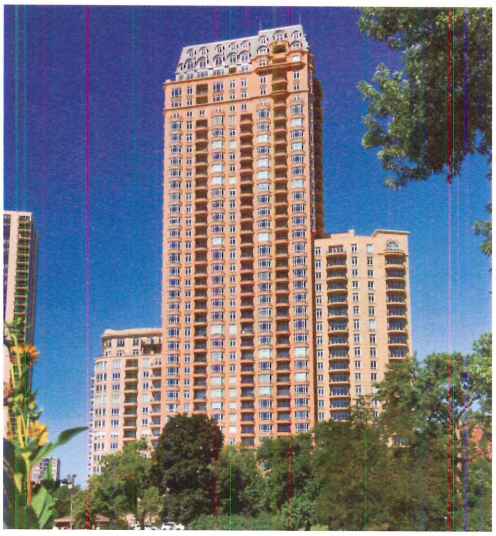
The Z
Category: **Parking Structures**
Location: **Detroit, Michigan, USA**
Architect: **Neumann/Smith Architecture**
Engineer of Record: **Rich and Associates, Inc.**
Precast Producer: **Kerkstra Precast, Inc.**
Photo: **Neumann/Smith Architecture**

Brigham Temple
Category: **Religious Structures**
Location: **Brigham City, Utah, USA**
Architect: **FFKR Architects**
Engineer of Record: **ARW Engineers**
Precast Producer: **Clark Pacific**
Photo: **JSturr Photographer**

First Baptist Church of Dallas
Category: **Religious Structures**
Location: **Dallas, Texas, USA**
Architect: **The Beck Group**
Engineer of Record: **Brockette Davis Drake**
Precast Producer: **Gate Precast Company**
Photo: **Jon Mindrup**

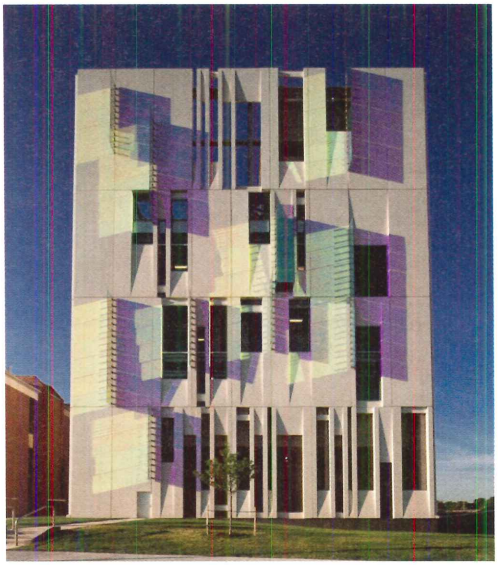


Sanford Cardiovascular Hospital
Category: **Healthcare/Medical Buildings**
Location: **Sioux Falls, South Dakota, USA**
Architect: **AECOM**
Engineer of Record: **AECOM**
Precast Producer: **Gage Brothers**
Photo: **© 2014 AECOM / Photography by Robb Williamson**



2550 North Lakeview Drive
Category: **Multi-Family Housing**
Location: **Chicago, Illinios, USA**
Architect: **Lucien Lagrange Architects**
Engineer of Record: **CS Associates, Inc.**
Precast Producer: **High Concrete Group**
Photo: **High Concrete Group LLC**

2014 PCI DESIGN AWARD WINNERS



The Ohio State University Chiller Plant
Category: **Custom Solutions**
Location: **Columbus, Ohio, USA**
Architect: **Ross Barney Architects / Champlin Architecture**
Engineer of Record: **Shelley Metz** Baumann Hawk, Inc.
Precast Producer: **High Concrete Group LLC**
Photo: **Feinknopf Photography**

G8WAY DC
Category: **Custom Solutions**
Location: **Washington, DC, USA**
Architect: **Davis Brody Bond**
Engineer of Record: **Robert Silman Associates**
Precast Producer: **Gate Precast Company**
Photo: **Eric Taylor, Davis Brody Bond**

University of Kentucky Albert B. Chandler Hospital – Pavilion A
Category: **Sustainable Design Award**
Location: **Lexington, Kentucky, USA**
Architect: **GBBN Architects / AECOM-Ellerbe Becket**
Engineer of Record: **Affiliated Engineers, Inc.**
Precast Producer: **Gate Precast Company**
Photo: **Pease Photography; Courtesy of GBBN Architects and AECOM**

Higher Ground
Category: **All Precast Solution Award**
Location: **Minneapolis, Minnesota, USA**
Architect: **Cermak Rhoades Architects**
Engineer of Record: **Mattson Macdonald Young**
Precast Producer: **Hanson Structural Precast**
Photo: **Brandon Stengel - Farm Kid Studios**

Thank you to all of the judges that reviewed all submissions to pick the winning designs:

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BOKA Powell, Inc.

Timothy Taylor, AIA
Gensler

Jean-Pierre Pelletier, FIRAC
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Bruce W. Sekanick, AIA, OAA
Phillips Sekanick Architects, Inc.

Special Awards Judges

Joe Bunkers, L3
Gage Brothers

Andrew E.N. Osborn, SE, PE
Wiss, Janney, Elstner Associates, Inc.

David Cook, AIA
CTLGroup

Transportation Awards Judges

Dr. Joey Hartmann, PE
FHWA

Mark Traynowicz, PE
Nebraska Department of Roads

Gregg Reese, PE
Summit Engineering Group

To view the winners for the Transportation Awards, please visit www.pci.org/designawards.

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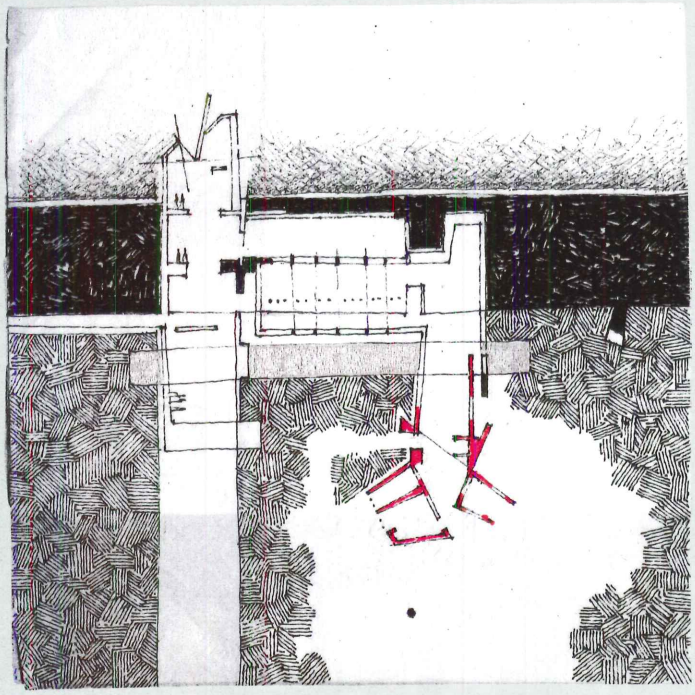
ARCHITECTURAL RECORD Announces the Winners and the Runners-up of the

2014 COCKTAIL NAPKIN SKETCH CONTEST

Now in its fifth year, RECORD's Cocktail Napkin Sketch Contest demonstrates there is still a passion for drawing within the architecture profession. RECORD received submissions that represent a wide range of architectural experience and background, from college students to long-practicing professionals. The nine winners, including a firm, were selected after a thorough evaluation process.

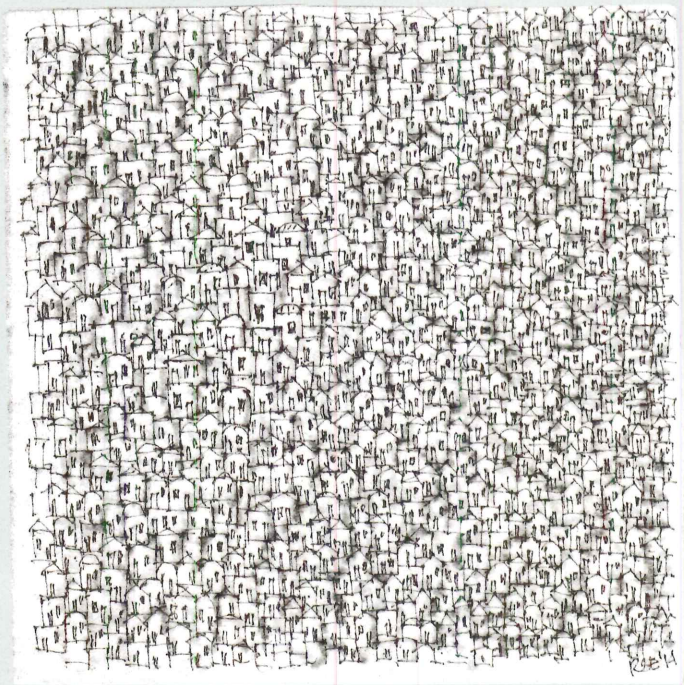
WINNER, REGISTERED ARCHITECT



DAVID FOX, ASSOCIATE PROFESSOR, COLLEGE OF ARCHITECTURE AND DESIGN, UNIVERSITY OF TENNESSEE, KNOXVILLE, TN
PLAN/SECTION STUDY FOR A CHAPEL, MARION CO., TN

David Fox has devoted his career to the study of architectural drawing. He has taught at the University of Tennessee College of Architecture and Design for 20 years and recently completed a Fulbright Scholarship in Krakow, Poland, where he focused on the relationship between analog drawing, digital design, and architectural pedagogy. His winning sketch was partially inspired by his experience designing a chapel as an employee in the practice of E. Fay Jones. However, the drawing also represents Fox's belief that sketching and developing an architectural concept must come before computer modeling. "The poetry cannot be an afterthought or occur at a midpoint," he tells his students. "It must originate from inception."

WINNER, NON-REGISTERED ARCHITECT

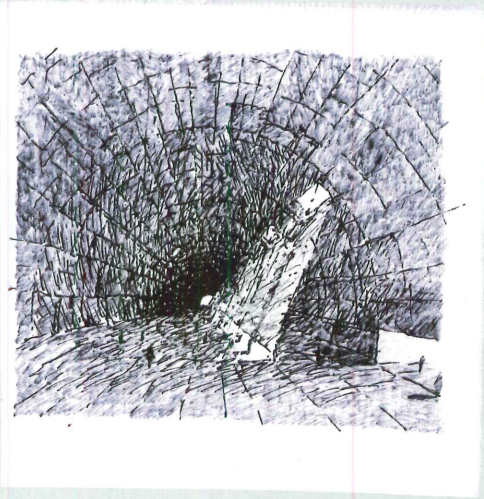


ROLAND ESCALONA, DESIGNER, MARK SCHEURER ARCHITECT, NEWPORT BEACH, CA **CLOSE QUARTERS**

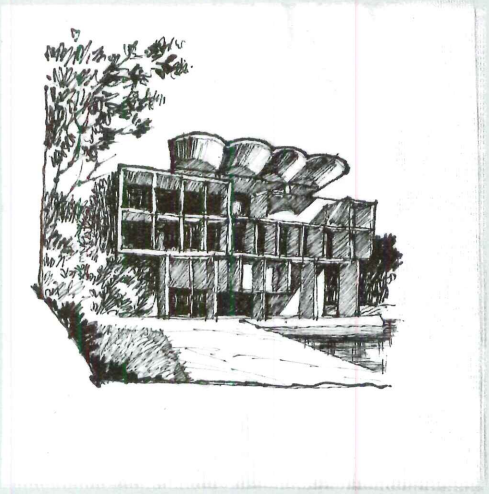
Roland Escalona's sketch was, without exaggeration, a lifetime in the making. "I grew up in Manila, the Philippines," said Escalona, "where shanty housing is part of the landscape." The memory of that landscape stayed with the young architect and was the subject of his B.Arch. senior thesis at the University of Southern California. The idea for the sketch struck him when he came across his old thesis and reimagined that dense landscape using the meticulous precision of photographic mosaic, one of his artistic hobbies. Escalona recounts that "the image of shanty living was stuck in my mind." But now that landscape has been distilled by hand for us to interpret.

RUNNERS-UP, REGISTERED

HANY HASSAN, PARTNER, BEYER BLINDER BELLE, WASHINGTON, D.C. **GLOW**



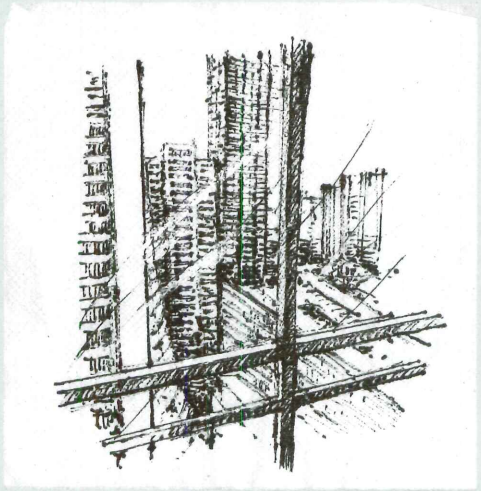
ERIC JENKINS, ASSOCIATE PROFESSOR, SCHOOL OF ARCHITECTURE AND PLANNING, THE CATHOLIC UNIVERSITY OF AMERICA, WASHINGTON, D.C.
LIGHT DRAWN FROM DARKNESS



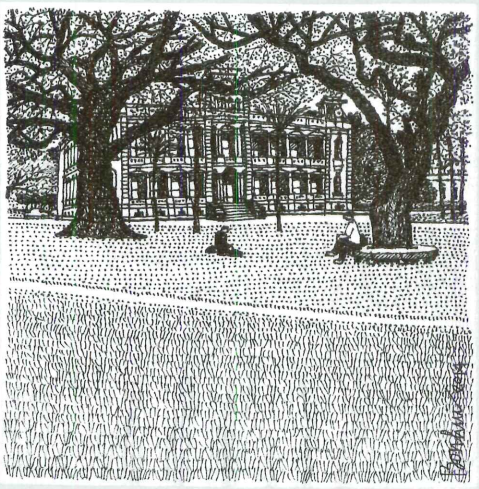
JOHN D. HICKS, ARCHITECT, ARCHITECTS AMERICA, MUNCIE, IN **LE CORBUSIER IN INDIA**

RUNNERS-UP, NON-REGISTERED

VIVIEN FERRARI, DESIGNER, AUFGANG ARCHITECTS, SUFFERN, NY **LOWER MANHATTAN SKYLINE**

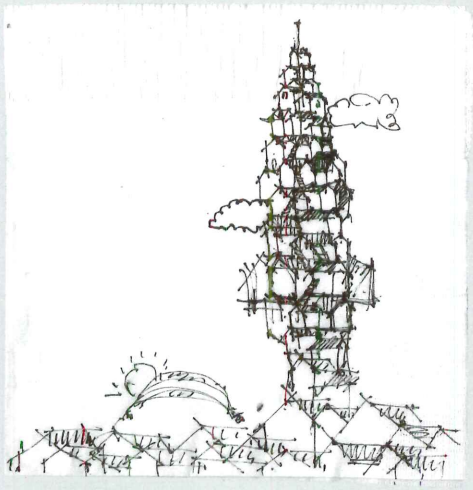


DIANA GRIGORYAN, ARCHITECTURAL ILLUSTRATOR, EARL SWENSSON ASSOCIATES, NASHVILLE
ATLANTA HIGH-RISES



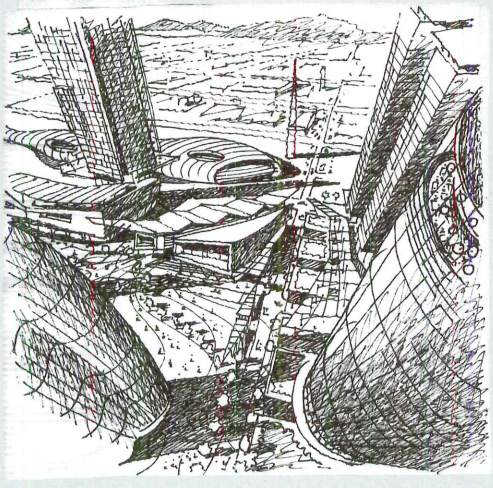
BONHUI UY, DESIGNER, BONHUI STUDIO, HONOLULU
IOLANI PALACE, HONOLULU

BEST FIRM: RTKL ASSOCIATES, L.A.



SHUANG ZHANG, DESIGNER (RTKL) **BABEL**

AMAR SHAH, SENIOR DESIGNER (RTKL)
THE PIONEERS OF MODERNISM



DANIEL SAUERBREY, ASSOCIATE VICE PRESIDENT (RTKL)
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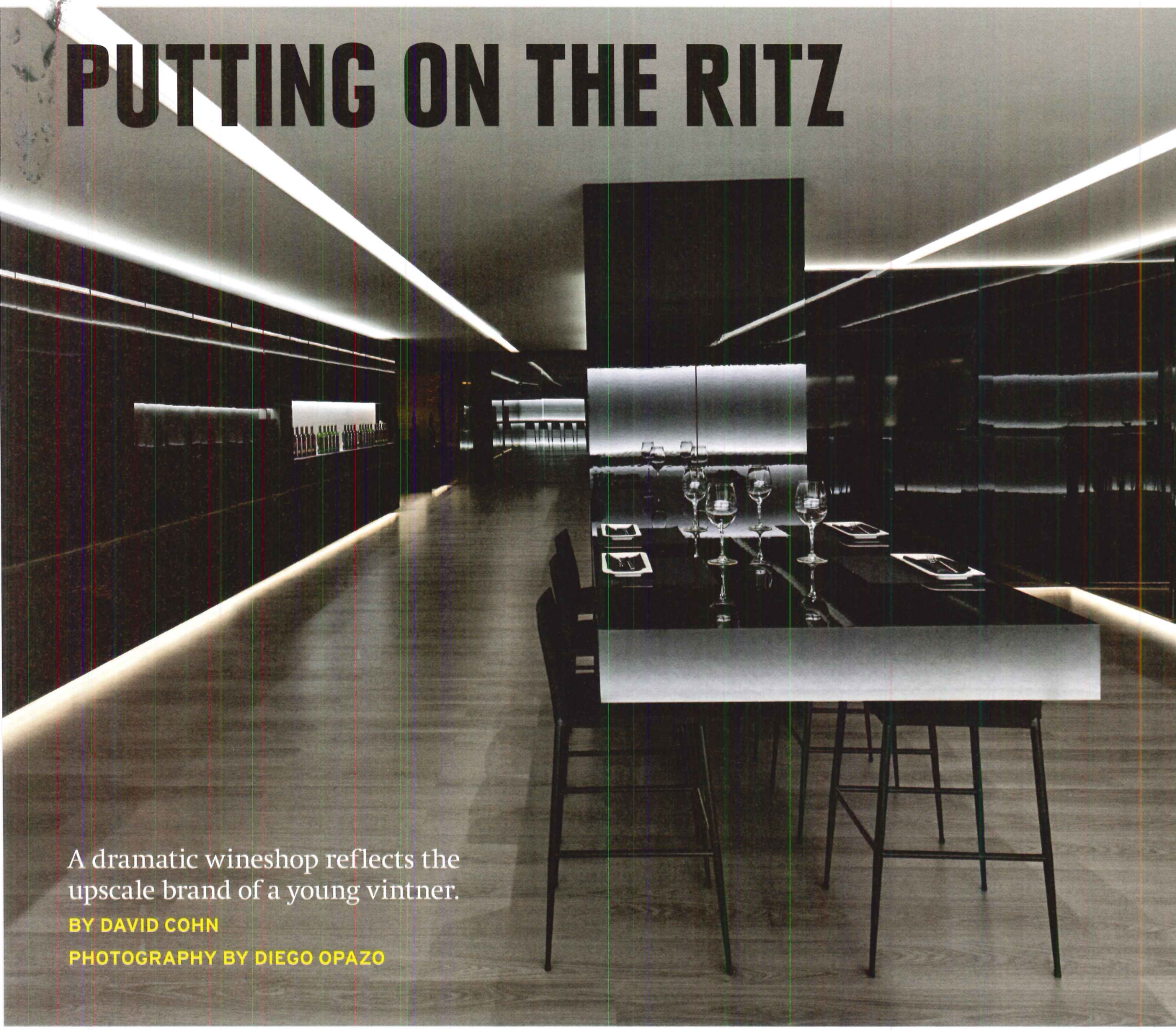
STATE MUSEUM OF ARCHAEOLOGY, CHEMNITZ, GERMANY
KAYANOYA, TOKYO

VINOTECA VEGAMAR SELECCIÓN BY FRAN SILVESTRE ARQUITECTOS

Vinoteca Vegamar Selección | Valencia, Spain | Fran Silvestre Arquitectos

PUTTING ON THE RITZ



A dramatic wineshop reflects the upscale brand of a young vintner.

BY DAVID COHN

PHOTOGRAPHY BY DIEGO OPAZO

A striking mix of glossy black walls and white light, the Vegamar Selección, a wine boutique on an exclusive shopping street in Valencia, Spain, was given the black-tie treatment by architect Fran Silvestre and interior designer Andrés Alfaro Hofmann to meet the client's ambition to achieve an image of sophistication and quality.

The 15-year-old Vegamar winery, located 40 miles inland from Valencia, was looking for greater visibility in the city to showcase a new line of select wines. Instead of a conventional wine store, they wanted a place to bring clients and offer wine tastings, sell wine and other products, and serve light gourmet tapas at lunch hour. Situated cheek-to-cheek with luxury jewelry and fashion shops, Vegamar Selección takes a similarly high-end approach to sales, with personalized service and only a few sample bottles on display.

The design team sought to increase the sense of scale in the 1,300-square-foot space by exaggerating the depth of the long, narrow display area at the front and drawing the visitor's eye toward a wider space in the back, which is dedicated to wine tastings, business meetings, and tapas. To this end, they lined the sidewalls flanking the street entrance with a continuous run of shiny black cabinetry sliced by light-gray display counters. These are outlined with recessed strips of LED lighting that illuminate the edges of the floor

LIGHT LINE
Reflective cabinets contrast with brilliant indirect light in this wine boutique. From the entrance, a backlit rear wall draws the eye beyond a long, narrow display area (right). Inside, a tasting table cantilevers off a support column (above).

and ceiling, as well as the countertops. A central streak of linear fluorescents, built into a trench along the length of the ceiling, accentuates the depth.

The cabinets are made of MDF panels with a polished lacquer finish. (The designers originally sought black glass, but the budget of just $100 per square foot, including mechanical work, did not allow it.) According to the architects, the dark, radiant surface multiplies reflections, "dissolving the limits of the store and making reference to the color of the wines on display." In contrast, the wood-look laminate flooring and laminate counter inserts are a pale, silvery gray and the ceiling is white.

The drama of converging light lines finds a point of focus at the rear wall, where a plane of translucent Plexiglas, backlit by fluorescent tubes, sends dazzling reflections back through the space and silhouettes the attached tasting bar: a chorus line of stools pulled up to a floating counter made of the same translucent acrylic-glass material. A strip of mirror at the top of the wall, directly above the illuminated panel, reflects the ceiling's bolt of light, allowing it to continue toward infinity.

On one side of this rear area, access to restrooms and a small kitchen with a serving counter are hidden almost seamlessly in the black wall. Opposite, a freestanding structural column with a table cantilevered off one side provides a more generous area for tastings, and for meetings. Refrigerated display cases for Spanish ham and other specialties, and a projection screen for promotional videos about the winery, are located beyond the table.

Silvestre and Alfaro Hofmann coordinated their work with the graphic designers Nacho Lavernia and Alberto Cienfuegos, who developed the company's product packaging, using similarly dark, minimalist tones, so that even the wine bottles take a back seat to the spatial experience. A tiny cash register area at the front of the shop includes pullout drawers custom-sized to fit special shopping bags designed by Lavernia & Cienfuegos.

Vegamar Selección is the inverse of Silvestre's Atrium House (RECORD Houses, April 2013, page 84), playing off the cavelike darkness of a commercial interior rather than the brilliant sunshine of a Mediterranean patio. However, both projects showcase Silvestre's interest in subsuming functional details such as doors and countertops into an all-embracing abstract formal play. As in his house designs (always realized with Alfaro Hofmann as a consultant for interiors and furnishings), the prominence Silvestre gives to the visual impact of seemingly airbrushed, polished surfaces over other qualities such as texture or spatial richness, reflect the aspirations of his clients, sharing with them a particular idea of glamour. In the case of Vegamar, Silvestre notes that the firm was previously known for a table wine, sold mainly to local restaurants, and their new outlet represents a bid to attract a more demanding clientele.

Like the creators of the Fred Astaire and Ginger Rogers movies of the 1930s, with their glossy Art Deco sets filmed in black-and-white, Silvestre and Alfaro Hofmann have given Vegamar that touch of class—an architectural version of "Top Hat, White Tie and Tails." ■

TROMPE L'OEIL Black and white surfaces, reflecting and radiating light, dress up the store like formal wear. The rear of the shop was designed for wine tasting, tapas, and meetings, with a backlit Plexiglas wall and two seating areas (left). Converging lines of light exaggerate the room's depth, while dark, minimalist bottles and packaging coordinate with the design (bottom).

1 ENTRANCE
2 WINDOW DISPLAY
3 WINE-TASTING SPACE
4 KITCHEN
5 BATHROOM
6 OFFICE

FLOOR PLAN

credits

ARCHITECT: Fran Silvestre Arquitectos – Fran Silvestre, principal in charge; Jordi Martínez, project architect; Ángel Fito, Adrián Mora, Fran Ayala, Maria Masià, design team

INTERIOR DESIGNER: Alfaro Hoffman

CONSULTANTS: Lavernia & Cienfuegos (graphic design)

GENERAL CONTRACTOR: Studio2

CLIENT/OWNER: Bodegas Vegamar SL

SIZE: 1,300 square feet

PROJECT COST: $133,000

COMPLETION DATE: September 2014

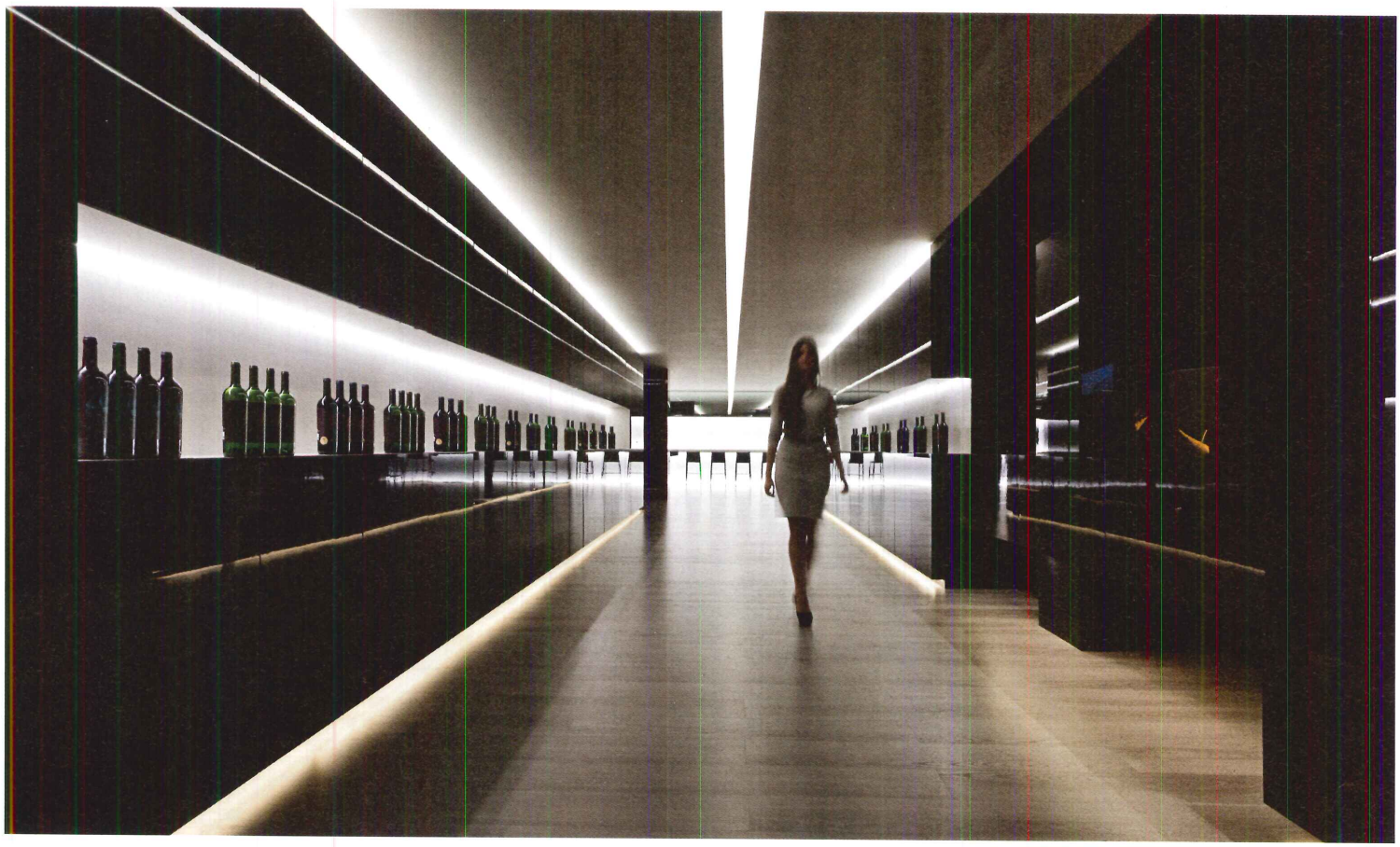
SOURCES

EXTERIOR CLADDING: Polyrey

ACRYLIC GLASS: Evonik Röhm (back wall and tasting counter)

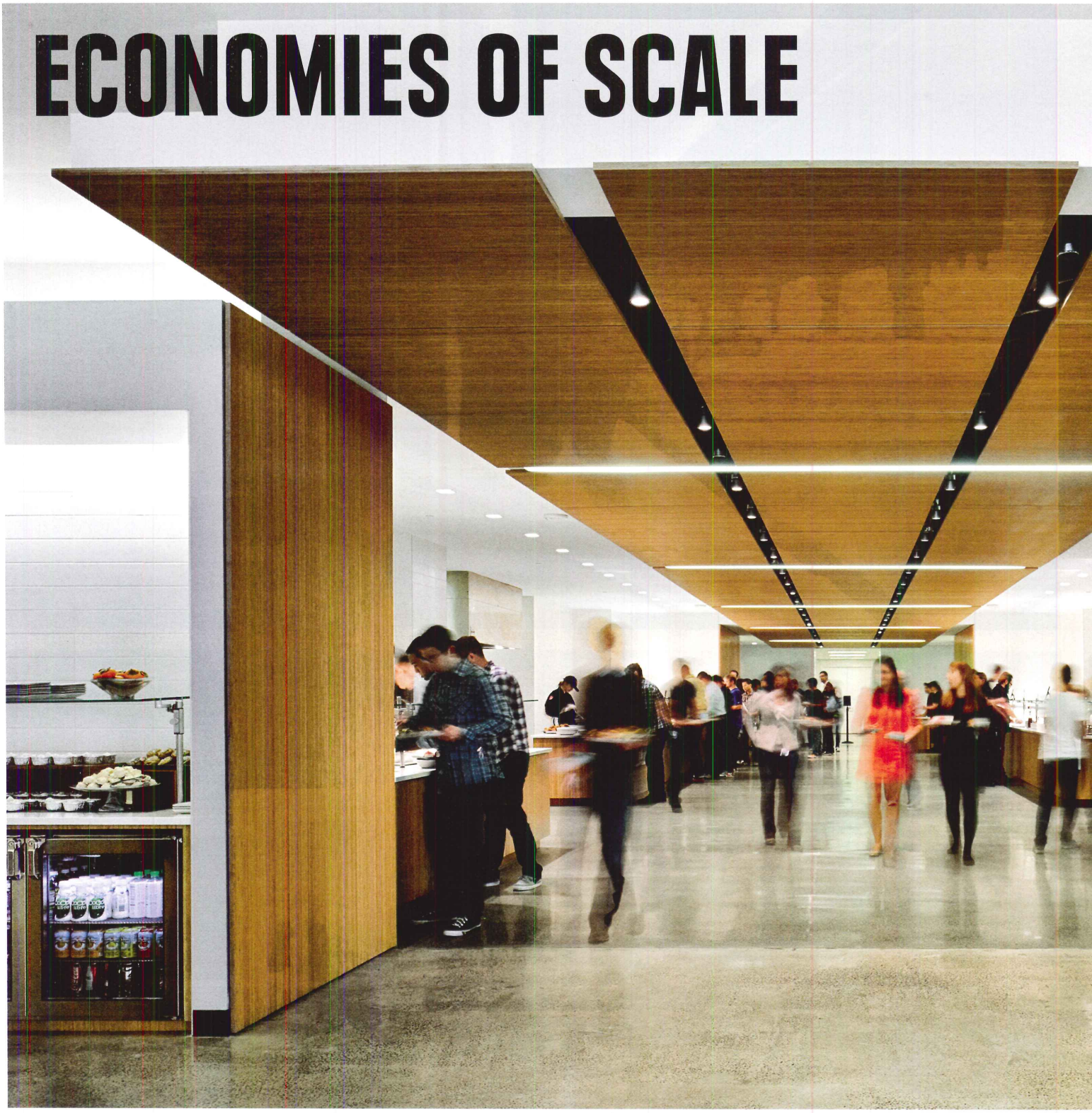
FLOORING: Haro (wood-look laminate); Saloni (exterior/bathroom tile)

FURNISHINGS: Ondarreta Contract (stools)



Square, Inc. Headquarters | San Francisco | Bohlin Cywinski Jackson

ECONOMIES OF SCALE



A booming startup grows with style yet retains the collaborative environment that has been key to its success.

