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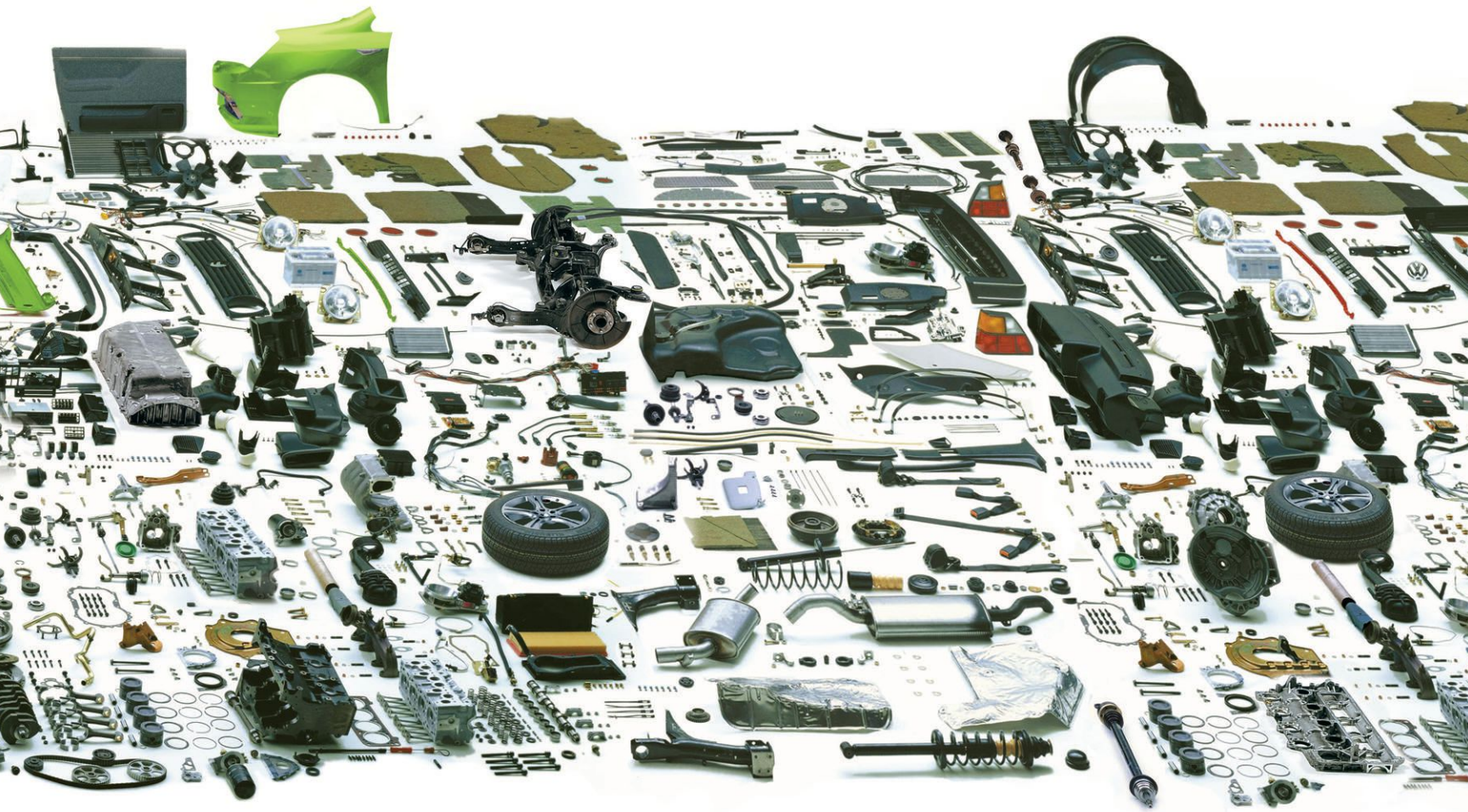

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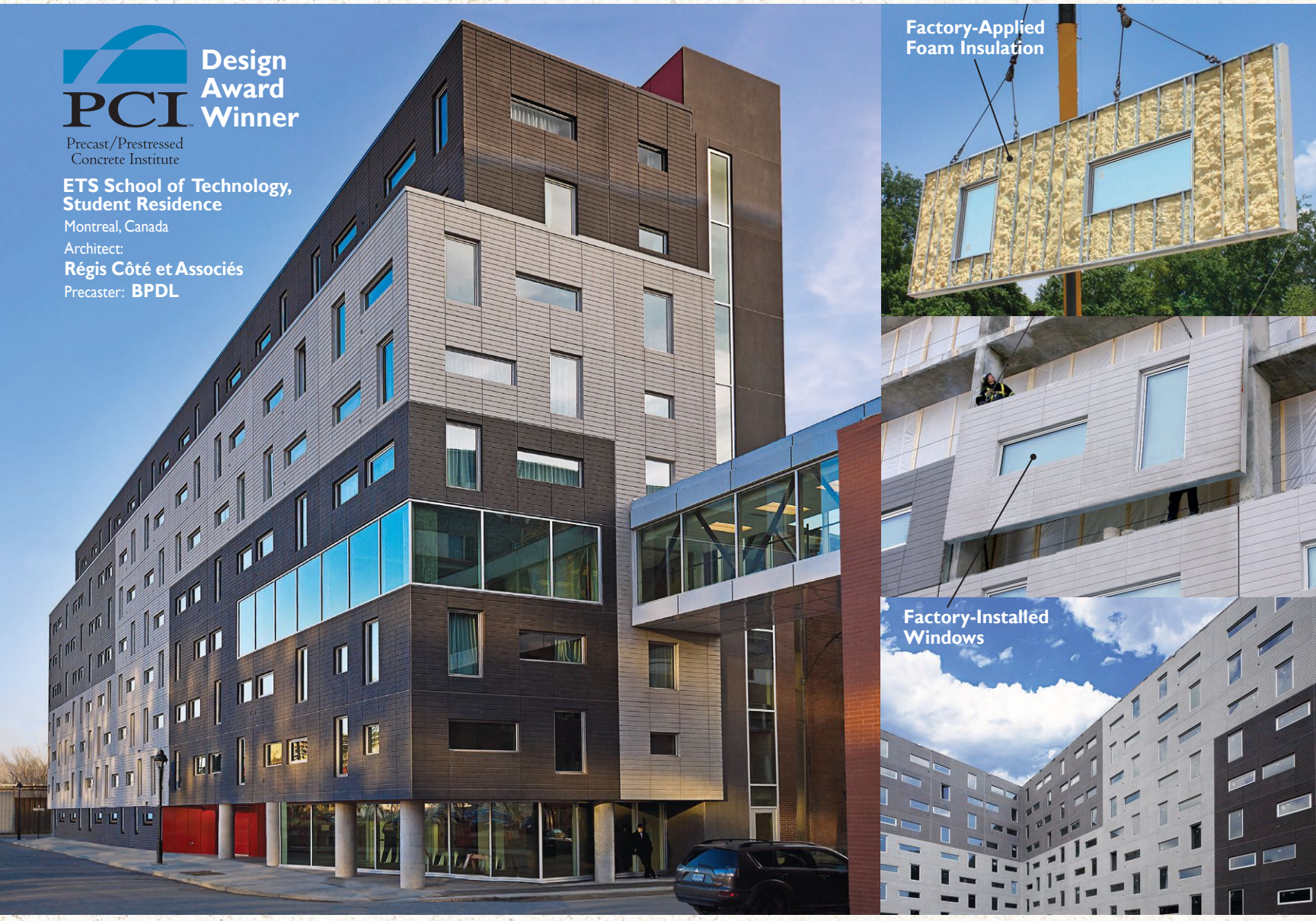

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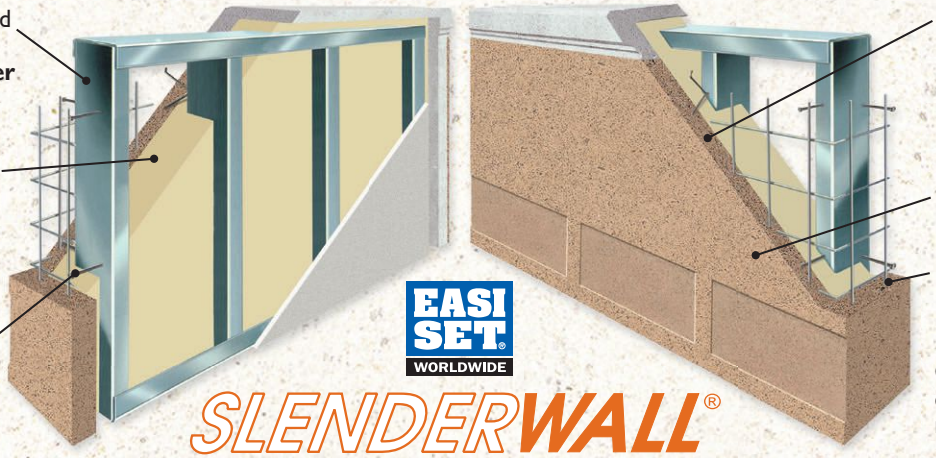

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Where Credit Is Due

Architects often struggle for recognition in the eye of the public, especially in the sensitive work of restoration and adaptive reuse.

ARCHITECTS MUST often feel invisible. Look at news articles about new buildings or real-estate deals and notice how rarely they are cited for their designs. The client or developer is front and center, and maybe the contractor, if the project is enormous. But unless the story is clearly an architecture review—or the architect is an international star—his or her firm may well be left uncredited, even though the architectural work in question is destined to become an indelible part of the built environment.

Even a famous architect can be forgotten in civic discussion of a major design. In Steve Jobs's last public appearance, before the Cupertino City Council in June 2011, he presented the scheme for Apple's new headquarters, now nearing completion. Strangely, Jobs never mentioned Pritzker laureate Norman Foster or his firm, Foster + Partners, for the radical donut-shaped structure he was proposing to build.

News reports of public infrastructure are even more likely to neglect the architects or engineers involved (but probably not the politician behind the job). In New York City, two major transportation works have opened in the last 18 months—the Second Avenue Subway (page 20) and an extension of the No. 7 line (RECORD, March 2016, page 112), which serves the vast Hudson Yards complex. Both lines have dramatic new stations—the Second Avenue stops feature public art by Chuck Close, Vik Muniz, and Sarah Sze, among others. But while the artists got full press, you scan most articles in vain to find the names of the designers involved. For the record, the Second Avenue stations were designed by AECOM and Arup, and the new station for the No. 7 line by Dattner Architects with WSP | Parsons Brinckerhoff.

The same goes for the worthwhile efforts of restoration and adaptive reuse, which account for an increasing amount of work done by architects. Unfortunately, the designers who undertake these deferential projects often do so with little public acknowledgment. The December 2016 press release from the office of New York State governor Andrew M. Cuomo announcing the conversion of Eero Saarinen's TWA terminal at JFK International Airport into a hotel failed to include the name of the architects who will restore and adapt the icon—Beyer Blinder Belle and Lubrano Ciavarra Architects—even though the former firm is celebrated for its extraordinary renovation of Grand Central Terminal (RECORD, February 1999, page 85). On a smaller scale, more than one article in *The New York Times* discussed the recent transformation of a striking 1883 Manhattan office tower, Temple Court (by Silliman & Farnsworth), with a skylit atrium, into a high-end hotel without ever naming the architects. (Gerner, Kronick + Valcarcel Architects oversaw the conversion, with interiors by Martin Brudnizki Design Studio. RECORD, October 2016, page 90.)

PHOTOGRAPHY: © MICHEL ARNAUD

Why are architects so often overlooked? Some say it's because the public doesn't understand the scope of what they really do. And it is true that the scale and complexity of certain ambitious projects mean a level of collaboration that makes credit hard to apportion, with tangled roles for design architects, executive architects, and consultants of every possible stripe.

In this issue, RECORD explores the unsung heroes and heroines of restoration and adaptive reuse. In some cases, the glaring fame of the original architect obscures the work of the designer who is bringing that star's building back to its former glory, as we see in the meticulous efforts of the Buffalo-based office of HHL Architects, in conjunction with the structural engineers Robert Silman Associates, with a Frank Lloyd Wright masterpiece, the Darwin D. Martin Estate (page 62). In another instance, the somber midcentury Temple Israel of Hollywood, originally designed by Samuel Lunden and S. Charles Lee, is given a new life with thoughtful planning and the lively addition of a chapel by Koning Eizenberg Architecture (page 90). One architect who has consistently shown her skill in transforming old buildings for new cultural purposes—from the Neue Galerie in New York to Le Stanze del Vetro in Venice—is Annabelle Selldorf. In the renovation of 19th-century railyard sheds in Arles, France, for an art foundation, she showcases the power and elegance of the industrial steel structure, allowing the history of the architecture to speak for itself (page 80). For the subtlety and sensitivity of such work, let's hope that she and her peers begin to get the credit they are due—and that the public and the press stop treating architects as if they were invisible.

Cathleen McGuigan

Cathleen McGuigan, Editor in Chief

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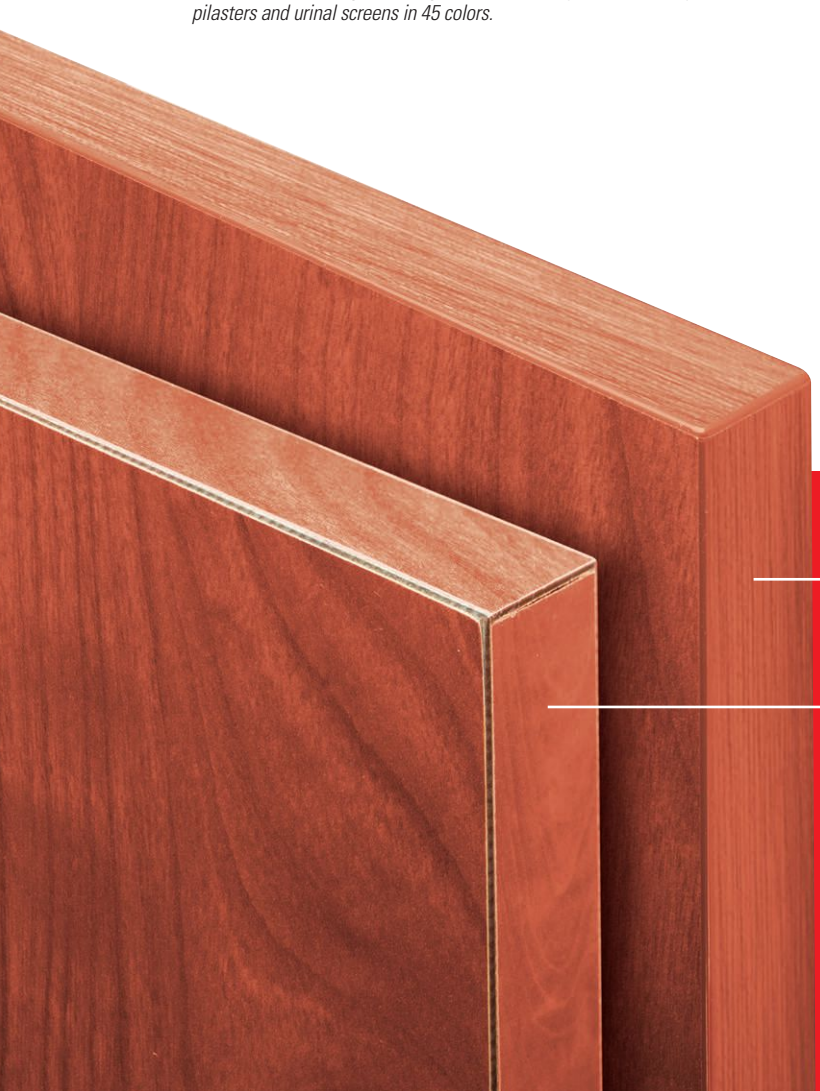

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My No. 1 piece of advice would be to work hard every day in the interest of people who need a champion for them. —*Former HUD secretary Julian Castro's advice to HUD secretary nominee Ben Carson, speaking on the public radio show* Texas Standard.

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A Look at New York's Ambitious Infrastructure Plans

BY FRED A. BERNSTEIN

New York opened its Second Avenue Subway line on New Year's Day. The station at 72nd Street (above) features artwork by Vik Muniz.

THE JURY is still out on what kinds of infrastructure projects President Donald Trump means to build nationally. But New York governor Andrew Cuomo wasn't waiting for Washington's go-ahead when he announced the latest in a series of major infrastructure projects for the New York City area.

On January 4, the governor proposed spending $10 billion on an overhaul of one of the nation's busiest airports, John F. Kennedy International. The plan calls for creating a single large terminal building. (Renderings, released by the governor, were created by Ricondo & Associates, an aviation consultancy based in Chicago; architects have yet to be chosen.) The airport's older terminals, with the exception of Eero Saarinen's landmarked TWA Flight Center, would be torn down or significantly altered. The new $8 billion terminal would be privately funded and—like a $4 billion HOK-designed terminal now under construction at LaGuardia Airport—would be run in part by public-private partnerships. The governor also plans to spend about $2 billion of public funds on improved road access to the airport.

But badly needed mass transit links to the airport are not part of the current plan, according to Rick Cotton, Special Counselor to the Governor for Interagency Initiatives. While Cuomo is committed to creating a direct link from Manhattan to JFK, "it's not straightforward to accomplish," said Cotton, who added that the governor has asked the Metropolitan Transportation Authority and the Port Authority of New York and New Jersey "to look at ways to improve getting to JFK by rail."

Indeed, the unusual overlap of state and city governments with the two-state Port Authority makes it difficult for the governor to roll out

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infrastructure programs on his own. Last month, the authority released a proposed 10-year capital plan that includes $3.5 billion for replacing the beleaguered Port Authority Bus Terminal in Manhattan, used by 230,000 commuters a day, but no design has been selected. Plans to improve nearby Penn Station, which services a total of 650,000 daily passengers, are just inching forward under the auspices of a complex roster of federal, state, and local agencies.

Building infrastructure isn't always so complicated. For example, in Los Angeles, voters approved a sales-tax increase to fund $120 billion in transit improvements over the next four decades. The city's expanded Metro Rail network will provide many Angelenos "one-seat rides" to Los Angeles International Airport, which is in the midst of a $14 billion renovation.

New York's infrastructure is in "worse shape" than that of many comparable cities, including those in Europe and Asia, according to José A. Gómez-Ibáñez, the Derek C. Bok Professor of Urban Planning and Public Policy at Harvard's Kennedy School of Government. Part of the reason is that much of New York's transportation network is more than 100 years old, he says, and "replacing or rehabilitating existing facilities is traditionally thought to be politically less appealing than building new."

New York governor Andrew Cuomo has proposed a $10 billion overhaul of John F. Kennedy airport. Ricondo & Associates, an aviation consultant, developed the renderings.

Yet cities far older than New York are in the midst of dramatic infrastructure upgrades. In London, construction of the Crossrail system, a 73-mile east–west train line (26 miles of it through new tunnels deep beneath the city), is proceeding rapidly, with key sections expected to open late next year. And in Paris, work continues on a $28 billion metro line around the city, linking its outer suburbs, an initiative that *The Atlantic* called "the most ambitious new subway project in the Western world."

But greater New York boasts two recent successes. One was the opening on January 1 of the Second Avenue Subway, a 2-mile-long line on Manhattan's East Side—after nearly a century of planning and construction. Its four new stations—designed by AECOM and ARUP—are notable for their accessibility (elevators and escalators reach from street level to platforms) and their eye-catching public art, including works by Chuck Close and Vik Muniz. The other is the replacement of the 60-year-old Tappan Zee Bridge, which crosses the Hudson River 10 miles north of the city, with a new span scheduled to open in 2018—the year the governor runs for reelection. In the view of Gómez-Ibáñez, Cuomo's "willingness to tackle some of the most important and expensive projects in New York's backlog is unusual and encouraging." ■

[NEWSMAKER]

Jeanne Gang

BY JOANN GONCHAR, AIA

ARCHITECT JEANNE GANG is best known for the Aqua Tower in Chicago and its rippling facade. But her work has long melded the formal with social concerns, and from the start of her Chicago-based practice—Studio Gang—in 1997, she has worked across scales and building types. Some current and just-completed projects include a new campus for the California College of the Arts in San Francisco, a second boathouse on the Chicago River, and the U.S. embassy in Brasilia. Gang is also among a handful of international architects named to the shortlist for the redesign of the widely reviled Tour Montparnasse in Paris. The studio now has an office in Lower Manhattan and has several New York commissions, including an expansion of the American Museum of Natural History (see sidebar). RECORD recently chatted with Gang about her work and the direction of the profession.

Aqua, completed in 2010, is arguably your most famous building. So it seems odd that you haven't completed other towers since then.

That's probably because, right after Aqua was completed, the economic crisis happened. But we've been working on tall buildings the entire time, continuously, starting with Aqua, of course. The Folsom Street tower in San Francisco, which has been in planning for quite a while, should be breaking ground this year. Vista, in Chicago, which we started years ago, and then it went on hold, is now moving forward as a hotel and condominium. Solar Carve, in New York [now called 40 Tenth Avenue], is not a particularly tall tower, but it's an interesting design, and it should be breaking ground in 2017. We also have a condo tower in Hyde Park in Chicago called Solstice on the Park. It was put on hold in 2008, and then it came back alive as rental apartments, and now it's going up. Another residential tower, One Hundred, was recently announced for St. Louis. Everything has to fall into place for them to actually break ground. It is exciting when it all comes together.

How has your thinking about tall buildings evolved?

From the first design for Aqua, we've identified a number of strategies for making a tall building more social and helping people get to know their neighbors. That's an ongoing interest, and we've done that through everything from creating balconies that become outdoor threshold spaces to rethinking the common areas within the building and considering how the building meets the ground. With Vista, the building forms three stems and they bridge over a link between two parks. It is possible for people to go right under the building, from one side to another. This connects it to the city.

Another interest is how buildings work with the sun. We might use the exterior wall for solar shading or solar access, including angling the glass to reduce heat gain.

But we also look at the play of light and shadow within the unit. We're not only thinking from outside in on these buildings, but also from inside out. We come at it from the scale of the living space, then the scale of the social space, and the scale within the city. High-rises do have a role in terms of the overall skyline, but that's only one aspect of a tall building.

Tell me about the research aspect of your practice. Is the research dictated by your commissions? Or are there areas of interest that you explore that then find their way into building projects?

Studio Gang's Design for the American Museum of Natural History

Last month, design details were revealed for Studio Gang's Richard Gilder Center for Science, Education, and Innovation—a 235,000-square-foot expansion and renovation of the American Museum of Natural History (AMNH) in New York. The $340 million project, slated for completion in 2020, will support the museum's educational and research initiatives with facilities such as an "Invisible Worlds" immersive theater focused on microscopic life forms, a dedicated space for its popular living butterfly exhibit, and new classrooms and learning labs. But it also aims to improve circulation inside the mazelike museum, which comprises more than 25 contiguous structures, including the original wing by Calvert Vaux and J. Wrey Mould (1877) and Polshek Partnership's Rose Center for Earth and Space (2000).

Gang refers to the Gilder as an "innie," meaning it will protrude only slightly from the AMNH's rear elevation, facing Columbus Avenue, with a bowed granite-clad facade and a new entrance. But the Gilder Center will penetrate deep inside the museum's fabric. This strategy will help conserve the green space and stately trees of the public park that surround the museum. The arrangement, with minimal new exterior envelope, also provides a high degree of thermal buffering and self-shading, says Gang.

The proposed entrance of the Studio Gang–designed Gilder Center at the American Museum of Natural History in New York.

Inside, the new center's main civic space will be an atrium-like exhibition hall, with curvaceous concrete walls that resemble features from the natural landscape shaped by hydrologic flows, like caverns and canyons. The skylit hall will drive daylight deep into the museum and link the main entrance on Central Park West with the new Columbus Avenue entrance on the opposite facade. All in all, the addition and renovation will touch 10 existing structures within the sprawling complex and create 30 new connection points over its five levels. —*JG*

IMAGES: COURTESY STUDIO GANG

Studio Gang's 40 Tenth Avenue tower along New York's High Line park is expected to break ground this year. Its unique faceted form was dictated by the sun's path.

We've always conducted research, and we think of it as somewhat independent of the commissions. It might apply to our projects, or it might be an interest that emerges from a commission. One example is our Rescue Company 2 project, in Brooklyn. It made us think about the role of the fire station and how it is different from a police station.

But then we went further—investigating how a police station could reach out to the community. We did a case study of Chicago's North Lawndale police station. One of the potential solutions that came out of this was an idea to use extra parking for basketball courts. We raised money with the city of Chicago and the parks department to install a half-court on one of the parking lots. And after it was built, they started using it—a lot. Neighborhood kids are using the courts nearly every day. It's also being used for tournaments that bring youth teams from other areas in the city. Police officers are beginning to join in too, and they keep a stash of basketballs inside the station that the kids can borrow. Now the alderman and the community want to expand it. That was a research project, but it was also a way to have an impact in our community.

What do you think some of the biggest challenges facing the profession are now?

There are some firms with an academic focus and an interest in developing a formal language using all of the digital tools. Then you have architects that have more of a focus on social issues. But there are a lot more ways to practice, which is great.

The challenges are in the public sector and how you make sure there is enough money for public projects. One project that we've been working on is an initiative [by the JPB, Knight, Kresge, and Rockefeller foundations] called the Civic Commons. Since there isn't much money available for new public buildings, we're trying to develop strategies for how to make use of existing recreation centers, libraries, police stations, transit centers, and schools and reinvent them for today's needs. It would be great if architects, instead of just thinking about new buildings, would think about reinventing older ones so they don't get abandoned and torn down.

It's important to be inventive with processes and with solutions. But it doesn't necessarily have to involve bricks and mortar. Sometimes things that have nothing to do with the traditional idea of what architecture is can be game-changing. ■

Students Develop Modular Homeless Shelters for L.A.

BY JANELLE ZARA

Individual units (left) form stacks that would face inward to an open courtyard (above). The second level is accessible via prefabricated stairs. Each unit is wired for electricity that will tap into the existing grid. Kitchens and bathrooms would be separate, communal structures.

FOR THE SECOND consecutive year, Los Angeles has reported the highest homeless population in the nation: 13,000 people, 95 percent of whom are living outdoors, according to the U.S. Department of Housing and Urban Development. While its root causes are diverse and complex—dwindling affordable housing, wealth stratification, lack of social services, and a warm climate among them—architecture students at the University of Southern California have designed an immediate solution: communities of modular, stackable, 92-square-foot "emergency stabilization" units that can be deployed in less than two weeks, just about anywhere.

Funded by Santa Monica design incubator the MADWORKSHOP Foundation, USC launched the Homeless Studio for 11 fourth-year students, instructed by faculty members R. Scott Mitchell and Sofia Borges, who is also the foundation's acting director. The course, which included lectures from visiting homeless-rights activists and site visits to the Skid Row Housing Trust, culminated in a design competition for a temporary 30-unit residence for Hope of the Valley, a women's shelter in Mission Hills, California.

"There's no question that the best solution for homelessness is permanent housing," says architect and MADWORKSHOP cofounder David C. Martin, but a temporary shelter for fewer than 30 people would not be beholden to the same code vetting as a permanent structure. "Those require a four- to five-year time frame, while right now there are people sleeping on the ground."

The obvious shipping-container solution was out—Los Angeles does not recognize them as occupiable spaces without reengineering, and "living inside one would be pretty dismal," says USC student Jeremy Carman, whose design team came up with the winning structure.

Together, the class built a prototype that features walls of aluminum-clad structural insulated panels (SIPs), framed by exposed steel beams. The structure's ingenuity lies in the c-channel rails installed on the top and bottom of each; a small forklift or crane can slide one unit on top of another, while fasteners lock them in place. The bottom units, meanwhile, are slid and fastened onto seismic piers, which allow the units to be assembled on diverse terrain, whether that's uneven land or the gravel of an empty lot. A convex back wall adds extra space for the length of a bed without crowding the limited floor space.

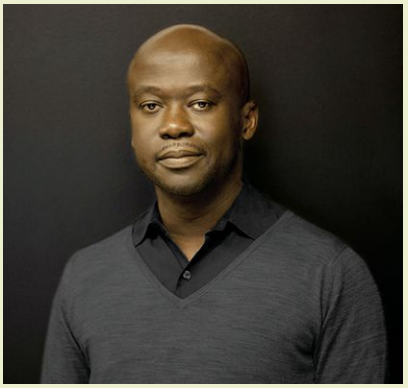
The versatility of these units greatly expands the possibilities of where they can be built, a typical obstacle when it comes to erecting shelters. "People will be very supportive of homeless housing, but not in their neighborhood," says Mitchell.

The city government is paying attention. The Homeless Studio's goal is to begin a pilot program in congressional districts that are actively looking for them, including L.A.'s Sylmar area. At $25,000 to construct each unit, the program is currently in fundraising stages. Promisingly, L.A. voters recently approved $1.2 billion in bonds to pay for the construction of 10,000 units of housing for homeless people, and the recent tragedy in the Oakland warehouse fire added new urgency for safe housing for displaced people. Neither client- nor site-specific, the design opens itself to broader possibilities: interim worker housing, disaster shelters, recuperative care facilities.

"It's L.A.-specific, but with broader applications," says Borges. "The hardest thing was to get this through code, permitted, and passed in L.A., so if we do can do it here, we can do it anywhere." ■

IMAGES: © DAVID ADJAYE ASSOCIATES (BOTTOM); MADWORKSHOP (TOP, 2)

David Adjaye Knighted



2016 was a big year for David Adjaye. In addition to the opening of his National Museum of African American History and Culture in Washington, D.C., the British architect announced several new projects and celebrated his 50th birthday. Capping off the successful year, on December 30 Adjaye earned a knighthood from Queen Elizabeth II. The 2017 New Year Honours, which recognize the achievements of "extraordinary people across the United Kingdom," effectively make him Sir David Adjaye.

"I am truly honored and humbled to receive a knighthood by Her Majesty the Queen for my contribution to architecture," said Adjaye in a statement. "I see this not as a personal celebration, but as a celebration of the vast potential—and responsibility—for architecture to effect positive social change, that we as architects have to bring something positive to the world."

Adjaye and the other winners—who include Victoria Beckham and Andy Murray—will be presented with their awards at a ceremony later this year.

