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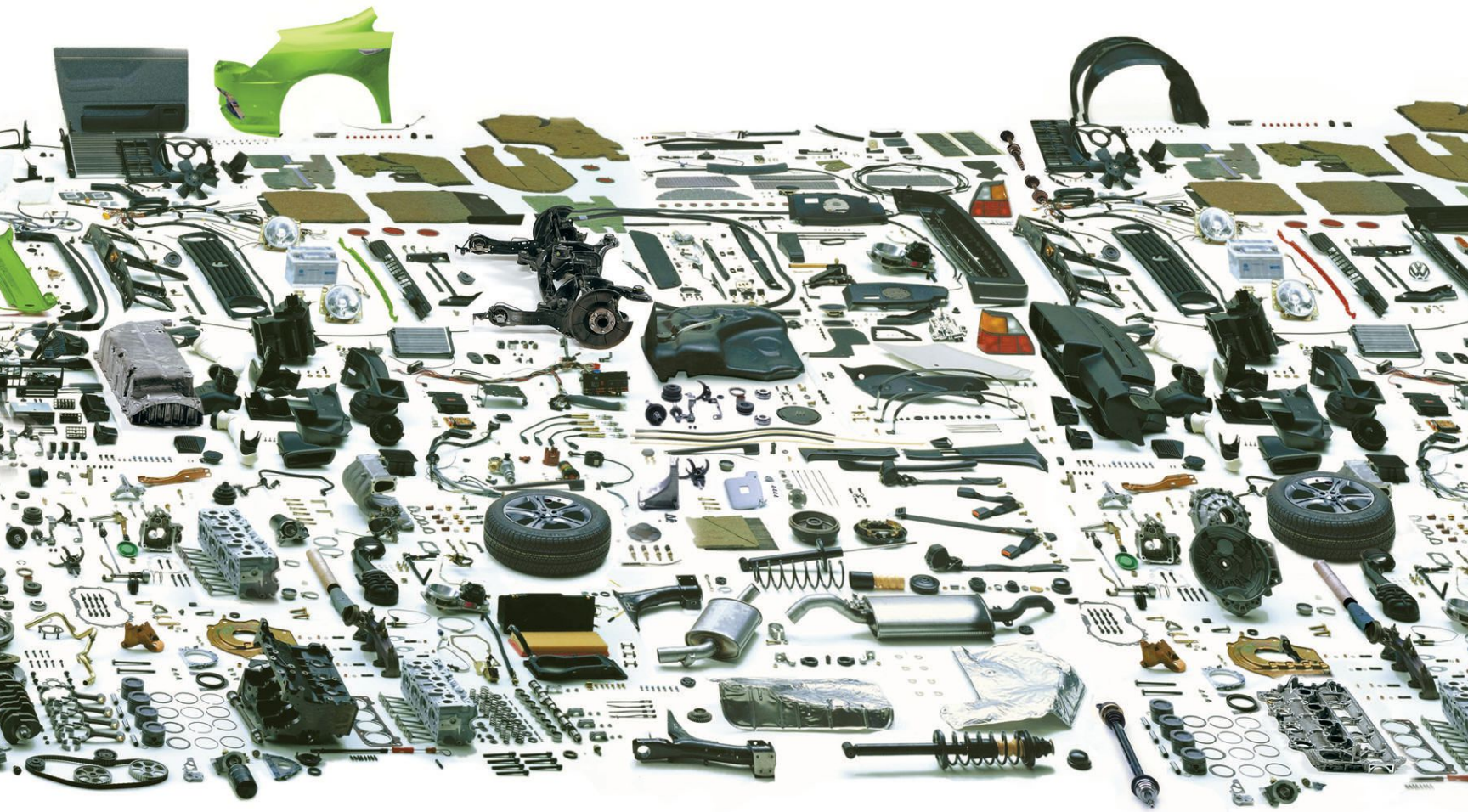

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remaking HISTORY

"When you stand and look at a restored home, you see the way in which it has advanced forward. It doesn't look old and outdated; it looks connected to the neighborhood ... that's the best of both worlds; you've preserved the history, but you've reinterpreted it without losing the thread back to its origins."

TREFF LAFLECHE, LDa Architecture & Interiors, Cambridge, MA

A lifelong advocate for stewardship, award-winning architect Treff LaFleche entered the Peace Corps before co-founding the esteemed New England firm, LDa Architecture & Interiors.

This experience became the foundation of LaFleche's architectural career, as it was during his service that he designed and built one of his first homes.

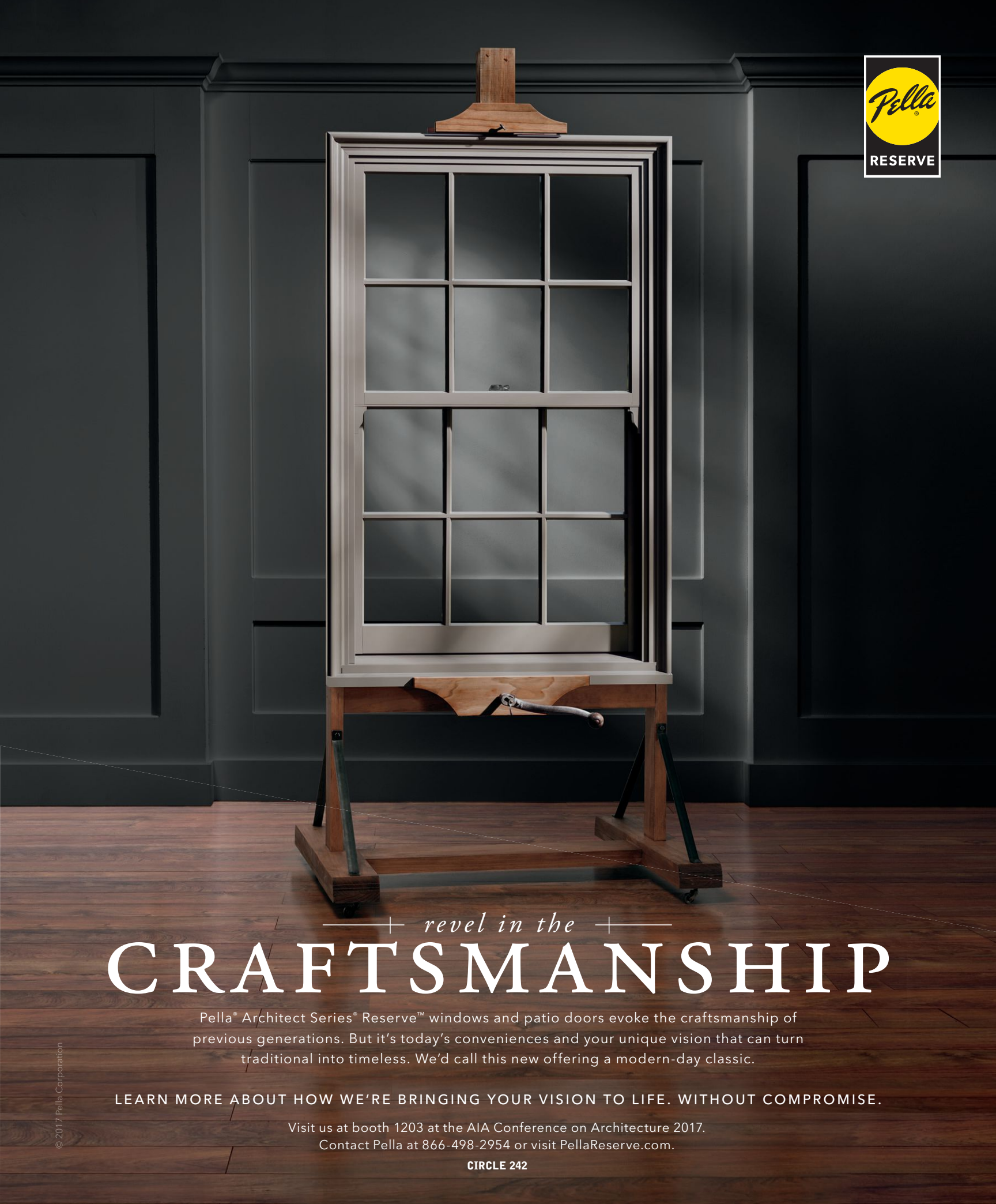
The innovation that project required ignited LaFleche with a passion for creating and restoring sustainable dwelling spaces — homes that not only have a story to tell but can also offer the revitalization people need when they enter their front door.

For LaFleche, and his firm, restoration isn't just about preserving history — it's about planning for a sustainable future.

"Sustainable architecture is that critical balance between design, craft and the environment," says LaFleche. "We follow a philosophy of finding balance among all three."

LaFleche's firm is no stranger to residential historical preservation. With dozens of projects a year, LaFleche has assembled a team of designers and building suppliers, including Pella Windows and Doors, who share the same philosophy, intent and commitment to craftsmanship and innovation.

"To bring a house forward to the future, we preserve the structure, but we strip its outdated technology from the outside and the inside," LaFleche explains. "Then we put in new windows and re-skin the exterior of the house." The end result is an adapted piece of art that represents a previous generation's understanding of time and place.



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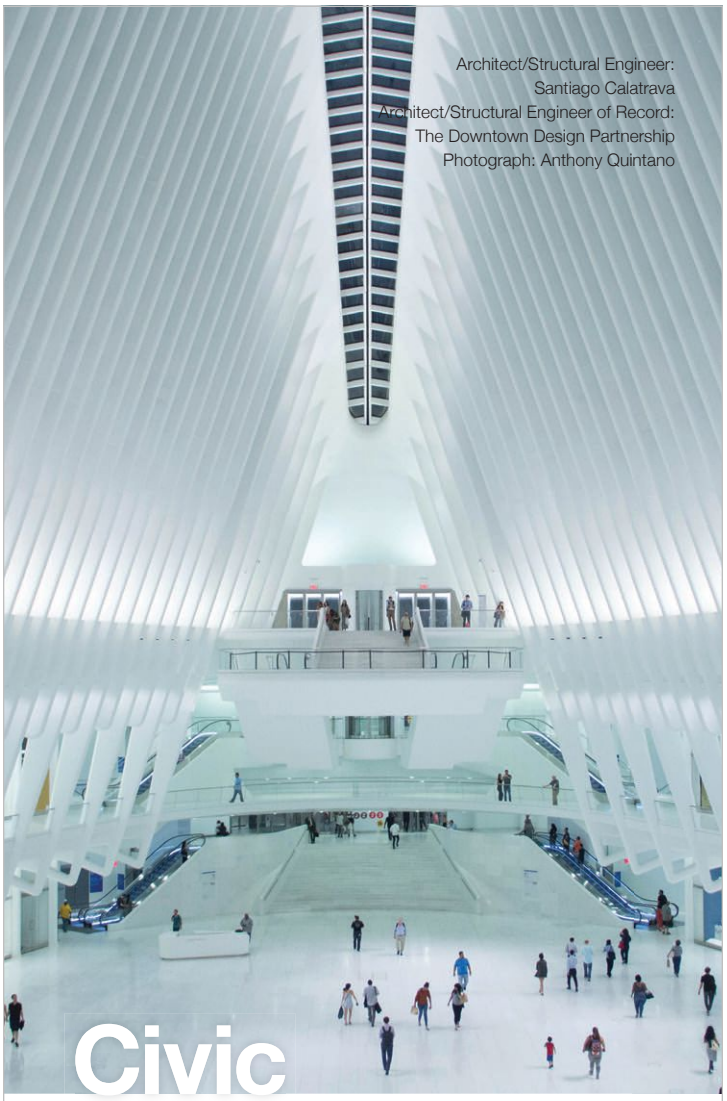

Civic Duty

New Yorkers watched in awe as ironworkers erected each of the **World Trade Center Transportation Hub's** steel ribs into place. Now, 250,000 commuters marvel at the 12,500 tons of structural steel arching overhead as they pass underneath each day. The vision of international architect **Santiago Calatrava** and his team, the Hub's central Oculus connects New Yorkers not only with the places to which they need to go—but with the skilled labor needed for such a vision to be realized. Read more about it in **Metals in Construction** online.

Steel Institute of New York

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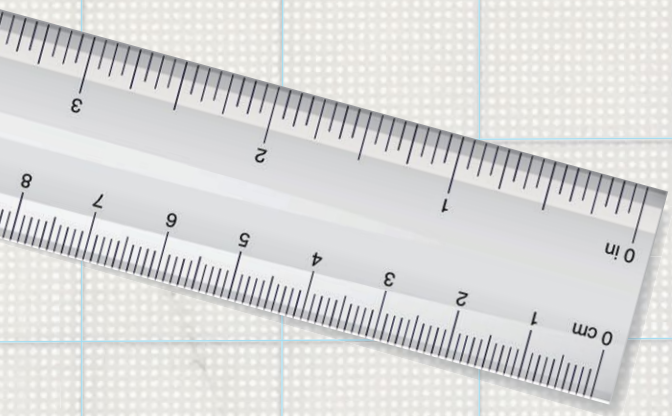