BY LYDIA LEE

PHOTOGRAPHY BY MATTHEW MILLMAN

Many San Francisco startups inhabit industrial warehouse spaces: the lofty, open structures readily adapt to become modern workshops for artisanal software development. Founded in 2009, the mobile-payments company Square, Inc., which makes credit- and debit-card readers for tablets and smart phones, would have been happy to consider a brick-and-timber warehouse for its headquarters in 2012. But by that time, with a staff that had rapidly grown to 300, there were very few buildings available in the city large enough to accommodate it. So when four levels of a 22-story downtown office building became available, the company signed a lease.

The primary space, the sixth floor of the structure's podium, which spans a whole city block, had been a data center for Bank of America. It has a generous floor plate but, at the time, it was windowless, and had just 9 feet between its dropped ceiling and raised floor. "It was extremely grim—a dungeon of mechanical stuff," says architect Greg Mottola, design principal at the Bohlin Cywinski Jackson (BCJ) San Francisco office. "The client definitely took a leap of faith." In addition to the sixth floor, the company took over an existing ninth-floor cafeteria and two upper floors in the building's narrow 16-story tower—for a total of more than 173,000 square feet.

Square founder, Jack Dorsey, selected BCJ to help his company make the leap after touring one of the firm's residential projects, the Creekside House in Woodside, California. The home's contemporary combination of wood and glass helped inform his vision of a more refined work environment.

The company's previous office was self-consciously "start-up" in its design: groovy midcentury-modern furnishings and pops of color. For the new offices, the architects established a neutral palette to complement Square's crisp, white branding: light wood finishes, soft gray textiles, and classic furnishings such as Eames Management chairs. "The concept was that the vibrancy and diversity would come from the employees, rather than the surroundings," says Mottola.

To turn the large sixth floor into a hospitable environment for people instead of computers, Mottola and his team worked with the landlord to add windows on three sides, opening the building to daylight. The existing raised floor turned out to be an asset, allowing all the wiring to be hidden underfoot. But they removed the dropped ceilings to increase the ceiling height in most areas to 13½ feet. Then they sprayed the newly exposed ceiling with cellular insulation for acoustic control and painted it white.

The voluminous 100,000-square-foot main office floor feels surprisingly intimate thanks to precisely detailed gathering areas, including an in-house coffee bar, wool-upholstered nooks, glass-walled meeting rooms, and a library with built-ins made of local eucalyptus. The architects organized the open floor plan around a long central boulevard, which spans the 32-foot width of a whole bay, so that the space is immediately legible from the reception

OFFICE REBOOT
A 20,000-square-foot existing cafeteria was updated with bamboo ceiling and wall surfaces, white subway-tile backsplashes, engineered-stone countertops, and additional amenities like a smoothie bar (opposite). The 1978 precast concrete building (above) is in the mid-Market area of downtown San Francisco, where a revitalization began when Twitter moved there in 2012.

lobby. The boulevard is delineated by carpeting in a lighter shade of gray than the rest of the floor, and flanked by gray columns with softly rounded corners (a nod to the shape of the Square card reader). Overhead, a line of bright LED linear fixtures illuminates the path, while low-level indirect lighting addresses the needs of programmers working nearby.

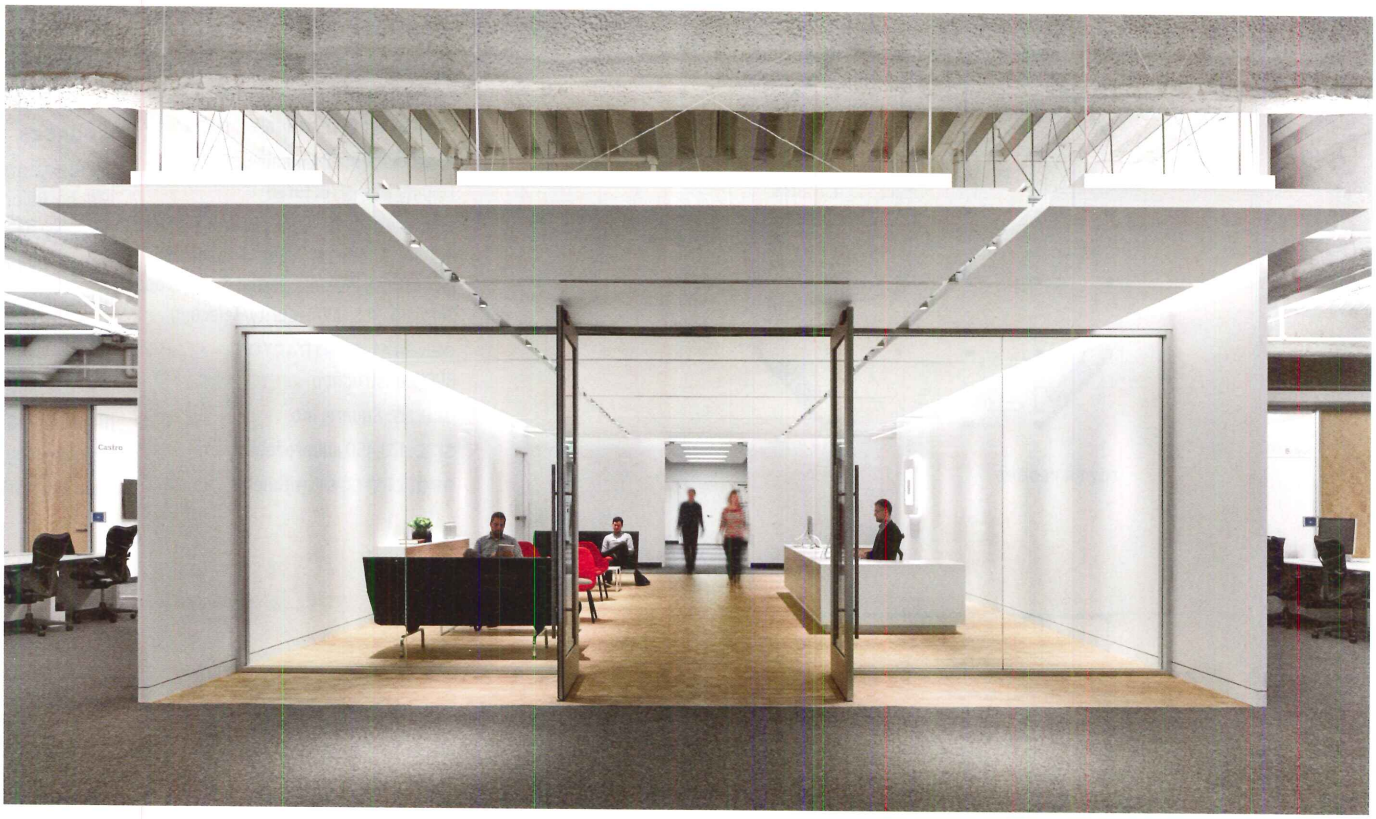
This interior thoroughfare is bracketed by a conference room at one end and library at the other. In between, a series of upholstered booths, stand-up tables, and sofas are on hand to facilitate quick collaborations. To encourage employees to move about, the designers provided an equal number of informal seating options and workstations (each person is allocated a relatively modest 4 feet). In order to promote an egalitarian environment, none of the workstations are located next to the windows. Instead, a mix of stand-up tables and soft seating are arrayed along the perimeter.

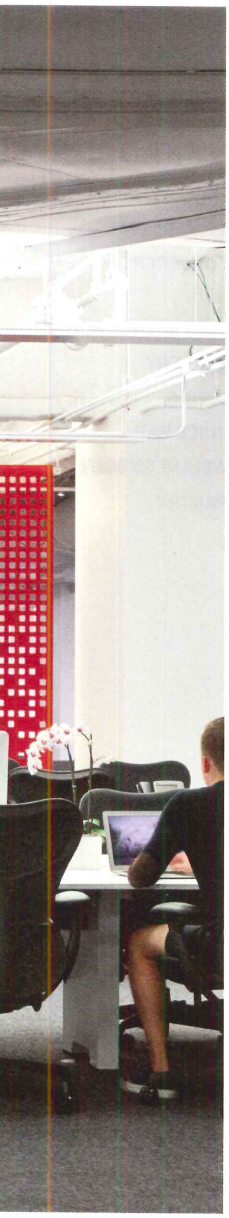
The ultimate tech-startup amenity, a coffee bar, brings the conviviality of a café to the heart of the boulevard. To differentiate it from the workplace, the architects surfaced the popular hangout with concrete and whitewashed end-grain hemlock and eucalyptus. An Italian espresso machine, a Japanese cold-drip system, and a row of single-cup setups offer top coffee-culture options as the baristas play music (on vinyl). Employees pay for gourmet brews via a Square reader at the register (to help them understand the customer experience), but regular coffee is free and plentiful.

Leveraging the firm's work for Apple's retail stores, BCJ designed a version of that establishment's familiar "Genius Bar" for Square's IT help desk. The open bar, in whitewashed eucalyptus with a wraparound solid surface counter, allows employees—now numbering 850—to get assistance with technology problems in a user-friendly setting.

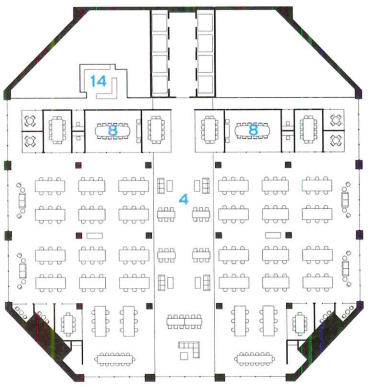
Designed to be more than an elegant upgrade, the new workspace, says Mottola, "underscores the company's goal of making commerce easy for its customers." ■

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





TOWN SQUARE
Square, Inc., project teams are grouped into neighborhoods, each with a glass-walled meeting room (left). A stretched-textile ceiling hovers over the reception area (above), creating a sense of compression before one enters the main workplace. Once a week, the cafeteria is reconfigured into an all-hands meeting space (right), where lighting in its extruded-aluminum ceiling is spaced to create a sense of movement.



TOWER FLOORS

credits

ARCHITECT: Bohlin Cywinski Jackson – Gregory Mottola, design principal; Christopher Orsega, project manager

ENGINEERS: CB Engineers (m/e/p); Tipping Mar (structural)

CONSULTANTS: Banks Ramos (lighting design); Charles M. Salter & Associates (acoustics); Presidio Design Group (Food Service); RLS (AV/Security/Telecom)

GENERAL CONTRACTOR: BCCI Construction

CLIENT: Square, Inc.

SIZE: 173,450 square feet

PROJECT COST: withheld

COMPLETION DATE: September 2013

SOURCES

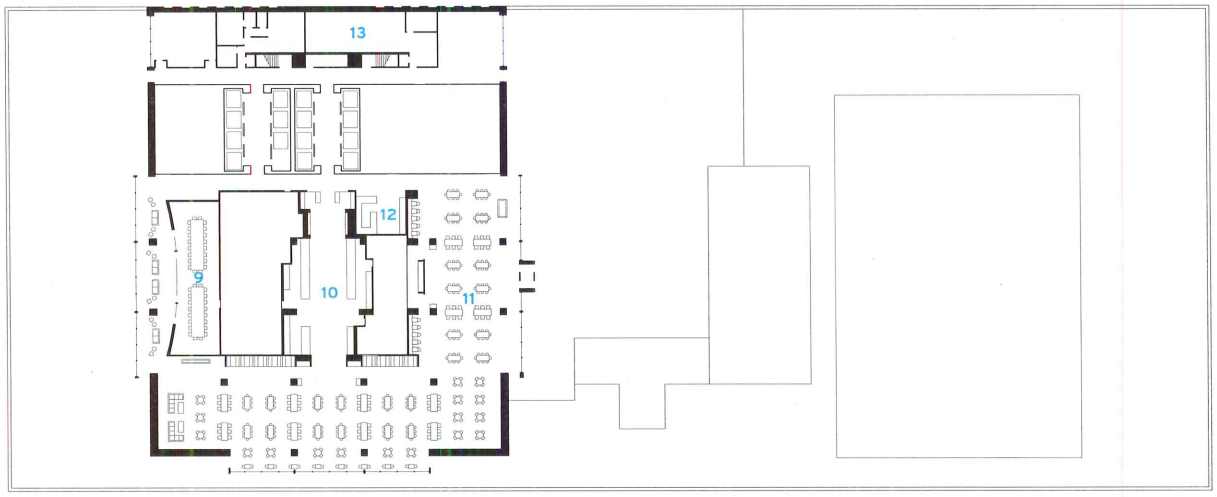
CEILING: Armstrong; Eurospan; 9Wood; Rulon

FLOORING: Interface; Armstrong; Artigo; Tate Access Floors

GLAZING: Pilkington; Wilson Partitions

FURNISHINGS: Steelcase; Northwood; Herman Miller; Mash Studios; Ohio Design; Tolix; Knoll; Design Within Reach; HighTower; Geiger International

SURFACING: Corian; Caesarstone; Concreteworks; Plyboo, Pionite, Daltile



NINTH FLOOR

1 RECEPTION/ENTRY
2 BOARDROOM
3 GALLERY
4 BOULEVARD
5 COFFEE BAR
6 LIBRARY
7 TEAM ROOM
8 CONFERENCE-ROOM BAR
9 CONFERENCE ROOM
10 SERVERY
11 DINING
12 JUICE BAR
13 WELLNESS SUITE
14 PANTRY

SIXTH FLOOR

0 50 FT.
15 M.

WORKERS COMP
Carved out of the open floor plan, with an oak-slat ceiling and eucalyptus built-ins, the company library (left) is a quiet, homey space for repose. "Cabanas" made of bamboo veneer and wool (below) are very popular with the staff: open to the boulevard and enclosed with glass on one side, they provide acoustic privacy within a public setting.

The Jane | Antwerp, Belgium | Piet Boon

RELIGIOUS EXPERIENCE

A Dutch design team transforms a former church into a sybaritic sanctuary of dining for a Michelin-star chef.

BY CHRIS FOGES

Lunch at The Jane in Antwerp, Belgium, is not so much a meal as a four-hour performance, choreographed to the smallest detail and designed to engage every sense. An exquisitely presented menu, served in bite-sized portions, delights with magical combinations of tastes, textures, and temperatures. Its elegance, weirdness, and precision is echoed in the design of the restaurant, created within a derelict church by the Dutch studio Piet Boon.

Set on the grounds of a 19th-century military hospital recently converted into apartments, the church gives little outward sign of its transformation save for a discreet neon logo and the muted burble of music emanating from inside. Behind stout wooden doors is the former narthex, where a heavy reception desk carved from cracked, blackened timber is flanked by two tall openings leading to the 36-by-66-foot dining room.

As guests enter the light-filled nave, all eyes are drawn irresistibly upward to the barrel-vaulted ceiling, proudly displaying the scars of decay and repair, and to a spectacular chandelier, 30 feet wide and 40 feet long. Bristling with 150 steel rods tipped with mouth-blown glass lamps, it hangs in the space like a giant luminescent sea urchin.

With its lowest branches just 9 feet from the floor, the chandelier celebrates the room's monumental scale while creating an intimate atmosphere underneath, where the seating arrangement retains a vestigial sense of the church's axial plan. Tables line the long walls and are double-banked down the center of the room, forming two aisles. Furniture in the middle of the space is slightly lower to the ground, ensuring good sightlines for people-watching.

The room's focus, however, is on the kitchen, prominently positioned in the former apse, where chefs stand at the pass-through like priests at the altar, sealed off behind a screen of steel-framed glazing. Silent sliding doors admit a constant relay of blue-aproned waiters from a service station at the opposite end of the room, where a matching steel and glass box has been inserted beneath the mezzanine.

Isolating the kitchen contains cooking smells and "the screams of the chef," says lead designer Rienk Wiersma, but the enclosure also alludes to the vitrines in which churches display holy relics. More overt references to the building's history—medical, military, and religious—are found in the 15 new stained-glass windows. A panoply of vivid cartoons depicts candy-colored cupcakes and ice-cream cones alongside rosaries, the crucifixion, and icons of sickness and war: poison bottles, bandages, and bombs.

Those who look closely may also register the presence of skulls, butterflies, bubbles, and other images used in *vanitas* paintings to symbolize the transience of earthly life. Another memento mori appears in the form of a neon skull by artist Kendell Geers that hangs high in the apse. Reminders of mortality might seem incongruous in a place devoted to pleasure, but the works fit comfortably both with the dilapidated vault overhead and with chef-proprietor Sergio Herman's brief for a sensual, chic restaurant "with a hint of darkness," where "fine dining meets rock 'n' roll."

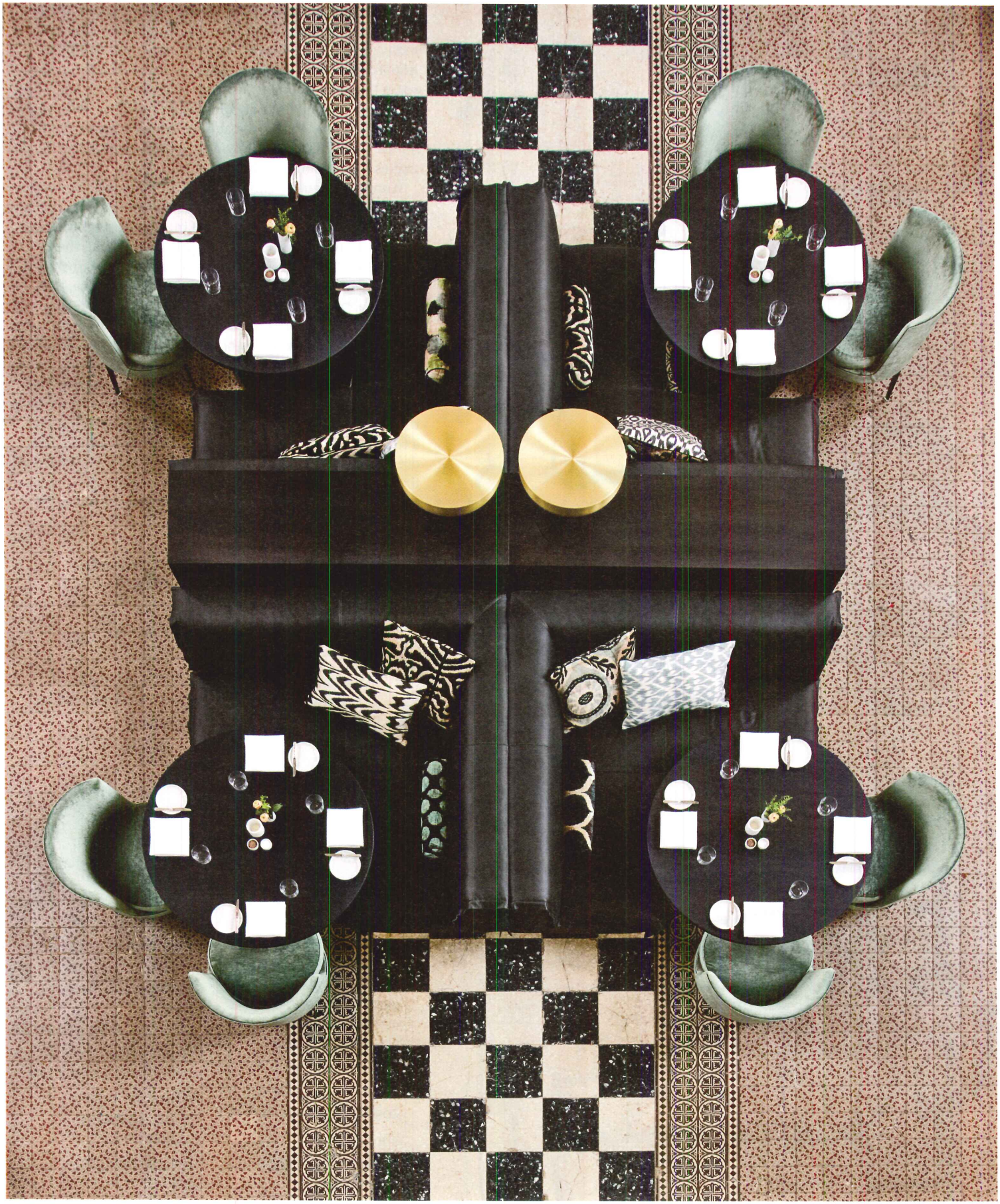
This concept is manifested more literally in the tattoo designs laser-etched into

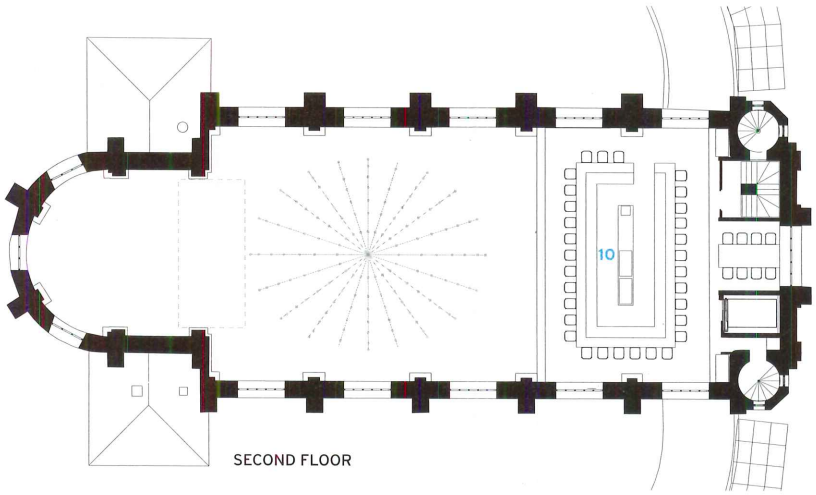
DIVINE INTERVENTION The 19th-century church (above) appears unchanged. Though the interior suffered significant deterioration during a 25-year vacancy, the designers opted to preserve its existing condition where possible (opposite). Original floor tiles were retained, and the 38-foot-high plaster ceiling was repaired and sealed but left unpainted. Damaged moldings were stabilized and painted white like the walls.

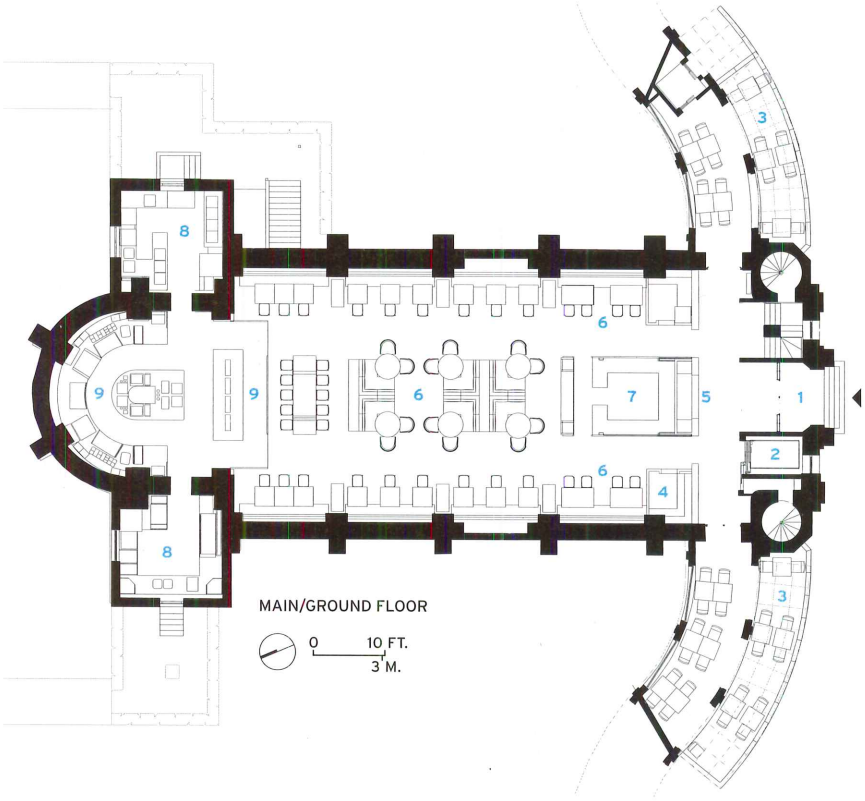
GOD IS IN THE DETAILS
New windows were produced by sintering ceramic pigments into the surface of 500 glass panes (left). The radiators are beneath the leather banquettes (designed by Piet Boon), and fabric acoustic panels line the walls above. Spine chairs by Space Copenhagen are at the perimeter tables; green Feel Good chairs by Antonio Citterio fill out the circular tables (opposite).

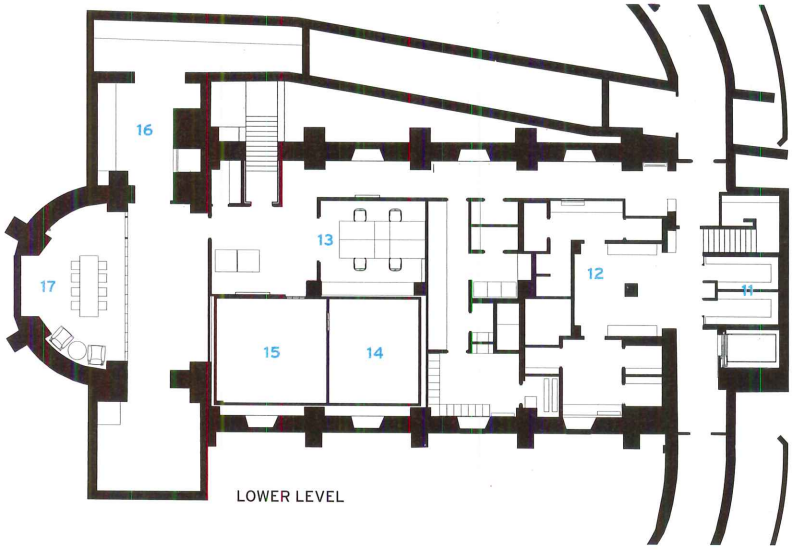
steel kitchen equipment. Such attention to material detail is evident throughout, and almost everything the diner sees is custom-made. Piet Boon adopted a curatorial role, working with other designers and manufacturers on products ranging from tableware to textiles, though sometimes, as with window designer Studio Job, maintaining a certain distance, because, says Boon's Wiersma, "the quality of the result rests on how much freedom you give." The lighting plan, including the chandelier centerpiece, was designed by Beirut-based .PSLAB. "Of course, we could have come up with our own design," says Wiersma, "but they are specialists, and we love their signature. They have their own craftsmen and therefore can create extraordinary custom-made pieces."

Bringing together works by numerous hands in a building with its own powerful presence might have produced a discordant mess, but coherence is lent by a controlled palette of materials that will age well: steel, dark-stained oak, and leather. A pale sage green is used sparingly on loose furniture and quilted acoustic panels, while the pilasters and plaster moldings on the walls of the nave are unified by a coat of white. The apse, painted battleship gray, recedes into the background.









A maximum capacity of only 80 covers also contributes to the room's relaxed feel. "It was never the idea to get in as many people as we could," says Wiersma. "Service is an important part of the experience, so we tried to keep the space as open as possible to allow easy access and create the right ambience." Places are also found for much of the necessary paraphernalia of a restaurant. Wooden cutlery chests double as low-level space dividers, and the sommelier's bar makes a focal point in the center.

Another 30 guests can be seated around a marble-topped bar on the enlarged mezzanine. There, the material themes of the dining room are developed in dark parquet flooring and black steel lighting tracks—which are among the "ridiculous" number and variety of light fixtures installed to give uniform illumination throughout the space, says Wiersma. "At the moment, a lot of restaurants are dark, but here the ambition was to be light and bright." A warm color temperature, enhanced by brass shades on the chalice-like table lamps and cylindrical ceiling lights, offsets the "cooler" elements of the interior, both at night and during the day.

It is this subtlety of detail that diners begin to notice once the initial impact of the space has faded. Piet Boon has created a room that is calm but sufficiently rich to sustain interest over a long sitting. Like the diverse series of flower-bedecked foams, crisp textures, and emulsions that make up The Jane's tasting menu, the parts are good but the whole is great. ■

1 ENTRANCE
2 ELEVATOR
3 COVERED TERRACE
4 COAT CHECK
5 RECEPTION
6 DINING ROOM
7 SERVICE/CASHIER
8 SCULLERY
9 KITCHEN
10 UPPER ROOM BAR/ KITCHEN
11 WINE CELLAR
12 RESTROOMS
13 OFFICE
14 FROZEN STORAGE
15 REFRIGERATED STORAGE
16 STORAGE
17 CHEF'S ROOM

credits

ARCHITECT: Piet Boon – Piet Boon, principal; Rienk Wiersma, Roland Kokkelar, design team

CONSULTANTS: .PSLAB (lighting); Bowers & Wilkens, Buzzispace Accoustics (acoustical)

CLIENT/OWNER: Chefs Sergio Herman and Nick Bril

SIZE: 4,350 square feet (restaurant and bar)

PROJECT COST: withheld

COMPLETION DATE: March 2014

SOURCES

WINDOWS: Studio Job (stained glass)

DOORS: Bod'or

FLOORING: Piet Boon Flooring by Solid Floor (upper bar)

WALLS: Buzzispace (acoustical material)

HARDWARE: Piet Boon by Formani

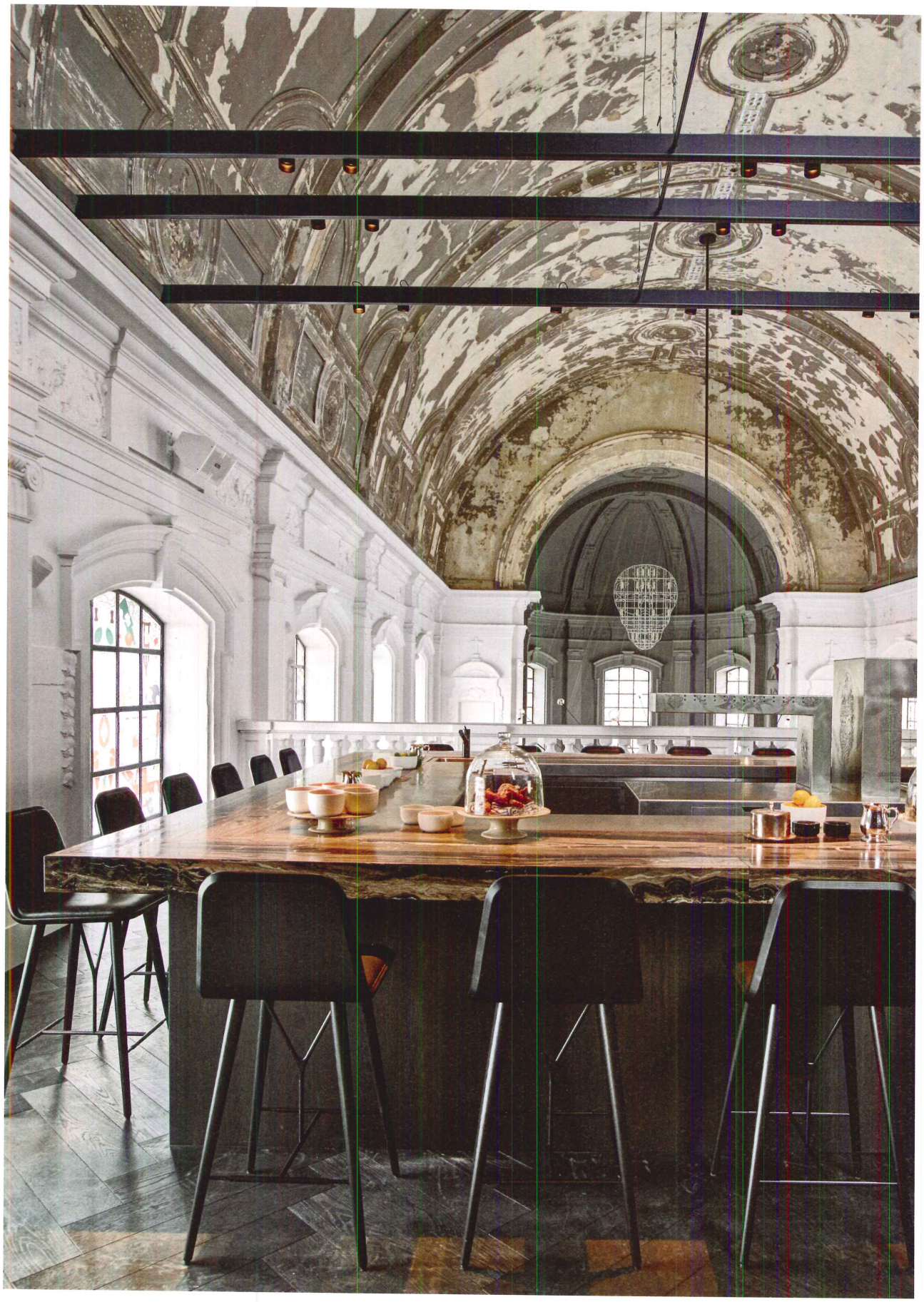
MARBLE: Hullebusch (upper bar)

FURNISHINGS: Fredericia (black chairs); Flexform (green chairs)

KITCHEN: Maes Inox

AUDIO EQUIPMENT: Bowers & Wilkins

TABLEWARE: Piet Boon Tableware by Serax



UPSTAIRS, DOWNSTAIRS
Five dumbwaiters and a passenger elevator were discreetly inserted into the existing structure, connecting the ground floor to the mezzanine—where the floor area was doubled to accommodate a dining bar (left) that overlooks .PSLAB's 1,800-pound chandelier—and to the basement, where a prep kitchen sits near a private dining room, provisions, laundry and staff rooms, and restrooms.

MIT Beaver Works | Cambridge, Massachusetts | Merge Architects

THE LAB THAT CAME IN FROM THE COLD

Run by a university and a laboratory with a legacy of Cold War research, a program's new home is both inviting and secure.