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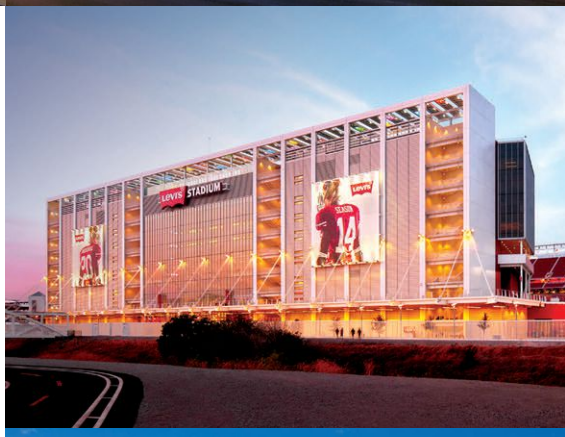
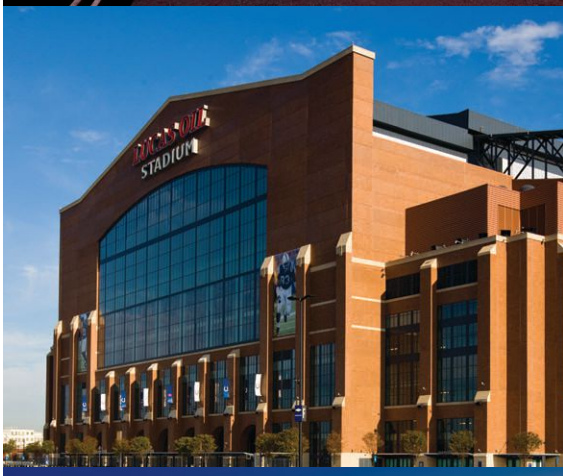
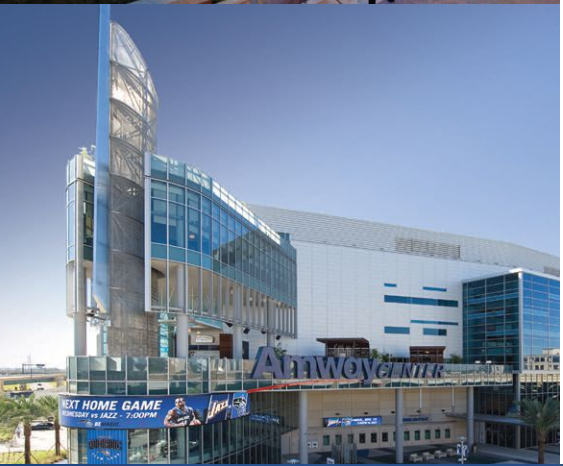
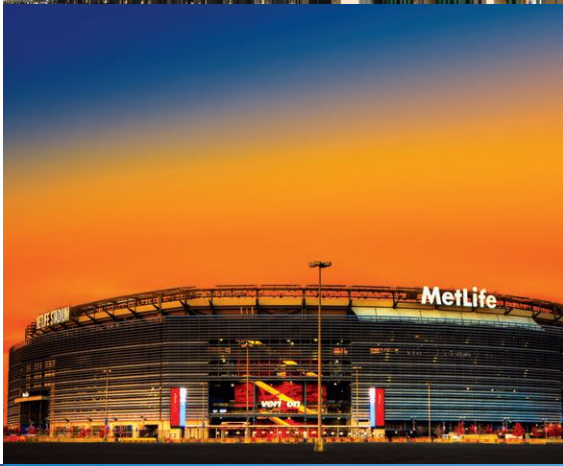
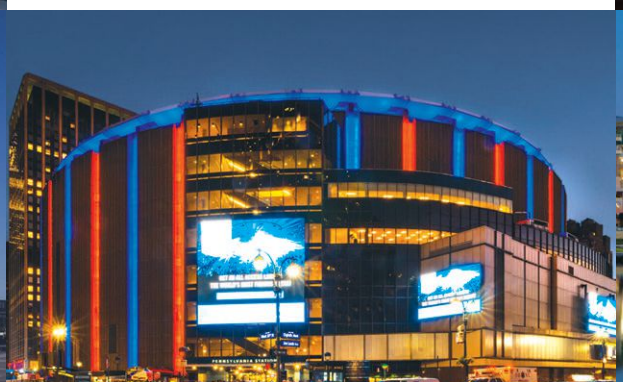
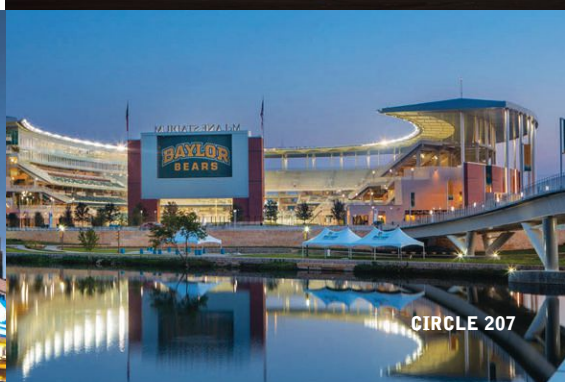








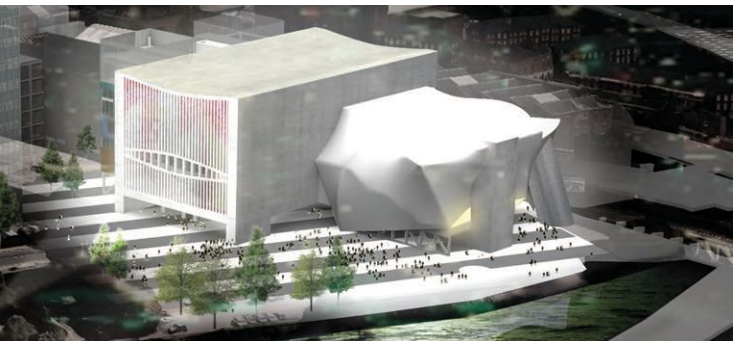




CIRCLE 207

On the Boards

From a futuristic museum in California to the upgrade of a historic soccer stadium in the United Kingdom, an international roster of renowned architects is continuing to make headway on projects across the globe. Once complete, these buildings are expected to become cultural and economic catalysts within their respective contexts—and new architectural icons.



The Factory
OMA
Manchester, England
Manchester city councilors have approved plans for a new state-of-the-art cultural center designed by Rem Koolhaas and Ellen van Loon. Construction on the project, which will be OMA's first major public building in the UK, is expected to begin this spring.

Hanking Center Tower
Morphosis
Shenzhen, China
A supertall tower designed by Thom Mayne's Los Angeles–based studio, Morphosis, has topped out in Shenzhen. The Hanking Center Tower boasts an innovative steel structural system, and will be a new beacon for China's high-tech industrial sector.

Lucas Museum of Narrative Art
MAD Architects
Los Angeles
The rivalry between San Francisco and L.A.—both contenders to be the home of filmmaker George Lucas's new MAD Architects–designed museum after plans fell apart to build it in Chicago—has ended. The museum, targeted to open in 2021, will be located in L.A.'s Exposition Park.

Chelsea Football Club Stadium
Herzog & de Meuron
London
Herzog & de Meuron has been given the green light by the local council to replace Chelsea Football Club's late 19th-century London stadium. The new stadium will be encased in over 250 brick piers to create spectator capacity of 60,000. The structure is expected to wrap up by 2021, provided London mayor Sadiq Khan grants final approval.

noted

Record Announces 2017 Traveling Fellowship

In celebration of the magazine's 125th anniversary, ARCHITECTURAL RECORD is accepting research fellowship applications from architecture students and recent graduates. Two $7,500 prizes will be awarded in mid-April. Visit architecturalrecord.com/call4entries for details and to enter.

Design for Alhambra Addition Scrapped

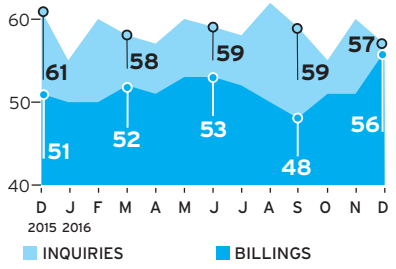
Plans for a new entry and visitors' center at the historic Granada palace in Spain will be completely revised, following a negative report from the International Council on Monuments and Sites. The group, which is dedicated to protecting World Heritage sites, deemed plans by Álvaro Siza and local architect Juan Domingo Santos to be "too invasive."

NCARB Grants Reciprocity in Australia and New Zealand

The U.S. National Council of Architectural Registration Boards (NCARB) announced an arrangement with licensing boards in New Zealand and Australia that allows architects' licenses to be recognized in those countries. The agreement went into effect on January 1.

Future of Thomas Heatherwick's Garden Bridge Proposal Uncertain

Plans to build a bridge across the Thames are in jeopardy due to ballooning costs. According to bridge trustees, the structure is likely to "substantially exceed" its estimated $225 million price tag. Scrapping the project will waste $50 million of taxpayer money, reports the *Guardian*.



Positive December ABI Bodes Well for 2017

The AIA reported that December's Architectural Billings Index ended the year in positive territory, jumping to 55.9, up 5.3 points from November (any score above 50 indicates an increase in billings). "This bodes well for the design and construction sector as we enter the new year," said AIA economist Kermit Baker. December's new projects inquiry index was down slightly, scoring 57.2 points, down from 59.5 in November.

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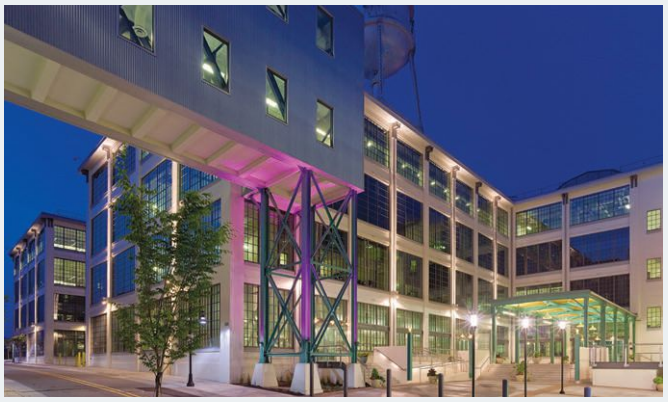

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Photo courtesy of Duravit AG

Sleek Design in Public Spaces

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CIRCLE 142

perspective **house of the month**

AN EYE-CATCHING ADDITION TO A HISTORIC BLOCK COMBINES CRAFT AND AN INDUSTRIAL AESTHETIC. BY JOSEPHINE MINUTILLO

The screen animates the street (left) and interiors, whose ceiling mimics its texture (above). Clad in standing seam siding, the rear wall faces a patio painted by artist Jimmy Chiale (below).

Its neighbors are grand Victorians with lofty gables and elegant bay windows in stained glass. Yet on this quiet street in Toronto's historic Parkdale neighborhood, the just completed Double Duplex more than holds its own.

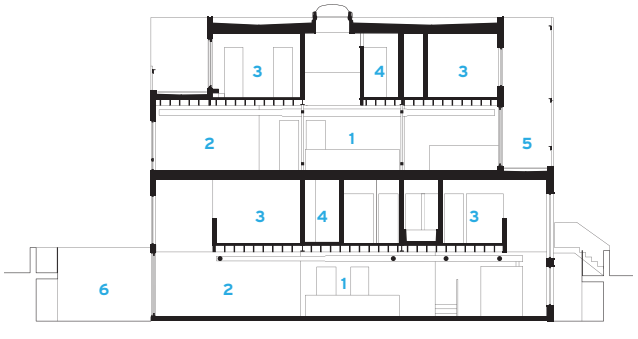
"We always find ways of integrating a project with its context—from massing to datum lines to material transitions—if not necessarily with overt symbols," says Andrew Batay-Csorba. He and wife, Jodi Batay-Csorba, founded their eponymous practice, currently focused on residential projects, after years of working on large public buildings for such firms as Morphosis and Gehry Partners.

Each 3,500-square-foot building here contains two stacked duplexes. The red brick bases give way to intricately designed screens on the upper levels, made from vertical strips of thermally treated, rot-resistant wood. Connecting those strips are variously angled wood pieces that, depending how sunlight hits them, reveal abstract patterns. Those designs were developed through 3-D digital and physical modeling. "The screen was a way to provide a level of detail and craft that is representative of the neighborhood," says Andrew. It also engages passersby, as the porch culture of a bygone era did, while providing a level of privacy for the terraces behind them.

The architects are very interested in how a building—even a house—can create public space. They enlisted a local graffiti artist to paint the walls of the partially enclosed rear patios and front entries to the basement units. These face double-height living spaces to bring daylight, and a bit of the street, into the below-grade areas. Light wells over the upper units' kitchens are similarly painted. According to Andrew, "That kind of immersive supergraphic gives you a lot of bang for your buck."

The rest of the bare-bones interiors feature exposed mechanicals and off-the-shelf products including diamond plate stairs, generally used in commercial or industrial applications.

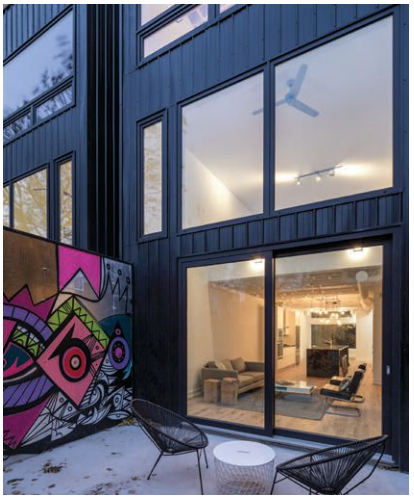
Nearby residents initially protested Batay-Csorba Architects' proposal, but after being allowed inside the design process and review meetings, they were won over. Now finished, Double Duplex is a contemporary addition that fits right in. ■



SECTION

0 10 FT.
3 M.

1 KITCHEN
2 LIVING
3 BEDROOM
4 BATHROOM
5 TERRACE
6 REAR PATIO



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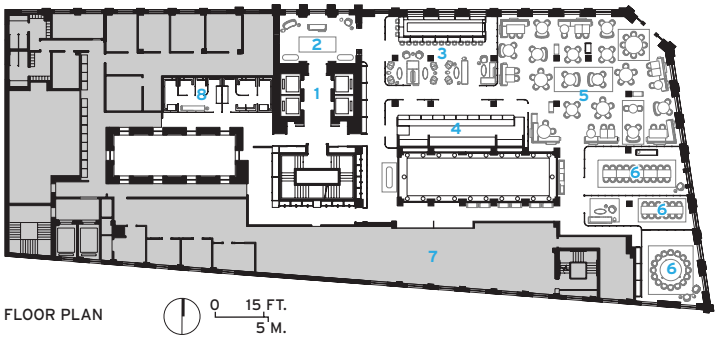
JEAN-GEORGES SHANGHAI IS REIMAGINED BY A TEAM THAT WORKED WITH MICHAEL GRAVES ON ITS ORIGINAL DESIGN. BY CLIFFORD A. PEARSON

MESSING WITH a successful restaurant is a tricky task. While the dining scene demands fresh ideas and style, prestigious establishments often resist change. A facelift to a beloved eatery might backfire, alienating old customers and disappointing new ones. And if the restaurant occupies a space in a landmark building renovated 13 years before by your mentor, an architect's job becomes that much more difficult. None of this stopped the husband-and-wife team of Lyndon Neri and Rossana Hu, partners at Neri&Hu Design and Research Office, from transforming Jean-Georges, the flagship of Jean-Georges Vongerichten's dining spots in Shanghai. The chef runs three places there, all in the same building—the historic Three on the Bund, a Beaux-Arts pile built in 1916 for the Union Assurance Company and reconfigured by Michael Graves in 2004. Neri and Hu, who worked for Graves in the 1990s and early 2000s, were involved in the Three on the Bund project including the design of the existing Jean-Georges.

"The old restaurant was perfect 13 years ago. But with the shifting culinary climate in Shanghai, Jean-Georges wanted a more modern approach," says Neri. "The identity needed to stay the same but had to be updated for a city that is becoming more cosmopolitan and global." So the architects removed the interior partitions, heavy curtains, dark wood paneling, and richly colored seating that gave the old incarnation a clubby, neocolonial feel. Stripping the space back to its 1916 surfaces, Neri and Hu restored the original plaster moldings and cornices in the 9,150-square-foot restaurant and revealed old columns and arches in the reception area. As they have done on other Shanghai projects, such as Waterhouse on South Bund (RECORD, page 80, September 2010), Design Republic Commune (RECORD, page 82, February 2013), and Mercato by Jean-Georges Vongerichten (RECORD, page 112, September 2013), the architects kept some elements—like the chipped column capitals—in their now damaged condition. This strategy leaves a palimpsest of previous eras and highlights the contrast between the old and the new.



FLOOR PLAN 0 15 FT. 5 M.

1 ELEVATORS
2 RECEPTION
3 LOUNGE/BAR
4 SHOW KITCHEN
5 DINING ROOM
6 PRIVATE DINING ROOM
7 KITCHEN
8 RESTROOMS

In the reception area, the architects revealed old concrete columns from the original 1916 Union Assurance Building, but kept the surfaces unfinished and the capitals chipped to show the passage of time.

PHOTOGRAPHY: © PEDRO PEGENAUTE

Brass-framed glass partitions (left) define areas such as the bar/lounge, show kitchen, private dining areas, and restrooms. Neri&Hu designed most of the furnishings, including a new Bund series of furniture for the main dining room (bottom, right) and a line of lights for the private dining rooms (bottom left).

While still luxurious, the new Jean-Georges restaurant is a lighter, sleeker animal. Instead of dark, opulent materials, Neri and Hu used white paint, white upholstery, oak floors with a honey stain, cream-colored travertine in the bar, and brass ceilings over the bar and in the restrooms. As they learned to do at Graves's office, they worked at all scales, designing everything from the chairs and cabinets to the rugs and lights. They opened up the interiors, replacing Graves's classically proportioned rooms with a large, open dining area and a series of brass-framed enclosures for the bar and lounge area, show kitchen, and private dining rooms, as well as for the lavs. To create levels of privacy, they wrapped these spaces with clear and sand-blasted glass and curtains. Throughout the restaurant, they placed antique mirrors etched with texts from French philosophers, adding another layer of history to the mix. The transparent, translucent, and reflective surfaces create a sense of constant interaction and dialogue, says Neri, and generate the energy that Vongerichten wanted. ■

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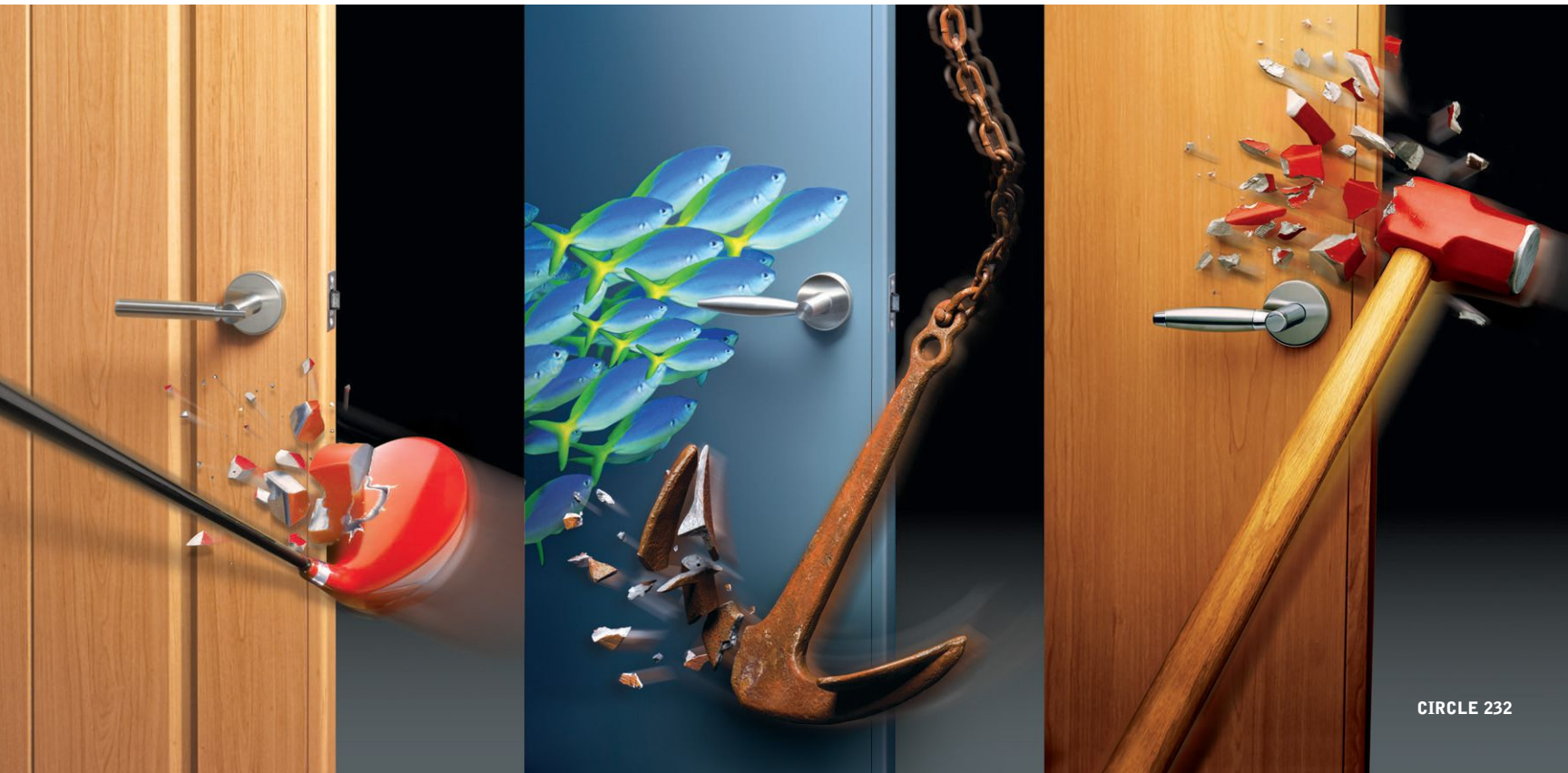

CIRCLE 232

Durable Color

Multi-Color Metal Roof Creates a Lively Experience

Destin Commons, Destin, FL
Owner: Turnberry Associates
Installing contractor: Roof Specialties
Architect: JPRA Architects
Distributor: CRS – Commercial Roofing Specialties
Profiles: Snap-Clad
Colors: Arcadia Green, Slate Gray, Terra Cotta

Destin Commons, a premier open-air lifestyle center, is clad with Snap-Clad metal roofing panels in three complementary PAC-CLAD Cool Colors. Petersen's premium 70% PVDF finish is available in more than forty colors on steel and aluminum.

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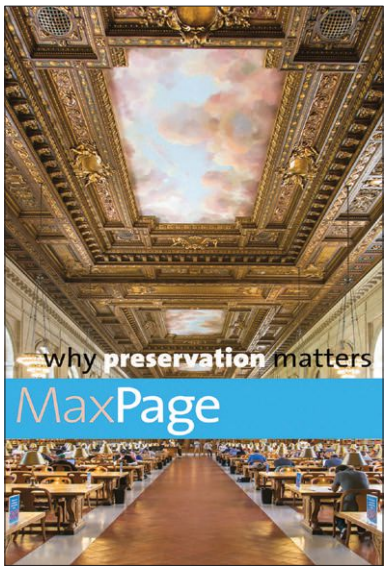
CIRCLE 303

An Authentic Argument

Why Preservation Matters, *by Max Page. Yale University Press, October 2016, 224 pages, $25.*

Reviewed by James Gauer

ARCHITECTURAL HISTORIAN Max Page believes America's preservation movement has reached a crossroads. His new book, *Why Preservation Matters*, written to mark the 50th anniversary of the 1966 National Historic Preservation Act, critiques where the movement has gone and ponders where it should go. The fundamental problems, according to the author, are that it's too focused on aesthetics, too inclined to emulate the museum approach to conserving and curating precious objects, and—because of the gentrification and displacement it can catalyze—"too often used as a tool for enshrining the inequality between rich and poor that is the stamp of our global age." The book attempts "to look beyond the practices of conservation to the role of preservation as a force in public life."



This broader view has been taking shape at the national level for a generation, thanks in large part to the leadership of Richard Moe, National Trust for Historic Preservation president from 1993 to 2009. Quoting Moe's speech praising National Preservation Award winners in 2000, Page writes, "Preservation isn't just about saving historic buildings. It's about saving historic neighborhood schools for our children, revitalizing downtowns, making historic homes affordable, and protecting our ethnic heritage." But Page doesn't think Moe went far enough, and he takes aim at one of that year's winners, Mayor Daley of Chicago, for allowing for-profit development too large a role in setting the agenda.

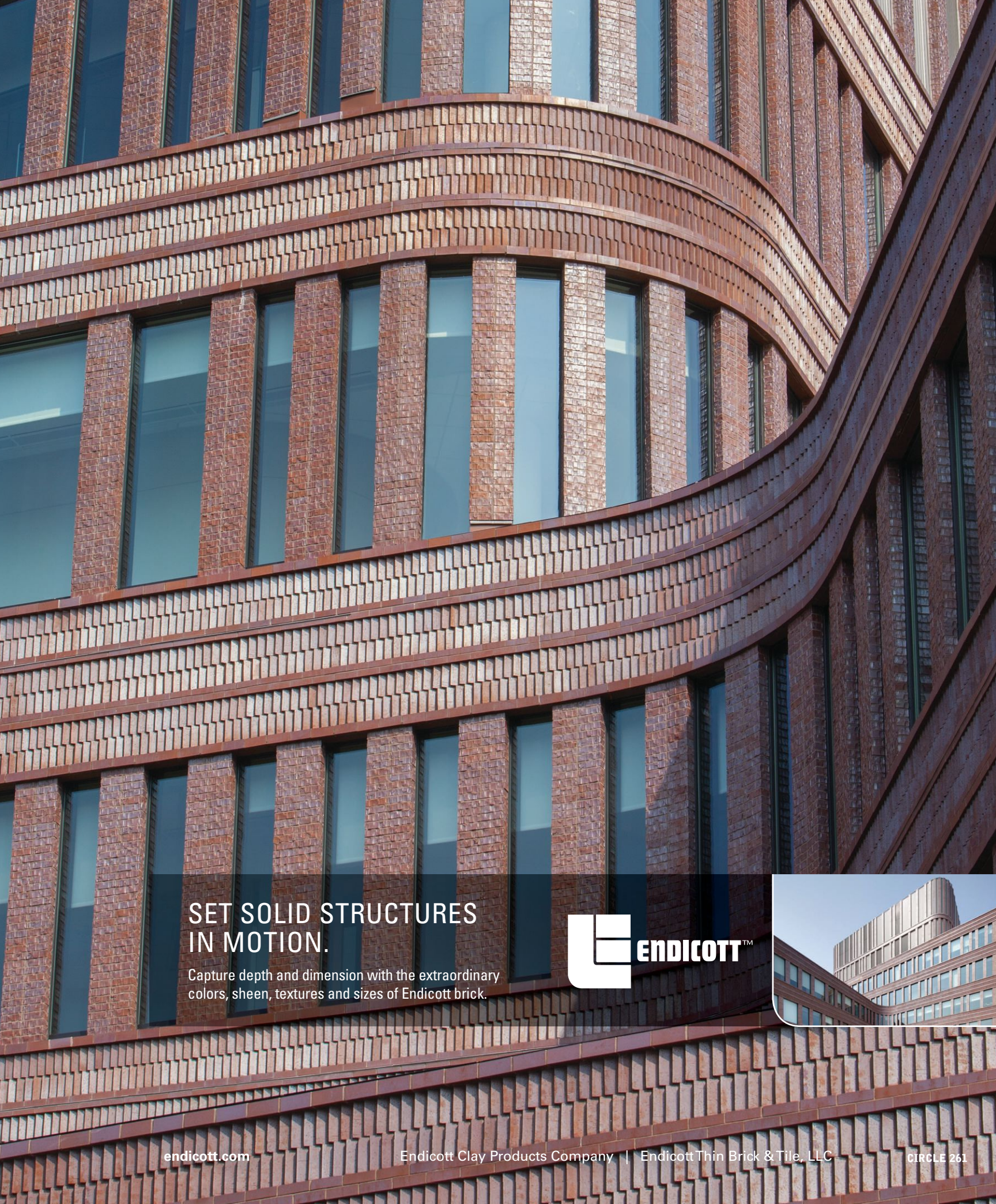
Page wants preservation to move past "squabbling about the appearance of new windows and the color of shingles" and join forces with the fights against climate change and income inequality. He advocates for a greater emphasis on "difficult places," such as slave markets and massacre sites, with more focus on "memory making, storytelling," and "community building," though he's rather vague on what these terms mean. And he argues that what impedes these worthy goals is an elite obsession with architectural aesthetics and authenticity.

Page builds this argument in the book's most intellectually ambitious chapter, "Why We Preserve." We do so, he says, because we are looking for "a soul-deep connection to our world." The catch is that this quest is underpinned by the concept of authenticity, which he dismisses as "a mirage and a chimera." To elaborate on this problem, Page alludes to such thinkers as Gaston Bachelard, Franz Rosenzweig, Martin Heidegger, John Ruskin, Walter Benjamin, and Lionel Trilling, to mention just a few. He concludes that the value of preservation lies not in its authenticity but in its ability to "help us confront a difficult past fully and honestly, to employ historic places in the service of economic justice, to secure a sustainable world, and to reaffirm beauty as a path to justice."

Well, why not? These are all admirable aims. What's missing is a viable strategy for achieving them. Much of the book reads like a manifesto for the democratization of an elite enterprise in order to create "economically just communities" while offering little useful guidance on how to do so beyond "taking to the streets." Page seems a bit aloof from economic realities and is especially scornful of market-driven rehab projects, typically enabled by tax credits and often resulting in gentrification. He seems unwilling to consider that preservation follows the money not for lack of idealism but because it's an expensive endeavor that requires firm financial footing.

Surprisingly, the author's assertion that the pursuit of justice and sustainability requires us to "jettison" aesthetics and authenticity proves to be more rhetorical than strategic. In the final chapter, he suggests that merely expanding our definition of beauty might suffice. ■

James Gauer, an architect and author based in Victoria, British Columbia; Chicago; and San Miguel de Allende, Mexico, contributes regularly to RECORD.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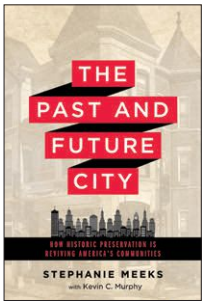
The New Urban Renewal

The Past and Future City: How Historic Preservation is Reviving America's Communities, *by Stephanie Meeks, with Kevin C. Murphy. Island Press, 352 pages, $60.*

Reviewed by Anna Shapiro

FOR THE readers of ARCHITECTURAL RECORD—particularly of this month's issue highlighting adaptive reuse—a book such as *The Past and Future City* probably looks about as fresh as a pile of paper left out for recycling. But it can be perfect for a designer who needs to convince a client of the virtues of recruiting old building stock to new uses, or for a neighborhood group trying to persuade local officials. Stephanie Meeks—CEO of the National Trust for Historic Preservation—has mustered, with Kevin C. Murphy, that organization's speechwriter, an array of data demonstrating the virtues of architectural adaptation deep enough to convince any remaining doubters. There are even charts to show that you'll save more money, make more money, create more jobs, revive whole neighborhoods and commercial life, and be more just and ecological if you do the right thing by those old hulks.

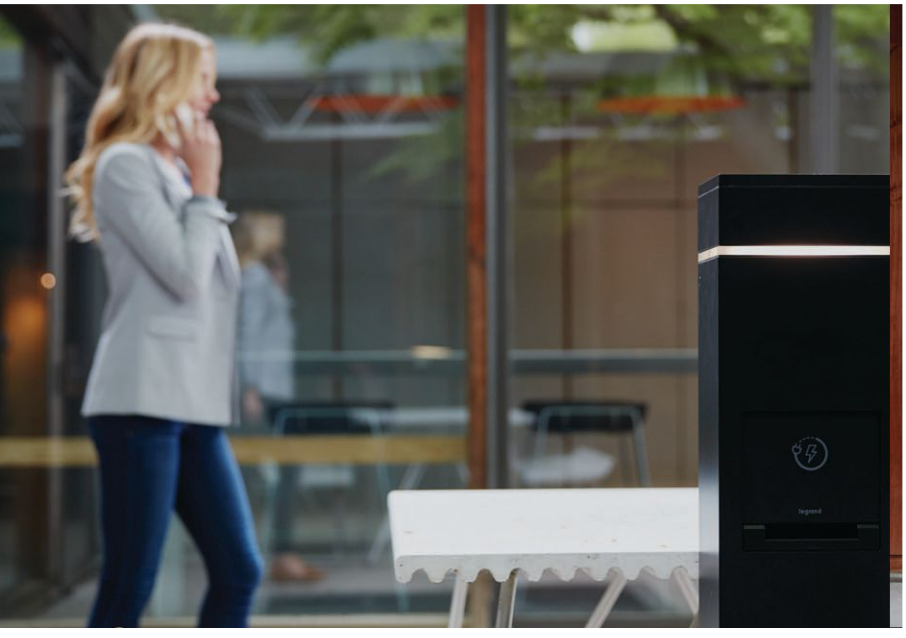


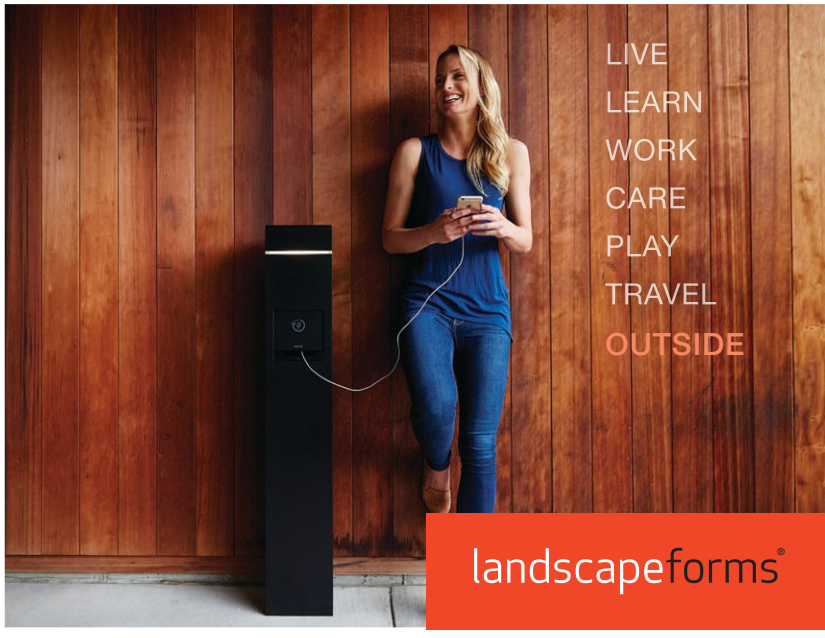
She approaches the pro-preservation campaign along many fronts, invoking Jane Jacobs and, to a degree, New Urbanism, unpacking the paradox of why older or modest buildings frequently provide more housing, at more affordable rates, than towers—not to mention healthier, more vibrant neighborhoods. She points out that what attracts tourists—history incarnated in wood, stone, and brick—is also what attracts residents and businesses, offering example after example of downtowns that have bounced back when their old buildings were rehabilitated for new purposes. She specifies means for funding such ventures, like historic tax credits, and describes guidelines that can allow for creative infill without destroying extant streetscape, such as form-based zoning, overlay districts, and, perhaps most innovative, code requirements that permit quirks and certain old-fashioned merits. There is also a chapter on the greenness of reuse—again, nothing that won't be familiar to architects but that might surprise some developers and civic leaders.