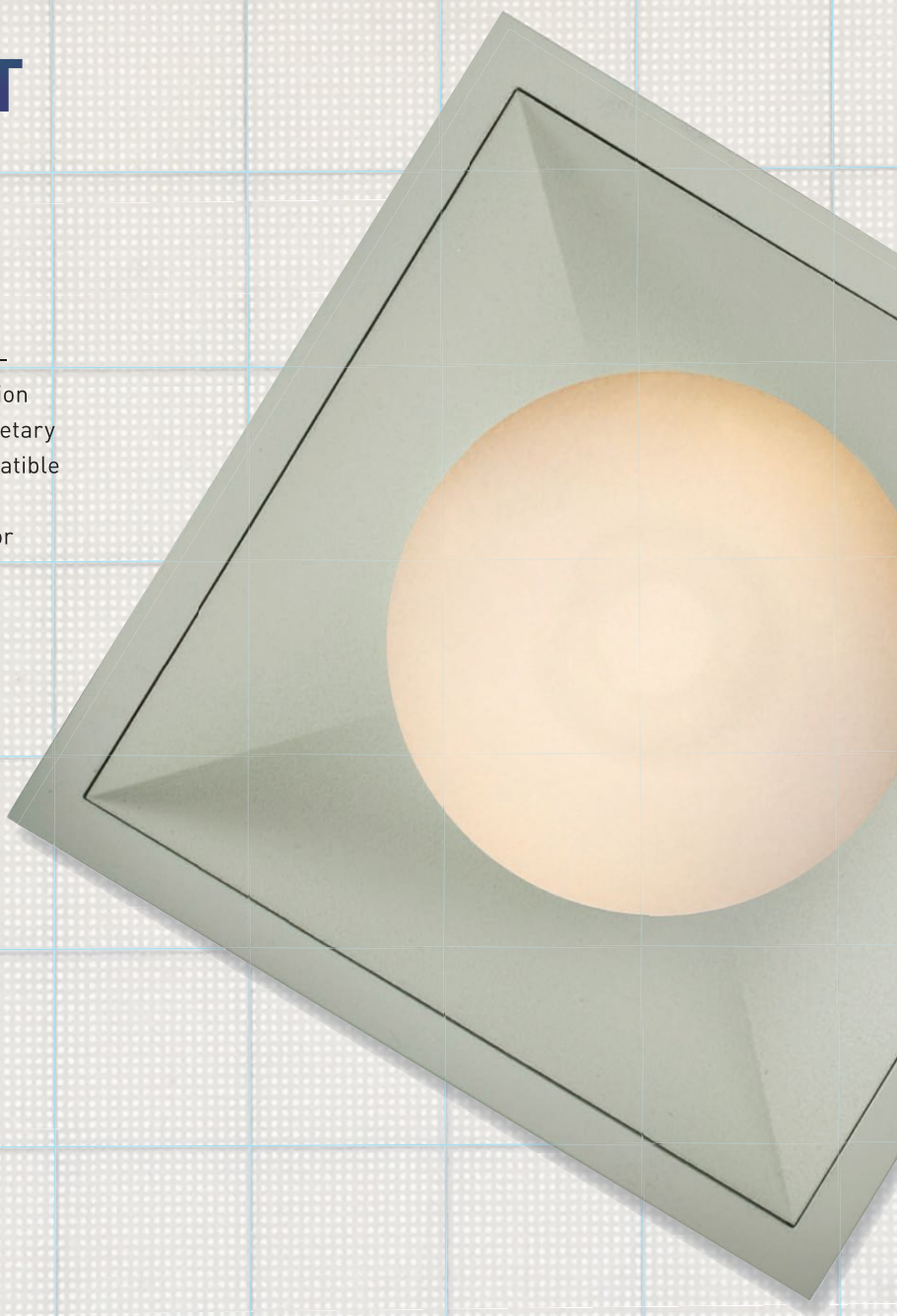

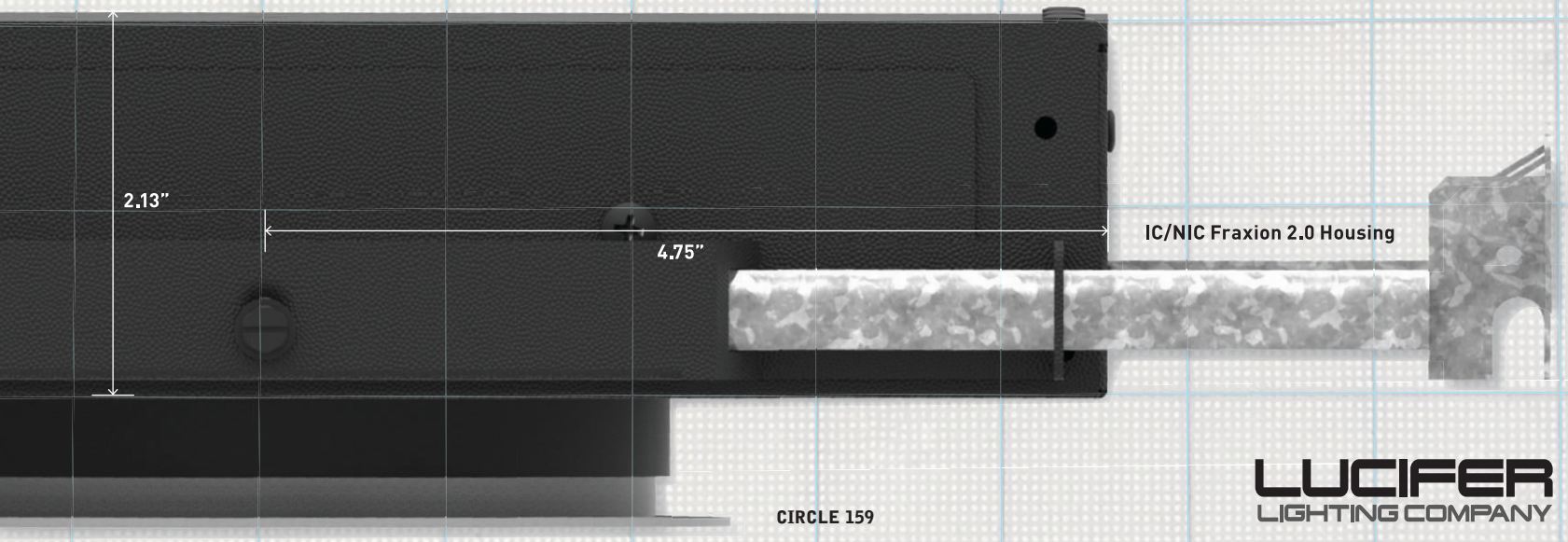

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Shape Up

What if a skyscraper didn't have to look like one? That was the question posed by **Bjarke Ingels Group (BIG)** when the firm was approached to design **Via 57 West** on Manhattan's West Side. By creating a courtyard-centric building whose sail-like facade plunges to street level from a height of forty stories, BIG made a statement, and a challenge for the facade's installers. The resulting double-curved form required more than 1,200 unique panels—and the skill of ornamental metal ironworkers to put them in place. Read more about it in **Metals in Construction** online.

Ornamental Metal Institute of New York

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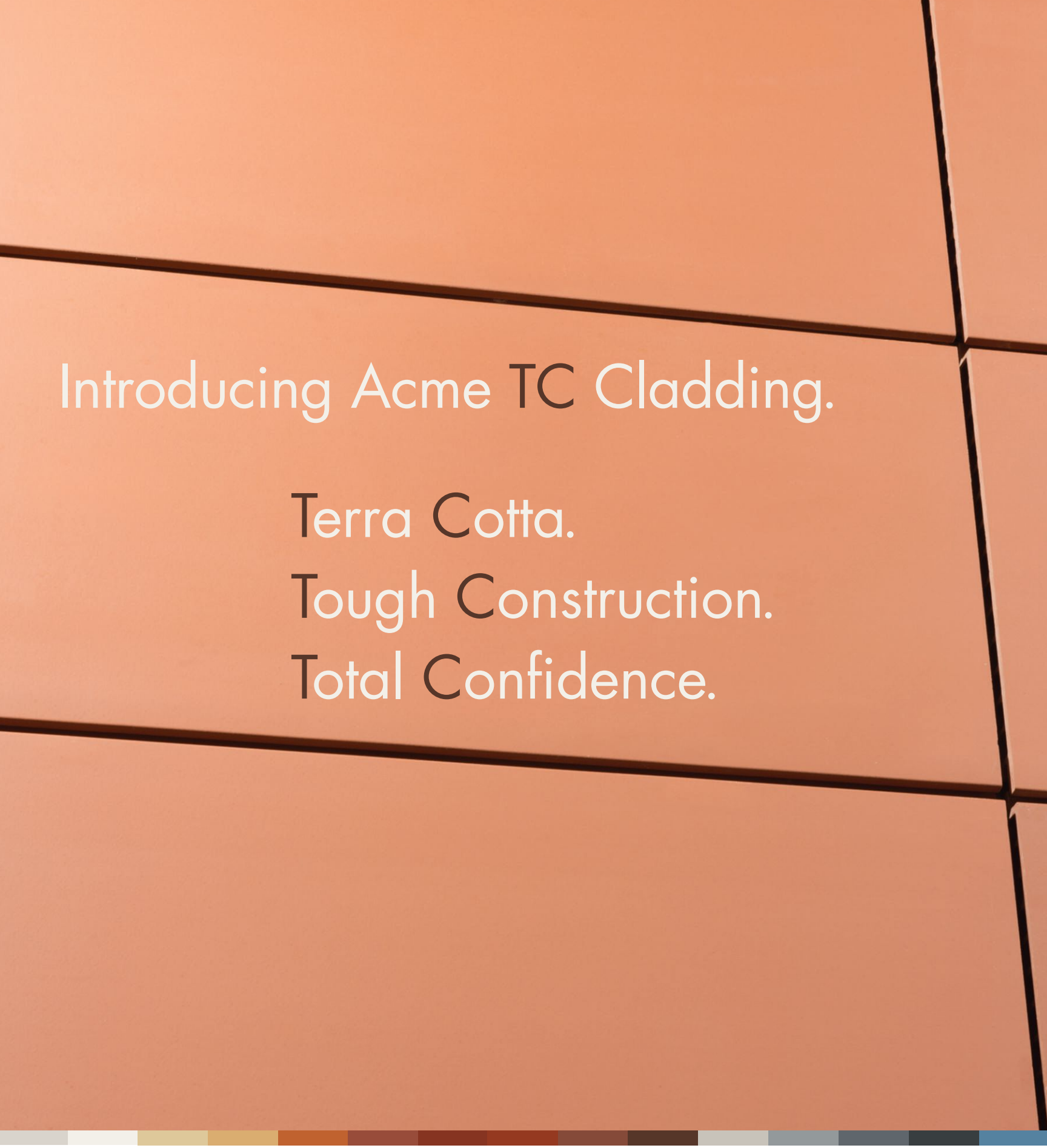

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PREVIOUS PAGE: ORCHESTRA HALL RENEWAL, BY KPMB. PHOTO BY NIC LEHOUX.

COVER: SECOND AVENUE SUBWAY, BY AECOM/ARUP. PHOTO BY JEFF GOLDBERG/ESTO.

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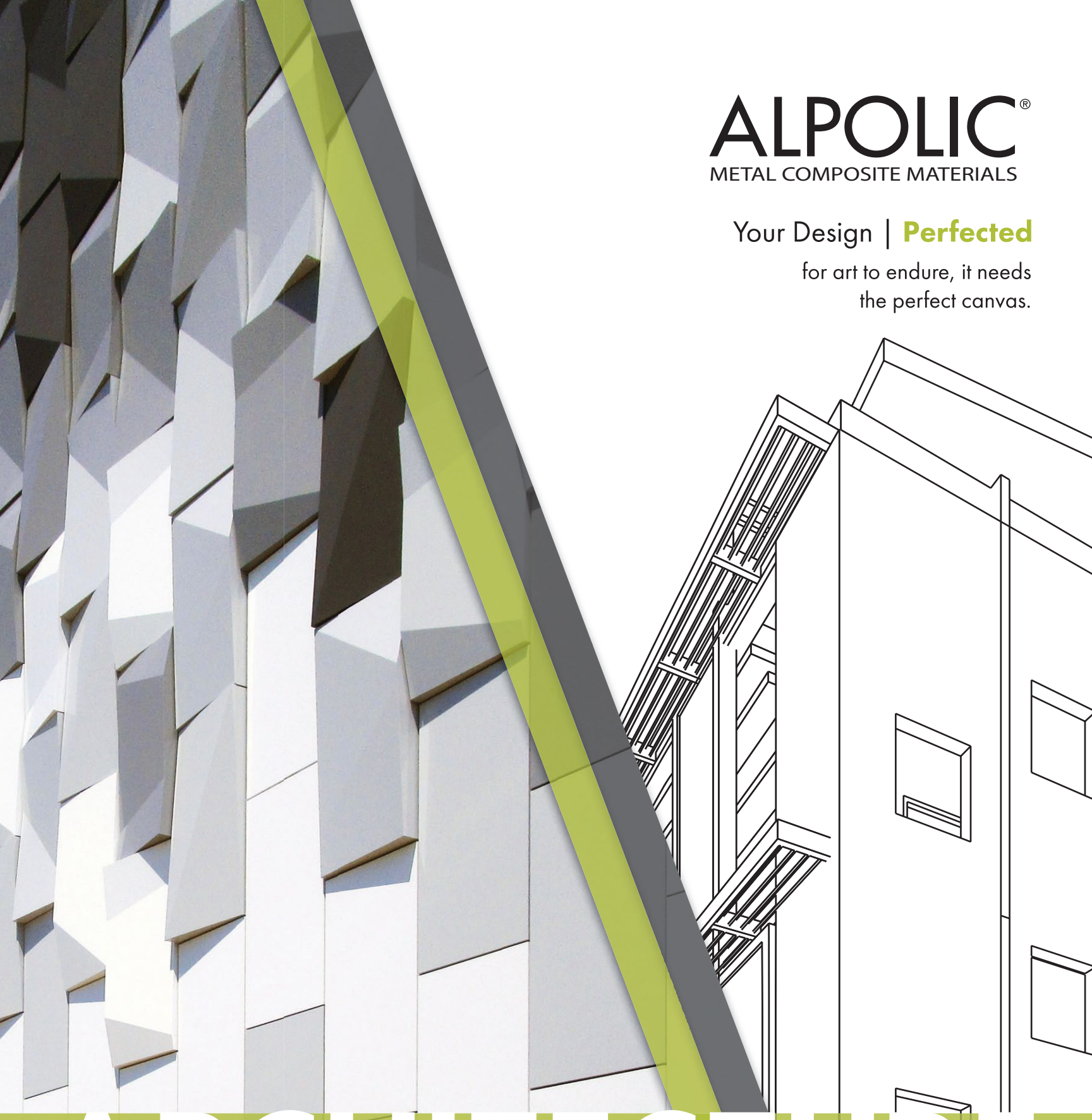

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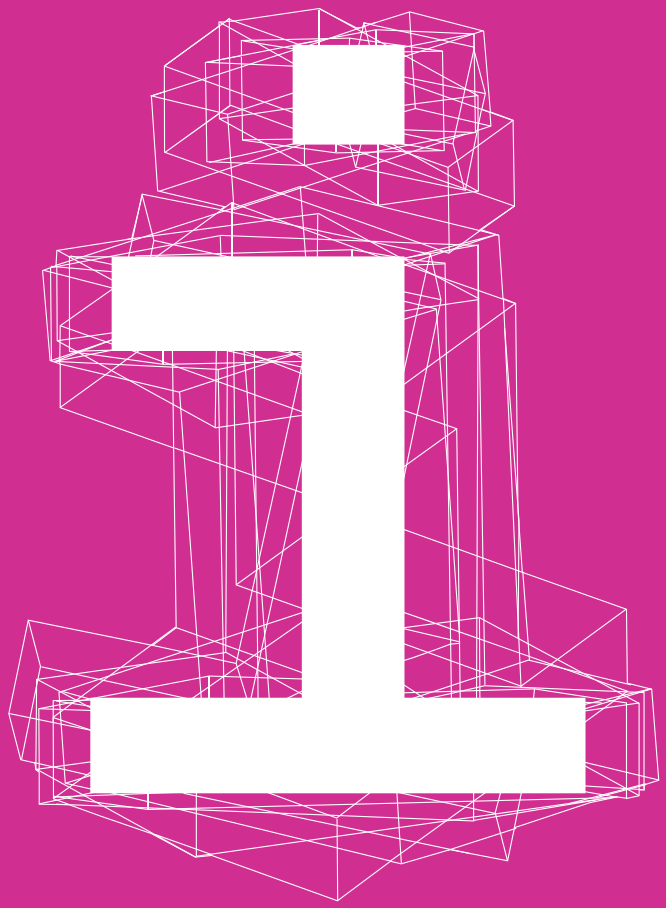

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DESIGN OF THE PUBLIC REALM
In this issue, RECORD looks at social infrastructure, speaking to the designers and clients (including those below) behind each project.