BY CLIFFORD A. PEARSON

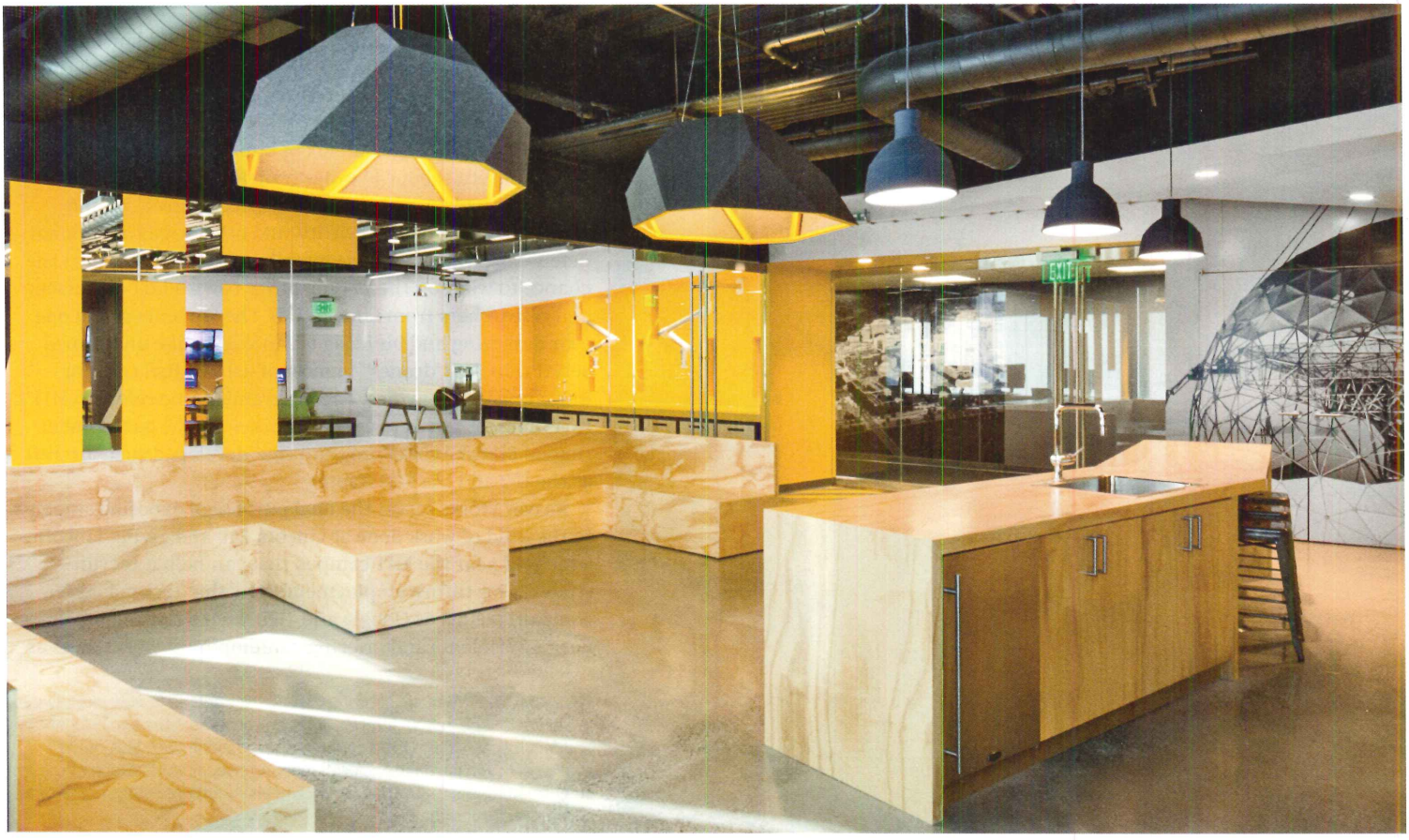
The offspring of an academic institution and a laboratory that develops systems for national security, the Massachusetts Institute of Technology Beaver Works straddles two different worlds: one that prizes transparency and another that requires locked doors. The program, which began five years ago using existing classrooms and labs at MIT, moved into its first proper home at the end of 2013. Designed by Boston-based Merge Architects, the new 4,900-square-foot space in an office building just off the MIT campus serves as an academic outpost for a laboratory shrouded in secrecy and a place where college seniors can get a taste of defense-oriented research and development.

Beaver Works is a joint program of MIT and Lincoln Laboratory, which was established in 1951 by MIT and the U.S. Air Force to build the nation's first air-defense system. Launched in the midst of the Cold War, Lincoln Lab now occupies a sprawling complex of buildings in Lexington, Massachusetts, about 10 miles from MIT's Cambridge campus, and develops technology for space control, air and missile defense, cyber security, and other areas of national defense. Beaver Works, meanwhile, offers MIT students the chance to work on thesis-type projects with MIT professors and researchers from Lincoln Lab. The students spend one year designing and building technologies like unmanned aerial vehicles ("drones" to most of us) and fuel cells for unmanned submarines. The program's name refers to MIT's furry mascot and echoes the moniker for the government-funded Skunk Works program that developed such aircraft as the U-2 and the F-22 Raptor.

Beaver Works serves the dual purpose of exposing students to the kind of work done at Lincoln Lab and giving Lincoln a toehold near the MIT campus that can help it recruit students for future employment. Now that technology companies such as Google and Twitter are chasing top engineering students and offering contemporary workspaces as

WORK MODE The main laboratory workspace seems to flow directly into the entry lounge, but an interior glass wall separates the two. Students and faculty can sit at a fixed counter running along two sides of the space, relax in a partially enclosed meeting pod, or work at one of the steel-frame desks that can move on wheels. Numbered storage units can also move around the room.


MIT | BEAVER WOR


EXIT

part of the deal, Lincoln Lab realized it needed to compete for talent in a new way. So Beaver Works breaks from the mold of both academic and research facilities, neither of which exerts much sex appeal for recent graduates. Robert Shin, the director of Beaver Works and the head of the Intelligence, Surveillance and Reconnaissance and Tactical Systems Division at Lincoln Lab, knew from the start that design would be an important aspect of the project. "It had to be a place where people wanted to be," he says.

Shin took a risk by hiring Merge, a young firm headed by Elizabeth Whittaker that had designed restaurants, bars, and residences aimed mostly at professionals in their 20s and 30s. The creative tension between Whittaker's contemporary aesthetic and Beaver Works' academic roots generated an intriguing design. "We wanted it to have a garage-like feeling," says Shin, but Whittaker made it more refined, with sharp graphics, clean lines, and sleek steel-framed tables and work surfaces. At the same time, Whittaker's interest in fabrication dovetailed nicely with Beaver Works' emphasis on learning by making.

"In our work, we try to test out new ways of putting things together," says Whittaker. Custom fabrication and unusual applications of common elements are often key strategies. For example, she used woven cotton straps to define partitions in a restaurant and created a wall made of 40,000 wooden dowels for a loft. For Beaver Works, she designed built-in seating made of radiata pine plywood, a system of mobile storage carts, and a teaching area that can be divided into two classrooms with a movable partition. Tables and chairs sit on wheels, so they can move too.

Shin had originally figured he would need 10,000 square feet for the project. But the place he ended up renting—just part of a floor in a tech office building—is half that size, requiring Whittaker to design spaces to accommodate multiple uses or change configuration.

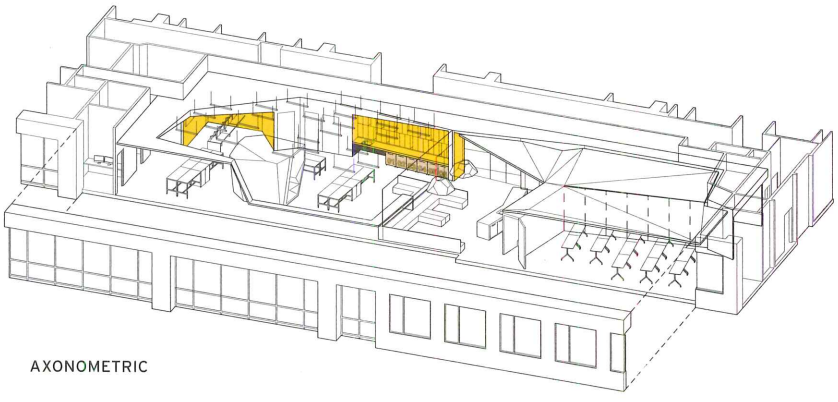
Expressing the dual nature of Beaver Works as a program for transmitting knowledge and exploring national defense technologies, Whittaker's design creates a fine balance between transparency and enclosure. From the generic building corridor that leads to the facility, visitors first see a large photograph of Lincoln Lab's main complex in Lexington and the Beaver Works' logo emblazoned on an angled wall. Vertical slots of glass in the wall provide peeks into the space beyond. Enter through a glass door and you find yourself in a lounge punctuated by a freestanding counter with stools and a sink. Built-in plywood seating topped with cushions and a pair of suspended light fixtures made of wood and felt give the space a welcoming feeling. A wall of glass looks onto a workspace, creating the illusion of openness. Anyone can grab a cup of coffee and sit in the

TESTING GROUND
The angled entry wall grabs attention with its bold contrast of colors and vertical slots that let people look inside (opposite, top). In the lounge (opposite, bottom), the architect kept costs down by designing simple built-in seating made of plywood and fabricating a pair of wood-and-felt lights in her own office. School bus yellow brightens a work counter and serves as a graphic element running throughout the project.

FLOOR PLAN

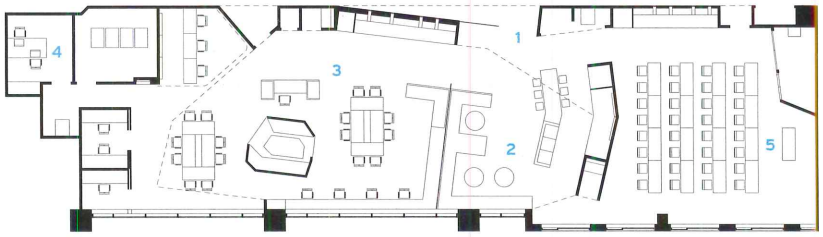
0 30 FT.
10 M.

1 ENTRY
2 LOUNGE
3 RESEARCH LAB
4 CLASSROOM
5 PROTOTYPING SHOP



AXONOMETRIC

1 ENTRY
2 LOUNGE
3 RESEARCH LAB
4 OFFICE
5 CLASSROOM

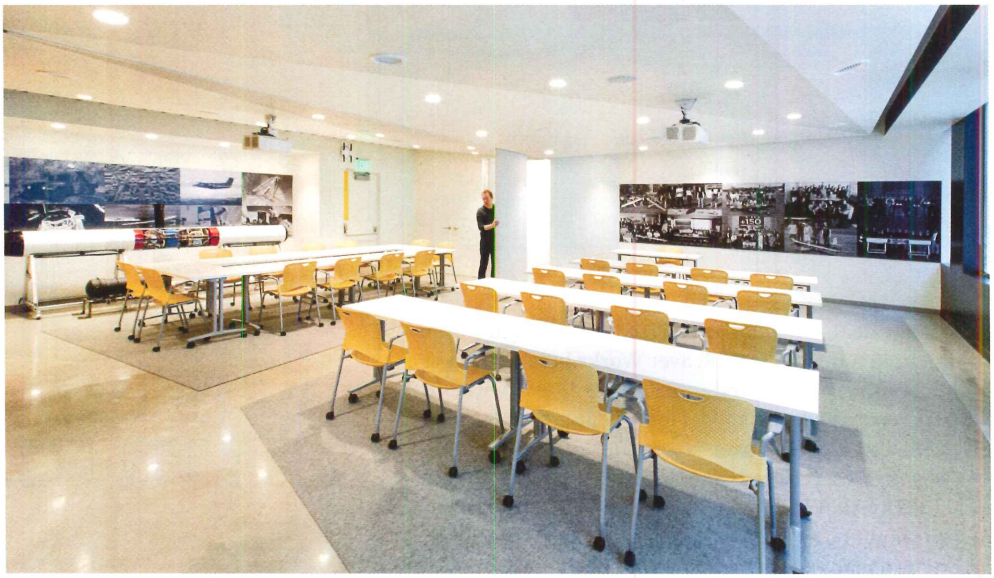


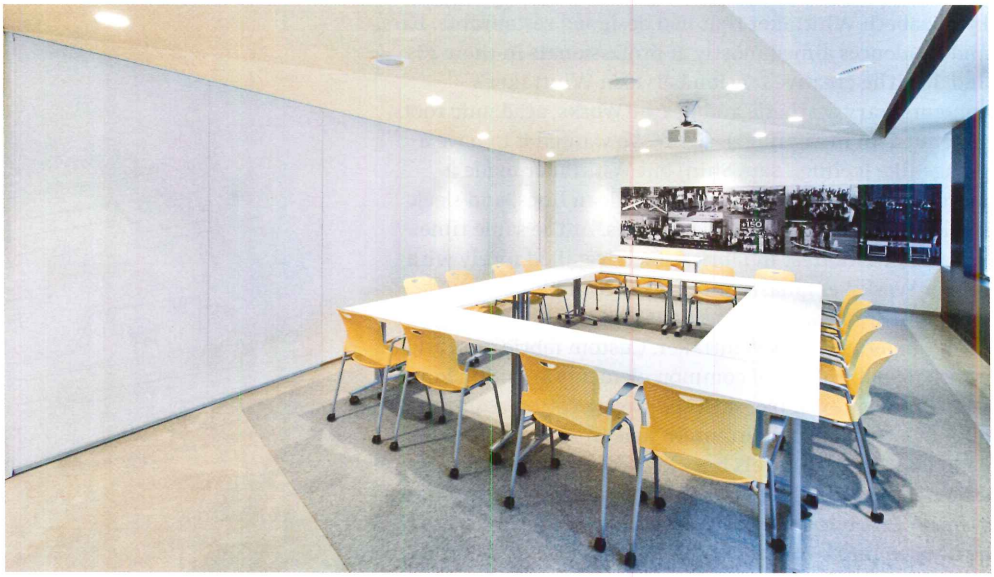
FLOOR PLAN : CONFIGURATION 1

0 16 FT.
5 M.

FLOOR PLAN : CONFIGURATION 2

CHANGING SPACES A movable wall allows the classroom area to work either as one large space or two smaller ones (below and bottom). Tables and chairs mounted on wheels can also move around.





credits

ARCHITECT: Merge Architects – Elizabeth Whittaker, principal; Anne-Sophie Divenyi, project architect; Jamie Pelletier, project manager; Allison Austin, Deb Katz, Parker Lee, Amy Garlock, Amit Oza, project team

ENGINEERS: BLW Engineers (m/e/p); Evan Hankin (structural)

GENERAL CONTRACTOR: J. Calnan and Associates

CLIENT: MIT Lincoln Laboratory Beaver Works

SIZE: 4,900 square feet

CONSTRUCTION COST: withheld

COMPLETION DATE: November 2013

SOURCES

GLASS ENTRY DOORS: K&G Entrances

METAL AND WOOD DOORS: Studco Building Systems

MOVABLE PARTITIONS: Modernfold

LABORATORY TABLETOPS: Trespa

CARPET TILES: Flor

DOWNLIGHTS: Lightolier

TASK LIGHTING: Philips Ledalite

lounge or head to the adjacent classrooms, but only students, faculty, and people with permission can cross over to the laboratory workspace on the other side of the glass partition.

In the lab area, the movable storage carts can dock along one wall or sidle up to raw-steel rolling desks. An angular plywood pod with upholstered benches provides a semi-private place for people to meet, work, or even take a nap (as one student was doing when this writer visited). Color activates and unifies the various parts of the project, with school bus yellow providing a sharp contrast to plywood surfaces, polished-concrete floors, and dark-gray ceilings. A faceted ceiling in the classrooms at one end of the project snakes along an edge of the lounge and into the lab, connecting the three major areas. A separate prototyping shop equipped with 3-D printers and other tools is a short walk down the corridor from the main Beaver Works space.

Many new workplaces created for fast-growing tech companies feel like corporate clichés, generic in their deployment of whimsical colors, beanbag chairs, and bleacher stairs. Beaver Works may have a slightly goofy name and lots of stuff that moves—however, it's anything but a playground. It's a place for learning and making that appears bigger than it really is and more open than security allows. ■

DUAL MISSION
A worker in the laboratory can look directly into the lounge, but not everyone in the lounge can enter the lab. Faculty have discovered that students now show up early for classes to hang out in the lounge. A separate prototyping shop (right) down the hall from the main Beaver Works space offers students the chance to use 3-D printers, laser cutters, and other tools for building their projects.

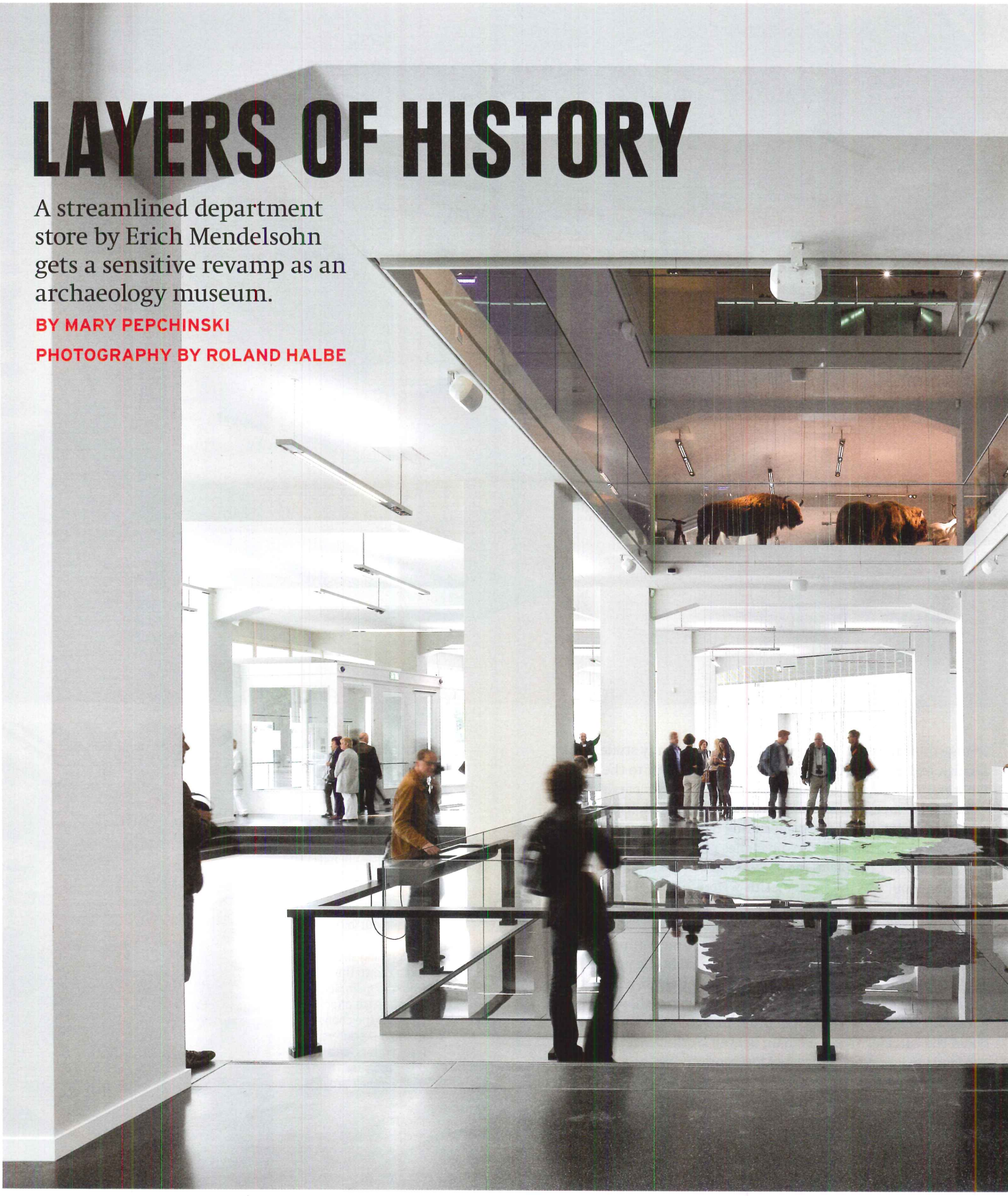
State Museum of Archaeology | Chemnitz, Germany | Auer Weber/Knerer und Lang

LAYERS OF HISTORY

A streamlined department store by Erich Mendelsohn gets a sensitive revamp as an archaeology museum.

BY MARY PEPCHINSKI

PHOTOGRAPHY BY ROLAND HALBE



ON THE GRID
The interior revamp shows off the building's original poured-in-place concrete structure but visually ties the exhibition levels together with a new multistory atrium cut through the floor plates.

Erich Mendelsohn's Schocken Department Store in Chemnitz, completed in 1930, is well known to architects worldwide. Yet encountering the recently renovated early-20th-century landmark will be a revelation, even for those familiar with it. The restored curved facade, with its ribbon windows and limestone spandrels, seems to float above the fully glazed ground floor, forming an arresting backdrop to a busy intersection in this central German city.

Animating this restoration is the store's recent revamp by architecture firms Auer Weber and Knerer und Lang, with exhibition designer Atelier Brückner, to house the State Museum for Archaeology in Chemnitz (SMAC). The adaptation ends a beleaguered history that included the flight of the Jewish owner, Salman Schocken, and seizure by the Nazis in the 1930s, and then, during East German rule, expropriation by the Communist authorities. A final indignity was a postwar facade reconstruction to repair windows and cladding. It jarringly altered the exterior with aluminum frames, reflective bronze glass, and dark stone.

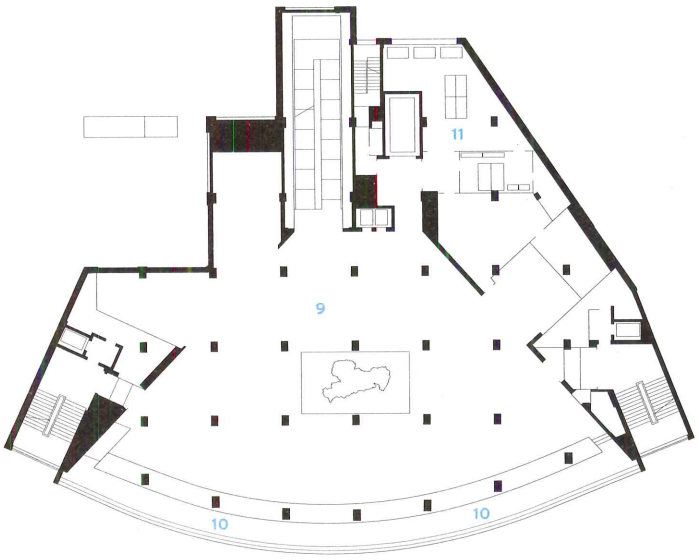
For their recent conversion of the structure, which had operated continuously as a department store until 2001, and had been designated as a state historic monument 20 years earlier, designers developed a twofold strategy: reconstruct Mendelsohn's facade and respectfully reinterpret the interior. They needed to accomplish these goals while contending with constraints such as the building's low floor-to-ceiling heights (the levels above the ground floor are only 10 feet tall) and problems like condensation, stemming from the original facade's early curtain-wall technology.

Working from original documents and details discovered on-site, the project team rebuilt Mendelsohn's exterior. "In many places they had to save money," notes Thomas Knerer, partner of Knerer und Lang. "We tried to re-create that." For example, Schocken had rejected steel windows due to the expense, opting for wood instead. So, for the restoration, the architects chose operable wooden frames painted white on the interior and light brown on the outside. They replaced the dark stone with limestone from the original Bavarian quarry. And on the facade's inside face they preserved important details like polished limestone ledges that step down from the windows. But in order to enhance the assembly's performance, the designers relied on current construction practices, including double-glazing and improved insulation.

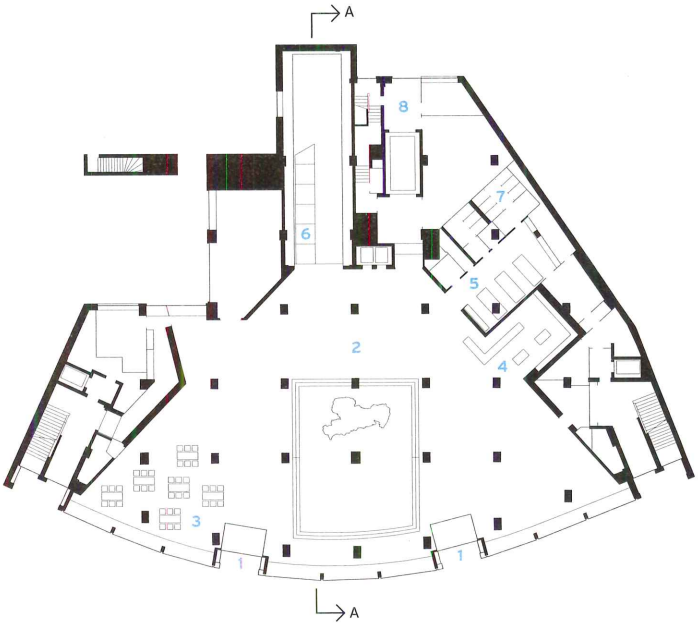
They took more license inside to accommodate SMAC's program. Here they altered the typical floor layout, which originally featured services and vertical circulation clustered at the rear, with most of the roughly triangular floor plate left open for the display of merchandise. The new configuration has support spaces lined up along opposite sides, with a quarter-pie-shaped zone in between devoted to exhibitions.

The architects have made the most of a key feature of the original department store's interior—its 20-by-20-foot grid of reinforced-concrete columns and beams. They have left these structural elements exposed, refinished them, and painted them white. Although a suspended ceiling was necessary to hide conduit, cabling, and other services, its modest depth (about 15 inches) ensures that the beams remain visible.

Some interventions help establish spatial and thematic connections between the museum's various levels. For example, an interactive model of Saxony is visible from all four



TYPICAL MUSEUM FLOOR PLAN



GROUND FLOOR PLAN

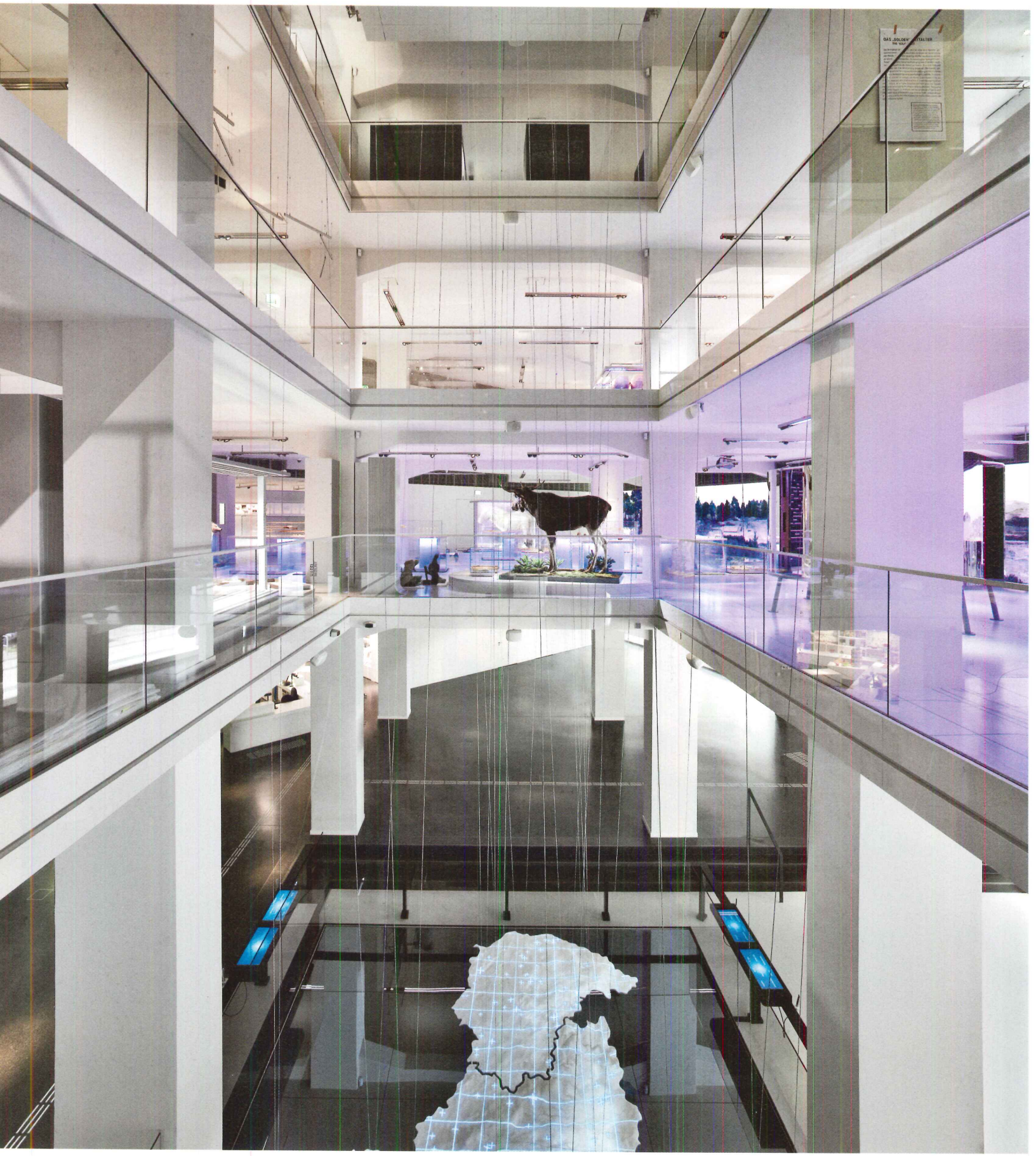
0 30 FT.
10 M.

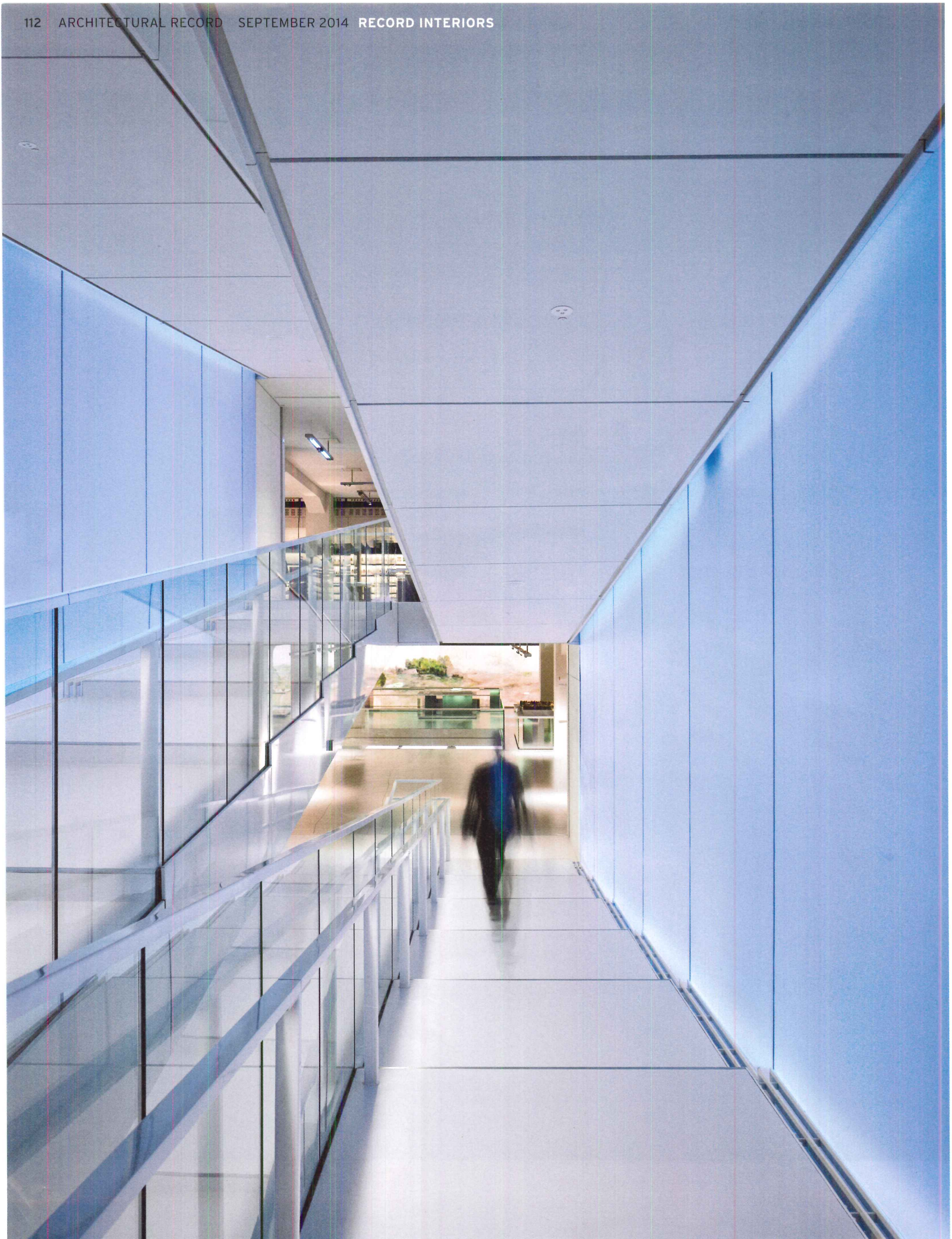
1 MAIN ENTRANCE
2 FOYER
3 CAFÉ
4 RECEPTION/SHOP
5 COAT CHECK
6 STAIR RAMP
7 RESTROOMS
8 RECEIVING
9 ARCHAEOLOGICAL EXHIBIT
10 ERICH MENDELSOHN/ SCHOCKEN EXHIBIT
11 CONSERVATION/STORAGE
12 SPECIAL EXHIBITIONS
13 EVENT SPACE
14 MUSEUM ADMINISTRATION
15 OFFICES

RECONSTRUCTIVE SURGERY As part of the project, the team rebuilt Mendelsohn's elevation with wood-framed windows and limestone cladding (top). In order to shield the main exhibition areas (opposite) from daylight, the architects devised a curving "museum wall" (above), placing it a few feet inboard of the facade. The narrow space between this partition and the exterior serves as a gallery devoted to Mendelsohn's architecture and the Schocken department store's history.