The book is at pains to distinguish the kind of preservation embodied in house museums from that of adaptive reuse; as it turns out, the information about house museums is pretty interesting: I did not know that George Washington's mansion in Mount Vernon, Virginia, was virtually the first American structure to be made the object of preservation. Before Ann Pamela Cunningham mobilized a group of ladies, starting in 1853, it was in "ruin and desolation." Now, however, there are "more house museums in the United States than there are McDonald's restaurants"—many unable to sustain themselves financially. Reuse by organizations and even, with protections, as private homes can be more reliable in preserving them.

At times the book reads like a speech to, say, a foundation board, with sentences that make you long for a red pencil—or for Jane Jacobs, with her crisp, powerful style. It builds its case by accruing examples, which means that you're following neither arguments nor a story. It may not be a book to read from cover to cover, but as a compendium and reference tool, it can be of critical use in a cause for which no arguing should be required. ■

Anna Shapiro is a New York–based essayist and novelist who currently heads the Greenwich Village neighborhood-preservation organization founded by Jane Jacobs.





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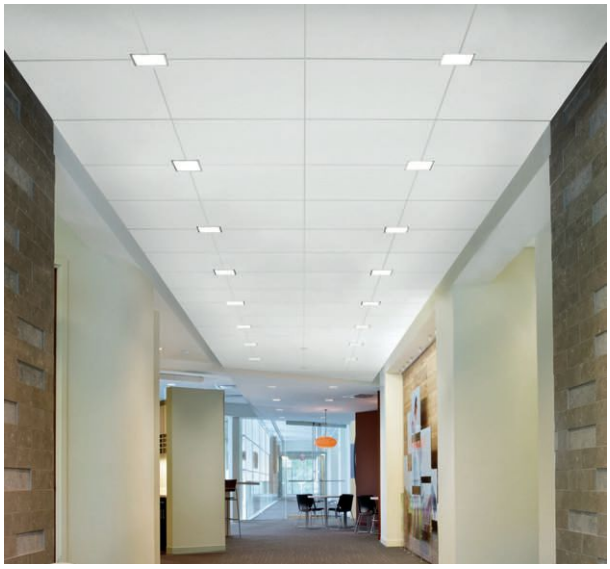
CIRCLE 217

Over Our Heads

Ceilings have become another surface to customize, with lighting, acoustic, and three-dimensional options widening the design palette.

By Julie Taraska



Intersection Downlighting

This solution, which pairs Armstrong Ceilings' suspension systems with USAI Lighting's Connect fixtures, allows architects to place recessed LEDs at framing intersections. Notched versions of Armstrong's Calla ceiling panels allow the fit to be seamless as well as to provide a 0.85 NRC and 35 CAC. The pre-engineered system is code-compliant for projects that must address seismic design criteria for categories D, E, and F.

armstrongceilings.com, usailighting.com

CIRCLE 100

Levels

The latest additions to Hunter Douglas's Tavola line of baffles vary in height and width, allowing designers to create unique ceiling topographies. The Class A fire-rated product comes in six perforation patterns that offer a total NRC of 0.6 to 1.0. Made of recycled aluminum, the pieces may be powder-coated or specified with wood veneer. They also are Greenguard Gold–certified.

hunterdouglasarchitectural.com

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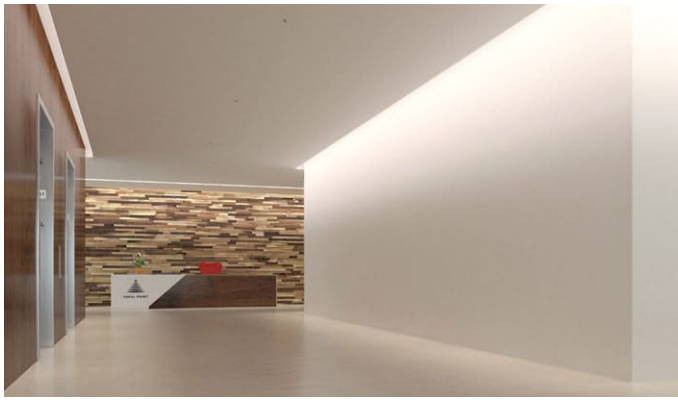
Exterior Suspension System

For use with USG's Celebration Torsion Spring panels, this G90 hot-dipped, galvanized-steel grid system suits outdoor and wind-uplift applications. It conforms to ASTM C635, contains greater than 50% recycled content, and meets all national code requirements for seismic and fire-rated assemblies. Stainless-steel clips and a polyester-paint finish further protect the sturdy system from corrosion.

usg.com

CIRCLE 102



Focus Wall Slot

The low-profile slot luminaire provides a glowing transition between wall and ceiling, illuminating inside and outside corners. The 6" tall, rough-in steel housing accommodates shallow plenum grid and drywall ceilings. A separate LED module can be snapped in at any stage of construction. Available in five lumen options and four color temperatures.

focalpointlights.com

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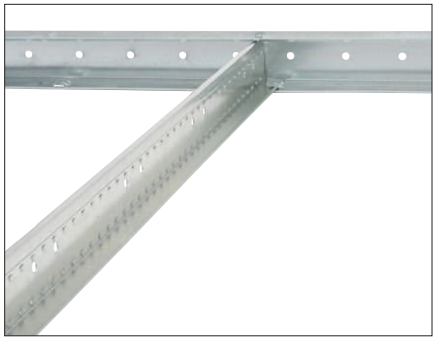
QuickSpan

CertainTeed's ceiling grid system supports drywall spans up to 12'—the longest in the industry. The galvanized-metal cross tees and locking channels snap into place with an audible click; no additional hanger wires are needed. Pieces come in standard and custom lengths, all with pre-engineered locking tabs punched every 8".

certainteed.com

CIRCLE 103



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Inside Job

Water lilies, grocery stores, and computer games inspire the latest surfaces and wall coverings.

By Julie Taraska

Bijou

Part of the Geometric Expressionism line, these decorative oak surfaces come in three designs, three wood colors, and four lacquered options (Jewel in White Lacquer, pictured). Standard and custom panel sizes are available, as are edge-banding and matching veneers.

archsystems.com

CIRCLE 105

Supermarket

Paola Navone's homage to the corner grocery store offers tidy rows of canned tomatoes, chocolate bars, and boxes of pasta; the pattern does not repeat over the length of each 19" x 394" roll. ASTM fire-rated, the colorfast covering features a paper top layer and nonwoven backing free of PVC, solvents, and formaldehyde.

usa.nlxl.com

CIRCLE 106

Writable Surfaces

Formica's latest collection of high-pressure laminate allows users to see the writing on the wall—and then erase it. The stain-resistant 8' sheets are available in two chalkboard and four markerboard designs (ColorBook, shown) that can be placed on horizontal and vertical surfaces.

formica.com

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Cape

Handwoven from fibers harvested from the stems of water lilies, the sustainable, sand-colored Cape possesses a subtle, unexpected shimmer. The Class A fire-resistant material arrives in rolls 43" wide and may be ordered in 3-yard increments. It also can contribute to LEED certification.

hartmannforbes.com

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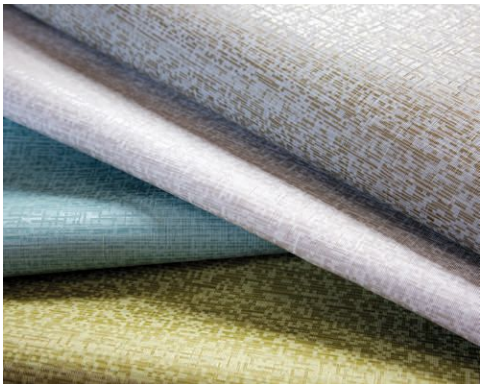

Pixel

Inspired by early video gaming, Pixel features layered blocks and lines embossed over a shimmering metallic field. The low-VOC Type II wall covering has an Osnaburg backing and can be recycled. It is NSF/ANSI 342–certified and comes in 15 gradated colors.

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Architect: Esocoff & Associates Architects

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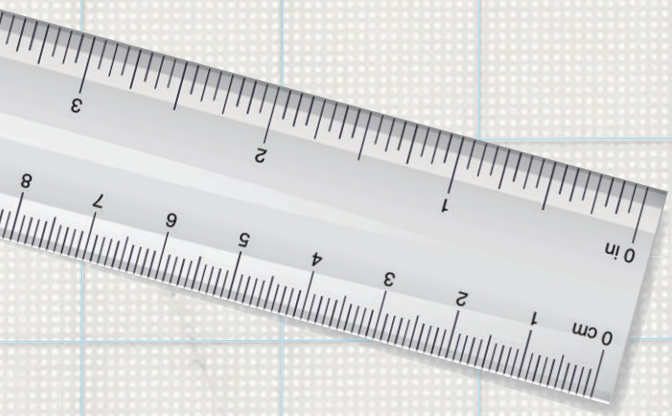

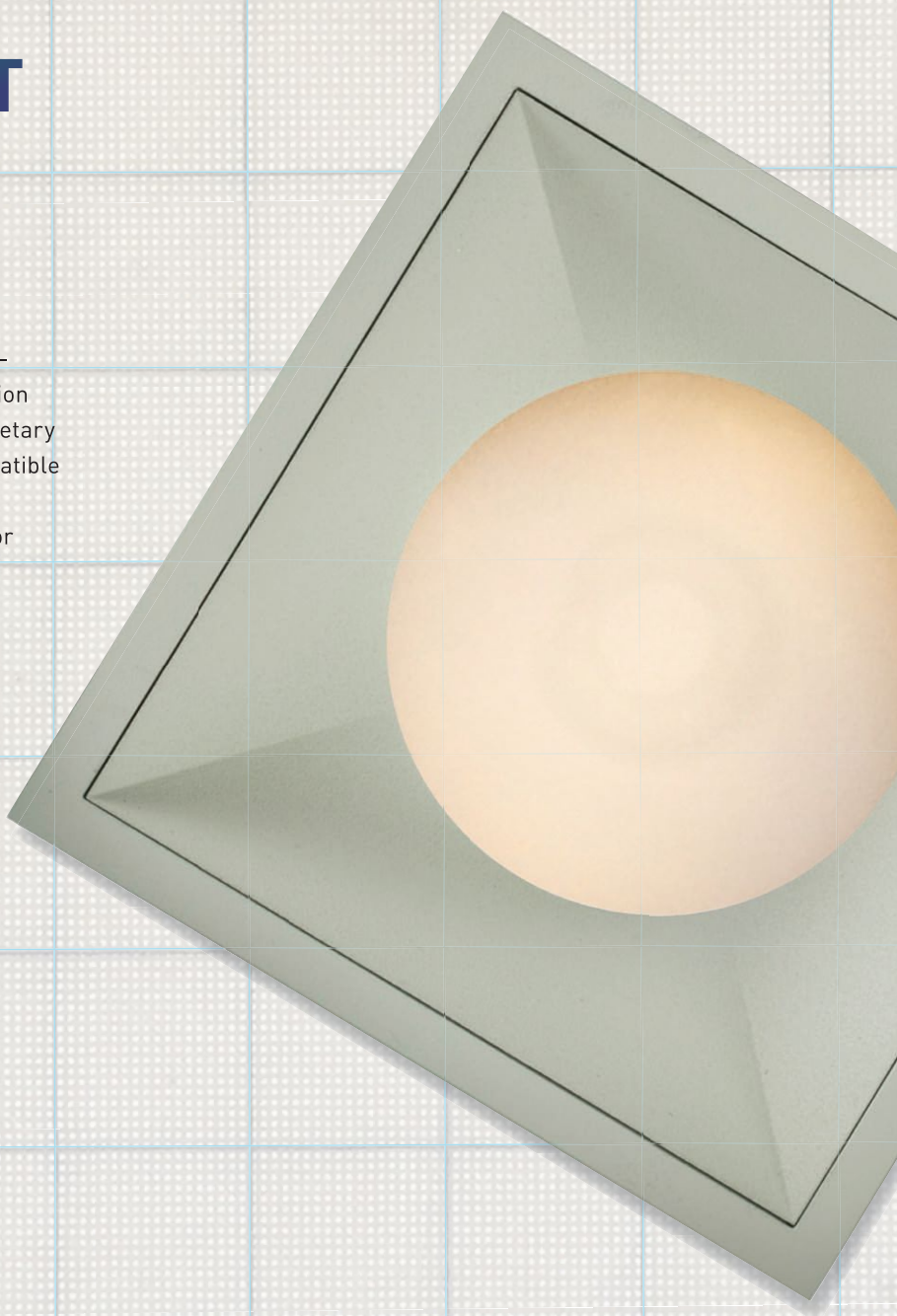

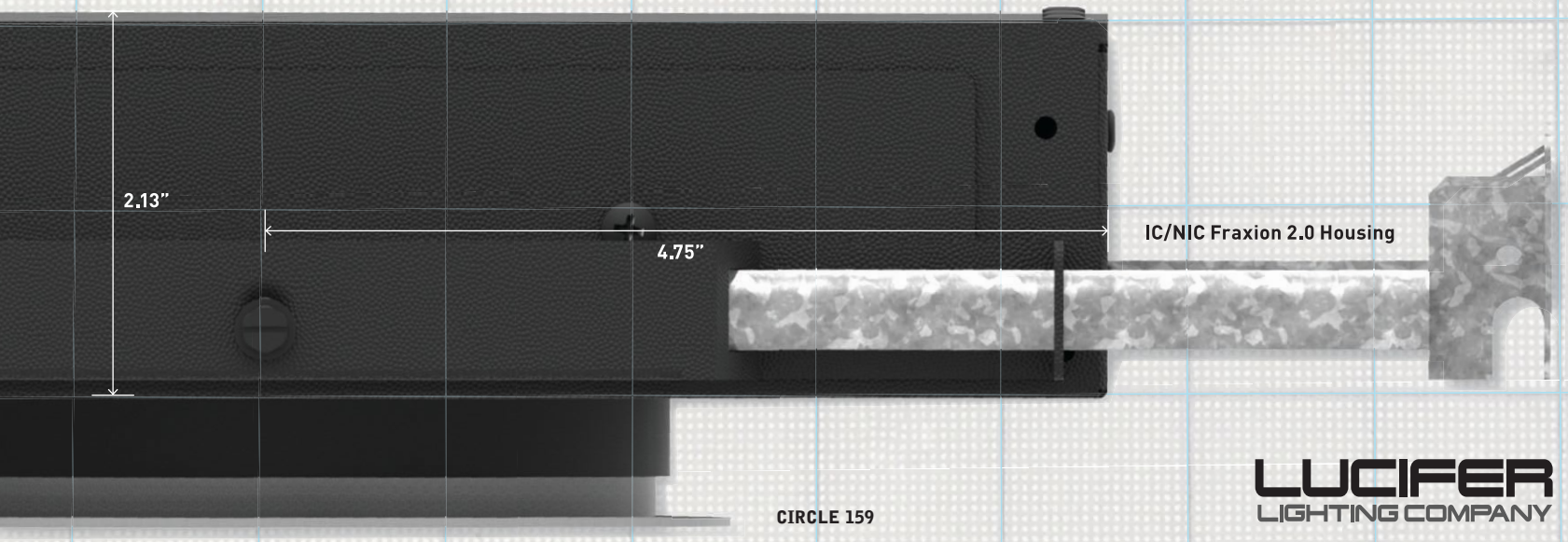

CIRCLE 159

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Modern Reboot

Four midcentury landmarks get a new lease on life.

BY JOANN GONCHAR, AIA

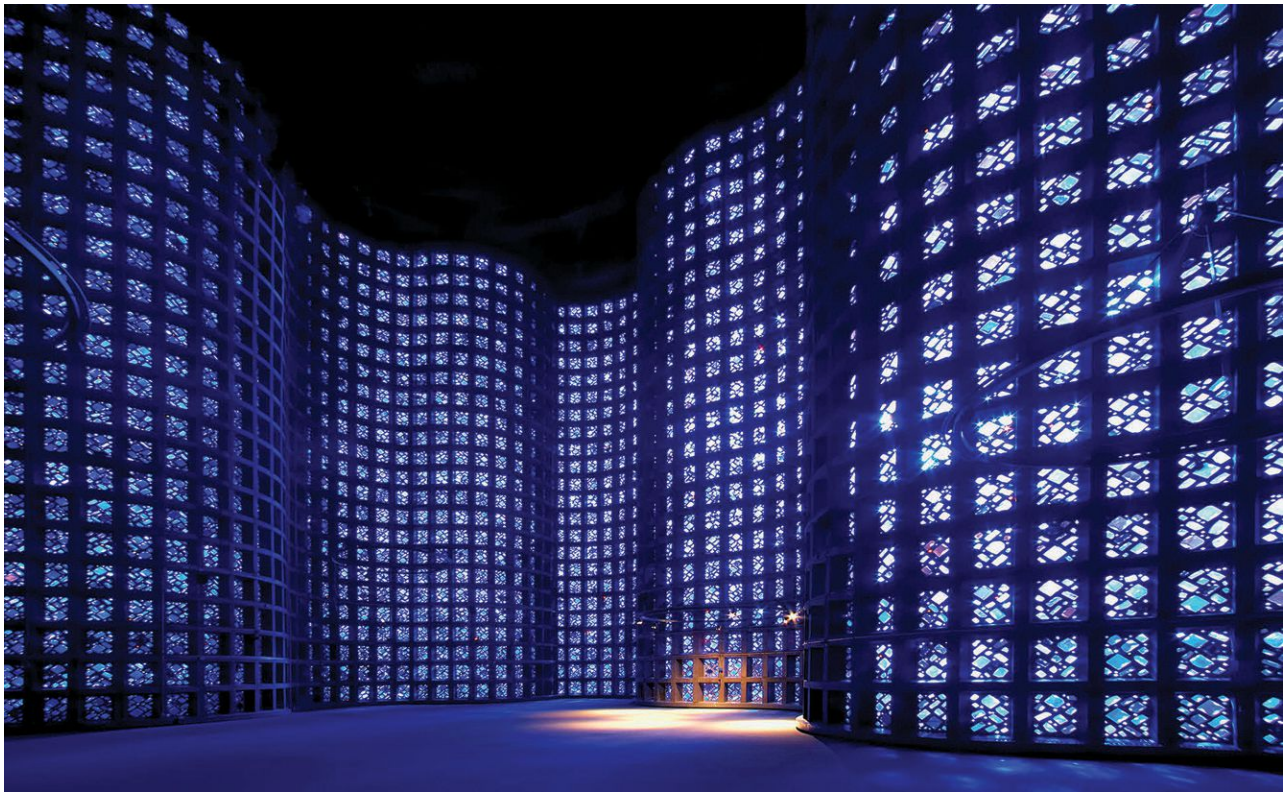
Midcentury Modern architecture is admired for its bold forms, clear expression of structure, and experimentation with new technology and materials. But those very same techniques, materials, and formal solutions were often untested and, despite their promise, soon outmoded. For many architects, renovating and restoring buildings of that period has become an important enterprise, since they can be especially prone to deterioration and challenging to adapt to changing needs. Nevertheless, the following case studies show such endeavors can be successful.

The Hall of Science, in Queens, New York, is one example of the sculptural exuberance of many midcentury buildings. Designed by Harrison and Abramovitz Architects for the 1964 World's Fair, it was conceived as a permanent museum devoted to science and technology. An eggcrate-like reinforced-concrete wall undulates and bends to define a nearly 90-foot-tall volume. Within the wall's framework, the original architects set more than 5,000 *dalle-de-verre* panels (approximately 1-inch-thick elements made of concrete with shards of cobalt blue glass cast into them). The result was a darkly luminous environment perfectly suited for the original exhibition, *Rendezvous in Space,* which featured a film by Frank Capra and space vehicles suspended from the ceiling. Todd Schliemann, a partner at New York–based Ennead, who completed the hall's restoration in 2015, describes its interior as abstract and almost scaleless, like outer space.

Ennead's renovation addressed chipping and spalling of the concrete framework that exposed its steel reinforcing, hairline cracks that had formed in many of the *dalle-de-verre* panels, and water infiltration. To reverse this deterioration, the firm, which had previously expanded the museum in 2004, carefully patched the concrete, refurbished the glass and concrete infill panels, and replaced those deemed beyond repair. As one of the final steps, the team applied a breathable waterproof coating to the exterior surfaces to help ensure that the hall's newly restored drama would be long lasting. Today it is open for visitors, and hosts an exhibition that focuses on the earth's diverse natural habitats.

Not all midcentury buildings exhibit the same kind of

LUNAR LANDSCAPE The defining features of Harrison and Abramovitz's Hall of Science (opposite) in Queens, New York, originally built for the 1964 World's Fair and recently renovated by Ennead, are curvilinear eggcrate-like walls infilled with panels made of concrete and shards of blue glass. The result is an interior (below) that evokes outer space.



PHOTOGRAPHY: © JEFF GOLDBERG/ESTO; EZRA STOLLER/ESTO (OPPOSITE)

adventurous and organic forms found at the Hall of Science. Instead, another significant work from this period—Louis Kahn's Richards Medical Research Laboratories (1961) at the University of Pennsylvania—demonstrates a commitment to order and rigor articulated in brick, concrete, and glass.

Recently designated a National Historic Landmark, Richards is considered the first built statement of Kahn's philosophy of "served" and "servant" spaces. It consists of four interconnected structures—three "served" towers for labs and one for services—bathrooms, elevators, and mechanical equipment. Exposed concrete Vierendeel trusses provided the primary structure, with ducts and other building systems organized—and visible—through the trusses' bottom chords. Below this structure, the floors were almost entirely lacking partitions, providing free-flowing space for scientific research and collaboration. Many scholars have noted that Kahn's model for this open working environment may well have been the architecture studio, says David Fixler, a principal in the Boston office of EYP Architecture & Engineering. His firm created the preservation standards for Richards and performed the first phase of the still-ongoing project. (The Philadelphia office of Atkin Olshin Schade Architects won a competitive bid for the subsequent phases.)

Whatever the source for Kahn's notions about the best spatial arrangement for medical research, he was misguided.

SERVED AND SERVANT
Louis Kahn's Richards Medical Research Laboratories, built on the campus of the University of Pennsylvania in 1961, consists of four interconnected towers in concrete, brick, and glass (above). A phased renovation by EYP and Atkin Olshin Schade includes a complete revamp of all mechanical systems and replacement of Kahn's extra-large, single-glazed windows with laminated glass (right) within the original steel frames.

PHOTOGRAPHY: © HALKIN MASON (2); JOHN GIAMMATTEO (OPPOSITE, TOP); COURTESY THE PAUL RUDOLPH FOUNDATION (OPPOSITE, BOTTOM)

SOCIAL SCIENCES
A renovation by Christopher Williams of Paul Rudolph's 1959 Greeley Memorial Laboratory (left), at Yale University, included the creation of a space where scientists can relax and informally meet (above). The area is defined by cherry cabinets that stop short of the sculptural ceiling in order not to interfere with the building's free-flowing configuration.

Not long after occupancy, the scientists began to subdivide their workspaces. And over the years, as their research evolved (along with laboratory ventilation requirements), ductwork, conduits, and other equipment proliferated, extending below the trusses, further impairing Kahn's clear diagram.

The move that was key to restoring the original architectural vision for Richards was the decision of the project team and the university to convert it from a wet lab for traditional bench science—which has intense ventilation requirements—to a dry lab where computational research would be conducted. This allowed the removal of the tangle of building services that had accrued since the Richards's completion and the installation of much smaller and more efficient systems, making Kahn's *parti* once again dominant.

The windows arguably presented the most daunting technical problem. The oversize single-glazed lites, more than 13 feet wide and 5 feet tall, were in bad shape: creep of the concrete structure had caused their custom-fabricated stainless-steel frames to warp, weakened the gaskets, and left the windows prone to breakage and leaks. Clearly they needed to be replaced, ideally with state-of-the-art glazing. But insulated units would be both too heavy and too thick for the existing frames, which were considered an essential part of Richards's original fabric. Much like the building itself, "they are elegant, minimal, with a strong character," says

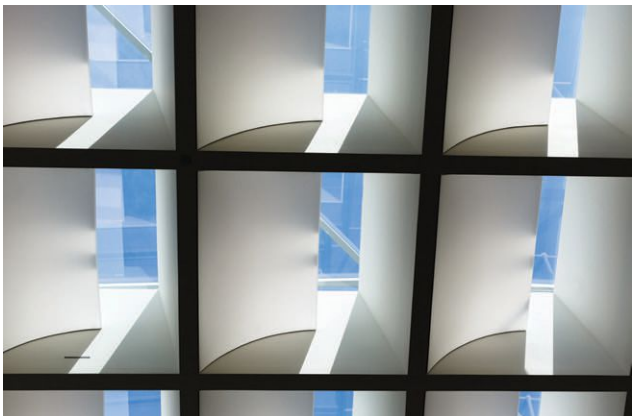
INTERIOR REINVENTION
Annabelle Selldorf recently revamped Pietro Belluschi's Manton Research Center (1973) at the Clark Art Institute (above) in the Berkshires. The renovation included the transformation of what had originally been an indoor sculpture court (right) into a reading room (opposite, top). A reconstructed skylight (opposite, bottom) includes baffles that address glare.

Fixler. The solution was laminated glass, only slightly thicker than the original glazing, with high-performance coatings that address glare. The new windows are coplanar with the exterior wall and "dead flat," despite the pressure differential between inside and out, he says.

Christopher Williams, a New Haven, Connecticut–based architect, faced many of the same problems as the Richards team in his recent renovation of Greeley Memorial Laboratory, a 24,000-square-foot research facility designed by Paul Rudolph for Yale University's School of Forestry & Environmental Studies. Since its completion in 1959, Greeley had suffered a number of unsympathetic alterations. These included new partitions and a profusion of piping, ducts, and systems for life safety. These changes gave the interior a makeshift, provisional feel and spoiled the expression of the coffered reinforced-concrete ceiling slab and the distinctive Y-shaped columns that support it.

Luckily, the scientists occupying Greeley increasingly conduct virtual and data-driven research that is less dependent on fume hoods and their accompanying ducts. Therefore the architect could remove the agglomeration of equipment that had accumulated over time and route the building services still required so that they are largely exposed, but arranged in a thoughtful and integrated way.

One programmatic change requested by the client was the creation of a place where the scientists could relax and informally meet to discuss their work. Toward that end, Williams designed a social area in Greeley's lobby, where previously



PHOTOGRAPHY: © TUCKER BLAIR (2); JEFF GOLDBERG/ESTO (OPPOSITE, TOP); COURTESY THE CLARK ART INSTITUTE (OPPOSITE, BOTTOM)

there had been only a reception desk. He provided soft seating and a kitchenette, and defined the area with cherry cabinets similar to the existing casework found throughout the building. These stop several feet below the sculptural ceiling to maintain Rudolph's free-flowing configuration.

The bold expression and spatial clarity of 1950s and '60s Modernist buildings is found in later projects as well. They are evident at Pietro Belluschi's Manton Research Center (1973) on the campus of the Clark Art Institute, in Williamstown, Massachusetts. Although this granite-clad library and study facility has a somewhat blocky exterior, Manton was "well-conceived," says the architect for the just-completed renovation, Annabelle Selldorf, principal of Selldorf Architects in New York (acting with Gensler). Its reading areas open to the Berkshire landscape, and it featured Belluschi's "classic modern details" that are "clean, elegant, and robust."

Selldorf and Gensler—who had previously overseen the renovation of the Clark's neoclassical-style main museum building, finishing it at roughly the same time as a Tadao Ando–designed visitor center (RECORD, August 2014, page 76)—made important functional upgrades to Manton. They updated life-safety systems, improved accessibility, renovated the auditorium, and created a new works-on-paper gallery and study rooms. However, the most visually impressive aspect of the Manton project is the transformation of the building's original skylit indoor sculpture court, which had devolved into what Selldorf calls a "nonspecific" space. In order to give it a new purpose, the architects remade it into a grand reading room, adding balconies with 24-foot-tall bookshelves on opposite walls. In addition, they reconstructed the gridded skylight overhead so that it appears almost identical to what was there before, but with improved thermal and daylighting performance: its 8-by-8-foot single-glazed lites were replaced with one double-glazed skylight. Baffles were introduced to mitigate glare while cleverly concealing electric illumination as well as sprinklers.

Now, not only is the space bright and inviting, it embodies Manton's research mission. This transformation, like the renovations of the Hall of Science, Richards, and Greeley, demonstrates how new technologies and fresh approaches can help midcentury buildings truly fulfill their potential. ■

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 CIRCLE 182

RENOVATION, RESTORATION, ADAPTATION

Preservation—from wholesale reconstruction to surgical intervention—involves all levels of architectural creativity. In the following pages, we depict this range with a wide collection of projects. First we present a restored residential compound by Frank Lloyd Wright that involved rebuilding three structures. Then we look at often-ignored structures, such as factories and warehouses, which have been adapted to contemporary uses while keeping their basic identities. In some cases, nondescript buildings can be revived with dynamic new extensions, and, in other instances, the approach is more subtle, adhering to a design version of the Hippocratic oath to "do no harm."

PHOTOGRAPHY: © ADRIAN GAUT, COURTESY GRUPO HABITA

THE ROBEY, BY ANTUNOVICH ASSOCIATES WITH NICOLAS SCHUYBROEK ARCHITECTS AND MARC MERCKX INTERIORS

Frank Lloyd Wright's Darwin D. Martin House Complex | Buffalo | HHL Architects

Righting Wright

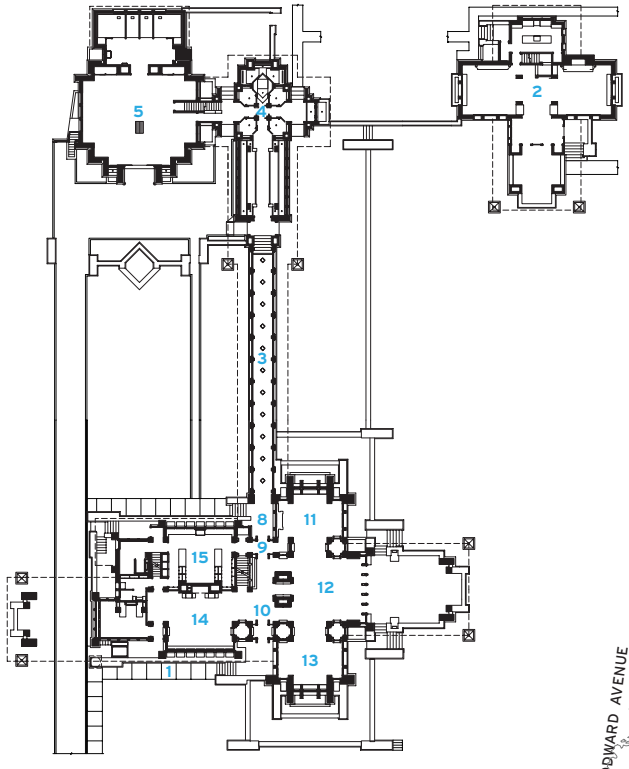
Restoration and reconstruction for one of the major landmarks of early modern architecture is now complete.