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SNØHETTA'S NICK KOSTER, PROJECT ARCHITECT, AND CRAIG DYKERS, FOUNDING PARTNER, WITH TIMES SQUARE ALLIANCE PRESIDENT TIM TOMPKINS

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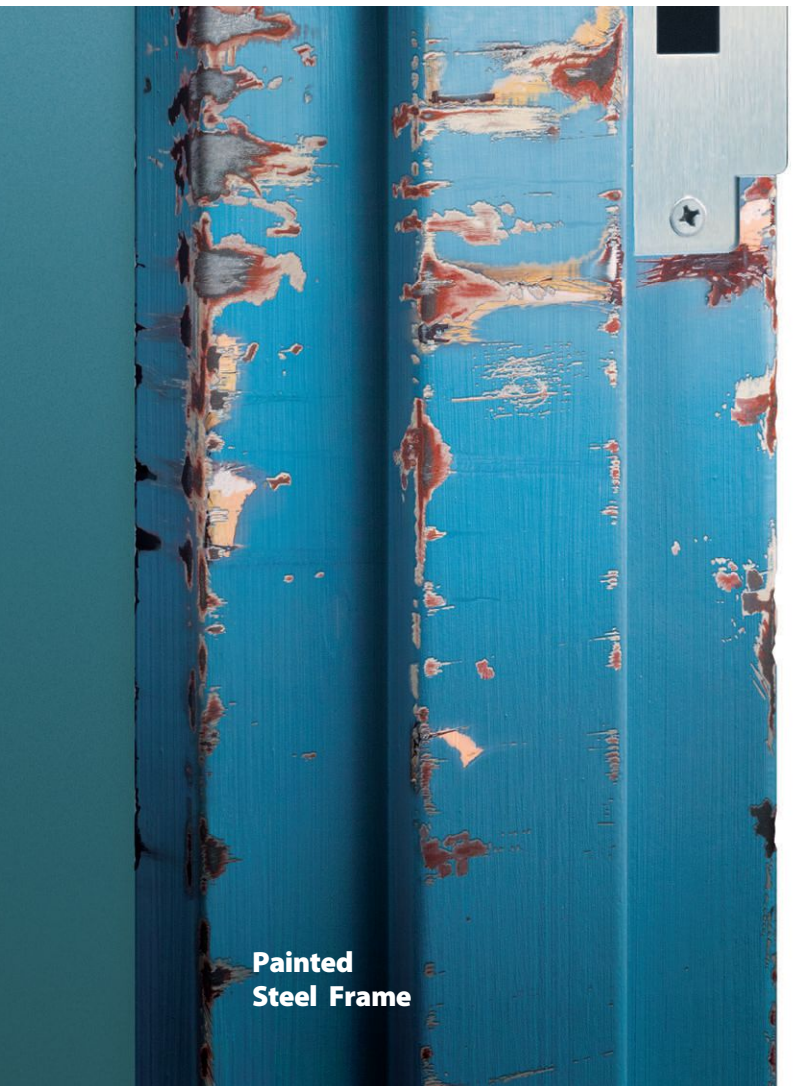

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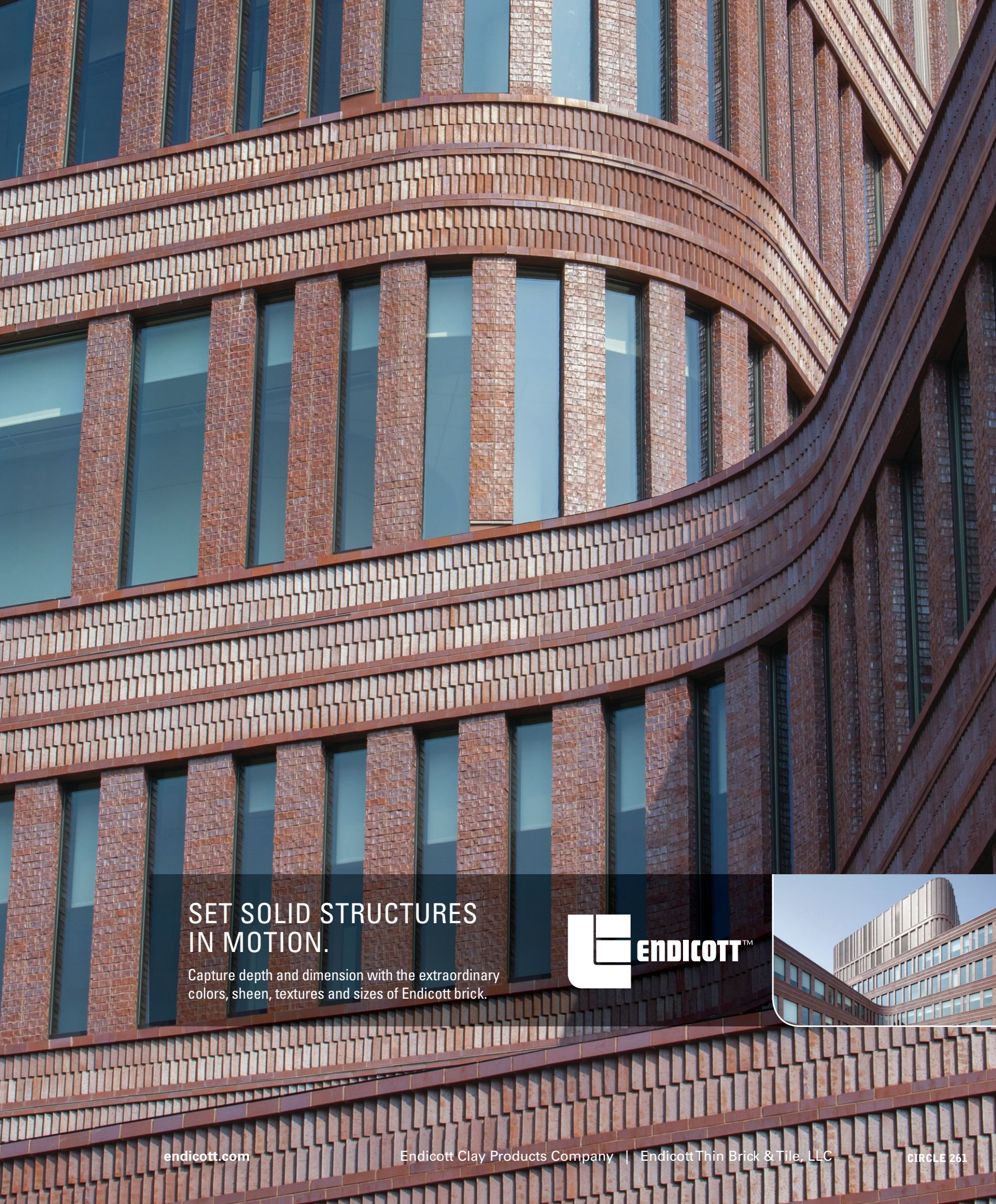
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Architecture and the Future of the Public Realm

As cities plan soft infrastructure, designers have an important role to play.

IT'S SPRING, and the economy is looking up. The Fed sees steady growth, unemployment is down, the stock market has been (mostly) up, and even the Architecture Billings Index is up. Architects also reported more new project inquiries, and in February, "new design contracts at architecture firms posted their largest monthly gain in over two years," according to AIA chief economist Kermit Baker.

All this is good news for architects.

This month, however, RECORD is not spotlighting the type of work that's mostly spurring the rise in billings. In the pages ahead, we're exploring projects that make a significant contribution to the public realm of cities and neighborhoods—what has come to be called "soft" infrastructure or social infrastructure. This includes urban design and landscape projects like parks and public plazas; facilities like libraries, health-care clinics, and social housing; and more traditional infrastructure like local and regional mass transit. Building these community-based projects is complicated and often drawn-out; they tend to be financed by multiple sources of public, private, and philanthropic dollars. And they are likely to have multiple stakeholders: architects are usually working collaboratively across disciplines, with landscape architects, engineers, and planners—and engaging with the community as part of the design process. All this requires patience, and may not do much to bolster a firm's bottom line.

So why do architects even go there? We asked a number of them and got some provocative answers. Maybe the most surprising came from Thom Mayne, the Pritzker Prize–winner best known for his idiosyncratic works of architecture. Yet as Mayne tells RECORD, "The architecture world seems to be overly invested in design with a capital D . . . The problems in the 21st century are going to be much more infrastructural than architectural . . . I'm not giving up design; it isn't either/or. But the most compelling work in front of us today is infrastructural" (page 181).

Even if a project is private, community-based design thinking is a growing priority. "In the past, civic placemaking was more in the realm of government agencies," says Charles Renfro, principal of Diller Scofidio + Renfro. "Now more of our private projects offer the opportunity to impact public experience. We want our buildings to be expansive, inclusive, and welcoming to people who would not normally think of themselves as invited in" (page 203).

Enhancing the public realm is a way for people to connect across socioeconomic and other barriers that have polarized communities. "In an era when people are becoming more isolated, and perhaps less empathetic, public space is our only hope for bringing people together," says Claire Weisz, principal of WXY, "especially spaces that serve multiple functions, like a plaza where you can run, or hold a health fair or have a wedding" (page 191).

The determination of cities, assisted by foundations and other nonprofits, to improve and expand the civic spaces we all share has already had a profound effect on urban life, and in this issue we include several unbuilt projects that, if funded, would continue a positive trend.

But federal money, from agencies like HUD, is often a part of the patchwork of financing for such projects. As we watch Congress grapple with the administration's proposed budget, the negative impact from possibly eliminating programs like the Community Development Block Grant is arousing real fear. Even small agencies like the National Endowment for the Arts—its very existence now under threat—have played an outsize role in promoting design excellence in the urban realm.

Underfunding the needs of cities has long been a concern. In 1968, Whitney M. Young, Jr., the civil rights leader and head of the National Urban League, spoke to the annual convention of the AIA and exhorted his almost all-white, male audience to challenge the inequity of the profession, and the injustice, poverty, and inequality faced, mostly by blacks and, mostly, in cities. "We are not at a loss in our society for the know-how. We have the resources," said Young. "We are at a loss for the will."

It is worth your while to read his speech, even if you argue that times have changed, that institutionalized racism is not what it was 50 years ago, that progress has been made. Because it is hard to argue that equity has arrived, and that the gap between haves and have-nots is not as wide as ever.

Where people come together, despite their differences, is in the civic realm—and the facilities and opportunities there should be the best that we can create. This is a good time for architects and for practice. And as leaders in our civil society, it is also a good time for us to stand up for the public good.

Cathleen McGuigan

Cathleen McGuigan, Editor in Chief

PHOTOGRAPHY: © MICHEL ARNAUD

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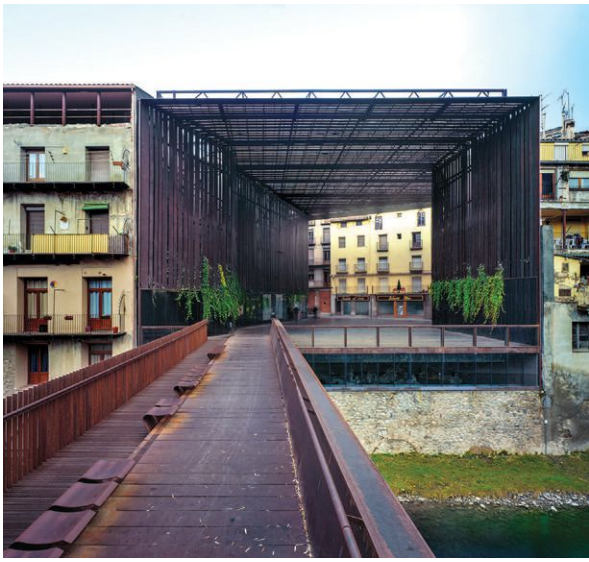
perspective

I am much more interested in minor-league, oddball structures than in tour-bus monuments like the Woolworth Building. –New York Times *architecture columnist Christopher Gray, who passed away Friday, March 10.*



Rafael Aranda, Carme Pigem, and Ramon Vilalta (left) established their firm RCR Arquitectes in Olot, Spain, in 1988. Their quiet yet powerful work has encompassed residential, educational, and cultural projects, including this footbridge and plaza for La Lira Theater (above).

PHOTOGRAPHY: © JAVIER LORENZO DOMÍNGUEZ, COURTESY OF THE PRITZKER ARCHITECTURE PRIZE (LEFT); HISAO SUZUKI, COURTESY THE PRITZKER ARCHITECTURE PRIZE (RIGHT)

2017 Pritzker Prize Goes to Rafael Aranda, Carme Pigem, and Ramon Vilalta

BY ANNA FIXSEN

FOR RAFAEL ARANDA, Carme Pigem, and Ramon Vilalta, design is a deeply communal practice. Not only do the three Spanish architects share a firm, RCR Arquitectes, they also share a single desk. "One draws a line, and another adds on," says Pigem. It's through this collective, iterative process that their masterful works come into being: a museum wrought in weathering steel, a translucent banquet hall punctuated by tree trunks, a kindergarten that evokes a box of colored pencils.

Now Aranda, Pigem, and Vilalta also share the 2017 Pritzker Architecture Prize. It is the first time the award has been bestowed upon three laureates in 38 years; only twice has it been given to two partners, not a solo architect. The three partners of RCR will share $100,000 and the Prize's signature bronze medallion, based on the designs of Louis Sullivan, at a ceremony at the Akasaka Palace in Tokyo on May 20.

"The collaboration of these three architects produces uncompromising architecture of a poetic level, representing timeless work that reflects great respect for the past, while projecting clarity that is of the present and the future," Glenn Murcutt, the chairman of the Prize's nine-member jury, said in the announcement.

Over the span of their nearly three-decade career, Aranda, Pigem, and Vilalta have worked primarily in their native Catalonia, designing dozens of projects there ranging from a two-Michelin-star restaurant to a running track in the middle of a forest clearing. The work may be unfamiliar to architects practicing outside of Europe, but through sensitive handling of context and materials, the architects of RCR have developed the uncanny ability to make the singular feel universal. "For us, architecture is not a device you can use but something that pushes your emotions," Pigem tells RECORD.

Aranda, Pigem, and Vilalta hail from Olot, Spain, a town of 34,000 cradled by a cluster of dormant volcanoes. The three architects became friends while studying at the Escola Tècnica Superior d'Arquitectura del Vallès (ETSAV), outside Barcelona. ("They heard a girl from Olot was studying architecture, and they both came to meet me," says Pigem with a laugh.)

At the time, Spain was still recovering from the economic and political turbulence that followed the death of Francisco Franco in 1975. At ETSAV, it was a prime time to employ radical design ideas. "A teacher there told us, 'If you want to be a good architect, you have to refuse the first project that will bring you a lot of money,' " Pigem recalls. Upon graduating, the three returned to Olot, eschewing the idea of establishing a big-city practice. Vilalta and Pigem married each other, and together with Aranda in 1988, the trio established RCR, named for their first initials.

The architects took their professor's advice to heart and boldly turned down their first would-be project. Instead, they devoted themselves to a national competition for a lighthouse in the Canary Islands. They questioned the idea of an archetypal tower and proposed a cantilevered structure that would perch on

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RCR's designs are controlled, but never cold. Their El Petit Comte Kindergarten in Spain features a screen of individual tubes that children can spin (left). The Cor-Ten surface of their Soulages Museum, meanwhile, is weathering to blend with the surrounding park (above).

PHOTOGRAPHY: © HISAO SUZUKI, COURTESY THE PRITZKER ARCHITECTURE PRIZE (2)

the edge of a sea cliff like an oil lamp. The proposal took first place and, though unbuilt, gained the firm international exposure.

This rigorous interrogation of a project's essence continues to inform RCR's work. Take their Les Cols restaurant in Olot (2002), which juxtaposed a 17th-century agrarian shell with gleaming Midas-touched interiors. Or the raw, steel gallery spaces for the Soulages Museum in Rodez, France (RECORD, August 2014, page 86), inspired by the stormy engravings created by the museum's namesake. When designing El Petit Comte Kindergarten in Besalú, Spain (2010), the architects observed that children often run their hands along walls as they walk, so they designed a screen made of rainbow-colored tubes that rotate and allow the children to engage with the building.

The Pritzker Prize has recently gone to architects with an explicit social agenda, notably last year's laureate, Alejandro Aravena, and the 2014 honoree, Shigeru Ban. The architects of RCR view their contribution to society as something more abstract: "For us, we think the social aspect of our work is a sense of quality for everybody," says Pigem. In 2013, the firm launched the RCR BUNKA Foundation, which hosts architecture workshops and public lectures in Olot. "Sometimes architecture is perceived only as landmarks," Pigem says. "We wanted to create this foundation to help society understand the value of architecture."

The firm sees the Pritzker Prize as the ideal platform to support the goals of their firm—currently a group of 12—as well as their foundation. "We feel really honored and happy, but we also feel as though we have a responsibility," says Pigem of the win. "It's a dream coming true." She pauses: "No, *being* true." ■

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CIRCLE 140

Border Wall Divides Profession

BY FRED A. BERNSTEIN

WHEN PRESIDENT Trump announced his plans to build a border wall, "it felt a little like divine intervention for me," says Brian Johnson, the principal of Collaborative Design Architects, a small firm in Billings, Montana. Johnson had already been sketching ideas for a border wall that resembled a series of hydroelectric dams, with curved concrete surfaces to foil climbers and a roadway on top for border-patrol vehicles. After Trump's announcement, Johnson began refining the idea in anticipation of an RFP. He says, "I knew I had developed something capable of being more than just a wall."

But where Johnson saw opportunity, many other architects felt outrage. "A border wall is just the wrong thing to do," says Larry Strain of Siegel & Strain Architects in Emeryville, California. "It doesn't make us safer, it doesn't protect our jobs, and it is divisive rather than inclusive." In early March, he and the members of his firm signed a pledge not to participate in the project, although, he says, they'd be happy to design a seat or a gate with the word *bienvenidos*.

The pledge was written by an advocacy group called the Architecture Lobby, which asked architects to walk off the job on Friday, March 10, to protest the RFP. Among the firms that complied was makeArchitecture of Chicago. According to its director, William Huchting, the six members of the firm stepped outside to discuss their problems with the wall, including its cost and the possible effect on immigrant communities, such as Chicago's Little Village. "Hardworking immigrants have transformed 26th Street into the most vibrant shopping district outside of Michigan Avenue," said Huchting. "We fear that this and other thriving neighborhoods will suffer if the wall is built."