SECTION A - A

0 30 FT.
10 M.





stories of the new atrium extending upward from the lobby. The rear of the museum includes a multilevel "stair-ramp" made up of shallow risers and elongated, inclined treads. Enclosed by backlit polycarbonate and enlivened with environmental sounds, the new circulation element creates an engaging transition for visitors as they ascend, advancing from exhibits devoted to the Ice Age on the second floor to those that discuss the region's more recent history on the third and fourth. The fifth floor provides space for special exhibitions, and the uppermost public level—the sixth—contains an event space and museum offices.

Custom-designed luminaires that incorporate both LED strips and flexible spots illuminate the galleries. The pendants, made of stainless steel, are fixed at one end but can be rotated 90 degrees to accommodate display changes.

In order to further control the museum environment and shield the exhibitions from sunlight entering through the ribbon windows, the project team created what it refers to as the "museum wall," a full-height, 7-foot-thick curving partition placed parallel to the facade on each of the gallery levels. On the side that faces the main exhibition area, the wall incorporates panoramas and display shelving, articulating its surface. On the other side, the one facing the restored facade, the wall allows for narrow, daylight-filled galleries, and offers space for installations dedicated to Mendelsohn's architecture, the Schocken department store chain, and the visionary client, Salman Schocken. Here one can ponder this monument's complex legacy or simply gaze at the city. Offering one of the most satisfying experiences in the building, these galleries present the project's contrasting themes—preservation and reconstruction, reuse and invention—creating an enriching, yet provocative, museum encounter.

Although the project takes liberties with the original, the renovation gives an important city landmark a new lease on life while gracefully bridging the past and the future. As Uwe Brückner, a partner at Atelier Brückner, observes, Mendelsohn's building is "no longer a place where material culture is sold." Instead, it has been transformed into one "where it is presented and reflected upon." ■

Berlin-based Mary Pepchinski is a writer, architect, and professor of architecture at the University of Applied Sciences in Dresden, Germany.

credits

ARCHITECTS: Auer Weber/Knerer und Lang – Jörn Scholz, Thomas Knerer, partners in charge: Sebastian Reusch, Andreas Putz, project architects in charge

EXHIBITION DESIGNER: Atelier Brückner

CONSULTANTS: Dataconstruct, Corall Ingenieure (fire protection); Obermeyer Albis-Bauplan (building services); Elektroplanungsbüro Künzel (electrical); Müller-BBM (building physics); LDE Belzner Homes (lighting)

OWNER: PVG Projektierungs und Verwaltungsgesellschaft Schocken

SIZE: 183,000 square feet

CONSTRUCTION COST: $36 million

COMPLETION DATE: May 2014

SOURCES

WINDOW GLAZING: Schott

ENTRANCES: Tischlerei Sebastian Schulz

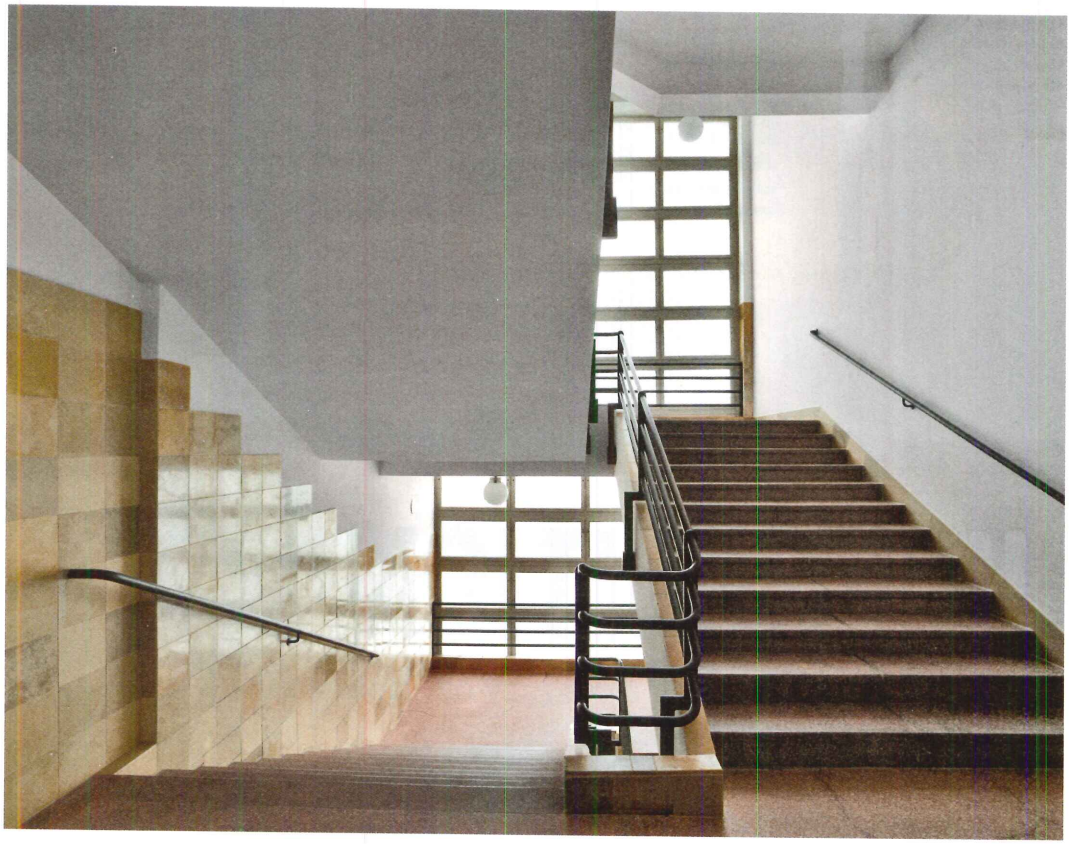
GLASS PARTITIONS: DORMA

RESILIENT FLOORING: Nora Systems

ACOUSTICAL CEILINGS: BASWA

GALLERY AMBIENT LIGHTING: Eigenart Leuchten und Beleuchtung Christoph Kappeler

ELEVATORS: Schindler



FUTURE AND PAST The museum's vertical-circulation elements include a new stair-ramp enclosed by backlit polycarbonate (opposite) and a pair of daylit egress stairs (left) with many of their original finishes intact. The stair-ramp connects all of the floors that are accessible to the public, while the historic stairs lead directly to street-level exits at each corner of the facade (above).

Kayanoya | Tokyo | Kengo Kuma & Associates

STEEPED IN TRADITION

Kengo Kuma refers to the classic brewing process of a century-old Japanese soy sauce maker for a surprising shop in an urban mall.

BY NAOMI R. POLLOCK, AIA

PHOTOGRAPHY BY SADAO HOTTA

CRITICAL CONDIMENT
The use of time-honored materials and methods (above and right) to create Kayanoya's displays evokes the company's history and meticulous processes.

The clean scent of freshly cut cedar creates a strong first impression at Kayanoya, the eponymous retail offshoot of a traditional soy sauce manufacturer, designed by Kengo Kuma. A true delight for the senses, this specialty food shop in the middle of Tokyo's Nihonbashi district engages not just smell but also sight, touch, and taste with a bold interior that evokes the 120-year-old company's Kyushu countryside headquarters.

Once the bustling commercial center of Edo (as Tokyo was called until the Meiji Restoration in 1868), Nihonbashi was eclipsed by other business and shopping hubs as the city grew. To help revitalize the area, developer Mitsui Fudosan created a mixed-commercial-use building complex—named Coredo or "the core of Edo"—where a themed retail mall on the lower floors features stores selling traditional Japanese goods with a contemporary twist. Kayanoya, a purveyor of soy sauce, soup stock, and other packaged foods, occupies a prominent ground-floor spot on Chuo Street, the area's main artery.

Accessible from both street and mall, the L-shaped shop has a small, adjacent wrapping and storage area concealed behind Japanese-style *noren* curtains. Kuma arranged distinct places for display, meeting, tasting, and paying within the selling floor, defining each by built-in casework or furnishings made with cedar *kojibuta* trays and decorative barrels inspired by those used in traditional soy sauce–making.

The massive casks normally sit on the ground, brimming with briny liquid. At Kayanoya, Kuma used them in lieu of a conventional dropped ceiling. This enabled him to mitigate the shop's 18-foot structure-to-structure height while maintaining a shadowy quality beneath the overhead slab.

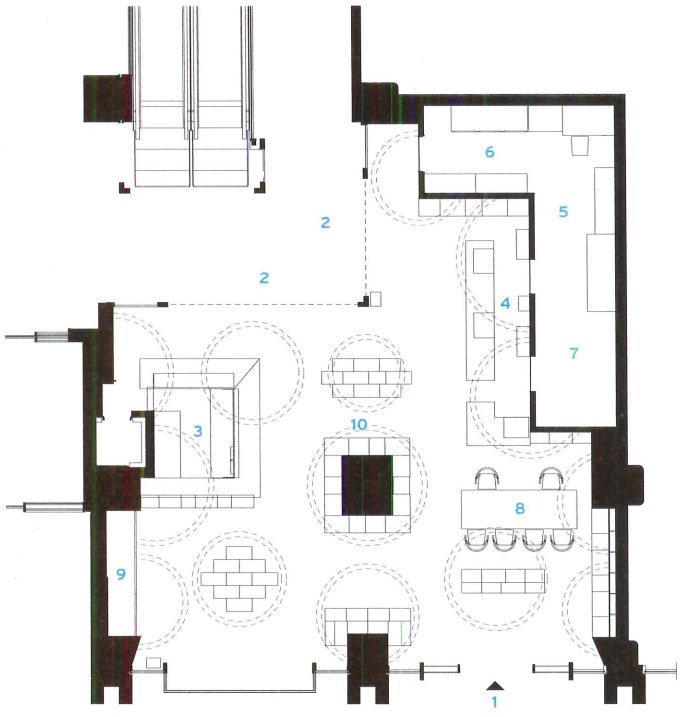
"When I visited Kayanoya's factory, I loved the darkness under its pitched roof," explains the architect. "I wanted to achieve that effect within a commercial building." Laced with exposed ducts and other mechanical equipment, the slab's underbelly bears little resemblance to a traditional Japanese manufacturing facility, yet the hovering wooden drums and their incongruous backdrop add drama to an otherwise cookie-cutter space.

Fabricated by a Kyushu carpenter, the 14 barrels range in diameter from 6 to 11 feet. Each one is made of cedar staves secured with braided bamboo ties, and conceals a steel frame that attaches to the building's structural system. LED downlights embedded in the barrels' flat bottoms illuminate the merchandise.

By contrast, the *kojibuta* trays are simple lidless boxes that store fermenting soybeans at the factory—and merchandise here. Made by an artisan with Kyushu cedar, each box measures a customary 1 by 2 feet. Kuma assembled the trays in alternating stacks to yield a flexible millwork system, used for freestanding displays and wall-mounted shelving as well as table and counter bases. "Actually, this is not our design," says project architect Shuhei Kamiya. "Traditionally, *kojibuta* were stacked like this so air could pass through." In Kuma's hands, the functional solid-and-void striping becomes a strong visual motif. "The porosity of the shelves diminishes their overall mass," explains Kamiya.

Kuma continues to articulate the space through highly textured surfaces. Recalling the factory's rammed-earth floor, the shop's floor slab is covered with a durable surface made from stones, soil, and concrete. Equally evocative of the country's tradition of craft are the *washi*-papered walls. Made in Fukui Prefecture, the sheets were dotted with drops of water during production to create a spotted motif in high relief. This pattern is prominent on the sidewall and a structural column at the room's center where the paper is on sheets of glass illuminated from behind by LEDs.

Backlit Japanese paper aside, Kayanoya is more rough-hewn than usual for Kuma. Instead of enlisting refined materials, the architect underscores the inherent beauty of the manufacturing process by employing what seems to be merely typically Japanese function-driven design. "I am not nostalgic at all," he explains. "If we study tradition, we can find that functionalism." ■



FLOOR PLAN

0 10 FT.
3 M.

1 STREET ENTRANCE
2 MALL ENTRANCE
3 TASTING AREA
4 CHECKOUT COUNTER
5 BACK OF HOUSE
6 STORAGE
7 WRAPPING
8 GIFT CORNER
9 REFRIGERATED DISPLAY
10 SALES AREA

credits

ARCHITECT: Kengo Kuma & Associates – Kengo Kuma, principal; Kenji Miyahara, Shuehei Kamiya, design team

CONSULTANTS: ModuleX – Daisuke Morita (lighting design)

GENERAL CONTRACTOR: Nomura Kogei

CLIENT: Kubara-Honke

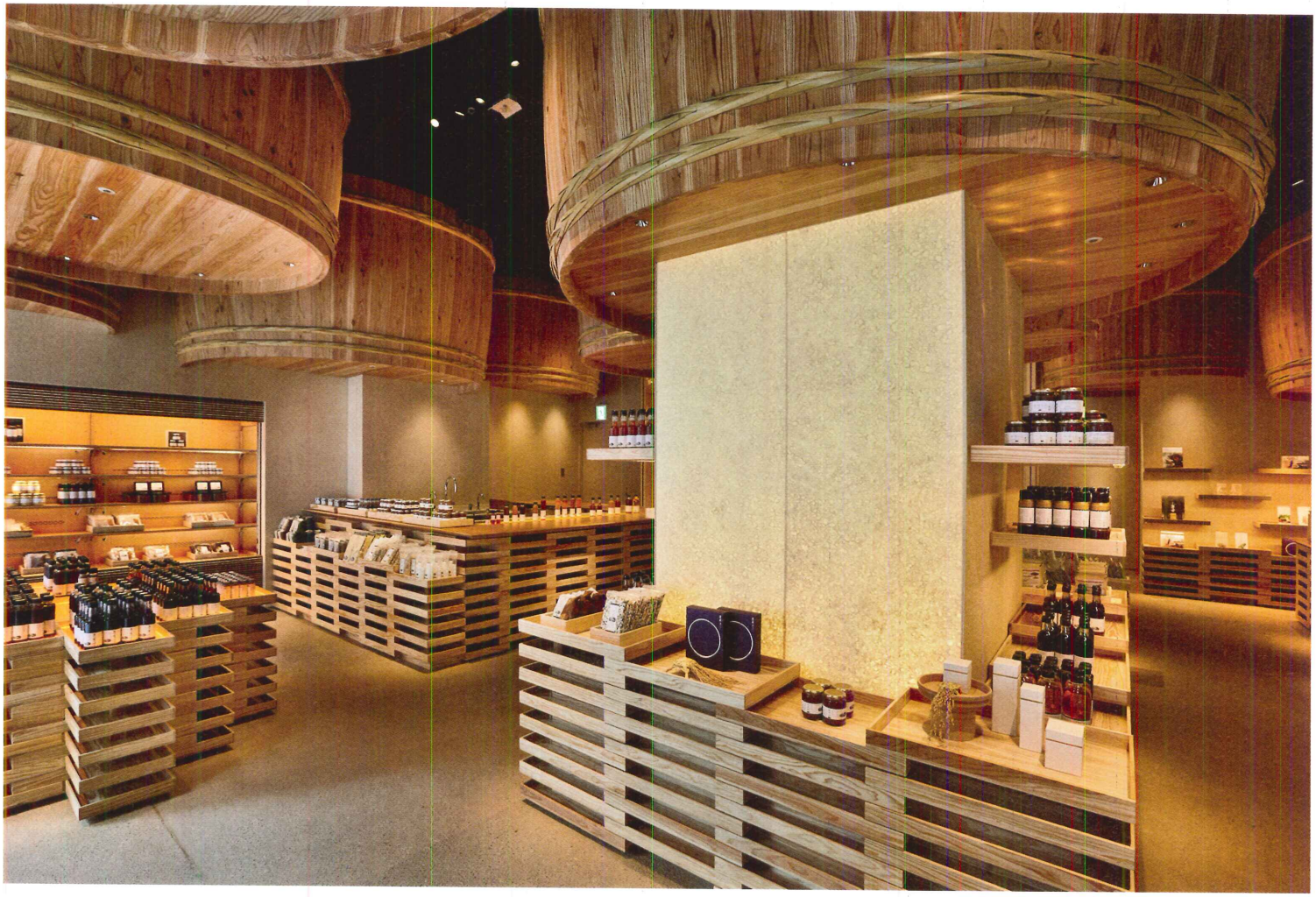
SIZE: 1,450 square feet

TOTAL PROJECT COST: withheld

COMPLETION DATE: March 2014

SOURCES

LIGHTING: ModuleX



ADAPTIVE REUSE
Made by local artisans the old-fashioned way, the components of soy sauce production stand in for retail essentials. Huge cedar barrels are outfitted with LED downlights, backlit *washi* paper covers walls and columns, and cedar *kojibuta* trays are used for display and storage (opposite and top). Gently lit by LED light-guiding panels, the uppermost trays illuminate the shop's delicacies from below (right).

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CIRCLE 29

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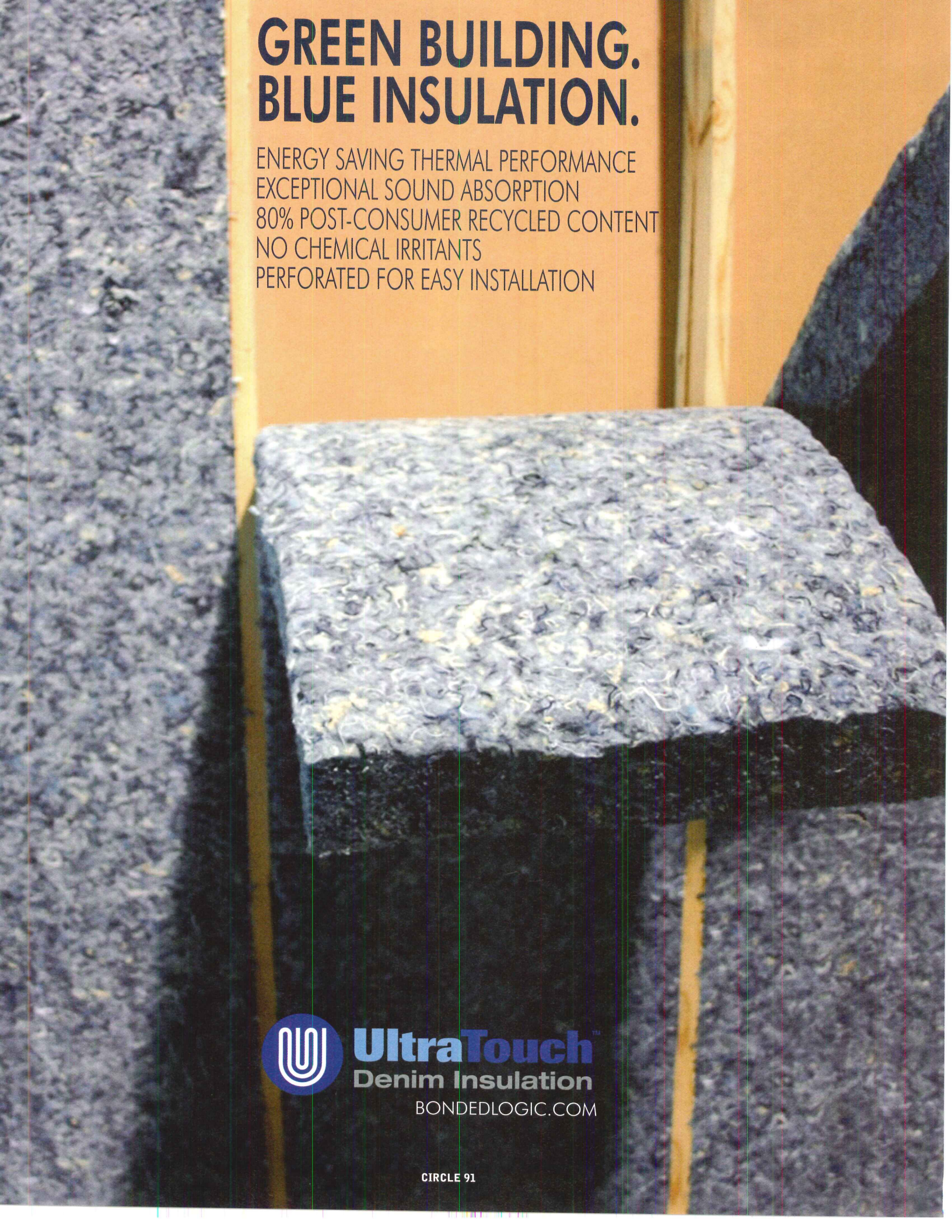
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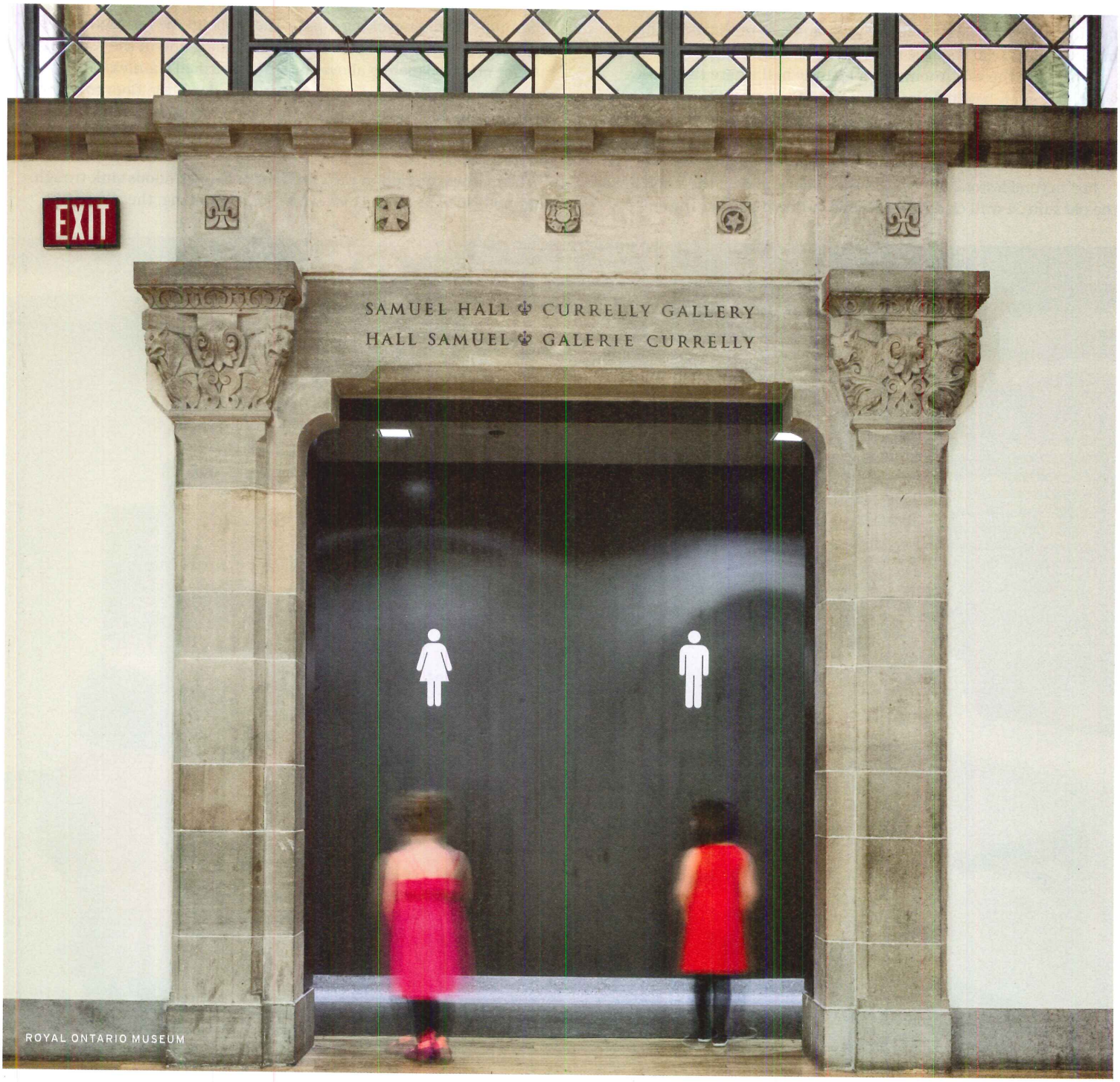
CIRCLE 78

RECORD KITCHEN & BATH

From a clever overhaul of an institutional lavatory to an impossibly minimalist kitchen, these commercial and residential projects use palette and scale to defy the ordinary.



ROYAL ONTARIO MUSEUM

Royal Ontario Museum Toronto
Architect **Superkül**

A WORLD-CLASS institution, the Royal Ontario Museum (ROM) in Toronto houses an extensive collection of cultural artifacts and natural history curios, from decorative objects to dinosaur bones. But earlier this year, the ROM relinquished one of its fossils: the museum's most heavily trafficked washroom suite. The pair of nondescript 1970s lavatories, situated in the ground floor's Currelly Gallery, was replete with tan tiles and mustardy laminate countertops until local firm Superkül tackled its excavation. In the rooms' stead emerged upscale facilities that can stand up to the wear and tear of the more than 1 million guests who visit the museum each year.

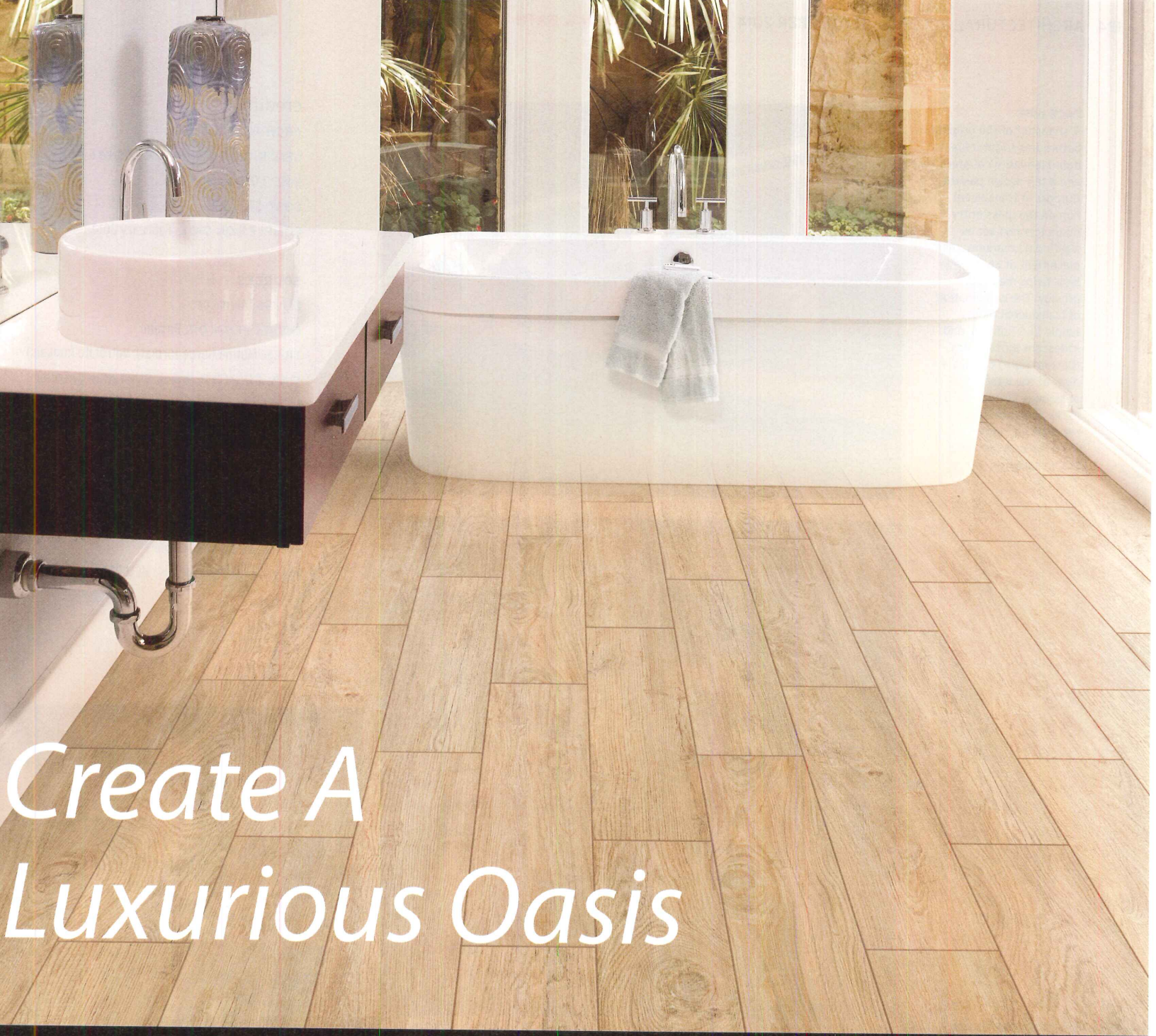
"These are the washrooms for a historic hall where they host weddings, galas, and political events, but they get all these kids and school groups during the day," explains Superkül principal Meg Graham. "They're spaces that need to transition easily from day to night, that need to be bulletproof but also a bit glamorous."

Just beyond a stone archway in the gallery, and on the same site as the old suite, a wall clad in black solid surfacing marks the entry vestibule for the refreshed facilities. Superkül subtly paid homage to the original building's palette here: new bluish-gray terrazzo floors that continue into the washrooms meet the museum corridor's existing brown terrazzo, separated elegantly by a thin bronze strip. Located around the corner at either side of the black wall, glass entry doors—one for men, the other for women—are layered with translucent film. "In a museum, there are lots of doors and places you can't get into. We wanted some kind of transparency so people knew it was a public space," says Graham. Graphic cutouts in the film were made at a toddler's-eye level, indicating men, women, a baby-changing station, and accessibility, as well as offering glimpses that help prevent collisions. "It's such a high-traffic washroom, so this gives a visual cue to people behind the door without having a privacy issue."

Shimmery water-evoking mosaic tiles pick up the terrazzo's hues and line the walls inside the restroom vestibule and in the washrooms, save for mirror paneling above the sinks. Brushed stainless-steel ceiling-height toilet stalls stop just 6 inches shy of the floor to allow for swift mopping and cleanup. Along the same lines, wall-mounted plumbing fixtures contribute to the ease of maintenance by leaving the floor clear.

The main attraction in each washroom is the sinuous sink trough. Thermoformed of 1-inch-thick white solid surfacing, the ribbonlike

FLUID FORMS Undulating sink troughs composed of white solid surfacing are striking new additions to the updated washrooms at the Royal Ontario Museum. In the women's room, the surfacing also wraps a diaper disposal unit and changing station.



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FACE LIFT
A snapshot of the original bathrooms (right) reveals dated laminate counters and a tan-brown palette. Cutouts in translucent film on the glass entry doors (center) act as wayfinding markers; their placement at child's-eye level helps maintain privacy. The combination of translucent glass, ample LED lighting, and iridescent mosaic tiles (bottom right) creates a glow at the washroom entrances. Bronze strips in the terrazzo flooring repeat a curving motif from the entry to inside the washrooms.

fixture is an eye-catching sculptural piece and an ingenious way of creating a unified bi-level sink for adult and child use. The children's trough rises 21 inches from the floor and holds one drain for its two faucets, while the adult-height trough, which features two drains serving four faucets, rises 27 inches—a height that meets Ontario's barrier-free accessibility requirements. Both sinks are fronted with 6-inch-high lips that safeguard against spillage, splashing, and pooling. And the faucets, which are actually taps and hand dryers combined into a single unit, further keep water in the sink troughs and off the floor. To hold personal items, a parallel shelf above the sink juts 10 inches from the wall.

Aesthetics aside, there is a symbolic gesture at work here. The sinks' curves, complemented by bronze arcs and circles in the floor, as well as disc-shaped ceiling lights, suggest the timelessness of the ROM, which turned 100 this year. Graham elaborates: "The circle is an intellectually pure, complete curve, symbolic of wholeness and eternity." *Sheila Kim*

credits

ARCHITECT: Superkül
GENERAL CONTRACTOR: Boszko & Verity
SIZE: 1,050 square feet
COST: $700,000
COMPLETION DATE: February 2014

SOURCES
DOORS: Alumicor
DOOR OPERATOR: Besam
TILES: Mutina (large format), VetroLite (mosaic)
SINK, COUNTER, WALL SURFACING: Corian
FAUCETS/HAND DRYERS: Dyson
TOILET PARTITIONS: Hadrian Manufacturing
TOILETS: Toto
LIGHT FIXTURES: 3G (recessed), Ametrix (cove), Zaneen (circular ceiling)
BABY CHANGING TABLE: Koala Kare
TERRAZZO: York Marble
CUSTOM METALWORK: MCM 2001

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CIRCLE 32

FOR THE EXPANSION of a 1970s-era kit house on the East End of Long Island in Southampton, New York, architect Paul Masi looked to the structure's muscular prefabricated components for design cues—a choice that ultimately informed the look and feel of the addition's bold new kitchen, completed last year.

"We liked the idea of an expressed structure—you see it, you read it, you understand how the building stands up," says Masi, a principal of Bates Masi + Architects, based in nearby Sag Harbor.

The Far Pond residence, a two-story house with weathered wood cladding and ample glazing, rests on a half-acre site overlooking wetlands. The client, a New York–based events planner with a keen eye and a pet Yorkie, needed a generous kitchen to accommodate weekend guests and dinner parties.

Although Masi eschewed mimicking the post-and-beam structure of the original house, he was especially drawn to the raw quality of the exposed black steel connectors between the existing glue-laminated beams and the columns. He also wanted a system that would serve as both structure and finish material. "As architects, we like materials that can perform multiple roles."

The designers conducted extensive research, exploring the ways in which metal akin to that of the connectors could be incorporated into the addition. They discovered shear wall panels that derive their strength from sheet metal bent over and over on itself. Such rigid elements, normally hidden, are typically used for light-frame construction in hurricane-prone areas. But at the Far Pond house, the 2-foot-wide panels, which are made from light-gauge steel, are exposed and perform as both structure and the backdrop for the upper-level kitchen.

To avoid concealing these panels behind kitchen appliances, the architects opted to pull the program away from the wall: the majority of the kitchen activities center around a monolithic island, 10 feet long and 5 feet 6 inches wide, which contains a sink and provides extra seating. To contrast with and enhance the minimal black steel panels and the oak floor and ceiling, Masi used a white solid surface material for the island, cabinet faces, and kitchen-area flooring.