BY SUZANNE STEPHENS

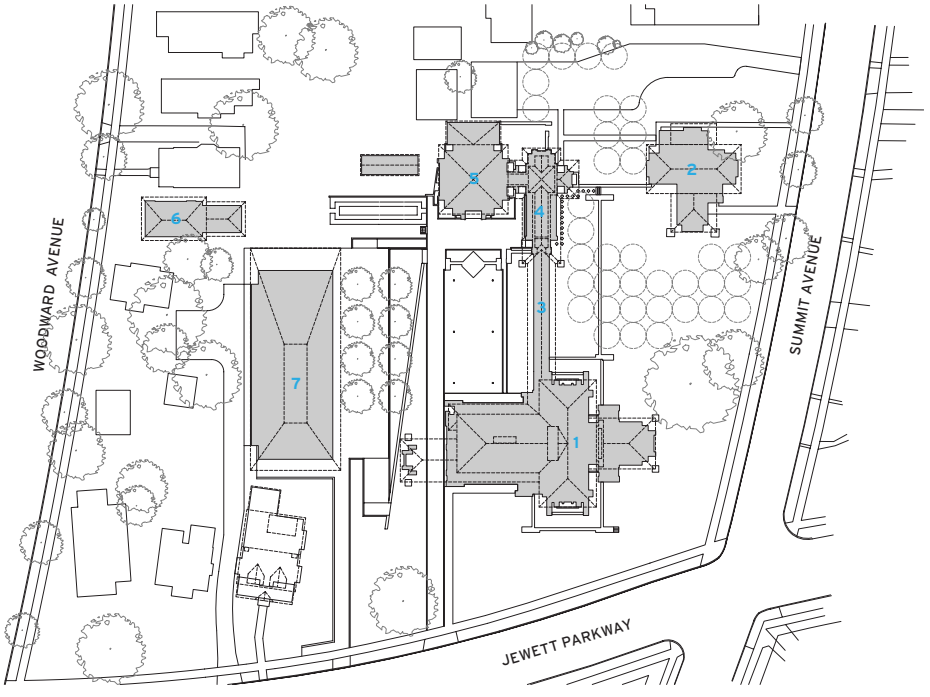
Frank Lloyd Wright called the grand complex he designed for Darwin D. Martin in Buffalo (1903–05) his "opus," as he wrote in 1954 to a prospective buyer of the property. And it was a major opus—even if just one among many. Now, in time for the celebration of Wright's 150th birthday in June, a 20-year, five-phase restoration and reconstruction process is wrapping up on the residential complex, with six structures by the architect. Its 1.5 acres include the main house for Martin and his family; a smaller one for Martin's sister Delta and her husband, George Barton; a pergola, conservatory, and carriage house, as well as a gardener's cottage that was added in 1909. Today it is hard to tell that it endured years of abandonment and neglect, not to mention actual demolition of three of its structures.

STATELY PRESENCE The Darwin D. Martin House (at left, this photograph) and the George Barton residence are part of an enclave constructed between 1903 and 1905. The cluster has just been painstakingly restored and partially reconstructed as a museum with a strong educational and events program.

PHOTOGRAPHY: © BIFF HENRICH, EXCEPT AS NOTED



MAIN-FLOOR PLAN 0 30 FT. 10 M.



SITE PLAN 0 50 FT. 15 M.

1 MARTIN HOUSE
2 BARTON HOUSE
3 PERGOLA
4 CONSERVATORY
5 CARRIAGE HOUSE
6 GARDENER'S COTTAGE
7 GREATBATCH PAVILION
8 PORCH
9 VESTIBULE
10 HALL
11 DINING
12 LIVING
13 LIBRARY
14 RECEPTION
15 KITCHEN

PHOTOGRAPHY: © IWAN BAAN (MIDDLE)

Martin and Barton both worked for the Larkin Company, a mail-order soap business. As a top executive, Martin helped bring Wright in to design the groundbreaking office building in downtown Buffalo (RECORD, March 1908, page 154; April 1908, page 310), which unfortunately was demolished in 1950. As the client for his own and his brother-in-law's houses, Martin proved to be surprisingly generous in letting his headstrong designer create a remarkable *gesamtkunstwerk* where architecture, interior fittings, furnishings, objects, and landscape came together in a splendidly integrated whole. (Nevertheless, Martin did chide Wright for not being punctual or paying enough attention to budget, specifications, and drawings.)

Built in the city's stately Parkside section, which was planned by Frederick Law Olmsted, the gracious enclave demonstrates Wright's early Prairie-style principles with long, low, horizontal volumes hugging the earth, sheltered under hipped roofs with deep overhangs. The elongated lines of the walls are emphasized by a reddish-tan Roman brick, with light concrete caps delineating parapets, sills, and the plinthlike base of the house. Red roof tiles attest to Wright's commitment to natural materials and colors.

The unity of the compound owes much to its axial planning: the pergola, extending from the 15,000-square-foot main residence on the south to the 2,700-square-foot conservatory on the north defines one axis, while the 5,500-square-foot carriage house and the 4,400-square-foot Barton House each flank the conservatory on a cross axis. Such intersections of axes determined the interior plans, which are based on a modular grid.

ALL IN THE FAMILY Wright connected the carriage house and adjoining conservatory (both reconstructed) to the main house, by means of a masonry-piered pergola (opposite, top). Next to it is a smaller house for Martin's sister, Delta, and her husband, George Barton (top). As with most of the structure, its horizontality is articulated by Roman bricks with raked profiles and concrete cappings. Wright also designed a stucco-walled gardener's cottage in 1909 (above). In 2009, a new glass-and-steel orientation center (opposite, middle), the Eleanor and Wilson Greatbatch Pavilion designed by Toshiko Mori Architect, was added.

Not everything functioned: the kitchen, placed on the opposite side of the entrance hall from the dining room, made the transport of dishes awkward for the staff. Some parts of the house were dark, owing to those overhanging eaves. But despite being large enough for eight bedrooms and four baths upstairs, the place was cozy: when Wright conceived the first-floor dining/living area and library as a single unit, he divided the flowing spaces into alcoves and niches with built-in oak cabinetry and masonry piers, along with lifted and lowered plastered ceilings and wood beams. Nearby, the Barton House's simpler cruciform plan, while less lavish, proved easier to keep up.

After Martin died in 1935, the main house stood vacant—and untended—for 17 years. Eventually the city took it over for nonpayment of property taxes, while the Barton House remained in private hands. In 1954, a local architect, Sebastian Tauriello, bought the Martin House, but sold off the land containing the pergola, carriage house, and conservatory, all of which were razed to build a 20-unit apartment complex in three structures.

In 1967, the State University of New York at Buffalo purchased the Martin House for its president's living quarters, and the then-provost bought the Barton House. By the early 1990s, with the state's backing,

LAYERS ON LAYERS
Inside, Wright created niches and alcoves with freestanding brick piers, built-in oak cabinetry, art-glass windows, and lighting fixtures (left). The library, dining, and living rooms were differentiated from each other by the cabinetry and clusters of piers as well as by raised and lowered ceilings with wood beams, to create an open spatial unit (below). Wright designed all the furniture and fittings, including the piano bench for the custom Steinway (opposite). The finishes, furnishings, fabrics, and fixtures were either restored or reproduced.

THE LONG VIEW From the main hall of the Martin house, a long, brick-piered pergola leads to the conservatory on the north end. Here a cast of the Victory of Samothrace takes its place at the terminus of the axis (opposite) within the 2,700-square-foot reconstructed setting.

the nonprofit Martin House Restoration Corporation (MHRC) was created to raise money to buy the Barton House and restore both it and the main residence as a museum under the aegis of the state's Parks, Recreation, and Historic Preservation Department. The ambitious plans included demolishing the apartment buildings and reconstructing the pergola, the conservatory, and the carriage house. The MHRC also acquired the picturesque stucco-and-wood gardener's cottage, which had belonged to other owners in the post-Martin years.

By 1997, HHL Architects, a Buffalo firm, began its work. The architects brought in the engineers Robert Sillman Associates to solve such problems as the sagging overhangs of the cantilevered roofs—the structural steel roof members weren't that structural, because they had not been attached completely around the perimeter. Now they were joined as one entity, and the wood rafters beefed up with engineered lumber.

The house's reinforced-concrete floors, resting on steel spanning beams, required patching on the second level, while the basement floor was raised for new mechanical equipment beneath the slab. Interior fittings, finishes, and small ceramic mosaic tiles on the ground floor and porches of the house received particular attention. Upstairs, the magnesite (a poured-cement material Wright also used in the Larkin Building) had to be replaced with a mix that contained no asbestos. Some of Wright's original movable furniture surprisingly remained intact, along with some of the sumptuously tinted art glass, but many windows had gone missing only to reappear in the art markets. They needed to be reproduced, as did most of the built-in furniture and casework.

The most difficult part of the project was sourcing the materials and finding trades to execute the work, says Theodore Lownie of HHL. It took some effort to find a manufacturer—in France—that would produce the red clay roof tiles, and eight years to locate a company willing to match the Roman-style brick with iron spotting.

With strong public and private support, the Martin House now functions as an active educational arts center, with tours, classes, events, and a shop in the carriage house, even as some restoration work finishes up. In 2009, the MHRC opened a 7,775-square-foot glass-and-steel orientation pavilion, designed by Toshiko Mori. Her concept follows Wright's general lines, but without the solid masses: it's as if a ghost of one wing of the house is gracefully poised at the edge of the site.

The completion of the Martin House resto-

PHOTOGRAPHY: COURTESY MARTIN HOUSE COMPLEX

ration comes at a time when Buffalo has undertaken a remarkable overhaul of its architectural legacy. The once-affluent city still retains stellar examples of architecture: besides the works by Wright (including a 1929 weekend house on Lake Erie for the Martin family), it is the home of Louis Sullivan's Guaranty Building (1896) and H.H. Richardson's Buffalo State Asylum for the Insane (1880), part of which is being converted to a hotel by Deborah Berke. The Beaux-Arts Albright-Knox Art Gallery, with its addition by Gordon Bunshaft of Skidmore, Owings & Merrill (1962), will soon have another wing by the Office of Metropolitan Architecture. Within this impressive collection, Wright's residential contribution serves as a testament to the power of design. Says Mary Roberts, director of the MHRC, "The Martin House is at the center of Buffalo's reinvention. It is the renaissance of a Rust Belt city as something new and exciting based on its architectural legacy." ■

credits

ARCHITECT: Frank Lloyd Wright (original); HHL Architects – Matt Meier, partner in charge; Theodore Lownie, project architect; Jamie Robideau, designer and project manager (restoration, reconstruction)

ENGINEERS: Robert Sillman Associates (structural); Landmark Facilities Group (m/e/p/fp); Watts Architecture & Engineering (civil, environmental); Convergent Technologies Design Group (audiovisual, telecommunications, security)

CONSULTANTS: Eifler & Associates Architects – John Eifler, principal (architectural restoration); Robert Furhoff (historic finishes); U.S. Heritage Group (historic masonry restoration)

CLIENT: Martin House Restoration Corporation, Mary Roberts, executive director

SIZE: 29,100 square feet (main house, pergola, conservatory, carriage house, and Barton House connection)

COST: $40 million

COMPLETION DATE: 1907 (original); January 2017 (restoration); spring 2017 (landscaping)

SOURCES

ROMAN BRICK: Belden Brick

ROOF TILES: Koramic Winerberger (formerly Tuilerie Aleonard)

ART GLASS: Oakbrook Esser Studios

HARDWARE: Jamestown Bronze Works

INTERIOR WOOD TRIM: Hulley Woodworking

CERAMIC MOSAIC TILE: American Restoration Tile

CAST-BRONZE LIGHT FIXTURES: Yamagiwa

HISTORIC PLUMBING: Vintage Bathroom

DECORATIVE WALL AND CEILING FINISHES: Chicago Architectural Arts

PITCH PERFECT
Double glazing covering the stained-glass windows and routed paneling at the base of the transept and altar enhance the acoustic performance of the newly restored Neo-Gothic church.

Christus Church | Hannover, Germany | ahrens & grabenhorst

Second Coming

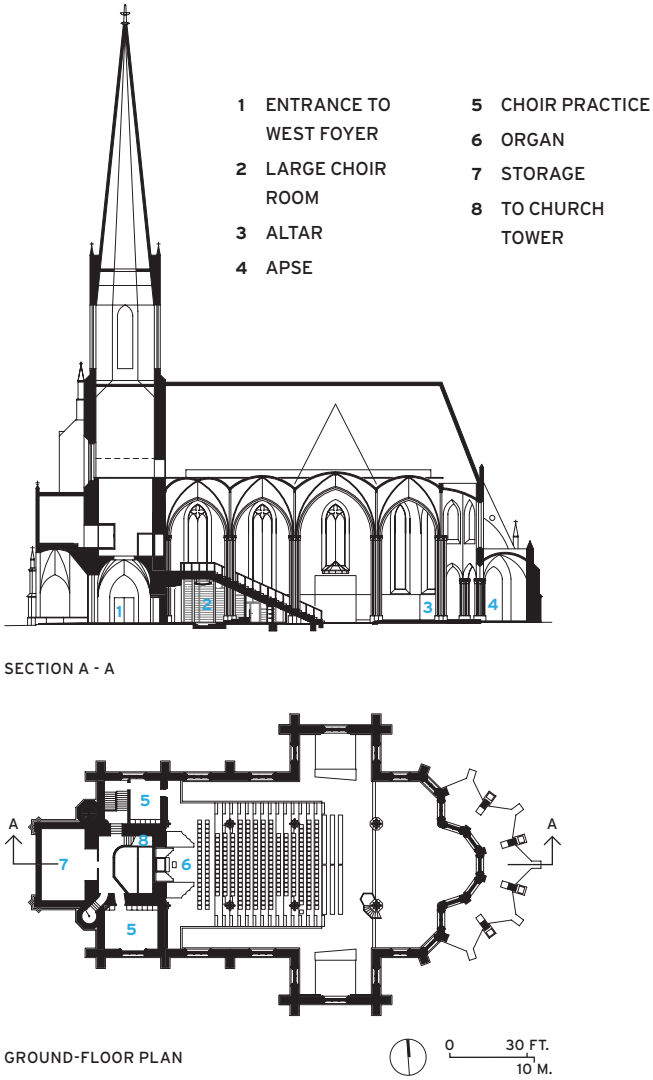
A church is resurrected to serve its congregation as well as a local choir.

BY MARY PEPCHINSKI

PHOTOGRAPHY BY ROLAND HALBE

You could say it was a match made in heaven. When the congregation of the aging Christus Church in Hannover, Germany joined forces with a local girls' choir, a partnership was formed that enabled the restoration of the historic Lutheran house of worship while creating a striking new venue for musical training and performance.

Though the facade of the 1864 Neo-Gothic edifice by architect Conrad Wilhelm Hase had been rehabilitated in the 1980s, the interior remained largely neglected—the paving was damaged, the walls were discolored with age,



INNER GLOW Honey-toned oak was used for the tall vestibule partitions and bleacher seating, as well as for the acoustic panels in the rehearsal space below (not visible), bringing a warmth to the Neo-Gothic interior.

and the building lacked heating. In 2011, local officials came up with the idea of pairing the church with the internationally celebrated Hannover Girls' Choir, which had outgrown its rehearsal space in a nearby high school and was looking to upgrade its facilities. The brief that resulted from this union required two seemingly disparate goals: the renovation of the landmark building for use as a church and its redesign as a choir center, which would include five rehearsal rooms. "The church had to remain a church," says Roger Ahrens, principal of Hannover-based ahrens & grabenhorst architects and planners, noting that the challenge became one of inserting the new program in such a way that it would not disrupt the building's primary purpose.

Approaching the redesign, the architects, with an extensive portfolio of new-construction and adaptive-reuse work, easily located four small choral practice rooms in the 230-foot-high church tower. The requirement to create a larger, 1,725-square-foot self-contained rehearsal space proved much more daunting. Then the team came up with a bold idea: remove the pews from the nave and build the rehearsal room in their place. To recoup the lost seating for worshippers (as well as that for future concertgoers attending performances in the main space), the architects topped the rehearsal room with oak bleachers, consisting of fifteen risers that seat up to 288 people and ascend to a height of 20 feet, stopping at the nave's rear wall. "Since the architecture is vertical," says Ahrens, "we decided to start with the floor and fold it upwards." The bleachers intersect the muscular brick columns yet are structurally independent of them, supported by a steel-reinforced concrete frame, which is flanked by steel beams. The architects exposed this structure in the practice room below, painted it white, and added routed, bowed oak panels for acoustics and to imbue the space with an intimate quality. The room's sides employ louvered glazing, which visually connects it to the larger church while optimizing sound quality and aiding ventilation.

Municipal building regulations mandated additional exits for concert venues. So the architects reopened the north and south entries, which had been sealed off in the 1950s. To create vestibules, they built large, freestanding oak partitions in front of each entrance. The upper portions of these walls are angled in to improve acoustics. Upon entering

the church on a brisk winter day, the bleachers and partitions, unified by their honey-toned oak, lend the cavernous interior a surprising feeling of warmth and welcome. This sensation is reinforced by amenities like radiant floor heating, installed under taupe porcelain tile, and LEDs above the nave that cast a warm light into the space.

To respect the historic architecture while optimizing sound quality and enhancing user comfort, the architects worked with a light hand. Even painting the interiors, for example, the team was careful to allow the structural brick elements—the columns and the ribs of the groin vaults—to remain unpainted to retain their visual prominence, as Hase had intended. To buffer against noise from traffic and provide thermal insulation, the architects covered the interior of the stained-glass windows with double glazing, fastening the new layer onto delicate steel frames. Eleven-foot-high fiberboard paneling covers the base of the walls along the nave, transept, and sections of the altar, to improve acoustics. When glimpsed from the bleachers, this lacquered, matte white surface seems to match the wall's stucco finish. Even the gold-plated stars, facsimiles of historic details that adorn the vaults, have a bitumen coating on their backs to absorb sound.

It is this attention to detail that makes ahrens & grabenhorst's renovation of the Christus Church such a success and allows the architecture to shine while bringing it up to date for the contemporary needs of both the congregation and the choir. The church remains a church, but now youthful voices enrich encounters with the sacred. "Between May and October, the door stays open," says pastor Stefanie Sonnenburg. "Visitors come here to find a quiet place. Often, the girls' choir is rehearsing, and people are delighted to be able to experience this building in its new function too." ■

Mary Pepchinski is a writer and educator based in Berlin and Dresden, Germany.

credits

ARCHITECT: ahrens & grabenhorst – Gesche Grabenhorst, Roger Ahrens, founders; Benjamin Höhn, project lead

ENGINEERS: StatikMeier (structural); Meihorst und Partner (advisory engineers/geotechnical)

CLIENT: Nordstädter Kirchengemeinde, Mädchenchor Hannover

SIZE: 9,275 square feet

COST: $2.4 million

COMPLETION DATE: June 2015

SOURCES

METAL PANEL RESTORATION: Vera Fendel

WOOD RESTORATION: Stepan Sowa

MASONRY/ENVELOPE: Stange Immobilien Service

GLASS WALLS: Metallbau Gieseler Service

MILLWORK: Funk Möbelwerkstätten

The Robey | Chicago | Antunovich Associates with Nicolas Schuybroek Architects and Marc Merckx

A New Angle

An Art Deco office building beyond the Loop is reimagined as an urbane hotel.

BY BLAIR KAMIN

PHOTOGRAPHY BY ADRIAN GAUT

Chicago's hotel boom has provided a major boost for historic preservation, breathing new life into aging downtown buildings designed by such legendary firms as D.H. Burnham & Co., Holabird & Root, Jenney & Mundie, and Rapp & Rapp. Now the trend has expanded beyond the Loop, turning a tiny Art Deco office building in the hip Wicker Park neighborhood into a boutique hotel, the Robey. Yet this conversion does more than save the brick and Indiana limestone skin of this charming flatiron building. It departs from the boutique hotel norm of the aggressively decorated, historically themed interior, opting instead for an understated, curated approach that layers the new on the old and effectively fuses influences from both sides of the Atlantic.

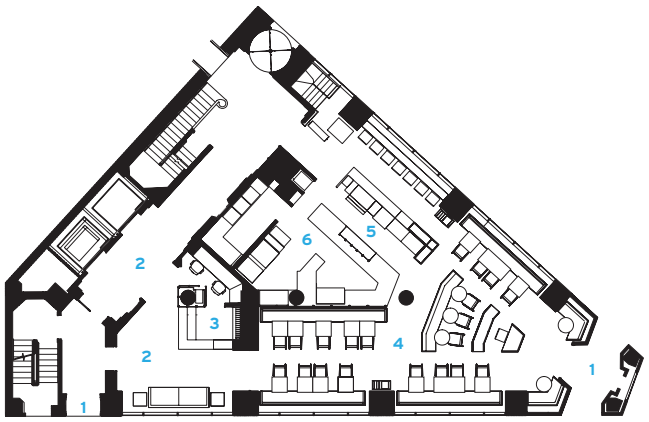
Designed by Chicago architects Perkins, Chatten & Hammond and originally called the North West Tower, the 12-story skyscraper was shaped by the six-corner intersection on which it sits, as well as a desire to bring a touch of downtown grandeur to a neighborhood business district. "The Skyscraper Leaves the Loop," proclaimed the February 1929 issue of *The Greater Chicago Magazine*, reflecting the exuberance that prevailed before that year's devastating stock market

SUBTLE SPECTRUM The Art Deco exuberance of the Robey's entrance lobby (opposite) gives way to a muted riff on Midcentury Modernism at the check-in desk (above), and doors leading to the hotel's ground-level café. The project transforms a once-derelict flatiron building (right) in Chicago's hip Wicker Park district.

crash. In the characteristic Chicago manner, structurally expressive brick piers shot skyward, leavened by patterned concrete spandrels that extended the building's concrete frame. A copper-roofed cupola, illuminated by floodlights, was the cherry on top of this "roaring 20s" party cake.

Despite Wicker Park's recent rise, the North West Tower fell into disrepair and was shrouded in scaffolding, after a developer's idea to revive it as a boutique hotel failed because of financial difficulties. That changed in 2012 when the parent company of Chicago-based Convexity Properties bought the tower with a new plan for reinventing it as a hotel, then selected Mexico City–based Grupo Habita to spearhead redevelopment and operate the concern. Grupo Habita, whose first American property is the Hotel Americano in Manhattan's Chelsea district (RECORD, December 2011, page 90), needed to respectfully restore the tower's critical features so the owners could reap federal and local tax credits. Yet the company also charged a team of architects to produce something more stirring than an Art Deco period piece.

For the exterior restoration, Chicago-based architect of record Antunovich Associates repaired the buckling brick and crumbling spandrels, buffed limestone panels, restored glass to the boarded-up



GROUND FLOOR

4TH, 6TH, 7TH, 9TH, 10TH AND 11TH FLOORS

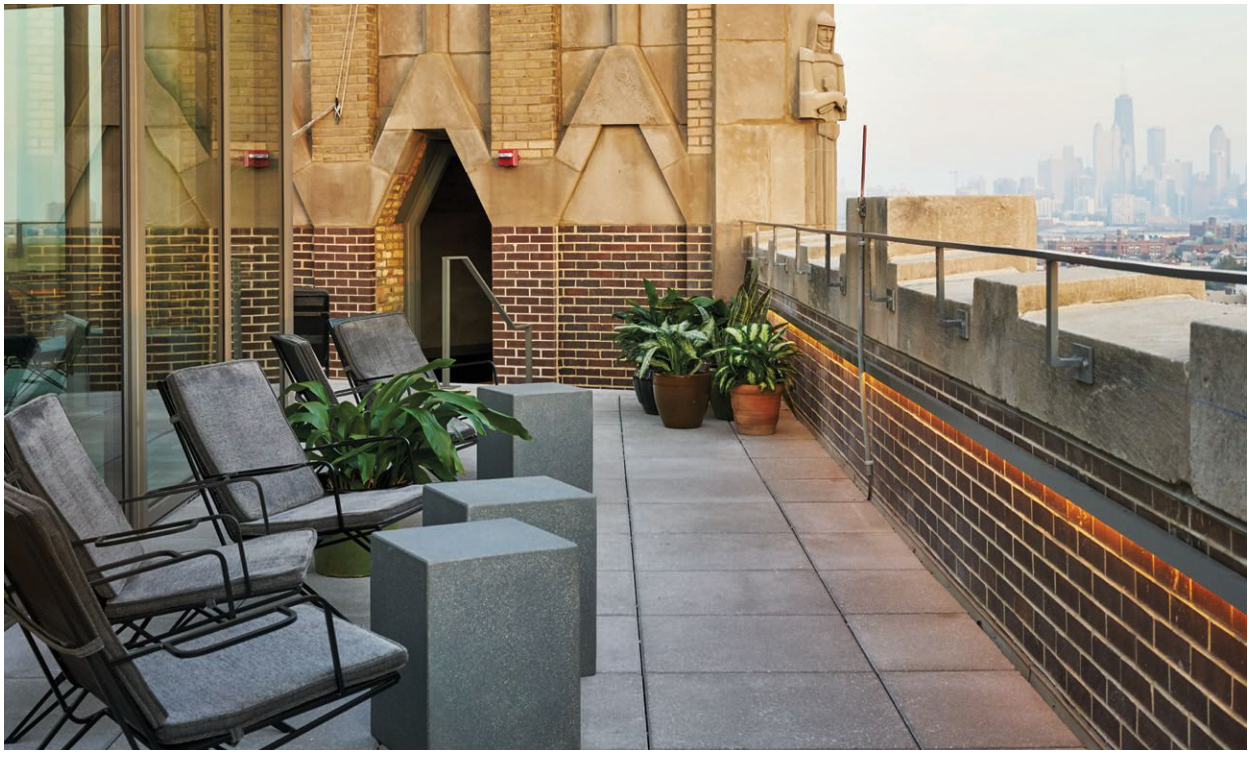
0 12 FT.
4 M.

1 ENTRANCE
2 LOBBY
3 RECEPTION
4 DINING
5 BAR
6 KITCHEN
7 GUEST ROOM

cupola, and installed new windows that replicate the appearance of the old ones. To temper the racket produced by the Chicago Transit Authority's Blue Line elevated train, which connects to O'Hare International Airport and has a station next door, the designers specified sound-buffering windows for several guest rooms on the third through fifth floors. By restoring large storefront windows at the base, they created a see-through corner restaurant, Café Robey, which evokes Edward Hopper's "Nighthawks," minus that iconic painting's mysterious gloom.

The revamped interior combines meticulous historic preservation with inventive insertions that reflect the hand of the interior archi-

HIGH LIFE Custom-designed furniture and fixtures enliven the rooftop lounge, Up & Up (right), endowing the 13th-floor aerie with a warm version of "Rat Pack" cool. The triangular top of one of the tables evokes the building's flatiron floor plan.



ABOVE IT ALL
Compressed to enhance its intimacy, the rooftop pavilion (above) is set back from the parapet wall, leaving room for a terrace with panoramic skyline views (left). Whether large or small, guest rooms (opposite two) have glass partitions that admit natural light and floor-to-ceiling stainless-steel rods that support bedside tables.

tects, Nicolas Schuybroek Architects and Marc Merckx Interiors, both based in Belgium, as well as that of Antunovich. The team has handsomely restored the elevator lobby, a high-ceilinged space with pearl-gray and green marble, bronze elevator doors, and still-operating vintage arrow floor indicators. Several guest-floor corridors retain the original marble wainscoting. Even the hotel's name reprises an earlier name of one of the streets that forms the six-corner intersection. "I did not want to impose anything on a building so strong, so emblematic of the neighborhood. The challenge was to maintain its identity," says Schuybroek.

Yet the design team has enlivened, rather than entombed, the old skyscraper, which now expresses layers of time rather than a single era. In the Robey's 69 guest rooms, ranging from expansive corner suites to smaller aeries of about 280 square feet, the architects inserted frosted wire glass partition walls that draw daylight into large bathrooms and evoke the building's original office doors. At the same time, new elements, such as custom-designed furniture and stainless-steel supports for bedside ledges, introduce Midcentury Modern and contemporary design motifs. There's no straining for effect here—just a muted elegance and a sense of expansiveness that comes from having a unique, slightly distant perspective on the downtown skyline. "Every room is organized so it has a beautiful view," Marc Merckx says.

The best vistas are glimpsed from the Robey's rooftop bar, Up & Up, which required an extension of the elevator shaft. A low-slung metal-and-glass pavilion holds this quietly exhilarating space, which is compressed by a wood ceiling that effectively frames the horizontal expanse of the cityscape outside. The pavilion is set back from the parapet, leaving room for a terrace and ensuring that the new does not alter the profile of the old when the Robey is seen from street level. In a previously unused space below the cupola, the architects created a grotto-like lounge for six to eight people that's enlivened by hanging brass light fixtures inspired by Belgian interior architect Jules Wabbes.

In a related project next door, Grupo Habita, Antunovich, and French design studios Cigue and Delordinaire have transformed an old cold-storage warehouse into the Hollander, an upscale hostel that shares a swimming pool with the Robey. Yet pride of place here clearly is the Robey's. With its compelling combination of historic authenticity and multilayered modernity, the hotel simultaneously grows organically from its neighborhood and brings something fresh to it. ■

credits

INTERIOR DESIGN: Nicolas Schuybroek Architects; Marc Merckx Interiors

ARCHITECT OF RECORD: Antunovich Associates

CONSULTANTS: Filament 33 (lighting); Forefront Structural Engineers (structural); WMA consulting Engineers (m/e/p/fp)

GENERAL CONTRACTOR: Pepper Construction

OWNER/DEVELOPER: Convexity Properties

HOTEL OPERATOR: Grupo Habita

COST: withheld

COMPLETION DATE: November 2016

SIZE: 43,000 square feet

SOURCES

FURNITURE: Knoll, Living Divani, Saint-Damase

LIGHTING: Restoration Hardware, Schoolhouse Electric & Supply, Rejuvenation

BATHROOM FITTINGS & FIXTURES: Waterworks, Duravit

TECHNOLOGY: Lutron, Enseo, Revo

Luma | Arles, France | Selldorf Architects

Back on Track

An arts foundation reinvents an old rail yard in a historic town in France.

BY CAROLINE ROUX

In 1984, France's national railway, the SNCF, shut down a rail yard with a handful of handsome 19th-century industrial sheds in the sun-washed southern city of Arles. The so-called Parcs des Ateliers, where broken trains had been repaired since the 1850s, was a major provider of employment in the town, which now numbers 54,000 inhabitants. But after the yards closed, the 16-acre sunken site remained unoccupied and unloved, a dustbowl next to the Avenue Victor Hugo, one of the city's main roads. Only the historic Roman amphitheaters and favorite spots of Van Gogh (who produced 30 paintings here between 1888 and 1889) were able to shore up the town's fortunes with tourism.