The employees of Emeryville, California–based firm Siegel & Strain Architects protested the border wall as part of a call to action on March 10.

The border wall has been arousing controversy among architects since Trump first proposed it while running for President. After he was elected, an AIA statement that architects were eager to work with the new administration—though it did not mention the wall—elicited angry responses from AIA members. Anger surged again February 24, when the government announced a presolicitation "for the design and build of several prototype wall structures in the vicinity of the U.S. border with Mexico." The Department of Homeland Security, according to the announcement, anticipates "procuring concrete wall structures, nominally 30 feet tall, that will meet requirements for aesthetics, anti-climbing, and resistance to tampering or damage." Full details would be included in an RFP, which, at press time, was expected to be released in March. (The timetable has been extended twice; DHS did not respond to e-mails seeking comment on the reason for the delays.) Initial proposals would be winnowed, with those on the short list asked to submit full proposals as early as May.

By mid-March, some 650 firms or individuals had registered on the government website as potential vendors. Most were engineering and construction companies. But there were also dozens of architecture firms.

Firms on the list have various motives for registering. Nicholas Gillock of Los Angeles–based Mertzel & Gillock Architects says, "We're not advocates of the wall; we're advocates of using this as a platform for discussion. We're looking into organizing a counter-competition as social commentary."

John Sanford, who runs a small firm in Tulsa, says, "I'm a supporter of the wall, but I'd like to see it benefit people on both sides." He believes that could happen by using the wall as a base for a high-speed train from San Diego to Houston, or as a way of researching new construction techniques. But he adds that the wall could negatively impact his firm's projects. "We have a lot of Mexican subs," he said. "We have a really good relationship with many of them. It's hard to find people who will work that hard."

Wyly Brown, a partner in the Norwell, Massachusetts, firm Leupold Brown Goldbach Architects, said, "I put my name on the list to stay informed. I am against the wall." Brown said that his firm is a subsidiary of a German company, "and we know what walls mean."

Brown said that, because he is on the list of potential vendors, he has received phone calls and e-mails from subcontractors interested in working with him. Many are women- and minority-owned firms, aware of government set-aside rules that generally require "primes" to work with qualifying "subs." Brown said he tells firms that contact him that he has no plans to actually build the wall. But he doesn't judge them. "There's a lot of money involved," he says. "It's hard to say no to that." ■

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CIRCLE 99

Chicago Architecture Biennial Preview

BY ANNA FIXSEN

CAB 2017 is codirected by Sharon Johnston and Mark Lee (left). Many projects will reimagine and reactivate the Chicago Cultural Center (above).

PHOTOGRAPHY: © ERIC STAUDENMAIER (LEFT); CHICAGO ARCHITECTURE BIENNIAL (RIGHT).

THE CHICAGO Architecture Biennial (CAB) may have been showered with critical acclaim following its 2015 debut, but as the exhibition's co-curator Sarah Herda pointed out, "You can't call it a biennial unless it happens twice."

Now CAB is back on for its sophomore run, beginning September 16. Last month, at a press briefing in New York, Herda, Chicago mayor Rahm Emanuel, and other Biennial organizers detailed exhibition programming and unveiled the list of more than 100 participating international architecture firms. "There is a major renaissance of cities in the world," said Emanuel. "I think it's essential to put Chicago and its history in architecture at the center of that discussion."

Architectural history will indeed take a role at this year's CAB, directed by Sharon Johnston and Mark Lee of the L.A. firm Johnston Marklee. The architects say that their exhibition, *Make New History,* will explore the legacies of the built environment as well as those of architectural images and materials. It will also expand upon projects, topics, and firms highlighted in the 2015 show, but underscore "more specific themes in their work," said Johnston.

Though projects will be shown across Chicago, the Biennial's nerve center will once again be the Chicago Cultural Center. Johnston and Lee are challenging teams to rethink the Beaux-Arts building with light architectural interventions.

Many projects will come with a Windy City twist: 16 teams will submit designs for the Chicago Tribune Tower, as in the famous 1922 competition. Another two-dozen studios will design projects that fit within Mies van der Rohe's iconic master plan for the Illinois Institute of Technology.

The participating firms include familiar faces from the 2015 edition, including SO-IL, Diébédo Francis Kéré, Bureau Spectacular, and Norman Kelly. But the show will also feature a host of newcomers, like Caruso St. John, whose Newport Street Gallery for Damien Hirst took home the 2016 RIBA Stirling Prize, and Basel-based firm Christ & Gantenbein, which recently completed an extension for the Swiss National Museum (RECORD, November 2016, page 84). The curators proudly pointed out that the lineup includes 56 female principals. The 2015 Biennial—with more than half a million visitors—has set a high bar. The Biennial, says Emanuel, makes Chicago a "center of gravity that we can draw intellectual energy from." ■

CIRCLE 308

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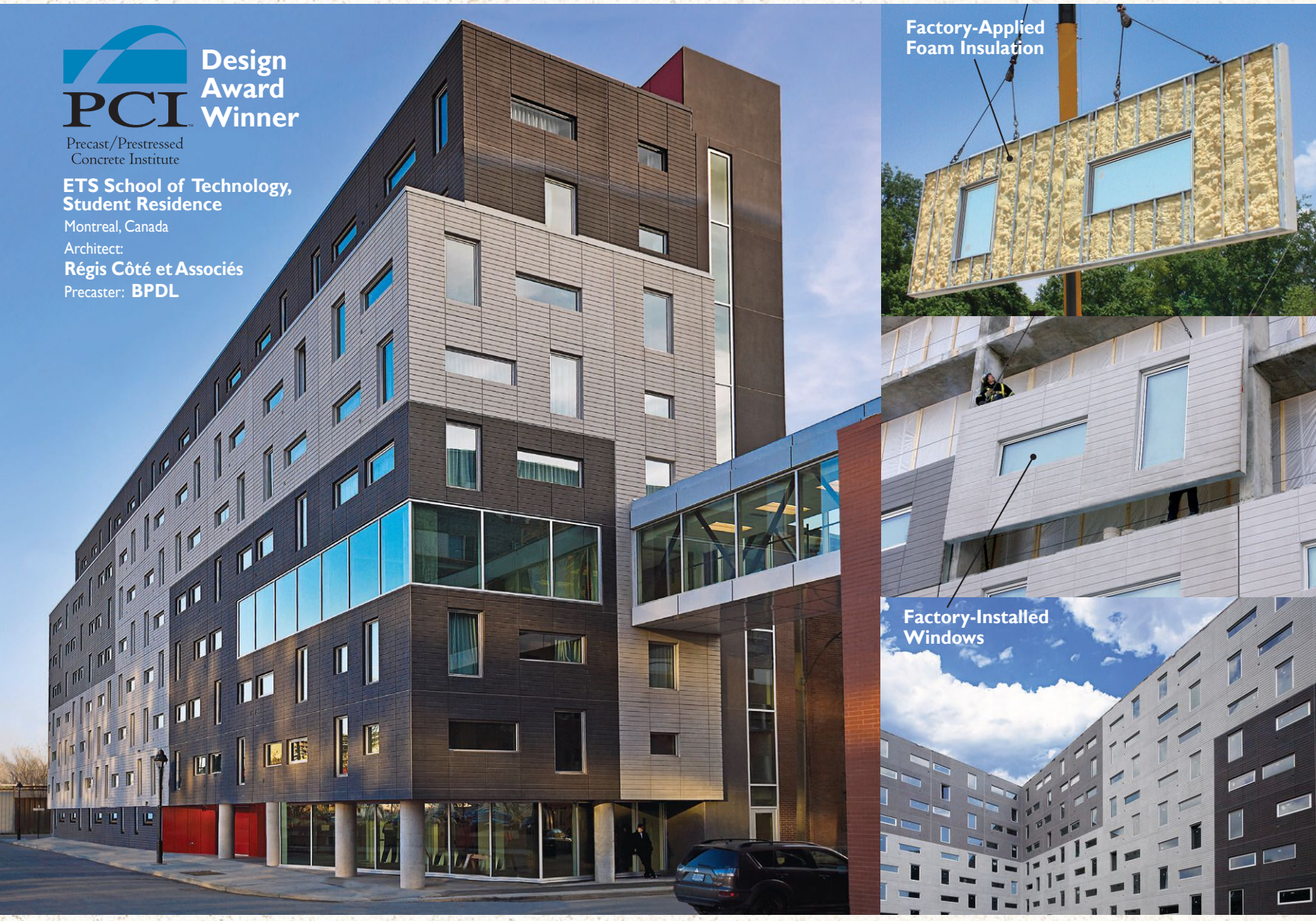

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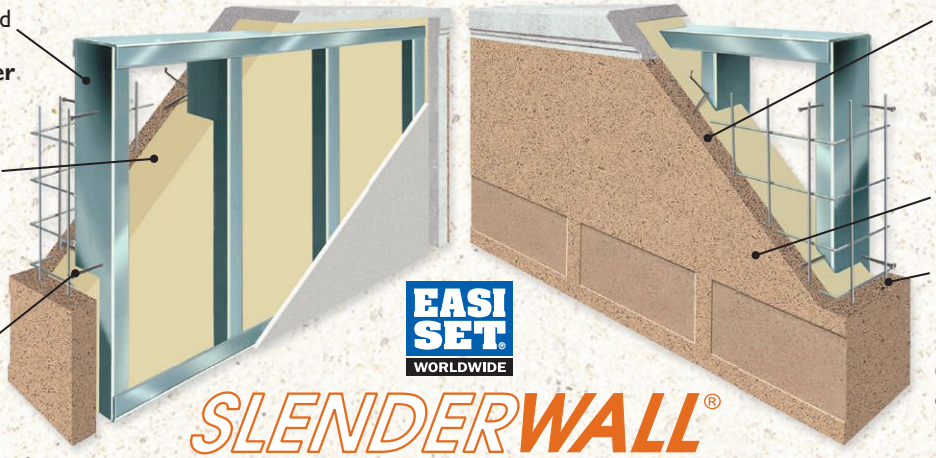

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CIRCLE 250

A Data-Driven Approach to Revitalizing the L.A. River

BY ANNA FIXSEN

Frank Gehry, along with partners Tensho Takemori and Anand Devarajan, and with landscape architect Laurie Olin (left), have been working behind the scenes on a comprehensive framework to revitalize all 51 miles of the Los Angeles River (above).

TO MOST, the Los Angeles River doesn't look like much. For the majority of its 51 miles, it winds through the metropolitan area in a concrete flood-control ditch—a setting better suited for chase scenes in films like *Grease* and *Terminator II* than, say, a picnic lunch. But its gritty appearance belies its potential to become one of America's great civic spaces. And, after years of complex—and contentious—revitalization proposals, things seem to be coming together.

The most publicized transformation strategy is being led by Frank Gehry and his team, who were commissioned in 2014 by the city-affiliated nonprofit River LA. More than two years into Phase I, a design has yet to be revealed. But behind the scenes, firm partners Tensho Takemori and Anand Devarajan, with the expertise of landscape firm OLIN and hydrological specialists at Geosyntec, have been in the midst of exhaustive data collection and analysis—an essential first step in getting a preliminary design off the ground. "Everybody's wondering what it's going to look like," says Devarajan. "But if you predetermine that, you are not letting information drive the solution."

As the L.A. River snakes southward down the California coast, it passes through 17 distinct municipalities, all with different priorities. Over the course of eight months, Takemori and Devarajan staged meetings in almost all of these communities, hearing from civic leaders and residents to identify what their needs were. The architects began to consider how revitalization efforts not only affect obvious issues, like flood control, ecology, and public space, but less tangible qualities, such as social equity and public health.

The Gehry team also needed to build on a large body of existing river research, including a 2007 City of Los Angeles–commissioned master plan, and Alternative 20, an 11-mile revitalization effort led by Mia Lehrer + Associates and others (news of Gehry's appointment drew chagrin from activists, who say his involvement undercuts decades of grassroots advocacy). Wanting to make the most of earlier work, the architects asked themselves, "How do we coalesce the data into a single conversation from which people can prioritize?" says Takemori.

Last summer the architects unveiled the LA River Index, a website detailing Takemori and Devarajan's findings so far. The Index identifies nine issues central to revitalization: flood-risk management, groundwater recharge, water quality, greenhouse gases, ecology and habitat, open space and parks, public health and social equity, transportation, and programming. Each category includes extensive explanations, charts, maps, and data sets.

How such information will translate into a design is yet to be determined. But the architects say that the final scheme will probably take the form of a kit of parts that can be tailored to specific stretches of the river.

Important strides are being made: last month, Los Angeles acquired a 42-acre riverside parcel that will be part of the Alternative 20 plan, an effort that is being pursued concurrently with Gehry Partners' larger river framework. Meanwhile, the Gehry team hopes to embark on Phase II of their plan by the end of the year, maybe even by summer, if funding permits. It's a meticulous process and a labor of love, but the architects are committed to doing it right.

Says Devarajan, "This is an opportunity for architecture and landscape design to make a difference where it really can." ■

noted

NYC Landmarks Interiors of Waldorf Astoria Hotel after Closure

Portions of Manhattan's grand Waldorf Astoria Hotel, including its public foyers and lobbies, the Grand Ballroom and balconies, and some decorative fixtures, were designated as New York City interior landmarks last month. The building will be under renovation for the next two to three years as it is converted into luxury condominiums. The hotel was purchased by Chinese insurance company Anbang in 2014; its last checkout date was March 1.

L.A. Rejects Contested Anti-Development Referendum

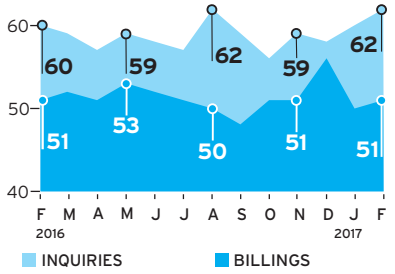
On March 7, Angelenos rejected a controversial measure aimed at slowing development and gentrification in the city. The referendum, known as "Measures S," would have placed a two-year moratorium on changes in city zoning to make way for certain developer-led projects. In spite of a highly publicized campaign, it lost by a 2–1 margin.

BIG Launches Engineering Branch

Bjarke Ingels Group (BIG) has established its own engineering wing. The department will be led by Duncan Horswill—the former COO of Søren Jensen Engineers and cofounder of the computational design group at Ramboll UK—who says he will aim at "breaking down the traditional barriers" between architecture and engineering.

I.M. Pei Celebrates 100th Birthday

I.M. Pei—one of the most lauded living Modernist architects—will celebrate his 100th birthday April 26. The Pritzker Prize–winning architect is a founder of Pei Cobb Freed & Partners and is known for projects including Boston's Hancock Tower and the Louvre pyramid in Paris.



ABI Back on Track in February

The AIA reports that its Architectural Billings Index (ABI) returned to positive territory in February, scoring 50.7, after a slight slip in January to 49.5 points. (Any score above 50 indicates an increase in billings.) The new projects inquiry index meanwhile scored 61.5 in February, up 1.5 points from the previous reading. AIA economist Kermit Baker says this indicates "stronger design activity as the year progresses."