The kitchen's crown jewel is its gravity-defying 10-foot-long counter with a cooktop, which cantilevers from the metal wall. Notched vertical fins—folds that protrude from the panelized steel structural system—do double duty by helping to support the stovetop slab and a shelf above, and by providing visual rhythm. A perforated-metal screen cleverly conceals downdraft vents and can slide out of the indentations for easy cleaning. This style of screen also appears on the stair, windows, and forms a custom light fixture.

Just off of the kitchen is a daylight-filled dining room. It is surrounded by sliding glass doors on two sides that provide access to a series of decks and a layered view of a backyard pond, a bay, and the Atlantic Ocean beyond. *Anna Fixsen*

1 ENTRY DECK
2 KITCHEN
3 DINING
4 STAIR
5 POWER ROOM
6 LIVING
7 BAR
8 DECK

UPPER LEVEL

0 10 FT.
3 M.

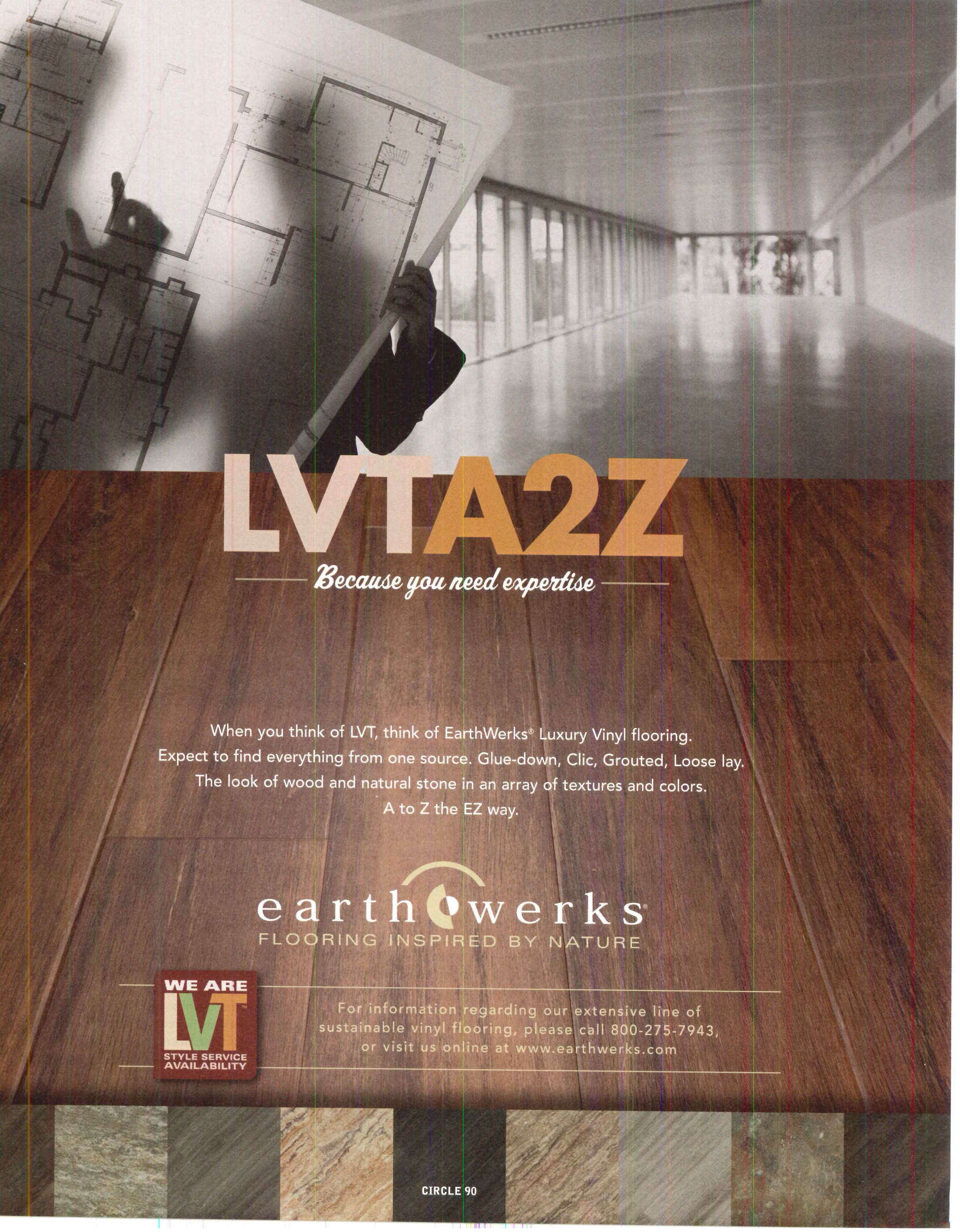
credits

ARCHITECT: Bates Masi + Architects – Paul Masi, principal
GENERAL CONTRACTOR: Breitenbach Builders
SIZE: 500 square feet
PROJECT COST: withheld
COMPLETION DATE: September 2013

SOURCES

CUSTOM CABINETRY: Breitenbach Builders
COUNTERTOPS: Corian
APPLIANCES: Wolf (oven and cooktop); Sub-Zero (refrigerator); Bosch (dishwasher)
PLUMBING FIXTURES: Grohe
PAINTS/STAINS: Benjamin Moore
WINDOWS: Gerkin Windows & Doors
LIGHTING: RAB Lighting

LIGHT FARE Far Pond's dining room, located just to the right of the kitchen on the house's east side, opens to a series of decks and overlooks a backyard pond (left). A custom light fixture echoes the black perforated-metal screen behind the kitchen's floating cooktop (opposite).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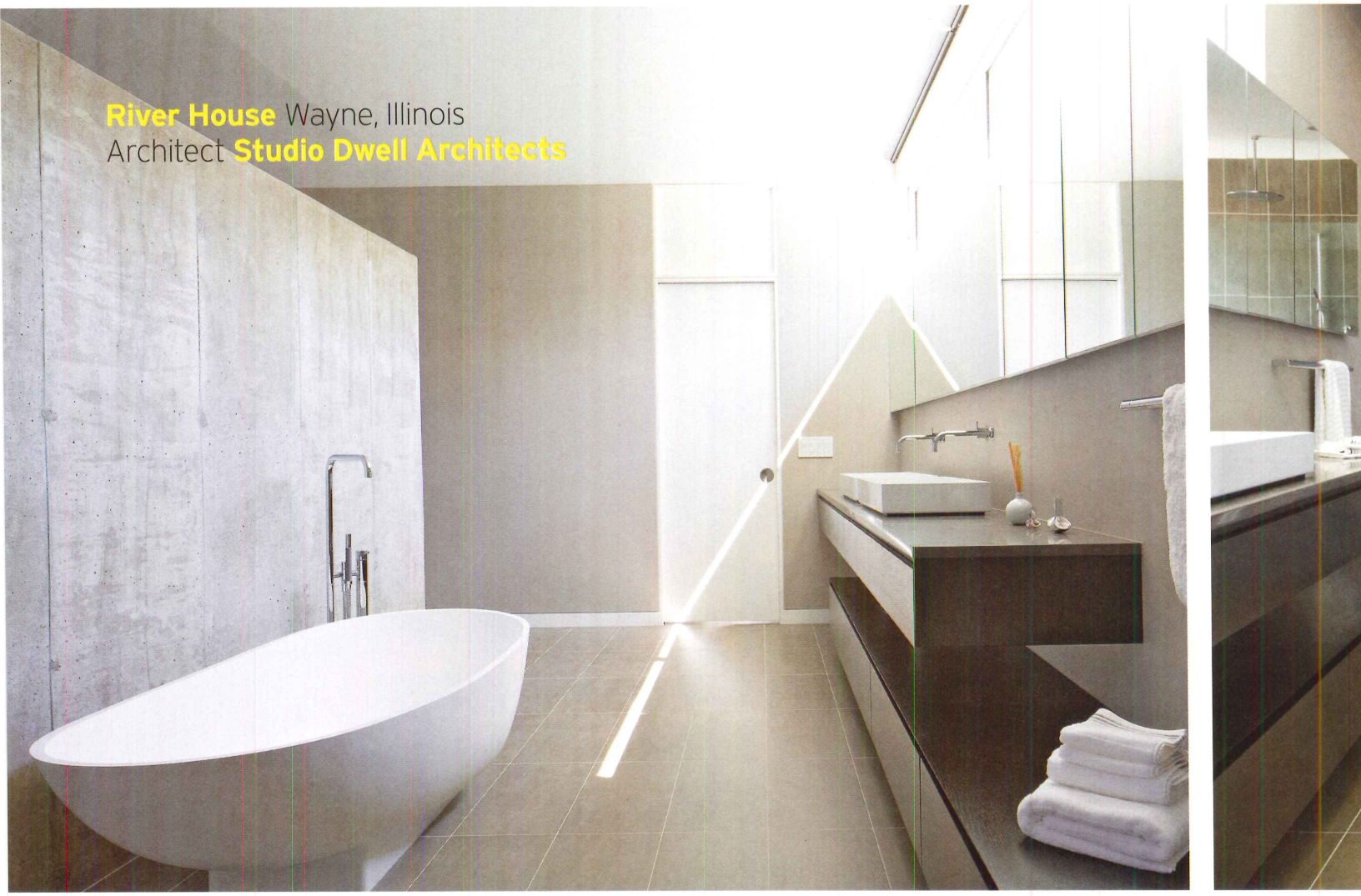
CIRCLE 90



River House Wayne, Illinois
Architect **Studio Dwell Architects**

THIS MASTER BATH breaks the mold of the traditional lavatory: not only is it uniquely integral to the success of its adjacent bedroom, it also contends with challenging site conditions. One would hardly suspect all that is at play here, thanks to a meticulous execution by Chicago-based Studio Dwell Architects.

Most of the house's first floor, which includes the master bath, is a full-time residence partially nestled in a hillside that slopes down toward the Fox River in Wayne, Illinois. Above the buried portion of the lavatory's exterior wall, a 12-foot-wide clerestory window floods the space with ample daylight for the occupants. But the bathroom's illumination is actually crucial to the success of the master suite.

Although the partly underground bedroom features large windows that frame and overlook the river, it receives relatively little sun until late in the day because of their westward orientation. To rectify this, the architects built an 18-foot-wide, 8-inch-thick concrete wall between the sleeping and bathing areas that stops 2 feet short of the ceiling, allowing the bath's abundant daylight to spill over.

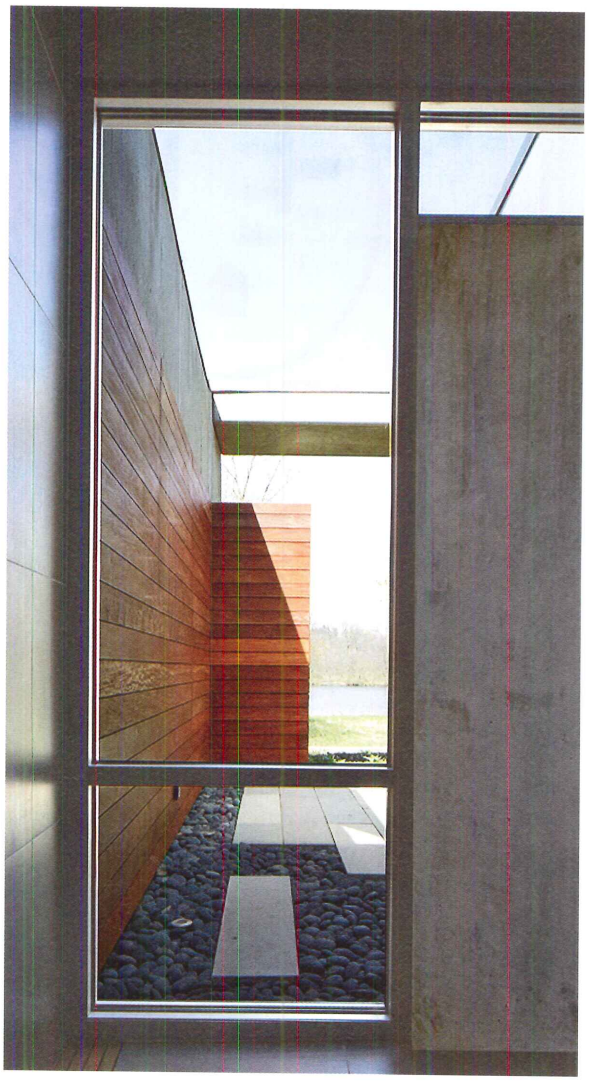
"When [the clients] wake up in the morning, they have this nice eastern light coming in across the ceiling plane," says Mark Peters, principal of Studio Dwell Architects. In the evenings, both rooms benefit from artificial light that is concealed within a recess in the top of the wall.

In addition to the clerestory, the architects applied other design strategies to accentuate the length of the 8-foot-6-inch-wide-by-24-foot-long bath. Rectangular porcelain tiles create a grid pattern that moves across the floor and up the walls behind the glass corner shower, further enhancing a forced perspective. Two 12-foot-long rows of drawer units (one used as a vanity) were mounted to the wall in parallel with the lines below. They were staggered to further create the impression of depth.

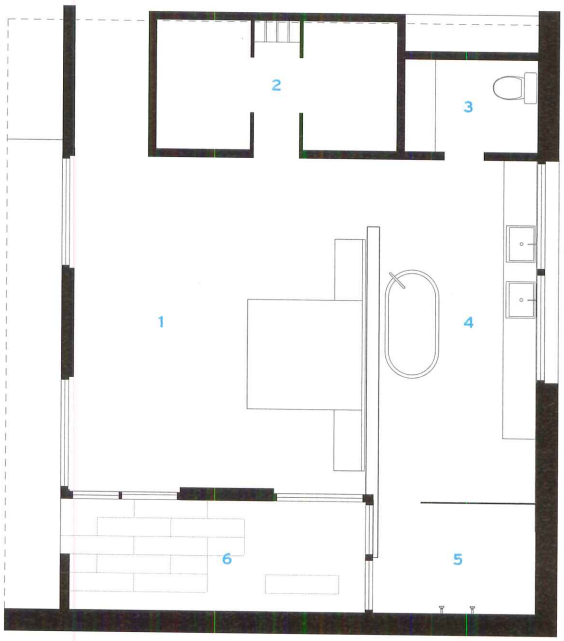
The washroom's neutral palette and clean design instill calm and render the space a canvas for the dramatic light streaks painted by the sun throughout the day. The large-format tiles have a sandy-gray hue, while the vanity features a wenge-veneer finish and concrete-tinted quartz countertops. Save for the concrete, glass, and tiled walls, the remaining vertical surfaces were painted beige, making the white freestanding, oblong tub a sculptural focal point.

Finally, the generous shower-with-a-view and its neighboring private terrace reinforce the spa-like feel. The shower window faces the outdoor enclave, which is accessed from the bedroom and outfitted with smooth stones and ipe wall paneling. The layout affords bathers vistas down to the Fox River, while a partial wall at the end of the terrace helps shield them from prying eyes. Like the rest of the house, the terrace is partially embedded in the earth, with one side functioning as a retaining wall, connecting this retreat both figuratively and literally to the surrounding landscape. *Zachary Edelson*

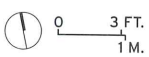
VIEW FINDER
The architects used clerestory windows (opposite) and a private terrace (right) to provide natural light and views in the bathroom without compromising occupants' privacy. The freestanding concrete wall (here) separates bath from bedroom space and allows light to spill over to the other side.



1 MASTER BEDROOM
2 CLOSETS
3 TOILET
4 MASTER BATH
5 SHOWER
6 PRIVATE TERRACE



FLOOR PLAN

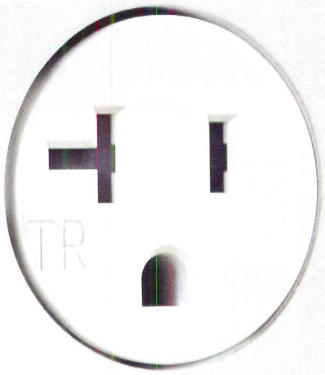


credits

ARCHITECT: Studio Dwell Architects
GENERAL CONTRACTOR: McLeod Builders Inc.
SIZE: 240 square feet
COST: $60,000
COMPLETION DATE: February 2014

SOURCES

WINDOWS AND GLAZING: Kawneer (clerestory); PPG (shower)
TILE: Stone Source (bath); Stepstone (terrace)
SINKS: Alape
FIXTURES: Vola (sink faucet and tub filler); Toto (toilet); Fantini Rubinetti (showerhead)
VANITY: custom
TUB: Lacava
TOWEL BARS: FSB
COUNTERTOP: Caesarstone
MEDICINE CABINETS: custom



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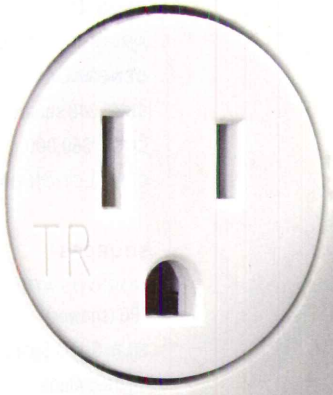

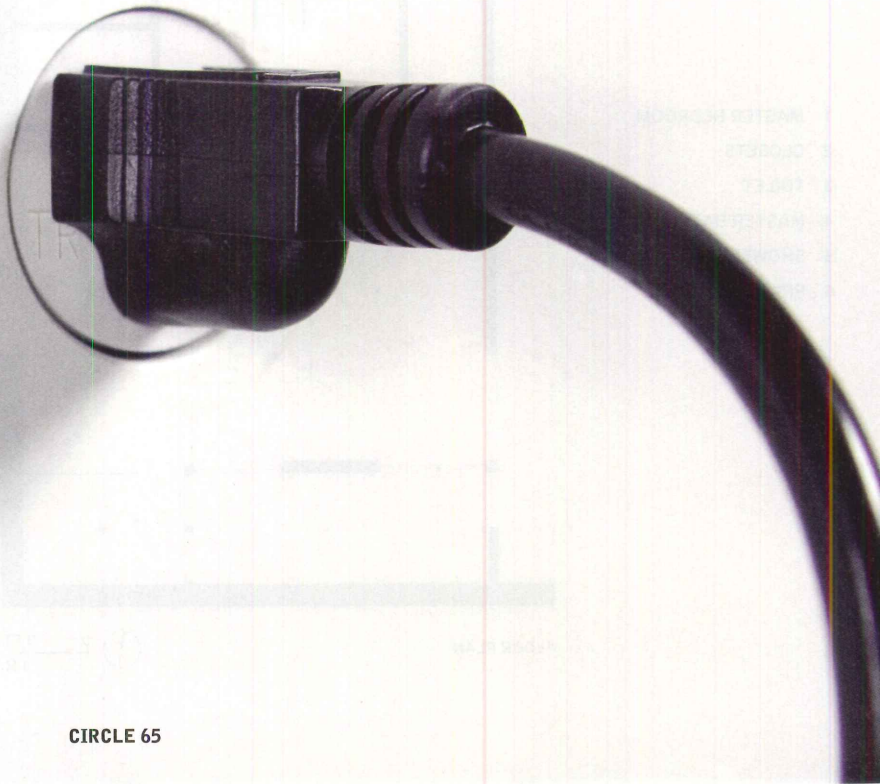

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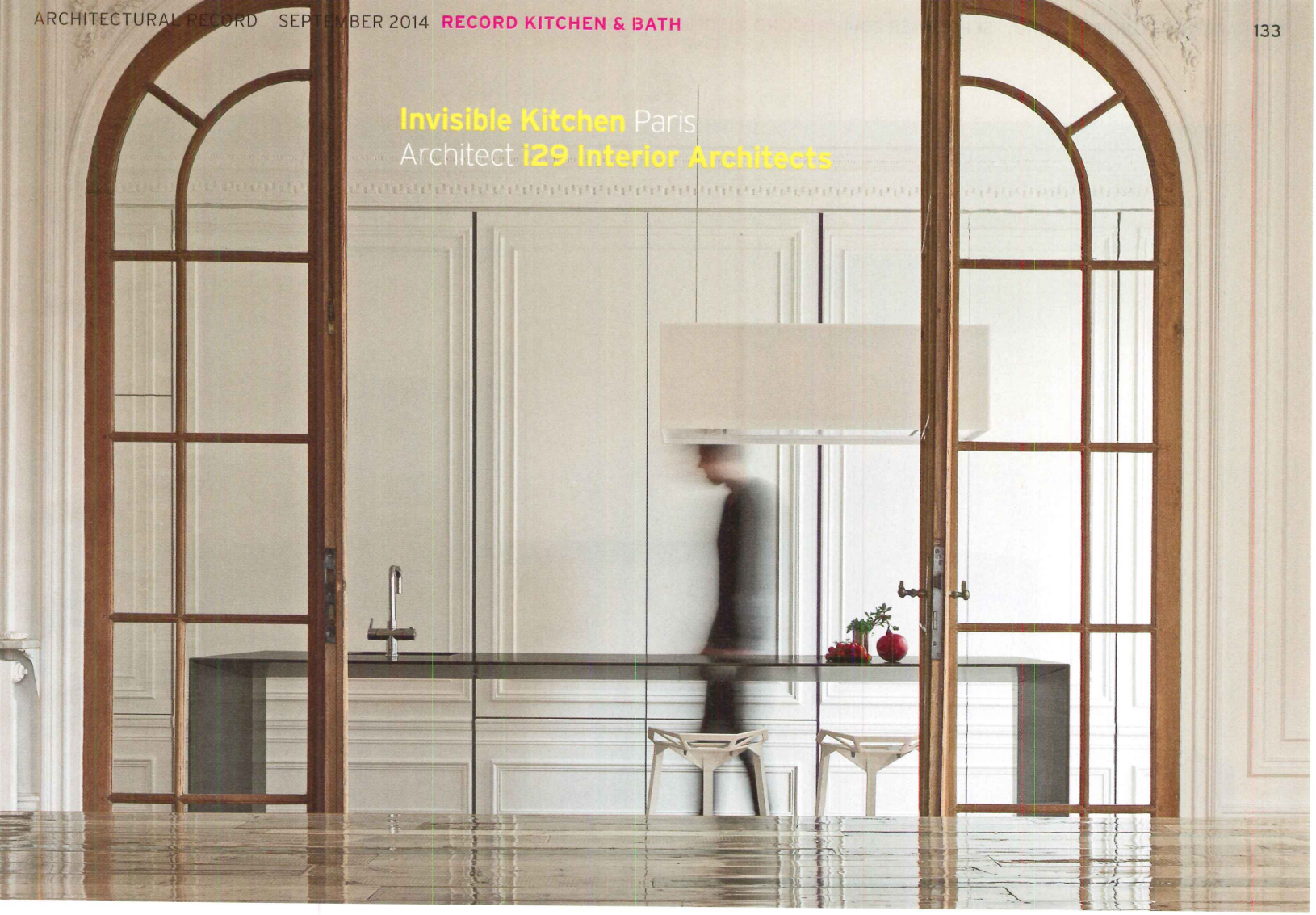
Invisible Kitchen Paris
Architect i29 Interior Architects



IN ONE PARTICULARLY humorous episode, the old television program *Candid Camera* tried to sell a house that had no toilets. (It was remarkable how many potential buyers didn't notice the defect.) A Paris apartment's kitchen, designed by Amsterdam-based i29 Interior Architects, is even better at playing tricks: it *does* have a kitchen, but one that practically vanishes.

The clients, a Dutch couple residing in Paris, initially desired an open kitchen at one end of the living room. "We felt that it would dominate the living space," says i29 cofounder Jeroen Dellensen. "So we went to the other extreme." When not in use, the kitchen is hidden behind a wall—in five sections—that is finished with decorative paneling and molding that mimic the circa-1905 apartment's original plasterwork.

The paneled doors open outward, slide away, and tuck in between contrasting charcoal-gray MDF-lined compartments, giving the clients access to different functions—the wall hides a refrigerator and dishwasher at the far left, for instance. In the center are three broader double-door sections, each measuring 4 feet wide by 9 feet, 6 inches high. One houses an oven, coffeemaker, and drawers for holding plates and cutlery; the middle compartment accommodates additional kitchen storage; and the third holds a pared-down computer workstation and writing desk. The narrow section to the far right is actually a false front that conceals shallow shelves and pipes.

The designers took a more inventive approach when it came to creating the "invisible" island. The ultrathin steel tabletop spans 10 feet and is 3 feet deep, a single steel plate whose edge has been machine-folded to present a very narrow profile of only ¾ of an inch to the living room. Toward the back, near the wall of doors, the counter expands to a thickness of 3 inches, just enough to accommodate a shallow sink and an induction cook surface flush with the top. This island's chamfered-steel legs, 3 feet high, provide room to route the aforementioned's water pipes and electrical equipment down to the floor, while access panels underneath the counter allow for maintenance of both the sink and cooktop. All of these steel elements were finished in a sleek black color and coated with scratch-resistant epoxy.

DISAPPEARING ACT In a Paris apartment, i29 Interior Architects concealed most of the kitchen behind MDF doors covered in decorative panels. The custom, ultrathin black-steel island holds a shallow sink and induction cooktop.

So as to further disguise the area's culinary function, the designers were also particular in their selection of a ventilation hood for the island. They chose an off-the-shelf product that resembles a suspended luminaire, thanks to integrated lighting and a 47-inch-wide-by-21½-inch-deep white solid surface shade.

The result is a smart juxtaposition of a classic look in the back and a cutting-edge, minimalist kitchen in the front. And since everything—appliances and equipment, dishes, pots and pans, cupboards, et al—is concealed behind the wall panels or within the table, the room is easy to keep clutter-free.

"We always try to integrate various functions in a way that looks simple but is actually a technical challenge," explains Dellensen. "The clients are very happy. And the kitchen is not just for show—they really do cook here!" *Tracy Metz*

NOW YOU SEE IT
Double doors open out and tuck away to reveal appliances and a workstation. The suspended light fixture is also a ventilation hood. The sole clue that the table—which appears to be less than an inch thick when viewed from the front (below)—is a functioning work top is a minimalist faucet.

credits

ARCHITECT: i29 Interior Architects
CABINETMAKER: Simon Sintenie
METAL FABRICATOR: Huib Joosten
SIZE: 240 square feet
COMPLETION DATE: March 2014

SOURCES

COOKTOP, OVEN, REFRIGERATOR, COFFEEMAKER: Gaggenau
DISHWASHER: Fisher & Paykel
FAUCET: Quooker
VENTILATION HOOD: Novy

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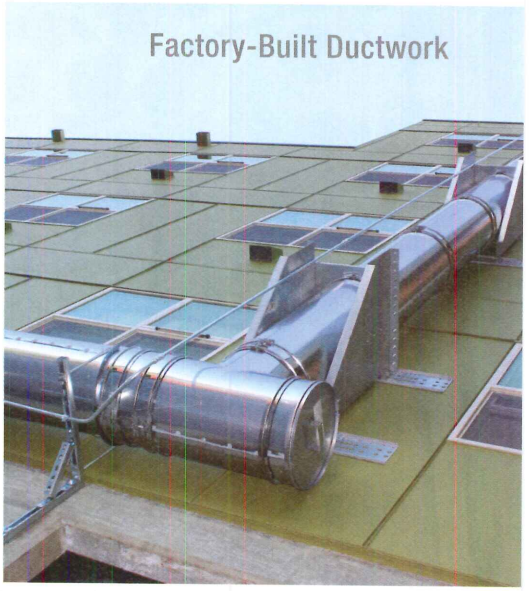

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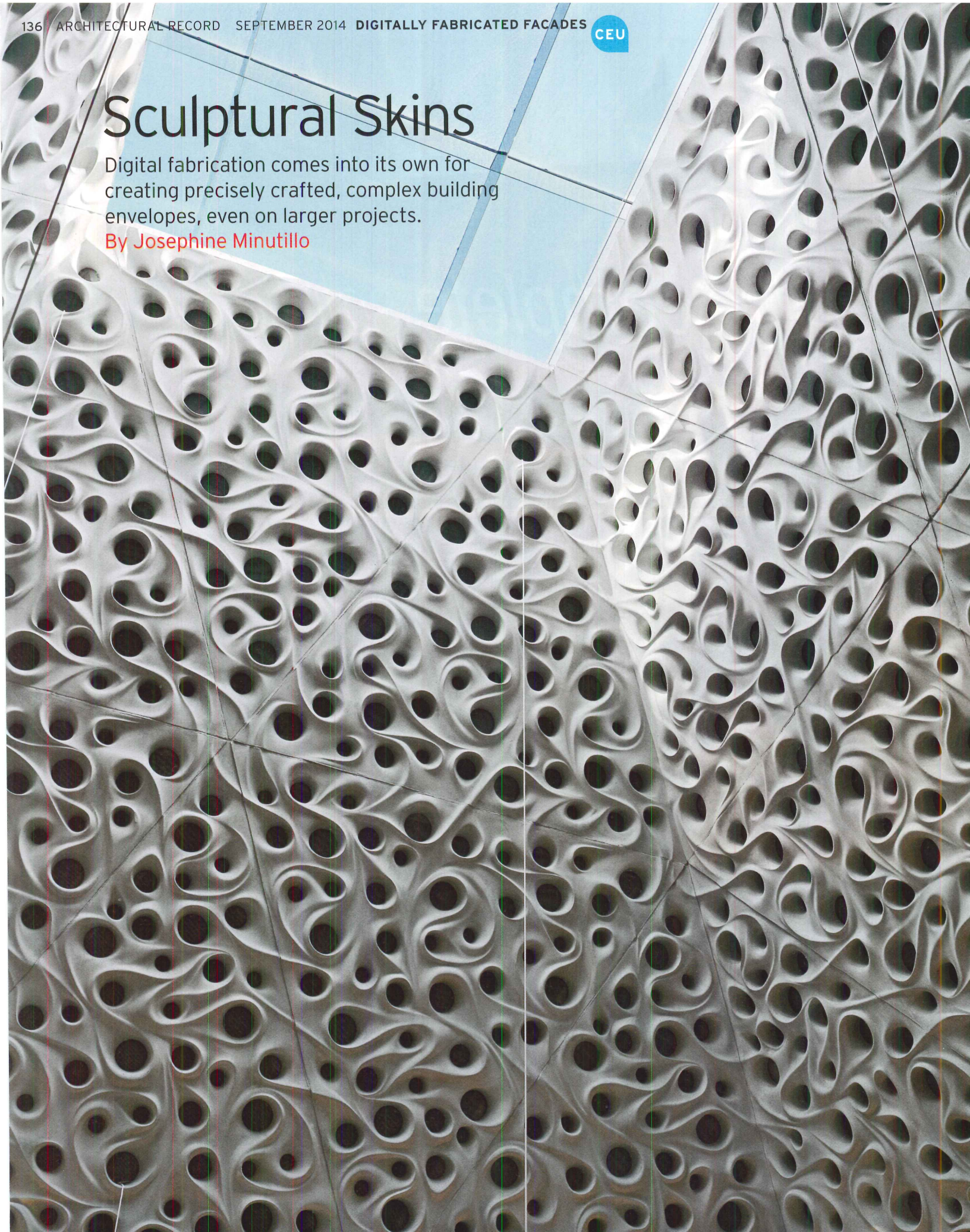
CAPTIVEAIRE

Sculptural Skins

Digital fabrication comes into its own for creating precisely crafted, complex building envelopes, even on larger projects.

By Josephine Minutillo



DIGITAL FABRICATION has been employed in the production of everything from furniture and lighting to jewelry and cell phones, but its use for large-scale construction has been rare. While parametric design has been a mainstay of architectural practice for decades, the computer's role in the manufacturing process for architectural applications has been limited mostly to small building components or temporary pavilions. However, several recent facade projects—for a courthouse, a stadium, and one particularly high-profile museum expansion now under construction—are taking digital fabrication to a new level. These building skins are proving that the process can be a highly efficient and cost-effective option when translating complex computer-derived forms into well-executed, precision-built structures that can be produced locally.

Gramazio & Kohler Architects has been at the forefront of digital fabrication, leading a research program on the subject at the esteemed science and technology university ETH Zürich, and completing several large- and small-scale works built with computer-controlled machinery and even robots. For its latest project, which the firm refers to as an "inner facade," Gramazio & Kohler created nearly 7,000 square feet of triangular panels to clad the pyramidal ceilings of a series of courtrooms inside the Federal Court building in Bellinzona, Switzerland, newly

FEDERAL COURT
BELLINZONA, SWITZERLAND
As part of their renovation and expansion of a classical courthouse (above), architects Bearth & Deplazes turned to digital-fabrication pioneers Gramazio & Kohler to create the reinforced-concrete ceiling panels for four courtrooms (left). The panels, which include perforations and a swirling pattern, perform both aesthetic and acoustical functions: they reflect light from a central skylight above the rooms (opposite) and help ensure that the court proceedings are audible.

renovated and expanded by another Zurich-based studio, Bearth & Deplazes.

Set against the building's classical main facade and a Minimalist addition of stark white interiors and austere new building faces, the highly ornamental panels of the courtrooms are a surprise. "The concept for these spaces was to create a hidden jewel in the center of the building," says Gramazio & Kohler project leader Sarah Schneider. But beyond aesthetic considerations, the panels serve important visual and acoustical functions, reflecting light from the single central skylight above each of the four rooms and ensuring that proceedings within the courtrooms are audible. "Acoustical engineers had already determined that the panels required 20 percent perforation, and Bearth & Deplazes came to us with a very organic design idea of what they could look like," recalls Schneider.

While those initial design sketches and plaster mock-ups were done by hand, Gramazio & Kohler's office developed the final design for the panels and their overall layout on the computer. Early 3-D prints on a small scale were made to understand how the swirling texture on the surface of the panels would flow around the perforations, and what kind of shadows it would cast. "The most important thing from an aesthetic point of view was to

create a continuous pattern and ensure the panel edges were hidden to produce a homogeneous surface," says Schneider.