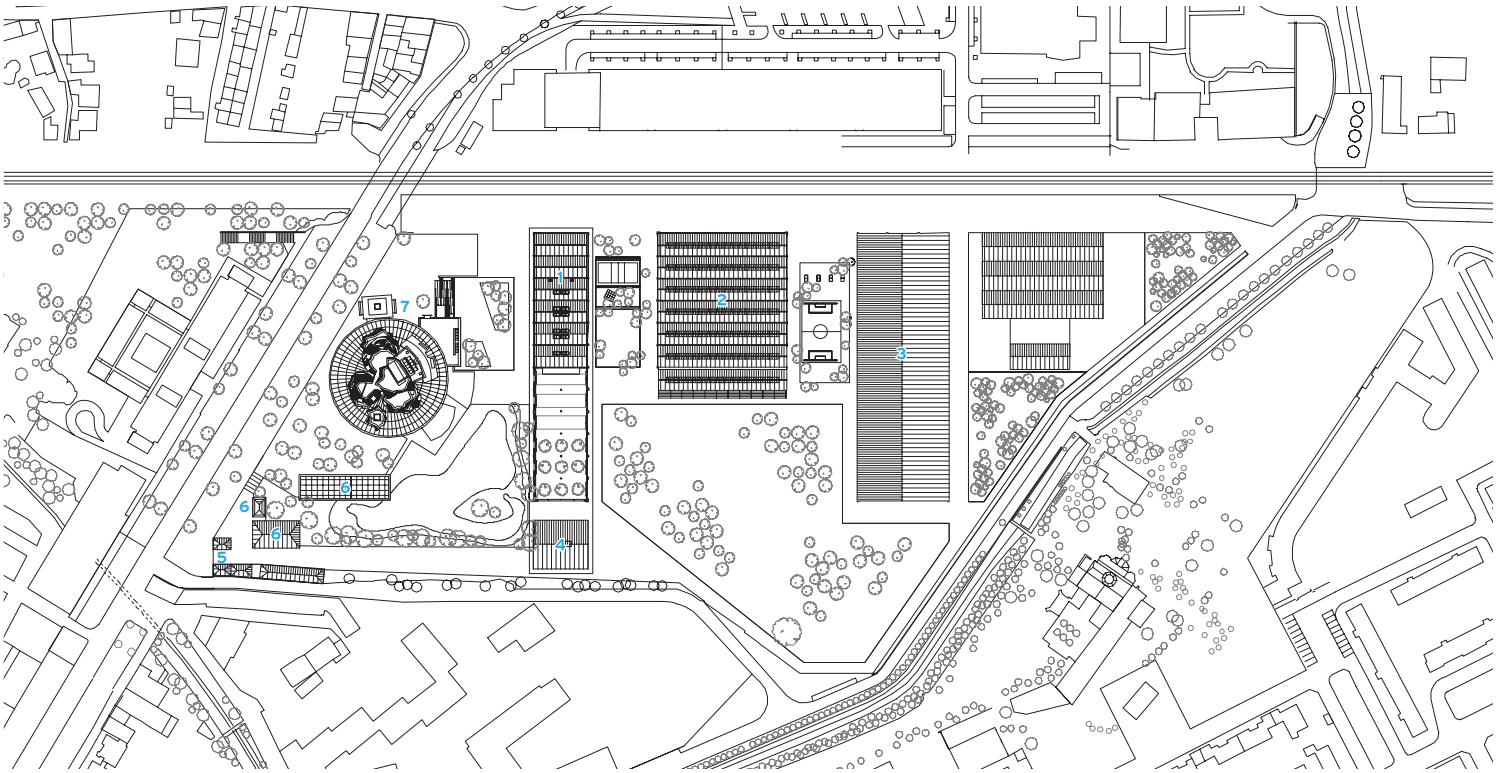
But like plenty of other postindustrial sites–the power station in London that's now the Tate Modern (RECORD, July 2016, page 70; June 2000, page 102), or the distillery in Milan that's returned as the Prada Foundation (RECORD, July 2015, page 56)–culture has flowed like water into the spaces that industry left behind. In this case, a radical new arts campus is rising from the SNCF's ashes, in the private hands of Maja Hoffmann, a Swiss pharmaceutical heiress, philanthropist, and collector of contemporary art, who arrived in Arles when she was just a few weeks old and considers it her hometown. Her foundation, Luma, begun in 2004 with the mission of spurring artistic activity rather than just exhibiting its results, will spend a sum estimated to be north of $100 million on the project. The centerpiece of the new Parc des Ateliers site is Frank Gehry's dazzling (literally, with its stainless-steel cladding) 185-foot-high tower for an art and research center, which will open in 2018. Its architect says the clustered blocks are inspired by the rock formations that occur naturally in the region.

But in the meantime, New York–based Selldorf Architects completed the stunning conversion of two buildings last summer–Les Forges, or the foundry building, and the Mécanique Générale, which had been the main repair space. The adapted structures have already hosted a range of events, including performances by Benjamin Millepied's L.A. Dance Project and an installation by artist Jordan Wolfson of a puppet in chains being thrown violently to the floor.

The firm's principal, Annabelle Selldorf, was charged not only with turning the buildings into galleries, but with the master plan of the Parc as well. She was a natural choice, having both a long-standing relationship with the art world and a reputation for subtle renovation projects, such as making over a Manhattan roller-skating rink as an art gallery for Hauser + Wirth in 2013. "My work is about proportions, light, and integrity of structure—what the building brings to the project," she says.

WORKSHOP REDUX The Luma Foundation is creating an arts center in Arles in a former train yard for the SNCF (top). Selldorf Architects is turning the limestone and stucco structures, such as Les Forges (right), into gallery space, including installing a mezzanine level (opposite). Nearby a new stainless-steel tower for art and research is being constructed by Frank Gehry.

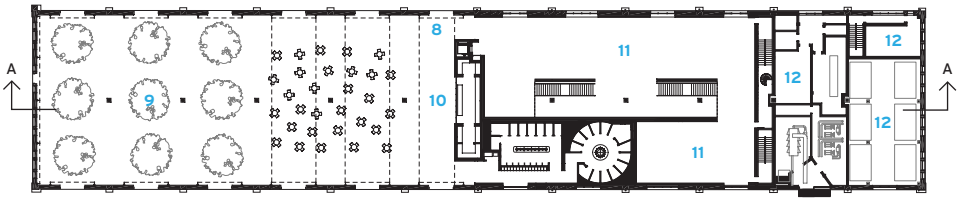
PHOTOGRAPHY: © HERVÉ HÔTE; COURTESY SELLDORF ARCHITECTS (OPPOSITE, 2)



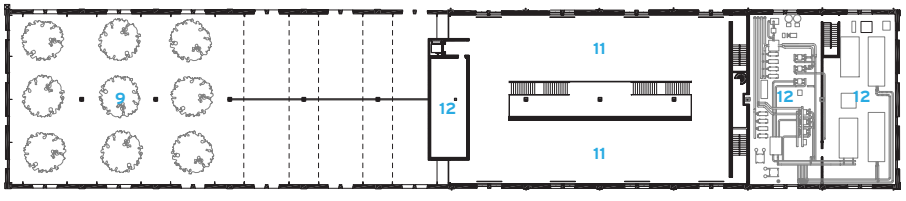
SITE PLAN

1 FORGES
2 MÉCANIQUE
3 GRAND HALL
4 DANCE STUDIO AND ARTISTS' RESIDENCE
5 CAFÉ AND VISITORS' CENTER
6 SOCIAL CENTER AND HOTEL
7 ART AND RESEARCH CENTER
8 ENTRY
9 COURTYARD
10 CAFÉ
11 GALLERY
12 MECHANICAL

LES FORGES SECTION A - A



LES FORGES GROUND-FLOOR PLAN

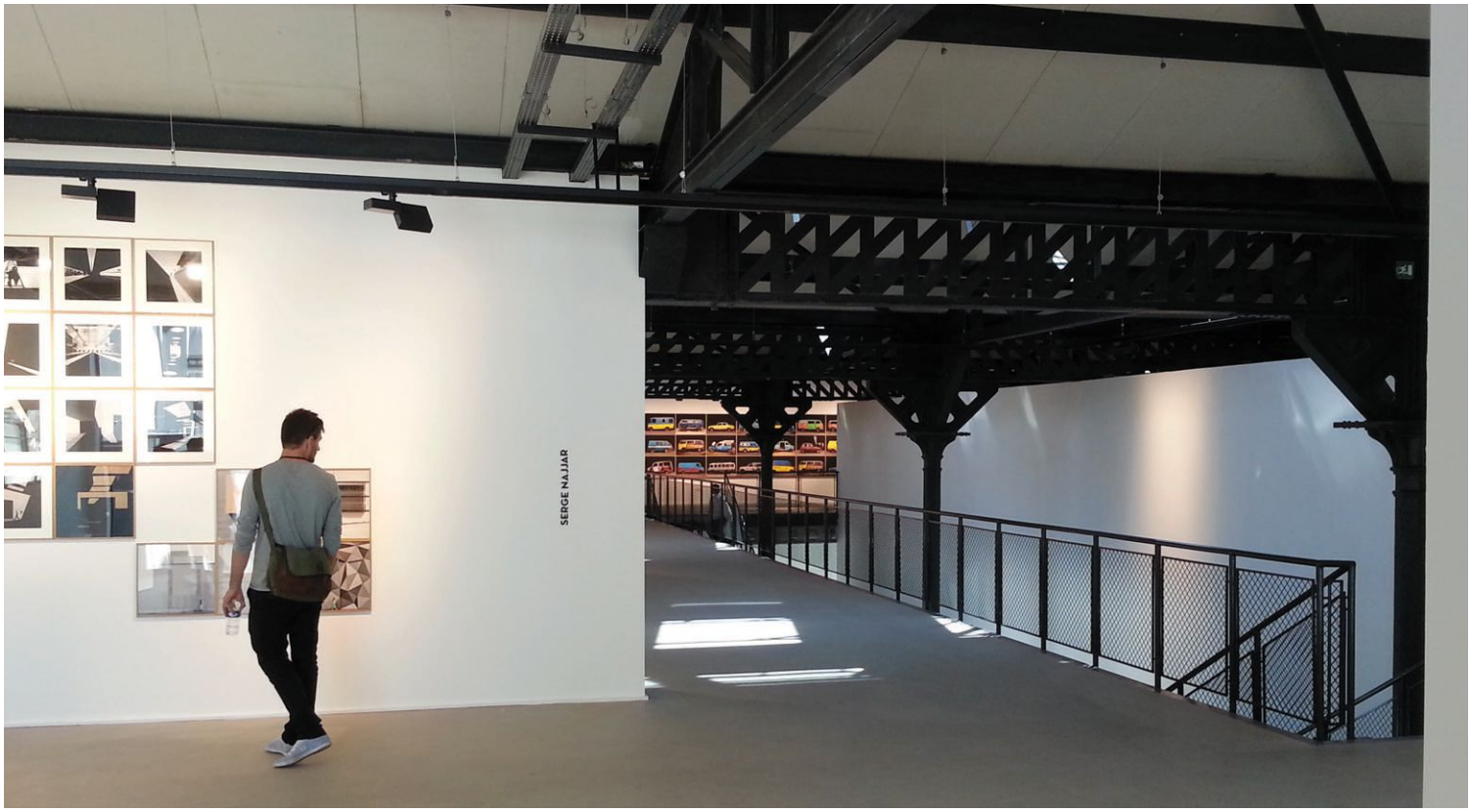


LES FORGES SECOND-FLOOR PLAN

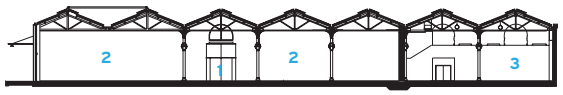
When Selldorf first visited Arles, she says, she "couldn't take in the incredible size of the site." The vast space is 23 feet below the street, on the same level as the railway. "You descend a slope to enter it. And this is not a 'park' in the usual sense—there's all that dusty gravel and intense sun," she adds. Accordingly, Selldorf is working with the Belgian landscape designer Bas Smets on developing a softer context, with newly introduced undulations and greenery that will guide visitors from building to building and create what Hoffmann calls "a public garden for my fellow citizens."

At Les Forges, the architect inherited a gabled structure of soaring cast-iron columns and steel trusses, with limestone walls and clay-tile roofs. In this former foundry, Selldorf ripped off the old roof, replacing its tiles; stabilized the cast-iron structure; and added a mezzanine level to create a total of 31,000 square feet of gallery space. She installed concrete floors on the ground level and mezzanine, and, to get light to the interior, inserted glazing in the upper windows where smaller panes or plywood had been and in some of the lower-level openings, while adding a few skylights. In the middle of Les Forges is an open-air courtyard café, another amenity in this dramatic, elongated volume. "The galleries have worked really well for conferences and symposia through the winter, too," says Selldorf.

PHOTOGRAPHY: COURTESY SELLDORF ARCHITECTS (OPPOSITE, 2)



HEAVY METAL In the 31,000-square-foot Les Forges (above and this image), Selldorf added a mezzanine with skylights and concrete floors to create a gallery, and restored the cast-iron columns and steel trusses.



LA MÉCANIQUE SECTION A - A

LA MÉCANIQUE GROUND-FLOOR PLAN

1 ENTRY VESTIBULE
2 GALLERY
3 WORKSHOP
4 MECHANICAL

The Mécanique building now offers a heroic, open-plan exhibition space of 48,000 square feet, mostly on one floor. Here the cast-iron structure with stuccoed limestone walls needed less extensive repairs. But Selldorf has added a 65-foot-long, column-free extension along the west elevation that mimics the structure's gabled bays—but with a dark gray concrete-block facade and zinc roof whose new materials allude to the building's past: a section had burned down years ago, and the remaining part was simply sealed up with concrete blocks. Selldorf has rewritten this history using contemporary architectural language.

The vastness and flexibility of the hall allow a multitude of uses. Last summer, it accommodated a huge photography show, with the insertion of diagonal walls, while in a space behind that, dancers performed for an audience sitting on temporary bleachers. Washed by day with natural light through new elongated glass strips, at night it felt surprisingly intimate.

The site's other major building–a 54,000-square-foot old boiler house called La Grande Halle–was reconfigured in 2008 as a multipurpose structure. French architects Alain Moatti and Henri Rivière added a steel-mesh wall to the west and a supersized LED screen on its north side.

Several more renovations are in the works. Another redo by Selldorf, La Formation, is being made into a dance studio and an artists' residence. A cluster of structures at one corner of the site has an orientation center on part of the ground floor, but more is planned there, including a hotel. All in all, the blossoming Parc des Ateliers is already creating its own history: the transition from industry to art that tells a truly 21st-century story. ■

Caroline Roux is based in London and writes about contemporary art and architecture. She contributes regularly to the Financial Times *and the* Economist.

PHOTOGRAPHY: COURTESY SELLDORF ARCHITECTS

SPATIAL ELABORATIONS
The Mécanique building, a 48,000-square-foot exhibition hall, includes a 65-foot-long column-free addition (opposite, top); the materials are dark gray concrete block with a zinc roof. Inside (opposite, bottom), linear skylights illuminate the galleries and thick, freestanding partitions give flexibility to the division of space.

credits

ARCHITECT: Selldorf Architects – Annabelle Selldorf, principal; Sara Lopergolo, partner in charge; John Spencer, project manager; David Bench, project architect; Ian Ollivier, architectural designer

ARCHITECT OF RECORD: C+D Architects

ENGINEERS: Terrell (structural, m/e/p)

CONSULTANTS: Bureau Bas Smets (landscape); Studio ZNA, Ingelux (lighting); Transsolar (sustainability)

CLIENT REPRESENTATIVE AND CONSTRUCTION MANAGEMENT: Myamo

CLIENT: Luma Foundation

SIZE: 31,000 square feet (Les Forges); 48,000 square feet (Mécanique Générale)

COST: withheld

COMPLETION DATE: June 2016

SOURCES

GLASS: Guardian

SKYLIGHTS: Schüco (Mécanique Générale): Souchier (Les Forges)

STEEL-FRAMED WINDOWS AND DOORS: Jansen Janisol

PAINTS AND STAINS: Tollens

EXTERIOR SHADES: Warema

VENTILATION LOUVERS: Renson

DOWNLIGHTS: ERCO

Eva's Phoenix | Toronto | LGA Architectural Partners

Fresh Start

An altruistic program breathes new life into an old building while giving hope to at-risk youth.

BY JOSEPHINE MINUTILLO

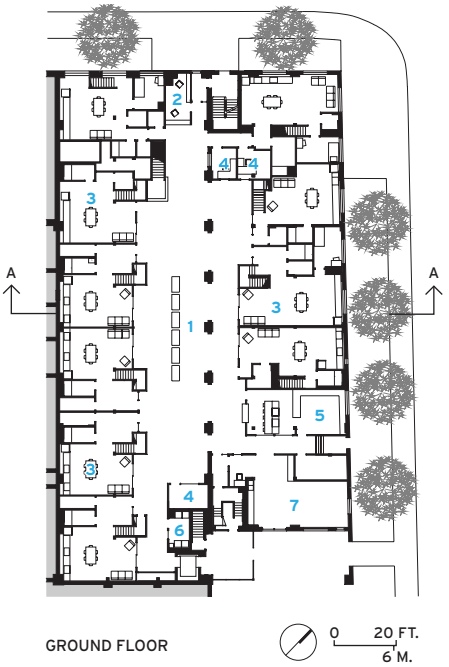
PHOTOGRAPHY BY BEN RAHN

MAIN STREET A 30-foot-high, skylit atrium is the heart of Eva's Phoenix. Painted in sunny colors, 10 distinct townhouses on either side of the atrium offer private quarters for the shelter's 50 residents.

Eva Smith was an ordinary woman with an extraordinary legacy. An immigrant to Canada from Jamaica, her tireless work for homeless youth led to the creation of a series of shelters throughout Toronto. Among them, Eva's Phoenix was launched after her death in 1993 to provide high school– and college-age girls and boys safe transitional housing and the skills they need to find long-term accommodations and employment.

When plans emerged to convert the building that housed Eva's Phoenix into condominiums, the organization tapped Toronto-based LGA Architectural Partners (LGA) to design a new space within a 1932 waterworks warehouse and office building in the city's rapidly gentrifying Fashion District. (A Shim-Sutcliffe designed Ace Hotel is under construction across the street.) Part of a larger commercial and residential development on the edge of St. Andrew's Park, Eva's received a portion of the Art Deco building from the city, and will share it with a giant food hall and a YMCA.

It wasn't the first time the charitable group collaborated with LGA: they designed the original Eva's Phoenix in 2000. The socially minded practice's diverse portfolio ranges from innovative, sustainable buildings—its house for the firm's founding partners, Janna Levitt and Dean Goodman, featured the first green roof on a single-family residence in Toronto—to large-scale university and cultural projects. Even before 2000, however, LGA offered a pioneering approach to designing shelter spaces with Strachan House, run by another organi-



INSIDE AND OUT The 1932 Art Deco brick facade was untouched by the renovation (left). Living areas within the townhouses have large windows onto the atrium (opposite, top). A workshop on the ground floor develops residents' construction skills (opposite, bottom).

zation. That scheme evolved after consultation with homeless people: it evoked an urban streetscape, with long views and individual dwelling units, a strategy LGA adopted for both Eva's Phoenixes.

The new Eva's was completed in the fall. Within the vast structure, 10 discrete townhouses line a 30-foot-high atrium that serves as an interior street. Each townhouse—five on either side of the "street"—includes a communal kitchen and small living area on the ground floor and bedrooms for each of its five residents on the floor above. "The idea is to slowly acclimate occupants by providing layers of privacy—from a very private bedroom to a semi-private house and, finally, a very public street," Goodman says.

At the same time, the safety of the 50 residents—who are permitted to remain in the building for up to a year while they receive job training on- and off-site—and the 30 or so staff was a key concern. According to Goodman, "We designed for privacy but also engagement, keeping in mind visibility and audibility in all of the spaces."

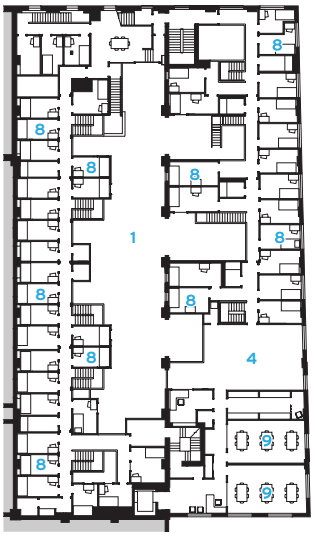
The townhouse living areas, for instance, do not have ceilings. Likewise, their internal staircases, while not accessible from the atrium on the ground floor, are open at the upper level, permitting views and communication between residents climbing the stairs and those hanging out in the atrium, where television, gym, and game areas are casually set up and can be moved around. On a third level over the west row of townhouses, open meeting areas for staff offer passive "rooftop" surveillance. The large skylights that drench that area, and the entire atrium, in sunlight were added above existing clerestory roof monitors. Diagonal bracing was installed and the original steel girders reinforced for the new openings and anticipated increased loads from snow blowing off a condo tower that is planned to rise above the building. To obstruct intrusive views from the future tower, a frit pattern was applied to the skylight glazing.

The former warehouse lent itself to this kind of open arrangement, but in order to build such partially enclosed multistory living spaces, the architects proposed a series of alternate measures for fire and safety and to comply with the Ontario building code. A freight elevator, for example, was removed and replaced with a fire stair. LGA also had to work around limited fenestration—only the east row of townhouses has windows to the outside. Windows along the opposite row were bricked over, since it now faces a party wall.

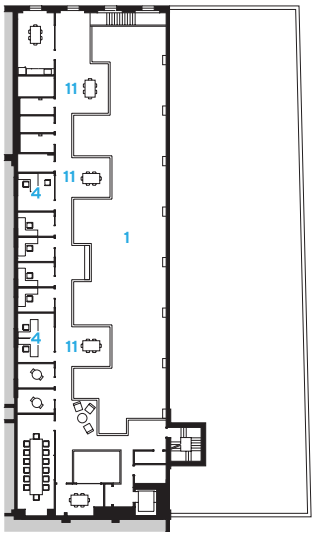
The major intervention to the masonry and timber structure involved cutting out openings in the lower portion of a brick wall that runs down the length of the atrium, making that space more expansive. The new ground-level concrete floor slab was raised about 3 feet, and 7 more feet beneath it excavated, to accommodate a below-grade, full-service commercial print shop that trains and employs residents. It contains a separate entrance for the public.

Employment skills are also taught in classrooms and counseling offices on the second and third levels, and in a large demonstration kitchen and workshop on the ground floor. Aside from job training, residents are expected to complete weekly chores. They also participated in some aspects of the design and details of the new space, from the choice of paint colors for select townhouse walls to actual construction work on some of the interior finishes. "It makes sense to have the people living in it help build it," says Goodman.

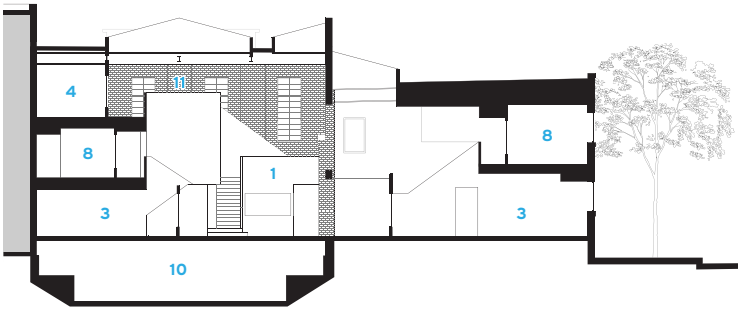
According to Eva's executive director, Jocelyn Helland, "Eva's Phoenix was designed to be a warm, welcoming space that says, 'You are cared for, you belong, and you deserve a great future, no matter what's happened in the past.'" By creating a neighborhood within the building, LGA succeeded not only in providing a sense of refuge for Eva's residents, but also a sense of home. ■



SECOND FLOOR

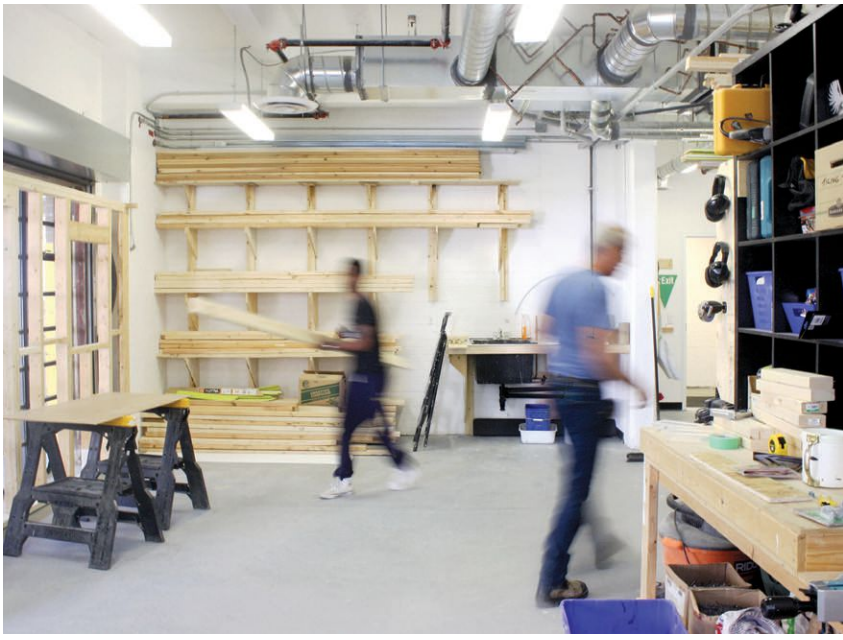


THIRD FLOOR



SECTION A - A

1 ATRIUM
2 FRONT DESK
3 LIVING/KITCHEN (WITHIN UNITS)
4 OFFICE
5 TEACHING KITCHEN
6 LAUNDRY
7 WORKSHOP
8 BEDROOM
9 CLASSROOM
10 PRINT SHOP
11 OPEN MEETING AREA



credits

ARCHITECT: LGA Architectural Partners

ENGINEERS: Blackwell (structural); LAM & Associates (mechanical & electrical); Fabian Papa and Partners (civil)

CONSULTANTS: Aercoustics Engineering (acoustics)

GENERAL CONTRACTOR: Somerville Construction Management

CLIENT: Eva's Initiatives for Homeless Youth

SIZE: 41,200 square feet

COST: $11.2 million (total); $10.2 million (construction)

COMPLETION DATE: October 2016

SOURCES

GLASS: TGP, PPG

SKYLIGHTS: Alumicor

HARDWARE: Sargent, RCI

PAINTS AND STAINS: Behr

PLASTIC LAMINATE: Wilsonart

RESILIENT FLOORING: Altro

INTERIOR AMBIENT LIGHTING: Philips

DOWNLIGHTS: Juno Lighting Group

EXTERIOR LIGHTING: Osram

ELEVATORS: Kone

PLUMBING: American Standard

Temple Israel of Hollywood | Los Angeles | Koning Eizenberg Architecture

Sanctuary for the Stars

An airy chapel is set against a somber historic synagogue in LaLa Land.

BY SARAH AMELAR

PHOTOGRAPHY BY ERIC STAUDENMAIER

It's not surprising that the home of Temple Israel of Hollywood (TIOH), right on Hollywood Boulevard, was partially the work of a theater designer. The Spanish-style structure, completed in 1949, was a collaboration between architects Samuel Lunden, creator of the original Pacific Coast Stock Exchange building in Los Angeles, and S. Charles Lee, best known for his movie palaces. Grand in scale, with tiered seating for more than 1,400 congregants, TIOH's main sanctuary is cavernous and inwardly focused, with sparse daylight filtered through small stained-glass windows. It's a hierarchical arrangement, with the audience facing a stage, site of the altar, or *bima*, with its Torah scrolls and pulpit. The temple—where Martin Luther King spoke and Elizabeth Taylor converted to Judaism before marrying Eddie Fisher—tends to attract movieland luminaries, and still draws crowds in its main sanctuary for High Holy Days and big bar mitzvahs or weddings. But, by 2006, this progressive congregation felt a growing need to add a more casual, intimate, and participatory space for daily prayer.

The synagogue leadership turned to Koning Eizenberg Architects (KEA) to reshape its ungainly agglomeration of post-1949 additions and, ultimately, design a chapel as both a complement and antidote to the original building. In contrast to the staid older sanctuary, with its solidity, dramatically dim lighting, and seclusion from the outside world, the new chapel needed to be luminous and intimate, with a sense of openness to the outdoors. But before creating such a place, KEA had to carve out a context for it.

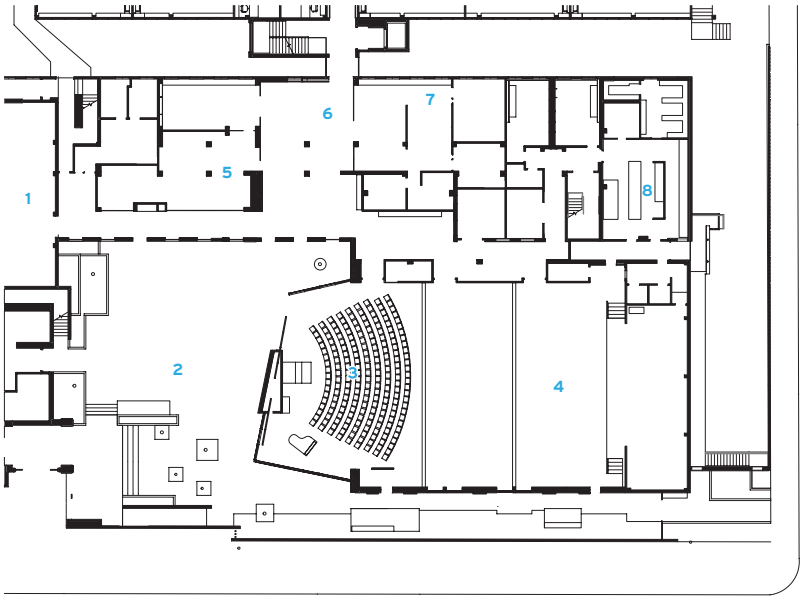
Over the years, TIOH had evolved into a 2.3-acre compound with pre- and day schools, a modest library, and community and administrative spaces. But these piecemeal accretions were fragmented and poorly integrated, making KEA's first

SOLID FOOTING The original 1949 building features exposed concrete facades and a tiled roof supported by steel beams. Its new glass neighbor has a decidedly different character, punctuated by a wavy sunshade.

mission to devise a master plan. The phased renovation (including the chapel) spanned a total of 15,000 square feet, opening up long sight lines, ushering in sunlight, and turning cramped spaces into gracious ones; it also accommodated modern security demands and, throughout the public areas, provided for the unprecedented exhibition of TIOH's remarkable collections of Judaic art and artifacts. Little was done to the original sanctuary.

At the complex's heart was a tight outdoor space that barely qualified as a courtyard, "more a place to pass through than to gather in," recalls KEA principal Nathan Bishop. The master plan rerouted interior circulation around the courtyard —now enlarged and lush with fruit trees— creating a single-loaded corridor with generous windows and direct outdoor access. Further reinforcing continuity, KEA defined pathways that extend from inside out, paved with encaustic-concrete tiles whose custom-designed geometric patterning recalls Islamic-influenced Jewish arts. The project also demolished a "completely uninspired" chapel, as TIOH executive director William Shpall describes it—finally providing a courtyard large and unencumbered enough for one to read the surrounding structures as continuous.

Across the courtyard from the 1949 synagogue, KEA's new 2,600-square-foot chapel now projects from an existing 5,000-square-foot social hall. Inspired by the weave and flow of the *tallit*, or prayer shawl, an undulant, slatted-metal sunshade veils the glazed facade. The elevation's central section is opaque: concrete stratified with small stones, collected by congregants visiting Israel over the years. With the same exposed, pebbly layering on the interior, this "sedimentary" wall backs the ark, the Torah's repository, a key element of the altar. And within the chapel, the sunshade's slatted language translates into a wavy ceiling of CNC-cut plywood fins, reminiscent of a *chuppah*, or Jewish wedding canopy. "The metaphor was very pliable," says Bishop of the ribs, which perform acoustically while visually masking mechanical and sound systems. Underfoot, unadorned concrete paving flows from the courtyard inside, featuring casually repositionable seating, as in a living

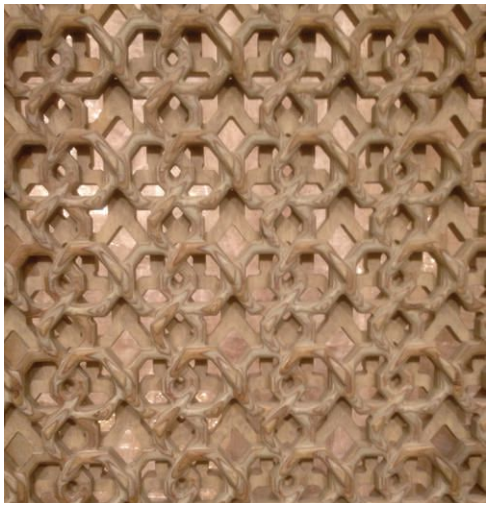


FIRST-FLOOR PLAN

0 20 FT. 6 M.