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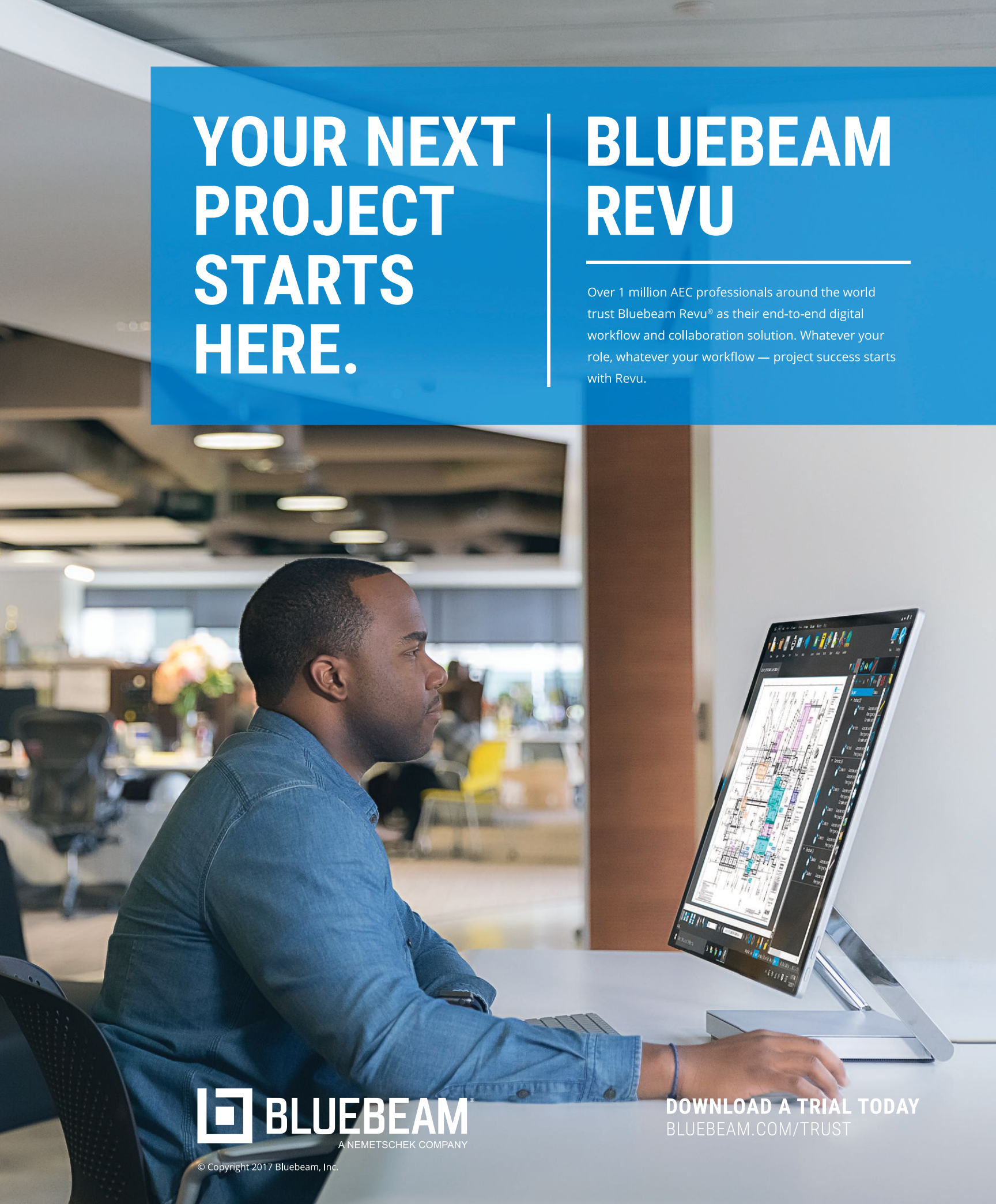
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A FAMILY COMPLEX SHIELDS ITSELF FROM A BUSY STREET WHILE OPENING UP TO INTERIOR COURTYARDS. **BY ADELE WEDER**

VANCOUVER IS a city of architectural extremes: thousands of pint-sized condominiums on the downtown peninsula and, across the water, enormous single-family houses. Architect D'Arcy Jones has forged a name for himself with the clever orchestration of small and mid-size houses. But his latest project, a spacious residence on the city's west side, offers a different solution: a kind of micro-village for an extended family.

Built for an art-collecting couple and their two teenage kids, the Yan Residence addresses a growing phenomenon of contemporary family living: how to incorporate secondary dwellings without sacrificing the inherent privacy of a single-family home. In this case, the clients wanted to include future accommodation for aging parents. In the end, Jones designed three autonomous living units on the one-acre lot while sequestering each from the noisy thoroughfare that fronts the property.

The complex reads like a collection of pristine white cubist structures, textured by stucco and white-stained cedar batten and defined by overhangs, cutaways, reveals, and a projecting chimney. The clients chose white as the dominant color—their favorite hue (even matching the cars in the driveway). And, from Jones's perspective, white walls inside and out were the perfect choice to contrast with the bright art within.

Configuring the two secondary suites, each with a complete kitchen, bath, bedroom, and living area, made for a Rubik's Cube–like challenge. The first is contained within the 6,000-square-foot main house but has a separate entrance path. The second, larger unit is a detached 1,500-square-foot residence at the northern edge of the lot, designed in the same language as the larger structure and with its own window pattern turned away from it.

The main house is designed for strategic opacity, with only minimal glazing adjacent to its deeply recessed front door. Walking up to it, visitors have no sense of the other dwellings. To avoid interior window-to-window sightlines, Jones conceived the home to be inward-looking, its living spaces arranged around glazed courtyards. Upon entering, highlights from the couple's art collection are visible

The public face of the inward-focused residence is a blind facade of textured white stucco (above). Living spaces are arranged around glazed courtyards (bottom, left) featuring highlights from the owners' art collection, including Douglas Coupland's *Self Portrait*, a stacked totem of the CMYK, RGB, SMPTE, and gray-scale color systems (below).

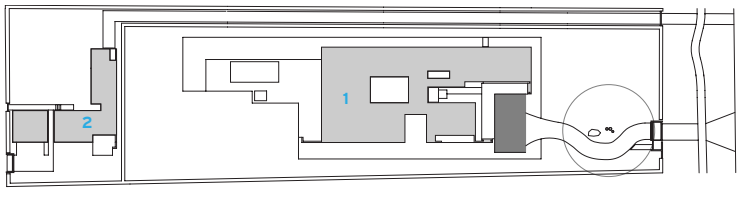
PHOTOGRAPHY: © EMA PETER

Generous glazing at the rear of the main house opens it up to a manicured lawn and pool (above). Elsewhere, slot windows offer controlled views, while a landscaped trench reads like a "moat" of small trees and plants such as swordferns, salal, and horsetail grass (left and top, left).

through the glass walls of the largest courtyard.

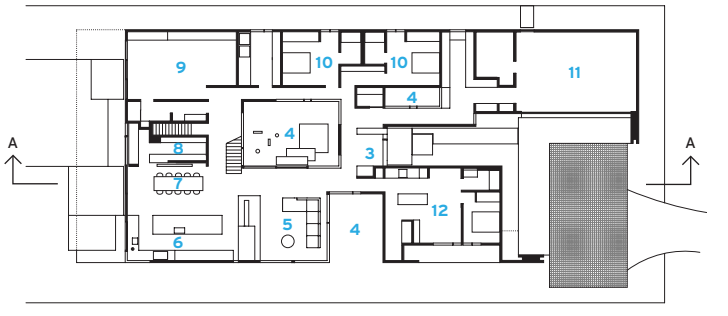
In every direction, there are glimpses of greenery: on the west wall, through a long slot window in the double-height kitchen; on the north, through a series of sliding glass doors; and, opposite the central courtyard, windows look onto 6- to 10-foot-high cedar hedges that conceal the long entrance path to the detached house at the back of the property. The interior space is flooded with daylight, punctuated by carefully controlled views to the outdoors that bear little trace of the other households.

Jones harnessed what he calls "the power of landscape architecture" to demarcate the three units while visually unifying the overall design. It also adds a psychological layer of distance from the city. "It's not about not liking your neighbors," says Jones. "It's about a sense of well-being and feeling safe." ■



SITE PLAN

0 50 FT.
15 M.



MAIN-FLOOR PLAN

0 20 FT.
6 M.

SECTION A - A

1 MAIN HOUSE
2 DETACHED HOUSE
3 MAIN ENTRANCE
4 COURTYARD
5 LIVING
6 KITCHEN
7 DINING
8 OFFICE
9 FAMILY ROOM
10 BEDROOM
11 GARAGE
12 SECONDARY SUITE

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Modern Masonry Using Pre-blended Mortar

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Dramatic, Durable Interiors Using Sintered Stone

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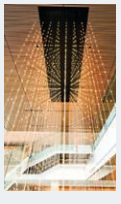

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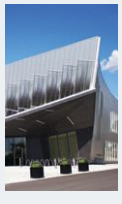

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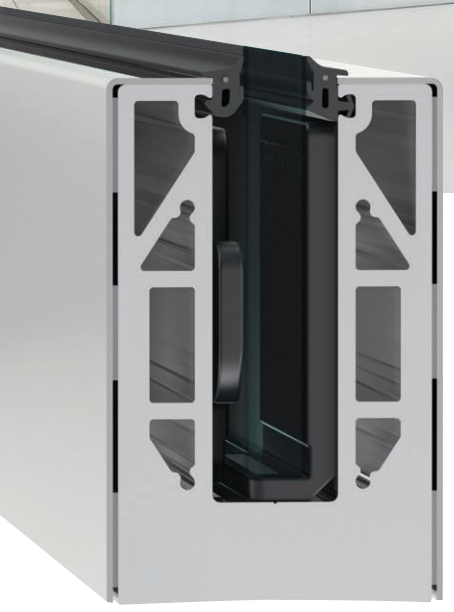

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perspective **interiors**

DAVID JAMESON DESIGNS AN AUSTRALIAN SKIN-CARE BRAND'S FIRST STORE IN THE NATION'S CAPITAL. **BY BRAULIO AGNESE**

WHEN THE 3-decade-old skin-care brand Aesop opens a standalone store, it frequently taps a local firm to design the space. As a result, no two shops are alike, yet all reflect the Australian brand's ethos. "They want the DNA of each project to emerge" from the specific local condition, says Washington, D.C., architect David Jameson, whose namesake firm designed Aesop's first store in the nation's capital.

For Jameson, the context was a new 600-square-foot shell at the base of the Shay, a ground-up residential development in the city's Northwest quadrant that opened in late 2015, filling two long-empty urban lots. As a result, the architect had more design breadth than usual: "We were able to control everything except the concrete floor and deck," says Jameson. Taking inspiration from the site at the east end of U Street, a corridor with a deep musical history, once known as "Black Broadway," the design team envisioned the space as an abstraction of that rich cultural past. Two bands of brass shelving line the walls; each band contains three levels. The 180-shelf units, some faceted and each about the size of a shoebox, hold the products but are not packed to the hilt. Instead, black tubes, bottles, and boxes (packaging is uniform across all product types) are placed in a variety of quantities and arrangements. Combined with the rhythmic, linear pattern of the shelving and creamy handmade paper that lines each shelf, the overall effect is of notes on a music staff.

The space narrows in width from front to back, where the sales counter sits, creating an increasingly intimate experience as one explores the product selection—a necessity, given the complete lack of signage and Aesop's fondness for small packaging fonts. At the center is a large communal sink for testing products (one of the few programmatic requirements), nestled in a rectangular block of blackened-oak cabinetry that Jameson calls the store's "Donald Judd moment." Indeed, everything in the space, including the empty walls, which are covered in a tan, hand-rubbed plaster, contributes, like the sculptor's work, to a sense of rich materiality and craft, in keeping with both Aesop's brand and the general design aesthetic of Jameson's firm, which primarily works on residential projects.

A communal sink—an Aesop standard—set into a block of blackened-oak cabinetry allows visitors to test products. Two rows of linear brass shelves provide a glowing background for the skin-care brand's minimal product packaging (above). The 600-square-foot Washington, D.C., store (below) narrows toward the rear for an intimate feel.

But just because the architects had latitude does not mean Aesop was hands-off. "They wanted samples of everything," Jameson notes. Yet there was little pushback on the design, he says (except when it occasionally impinged on company requirements), adding enthusiastically that "whenever there was an opportunity to go even more minimal, they would spend the money." (Jameson won't disclose the construction budget, except to note that it was "significantly" more per square foot than the average District retail project.) "At every turn," says Jameson, "I found them wanting to do the next, better thing." ■

Braulio Agnese is a freelance writer and editor based in Washington, D.C.

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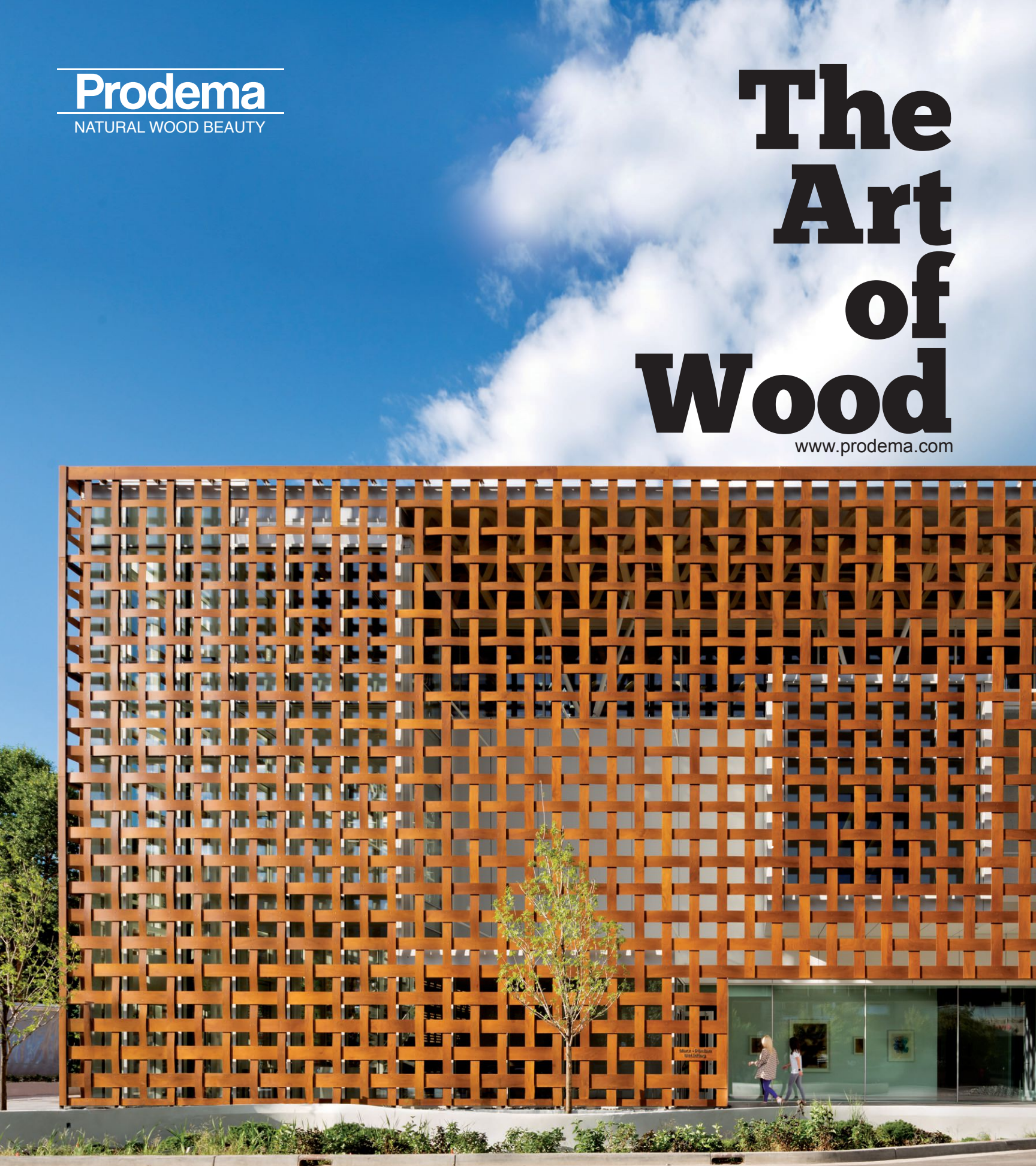

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Going It Alone

Zaha Hadid Architects' leaders assess the firm's prospects one year after the founder's death.

BY CHRISTOPHER TURNER

DAME ZAHA HADID died a year ago, age 65, on March 31 in Miami. The anniversary of her death was marked by a symposium at Princeton University at which Rem Koolhaas, Hadid's teacher, was scheduled to speak, alongside Patrik Schumacher, her longtime collaborator, and many of her students. "It was a traumatic event," says Zaha Hadid Architects' (ZHA) director Gianluca Racana, who has been with the firm 17 years and was instrumental in the design of the MAXXI Museum in Rome. "But in a weird way, it's been a catalyst for the work of the office and the relationships between the people here. In some ways, it's similar to what happened after the World Trade Center attack in New York; everyone says that, afterwards, those living in the city felt a greater sense of belonging, togetherness, and identity . . . We feel that, and the pressure to keep up the quality of the work of Zaha and this office moving forward."