Using Rhinoceros, a 3-D-modeling software program more commonly known as "Rhino," particularly useful for designs that feature free-form curves, the team resolved several design challenges. These included determining the size of individual panels and the total number needed, how they would be connected, and where special corner conditions necessitated different geometries. In the process, they settled on a construction solution that involved fabricating a limited number of molds with computer numerical control (CNC) milling, a manufacturing method that, as its name suggests, relies on computers to control machine tools. These, in turn, would be used ultimately to produce 240 reinforced-concrete panels—60 per room—ranging from 13 square feet in the smaller courtroom and a press area to as big as 61 square feet in the largest courtroom.

"Because milling time is expensive, we needed to reduce the number of unique panels rather than mill all 240 of them," Schneider explains. Each of the four rooms has three different types of panels, whose molds were milled nearby in Germany and brought to a facility outside Bellinzona that manufactures prefabricated-concrete elements.

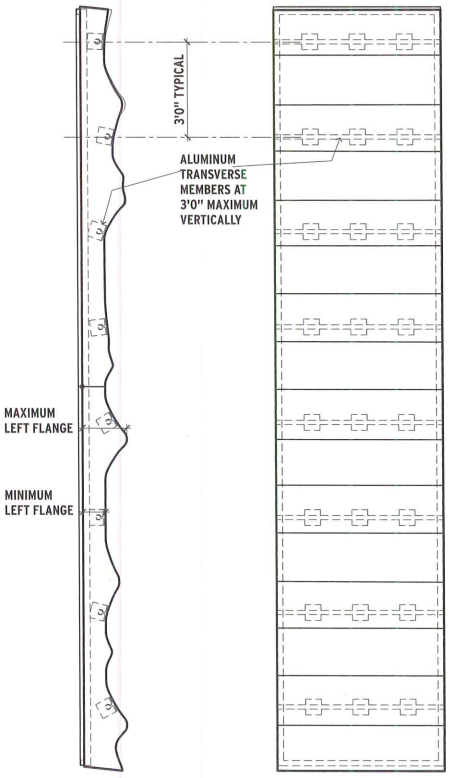
SAN FRANCISCO MUSEUM OF MODERN ART
SAN FRANCISCO

The main facade of Snøhetta's addition to SFMOMA, now under construction, will be clad in hundreds of unique panels. These are made of a specially developed type of GFRP that complies with fire codes but is light enough to be attached to a unitized curtain wall system—an approach that reduced the amount of supporting structure required and saved money.

The off-site manufacturing process was very precise, but there was no visual control, as Schneider puts it, over the on-site installation of the precast panels. These were positioned in place behind a wood falsework that defined the ceilings' canted surfaces. Once the panels were secured, concrete structural beams that connected to them were poured. "We only got to see how it looked once the wood was removed," says Schneider. The results however, were just as designed, with tolerances between panels of less than 3/16 of an inch.

Though Gramazio & Kohler kept the number of unique panels to a dozen to reduce milling expenses, a custom-fabrication shop in the U.S. has devised a cost-effective plan to produce over 700 unique panels for what is one of the largest and most significant digitally fabricated building projects to date—the main facade of the San Francisco Museum of Modern Art (SFMOMA) expansion by New York– and Oslo-based Snøhetta.

Snøhetta was selected in 2010 as the architect for SFMOMA's approximately 225,000-square-foot addition from a shortlist that included Adjaye Associates, Diller Scofidio + Renfro, and Foster + Partners, unveiling a preliminary design nearly a year later. The long, narrow building, slated to open in early 2016, runs along the back of Mario Botta's iconic brick museum pile from 1995. As Snøhetta developed the design in building information modeling (BIM) program Revit and with a series of handmade models, the bowing facade—which cantilevers 25 feet at its widest point, primarily over a new entry—took on a rippled appearance, inspired in part by the fluidity of the nearby coastline, but also by the PacBell Building directly behind it. Designed by Miller and Pflueger and completed in 1925, the Art Deco office tower composed mostly of terra-cotta and traces of stone, has



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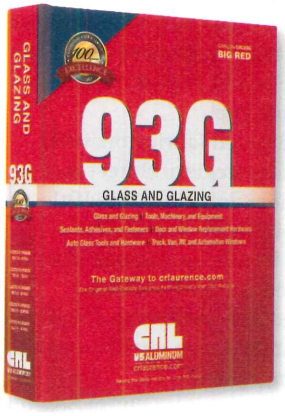

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many qualities similar to the addition's facade, according to Snøhetta founding partner Craig Dykers. "It appears to move a lot, and catches light in different ways," he says. "It feels substantial, and is made of big, heavy monolithic elements." Dykers's building, on the other hand, needed to be as light as possible, even if the panels averaged 5 feet wide by 26 feet long. "We knew we had to develop a wall system that would be economical but provide variety."

Enter Kreysler & Associates. Located in the Napa Valley, 35 miles northeast of San Francisco, the custom fabricator has been leading the way in the use of composite materials in construction, working with artists and architects on large sculptural works, acoustic surfaces, facade panels, and replicas of historic building elements for restoration projects. SFMOMA, however, is its biggest project to date.

It also represents an achievement in material advancement. For the project, Kreysler developed Fireshield 285, a glass fiber reinforced polymer (GFRP) with a cementitious aggregate that achieved compliance with the National Fire Protection Association's 285—a standard that establishes fire-resistance requirements for exterior non-load-bearing wall assemblies. "The main barrier in the use of composites for construction in this country has been the strict fire codes," explains Bill Kreysler, a former boatbuilder who had been using the synthetic materials in that capacity for decades. Though other composites would have complied, the new Fireshield panels have the advantage of being extremely light.

To cover over 75,000 square feet of facade with the material without repeating a panel, Kreysler made hundreds of unique molds out of digitally cut expanded polystyrene foam. "It's perfect for two reasons," he says. "It's very inexpensive, and the shavings and used molds can be returned to the maker to be recycled."

Now under construction, the large sculptural panels, already attached to their aluminum frame, are beginning to be installed one floor at a time on the entire 200-foot-tall east facade and small portions of adjacent faces. "Engineers didn't think they'd be able to use a unitized curtain wall system if we had gone with glass fiber reinforced concrete or ductal concrete, because those materials are heavy," recalls Kreysler. "But at 3 to 4 pounds per square foot, our material is lightweight enough to be attached to a unitized system, which is extremely cost-effective, since it requires much less steel."

The ¼-inch-thick GFRP panels are lightweight but also extremely resilient. "The biggest fear was how durable it would be," Dykers admits. "At a visit to see the mock-up, I picked up the biggest rock I could find,

SAN FRANCISCO MUSEUM OF MODERN ART
SAN FRANCISCO

Kreysler & Associates cut the molds for the SFMOMA facade panels, with a CNC machine, from expanded polystyrene foam and then manually refined their contours. On top of the foam, workers glued a layer of aluminum foil. After spraying a concrete gel coat inside the mold, they placed layers of glass-reinforced laminate. A label attached to the back of each panel details tracking and quality-control information. As a final step, the concrete-gel finish is touched up by hand.

and I just hurled it at it, and it didn't make a mark." The panels resisted more formal subsequent tests with a sledgehammer. Their complex curves also give them greater stiffness, though with a ⅜-inch gap between panels, the facade is designed so that all its pieces move together in a seismic event.

The curtain wall assembly, which includes the wavy rainscreen panels in front of a weatherproof enclosure, was developed with facade engineering and curtain wall–design company Enclos; these components are being put together at a warehouse outside San Francisco and delivered to the site as construction progresses. With no storage on the tight urban lot, digital fabrication and the off-site manufacturing offered a clear advantage. But in this case, the human element is not lost. The final step to smooth out the surfaces was done by hand, because a last pass on the computer would have been too time-consuming and expensive. "People think craftsmanship is lost in digital fabrication, but that's not true," Kreysler says. "It just shifts in emphasis."

Craftsmanship, or the lack of it, was a major consideration for Kansas City–based 360 Architecture when designing the marquis venue for Basrah Sport City in Iraq, completed last year. "We didn't set out to do a digitally fabricated facade," explains project designer Ryan Gedney. "But it became clear that the construction quality in Iraq and the capabilities of the contractor—who had no experience doing stadiums—weren't sufficient to execute the structure as we would expect." Digital fabrication filled that gap.

The architects targeted fabricators with experience doing large-scale architectural projects, though there are only a handful throughout the world. They found BFG, a composites facility in nearby Bahrain that, like Kreysler, started out in the boating industry and moved into producing composites for building construction—in this case, mostly domes for mosques.

Thornton Tomasetti was already on board as the project's structural engineer and subsequently took on the engineering of the facade, whose design features large boat-shaped panels that interlace with structural

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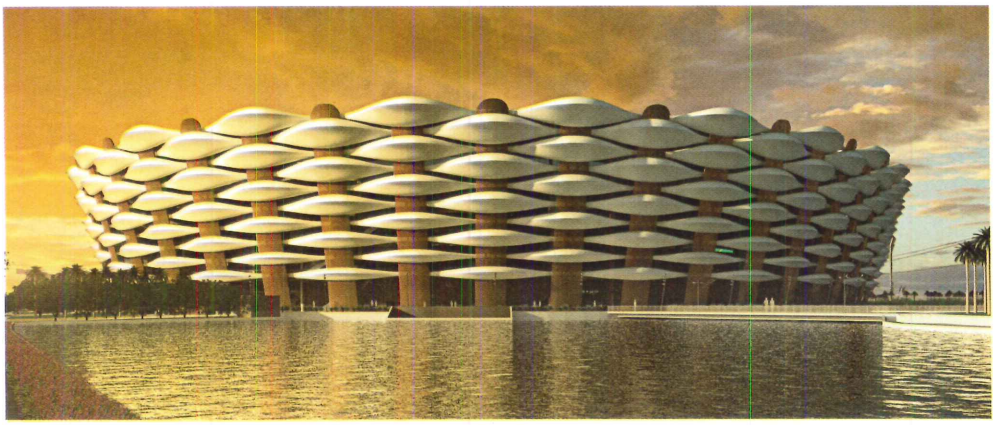

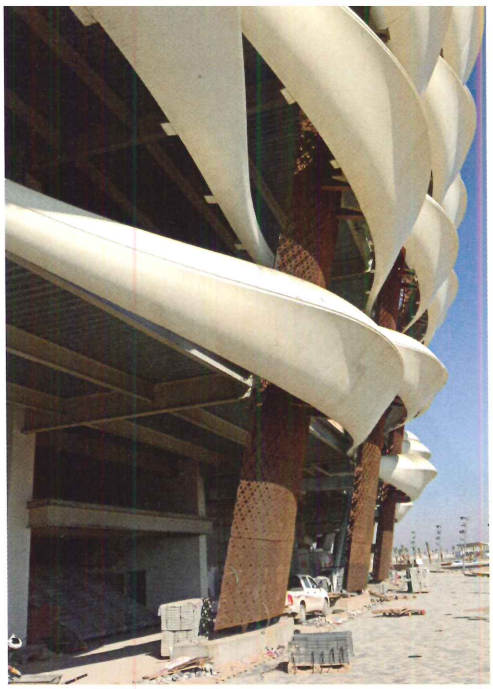

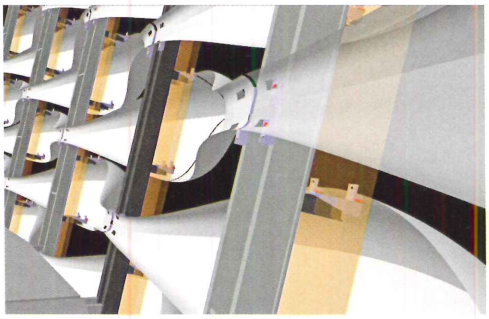

steel columns covered with more delicate-looking steel shrouds evoking traditional Middle Eastern *mashrabiya* screens. The combination produces a permeable building skin for the 65,000-seat multipurpose facility designed to FIFA soccer guidelines and international track-and-field standards.

Both the engineer and the panel fabricator used the aerospace engineering and fabrication software CATIA. "There's a high level of control over curvature in CATIA, especially in manipulating tangencies between neighboring panels," says Jonatan Schumacher, director of Thornton Tomasetti's CORE (Computation Research) Studio, based in New York. "And it was definitely a plus that BFG used it too."

One downside, however, was fabrication time. Originally designed to incorporate 10 unique molds for the varying panel sizes and geometries, the designers had to lower that number to five, since each mold would take up to five months to produce, one at a time. A negative mold was CNC-milled in medium density fiberboard (MDF), and then a positive mold was made by laying polyester resin over the fiberboard shape. The positive was used—and reused—to produce the GFRP panels.

Despite the limited number of unique molds, the digital model revealed that more than 50 different configurations of panel connections would be required. Moreover, with some panels as much as 100 feet long, and the decision to deliver them by land via Bahrain, Saudi Arabia, and Kuwait rather than by sea, panels had to be cut in half to fit onto trucks, leading to the need for additional on-site connections. The steel—which was digitally fabricated elsewhere using Tekla, a structural-detailing software, and information that was custom-exported from CATIA—was delivered to the site ready to assemble, with brackets already welded into place. Despite the inexperienced labor force and the precarious conditions of a war-torn area that required engaging a security agency for site visits, the precision of digital fabrication made the task of connecting all the pieces of the puzzle a little less daunting. According to Gedney, "That was the easy part." ■

MAIN STADIUM
BASRAH SPORT CITY, IRAQ
The 65,000-seat multipurpose venue at a new sports complex in Iraq has a permeable building skin made up of GFRP panels that interlace with structural steel columns covered with perforated-steel shrouds. The panels were fabricated in Bahrain and transported by land to the construction site. Although there were only five unique panel molds, the building's digital model (above, right) revealed the need for more than 50 different connection details.

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Learning Objectives

1 Describe the advantages and challenges of digital fabrication versus traditional methods of construction.

2 Describe the different approaches used to create the highly sculptural building skins in the projects discussed.

3 Outline the advantages and disadvantages of using composite materials in building projects.

4 Identify the various software programs used in digital design and fabrication and explain the roles of these tools in the projects discussed.

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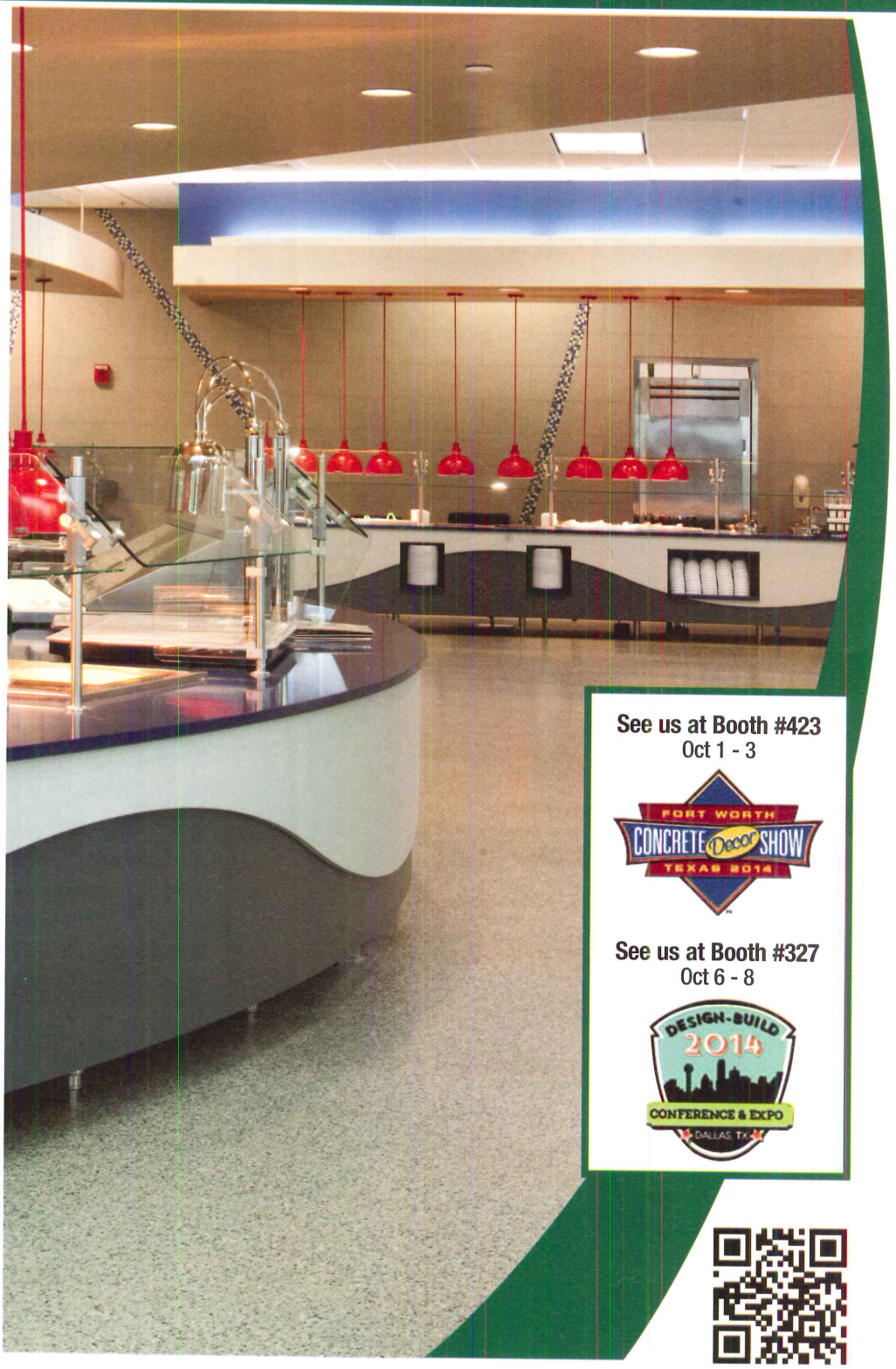

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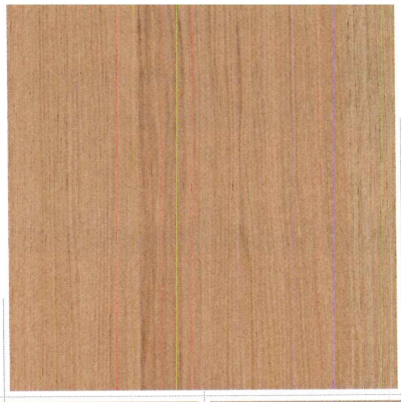



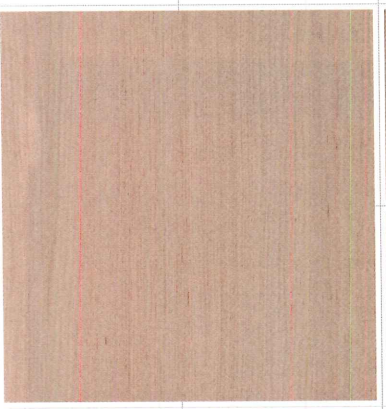

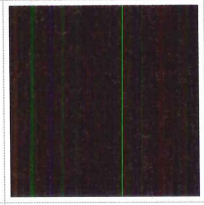


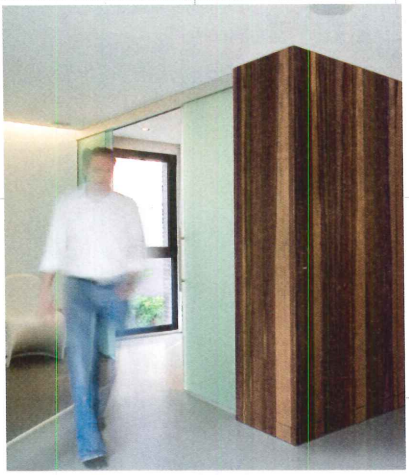


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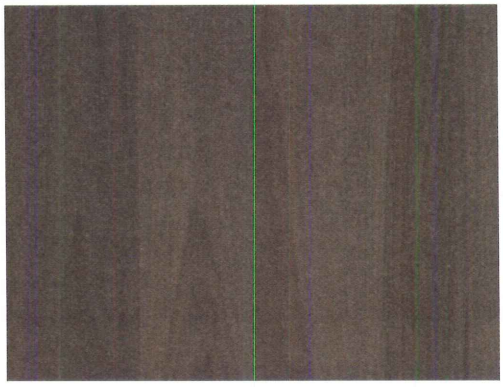

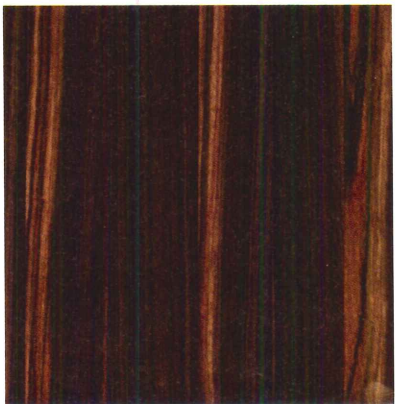


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By C.C. Sullivan

Gates Hall at Cornell University, designed by Morphosis, uses a custom unitized curtain wall with a custom-perforated metal panel system.

Complexity and nuance, say leading architects, are the hallmarks of today's best building envelope designs. From meeting key performance measures to projecting unforgettable aesthetics, their pioneering building projects benefit from the latest innovations in façade systems and exterior cladding products. In fact, the most recent crop of solutions have been designed to exceed baseline needs, protecting the enclosed spaces, improving performance, and lending unique identity to the various building types. To employ them for best effect, façade architecture must be subtle, detail oriented, and installation focused.

"Successful enclosure projects also consider occupant comfort, which has real return on investment" or ROI, says Terry Zeimetz, AIA, CSI, commercial marketing manager for Pella, listing four options for façade window renovations as an example. "To reduce air infiltration, you can leave the envelope as is but seal the existing windows. Or you can seal the façade and retrofit a basic window or a high-performance window product. Last, you can specify windows with sunshades and light shelves, between-the-glass blinds, and/or dynamic glazing to even better regulate heating and cooling requirements." All of the renovation approaches help reduce drafts and temperature fluctuations at the building perimeter.

"Air sealing is critical to maximizing the performance of the building envelope and getting the most out of the thermal insulation in the available cavity along with keeping costs within budget," says Bill Lippy, CEO of reflective insulation manufacturer Fi-Foil® Company, Inc., who has authored technical articles on radiant barriers. "That's why many architects are combining technologies that accomplish these aims—maximizing the envelope while reducing waste and enhancing durability." As an example, he points to "hybrid insulation" assemblies using enclosed air spaces and low-emittance or low-emissivity (low-E) reflective insulation, such as layers of metallic foils, along with typical insulation materials. As explained in ASHRAE Fundamentals, a 3/4-inch air gap in a wall assembly has an insulating value of about R-1; adding a low-emissivity barrier film can improve the performance to R-3. Multiple low emittance

Photo courtesy of W&W Glass, LLC

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Learning Objectives

After reading this article, you should be able to:

1. List key energy and green building goals that impact façade design, and their underlying metrics.
2. Explain two or more design tools and construction processes that make building façades more predictable, durable, and energy efficient.
3. Discuss how various fenestration and framing technologies have been developed to meet such goals of energy efficiency, green building, and life safety.
4. Describe façade components, finishes, and systems that can make buildings more durable or resilient to severe weather and also improve occupant comfort.

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layers can boost performance even higher.

Such methods also cut energy use, which—along with occupant comfort—is a top project objective. Overall thermal performance of a façade is reported as U-value, which is the heat transfer coefficient of the full enclosure; the lower the U-value, the better the insulating capacity and thermal performance. "Part of controlling heat transfer is insulation and the trend is toward higher-performance products being used in façades. Historically, this was achieved by reducing the window-to-wall ratio," or WWR, says Jody Cash, vice president of operations with manufacturer Quest Window Systems Inc. "But lower WWR means reducing daylighting, which is generally not preferred. So architects are seeking unitized window systems that are better insulated, especially in the non-vision areas."

The increased use of unitized systems helps to control façade construction variables, and accommodates the use of thermal performing advances such as triple glazing, says Donnie Hunter, a Kawneer Company architectural promotion marketing director whose background is in architectural engineering. "The leading systems also have better thermal break pockets, such as the frames with two thermal breaks: dual-polyurethane pour and debridged or polyamide inserts, with frame depths of up to 6 inches, and up to 7.5 inches for curtain wall," he explains.

These incremental improvements benefit one of the major façade design trends of today, in fact: the desire to use ever-larger spans of glass. Yet design teams must also specify well-engineered products designed for structural performance, say experts. "Insulated glazing units, or IGUs, are engineered for energy efficiency, so the manufacturer or fabricator must have a track record of making IGUs and IGU spacers that can withstand significant amounts of deflection," says Jeff Haber, a managing partner with W&W Glass, which specializes in point-supported glazing systems.

Other material innovations are complicating these structural calculations—while also creating the means for new design expression. For example, the use of durable, shatterproof polycarbonate instead of glass—which for

Photo courtesy of Fi-Foil® Company, Inc.

For air sealing of the envelope and to control façade system emittance and radiant heat to improve thermal performance, some projects use hybrid insulation assemblies with enclosed air spaces and low-E reflective insulation.

decades has been much more prevalent in Europe—has helped improve fenestration insulating values and reduce solar heat gain, making façades more efficient. "Compared to glass, polycarbonate panels provide about double the R-value," says David Strait, director of sales and business development at EXTECH/Exterior Technologies Inc., which fabricates polycarbonate glazing systems. "And the translucent materials admit diffused daylight, which eliminates glare and hot spots on the interior."

Another design approach gaining from the success of European exemplars has been the use of rainscreens, says Paul Schwarz, CEO of Architects' Surfaces, also known as FunderMax USA. FunderMax manufactures compact high-pressure laminate (HPL) cladding materials for the North American construction market. "The most important element of an open-joint rainscreen, which is drained and back-ventilated, is to provide a reliable and effective weather-resistant barrier on the substrate behind the rainscreen system," he explains. "The highly durable compact HPL rainscreen cladding reduces energy costs by minimizing hot and cold air and thermal movement through the wall."

While innovation with rainscreens and polycarbonate, among other materials, is a major driver for today's façade designs, in some cases architects are also relying on timeless, classic approaches that have benefited from incremental improvements over the decades. As an example, tried-and-true anodized aluminum finishes are seen as resilient, sustainable

Photo by Ben Benschneider, courtesy of Guardian Industries

Using targeted glass formulations on different elevations helps optimize light transmission and thermal performance, as at the Swedish Medical Center in Issaquah, Washington, designed by CollinsWoerman Architects.

The Volo Aviation hangar at Sikorsky Memorial Airport in Stratford, Conn., designed by Beinfield Architecture, uses a full-height translucent polycarbonate facade to provide insulation as well as daylighting within the large technical facility.

Photo courtesy of EXTECH/Exterior Technologies Inc.

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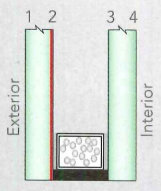

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GLASS FAÇADE PRODUCT SELECTION CRITERIA

Radiant energy transfer is the key to the selection of glazed fenestration. Four properties contributing to radiant energy transfer are transmittance, emittance, reflectance, and absorptance.

As its name suggests, emittance is the property that is addressed by low-emissivity (low-E) glass. Yet all areas of a window assembly or curtain wall may affect the types of performance expected for radiant energy transfer.

Three of the four properties also contribute to the overall performance of glazed fenestration:

Solar Heat Gain Coefficient (SHGC)
The tendency of a fenestration assembly to resist heat gain caused by direct or indirect solar radiation is quantified by SHGC.

Visible Light Transmittance (VLT)
Visible light transmittance describes how much visible-spectrum light comes through a glazed assembly. More visible light generally means more daylighting opportunities—and higher heating loads and more potential for glare.

U-Factor
The U-factor essentially describes how well a fenestration assembly insulates the building, similar to an R-value. Instead, though, it summarizes the window or skylight's total rate of heat transfer. From indoors, a window with an excellent U-factor will not be as cold to the touch in winter as a similar window with poor U-factor.

Photo courtesy of Bosa Development

Some façade systems, like the one used for Insignia Tower in Seattle, designed by Perkins & Company Architects, are designed so that each infill of glass, panel, operable window, or door is individually drained, as well as the surround of the window.

and healthy, says Phil Pearce, LEED AP, vice president of sales and marketing for Lorin Industries, which anodizes aluminum coil for architectural uses. "It may cost more than paint, but it never chips, peels, or flakes, and it passes a pencil hardness test for graffiti resistance, ASTM D3363," says Pearce.

While industrial anodizing dates to the mid-1920s, the results still can outshine other metal finishes, especially with the color and finish consistency that continuous coil anodizing can deliver, as opposed to batch or piece-part anodizing. Yet many of those metal cladding assemblies benefit from design processes and material innovations that are only recently becoming mainstream.

INFLECTION POINTS IN FAÇADE DESIGN

For a closer look at how façade and cladding product approaches are shifting architectural currents, the following five topics demonstrate where manufacturers and fabricators have provided products or systems that lend subtle inflection points. These begin with the emergence of new design tools that are successfully expanding the horizons of building envelope performance.

Underlying the new tools—which include standalone online calculators, specification analytics, and output ready for use with building information modeling (BIM) platforms—are widespread concerns about incomplete or inappropriate specification practices. "Experienced architects know you can't just always go with what you've used before," says Andy Nixon, a builder sales manager and architectural specialist for Simonton Windows & Doors. "Yet the specs we see are often very broad, or they list performance and thermal characteristics that are out of synch with the project or application."

Nixon and other window makers recommend that architects spell out the required standards, including American Architectural Manufacturers Association (AAMA) certifications, the North American Fenestration Standard (NAFS), and National Fenestration Rating Council (NFRC) listings. Specifications should also provide all relevant performance components, such as U-values, visible light transmission (VLT), and solar heat-gain coefficient (SHGC), among others.

In total, the designer should be able to answer seven or eight basic questions beyond aesthetics, including the frame material choice, the required AAMA performance grade (PG), and the design pressure (DP), which identifies the wind and snow loads the product can withstand. Newer spec criteria include air leakage, which Nixon says will be required for the federal Energy Star program in 2015, as well as any specialized criteria for acoustics, impact resistance, security, child safety, and protections for wildlife, such as birds and sea turtles.

BIM Integration and Specification Tools

With more accurate specifications and project takeoffs in mind, several manufacturers have created design tools to get answers to these many façade questions. "With so many products out there, architects are asking, how do I choose the best one for the project?" says Chris Dolan,

director of marketing for Guardian Industries, a glass manufacturer. "We've created a Glass Analytics program to give the design team a head start and a tool to use for architectural glass solutions." The online selector allows the project team to down-select or tailor the glass specification and test its suitability in four discrete steps: first, by estimating glass performance variables such as VLT, U-factor, and SHGC. Second, the tool estimates energy use for the proposed building based on its size, orientation, and location. With these results, a third step is to use a built-in generator to create a BIM object for the glass product under consideration. Fourth, a visualization module lets the project team review the glass option in terms of simulated color, light qualities, reflectance, and reflectivity, from both an outside and inside view.

Beyond the physical glass samples that are commonly compared to determine the impact of glass choice on a project's aesthetics and interior spatial qualities, the visualization allows for a relative understanding of these effects, which helps inform glass selection early in the design process.

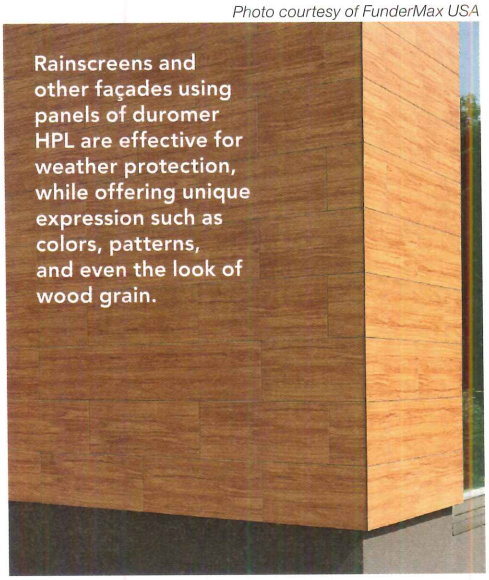
In addition to isolating the proper glazing considerations, other new analytical tools have been developed to evaluate the interdependencies between various building systems, says Jack Williams, a former engineer and now director of product marketing for EFCO. Developed with the energy consultant The Weidt Group, the envelope analysis service helps account for ways energy is lost through the envelope in addition to variables such as U-factor and SHGC. "But what about sources of air leakage, and the comfort of people inside the building?" asks Williams. "This analysis service allows you to compare a simple renovation solution against a very high-performance solution, such as dynamic windows, curtain wall or storefront."

As an example, Williams points to a recent and extensive retrofit of the iconic Wrigley Building in Chicago, designed by Daniel Burnham acolyte Charles Beersman of Graham, Anderson, Probst & White. The goal was to recapture Beersman's original design intent while improving interior performance and usability to attract new tenants. The analysis by Pella EFCO Commercial Solutions found that 41 percent of total energy use was attributable to the underperforming envelope, and upgrading its 2,000 single-pane windows and air-sealing the openings would save the 1920s Wrigley Building about $276,000 annually in energy costs—a 27 percent savings—and reduce carbon emissions by 1,730 tons per year, or about 22 percent. The payback of about 15 years was sweetened by the fact that windows with a higher thermal resistance would allow occupants to relax the thermostat set points by up to 5°F, for significant energy savings. The windows and air-sealing would also reduce drafts by 51 percent.

Using an envelope analysis tool for the iconic Wrigley Building in Chicago, the project team showed that 41% of total energy use was due to the underperforming envelope. The solution was to retrofit 2,000 single-pane windows and air-seal the openings.