1 HISTORIC SANCTUARY
2 COURTYARD
3 NEW CHAPEL
4 SOCIAL HALL
5 LIBRARY
6 LOBBY
7 OFFICE
8 KITCHEN

MAKE WAVES Vertically retracting doors allow the chapel to open onto the courtyard (above). The fold of the sunshade's aluminum panels (top, opposite) was inspired by the weave and flow of a prayer shawl. Its undulant design is mimicked in the chapel's plywood ceiling (opposite, bottom right). The fretwork of the ark doors evokes Islamic screens (opposite, bottom left).



room. Adjustable in size, the chapel has motorized, ceiling-mounted partitions that can open up the entire 7,600-square-foot space (including the social hall) or divide it into two or three soundproof, acoustically balanced rooms.

Throughout the project, handcrafted and digital sensibilities dovetail, as with the ark doors, modern CNC-fabricated panels that

THE BIG REVEAL Public spaces, including the lobby, are now able to display art and artifacts, some from antiquity, for the first time (above).

credits

ARCHITECT: Koning Eizenberg Architecture

ENGINEERS: Parker-Resnick (structural); Barbara L. Hall (civil); Nikolakopulos & Associates (electrical); Pullen Associates (mechanical/plumbing)

CONSULTANTS: Pamela Burton & Company (landscape); Oculus Light Studio (lighting); Newsom Design (environmental graphics); GeoConcepts (geotechnical); Freeman Group (project manager)

GENERAL CONTRACTOR: Sierra Pacific Constructors

SIZE: 15,000 square feet

COST: withheld

COMPLETION DATE: May 2016

SOURCES

SUNSHADE: Ramirez Ironworks

CURTAIN WALL: Corona Aluminum

GLASS: PPG

SKYLIGHTS: Solatube

ENTRANCE DOORS: Arcadia

SEDIMENTARY WALL: Shaw & Sons

HARDWARE: Assa Abloy, Schlage, LCN, Dorma, Von Duprin, C.R. Laurence

CUSTOM MILLWORK: CW Keller & Associates

PAINTS AND STAINS: Dunn-Edwards Paints

FURNITURE: Haworth, Herman Miller, Blu Dot, Knoll, AMC Cabinets

PLASTIC LAMINATE: Wilsonart

INTERIOR AMBIENT LIGHTING: Axis, Bartco, Tom Dixon

evoke carved Islamic screens and their affinities with Jewish arts. While integrating the Star of David, these perforated wood panels abstract it within a layered fretwork. “A key question was how to make familiar icons fresh,” says KEA principal Julie Eizenberg. “This project was about new models inverting the old.”

Light-filled, the chapel plays against the original building’s darkness, contrasting an open and casual spirit with the main sanctuary’s more introverted and heavy formality. “Its’s a constant dialogue,” says Eizenberg. “The old solidity speaks of the past, whereas this sense of the ephemeral brings one into the moment.”

Amid the challenges of rethinking tradition were congregants debating “every decision,” she recalls, but in the end, they embraced the project. As one member wrote to the architects, “I love the chapel’s mix of austere and complex surfaces, the echoes of Moorish design, desert colors, and the Western Wall. There’s a sense of floating, as on an actual ark, with a wavy motion overhead. And, happily, gaps in the sunshade to see hints of blue sky and palms; the temperature, the sound, the flow of people—they’re all harmonious.” ■

New Orleans East Hospital | New Orleans, LA | Manning Architects Eskew+Dumez+Ripple

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LafargeHolcim Awards "Next Generation" 3rd prize 2014 – $25,000. Developed by students at MIT, Pleura Pod: Air purification wall transforming carbon dioxide into oxygen. Pleura Pod is a wall that is composed of multiple layers that are made out of natural or recycled materials. Cambridge, MA

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Brick by Brick

Architects and engineers enlist one of the oldest building technologies to create innovative 21st-century structures.

By Michael Cockram

VENICE IS a city built of bricks and one enriched by the wooden cargo ships that helped lift the former Venetian Republic to greatness. So it's fitting that last May at the 2016 Venice Biennale, a handful of architecture and engineering students from the Massachusetts Institute of Technology and several European schools joined a team of professionals to build an experimental brick structure in the courtyard of the historic Arsenale, where naval and trading vessels were once constructed. Under the guidance of Foster + Partners architects, the team tested new approaches to traditional brick. Lord Norman Foster, known for his groundbreaking works in steel and glass, developed the design for the graceful, thin-shell masonry vault, demonstrating that common brick, with its durability, relatively low cost, and almost universal availability, continues to inspire form and innovation.

The vault built for the Biennale was a full-scale mockup of a cargo droneport and is an early step in the creation of a network of such facilities for developing countries. The concept is the brainchild of Jonathan Ledgard, director of the Ecole Polytechnique Federale de Lausanne's Afrotech initiative and its offshoot Redline, a drone developer. The team is currently exploring sites for the first droneports in Rwanda, where, as in many emerging countries, roads are sparse and difficult to navigate. Cargo drones have the capacity to carry small freight such as medical supplies to remote places, and "leapfrog" over the lack of adequate infrastructure, says architect Narinder Sagoo, a partner at Foster + Partners.

Foster's idea was to create a module that could be replicated and expanded by combining the units into different configurations, depending on local needs. In addition to housing drones and supplies, part of each facility could also serve community functions, such as a clinic or a post office.

The form of the droneport evolved from Foster's revolutionary airport designs with their structurally expressive roofs. Similar to the firm's upcoming airport for Mexico City, the droneport's vaulted envelope "comes up from the ground and becomes the cladding and roof in one continuous system," says Sagoo. "Instead of columns, slabs, and roofs, we wanted to create a model that is structurally efficient, maximizes spans, and is built with a single building system that is easy to construct."

Following Foster's mantra to "do more with less," the architects worked with engineers from Cambridge, Massachusetts–based Ochsendorf DeJong and Block (ODB) early in the process to optimize the structure. Because the materials for making brick are readily available in Africa, the team decided to explore using an unreinforced masonry system.

The first step was a process that John Ochsendorf, an MIT professor of engineering and a partner in ODB, calls "form finding." Because unreinforced masonry performs well in compression but not in tension, the engineers relied on digital models to find a geometry that works only in compression under all expected load conditions, Ochsen-

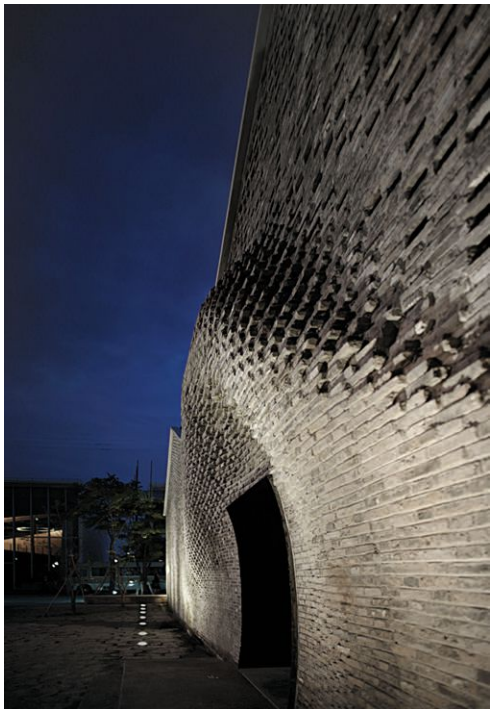
IMAGES: © NIGEL YOUNG AND THE NORMAN FOSTER FOUNDATION (ABOVE)

COURTESY FOSTER + PARTNERS (OPPOSITE AND RIGHT)

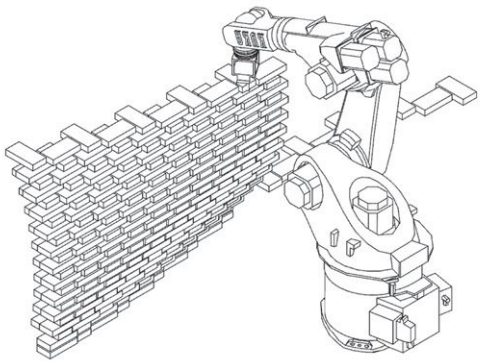
dorf explains. The digital modeling tool they used is similar in concept to the famous experiments in which the Spanish architect Antonio Gaudí suspended chains to find the most efficient shape for arches and domes. When slung between two points, a string or chain will inflect to a curve, or catenary, that is uniformly loaded in tension. If that shape is inverted and constructed of a rigid material like masonry, it forms an efficient arch in compression.

The technique used to build the droneport is indebted to another Spaniard, Rafael Guastavino, who immigrated to the U.S. in the late 19th century. He developed a method of mak-

INTO AFRICA
This past summer, a team of architects and engineers built an unusual brick vault at the Venice Biennale (above). The structure was the first step in the creation of a network of cargo droneports for developing countries. The first facilities, planned for Rwanda, would be made of multiple vaults in a variety of configurations, depending on local needs (left and opposite).



ing thin-shelled masonry domes and vaults with little or no formwork. It relied on a quick-drying mortar to cantilever the tiles in place until the finished form was completed. Guastavino's distinctive vaults were incorporated into many notable projects, including Grand Central Terminal in New York and the Boston Public Library.



BILLOWING BRICK To convert an old industrial building in Shanghai into artists' studios and a gallery, architects from Archi-Union salvaged the bricks from the original structure. They created the new undulating facade (left and top) with the help of a bricklaying robot (above).

To build the droneport mockup, Foster's team erected scaffolding and light fiberglass poles sprung into arches every few feet in each direction. Over these temporary supports, they laid three layers of masonry, each at a different orientation, to increase strength.

The two outermost layers are made with an experimental 1½-inch-thick earthen brick, developed in collaboration with LafargeHolcim Foundation, a partner in the droneport project. Traditional air-cured earthen bricks, like adobe, typically consist of clay-based soil that contains sand or silt and organic material such as straw. Although easy to produce, these bricks are heavy and lack the strength, durability, and weather resistance of the kiln-fired variety. But those used for the Droneport include a small amount of Portland cement, which strengthens the bricks through a chemical curing process. The formula was conceived for situations where appropriate soils are plentiful but the resources for the energy-intensive production and firing of traditional bricks are scarce.

Due to time and technical constraints on the Venice project, the designers specified a 1-inch-thick Spanish-fired brick for the prototype's initial interior layer. Although the fiberglass poles and the steel for the scaffolding would be imported for the actual droneports, the idea is to rely on bricks made from raw materials found near the building site, Ochsendorf says.

Air-cured bricks that incorporate a small amount of cement have a significantly smaller carbon footprint than those that are fired. But researchers are studying ways to make modified earthen bricks even more green with additives that could replace the Portland cement, which has a high embodied energy due to a manufacturing process that includes heating limestone in a high-temperature kiln. MIT professor Elsa Olivetti, who teaches in the materials science department at MIT, is working with Ochsendorf to explore the potential of industrial by-products, such as

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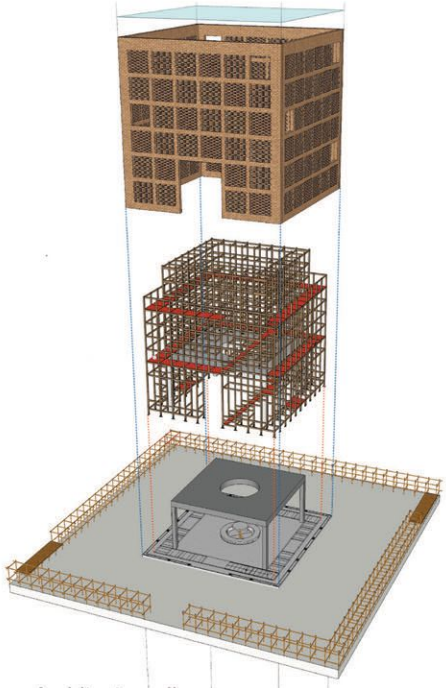
boiler ash, which contains silicates and aluminates. These substances could chemically harden bricks in the same way that Portland cement does, but with fewer environmental consequences, she says.

One way to offset the negative impact of brick is to reuse it. That is what the architects, local firm Archi-Union, did for the Chi She Gallery in Shanghai. They repurposed much of a 70-year-old aircraft repair building, including the brick, and converted it into galleries and workspaces for several artists. Archi-Union stripped down the building to its concrete walls and floor slabs and raised the roof level to allow for a clerestory that lets daylight into an upper-level gallery. The ground level contains a multiuse space and studios.

The most distinctive feature of the project is the rippled brick facade. Made from the salvaged gray-green bricks of the original building, the non-load-bearing wall billows out over the entry. In addition to endowing the structure with a new sculptural presence, the designers made the facade appear lighter and screenlike near the top by omitting bricks in its Flemish bond (a pattern that alternates stretchers, or bricks laid flat with the long face exposed, with headers, or those turned so the short end is exposed).



GRANNY SQUARES Tropical Studio organized the four walls enclosing a studio for a ceramist near Hoi An, Vietnam, so that they resemble a quilt, each with a grid of 36 squares. Within these squares, some bricks are omitted to create different patterns with various levels of transparency.

To achieve the complex curvilinear geometry, the firm tapped into the new technology of robotic bricklaying, which is conceptually similar to CNC (computer numerical control) fabrication techniques. But instead of relying on machines for cutting, milling, or grinding, here a robotic arm was programmed to propel itself along a track while applying mortar to each brick and placing it with precision. Because the technology is not yet sufficiently developed to perform fine finishing tasks, masons followed behind the robot to strike, or shape, the mortar joints between the bricks.

For projects where crisp lines and uniformity are important, bricks that have a consistent hue and surface treatment are available and can be combined with robotic technology. But, like pottery, the elemental beauty of a hand-laid wall of bricks with subtle changes in color and texture is part of our 10,000-year love affair with the material. For a studio for ceramics artist Le Duc Ha near Hoi An, Vietnam, the architects at Ho Chi Minh City–based Tropical Studio show how simple forms can be enriched by taking advantage of variations in locally sourced brick as well as its potential for pattern-making and composition.

According to Tropical Studio principal Tran Thi Ngu Ngon, the firm envisioned the shape

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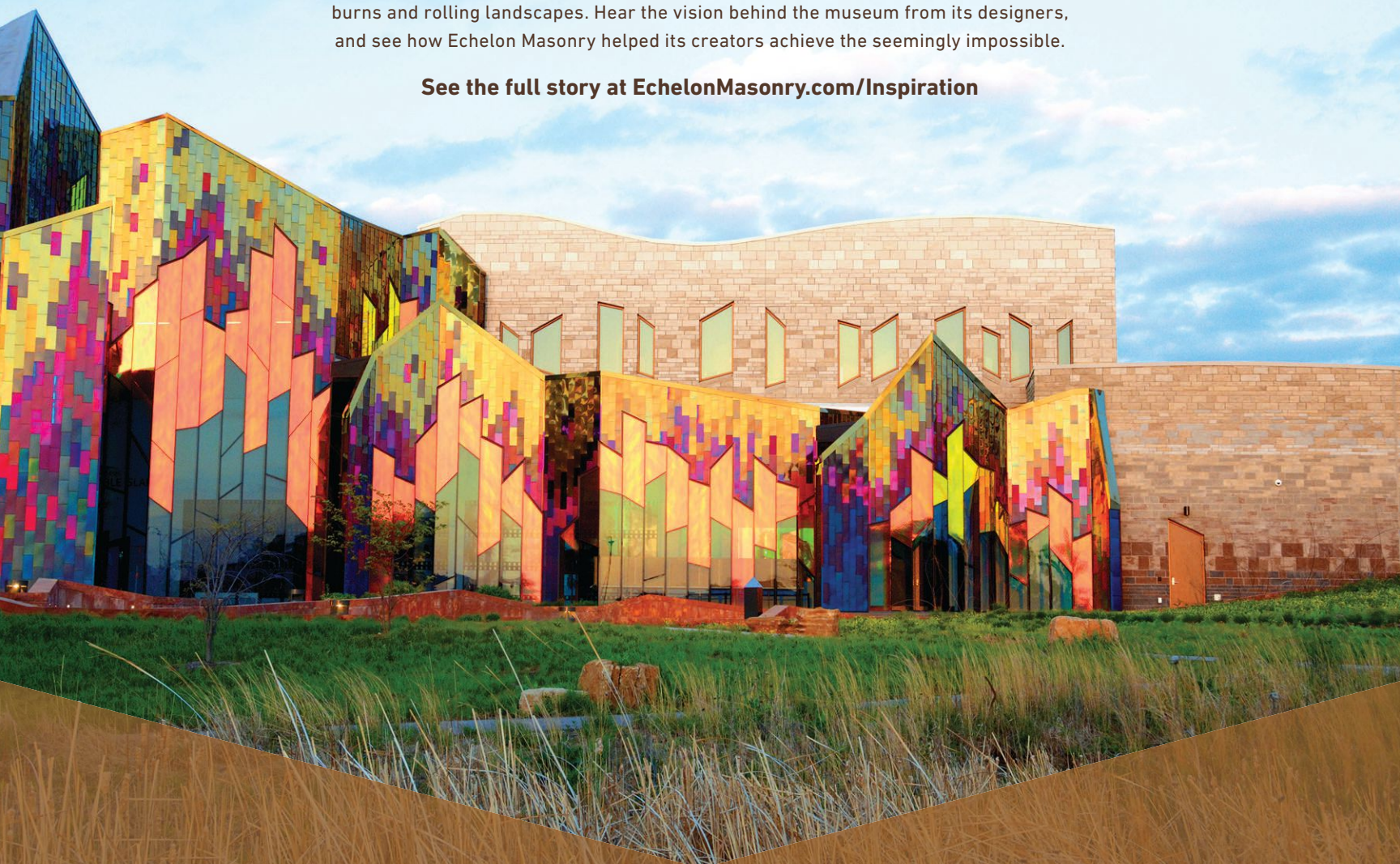

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BEHIND THE VEIL Inside the two-story ceramist's studio, a stout 16-inch-thick slab is supported on four concrete columns (above). Between this slab and the exterior brick screen, a timber frame extends to a second level and to the building's glass roof (right), housing stairs and shelves for display.

of the building as being as elemental and strong as the clay that forms the artwork. The cubic structure, 21 feet in all dimensions, contrasts with its pastoral setting, the edge of a field overlooking the Thu Bon River.

One goal was to relate the building to the historic brick construction of the region, says Nguyen Hai Long, a partner in the firm. Brick construction in central Vietnam dates to the 4th century, when the Champa culture began building Hindu temples in sacred complexes throughout the area, according to Nguyen. The site organization of the studio, with a path centered on the intricately detailed building, recalls the ceremonial layout of the Champa period.

The walls of the studio were constructed by first pouring a concrete frame for the exterior. To respond to the client's desire that the studio provide shelter but be open to sunlight and cool river breezes, the architects devised a grid of openwork panels. Each wall is divided into 36 squares made up of several patterns of brick screens with various levels of transparency—created by leaving voids in the brickwork—fitted like patchwork pieces to make the larger square.

Masons laid the brick so that the concrete frame would be hidden both inside and out, with the brick sawed to fit around the concrete members. The resulting perforated walls are about 8 inches thick, the length of one brick.

Inside the two-story volume, four concrete columns support a stout 16-inch-thick concrete slab. Because the slab is separated from the brick walls by a 2-foot gap, it forms a tablelike pedestal between the lower and upper levels. A timber frame surrounds the workspace and passes up through the gap between the slab and the exterior wall to extend to a flat glass roof. This wooden matrix houses shelves for display and stairs to the upper level.

At the center of the ground floor, Le's potter's wheel sits directly below an oculus that penetrates the floor slab. Daylight fills the upper-level display space and focuses a Pantheon-like disk of light on the artist's workspace below.

The elemental purity of the ceramist's studio, along with the dynamic expression of the Shanghai gallery and the structural elegance of the droneport project, prove brick's continued relevance. "Great buildings often go through considerable complexity to reach simplicity," says Foster + Partners' Sagoo. In selecting materials for these three projects, the designers found that simplicity in a humble and age-old material. ■

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

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Learning Objectives

1 Describe different methods of building brick vaults.

2 Compare the environmental profile of air-cured, earthen brick with that of fired brick.

3 Describe efforts to enhance the durability and strength of air-cured, earthen brick.

4 Describe some of the limitations of robotic brick-laying technology.

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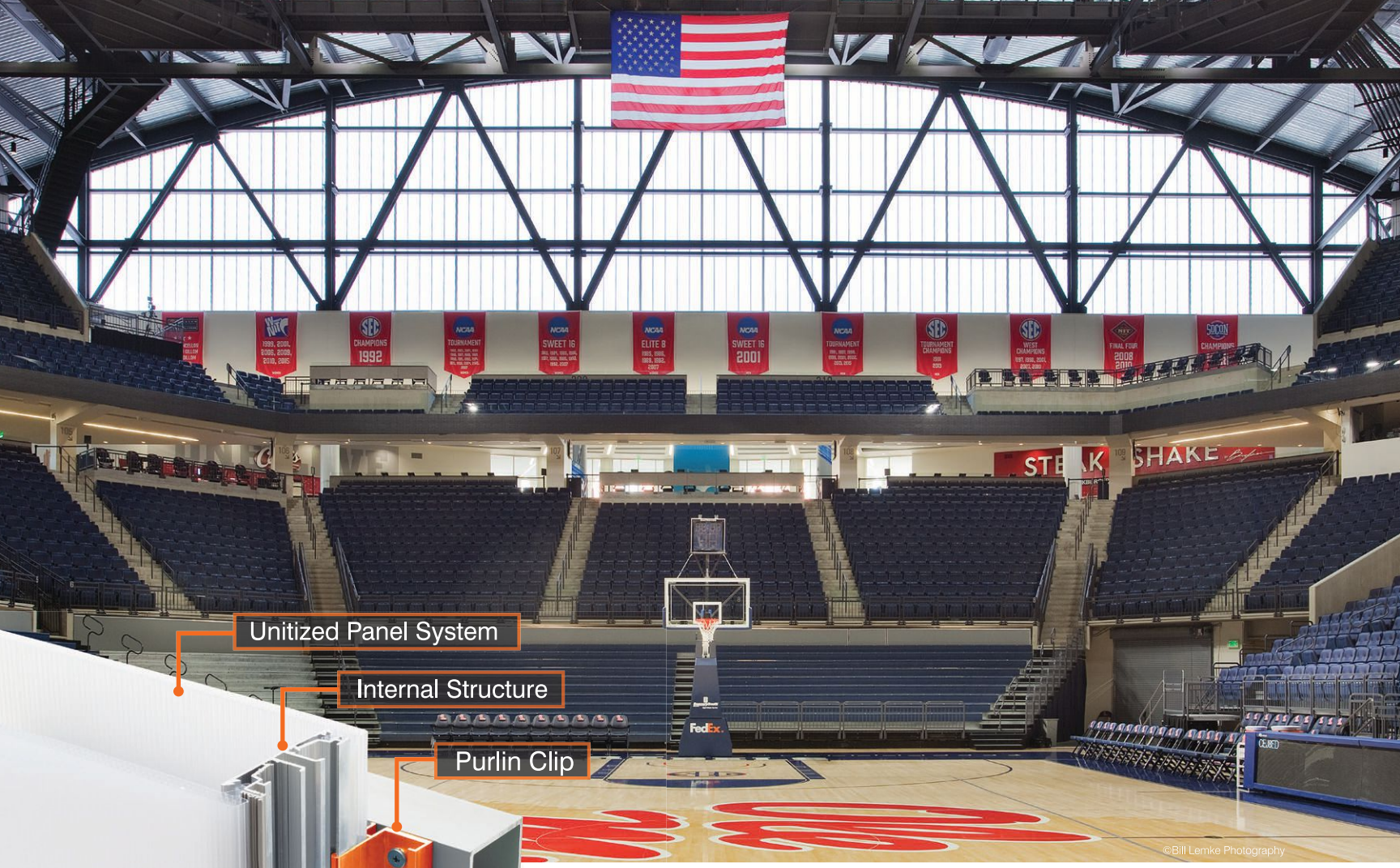

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SOLARIS *LIGHT INSTALLATION AT MONCLER MADISON AVENUE, BY BARDULA*

Moncler

Gilles & Boissier
Bardula Studio

By Alex Klimoski

ON THE elite retail strip of Madison Avenue on Manhattan's Upper East Side, a lustrous, dynamic light installation titled *Solaris* serves as the gateway to a new flagship store for luxury-fashion purveyor Moncler. The idea, according to Patrick Gilles of the French interior design firm Gilles & Boissier, was to create a display that would draw in passersby "like a lung." Working with Paris-based Bardula Studio, his vision came to life.

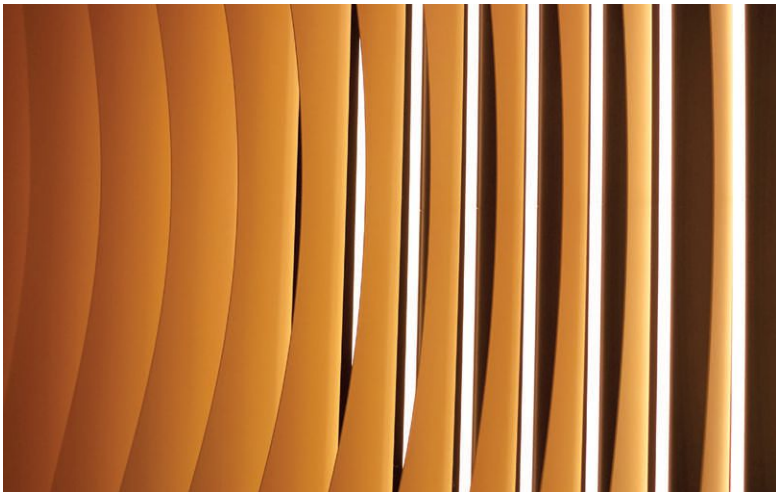
Bardula, a pseudonym for a Belgian artist (with gold- and silversmith training), collaborates with her architect husband to produce what the pair calls "abstract geometries"—dynamic artworks made from mostly metal, mirrors, and LEDs. Gilles had worked with the studio in 2015 to create a series of light-infused volumetric sculptures for New York's Baccarat Hotel, so he knew that the couple would be the right fit for the Moncler project.

"When Patrick Gilles said that he wanted a physical structure integrated into the entry alcove, and that it had to signal a progression, I knew it was our cup of tea," says Bardula, whose name originates from a character in a children's fairy tale. The piece also had to provide a contemporary contrast to the store's dark, classical décor—including its Italian marble floors and walls, oxidized tarnished brass fixtures, and wood paneling.

Drawing upon one of their past works, a digital LED and Plexiglas sculpture called *Dome*, the husband-and-wife team used a spherical form as a starting point. "We wanted

RADIANT PORTAL Paris-based Bardula Studio's glimmering installation of anodized aluminum and LEDs surrounds the entryway to Moncler's new Madison Avenue storefront, bathing customers in sequences of golden light.

PHOTOGRAPHY: © CHRIS VON HOHENBERG



SUN FLARE
Twenty-four carved metal fins were placed on either side of the foyer to form an open spherical volume intended to evoke the sun. Behind each fin, elongated LED fixtures shift color temperature every six seconds, creating a subtle gradient effect.

to work off of the image of the sun as the heart of the solar system," Bardula says. The concept was to create a radiating orbicular volume out of a sequence of metal fins, so customers could immerse themselves as they enter the store—like being pulled into the center of the Moncler universe, according to the artists.

Although the fins, which were cut with a CNC water jet machine in France and installed on-site, were to have a golden hue, using gold was out of the question due to its high price and heavy weight. Brass had similar limitations, so the artists used golden-tinged anodized aluminum. The electrochemical process, which was done by hand, also lends a craftlike feel to the fins, giving each piece a slightly different shade and enriching the overall work's glistening effect.

To simulate the pulsing magnetism of the sun, LED fixtures spanning the 13-foot height of the installation were placed behind each of the blades (there are 24 on each side), and controlled to shift color temperature every six seconds, progressing through the full range of white light to form a gradient effect. Working with the lighting manufacturer KKDC, the team programmed two main "scenes": the first features warm at the center and cold at the extremities, then shifts to cold at the center and warm at the extremities; the second switches back and forth from cold on one end to warm on the other.

As a result, "Solaris" offers a hypnotic spatial experience that pulls you into Gilles & Boissier's interior, which opens up to the right of the main corridor, into a series of sumptuous, interconnected rooms where merchandise is displayed. The glowing entryway also frames a monumental bust by sculptor Christophe Charbonnel that anchors the far end of the passage.

"Bardula Studio's piece represents a dynamic airlock between the street and the inside of the shop," says Gilles. "It offers those who come into Moncler a real experience." ■

credits

INTERIOR DESIGNER: Gilles & Boissier – Patrick Gilles, principal

LIGHT-INSTALLATION DESIGNER: Bardula Studio

CONSULTANT: LightIQ (lighting); Michel Delarasse (fabrication)

CLIENT: Moncler

COMPLETION DATE: October 2016

SOURCES

LIGHTING: KKDC (linear LEDs)

Bernhardt Design

Rottet Studio
One Lux Studio

By David Sokol

A NEW design district is rapidly emerging just north of Madison Square Park in New York, with retail outlets and showrooms for such upscale commercial and residential brands as Porcelanosa, Sicis, and Duravit. One of the neighborhood's latest arrivals is the New York flagship for both Bernhardt Design and Bernhardt Textiles. The contract furnishings company's recently completed 20,000-square-foot showroom created by Rottet Studio with lighting by One Lux Studio features an understated interior design and a gentle illumination that, according to firm principal Lauren Rottet, "clears your head from visual clutter."

Sensory detox begins at the threshold of the pristine showroom, which occupies the third floor of a Beaux Arts skyscraper on Madison Avenue. In the elevator lobby, the glow of 3000K-hued LEDs emanates from a suspended ceiling while glass- or light-edged walls—backlit with the corporate logos of the two divisions—appear to float on either side of the entrance. To the left of these walls, a narrow window into the showroom offers a glimpse of its so-called

WELCOME GLOW
Subtle cove and backlights greet visitors to Bernhardt Design's new showroom on Madison Avenue (opposite). The concealed LEDs define the linearity of the space, showcasing the angles of a canted wall, as well as the Calacatta-marble reception area and red sofa by Océane Delain (above, right).

PHOTOGRAPHY: © ERIC LAIGNEL

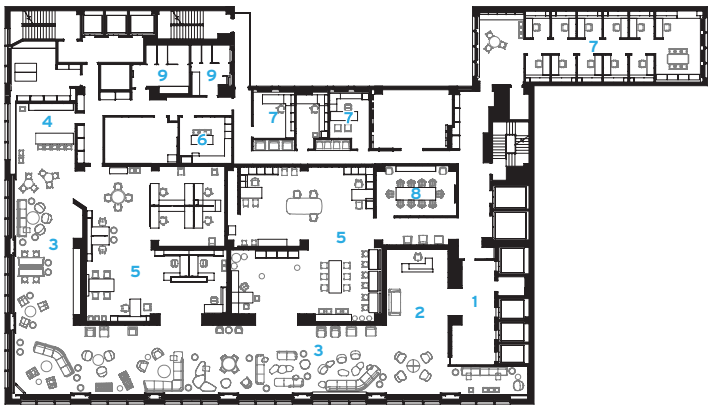
"runway": a gallery of furnishings and textiles along east- and south-facing windows with a ceiling that reaches the original structure's 14-foot height. "Every line manipulates where your eye is supposed to go," Rottet says of the peekaboo window, though, as she notes, showroom design cannot distract from the items for sale.