It is rare for a practice to outlive its eponymous founder—Le Corbusier, Mies van der Rohe, Oscar Niemeyer, and Eero Saarinen's firms are all extinct. However, with Schumacher at the helm, ZHA hopes to prove the exception. "There was some kind of succession plan, in terms of my position," Schumacher explains. "We had done so much together over the last decades. When I started [in 1988] there were four people here, and now we have 400—we achieved all that together." Schumacher was the brains behind the practice's investment in computational processes, which enabled Hadid's deconstructionist schemes to finally be realized in three dimensions, and he worked on her first completed building, the Vitra Fire Station (1992). He coined the term "parametricism" to describe the resulting fluid, sculptural forms, a theory elaborated in a series of abstruse books and sometimes referred to as "Patrik-metricism" by his boss.

I am meeting with Schumacher in a long and narrow glass-walled room, with views out over the London skyline, in the firm's offices above the Zaha Hadid Design Gallery on Goswell Road. He is joined by two of the four members of the board of directors, Racana and CEO Mouzhan Majidi. It is tempting to imagine that both are present to keep their principal on message. Over the past year, Schumacher has generated columns of controversy with his free-market libertarian provocations. In 2016, at the Venice Biennale, he criticized the "vacuous, quasi-socialist consensus" that had taken over architecture. And at the World Architecture Festival in Berlin last November his statements about "free-riding" tenants living in social housing were reported in the *Guardian* and landed Schumacher on the front page of London's *Evening Standard*. (The headline: "Storm as Dame Zaha's Successor Calls for Affordable Housing to be Scrapped.") Protestors camped outside the firm's Clerkenwell office chanting, "Stop the fascist!" and even chased Schumacher down the street.

The Mathematics Gallery at the Science Museum in London evokes airflow around a plane.

Other members of the practice distanced themselves from Schumacher's "urban policy pronouncements" in a statement that hinted at disunity, even mutiny. "I bloodied my nose, and I've learned my lessons," Schumacher sighs, before adding, "But also my views aren't as outrageous as they were made out to be." Today, the senior figures I meet are very keen to emphasize the "collegial" atmosphere of the firm, "the shared methodology and vision," where ideas "flow democratically and not hierarchically." Majidi joined two years ago, after a long stint at Foster + Partners: "This is a lot more like a family," he says. "At this scale, it feels a lot more intimate and not so corporate." Even so, the practice has offices in London, New York, Beijing, Hong Kong, Dubai, and Mexico City.

When Hadid died, there were 36 projects on the books, 24 of them already on-site. The last year has seen the completion of a mollusk-like maritime terminal in Salerno, Italy; the crowning of a port building in Antwerp (RECORD, November 2016, page 79), with a dazzling form reminiscent of the hull of a ship; the fitting of the Mathematics Gallery in the Science Museum with a tensile structure intended to evoke the airflow around an airplane; and a new walnut furniture collection, Interstellar, for David Gill Gallery, both in London. This April, ZHA will open a train station in Naples, and their Manhattan midrise at West 28th Street, next to the High Line, is just topping out.

The firm has a special team devoted to research and competitions, many of whom are Hadid's and Schumacher's former students from the Architectural Association. They develop algorithms and tools, and explore new materials and ideas in installations and pavilions. In the firm's gallery, the *Meta-Utopia* exhibition showcases new robotic fabrication

PHOTOGRAPHY: © LUKE HAYES

The first post-Zaha competition win is for an all-timber soccer stadium in the UK (above). The firm has designed a tower for Melbourne (right).

techniques, a theme also explored in the pavilion ZHA is building for Samsung at this year's Salone del Mobile in Milan. These innovative principles and forms are expanded in the studio's competition entries, for which they often only have a few weeks to submit. "We don't approach each project as a new research," explains Racana. "We like to see a continuity in our work. The value of this office is the capacity to think outside the box and apply innovative design processes at every scale and typology."

The firm, well known for its distinctive cultural projects, is increasingly working for corporate clients, and one of the schemes about to break ground is a headquarters for Sberbank in Moscow. This will feature a mega-atrium, influenced by the neo-futuristic hotel designs of the Atlanta architect John Portman —a large, dramatic central space with open platforms, under a big shell roof. The trio show me renderings of other projects that are still in the pipeline, which include a huge bridge over the Tamsui River in Taipei, billed as "the world's largest asymmetric cable-stayed bridge with a single tower"; two tapering skyscrapers with expressive facades in Australia; a mixed-use development with staggered volumes that allow for multiple balconies in Monterrey, Mexico; and the starfish-shaped Beijing airport, which will be the largest passenger terminal in the world and is the practice's most ambitious project to date.

"We seem to still be credible as candidates

for major cultural and other large projects, airports and so on," Schumacher says. The first post-Zaha competition win was for a 10,000-seat eco-stadium for the Forest Green Rovers (who play in the fifth tier of English soccer), to be built entirely out of timber. They are also in the running for several other projects, including a concert hall in Munich, the National Holocaust Memorial in London (for which they've partnered with artist Anish Kapoor), and the National War Museum in New Delhi, a city from which Schumacher has just returned. Not all entries have been successful. Schumacher is still smarting after losing, to Herzog and de Meuron, the commission to extend the New National Gallery in Berlin: it was his love of Mies that enticed him into architecture. Showing me two thick portfolio volumes, he tells me that ZHA is planning an exhibition in its own gallery of these "hundreds of unpublished and unseen projects."

There was an article in February's issue of *Building Design* that reported profits at the practice were significantly down, due to falling workloads in Asia and the Middle East. Majidi points out that these figures referred to accounts filed for the financial year that ended just after Hadid's death. "I think, in terms of workflow and numbers," he says, "this year we've done more work in terms of revenue than the previous one; it's probably been one of our best years." As with every big firm, the challenge is to refresh the order book. "We have to explore the world market in all its corners," Schumacher adds. "There's always an economic downturn, and we have to be able to sustain the firm. Australia and Russia are two new lucrative areas for us." He looks out the window, full of zeal for a parametric future. "In London, we'd like to have things like the Leadenhall Tower or the Shard. We will have things like this in London, Berlin, New York, and Paris. That's the ambition . . . and that's what Zaha was also very keen on." ■

Christopher Turner is the director of the London Design Biennale 2018 at Somerset House.

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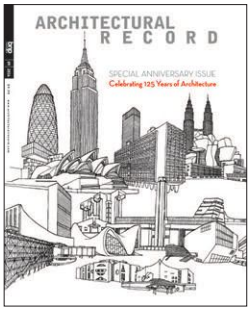

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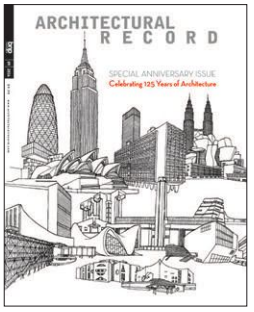

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CIRCLE 248

Architects' Original Sin

To atone for the built environment's impact on the climate, the profession must demonstrate leadership.

BY LANCE HOSEY, FAIA

LAST FALL, Pope Francis declared that "to commit a crime against the natural world is a sin against ourselves and a sin against God." In late January, the conservative media mogul and evangelical Christian Joseph Farah put it differently: "Sin, not carbon, causes climate change."

Either way, if climate change is a sin, much of the burden belongs to architects.

Conventional wisdom has it that transportation and industry are responsible for the lion's share of greenhouse gases. For example, in February a *Boston Globe* editorial identified fuel-efficiency standards for vehicles as the best strategy for New England to compensate for the expected void in federal leadership on climate change under the Trump administration. In actuality, however, transportation accounts for only a third of annual CO_2 emissions in the U.S., with industry comprising another fifth, according to the U.S. Energy Information Administration. The building sector alone represents nearly half the country's energy consumption and emissions and three-quarters of electricity use. By far the biggest challenges with climate change are in the built environment.

How much of the built environment is touched by architects is unclear, since estimates range from 2 to 100 percent, depending on whom you ask and who is considered an "architect"—only licensed practitioners or anyone who designs buildings. But our role is both direct and indirect. "We either design it or we highly influence it," Ed Mazria tells me. "What we do matters greatly." In 2002, Mazria founded Architecture 2030, a nonprofit whose mission is "to rapidly transform the built environment from the major contributor of greenhouse gas [GHG] emissions to a central part of the solution to the climate and energy crisis." Fifteen years later, how are we doing in that transition?

For this article, ARCHITECTURAL RECORD created a survey on attitudes toward climate change and energy efficiency, to which 547 architects and design professionals from 43 states responded. The share of respondents who say they believe that human activity is changing the climate is 94 percent—24 points higher than the general public, according to recent national polls by researchers at Yale and George Mason universities. (Interestingly, 84 percent of architects responding to RECORD's survey say there is scientific consensus on climate change, so it seems that 10 percent of believers are going on faith alone.) Nearly 85 percent say that combating climate change is either "essential" (55 percent) or "very urgent" (30 percent) for architects, yet only 10 percent say we are doing enough, and 28 percent feel their own organizations are. Two-thirds of practicing architects feel that the profession is partly to blame for climate change, and 58 percent feel some degree of personal guilt about it.

With his 1921 proposal for a crystalline skyscraper on Friedrichstrasse in Berlin, Mies van der Rohe invented a new typology—the now-pervasive all-glass high-rise.

As leaders in shaping the built environment, architects arguably bear the greatest responsibility for the impacts of climate change—but we also have the greatest opportunity to mitigate them. What can we architects do to absolve ourselves? Here are five steps we can take on the road to redemption.

Push for stronger regulation

The survey asked respondents to rank 11 actions "to transform the building sector to reach carbon neutrality," and seven of their eight top choices relate to regulation. Yet while 90 percent say that climate science should have more influence on public policy, 86 percent feel that combating climate change will become more challenging over the next four years. If the Federal government won't lead the way, cities and states can, and many are doing so. New York and Washington, D.C., have adopted very advanced building codes, for example. "In large cities, new buildings and major renovations are coming in at half the consumption of the average building," says Mazria. At the state level, California's electricity use per capita nearly flattened in the three decades following the 1978 passage of the efficiency standard Title 24, while it rose 50 percent in the rest of the U.S., according to calculations by Berkeley physicist Art Rosenfeld. Now the state has mandated net zero energy targets for all residential buildings by 2020 and all commercial buildings by 2030.

Codes matter, and architects can do more to change them. "They have to play a larger role," insists Maureen Guttman, president of the Building Codes Assistance Project. "It's easy for clients to override you by saying that if it's not required, they're not going to do it." Mazria says architects already are having a big impact. "They're doing a hell of a job in pushing for better regulation."

Show more leadership

But are they doing a hell of a job in their own projects? Since 2010, the American Institute of Architects (AIA) has tracked the progress of hundreds of firms who have signed the 2030 Commitment, its framework for reaching carbon neutrality by that year. The target was a 60 percent energy reduction from a baseline standard until 2015, when it shifted to 70 percent, and in 2020 it will jump to 80 percent. The annual progress report for 2015 shows that less than 4 percent of the gross square footage designed by 2030 firms met the target for that year. For six years in a row, the average reduction has hovered between 35 percent and 38 percent—about half the current target and about average for all LEED-certified buildings, according to the U.S. Green Building Council. And this is just from the 152 firms who actually submitted data to the AIA, so even the leaders are lagging.

What will it take to accelerate performance? "Getting designers to give a damn," insists Greg Mella, director of sustainable design for SmithGroupJJR. "Designers still see this as a constraint instead of an opportunity." Mazria believes the new political climate is motivating more architects. "The new administration has mobilized the profession. People have new passion around these issues. We're seeing an urgency to act now."

Offer better training

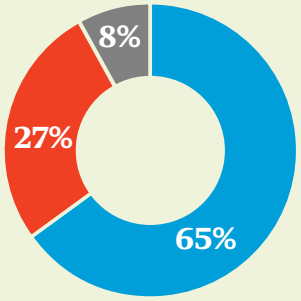
When asked to assess architects' general state of knowledge about energy-efficient design tech-

IMAGE: © 2017 ARTISTS RIGHTS SOCIETY (ARS), NEW YORK/VG BILD-KUNST, BONN

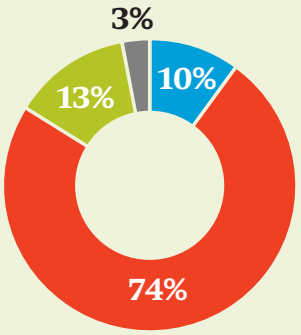
Climate Quiz

Over two weeks this winter, Record surveyed readers online regarding their attitudes toward climate change. Almost 550 architects and design professionals responded.

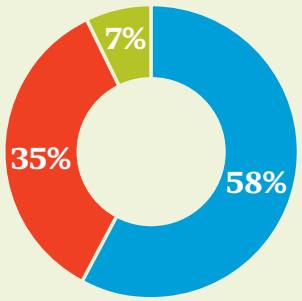
Are architects and designers at least partly to blame for climate change?



Are architects and designers doing enough to combat climate change?



As a design professional, do you feel any degree of guilt for the impact of buildings on climate change?



YES NO I AM NOT SURE I HAVE NO OPINION

niques, 52 percent of survey respondents call it "modest." Thirty-eight percent call it "good" or "excellent," and 71 percent label their own knowledge with those terms. Yet while 98 percent claim they understand what climate change is, fewer than half correctly identify its causes. Only 42 percent know that the building sector emits more GHGs than industry or transportation does, and a mere 15 percent know that buildings account for nearly half of emissions. In fact, only 21 percent of people who believe their knowledge is "excellent" answered this correctly. Architects appear to overestimate their own comprehension of the subject.

For example, according to the survey results, architects believe that the No. 1 obstacle to combating climate change is cost. Yet for more than a decade, numerous studies, including a 2007 report by the construction consulting firm Davis Langdon, have demonstrated that green building need not cost more, and the National Renewable Energy Laboratory calculates that adopting current best practices can achieve up to 60 percent reduction in energy without any additional expense. But the perception that higher performance means higher costs is a myth that dies hard.

How can architects wise up? Survey respondents highlight the need for better training in the schools, but this defers responsibility to the next generation of architects. I asked two dozen green building experts for suggestions, and their consensus was that architects should be getting better on-the-job training through their firms and through continuing-education requirements as part of basic practice. Nevertheless, in 2012, the AIA "sunsetted" the sustainable-design requirements in members' continuing education, because, it announced, "sustainable-design practices have become a mainstream design intention." But intention and outcome are different things, and the evidence suggests that more education is sorely needed.

Make renewables more available

"We've always known that progress would happen inconsistently," says Heather Holdridge, sustainability director at Lake|Flato Architects. "It's more of a kinking curve." In market theory, a "kinked demand curve" refers to competitors' decreasing their prices to match each other and avoid losing customers, and we're seeing this in the solar energy market now. Photovoltaics (PVs) now cost 100 times less than they did in the late '70s, and the price continues to drop. "Swanson's Law," named for Richard Swanson, the founder of PV company SunPower, shows that as the manufactured volume doubles, the cost drops 20 percent. Efficiency also is improving. In the three-year period from 2012 to 2015, the output of solar panels increased 10 percent, while the cost per watt decreased 35 percent. The lesson for architects: specify renewables whenever possible. The greater the demand, the lower the cost.

Still, the experts I interviewed list renewables as the last priority in improving energy performance. Imagine if all power production were clean and renewable. Would this take the pressure off architects to make better buildings? "That question worries me a lot," Holdridge confesses.

Change our values

In *Fire and Memory: On Architecture and Energy*, Luis Fernández-Galiano explains that energy was an essential part of architectural theory before the past century, going all the way back to Vitruvius. Modern architecture, however, shifted the values of design by imposing a "dictatorship of the eye" over the skin. Nothing makes this more evident than architects' infatuation with glass. Le Corbusier called it a "miraculous" material, "the fundamental material of modern architecture," but it was Mies van der Rohe who truly anointed it. In his 1921 Friedrichstrasse Skyscraper proposal, he singlehandedly invented the now-pervasive all-glass high-rise. If climate change is a sin, Mies was architecture's Virgil, shepherding us all into the underworld.