Photo courtesy of Pella EFCO Commercial Solutions

Photo courtesy of FunderMax USA

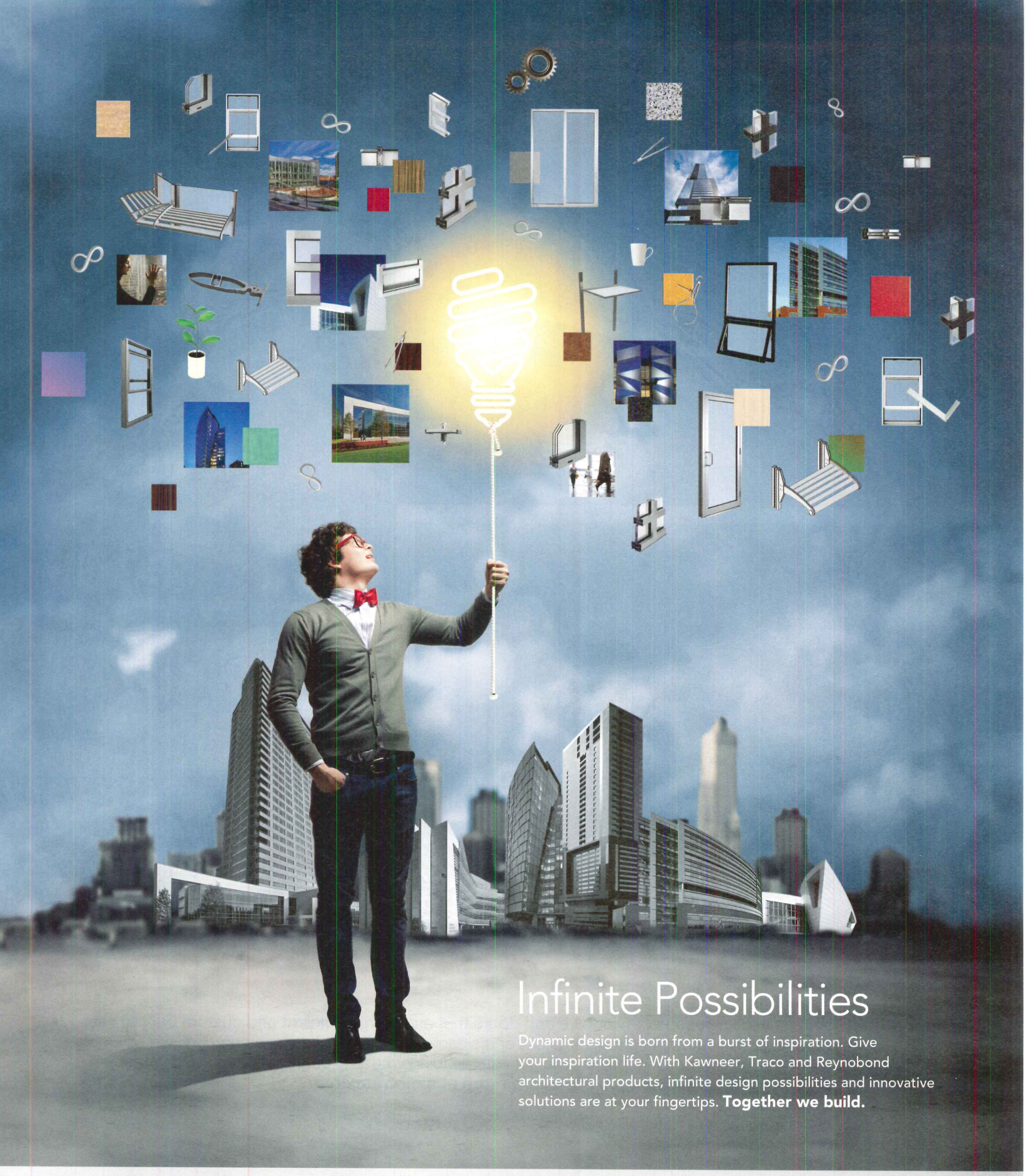


Rainscreens and other façades using panels of duromer HPL are effective for weather protection, while offering unique expression such as colors, patterns, and even the look of wood grain.

Thermal Performance and Moisture Control

In addition to sealing against air leakage, a variety of advances in façade system engineering relate to preventing unintended penetration of moisture and water through the façade. For window wall and curtain wall, there are three types of assemblies to consider: face-sealed, water-managed, and pressure-equalized rainscreen systems. Whichever is selected, the façade system must mitigate water infiltration caused by gravity, wind, air pressure differentials, and capillary motion.

"Prevention of water penetration is a function of how the fenestration systems are detailed and installed, including frame construction, drainage details, gaskets, flashings, and sealants," says Quest Window's Cash, who currently has projects in such cities as San Francisco, Seattle, Toronto, and Denver, among others, using the company's unitized window systems. "Watertight frames and drainage of the glazing pocket are essential in keeping water out." The system is designed so that each infill of glass, panel, operable window, or door is individually drained. The same philosophy is then expanded to the surround of



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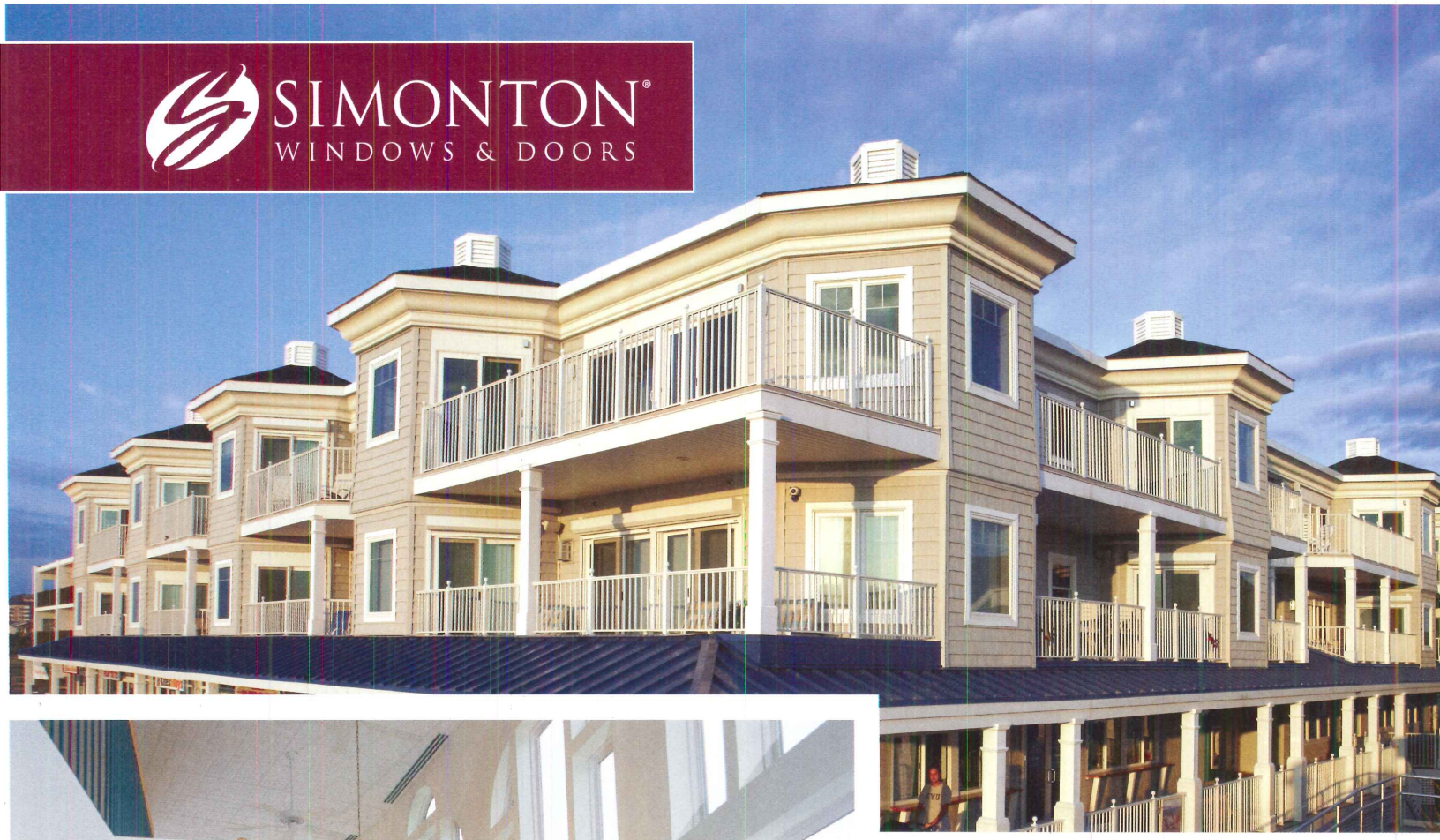

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the window, backsealing, membraning, and flashing the cavity around the window to be pressure equalized and drained. Cash explains that in Quest's façade system, each floor is isolated from the next using this approach. Project examples include Insignia Tower in Seattle, designed by Perkins & Company Architects.

One successful approach Cash details is a window wall system that bypasses the slab, with about half of the window unit's depth cantilevered off the slab edge—or, more accurately, "extended downward to bypass the slab," he says. "This method meets America's toughest seismic standards and also provides a very long path for water to climb at the slab-edge detail." This means that even as slab height varies, there is a long and impenetrable path for water to move and migrate up and into the building. More important, the detail can give a building the look of an all-glass tower, without the use of curtain wall. In some cases, opaque panels in the unitized windows are used instead of aluminum composite material (ACM), precast, or other solid materials supported by a structural stud wall, reducing the number of trades needed for façade construction and limiting responsibility of the waterproofing to fewer elements or trades.

Moisture management is important for any cladding systems, including rainscreens, says Paul McCafferty, U.S. technical director for Architects' Surfaces. The multi-component approach of rainscreens includes a cavity, thermal layer, air barrier, moisture barrier, and supporting wall in addition to the cladding system. Yet the cladding must meet basic weathering criteria to remain durable and attractive over many years. "Compact HPL panels meeting the EN 438-6 standard and ICC AC92 testing criteria with enhanced fire resistance, type EDF, are very effective for weather protection, resisting delamination and water intrusion, and exhibiting very minimal color change over decades of weather and sun exposure," he adds.

Next-Generation Glazings

In addition to these panels, windows, glazing units, and stick-built curtain walls are also incorporating advanced glass formulations that allow more light transmission or VLT while reducing solar heating, measured as SHGC. In more cases, the options being considered include low-E coated glass, active glazings such as switchable, *electrochromic glass* with its user-controlled tinting, as well as insulating polycarbonate panels, which are used extensively in countries where energy costs are a primary consideration.

Material choice and specification begins with top-level issues, such as desired color or

Photo courtesy of Kawneer Company, Inc.

At Drexel University, the new Millennium Residence Hall features a unitized curtain wall that was specified to have coordinated glass panels and aluminum composite panels, all provided by the same manufacturer.

appearance, and related aesthetics, such as the need for matching vision and spandrel glass, says Guardian's Dolan. "Glass can be specified as clear, but newer low-iron glass formulations are even more clear than those standard glazings marketed as clear, offering a more neutral and less greenish look," he explains. Glass colors such as light gray, gray, green, and others are also available, all with low-E coatings. "Because of advances in low-E technology in recent years, as many as five to 18 layers of metal or metallic oxides can be deposited onto the glass surface, boosting its performance." These include new "triple-silver coatings" that yield an attractive neutral/blue reflected color yet boast a low SHGC of 0.23—meaning that 77 percent of the solar energy is blocked—while allowing 51 percent light transmission.

In spite of these very high performance levels, architects are also considering alternatives. "While the glass industry has been adding exotic treatments to their formulations to improve performance, polycarbonate is naturally good at insulating and rejecting solar heat gain," says EXTECH's Strait. "For applications such as clerestory openings in gymnasiums, industrial facilities, or any place that does not require visual access, translucent polycarbonate glazing admits high levels of natural light while eliminating glare." In addition, polycarbonate—made from thermoplastic polymers—is shatterproof, easily molded to various shapes, and can be color-matched to a particular design scheme. Properly integrated into an engineered framing system,

polycarbonate glazing is effective in reducing air infiltration, controlling moisture entry, and meeting any required codes.

Other glazing innovations like these are boosting the WWR for new buildings while keeping energy performance within tight ranges. Dolan notes that pre-painted glass in very large sizes is now available for spandrel applications. These manufacturer-painted panels are then cut and heat-treated by fabricators—some of which don't paint glass or previously required longer lead times to do so—making it easier to improve glass matching on the façades.

Whether spandrel or clear or coated glass, the ever-larger panels are helping accommodate the trend toward larger IGUs and lite sizes. Bigger units mean reductions in the number of frame components and amounts of field labor as compared to traditional systems. For example, while a 30-foot opening might typically require six modules, now they are commonly achieved with two or four units that have steel reinforced members, depending on seismic and wind load requirements. With larger openings come greater demands on manufacturer and contractor quality, cautions Haber of W&W Glass—and this in a market that still exhibits a post-recessionary "hangover" accustomed to commodity pricing and generic performance levels.

"Large-span façades are all about glass engineering," says Haber. "Yet the design team is facing quality issues in glass fabrication such as roller-wave distortion due to softening from the heat-treating process and nickel sulfide spontaneous breakage, a catastrophic failure seen in heat-tempered glass with nickel sulfide contamination." While a heat-soak process is used by most U.S. and European manufacturers to reduce or eliminate potential breakage, Haber says that some Chinese glass suppliers are distributing low-cost glass with dramatic increases in nickel sulfide content, resulting in significant instances of onsite breakage.

In addition, cost and warranty issues loom larger as glass panels get bigger, Haber notes. "Oversized glass manufacturing, packaging, shipping, and installation are inherently riskier and more expensive, and also limit the number of vendors who can make the product," says Haber. "To limit liability, architects and their project teams should start out with a solid, performance-based specification with prequalified vendors and then pick the right product, always insisting on a manufacturer's warranty for the system, not a warranty from the subcontractor, who is really just a system amalgamator."

Unitized, Pre-Engineered Systems

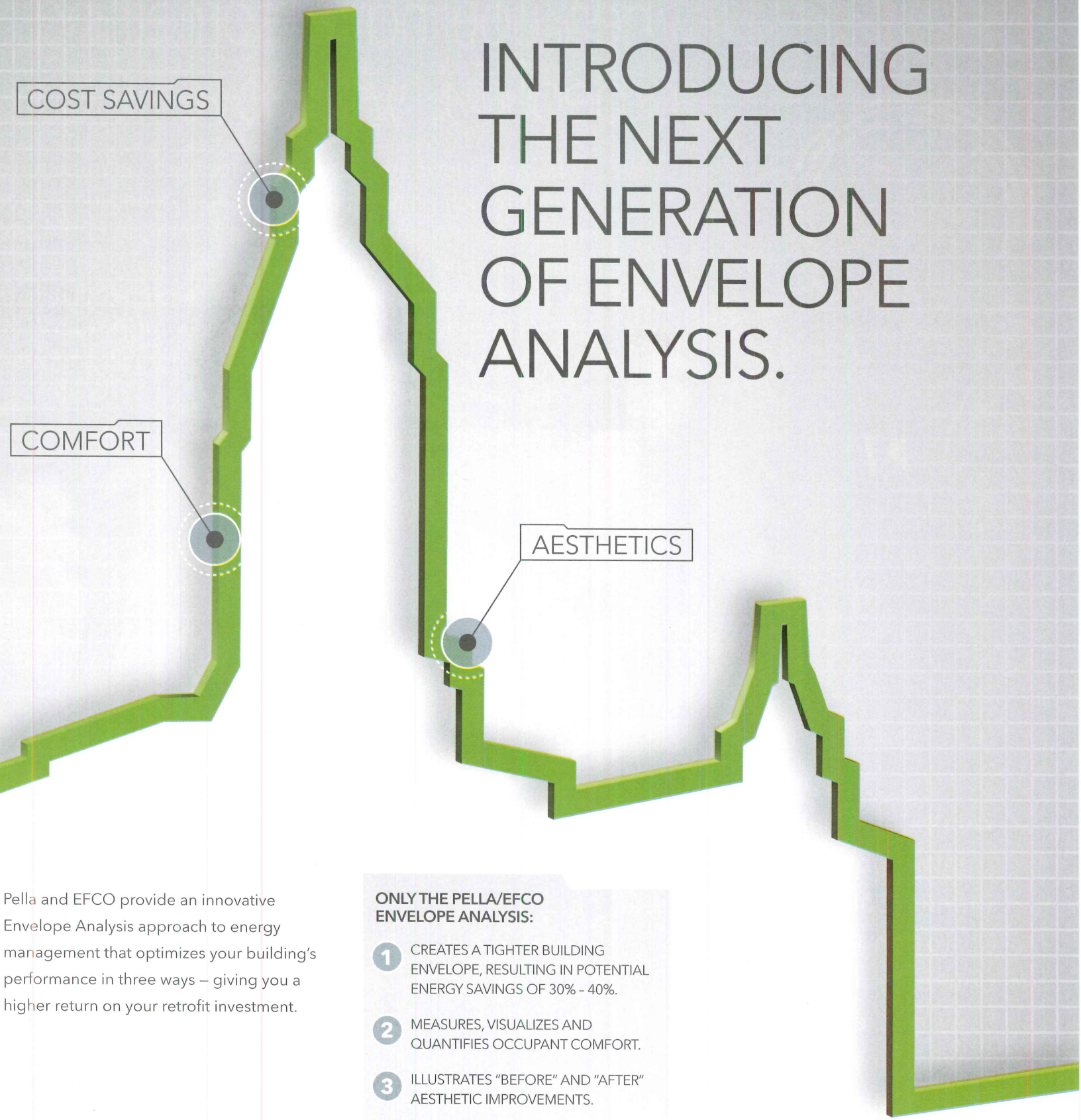
With these quality and liability issues in mind, an increasing number of architects are specifying unitized products where site-assembled once predominated. "More and more mid-size façades are using unitized solutions on smaller projects, such as four- to eight-story buildings, which traditionally would be stick-built and are now more often unitized," says Kawneer's Hunter. "The reasons are that today, the glazing skills are harder to find depending on the area of country, and the glazier's trade is handed down from generation to generation rather than taught in schools."

So more contractors want to unitize their low- and mid-rise projects, which brings the added benefits of improved quality control and by having the ability to closely monitor labor in a shop environment vs. in the field. It can also accelerate the scheduling, helping the contractors enclose the buildings faster and expediting occupancy. "But it takes more pre-planning and you have to get all shop drawings completed and approved so that manufacturing can start earlier in the project sequence," Hunter adds.

Quest Window's Cash agrees, adding that about 30 percent of the company's unitized façade systems are specified as opaque openings, similar to Kawneer's approach offering aluminum composite material (ACM). The same is true with polycarbonate glazing systems, adds EXTECH's Strait, which are sometimes combined with glass panels for variety, view, and increased visible light. "We pre-fabricate the entire glazing system in our shop, so that it arrives at the jobsite ready to install. We eliminate the uncertainties associated with

Photo courtesy of Simonton Windows & Doors

For the LEED-certified Elizabeth Seton Pediatric Center, a long-term-care facility for 130 children in Yonkers, New York, the firm Perkins Eastman specified crisp, white vinyl frames for new picture windows and casements using low-E glass with argon gas fill.



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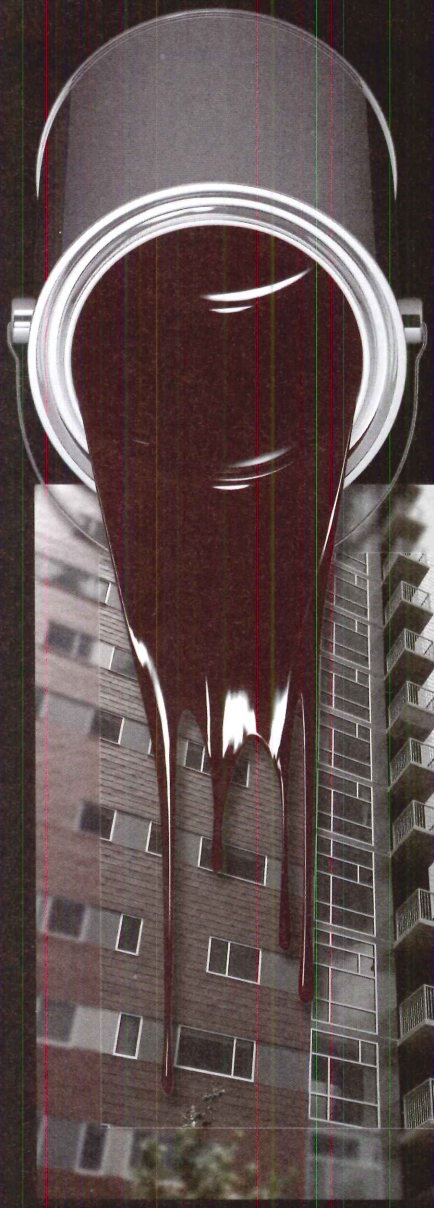

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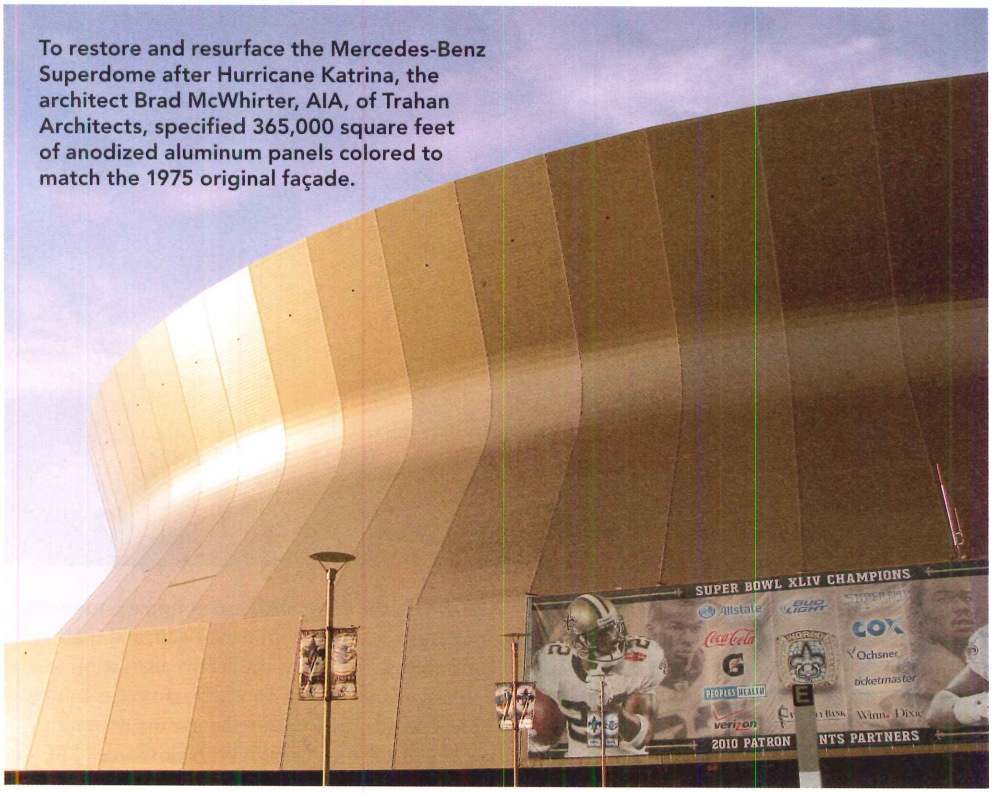

To restore and resurface the Mercedes-Benz Superdome after Hurricane Katrina, the architect Brad McWhirter, AIA, of Trahan Architects, specified 365,000 square feet of anodized aluminum panels colored to match the 1975 original façade.

field fabrication," says Strait. "Deep glazing rabbets and low-friction gaskets help the façades maintain an effective seal against air and water infiltration, while allowing for thermal movement of glazing."

Manufacturers of unitized systems also offer a variety of specification and installation services to help smooth the project work. This typically starts with engineering support in the design phase followed by an optional mock-up phase, which many façade consultants recommend, noting that it is a required element of building enclosure commissioning (BECx). Later, the product manufacturers offer installation guides and field support to contractors and the trades. Some even offer training and certifications in their particular specialties.

In addition to product laboratory testing and project field checks, the mock-up helps "verify that the individual systems are assembled and installed appropriately, [and] that all systems will function interactively to meet the project goals," according to Rick Ziegler, P.E., a BECx expert with engineering firm Smith Seckman Reid. "The testing conducted is typically not as comprehensive as laboratory testing, but can include structural, seismic, thermal, durability, air infiltration, and water penetration." Mock-ups can be valuable for both stick-built and unitized systems, though the unitized systems tend to benefit from more lab review, reducing issues found in the mockup tests.

Touting this benefit, a number of door and window makers offer industry-standard certifications for product performance and integrity, says Simonton's Steven Saffell, a technical expert. "AAMA's Gold Label certification states who manufactures the product and to what levels it has been tested, and the information is publicly available on their website," he explains. "This gives the end-user confidence that can't be matched by self-certification or other audits that don't have an independent third party involved." According to AAMA, its certification program and familiar Gold Label are required by many federal, state, and municipal building codes and administrators.

AAMA's certification programs, which began more than 50 years ago, are ANSI-accredited and require testing to the NAFS standard known as 101/I.S.2/A440-11. The required battery of tests shows that the products meet minimum criteria for assembly air leakage, zero water penetration at certain wind speeds, structural resistance, and life-cycle durability. Optional certification for thermal performance and condensation resistance may be included using the AAMA 1503 method or an NFRC equivalent, and some products only tested for thermal values are given AAMA's Silver Label certification. For the Gold Label, however, manufacturers must even submit to unannounced plant inspections.

Resiliency, Durability, and Life-Cycle Benefit

The product control side of building quality is only half the battle of façade design, however. Savvy architects note that good long-term design decisions are too often undermined by underlying challenges in the commercial building market, ranging from mortgage financing and short-term ownership to value engineering by contractors and even low costs for dirty energy sources. These forces can cheapen projects and make them less adaptable to future conditions, often with insidious or even catastrophic consequences.

Fortunately a number of countertrends are encouraging investors and project teams to boost building value and think long-term. In addition to the green building movement—with its emphasis on life-cycle assessment (LCA), resource conservation, and low maintenance needs—the new interest in resiliency is raising quality expectations for architecture. As defined by the Resilient Design Institute (RDI), resiliency is "the capacity to adapt to changing conditions and to maintain or regain functionality and vitality in the face of stress or disturbance." To survive earthquakes, hurricanes, droughts, or the next energy crisis, says RDI, today's buildings should be (a) simple, passive, and flexible; (b) durable in terms of methods, materials, and design; and (c) reliant on locally available, renewable, and reclaimed resources, "such as solar energy, annually replenished groundwater, and local food, [which] provide greater resilience."

This thinking is also dramatically influencing product manufacturers focused on façades that can enhance long-term value and building life expectancy. "We're investing in a proven and efficient technology, coil aluminum anodizing, which is a very benign process in environmental terms yet is also among the most durable, resilient finishes for architectural metals," says Lorin's Pearce, explaining that the process recovers materials, reuses water, and neutralizes industrial chemicals so no harmful materials negatively impact the environment. "Plus aluminum is 100 percent recyclable because it does not have the unrecyclable alloying elements found in many other metals," he adds. The resulting finishes have no VOCs, unlike many paint or coatings, and aluminum—with its very high strength-to-weight ratio—provides a resilient, durable structure.

From another point of view, EFCO's Williams illustrates how manufactured façade products are boosting strength-to-weight ratios, thermal performance, and durability by using alternate materials and inventive detailing. "New curtain wall systems are employing fiberglass for pressure plates and the thermal spacer that acts as a setting chair for the glass," he explains "This not only reduces weight but also greatly improves thermal

Photo courtesy of Pella EFCO Commercial Solutions

SmithGroupJJR specified a sophisticated glass wall system for the LEED Gold-certified BAE Systems Land & Armaments complex in Sterling Heights, Michigan, which has a pattern of digital camouflage fritted to the glass to block the view into the building from the nearby road.

characteristics when compared to traditional curtain wall systems."

For wood windows, architects see vinyl alternatives and vinyl-clad wood products as a durable, resilient spec for both retrofit and new building projects, says Megan Mazur, a marketing director at Simonton Windows & Doors. "The perception of vinyl has been changing in the last five to six years, with improved quality of extrusions, better vinyl performance, and such incentives as the Federal Energy Tax Credit in 2009 to 2010 that encouraged the use of high-quality vinyl," says Mazur, adding that vinyl doesn't rot, requires less painting, and offers aesthetics that many architects and end-users prefer. "You can get a look and feel indistinguishable from wood, including durable exterior coatings or interior woodgrain laminates, and all the hardware options expected for wood windows."

While anti-vinyl sentiment has arisen in the past due to vinyl manufacturing processes and presence of dioxin in the materials, the U.S. Green Building Council issued two papers on PVC building materials in 2004 and in 2007 that outlined a technical basis for LEED credits involving PVC-related materials. The reports said that using LCA methods, vinyl materials were not seen to be any less desirable based on environmental or health concerns. This helps explain how vinyl building products outperform competing products, with durable, resilient, and low-maintenance qualities. "Vinyl is a good retrofit and new building material," Mazur concludes. "It can be painted during manufacturing, and we see it used in historic districts, with the thin, architecturally correct profiles and simulated divided lites needed for landmark buildings."

In this way, whether for the hidden recesses of façade systems and even the most persnickety visible details, the use of high-performance materials is not only accepted but in many cases preferred. Another valuable example is the increasing sophistication of insulation and barrier systems, says Fi-Foil's Lippy, which have benefits in installation time, waste reduction, less call-backs, and operational performance.

"There is growing use of hybrid insulation systems that outperform single types of insulation alone, such as combinations of low-emittance multi-layer reflective insulation, insulating air gaps, and an insulation product such as spray polyurethane foam, expanded polystyrene boards, or fiberglass or cotton batts," says Lippy. While SPF is beneficial for air sealing, the applicator teams commonly overfill stud wall cavities, needlessly increasing material costs and requiring them to shave off the excess to be carted away and discarded. Instead, says Lippy, "You can combine closed-cell or open-cell foam with reflective insulation. One example is spraying 4 inches in the 5.5-inch (2 x 6 nominal) stud wall, leaving a 1.5-inch nominal air gap, and then installing a multi-layer reflective insulation to the face fo the studs. Another example is 2-inch of closed-cell SPF with reflective insulation in a 2-inch x 4-inch cavity." With closed-cell SPF running about $1.00 per square foot per inch of depth installed, this saves at least $1.50 per square foot of façade area while providing a high R-value. You cannot completely fill a wall cavity with spray foam without over-spray, which results in unnecessary waste and cost. The hybrid system is a better option.

As the material examples mentioned show—whether it's fiberglass and reflective insulation along with an air barrier or spray foam and reflective insulation—façade product innovation goes to the heart of resiliency and robustness while potentially reducing material needs, waste, and environmental impact. As building enclosure guru Joe Lstiburek, Ph.D., president of Building Science Corporation, based in Westford, Massachusetts, has said, "Durability and energy efficiency are the cornerstones of sustainability."

Continues at ce.architecturalrecord.com

Chris Sullivan *is an author and principal of C.C. Sullivan (www.ccsullivan.com), a marketing agency focused on architecture, construction, and building products.*

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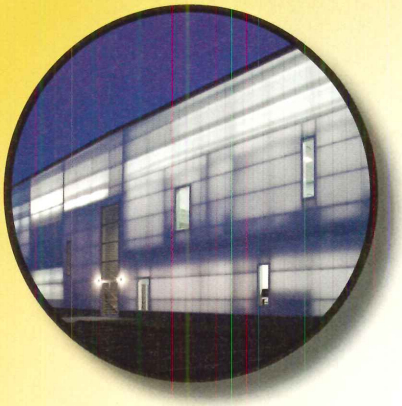

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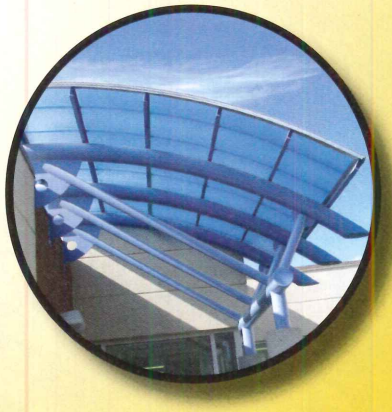

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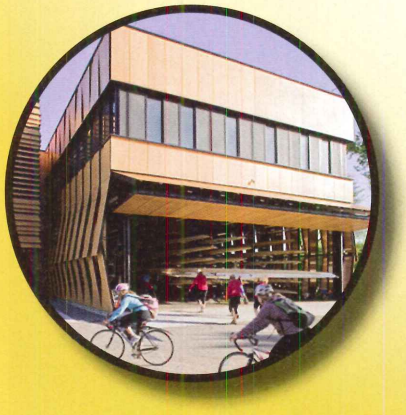

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CIRCLE 67

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Nuanced Solutions for Greener Façades

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PRODUCT REVIEW

Nuanced Solutions for Greener Façades

FunderMax USA

Pre-Engineered Rainscreen Cladding Panels

FunderMax is a global leader in the manufacturing and engineering of phenolic compact panels for exterior applications. It is known for engineering innovation such as the recently introduced Modulo panel system—an economical pre-engineered closed joint concealed fastening panel system.

www.fundermaxusa.com *Circle 17*

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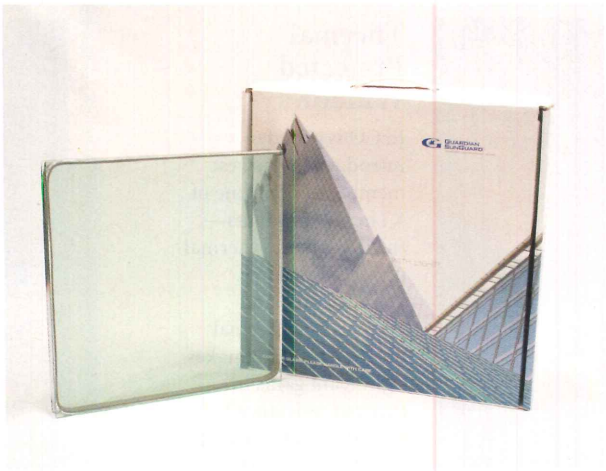

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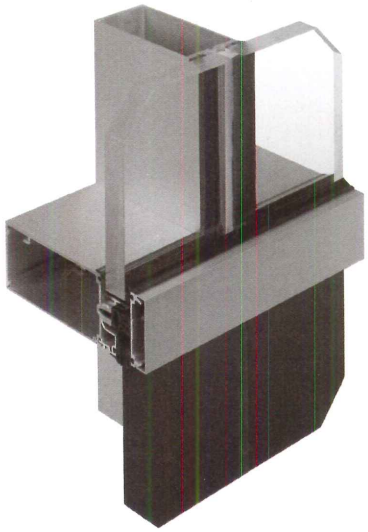

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PRODUCT REVIEW

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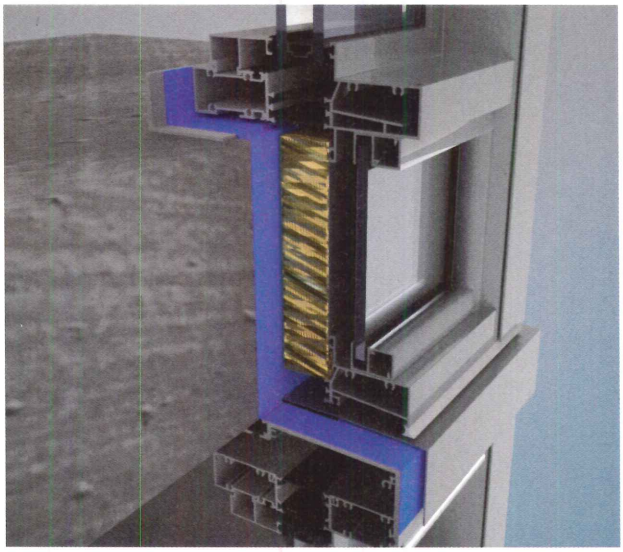

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Learning Objectives

After reading this article, you should be able to:

1. Differentiate between the properties of natural material-based stone wool ceiling tiles and other acoustical ceiling materials.
2. Analyze and explore the fundamentals of interior acoustical design treatment and their relationship to green buildings and sustainable design.
3. Assess the multiple qualities of stone wool acoustical ceilings that can contribute to green and sustainable building design.
4. Recognize and identify the acoustic needs of different design applications and the attributes to look for, including contributions to green building certification.