To support the architect's minimalist philosophy, lighting draws visitors in and around the showroom, even if many of the light sources are hidden. "We wanted the light to appear like a natural phenomenon, not a layering of hardware," explains One Luxe founding partner Stephen Margulies. For example, as downlights in the lowered ceiling provide an even, ambient glow in the reception area, crisp beams from discreet LED strips tucked into coves frame its varied planes. These strokes of light amplify a canted wall directly facing the elevator lobby that frames a bright red Mellow sofa by Océane Delain that won an ICFF Editors' Award last year. Shining around a Calacatta marble-clad wall and desk adjacent to the entry, the hidden LEDs make the monumental stone seem almost weightless. Throughout the vestibule and reception areas, a snowy terrazzo floor of crushed Turkish porcelain reflects the light to emphasize the ethereal quality of the space.

Bernhardt staffers say customers are welcome to spend the entire day in this clean, intriguing atmosphere, but Rottet's scheme keeps them moving through it. By reaching toward the daylit "runway," the suspended ceiling guides visitors beyond reception. This knife-edge canopy skirts the length of the soaring L-shaped gallery, to serve as a wayfinding device between the displays here and additional furniture vignettes positioned entirely beneath it near the building core. The beveled canopy terminates above a solid surface bar area at the end of the runway, anchored by a 15-by-11½-foot backlit wall made of a similar material, both of which feature marbleized patterning.

The showroom maintains the 3000K color temperature throughout its passages and display areas to optimize visitors' perception of color. Sheer white draperies at the windows are downlit to help mitigate the room's mediocre views and varying weather conditions, explains Margulies. The soft lighting on the gauzy fabric also turns rows of windows into a more neutral backdrop for the furniture.

Sounding a pragmatic note, the lighting designer adds, "Bernhardt recognizes that you have to have many light sources, or otherwise the furniture goes dead." Within the runway, then, LED downlights in the canopy and rows of



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2 RECEPTION
3 "RUNWAY"
4 BAR
5 CONTRACT VIGNETTES
6 KITCHEN
7 OFFICES
8 CONFERENCE ROOM
9 RESTROOMS

FASHION FORWARD An L-shaped furnishings gallery, dubbed the "runway," features downlit sheers, baselit walls that appear to float, and reconfigurable recessed and track lights to illuminate various scenes.

track luminaires mounted to the original ceiling spotlight products along the route. Internal galleries that sit fully underneath the canopy of the lower ceiling height are largely devoted to showing case goods for office applications, and feature abundant track lighting. All are easily reconfigurable to serve a rotation of setups. "We were really concerned about having enough light to hit the merchandise, no matter the location," Margulies says, observing that, given the amount of equipment needed to guarantee coverage, affordable track pads bearing LED lamps perform comparably to other, more expensive track-lighting products.

As much as their various strategies provide escape from the visual stimulation of Manhattan, the collaborators agree that, ultimately, the design of the showroom celebrates the client's brand. Bernhardt Design products eschew spectacle and trends, so their new home is deliberately quiet. Besides deferring to the merchandise, says Rottet, who has designed furniture for the North Carolina–

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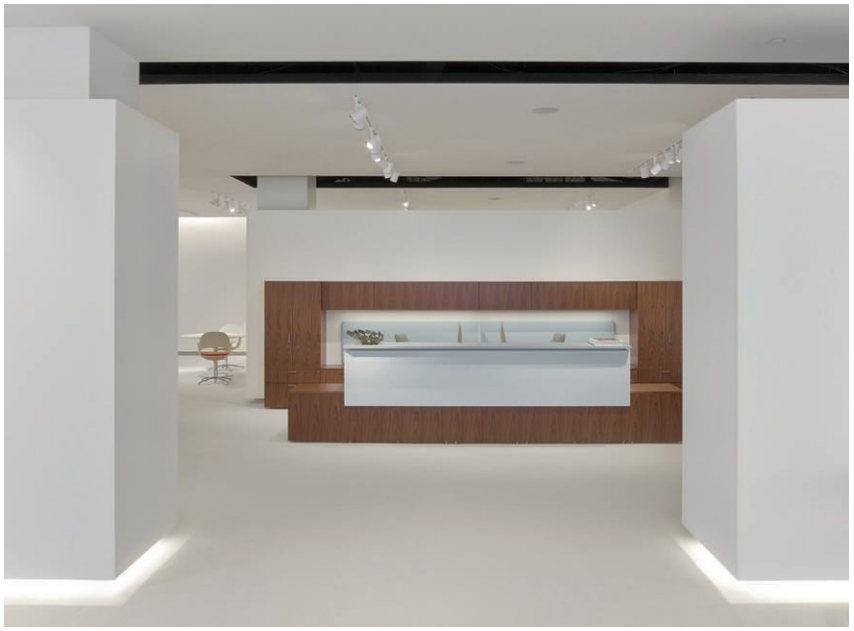
BACK OF HOUSE The "runway" culminates at a solid surface bar, anchored by an illuminated wall (above). Cove lighting beneath the walls leads visitors to the showroom's internal galleries (below).



based manufacturer, architectural understatement echoes her client's approach to its craft. "Just as an angle here or there makes a huge difference in how you perceive an interior, the way a piece of leather is piped or seamed is a marker of its quality." ■

credits

ARCHITECT: Rottet Studio – Lauren Rottet, principal; David Davis, Josef Jelinek, James Cull, Ashley Liu, Kefan Lu, Laurence Cartledge, Harout Dredeyan, project team

LIGHTING DESIGNER: One Lux Studio – Stephen Margulies, founding principal

ENGINEERS: The Office of James Ruderman (structural); Jack Green & Associates

GENERAL CONTRACTOR: O+D Builders

CLIENT: Bernhardt Design

SIZE: 20,000 square feet

COST: withheld

COMPLETION DATE: October 2016

SOURCES

LIGHTING: Contech (track); USAI, Gotham (downlights); EcoSense (cove); Jake Dyson Lighting (task)

FINISHES: Sherwin-Williams (paint); Formica (plastic laminate); Artistic Tile (marble); Krion (solid surface)

FLOORS: Amadeus Marble & Granite (terrazzo); Armstrong (resilient); Mohawk (carpet)

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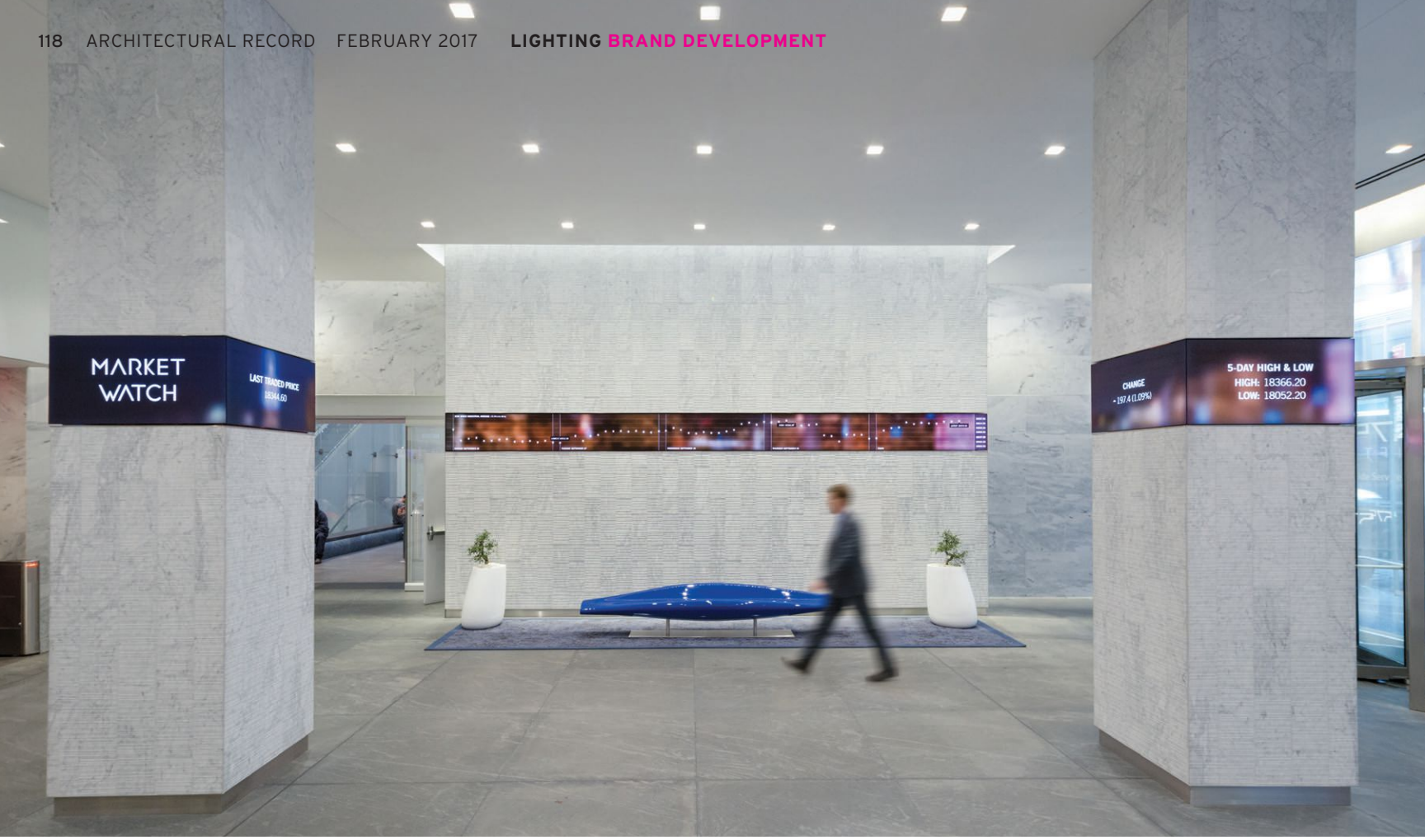


575 5th Avenue Lobby

ESI Design with HOK
Available Light

By Linda C. Lentz

AFTER MORE than 30 years as L'Oréal's headquarters, a 1960s office tower in Midtown Manhattan recently unveiled a new identity when the cosmetics company moved to a new location. To lure smaller businesses, co-owners Beacon Capital Partners and MetLife invested $25 million in capital improvements, and the results are apparent at the entrance: a lively lobby, reimagined by ESI Design with a data-driven scheme, now engages employees, visitors, and even passersby.

Clad with both ridged and smooth Carrara marble, the 2,350-square-foot space is wrapped by a ribbon of high-resolution LED screens programmed with changing streams of dynamic media. The original content by ESI features alternating slow-motion videos of neighboring buildings (filmed from the 40th floor), pedestrians walking by outside, and meditative nature scenes (during off-peak hours). These are layered with infographics that deliver real-time updates on local events, the stock market, news, and weather.

The lighting, designed by Available Light, is crisp and well-balanced. "So there isn't just bright media on the walls," says ESI design lead Michael Schneider. Controlled to enhance the visuals and adjust to the time of day, dimmable 3000K LEDs tucked in ceiling coves graze the textured marble walls—which catch the light—and gently wash the smooth ones down to the floor. Recessed LED downlights with wide beam spreads illuminate the columns and central space.

The lobby installation is like a virtual window out to the city, with immersive yet unhurried views. It's not meant to mimic television. "This is architecture. It is not entertainment," Schneider explains. "It's a space that you move through, and we want the media here to move at the same speed as somebody's shadow as they walk across the room." ■

SLICE OF LIFE LED monitors streaming dynamic media are integrated into the marble cladding on the walls and around the columns at the same datum throughout the space (top). These are attached with magnets to simplify removal for maintenance (above).

credits

ARCHITECT: HOK – Stanley Pikul

INTERIOR & MEDIA DESIGN: ESI Design – Edwin Schlossberg, principal designer; Michael Schneider, design lead

LIGHTING DESIGNER: Available Light – Rachel Gibney, project designer

CONSULTANTS: AV&C (software design); Diversified Systems (systems integration)

GENERAL CONTRACTOR: Structuretone

CLIENT: Beacon Capital Partners

SIZE: 2,350 square feet

COST: withheld

SOURCES

LIGHTING: Lumenpulse, Prolume (ambient cove lighting); USAI (downlights)

CONTROLS: Lutron (lighting)

LED TILES: VER

FURNITURE: Capellini (bench); Minotti (armchairs); Vondom (planters)

PHOTOGRAPHY: © BRETT BEYER

TREE OF LIGHT Rising from four inclined steel columns, the 1,500-leaf canopy oversails a tapering bridge that spans the new two-story atrium flanked by two grand staircases (this page). The large space contains a coffee shop and meeting areas.

PHOTOGRAPHY: © JONATHAN ANDREW

Philips Lighting Headquarters

LAVA

By Chris Foges

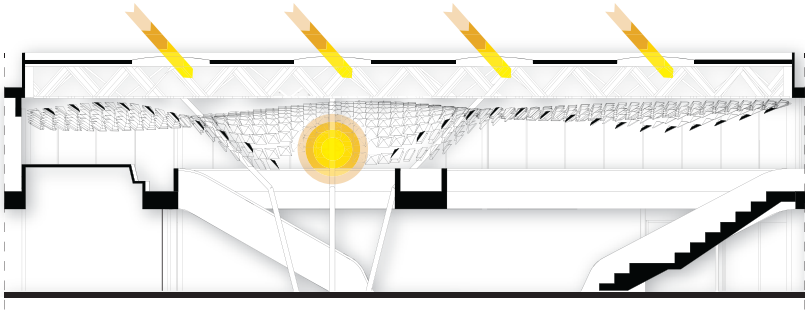
"GOOD LIGHTING is about more than getting the right quantity of lumens in the right place; it's people-centric," says Pierre-Yves Panis, head of design at Philips Lighting. "We try to consider the use of light beyond illumination, to enhance the experience of everything you do." This ethos is reflected in the design of the lighting manufacturer's new headquarters in a 1960s building on the Dutch city of Eindhoven's High Technology Campus, which has been remodeled by the Stuttgart, Germany, office of the firm LAVA (Laboratory for Visionary Architecture). At its heart is an expansive atrium, 33 feet high, conceived as a multifunctional hub where both planned events and chance meetings might take place, to foster a culture of creative cross-disciplinary collaboration. To draw people into the space, LAVA created an immense interactive sculpture that resembles a pixelated tree canopy, bulging and billowing overhead. Its fragmented surface registers an ever-changing play of natural and electric light, governed by a bespoke control system that adjusts the ambience over time and in response to the activities taking place within the space.

The atrium is a new addition to the building, created from a former courtyard, and the desire to preserve a sense of connection to the outside inspired the sculpture's arboreal character. It was refined and abstracted through "constant reengineering and a focus on what really matters," says LAVA director Alexander Rieck. Four canted steel columns suggest the trunk of the tree, but adding branches would have been inelegant and expensive: "The smart solution was just to create the leaves and suspend them from a ceiling in a way that creates the desired form," he says. Parametric design tools were used to generate "a complex geometry made up of very simple elements."

There are 1,500 seemingly identical leaves, each 2 feet square, of which 500 are light fixtures manufactured by the client. Those light-emitting panels incorporate both acoustic absorption and warm-white LEDs that give an even distribution of light across the face. Independent controls mean that, as some panels flicker into life, others are fading into shadow, apparently at random. Another 50 fixtures–LED theatrical lights–are clustered at the top of the "trunk," giving off a golden glow from the heart of the structure. Pyramidal metal reflectors fixed to the reverse of each leaf bounce some of this light backward onto the faces of adjacent panels, creating myriad shimmering accents that recall the way that sunlight filters through treetops or sparkles on water.

The metallic reflectors also disperse the daylight that filters through the structure from skylights above. The lighting-control system developed by LAVA calibrates the warmth and brightness of electric light to daylight conditions throughout the year, in a process of constant change that is sufficiently gradual to seem natural. "The light is very unobtrusive," says Panis. "I often take my laptop and work in the space and feel as though I am working outside, with changeable natural light but also with an overall sense of comfort."

TECHNO COVER-UP
Both the light fixtures and unlit panels are made from a Philips ceiling-lighting system that integrates LEDs with sound absorption (above). They are unmodified except for pyramidal reflectors on the reverse side (right). Daylight from skylights (below) is filtered and reflected by the fixtures.



A form of artificial intelligence is used to generate non-repetitive patterns of illumination, so that the installation always appears fresh to both staff and returning visitors. An open-ended design allows for the future addition of sound or movement sensors that gauge the intensity of activity in different parts of the atrium, or for the installation to serve as a test-bed for new ideas about lighting. "Light is the easiest way to change an environment over time without a lot of investment," says Rieck.

Though sophisticated technology underpins the scheme, it is the means to an end, not the end in itself. "We all realize that with the products now available, you can do just about anything," says Rieck, "but simply demonstrating that capability is not interesting. At Philips Lighting, the emphasis is not on the sources of light but the space made by light." ■

credits

ARCHITECT: Laboratory for Visionary Architecture (LAVA) – Alexander Rieck, Tobias Wallisser, Chris Bosse, directors; Nuno Galvao, Matthijs la Roi, Stephan Markus Albrecht, Sebastian Schott, Mariusz Polski, project architects

ENGINEERS: Adviesbureau Tielemans (structural); Deerns (m/e/p)

CONSULTANTS: Beersnielsen, Philips LiAS (lighting); Inbo, JHK Architecten (design development); Brink Groep (project management); BICG (space planning)

GENERAL CONTRACTOR: Heijmans

CLIENT: Philips Lighting Real Estate

SIZE: 115,000 square feet

COMPLETION DATE: May 2016

SOURCES

LIGHTING: Philips – Ecophon Soundlight Comfort system (light tree panels), Selecon Rama LED fixtures (theatrical); eW cove MX powercore (concealed); RC461, LumiStone SmartBalance (office)

CEILING: Ecophon (acoustic); wood (Derako)

FLOORING: Moso (bamboo); Desso (carpet); Forbo (linoleum); Durabella (terrazzo)

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CIRCLE 90

All the Right Moves

Flexible in use and abilities, LED fixtures and drivers conquer tight plenums, frozen environments, and last-minute tech upgrades.

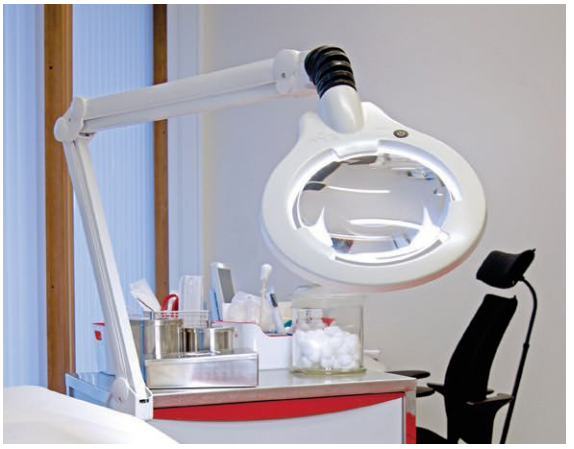
By Julie Taraska

Zaphir

The 40 high-power LEDs in these architectural lighting fixtures can be marshaled into two elliptical beam patterns and five rotationally symmetric distributions. Two of the surface-mount models (including the RGBW one, above) feature onboard touchscreen controls; all have a continuous dimming range of 1 to 100 percent. Custom options include louvers and glare shields, with a polar edition of the fixture also available for snowy and icy locales.

griven-usa.com

CIRCLE 110

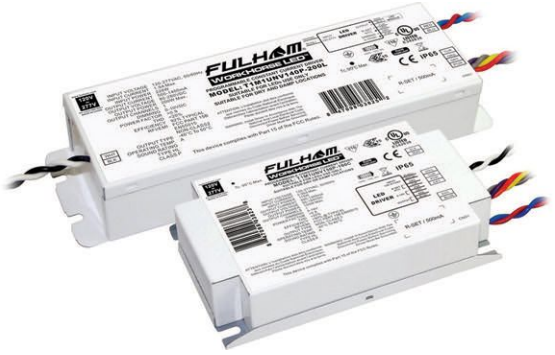


Circus

This lighted magnifier's dimmable 10-watt LED module provides accurate visual rendering thanks to a 90 CRI and 4000K color temperature. Offered with a 3.5- or 5-diopter white crown optical-quality glass lens, the die-cast aluminum fixture can be positioned horizontally, vertically, or laterally. A secondary 4-, 6-, or 10-diopter STAYS lens may be added.

luxous.com

CIRCLE 111



WorkHorse LED XP Series

Built for use outdoors and in harsh environments, Fulham's IP65-rated line of LED drivers supports outputs up to 5000mA. Five power configurations are available, as are versions with integrated wireless controls—a first for the category—that run Tvilight's CityManager control software. Programming options for all models include custom dimming curves and NTC thermal feedback.

fulham.com

CIRCLE 112

Halo

Ideal for tight spots, Eaton's family of surface-mounted LED downlights can be installed directly into drywall, eliminating the need for recessed housings or junction boxes. The flush fixtures, which are available in round and square models, offer a 90 CRI and up to 815 lumens of light. Wet-listed, they come in five color temperatures and are dimmable down to 5 percent.

eaton.com

CIRCLE 114

CWM

Even after mounting this modular luminaire, designers can swap out or upgrade its electrical components thanks to the interchangeable lenses and end caps. The fixture's LEDs deliver an 84 CRI and up to 140 lumens per watt, with a projected life over 86,000 hours. The ADA-compliant CWM comes in flush and semi-recessed configurations (the latter shown) and with optional 3form lens designs.

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CIRCLE 301

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p128

Photo courtesy of Graham Architectural Products

What's New in Fenestration?

Sponsored by CornellCookson, Inc., CRL-U.S. Aluminum, Graham Architectural Products, Marvin Windows and Doors, and NanaWall Systems

BE PM RR

CREDIT: 1.25 AIA LU/HSW; 0.1 IACET CEU

Fantastically Flexible

Sponsored by Space Plus, a division of The Sliding Door Company


p141

Photo courtesy of Space Plus, a division of The Sliding Door Company

IN PM PMD

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CATEGORIES

BE BUILDING ENVELOPE DESIGN
IN INTERIORS
PM PRODUCTS AND MATERIALS
PMD PRACTICE, MANAGEMENT, DIGITAL TECHNOLOGY
RR RENOVATION AND RESTORATION

Fenestration can take many forms and be used in many building types, such as the adaptive reuse of this former tobacco factory into a high-tech research facility in Winston-Salem, North Carolina.

Photo courtesy of Graham Architectural Products

What's New in Fenestration?

Great strides are being made in improving efficiency along with other enhancements

Sponsored by CornellCookson, Inc., CRL-U.S. Aluminum, Graham Architectural Products, Marvin Windows and Doors, and NanaWall Systems

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

Fenestration includes all intentional visual or actual openings in a building envelope, particularly in exterior walls, including doors, windows, curtainwalls, storefront systems, and even operable glass walls. Its purpose is first to allow and control (by virtue of opening or operating) the flow of desired elements through the walls, such as daylight, ventilation, access, and connectivity. At the same time, since fenestration forms a part of the building enclosure, there is a need to restrict the flow of unwanted things (i.e., in the "closed" position), such as weather, water, the inefficient transfer of heat between inside and outside, or unwanted air infiltration. Since any fenestration system will have varying degrees to which all of these things can be accomplished, it becomes incumbent on architects and other design professionals to understand the realistic and steadily improving capabilities of different types of fenestration. While none are capable of matching the overall weather resistance and energy tightness of an opaque, well-sealed, and well-insulated wall, it is important to be able to assess how a particular fenestration product can help or hinder any particular building project—whether new or renovation.

Recognizing this need, there has been literally decades of research carried out on fenestration. A significant part of that research has been conducted or influenced by Lawrence Berkeley National Laboratory (LBNL) in Berkeley, California. A well-known building scientist, Stephen Selkowitz headed LBNL's building technologies department from 1985 to 2011. Stephen and his colleagues have worked diligently to investigate the many variables that can affect the performance of fenestration products in terms of energy conservation in buildings, daylight, weather resistance, and indoor environmental quality. He was also the driving force behind a "plug-and-play" testing complex dubbed the Facility for Low-Energy Experiments

CONTINUING EDUCATION

1.25 AIA LU/HSW

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Learning Objectives

After reading this article, you should be able to:

1. Identify energy ratings and certifications of window and fenestration systems as defined by national programs suitable for all buildings, including green building design and renovation.
2. Assess and compare the energy performance and other attributes of different types of fenestration systems suitable for green buildings, renovations, and other designs.
3. Investigate the significance of different fenestration components, including frame materials, glazing, and spacers, related to optimizing energy performance in green buildings.
4. Explore different types of fenestration products that combine multiple components to achieve overall performance and aesthetic results.

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(FLEXLab). This facility allows researchers to mock up and evaluate the performance of proposed designs with actual building components, such as cladding, windows, lighting, and mechanical systems. The test results can be used to determine the relative difference between different designs in real-world terms and be made available to others to learn from those test results.

Of course, not everyone can undertake full-scale testing, so for the rest of us, there is computer modeling. Selkowitz and LBNL took on that challenge too with funding from the California Energy Commission to create the COMFEN software tool.[1] This is a free resource that provides architects and engineers with the ability to assess the energy consequences of building design decisions. While the underlying simulation engines were developed over time as part of the U.S. Department of Energy's (DOE) national windows and daylighting program, the specific design features of COMFEN were evolved over a several-year period by consulting with a series of largely California-based architectural and engineering firms. These firms provided important guidance and feedback on desirable features in the software program and then again on its functionality once the features were implemented. It is based on the premise that achieving a highly efficient or net-zero energy building cannot be done solely by improving the efficiency of the engineering systems (HVAC, lighting, equipment). It also requires consideration of the essential aspects of the design of the building including fenestration and the ability to compare different design options from the earliest phases of the design process.

With all of the above in mind, we will delve into several specific types of commonly available fenestration in terms of their performance in the context of some of the latest improvements currently available.

WINDOWS

Manufactured windows are typically made from identifiable parts (e.g., frame, glazing, lite, hardware, sash) by a manufacturer that can create finished units in standardized or customized sizes and styles. While the variability of choices and options gives designers a lot of freedom to work with, the standardized nature of the manufacturing allows for a good degree of predictability on performance. In particular, manufactured window units can be physically tested and assessed for the full variety of conditions that affect their performance. One form of testing is done by the independent National Fenestration Rating Council (NFRC) in the same laboratory type of controlled conditions that LBNL and others use. The results of the testing are certified by NFRC, and a label attesting to the results can then be affixed to a window by the manufacturer to show its overall and specific performance characteristics. The ENERGY STAR program administered by the U.S. DOE also tests and rates window units, specifically to determine if they perform high enough above minimum standards to earn the ENERGY STAR label.

The NFRC recognizes that window performance is not limited to any single criterion. Rather, there are a number of factors that need to be looked at, tested, and assessed to determine the true overall performance of a window. U-factors (the inverse of an R-value) are usually what come to mind first, which measure the rate which a material or product transfers heat through it. When observing U-factors, it is important to differentiate U-factor variables for the insulated glass alone (e.g., center-of-glass U) from the window unit as a whole. NFRC utilizes the component modeling approach to calculate the whole U-factor of a window by assessing the glass, the spacer between glass, the sash, and the frame. Of course the size and makeup of the glass are also important—including the number of panes that make up insulated glazing units (IGUs). Ultimately, the total NFRC U-factors for windows are based on actual testing of representative manufactured units and expressed in normal fashion as a decimal value with a lower number showing less heat transfer, therefore greater energy efficiency. If a U-factor is not listed by a manufacturer as part of an NFRC test or as a center-of-glass value, then it may be based on a post-installation assessment and should be identified based on how the specific window performs in a certain wall after a specific installation.

Once the U-factors are identified, it is important to understand that that a U-factor difference of only 0.01 is not insignificant (i.e., in thermal physics, a difference of 0.01 between U-factors does not mean a 1 percent improvement, but something more). The range of U-factors for most windows only varies from 0.10 to 0.40, so an improvement in U-factor from 0.30 to 0.29, for example, can be highly noticeable in an overall large commercial building design and may save significantly on annual energy costs.

The second notable factor in the energy efficiency performance of a window is the rate of air infiltration, particularly in operable windows. The 2015 International Energy Conservation Code sets the bar at 0.20 cubic feet per minute per square foot of window as the maximum allowable air leakage rate for windows, with some exceptions allowing 0.30 cfm/square foot. This is the same rate as for sliding and swing doors in commercial construction. The NFRC takes the air infiltration into account when testing window units so manufacturers pay attention to details of construction in this regard too. Proper weather sealing and tightness of fit all come into play, but so does the type of window. Casement, awning, or hopper type windows can employ multipoint locking hardware that can provide better-performing, positive-sealing pressure between the window sash and frame compared to a double-hung window, which slides in side tracks and relies on the meeting rails in the center to form a seal. European style tilt-and-turn units have become increasingly popular in the United States because they often provide the most energy-efficient option overall with the greatest air sealing capabilities as well as the highest potential for longevity.

Photos courtesy of Marvin Windows and Doors

The type and function of operable windows can affect their energy performance, particularly in terms of air infiltration. The tilt-and-turn type shown here, which offers opening options, is generally the most energy-efficient type available from some manufacturers.

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Older, historic buildings that need new windows can find new life by incorporating custom replication windows that can meet historic preservation guidelines and modern energy performance needs as shown here in the Firestone Triangle Building in Akron, Ohio.

Other aspects of the glass used in windows will affect the energy performance. Glass is tested and rated for its solar heat gain coefficient (SHGC), which indicates how much solar heat passes through the glass compared to what is reflected away. In building situations where heating from passive solar gains is desired, a high SHGC is desirable to take advantage of the free solar heat. In other situations where cooling is the primary energy driver in a building, a lower SHGC is needed to prevent unnecessary air-conditioning use because sunlight is heating up a space. Of course, the treatment for some of the energy-efficiency characteristics of the glass can interfere with the ability of people to see clearly through it. Therefore, visible light transmittance is also measured to help identify acceptable levels of clarity for views or the use of natural daylighting in buildings.

Ultimately it is up to a window manufacturer to put all of these things together and the architect or designer to select a product that suits the design and performance needs of a project. Manufacturers offer numerous window and door options with two or three panes of glass, choices in operation types, and a range of glazing options to meet the performance challenges of any climate. Some even use their extensive selection of shapes, sizes, styles, and finishing options to allow virtually unlimited design capabilities and the flexibility to get exactly what a project requires. Kris Hanson, senior manager of Group Product Management at Marvin Windows and Doors, sums it up this way: "We are continuously updating our product offerings to best meet architects' current needs and to help solve the challenges they face on a daily basis. As design trends continue toward more glass and narrow frames, we work to create large window offerings that continue to deliver superior performance."

CUSTOM REPLICATION WINDOWS

It is easy to think of selecting windows creatively in terms of new construction, but existing buildings, and historic buildings in particular, bring some additional considerations. Typically, windows in these cases need to fit some preexisting conditions or incorporate custom features to achieve results that match the design, function, or historic needs of the existing building. Therefore, the design challenge is to work with a window manufacturer who can help maintain the original aesthetics of the building while improving overall efficiency using modern materials and glazing. Often, the exact look or design an architect is trying to achieve does not exist off the shelf as a premanufactured product. Fortunately, there are window companies that will work with the architect and design team to either modify or create new shapes to satisfy the desired look and meet historic requirements.

A specific challenge can be producing windows with designs that faithfully replicate the original steel windows used in many older buildings using alternative, higher-performing materials such as thermally broken aluminum. At least one manufacturer has developed such a steel replication window specifically for use in historic buildings to help meet the requirements of state or national historic preservation agencies. This design includes narrow (less than 2-inch) frames that mimic historic steel profiles and slim-line integral and fixed-stack mullions for minimal sightlines. It is possible to specify historic profile true muntins as well. In addition to meeting these visual needs, applied-muntin grids with 1-inch insulating glass allows for the windows to be upgraded in terms of thermal performance compared to the original, which are most often single-glazed clear glass. That means that retrofitting older buildings can be done using modern materials and window product designs so the overall building energy performance is also inherently improved.