"Sealed, glazed facades, now so ubiquitous, lead to higher heating and cooling loads as well as glare and thermal comfort challenges," explains Andrea Love, director of building science at Payette. Yes, glass allows for more daylight and expansive views, but there's a point of diminishing returns. Love's analysis for a science-center project found that a typical double-paned glass facade offered no additional benefits for daylight beyond 25 percent glazing, and thermal discomfort started at 30 percent glazing. The more glass, the more glare, unless the envelope design compensates for this with effective (and potentially expensive) sun shading. "We can compose facades that will perform well and be beautiful with only 30 percent glazing," insists Love. "It's time to end our collective passion for all-glass buildings. As designers we should embrace the challenge of creating a new image for what it means to be modern."

If the Pope is right, our salvation may depend on it. ■

Architect Lance Hosey leads the design excellence initiatives at Harley Ellis Devereaux. His latest book is The Shape of Green: Aesthetics, Ecology, and Design *(2012).*

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CIRCLE 35

The Autonomobile and the City

Urban mobility in the future can liberate the street and transform it into a truly shared public place.

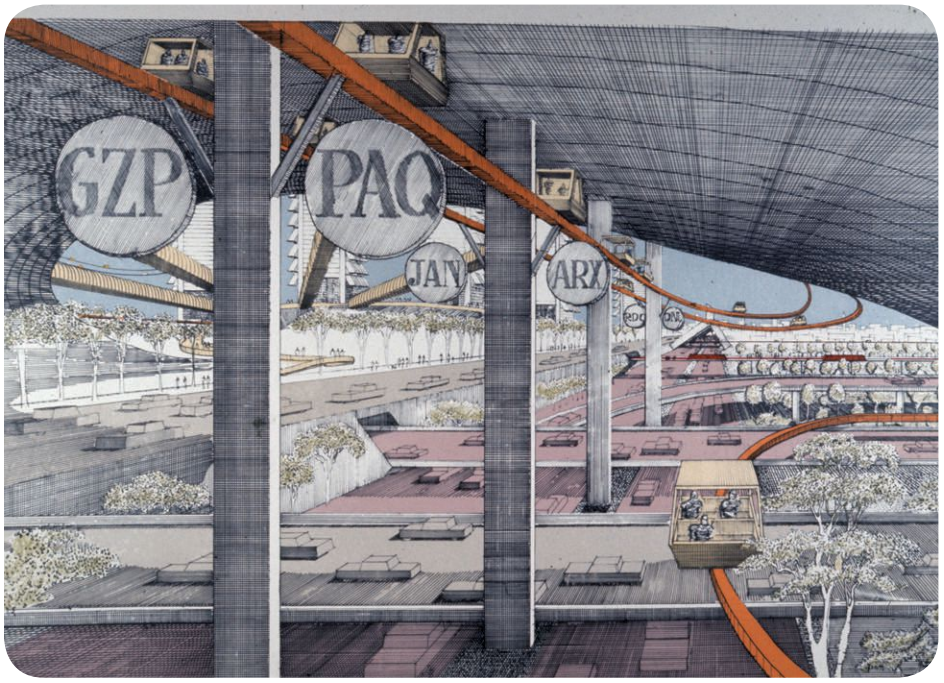
BY MICHAEL SORKIN

LIKE MANY New Yorkers, I often use Via, a ride-sharing app which—for five bucks—will transport you between any two points in Manhattan below 125th Street. They've got their algorithms in a row and, in general, the system works very smoothly. But it's clear, when the car pulls up, that something's slightly off. The trip is almost completely automated, and computers organize the pickup, drop-off, journey, and payment: the anomaly is the driver. Watching the route unfold—following the instructions of that anodyne, robotic, female voice from the GPS—I catch the sad whiff of impending obsolescence. The self-driving car is about to arrive.

The implications are profound, and not just for the employment prospects of the immigrants and "shared economy" operatives who drive the vehicles. Something radical looms, both for the fundamental nature of our mobility and for the form of the cities in which we circulate. Just as earlier technological innovations, like streetcar lines, railways, and horseless carriages, had transformative effects on urban morphology and life (exponential growth, suburbanization, corridorization, and other dramatic physical and social changes), so the advent of the autonomous vehicle—*autonomobiles*—will transform our cities decisively.

In the U.S., we've long relied on the radical inefficiency of private cars or on rail and bus trunk lines that are only economical in conditions of high density, and which often produce the classic "last mile" conundrum. Public transport is not one of America's glories: despite many decades of argument for transit-oriented development and other densification policies, close to 90 percent of daily trips are by car, and our sprawling cities are its natural habitat and spawn.

As the modal mix rapidly transformed in the early 20th century, much creativity—and loopiness—was devoted to imagining cities reshaped by this technological maelstrom of planes, trains, and automobiles. These visions ranged from the extreme lamination of the vertical metropolis with its multiple modes stacked in space: subways, cars, el trains, pedestrians, auto-gyros, and airplanes shish-kebobbed together by elevators; the fantasy of the linear city—an endless band of settlement along a rail line; the "people mover"—a desperately constrained system that attempted to hybridize the car and the railway but which could never rise above the tyranny of its fixed routes or crude technology; the car-enabled edge city that has so complicated the historically centrifugal relations between urban centers and peripheries. What all have in common is the idea of modal separation, systems of isolation in which the least powerful yields to the most: pedestrians give way to bikes, bikes to cars, cars to trolleys, trolleys to trains, etc.



Paul Rudolph's 1967 proposal for the Lower Manhattan Expressway showed layers of highways and "people movers" woven through stretches of buildings.

Autonomobiles could present a truly new model of on-demand, point-to-point mobility. Indeed, new shared, responsive systems have already had major impacts on urban patterns and habits. I've been working on planning projects for the South Side of Chicago for decades, and the transformations brought about by the arrival of Uber and Lyft in many of its relatively low-density, transit-poor neighborhoods is startling: sparsity becomes practical. My survey is not scientific, but I'm impressed, when using ride-share services there, by how many fellow passengers are on simple errands of moderate distance, otherwise impossible without a personal vehicle. This surely suggests capacious possibilities for urban transformation—new mixes of use, local centers, flexible access to available housing, and networks of sociability that are otherwise thwarted by distance, danger, and inclemency.

Autonomobility will have perhaps its greatest formal impact in altering the most critical matrix of public urbanity: the street. In New York, our streets are both troubled and changing. The widespread growth of cycling, an increase in tree cover, and various managerial efforts to ease traffic via modal mixing have resulted in an even more horizontally laminated streetscape that retains and reinforces modal isolation (sidewalk, bike lane, parking lane, bus lane, traffic lane, median, repeat . . .). We haven't had the courage of more radical mixing tactics like the *woonerf*, or shared street, in which all modes coexist in one minimally regulated space. And we haven't even begun to look at what the recapture of the street might look like if it were considered from scratch, with a radically reformed mix in mind—one in which individually owned cars headed for urban extinction.

One immediate effect could be the liberation of well over a third of street area from use as vehicular storage space. If small-scale, mobile passenger and logistics "particles" were deployed around the clock and on demand, a radical reduction of the number of actual vehicles in service would occur (an MIT

IMAGE: © LIBRARY OF CONGRESS

study of Singapore suggests the reduction could be at least two-thirds) and with it the liberation—and lubrication—of an enormous portion of urban streets. A variety of robotic and sensor technologies would also allow the efficient utilization of curb space for the transfer of both goods and people from the street to buildings or sidewalks. Indeed, the defeat of the hydra of storage parking and delivery double-parking would have a cascade of beneficial impacts, from eased mobility to reduced pollution and accident reduction to the most important prospect of all: the capture of this public space for more authentically public uses.

In New York City, the street could become a true public service conduit. Traffic would move at a rational pace and bikes could safely join the mix. Sidewalks would be augmented with new uses, including plantings and bioswales, recreational areas, small facilities, and—most crucially and transformatively in New York and other cities that don't have service alleys—could become the site of operations for managing our solid waste. Replacing our Alpine heaps of plastic sacks of rubbish, a fascinating new architecture of collection, recycling, redistribution, and remediation might arise, anticipating the day when the very idea of waste is relegated to history's own dustbin. Ultimately, this freeing and reappropriation of the street can be part of a truly localist metabolics in which our air, water, climate, energy, mobility, education, sociability, and nutrition become the central focus of the space we most urgently share.

The horizontal re-lamination of city streets is likely to be accompanied before long by a vertical one as well. Given the imminence of ubiquitous drone movements—as well as the soon-to-appear flying Ubers (the company has already branded its vertical-lift ride-sharing operation "Uber Elevate")—the space above the city is also sure to be reconfigured. Although the physics (and acoustics) of flying cars will seriously limit their point-to-point capacity at first, NASA and others are already deep into the study of the laminar systems and "rules of the road" to allow large numbers of unmanned aircraft systems (UAS) to operate above and in cities, bringing consumption's necessities from Amazon and GrubHub. A variety of concepts—including sky-lanes, sky-corridors, and sky-tubes—renew that early fantasy of the laminar city that includes flying vehicles, although most seem to be based on the conventional geometry and parameters of deference that rule roads.

Such revolutionary technology can have fundamental impacts on the form of both current and coming cities. To keep it friendly, however, will demand fighting the growing dominance of the "smart city" mind-set and its uncritical accumulations of "big data" to improve efficiency and control, without much deep thinking about noncorporate forms of desire. This must include the defense of many of our traditional gathering places—our squares, plazas, parks, and sidewalks. The reasons for mobility are not merely logistical. We move to live, to experience the other, to engage the pleasures of place, to collaborate, to enjoy happy accidents of encounter, and to enlarge the space of the political, which demands the verifying integrity of the face-to-face. New mobility systems, however, risk undermining urbanity in favor of a distributive entropy that arrives under the false flag of convenience. Mobility may become more flexible, but it might also become far less accessible (Uber Elevate won't be cheap), a privilege rather than a right.

This surge of technology could simply yield three-dimensional traffic jams, and it's urgent that the transition to these new means be finessed with art and determination. Simply adding a new class of vehicles will have the same effect as adding more miles of highway: more traffic. For an autonomobile system to truly fulfill its promise demands radical subtraction. Fewer vehicles and less pavement will mark the truly sustainable cities we might have if we're authentically dedicated to sharing them equitably and efficiently. ■

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CIRCLE 229

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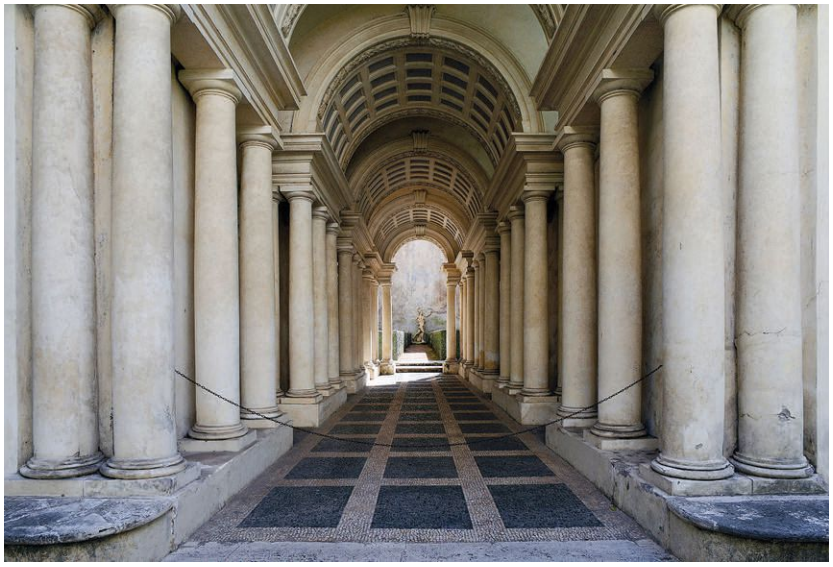
The Architectural Experience

In her new book, *Welcome to Your World: How the Built Environment Shapes Our Lives,* **Sarah Williams Goldhagen** delves into cognitive neuroscience and psychology to explain how we respond to buildings, spaces, and landscapes.

THE STORY of our relationship to our surroundings is revelatory, rich, multilayered, and, owing to the changing rhythms of the day and the operations of human memory, temporally complex. Experiencing the built environment involves more than how we process the swirl of sensory cues and impressions at the moment that we apprehend them. It also involves the prior knowledge we use to interpret these cognitions, as well as the way that we subsequently store them as memories, since, although what we think and experience usually seems wholly independent from the particularity of the place, when we remember such events, we unfailingly access something about the environments in which they took place. So we need to understand some fundamentals about the complex architecture of cognition—how people initially process sensory and mental impressions, as well as how we recall them. Through these fundamentals, we come to appreciate how pervasively the built environment permeates and shapes human experience.

A new account of cognition is emerging from the combined fruits of many research fields. At its core is knowledge derived from two powerful new scientific disciplines, cognitive neuroscience and cognitive neuropsychology, both of which have benefited from the spate of technological innovations that allow us to study the human brain and its functions with unprecedented insight and precision. Knowledge from these sciences is cross-pollinating with research in myriad fields, including environmental, social, and ecological psychology; artificial intelligence; behavioral economics; cognitive linguistics; and neuroaesthetics.



In the design of a gallery (1653) off the courtyard of the Palazzo Spada in Rome, Francesco Borromini used forced perspective to deceive the eye into thinking it was much longer than 30 feet.

This still-evolving account of cognition already has begun to fundamentally transform the common understanding of our experience—that unified impression we take away from those moments of what we see, hear, and smell, as well as what we think, touch, feel, and do. Experience is grounded in our sensory perceptions and in our internal thoughts, which together govern how we make sense of the information that comes to us from being in the world. And when something happens in the world or in our minds, that "something" is always *situated*—in our bodies, in a given time, and in place.

We need to recognize three precepts to properly explore the nature of cognition and its role in built environmental experience. First: what our minds think is largely shaped and profoundly influenced by the human body. Second: this, along with the fact that our bodies are shaped by the environments in which we live and have evolved, suggests that much of our internal cognitive life takes place outside language and below the level of our conscious awareness. Third: these factors transform our understanding of how humans live in the world by making us less the sovereign agents over our experiences that we often believe ourselves to be. We are thoroughly environmentally embedded beings.

The body is not merely some passive receptacle for sensations from the environment, which the mind then interprets in a somewhat orderly fashion. Instead, our minds and bodies—constantly, and at many levels—engage in active and interactive, conscious and nonconscious processing of our internal and external environments. The term *nonconscious* as we use it here, then, does not mean "not verbalizable"; it simply means "not in words, thought or spoken." Nonconscious cognitions about the built environment incorporate visual impressions in combination with impressions from other sensory faculties—such as cold feet, a breezy room, a knobbily textured rug—and fleetingly perceived patterns—a geometric figure, voids playing off solids. They also include the full battery of emotions and feelings—the comfort of a small window nook that embraces us. And they include patterns of associations, called schemas, which we mentally construct through our experience of growing and living in our bodies in the world. All of these nonlinguistic cognitions come to us nonconsciously, at least at first, transpiring beneath that ongoing verbal monologue inside our heads.

Perception is intersensory, and besides well-known sensory impressions, such as vision, touch, hearing, and smell, are less familiar ones including thermoception, which relates to the discernment of temperature and the sensory response to it, imagined or real. The architect Alvar Aalto, building in his northern, native Finland, painted the staircase floors bright yellow and encased the handrails of his metal banisters in wood sleeves, because he correctly intuited that people need only look at a wood handrail in a sunny-yellow stairwell to feel warmer. Proprioception gauges your sense of your body and its parts in space, and helps you monitor its location relative to the objects and

Excerpts from Chapters 2 and 4 in **Welcome to Your World: How the Built Environment Shapes Our Lives,** *by Sarah Williams Goldhagen,* © **2017** *by* **Sarah Williams Goldhagen.** *Reprinted courtesy of Harper, an imprint of HarperCollins Publishers.*

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spaces around you; it is the difference between visual and proprioceptive perception that creates the aesthetic power of the famous Palazzo Spada gallery in Rome, in which Francesco Borromini, the Italian architect, used forced perspective to make us anticipate that our promenade would be longer and more arduous than it actually is.