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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Stone Wool Acoustical Ceilings

A proven, natural building material is now used in ceilings providing high-performance acoustics and smooth, clean surfac

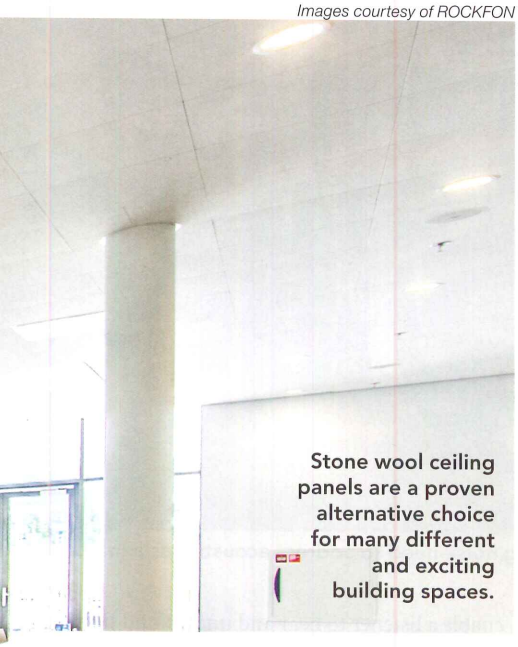
Sponsored by ROCKFON | *By Peter J. Arsenault, FAIA, NCARB, LEED AP*

Acoustical suspended ceilings are commonplace across many building types. Since the 1950s, they have been a preferred design choice due to their ability to conceal but still be accessible to HVAC ductwork, electrical wires, plumbing pipes, phone cables, security lines, and other components of commercial buildings. These suspended, interconnected ceiling systems use a metal grid comprised of cross tees and main runners in various profile sizes. Within that grid, acoustical tiles of different types provide the aesthetic and sound properties desired for a particular space. Although architects often think of traditional materials such as mineral fiber or fiberglass for those ceiling tiles, there is another option where the tiles are fabricated from natural stone wool. This product has impressive characteristics for fire rating, strength, acoustics, and sustainability, among others.

OVERVIEW: STONE WOOL CEILING TILES

The idea of producing stone wool has its origins in the volcanic eruptions on the islands of Hawaii. Early native inhabitants discovered woolen-like strings of stone lying on the ground following these eruptions and attributed it to hair from the goddess, Pele. Modern geologists have identified it as primarily igneous basalt, the earth's most abundant bedrock. This natural stone wool has thus become understood to be formed by the rapid cooling of lava from eruptions on the sea floor which creates the thin strands of stone. The strands flare out randomly creating a non-directional pattern that provides some unique and valuable characteristics related to strength and stability. The recognition of the value of this stone wool has led producers to emulate and imitate the process to create building products out of manufactured stone wool.

Images courtesy of ROCKFON



Stone wool ceiling panels are a proven alternative choice for many different and exciting building spaces.

Manufacturing Process

As a product, stone wool combines the traits of rock with the characteristics of typical fiber-based building products. The manufacturing process is based on using natural, inorganic basalt to create natural fibers with no blowing agent used. In addition, a number of other recycled secondary materials (e.g. sewage sludge ash from treatment of wastewater or residues from metal industry processes) are used to add to the overall properties of the finished product.

The typical production process for stone wool begins with the fusion of the volcanic basalt at a temperature of 2,732°F (1,500°C). The rock, secondary materials, and coke are automatically fed from the top of a cupola-style furnace. The melt runs out of the bottom of the furnace and onto a spinning machine, where stone wool is literally spun. Minor amounts of organic binder and oil are added to bind the stone wool together and to increase water repellency. The wool is then collected on a belt conveyor so its structure and density can be adjusted according to its final use as either a rigid panel product or a batt-style product. Either way, the wool fibers remain non-directional which is important for achieving many of the desired performance characteristics.

In addition to acoustic ceiling panels, stone wool's unique combination of thermal, fire, and acoustic properties make it well suited for blown or batt insulation in cavity walls, board type of insulation for roofing installations, and pre-formed insulation pieces for faced pipe sections and wall slabs.

Once stone wool is formed into the more rigid panels, they move to a curing oven where the final properties are locked in the curing of the binder. Finishing of the ceiling panels relies on the use of a mineral fleece and water-based paint which are layered on top of the stone wool to produce the desired appearance.

Note that since stone wool is naturally porous and sound absorbent, there is no need to create fissures or holes to improve sound qualities. That means that the surface can look more uniform and smoother than many mineral fiber ceiling tiles. The finished panels then proceed on to formatting saws, where they are cut to specific tile sizes, and edge profiling equipment, where final edge profiles are formed. In certain cases, the panels could be diverted to specific custom finishing processes or be led to off-line equipment for special treatment. Once complete, the finished tiles are then gathered and packaged for shipment.

From an environmental standpoint, the off-gases of the production process coming from the furnace, spinning chamber, and curing oven are typically cleaned in filters and after-burners before entering the chimney, helping to assure a rather clean operation. Further, the waste inevitably created during the production is recaptured and reused since it is both fully recyclable and a valuable raw material.

Properties of Stone Wool Ceiling Tiles

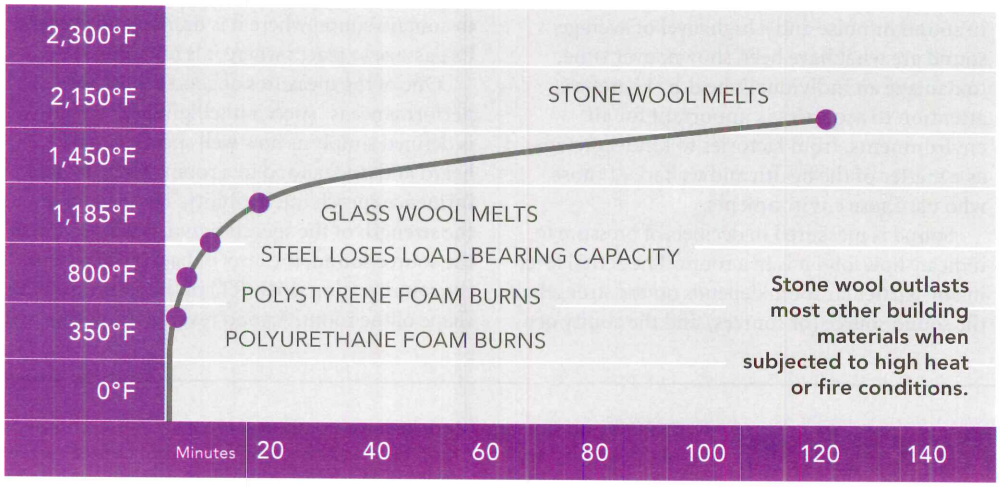
Once completed, stone wool acoustic ceiling tiles generally have a density that is higher than fiberglass ceiling tiles, making them more rigid and durable. Additionally, stone wool exhibits a number of other superior properties when compared to other acoustical ceiling tile choices, which are summarized as follows:

Surface burning characteristics. UL 723 (ASTM E84) / CAN / ULC S102 is a standard method of testing for surface burning characteristics of particular building materials. The test is designed to determine the relative surface burning characteristics of materials under specific test conditions. Results are expressed in terms of Flame Spread Index (FSI) and Smoke Developed Index (SDI). Many commercial applications require an FSI of 25 or less and an SDI of 50 or less. Products labeled "FHC 25/50" (Fire Hazard Classification 25/50) or "Class A" (ASTM E1264) fulfill these requirements. Most stone wool ceiling panels in North America outperform the fire requirements for ceilings due to their non-combustible makeup.

Dimensional stability. This term is generally defined as the material's ability to retain its original shape when subjected to external forces such as varying degrees of temperatures, atmospheric pressures, moisture content, and/or other external stresses. Stone wool retains its manufactured characteristics unaltered over time with the particularly unique property of not expanding or contracting when subjected to changing heat or cold conditions. This has been commonly demonstrated using the ASTM C356 test for thermal expansion. For ceiling tiles, that means a tighter fit in the grid and tolerances can be maintained over time without concerns of the tile swelling or shrinking.

Humidity resistance. Humidity can weaken the structure of certain ceiling materials and cause them to sag. In extreme cases they may even fall out of the grid. This will often happen in buildings under construction where the building is not fully sealed, or materials have not dried out.

Additionally, humidity levels are naturally high in wet rooms like kitchens and sanitary areas, where moisture problems can occur. Stone wool is a hydrophobic material, meaning it does not absorb water and is not impacted by humidity. As such, stone wool ceiling panels have been found to be dimensionally stable at up to 100 percent relative humidity. That means that stone wool ceiling panels can be installed in the early stages of construction (when the windows are not fully sealed) without any risk of sagging.



Mold and mildew resistance. Stone wool is water repellent and has no nutritional value. Hence, stone wool ceiling panels inhibit growth of mold and bacteria through their inherent material makeup. In healthcare buildings, they have also been shown to provide no sustenance to other harmful micro-organisms.

Impact resistance. High-usage areas can create heavy wear and tear on building materials, thus requiring impact-resistant ceiling panels. This is commonly true in settings like schools and gyms where ceilings in these kinds of areas need to be able to withstand tougher-than-average conditions as well as frequent access requirements. Special, reinforced stone wool ceiling tiles are available to address this need.

All of these properties are significant and important in the design of buildings. However, there is one more important aspect that we will delve more deeply into, namely the acoustical performance of ceilings.

Indoor environments that are prone to generating noise need to address acoustics as a matter of human health and welfare.

ACOUSTICS: DESIGN PRINCIPLES FOR CEILINGS

The importance of acoustics is found in the ways that poor acoustics can affect human health and well-being. According to the National Institute for Occupational Safety and Health (NIOSH), high ambient noise levels in a room or space affect people's health by increasing general stress levels. Further, they find that continued exposure does not lead someone to adjust and "get used to it," rather, the effects worsen.

The World Health Organization (WHO) (www.euro.who.int/en/health-topics/environment-and-health/noise) has noted that "noise seriously harms human health by causing short- and long-term health problems. Noise interferes with people's daily activities at school, at work, at home, and during leisure time. It can disturb sleep, causes cardiovascular and psychophysiological effects, hinder work and school performance, and provokes annoyance responses and changes in social behavior." Peaks in sound or noise and a high level of average sound are what have been shown, over time, to damage an individual's health. Therefore, attention to acoustics is important for all environments, from factories to kindergartens, as a matter of the health and welfare of those who use those environments.

Sound is measured in decibels of pressure to indicate how loud it is in a room. The actual level in any particular room depends on the strength of the sound source (or sources) and the ability of a room or space to help control that sound. Sound sources can be desirable such as a person speaking or music playing but they can also be undesirable if undue echoes are caused or background noise is encountered. Since sound radiates from a source and moves through space in all directions, how it acts within a room will be a function of what it encounters. If there are a lot of sound-reflecting surfaces, then echoes and reverberation become noticeable. If there are a lot of sound-absorptive surfaces, then the sound is deadened and echoes are reduced. The size and shape of the room will similarly come into play as sound moves through it and create additional impacts.

Once airborne, sound doesn't necessarily stay within a room—it can readily pass through openings, transfer through ceilings, etc. In this case, it is the ability of a space to insulate itself from unwanted sound that is important. Background noise that enters a room can interfere with the desired sounds, thus creating unwanted noise. By the same token, desirable sound created within a given space can become unwanted noise once it passes through to other spaces. Hence, it is important for rooms to be appropriately designed to contain sound where it is desired and prevent its passage to places where it is not desired.

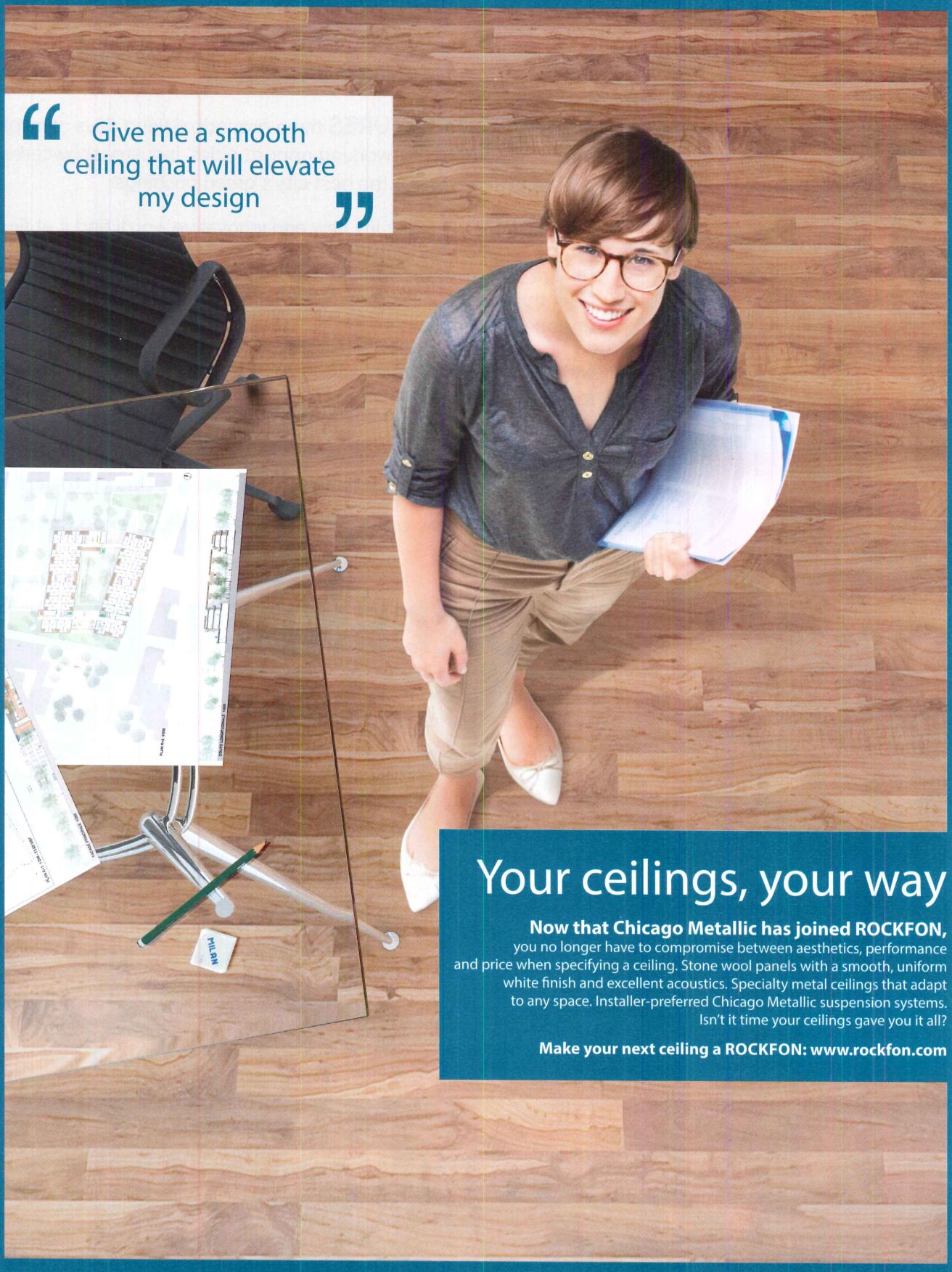
One of the measures of good acoustical performance is "speech intelligibility" which is defined simply as how well speech can be heard and understood in a room. Many factors influence speech intelligibility. These include the strength of the speech signal, the direction of the source sound, the level of background noise, the reverberation time (RT) of the room, and the shape of the room. A good reverberation time will enable a listener to hear and understand the first word, allowing that sound to die out before the sound of the next word reaches the listener.

Longer reverberation times can impair speech intelligibility since word sounds will overlap, creating garbled sounding words and poor verbal communication. Instructional spaces, such as classrooms, are best with short RTs—less than 0.6 second to ensure clarity and high speech intelligibility. Auditoriums, theaters, and other musical spaces will typically benefit from longer RTs, typically greater than 1.2 seconds. In addition to RT, if desirable sound is drowned in background noise, the listener will have difficulty understanding what is being said. The normal reaction is to speak louder, leading to more reverberation and poorer speech intelligibility.

Recognizing the importance of good acoustical design in schools in particular, ANSI Standard S12.60 "Acoustical Performance Criteria, Design Requirements and Guidelines for Schools" has been developed. This national standard is used as a basis for determining currently acceptable levels of acoustic performance in schools including appropriate RT and speech intelligibility thresholds. Stone wool ceiling tiles can be used as part of an overall acoustical design to work with the principles of sound and demonstrate compliance with the ANSI standard.

Continues at ce.architecturalrecord.com

Peter J. Arsenault, FAIA, NCARB, LEED AP, *is a nationally known architect, sustainability consultant, technical writer, and continuing education presenter. www.linkedin.com/in/pjaarch*



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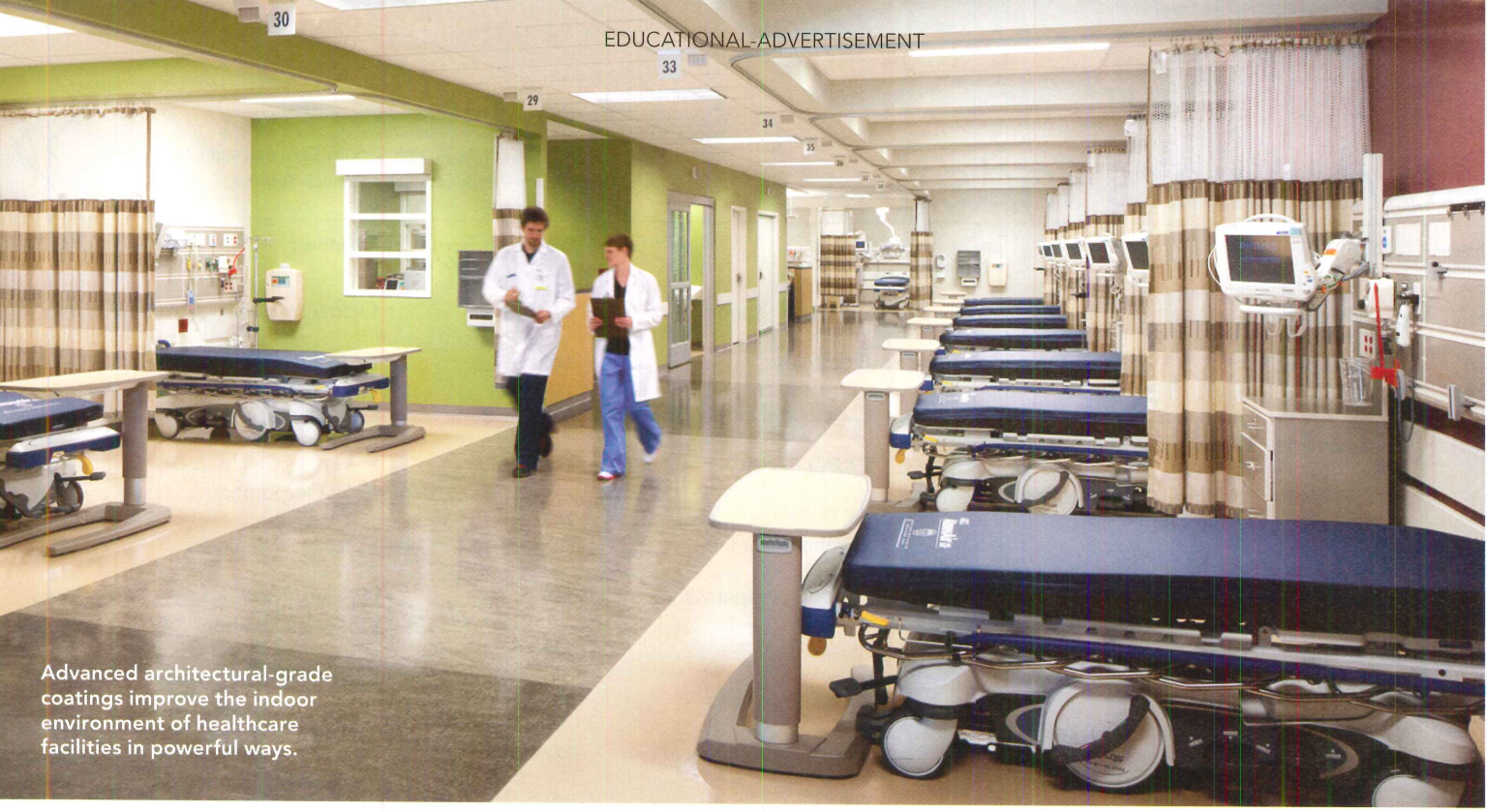

Advanced architectural-grade coatings improve the indoor environment of healthcare facilities in powerful ways.

Photo courtesy of The Sherwin-Williams Company

New Coatings to Help Support Cleaner And Fresher Healthcare Environments

Advancements provide unexpected solutions and value

Sponsored by The Sherwin-Williams Company | *By Jeanette Fitzgerald Pitts*

There is a powerful new tool helping designers create better healthcare environments and it will probably surprise a few people. Traditionally considered solely in terms of color and finish, and the feelings it invokes in occupants in the space, commercial paint has been technologically advanced to now deliver much more to a healthcare environment than a sense of calm. These advanced architectural-grade coatings improve the indoor environment of acute-care and long-term care facilities by reducing respiratory irritants from the air and reducing the growth of mold and mildew on the paint film. They also support new cleaning and sanitation protocols by standing up to harsh disinfectants and more rigorous scrubbing regimens. Additionally, they help to reduce odors from the environment to maintain a facility that smells fresher.

When the cumulative benefits are examined, these high-performing coatings now generate real value for facility owners and give designers the option to specify a wall paint that is simply visually stimulating, or a high-performance wall coating that is visually stimulating and actively helps to improve indoor air quality. Whatever the project, paint is the new partner in supporting a better healthcare environment.

NOW CLEANING WITH HARSHER DISINFECTANTS, MORE FREQUENTLY

The stakes for cleanliness in acute-care facilities are higher than ever. It was recently reported that hospital-acquired infections (HAIs) are the fourth largest cause of death in the United States, responsible for an estimated 90,000 deaths a year[1] and killing more people than AIDS, breast cancer, and car accidents combined. Nationwide, about one in 20 hospital patients will contract a potentially deadly infection, according to the federal Department of Health and Human Services.[2]

See endnotes in the online version of this article.

Continues at ce.architecturalrecord.com

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Learning Objectives

After reading this article, you should be able to:

1. Explore how new coatings support the latest initiatives in acute-care facilities by incorporating chemical-resistant, formaldehyde-reducing, and anti-microbial technology.
2. Describe how a coating can help reduce odors in long-term care facilities.
3. Specify a high-performance coating that will best meet the specific needs of a healthcare facility.
4. Explain cost implications of specifying an advanced-technology coating for acute-care or long-term care facility projects.

To receive AIA/CES credit, you are required to read the entire article and pass the test. Go to **ce.architecturalrecord.com** for complete text and to take the test for free.

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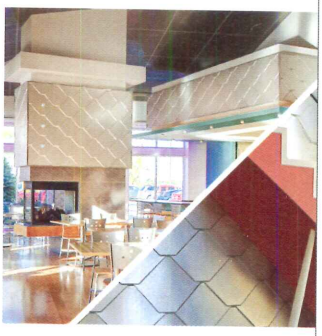

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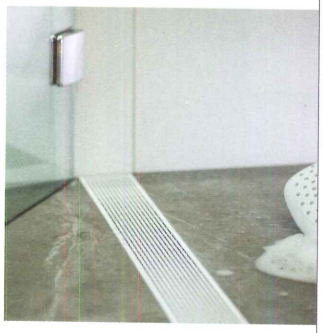

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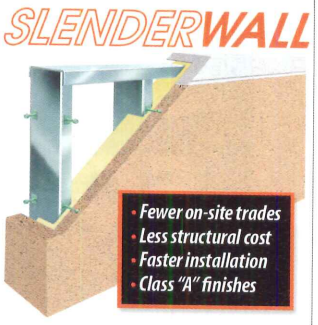

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New & Upcoming Exhibitions

Provocations: The Architecture and Design of Heatherwick Studio
Dallas
September 13, 2014–January 4, 2015
The first North American presentation by a museum of the work of Thomas Heatherwick and his studio, *Provocations* examines the astonishing range of Heatherwick Studio's practice. The exhibition focuses on the design concepts behind early projects such as the handbag designed for Longchamp and the rotation-molded "Spun" chairs, as well as current large architectural projects in the UK, South Africa, Abu Dhabi, Singapore, and China. At the Nasher Sculpture Center. For more information, visit nashersculpturecenter.org.

Ongoing Exhibitions

Architecture to Scale
Chicago
Through September 14, 2014
An exhibition at the Art Institute of Chicago, *Architecture to Scale* demonstrates the complex process and vast range of scales in architectural representation through the work of two groundbreaking architects, Stanley Tigerman and Andrew Zago, in adjacent installations. Tigerman, a major figure in Chicago's post-modern-architecture movement, is largely known for his intricate and inventive *Architoon* drawings. Zago Architecture, founded in 1991, employs a rigorous practice of research and experimentation in parallel with its architecture projects. For more information, visit artic.edu.

Vertical Urban Factory
London
Through September 15, 2014
Vertical Urban Factory explores the potential for manufacturing to be a feature of our cities once again. Curated by New York–based architectural historian and critic Nina Rappaport and held at the Museum of Architecture, the exhibition explores urban manufacturing through historical and present-day examples and contends that since production has become cleaner, greener, smaller, and on-demand, it should play a central role in the revitalization of neighborhoods. For more information, visit museumofarchitecture.org.

Houghton Hall: Portrait of an English Country House
Houston
Through 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 U.S. The exhibition brings together more than 100 objects with 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.

Hollein
Vienna
Through October 5, 2014
The extensive exhibition *Hollein*, presented at the Museum of Applied Arts (MAK) in collaboration with the University of Applied Arts Vienna, will delve deeper into the universe of Hans Hollein, the only Austrian to have won the Pritzker Prize to date, and present his entire oeuvre from a new perspective, revealing a range of material from his archive that has never before been on public display. For more information, visit mak.at.

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 post–World War II American domestic landscape, *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* is organized around five key areas that include furniture, Judaica, and Hollywood films. At the Contemporary Jewish Museum. For more information, visit thecjm.org.

Louis Kahn: The Power of Architecture
Shad Thames, London
Through October 12, 2014
Louis Kahn (1901–74) was a visionary architect, an expert manipulator of form and light, a creator of uniquely dramatic buildings, and a highly complex individual. This new exhibition at the Design Museum explores Kahn's work and legacy through architectural models, original drawings, travel sketches, photographs, and films, bringing to life his singular career and diverse output. *The Power of Architecture* explores such broad themes as ruins and archetypes, the world as structure, and community. For more information, visit designmuseum.org.

NYC Makers: The MAD Biennial
New York City
Through October 12, 2014
This exhibition spotlights the creative communities thriving across the five boroughs of New York. It showcases the work of approximately 100 makers who have been 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 his or her respective field, whether architecture, furniture design, fashion, or film. At the Museum of Arts and Design (MAD). For more information, visit madmuseum.org.

Infra Eco Logi Urbanism
New Canaan, Connecticut
Through November 30, 2014
Opening at the Yale School of Architecture, this exhibition brings together research and design work by the experimental Canadian architecture practice RVTR to explore possible urban and architectural futures in a post-metropolitan world. *Infra Eco Logi Urbanisim* looks at the Great Lakes Megaregion of North America (GLM) to envision the kinds of systems that could best serve a cluster of cities in an age of renewable energy, new mobility, and urban growth. For more information, visit architecture.yale.edu.

Mackintosh Architecture
Glasgow
Through 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 devoted to Mackintosh's architectural work, featuring more than 80 architectural drawings, films, models, and archival material from The Hunterian and collections across the UK. The exhibition is supported by three displays that showcase Mackintosh's skills as a draughtsman and designer, including his travel sketches and still-lifes. At The Hunterian. For more information, visit glasgow.ac.uk/hunterian.

Unsettled Landscapes
Santa Fe, New Mexico
Through January 11, 2015
Unsettled Landscapes will look at the insistent forces, political conditions, and historical narratives that inform the work of contemporary artists across the Americas—from Nunavut to Tierra del Fuego. Through three

themes—landscape, territory, and trade—this exhibition at SITE Santa Fe explores the interconnections among representations of the land, movement across the land, and economies and resources derived from the land. For more information, visit sitesantafe.org.

Designing for Disaster
Washington, D.C.
Through August 2, 2015
From earthquakes to hurricanes, flooding, and rising sea levels, natural disasters can strike anywhere and anytime. In light of this reality, the National Building Museum presents the multimedia exhibition *Designing for Disaster*, a call to action for preparedness on the part of design professionals, local authorities, homeowners, and school kids. The exhibition explores strategies local leaders are pursuing to reduce risks and build more resilient communities. For more information, visit nbm.org.

Lectures, Conferences, and Symposia

Seattle Design Festival: Design in Motion
Seattle
September 5–19, 2014
Exploring all the ways design makes life better in Seattle, the *Seattle Design Festival* offers the city's denizens a wide variety of programs including talks, tours, films, exhibitions, site-specific installations, family- and kid-oriented programs, workshops, games, hands-on making, crafts, and more. For more information, visit designpublic.org.

ARCHITECTURAL RECORD Innovation Conference
New York City
October 9, 2014
Influential designers will address topics ranging from the integration of art, technology, and design to the creative process behind experimental architecture and the evolution of a new American modernism. Keynote speakers include Doriana and Massimiliano Fuksas and Odile Decq. Architects will have the opportunity to earn seven AIA learning units. For more information, visit construction.com/events/2014/innovation-ny.

Women in Architecture Forum and Awards
New York City
October 10
The awards program acknowledges the increasingly visible role of women in the profession; encourages firms to promote female architects and their work; and provides an

dates&events

opportunity for those in the field—honorees, firm leaders, and other practitioners—to come together to celebrate women's design achievements at an event hosted by ARCHITECTURAL RECORD. For more information, visit archrecord.construction.com.

Greenbuild International Conference and Expo
New Orleans
October 22–24, 2014
Greenbuild is the world's largest conference and expo dedicated to green building. Featuring three days of speakers, networking opportunities, showcases, LEED workshops, and tours of green buildings in New Orleans, Greenbuild offers a place for thousands to gather and commit to the green movement. At the Morial Convention Center. For more information, visit greenbuildexpo.com.

Competitions

Breaking New Ground
Registration opens October 2014
Breaking New Ground is an international design and ideas competition that addresses the urgent affordable-housing needs of farmworker and service-worker families in the Coachella Valley in southeastern California. Efforts to improve living conditions suffer from a lack of funding and coordination. The competition seeks to address this by harnessing the power of design to envision new precedents, mechanisms, and policies for affordable-housing implementation and development, with implications for California and the nation. For more information, visit breaknewground.org.

Future Ground
Submissions due September 29, 2014
The Van Alen Institute is accepting submissions from professionals in landscape design, architecture, planning, public policy, and other related fields to develop innovative strategies for vacant-land reuse in New Orleans. The competition is supported by the New Orleans Redevelopment Authority (NORA), which owns over 2,000 vacant lots and has become a regional and national leader in reuse of vacant lots for community resilience and development. For more information, visit vanalen.org/futureground

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LOCATION SÃO PAULO
DESIGNERS LOEB CAPOTE ARCHITECTURE AND URBANISM

FROM CHICAGO to Copenhagen, movable bridges are an iconic feature of many cites. Now São Paulo has its own innovative rendition. Commissioned by Bayer to build a pavilion for showcasing its ecologically sensitive building products, São Paulo–based architect Roberto Loeb noticed that employees needed half an hour to walk from the metro station to his new structure, as well as to the offices and manufacturing facilities just across an adjacent canal. The steel bridge he devised, which also connects to an urban bicycle network, cuts that time to minutes and serves 9,000 locals and Bayer employees every day. The bridge's discs of greenery were inspired by the lily pads that float in the canal. "This was the beginning of the idea: two water lilies suspended on concrete pylons," says Loeb. Beyond their beauty, the pads conceal electric motors that rotate the two halves of the span and allow boats to pass. Ultimately, says Loeb, the horizontal rotation makes for smoother and more efficient movement than that of a standard movable bridge that lifts upwards. The walkway itself demonstrates the design's emphasis on nature and functionality: metal grating allows for easy drainage and views to the water below, while a wood-surfaced pathway makes for a comfortable pedestrian crossing. *Zachary Edelson*

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