Putting this in context, those engaged in historic replication projects will usually attest that they are not for the faint of heart. Each job of this nature has its own unique challenges, which means it often requires a combination of architectural attention to detail along with a window manufacturer that can provide a highly engineered solution to deliver the necessary blend of strengths, capabilities, and aesthetic demands. It is important to select a company that has a track record of meeting the demanding scrutiny of historic preservation jurisdictions. It is equally important that the company can demonstrate how it recaptures original aesthetics while providing improved thermal efficiency and structural integrity to the buildings it has been involved in. That might include projects like renovating old factories or enabling the repurposing of an old mill to bringing the highest levels of performance, beauty, and operability to new construction.

The companies involved in successfully producing replication window solutions find it is a particular source of pride for those involved. Their focus is on overcoming the limitations of steel windows with single panes of glass and being able to design and deliver aluminum replications using state-of-the-art thermal technology that meets the often conflicting needs of both the National Park Service and the Department of Energy. Bill Wilder is Graham Architectural Product's director of technical sales and comments, "That's what makes our niche hard to do. That's the fight we face in this industry of architectural windows: how to morph current technology into antiquated design while meeting today's demanding standards for energy efficiency."


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ALUMINUM STOREFRONTS AND CURTAINWALLS

In many commercial buildings, the exterior building enclosure isn't made up of an opaque wall with manufactured windows punched into it but instead of an aluminum and glass fenestration system, such as a storefront system (suitable for light-duty, first-, or second-floor installations) or a curtain wall (suitable for higher-design conditions and multistory applications). Similar to windows, however, their overall performance is comprised of and determined by the variable combination of different key components. These include the aluminum framing system, glass types, glass spacers, thermal break types, and gaskets. Of course, the specific characteristics of these items will vary based on whether a storefront system or curtain wall system is being considered and certainly will vary somewhat between manufacturers. Therefore, it is important that architects consult and collaborate with the product manufacturer and their technical staff early in the design phase. This way, the proper understanding of available product options can be obtained and the best means determined to achieve the desired results, including the overall U-factor, solar heat gain coefficient (SHGC), visible transmittance (VT), and condensation resistance factor (CRF). "Early collaboration between the design team and manufacturer becomes essential when specifying fenestration systems that are driven by performance," says Mario Maggio, sales director at CRL-U.S. Aluminum. "As codes grow more stringent and building envelope trends evolve, we help select the most effective systems by remaining abreast of code changes and proactively coordinating with the architect during the design phase."

Just like for windows, the NFRC has a process to rate and certify storefront and curtain wall systems, but it is based on computer software rather than physical testing since the combination of possibilities is vast and testing is simply not practical. Therefore, architects need to understand that all of the different components in a system can and need to be considered, assessed, and specified individually to produce the best combination for a particular building in a specific climate zone. Comparing different options and combinations based on computer analysis is the best way to identify a system solution that can achieve the design intent, meet the performance requirements, and stay within budget.

Aluminum and glass fenestration systems are designed based on transferring their own weight and structural forces back to the building's main structural system. However, they do need to maintain their own structural integrity as a system through the use of aluminum frames and related components. At the same time, those frames need to address thermal performance since aluminum is a very good conductor of heat with an undesirably high U-factor. Thermal breaks in the frame are meant to do just that—stop or slow the flow of heat through the frame by separating the inside portion of the metal frame from the outside portion around the entire perimeter of the unit. In order to maintain the integrity of the window unit, the two halves still need to be joined, just not with metal. Rather, a low heat-conductive material is used with enough rigidity to be effective but enough insulation value to reduce heat flow. When it comes to framing systems, those with more than one thermal break are the most effective at maintaining high thermal performance. The more thermal interruptions between the exterior and interior of a building, the better the fenestration system is at mitigating heat transfer.

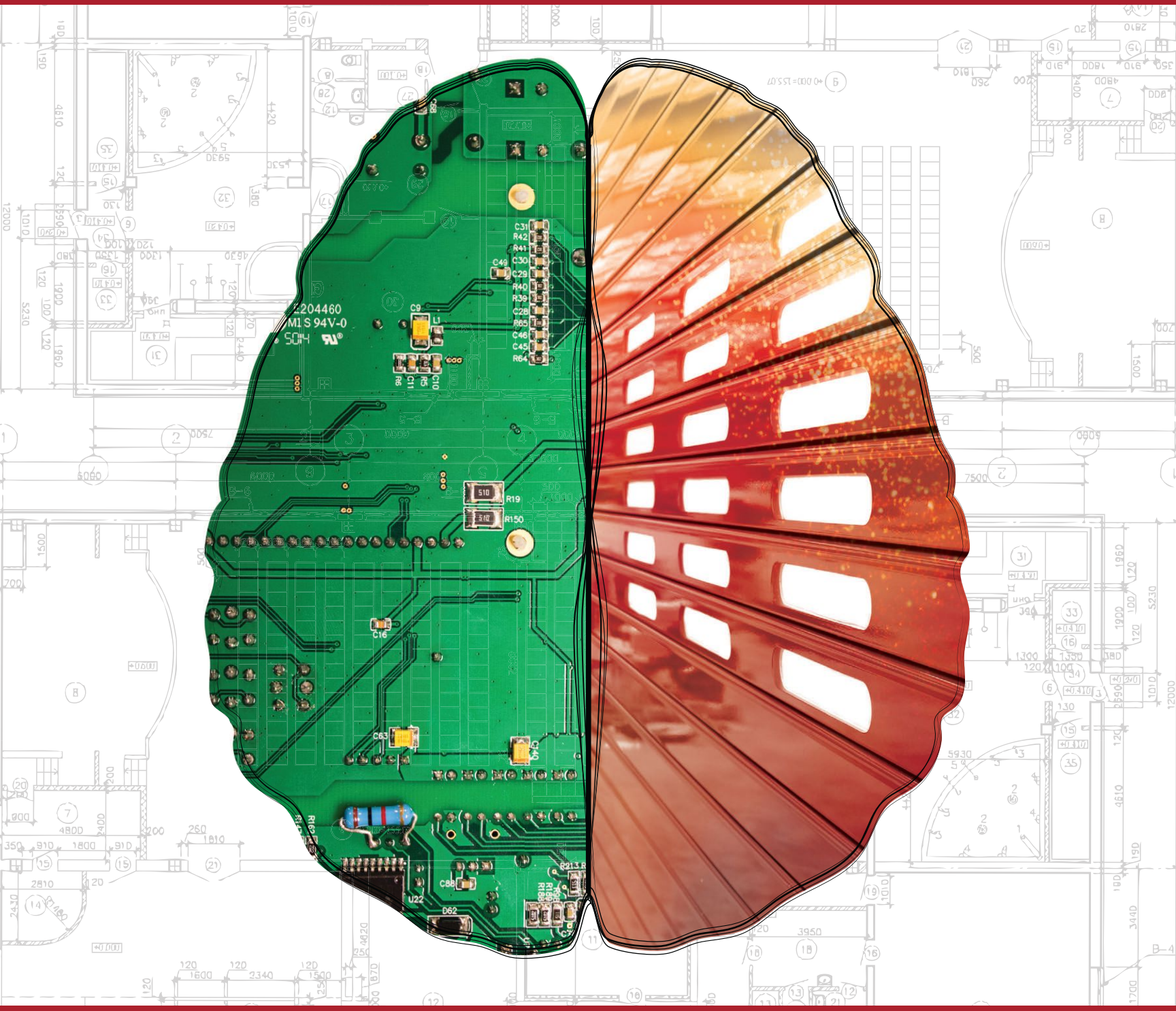
There are two common ways that thermal breaks are incorporated into curtain wall and storefront system frames. The first is to create an extrusion that has a "pocket" in the middle of the frame perimeter where a polyurethane material is poured in. Once cured, the portion of aluminum that connects the inner and outer frame is cut away, thus eliminating the thermal bridge between the inside and outside of the frame. This method is appropriately called "pour and debridge" and is common. The other method is to cast aluminum frame pieces that can accept polyamide (nylon) structural insulating strips that create an appropriate but strong thermal break. The size of these strips can vary, usually with wider ones being regarded as more effective.

Storefront and curtain wall systems will all have the same variables as other fenestration when it comes to glass options. Specifically, are double or triple IGUs being incorporated, what inert gas is selected between the panes (Argon and Xenon), what coatings (i.e., low-e) are being incorporated, etc. They also have the same IGU spacer options such as the common but conductive aluminum spacers or more advanced composite spacers that create a "warm edge" around the glass. By identifying all of these specific details into the makeup of a system, the computer analysis and the NFRC ratings can identify the specific U-factors and other attributes of a system. Some manufacturers may have some standard configurations and can offer them as starting points for comparison with certifications from NFRC accordingly. Note that changing any individual component will affect overall performance, either positively or negatively, and should all be assessed carefully in concert with the manufacturer.

Photos courtesy of CRL-U.S. Aluminum

Aluminum storefront systems (left) and curtain wall systems (right) are subject to many variables that need to be selected and specified in order to determine specific performance.

BRAINS & BEAUTY



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CIRCLE 225

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Photo courtesy of NanaWall Systems

Operable glass walls can be used to provide complete flexibility of building design by allowing indoor and outdoor spaces to be combined when the walls are opened or sealed off and protected when closed.

OPERABLE GLASS WALLS

In some building situations, there is a design intent or user need to provide extreme flexibility in the use of fenestration to the point of being able to open or close large wall areas completely. Operable glass walls are a product that do just that by going beyond the capabilities of conventional windows and instead using large, door-sized glass panels that can be readily opened or closed on demand. Like any other type of building fenestration, this system does not carry any structural load from the building but is reliant on being appropriately attached to the building and operates within a structurally supported opening.

When operable glass walls are used as part of the building enclosure, the performance of these systems is clearly critical. Comparing manufacturers and specifying operable glass walls that can show documented capabilities to appropriately withstand the challenges of wind, water, extreme temperatures, forced entry, impact, acoustics, and structural integrity is a critical first step. This review should include attention to details such as multipoint locking entry doors that may be equipped with tamper-resistant locking rods between panels to ensure they meet or exceed forced-entry testing for commercial-grade door panels. It may also include built-in adjustment and compensation points to ensure continued ease of operation if any building settling occurs.

This type of flexible fenestration has been popularly used in a wide range of building types, including restaurants, retail, hospitality, education, sports venues, and even residential projects, both single and multifamily. In restaurants and retail, for example, opening up the entrance makes the entire street front a welcoming door by eliminating barriers. This creates a seamless transition between the street or mall and the store or restaurant, helping to attract customers inside and increasing sales. Passersby easily see what is inside and are immediately engaged in the activity and ambience of the space. By opening up the inside to the outside, additional seating space can be readily accessible whether for restaurants, hotels, or other gathering places. This type of system can also provide comfortable and attractive four-season outdoor dining by enclosing a covered patio with energy-efficient, NFRC certified operable glass walls. When it is time to close up for the day, the glass wall continues to showcase the interior and provides a secure, energy-efficient, transparent facade that seals tight as a dust-control measure after hours. Restaurants are also able to benefit from operable glass walls that can increase seating capacity and boost revenue by opening a restaurant's interior to surrounding outdoor spaces such as the street, a patio, or balcony. In mixed-use conditions, it is possible to create unique and memorable indoor/outdoor dining atmospheres for shoppers to enhance and extend their shopping experiences.

In hotels and other hospitality projects, similar benefits exist in using an operable glass wall that creates large, inviting entrances in the lobby area and throughout the hotel, producing a memorable first and lasting impression. It is also possible to incorporate beautiful views, hotel landscaping, natural daylight, and fresh air into the registration, dining, and guest room areas when the walls are open. When closed, the operable glass walls protect against the weather but also dampen sound transmission for the desired acoustical performance needed in hospitality and other settings. They can also be used as interior divisions in hotels and restaurants to allow personnel to quickly and easily incorporate or close off adjacent retail space, dining areas, bars, terraces, or meeting rooms. Such a separation might be appropriate between a time-specific breakfast area and the hotel public space after the food service has concluded. Or it might be a way to quickly create private banquet rooms, meeting rooms, or retail spaces that can still transmit light but significantly reduce sound transmission.

Matt Thomas is the marketing manager for NanaWall Systems and offers this perspective on the need for both design flexibility and high performance: "For us as a manufacturer, it's important to supply a product that enables the architect to fulfill their vision but also to provide a product that lasts. These points are as important to the architect as the aesthetic since we provide the product they are specifying on behalf of their client."

ROLLING DOORS

In many buildings, there is a need for a large fenestration opening that has less to do with moving people or creating a particular aesthetic but is more about moving equipment, goods, or machinery. This can be true in industrial settings, warehouse spaces, commercial enterprises, institutions, or others. In these cases, the design issue is usually centered on the type of door to provide and how that door operates. Roll-up, or coiling, doors have improved in recent years. New high-performance models operate at higher speeds, can cycle (open and close) more frequently without wearing out, and have been designed with energy efficiency and aesthetics in mind. This means that high-performance rolling steel doors can find their place as a part of a robust energy efficient building envelope—something that might not have been considered previously possible.

The biggest advances in rolling steel door design have focused on dramatically reducing air infiltration. In the past, rolling steel door products have not generally been known as being very air tight, which many people assume is because of the slatted design of the door (i.e., air gets through in between each slat of the door). In reality, that's not actually the case since the slats in higher-performance rolling doors interlock and don't account for much air infiltration. Instead, the primary locations of air leakage come from the perimeter of the door—particularly the sides and top of the door. This is due to the design of the guides (the steel channels on each side of the door) plus the top of the door where it coils up on itself. By addressing these areas with advanced sealing and gasketing techniques, manufacturers are able to demonstrate notably reduced air infiltration rates when the door is closed.

Of course, any door has the issue of creating air exchange when the door is open so in settings where frequent openings and closings are needed, the key becomes to minimize the time it takes to operate the door. Some high-performance rolling doors have open speeds of up to 24 inches per second. Other types of high-speed doors can open at speeds of up to 48 inches per second. This may sound like a large difference, but the average height of a door is 10 feet or less, meaning that the difference between the two opening speeds yields a net

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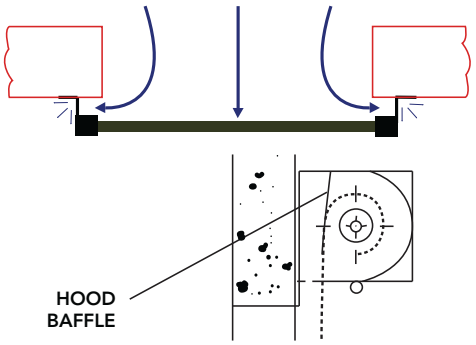

Images courtesy of CornellCookson, Inc.

Rolling steel doors are useful in many buildings, but air leakage around the perimeter of the doors needs to be addressed to assure that they are energy efficient as well as functional.

difference of less than 2 seconds. The best speeds for high-performance rolling steel products are often achieved using an electric operator with a variable-frequency drive that ensures a soft start and stop—reducing wear and tear on both the door and the operator. This type of direct drive design also means there's no sprocket and chain to wear or replace.

Beyond door speed, activation devices play an important role in energy efficiency. If the sensors are set to open the door too soon or delay too long before closing, the door will remain open longer than needed. Properly placing and setting the sensors/activation devices will help assure that the timing of door opening and closing is optimized to balance both building operation needs and energy efficiency. In this way, rolling steel doors can address both without compromising on either.

Of course, there are other reasons to take a look at rolling steel doors too. They are known to be durable, often with a positive life-cycle assessment, and they typically meet the security needs of building owners and users in their facilities. Some are tested and rated for 300,000 cycles of generally maintenance-free performance—maximizing uptime for building operations and improving productivity. Since springs are the most frequent point of failure for high-cycle products, doors that feature direct drive operation without the need for springs eliminate that maintenance concern. They are also available with insulation in the doors, which will improve the overall U-factor of this fenestration type to be likely higher than some others.

When considering the use of rolling steel doors in a project, there are four common design criteria to consider. First, how many times does the door need to open each day? Occasional use will suggest a standard door compared to a very high usage demand necessitating a high-performance door system. Directly related, the second thing to consider is the distribution of traffic or traffic patterns, including how it's spaced throughout the day. This may suggest that different doors are subject to different usage patterns. Third is the degree of productivity impact that the doors can have. Higher speeds of opening with the correctly placed activation devices can shave seconds off of each pass through—which can turn into hours and then days of productivity gained. Finally, consider the nature of the opening in terms of usage. If it's critical, then a springless design that can operate reliability throughout the life cycle of the door is likely the preferred choice.

In terms of appearance, there are a variety of powder coating, graphics, and custom design options that are available for rolling steel products. In some cases, custom solutions have been created for high-cycle applications that blend right into the facade of the building without it being obvious that a rolling door is even there. Manufacturers are quite willing to work with architects to make the door function requirements meet the design vision for the building.

Architect Marc Chavez, AIA, a construction specifier at ZGF Architects in Washington state, is proud of specifying high-performance products for his clients that comply with strict energy code requirements there. When looking at energy models for their projects, he previously found that the building envelope performance suffered from sectional or coiling doors that would leak air. "Selecting a high-performance door system is important as well as making sure it is not value engineered out of a project," he explains. "Increased performance values are available in rolling doors that decrease air infiltration by as much as 95 percent." Needless to say, he is convinced that others need to pay attention to these details too in order to achieve these results.

CONCLUSION

Incorporating new or replacement fenestration into a building can make a dramatic difference on the overall performance, longevity, and appearance of that building. Understanding the performance principles and standards for different types of fenestration, as we have discussed, can make a significant difference on the operation of the building. Staying up to date on available products, systems, and other manufactured fenestration choices provides designers with a broad palette to create buildings that are better designed, more appealing to users, more energy efficient, and more cost effective to operate.

Continues at ce.architecturalrecord.com

Peter J. Arsenault, FAIA, NCARB, LEED AP, *is a practicing architect, green building consultant, continuing education presenter, and prolific author engaged nationwide in advancing building performance through better design.* ***www.linkedin.com/in/pjaarch***

PRODUCT REVIEW

What's New in Fenestration?

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Insulated Extreme® 300 Series Performance Door

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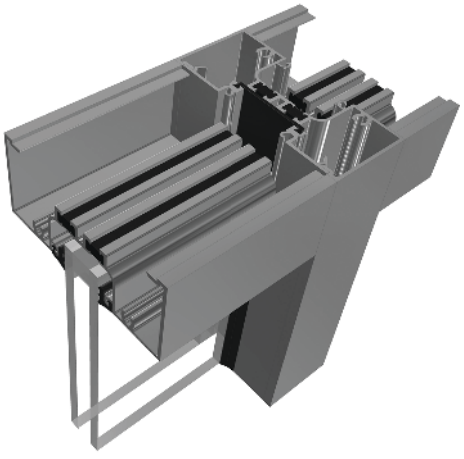
www.cornellcookson.com *Circle 405*

CRL-U.S. Aluminum

Image courtesy of C.R. Laurence Co., Inc.



ArcticFront™ Series 45X Dual Thermally Broken Storefront System

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Graham Architectural Products

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Graham's SR6700 Series Steel Replica Window

Graham Architectural Products' innovative SR6700 Series window is designed to replicate the original steel windows used in many buildings thanks to a floating vent, large openings, minimal sight lines, and applied grids. The SR6700's design is so authentic, it has helped numerous projects attain National Park Service approval.

www.grahamwindows.com *Circle 407*

Marvin Windows and Doors

Photo courtesy of Marvin Windows and Doors

Marvin Ultimate Casement

The Marvin Ultimate Casement Window is an innovative, high-performing casement window, offering expert craftsmanship, a variety of customization options, and the industry's largest operating sizes. Designed to suit virtually any application, these state-of-the-art windows feature concealed multipoint locks, a patented exclusive wash mode, and durable hardware that ensures easy opening and smooth operation.

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Glass interior wall partitions help support flexibility and adaptability for today's commercial facilities.

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Interior glass systems: meeting the need for adaptable, optimized space utilization

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As highly complex, function-specific spaces, today's health-care, industrial, and commercial buildings must respond to multiple conflicting demands over time. These facilities therefore require a high level of flexibility to meet constantly evolving needs.

"Buildings planned to accommodate change from the design stage up front will be most efficient, functional, and inspirational to workers, visitors, and building owners over their lifetime," states Sheryl Hai-Ami, administration officer, The Sliding Door Company, Westlake Village, California.

Consequently, building owners should think long and hard before building with traditional studs and drywall and designing highly specialized programmed spaces, cautions Karen Thomas, CID, LEED AP BD+C, principal, LPA Inc., Irvine, California.

While initial build-out costs may be less, such short-sighted design decisions will likely lead to more costly remodels down the line when program requirements and work processes inevitably change.

"Flexibility and adaptability are critically important and a key factor in building resilience," states F. Jeffrey Murray, FAIA, LEED AP, director/architect/practice leader, CH2M, Pittsburgh. "A facility that becomes out of date or incapable of supporting the activities planned to occur loses its value."

Offering some historic perspective, Suzanne Blair, associate principal, workplace studio leader, SERA Architects, Portland, observes that the primary needs and tools in her firm's architectural offices are dramatically different from what they were just five to 10 years ago.

"Accommodating future needs of the users, as well as the future growth and delivery model of the company are difficult tasks but should be considered from the start of every workplace project," she says.

CONTINUING EDUCATION

1 AIA LU

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Learning Objectives

After reading this article, you should be able to:

1. Discuss insightful viewpoints on design flexibility and adaptability from leading architects.
2. Examine modular designs and multipurpose use for health-care facilities in action.
3. Identify how interior glass solutions and sliding doors boost modularity and flexibility into health-care, hospitality, and commercial spaces.
4. Recognize key integrated sustainable design benefits and best practices.

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To support this essential level of adaptability, design solutions like interior glass doors, sliders, swing doors, barn doors, and stacking room dividers enable buildings to quickly and inexpensively adapt to rapidly changing facility needs and functions.

For example, dividing an open space into smaller, private rooms is an easy retrofit. Or even more effective, proactively designing the floorplate with various glass partitions lends much flexibility to shifting space utilization and function.

EVOLVING HEALTH-CARE SPACES

Supporting such flexible, functional space requirements is particularly essential for today's health-care facilities.

Whereas the typical doctors' office of the early 1990s consisted of a small waiting area with a couple exam rooms and doctor's offices, today's outpatient facilities are much more robust operations with physicians from various specialties, social workers, dieticians, pharmacists, etc. making up a larger, integrated team.

"This shift has really been driven by the focus on population health and evolving relationships of physicians to hospitals and insurers," reports Troy Hoggard, senior vice president, Cannon Design, Chicago. As a result, "medical office design is beginning to track along with and catch up to commercial workplace design in dynamic, exciting ways."

Primarily, these health-care spaces have evolved into open-plan, module-based layouts where team members may need to gather to discuss a patient's situation, break up to do some individual work, and then huddle once again.

"To support this kind of extensive collaboration, health-care designers need to infuse a diverse types of spaces into health-care environments," he says.

In response, CannonDesign recommends the following:

- **Touchdown spaces:** places where staff can sit for a few moments to jot something down, review notes, or look at a chart.
- **True open-office environments:** open spaces where teams and individuals can connect, huddle, and collaborate.
- **Consult rooms:** more traditional rooms where folks can connect for quiet, private meetings with patients.

MODULAR PLANNING

Another important design strategy for commercial and industrial facilities, particularly health-care facilities, is modular planning to support multiuse spaces. Described as repetitive designs that are easy to expand or reduce, these modules are highly functional and cost effective. With each module incorporating the same infrastructure and dimensions, facilities can quickly reconfigure these spaces to accommodate current needs.

To help enable the kind of flexibility required by today's health-care clinics, interior glass doors are an easy and efficient way to divide and best utilize the space.

Glass enclosures such as this one can be moved in a quick and inexpensive manner to support changing facility needs and functions.

"Modern work styles require space to support a variety of different activities, and if one were to designate spaces specifically for one activity, then they would go unused, possibly for a significant proportion of the time," Murray states. "This is a cost that is hard to justify and really a waste of resources."

The goal, says David Lubin, associate principal, HKS, Dallas, is to design spaces with an eye on what "could be" or "might happen" versus a single-function approach.

"When applied thoughtfully, the use of modular planning can provide organization and rationale to a design while providing a client with a more fiscally responsible product," suggests Darin Daguanno, AIA, LEED AP BD+C, design principal, SmithGroupJJR, Detroit.

For example, in a health-care clinic, multiple specialties might alternate days of operation and/or one particular clinic might require twice as much space on one day of the week.

"Health workplace designs need to be ready to accommodate this kind of constant flexing," states Hoggard. "So, the more one can do to offer spaces that can accommodate a wide range of specialties, the stronger and more adaptable the facility will be." For instance, a conference room can be closed off and double as smaller consultation areas when needed.

Tasked with keeping cost and space requirements down, health-care providers require the ability to provide these clinics with additional space when they need it and retract it when they don't.

Getting into more specifics, the exam room configuration, as the most replicated unit, usually sets the standard for clinic modularity.

Continues at ce.architecturalrecord.com

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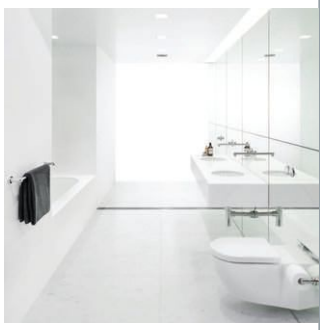

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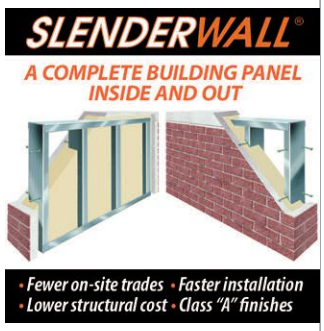

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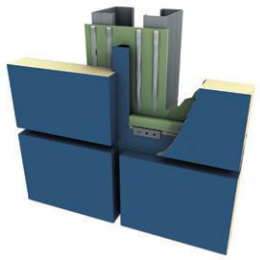

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New and Upcoming Exhibitions

Bureau Spectacular: insideoutsidebetweenbeyond
San Francisco
February 11–August 13, 2017
For its first museum presentation on the West Coast, architecture studio Bureau Spectacular has designed a large-scale installation that further develops the studio's ideas on past, current, and future architecture as seen in the drawing insideoutsidebetweenbeyond, which SFMOMA acquired in 2015. Led by Jimenez Lai, the Los Angeles–based studio views architecture as a medium capable of rewriting cultural narratives. Reconsidering its incarnation inside, outside, between, and beyond the "monotonous rectangular" buildings seen in most city skylines, the exhibition offers an urban landscape littered with surrealistic architectural forms and jarring environments. For more information, visit sfmoma.org.

Architecture and Independence–African Modernism
New York City
February 16–May 27, 2017
Architecture of Independence–African Modernism explores the complex legacy of modern architecture and nation-building in 1960s and '70s postcolonial Africa, when many sub-Saharan countries gained their independence and turned to experimental and futuristic architecture to express their national identities. Held at the Center for Architecture, this exhibition features original photography by Iwan Baan and Alexia Webster. For more information, visit aiany.org.

Ongoing Exhibitions

Design Episodes: Form, Style, Language
Chicago
Through June 25, 2017
In anticipation of the Art Institute of Chicago's fall 2017 new permanent display of architecture and design works, this exhibition presents highlights from the Art Institute's collection as three provocative episodes or vignettes: the modern chair, the emergence of postmodern design, and contemporary identity systems in graphic design. Each of three distinct "episodes" in the exhibit is tied together by *Boundary Lines*, a custom-designed installation by graphic designer Amir Berbić that occupies the gallery windows overlooking Griffin Court. For more information, visit artic.edu.

Lectures, Conferences, and Symposia

Zoning to Scale: Considering Neighborhood Character
New York City
February 28, 2017
Zoning decisions affect us all: depending on the type of zoning ordinance, a supertall tower can be built in a neighborhood that typically features uniform, low buildings, clashing with its surroundings. Through contextual zoning, the city can regulate the height, bulk, setback, and street frontage of new buildings as measures to preserve the fabric especially of historic neighborhoods and prevent any disruptive new developments. Join this lecture at the Museum of the City of New York to discuss the impact of contextual zoning and its effectiveness in preserving New York's most beloved neighborhoods. For more information, visit aiany.org.

Competitions

Hollywood: The Last House on Mulholland
Registration deadline: February 9, 2017
The competition asks participants to design a house of the future that demonstrates the use of innovative technology, integrative environmental strategies, and capitalizes on the iconic prominence of a site beneath the famed Hollywood sign. The competition will challenge the traditional approach to residential design as well as the nature of a modern-day home. Participants will study the role a home plays in our lives, both today and in the future. For more information, visit archoutloud.com.

BIM 2017
Registration deadline: March 5, 2017
Those submitting to the 2017 BIM Contest must create an original BIM model of several residential and commercial buildings, which will be integrated into a larger project for the creation of a new central area in Saint-Prix, on the north side of Paris. At least one product or texture of each manufacturer featured in the sponsors section should be integrated into the BIM model of the project. For more information, visit bimcontest.com.

E-mail information two months in advance to recordevents@bnpmedia.com

2017 CALL FOR ENTRIES Record Houses

The editors of **ARCHITECTURAL RECORD** announce the **2017 RECORD HOUSES** awards program, published in June this year.

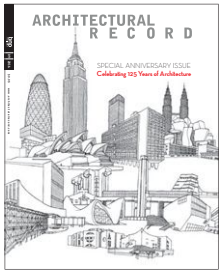
Entry is open to any architect registered in the U.S. or abroad. Of particular interest are projects that incorporate innovation in program, building technology, materials, and form. Projects must be built and inhabited. They may be new construction or renovated and adaptive-reuse projects.

The fee is US$75 per submission. Find all details and submit your entry at **architecturalrecord.com/call4entries.** E-mail questions to arcallforentries@bnpmedia.com. Please indicate **Record Houses** as the subject of your e-mail.

SUBMISSION DEADLINE: **FEBRUARY 15, 2017**

CALL FOR ENTRIES

Architectural Record Traveling Fellowship 2017



ARCHITECTURAL RECORD is awarding two traveling fellowships to architecture students and young professionals to commemorate the magazine's 125th anniversary.

The purpose of the fellowship is to explore significant architecture and/or urbanism outside the United States—to pursue greater general knowledge of design or to study closely, for example, a single typology, historic period, or place/region.

Eligibility: U.S. citizens currently enrolled in or graduates of an accredited U.S. architecture program.

- One fellowship will be awarded to a candidate who will have completed a B.Arch. degree or at least the first year of an M.Arch. program by summer 2017.
- One fellowship will be awarded to a candidate who graduated with a B.Arch. or M.Arch. within the last five years (since 2012).

Entry is free. Find details of the fellowship and submission requirements at **architecturalrecord.com/call4entries**. E-mail questions to arcallforentries@bnpmedia.com and write "Traveling Fellowship" in the subject line.

SUBMISSION DEADLINE: **MARCH 15, 2017**

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snapshot

PROJECT **LIBERTY HOUSE**
LOCATION **CORATO, ITALY**
DESIGNER **ESTHER TATTOLI**

BEFORE ARCHITECT Esther Tattoli intervened, the sumptuous second-floor flat of an Art Nouveau building in the Southern Italian town of Corato was in a state of disrepair. Painted ceilings depicting organic motifs had succumbed to water and mold damage. The embellished stucco walls, patterned floor tiles, and gold leaf detailing (featured most prominently in a small chapel, seen here through the remodeled entry parlor), were also in need of refurbishment. "The goal was to reconcile the historic nature of the space with the functional requirements of a modern residence," says the Corato-based architect. So the design team restored the ornamental elements to their original luster and transformed the interior by reorganizing the program, updating the lighting and installing energy-efficient elements such as solar panels on the roof. In conjunction with the client's contemporary furnishings—including a dramatic blue Edra sofa and gold-coated vases in the foyer—the renovation accentuates a contrast between old and new and, says Tattoli, "traces the threads of a new history." *Alex Klimoski*

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