Even when we pay no conscious attention to the built environment or focus only on selected aspects of it, our surroundings function, in our lived experience, as a never-ending concatenation of what psychologists call *primes*. A prime is a nonconsciously perceived environmental stimulus that can influence a person's subsequent thoughts, feelings, and responses by activating memories, emotions, and other kinds of cognitive associations. Our built environment is riddled with primes, and because that is so, a design can be deliberately composed to nudge people to choose one action over another. A change in a visual axis, or spatial sequence, or the way solids are massed and volumes composed could ignite very different cognitions.

Grids provide a telling case study. Pragmatism largely explains why rectangular and square grids recur so extensively in the history of design. Before digital computation, designing with straight lines and right angles greatly reduced the complexity of construction and facilitated engineering and systems of construction. The arrangement of rooms and paths and corridors, of solids and voids, could all follow from the grid's transparent logic—even city plans in the Midwest or Manhattan proved its ease and efficiency.

Architects have championed the practicality of the grid since the early 1800s, when the influential French pedagogue Jean-Nicolas-Louis Durand taught generations of students that a building of nearly any size and complexity and program could and should ideally be designed along a modular square grid. Early modernist architects such as Walter Gropius, entranced with the possibilities of mass production, reinterpreted Durand's design for the fabrication and construction of model projects for affordable housing, such as his houses Numbers 16 and 17 at the Weissenhofsiedlung in Stuttgart, Germany, which opened in 1927.

Alvar Aalto used yellow on the stairs at his Paimio Sanitorium in Finland (1933) to convey a sense of warmth in an institutional setting.

Yet right-angled spatial sequences don't resonate seamlessly with the techniques our brains use to navigate spaces. In order to get us safely from one place to another, our brains rely on the collaboration of place-recognition cells and grid cells in the hippocampus and parahippocampal region; these help us to continuously update our position vis-à-vis the objects around us, a system poetically referred to as "dead reckoning." But the grids that our brains construct in dead reckoning are not right-angled. Cognitive neuroscientists Edvard and May-Britt Moser and John O'Keefe have demonstrated that human spatial navigation is organized around our practice of nonconsciously, imaginatively triangulating the location of our body in space with two other proximate points. To navigate our bodies through space, our brains nonconsciously imagine a hexagonal lattice of points, and locate the place of our body with reference to two objects in space, forming triangles within their hexagonal grid.

Armed with this knowledge, compare Gropius's Weissenhofsiedlung houses to Frank Lloyd Wright's Hanna House in Stanford, California (1936). Wright, who was concerned with the problem of creating well-designed housing for people of limited means, eschewed the simple rectilinear grid in the residence for Paul and Jean Hanna, employing an unconventional geometry of equilateral triangles arranged into a hexagonal field. He believed that because these shapes echo those in natural forms such as honeycombs and soap bubbles, people would find them intrinsically—in other words, nonconsciously—appealing. Perhaps. But it is likely that Wright adopted the hexagonal grid also because he intuited that people would be drawn to spaces arranged according to hexagonal geometries because they are consonant with the dictates of human visual perception: they facilitate a more effortless spatial experience.

While right-angled grids will always have an important place in the built environment, recent developments in the technology of computer-aided design and computer-aided manufacturing enable designers to execute designs that are not just mass-produced but also mass-customized around the exigencies of human experience. A project's overall composition and component parts can be more complex and more specifically tailored to the site, the users, and the functions housed than what had been technically feasible in the past.

Louis Kahn and Nature

Our long evolution in earth's varied habitats and ecosystems, each with its own climate, topography, and greenery, has imbued us with sensitivities to and proclivities for certain environmental patterns and ways of being in the landscape. People are drawn to enclosed areas where we can take refuge, coupled with views of and access to open, expansive terrain where we can "prospect" for opportunities.

Even if systematic and individual variations exist in our affinity with nature, we have evolved as a biophilic species, meaning that we are drawn to nature: we like to feel a connection to it in our homes, our offices, our communities. Our very genes are encoded to link our well-being—our being well and our feeling well—to sustaining an intimate connection with the natural world.

At least one reason why regular access to nature reduces crime rates and stress is that it improves people's cognitive faculties. We know that the ability to concentrate and think clearly and effectively is easily depleted. According to environmental psychologists Rachel and Stephen Kaplan, enjoying a natural landscape promotes what they call effortless focus. The greater a city dweller's access to greenery, light, and open spaces, the better she or he will solve problems and understand and take in new information.

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project's design, we can visit one of modern architecture's greatest and most beloved icons, the Salk Institute for Biological Studies in La Jolla, California, by Louis Kahn (1965). Jonas Salk, the client for the eponymously named institute and the developer of the polio vaccine, believed that major breakthroughs in scientific research necessitated both the rigor of method and the freedom of creativity. He worked closely with Kahn to bring to fruition a complex of research laboratories and private offices sited on the crest of a sandy cliff overlooking the Pacific Ocean. The Salk Institute (altered in 1996 by a much needed, though grievously banal, addition) deliberately appeals to people's inherent biophilia in obvious and less than obvious ways. Kahn gracefully integrated the complex into the existing site and invoked schemas of "prospect and refuge," introducing different aspects of our human connection to nature in carefully sequenced stages. The result is an enthralling architectural experience that synthesizes both moment-by-moment actual perceptions with evocations of nature's enduring infinitude.

We come upon the Salk Institute in one of two possible ways: from the south (an approach mirrored on the north, but rarely used) and from the east. From the south, our first glimpse of the building, across a grassy knoll, presents a blank concrete monolith of a wall, punctuated by four projecting concrete prisms, each housing the deep shadow of a small entrance. It's a bit like stumbling upon the walls of a ruined medieval fort, simultaneously forbidding and intriguing. We cannot but wonder what's *behind* that wall. In the more heavily used approach from the east, Kahn's restrained laboratories are slung low, hugging the cliff, framing the horizon, while the symmetry of the two blocks, like the A:B:A:B pattern on the south facade, quietly reassures us of a human presence.

The monolithic concrete wall of the south facade of Louis Kahn's Salk Institute for Biological Studies in La Jolla, California (1965), piques the interest of the observer in what lies behind it.

These initial views of the original Salk Institute offer easily comprehensible images and patterns because they are attuned to the mechanisms and—especially—the limitations of human visual cognition. The visual field in which human eyes perceive things as sharply etched is a tiny region known as the fovea. Because our face and feet are oriented in a direction we call "forward," to see what's behind or even at a 60-degree angle from that focal point in front of us, we must turn our heads, our bodies, or both. Outside that cone of vision, the resolution of our sight becomes astonishingly poor, though you may not be aware of this because your brain, using details gleaned from rapid scanning and based on memories of past scenes, supplies information your eye fails to capture. At any moment, much of what a person thinks he sees of the world in his peripheral vision—patterns, rhythms, and general compositional elements—is little more than an imaginative filling in of the blanks. As a result, human sight excels at *rapid gist extraction*, our efficient ability to take essential visual information from our environments so quickly (20 milliseconds) that the speed is literally within the blink of an eye.

In our initial approaches to the Salk complex, the buildings convey a sense of order that is obviously man-made, through the repetition of its simple rectangular volumes on the south and north facades, and through the symmetry of the laboratory blocks on the east facade. But at first, it's not the forms of the architecture that command our attention. In the symmetrical arrangement of the light gray concrete volumes, Kahn minimizes the distractions that interrupt the sweep of our eyes toward the visual center of the composition, the Pacific's glistening horizon. Views of staircases, windows, corridors, doors—ordinary architectural indicators of human presence and movement—are mostly suppressed. These approaches insist upon the architecture's *unobtrusiveness*: through design, as Kahn doggedly draws our attention *away* from the buildings, redirecting our gaze to the light-drenched, wind-swept land, the dark horizontal line of the Pacific, and the clean grandeur of La Jolla's blue skies. By designing the complex to both meld into the topography and create a sense of mystery as to its identity, Kahn skillfully manages our initial emotional response to this place. It is as though he is saying directly to us, forget the road. Come, enter this world within a world. This entire first part of the entry sequence is designed to slow us down and train our focus on the substantive essence of the Salk Institute's mission: biological research, which is nothing less than an inquiry into the profound mysteries of nature.

As we cross into the central plaza, Kahn breaks the quietude of our initial ingress at first with sound: water gurgles into the channel embedded in the plaza's travertine pavement, with the fountain that feeds it emitting far more noise than its small size might suggest. The channel fountain measures only slightly wider than a human foot, tempting us to literally take its measure. As a result, our auditory and proprioceptive faculties are put on alert: hearing the water's gushing, intrigued by this narrow, watery "line of light" (as the Salk's scientists call it) at our feet, we are determined to explore this fountain and the plaza surrounding it.

As we make our way into the plaza's center, the importance of the site's topography and the overall composition of the buildings diminishes. Once we are deep into the central plaza, Kahn leaves behind the obvious use of reassuringly simple geometries and the emphatic attention to nature—greenery, topography, light—to orchestrate a more conventional architectural experience. Now we focus on the buildings that define that plaza, the laboratories introduced by the staircase-office blocks and, especially, on their surface materials and their interaction with gravity. In pulling our attention to the building's surfaces, Kahn ensnares us into an engaged, indeed interactive physical relationship with the buildings and—by extension—with the institution they embody and house.

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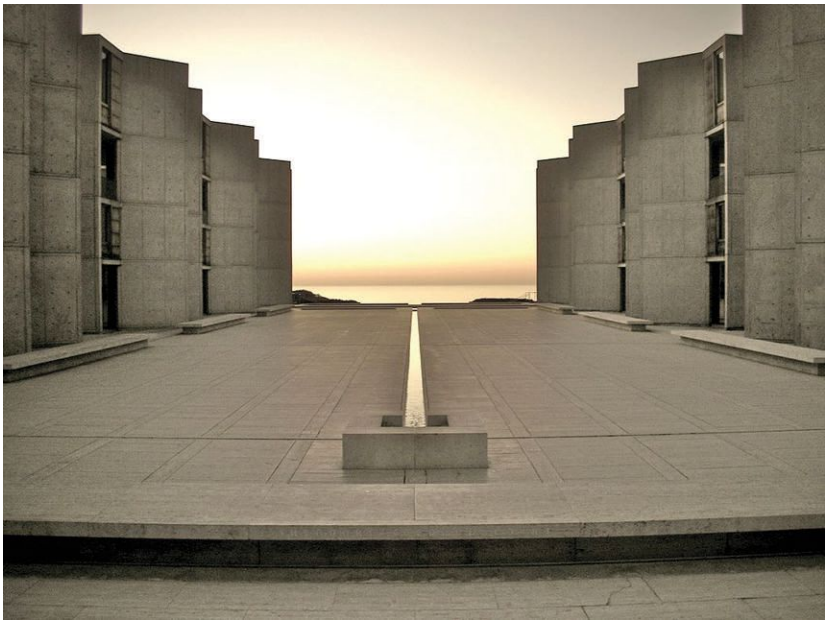
Materials and surface details command our attention. In order for us to make sense of surface-based cues such as texture, density, color, pattern, and so on, our visual impressions are primarily processed through a pathway that involves the medial temporal lobe and the hippocampus, necessitating that—in contrast to form-perception—we call up our memories of prior experiences with similar surfaces. Such memories will draw up a lot of other varied information, not only from vision but also from our emotions and from other sensory faculties: tactile sensations, smells, sounds, and more. Our responses to surfaces, consequently, are more likely to powerfully contribute to our holistic experience of place than our responses to forms. In short: form has wrongly been crowned king, because form-based cues elicit less of a whole-body, intersensory, and emotional response than surface-based cues do. Surfaces we experience emotionally and *palpably*.



Louis Kahn's design of the central plaza at the Salk Institute (top), with its linear fountain directed to the horizon and the receding building blocks, focuses attention on materials and details. We experience the travertine, poured concrete, and teak surfaces (bottom) emotionally and palpably.

Richly textured materials and surfaces—like the Salk Institute's travertine, concrete, and teak—elbow their way into our peripersonal universe by eliciting multisensory, emotionally rich, nonconscious and conscious cognitions. Take the teak panels in the Salk's staircase-office blocks. People like wood. They are drawn to it for countless reasons. In comparison with metal, wood maintains a more consistent temperature. The teak's visible grain and hues of reddish-orange browns exhibit an appealing tension of pattern and irregularity. Wood simultaneously elicits associations of nature on the one hand and—because it so commonly appears in residential architecture—domesticity on the other. Travertine, too, links to a rich associative trove, echoing some of what we glean from wood (nature, incident, texture) while also evoking an almost pathos-filled coupling of hard permanence with porous fragility and the creamy, rich, pock-marked stone of ancient Rome.

When a building's surfaces advertise the traces of their construction, they offer us opportunities to mentally simulate the process of their making. This simulation involves the brain's system of canonical neurons, and perhaps also mirror neurons. Canonical neurons control motor actions; located in the brain's frontal and parietal lobes, they fire when we are doing something such as hand-building or throwing a clay pot, and even when we do nothing more than look at an inanimate object, which we imagine ourselves manipulating with a certain goal in mind. Mirror neurons (also located in the frontal and parietal lobes) go off when we execute a given action such as sculpting clay and when we mentally simulate that action; they also fire when we observe *someone else* executing that action. The brain's canonical and mirror neuron mechanisms indicate that in our experience of built environments, obviously human-made surfaces as well as manipulable objects really do prompt us to simulate the process by which they were crafted.

The discovery of the canonical and mirror neuron mechanisms supports the emerging cognitive neuroscientific view that the human motor system may not be distinct from our sensory faculties, and that they may be two components in a single unified system. Perception is never passive. Perception is perception for action, imagined or actual.

Because people are nonconsciously susceptible to environmental primes, and because our perceptions of the built environment are enmeshed in our human embodiment, skillful design rests on foundational knowledge about the operations of how we think and perceive. The way we apprehend our built environments—and their relationship to nature—is profoundly intersensory. Not only that: it also involves our motor systems as we interact, or imagine interacting, with the things and places around us. A principal reason the Salk Institute design succeeds is that Kahn understood that one of the architect's principal tasks is managing users' attentional resources. He orchestrated an entry sequence that first emphasizes nature's monumentality, then draws us into a relationship with the buildings through intersensory stimulation—vision, touch, sound—that also invites us to interact and imagine interacting with them. Understanding such fundamentals of human cognition can help designers create places that will long resonate in our memories, and become a treasured part of who we are. ■

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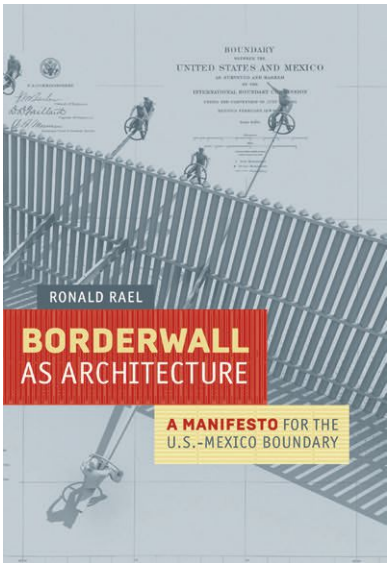
CIRCLE 19

The Great Divide

BORDERWALL AS ARCHITECTURE: A Manifesto for the U.S.-Mexico Boundary, *by Ronald Rael. University of California Press, April 2017, 200 pages, $29.95.*

Reviewed by James Gauer

DONALD TRUMP has famously promised to build a "big beautiful wall" at the U.S.-Mexico border. Its construction could take more than three years and cost $21.6 billion, according to a report by the Department of Homeland Security, which has requested proposals for design-build prototypes. In February, Trump claimed it "is getting designed right now." During his campaign, the President seized on the wall as a simple solution to complex problems of security and immigration. But, points out Ronald Rael, the editor of these collected writings, a wall already runs along 700 of the border's 1,900 miles, and it is not effective: as former Secretary of Homeland Security Janet Napolitano said, "You show me a 50-foot wall, and I'll show you a 51-foot ladder."



Rael, an associate professor in the departments of architecture and art practice at the University of California, Berkeley, and principal of the Oakland-based firm Rael San Fratello, gathered the essays by architects, academics, and authors to rethink the existing wall. He sought ways to "exceed its sole purpose as security infrastructure" and "make positive contributions to the lives and landscapes of the borderlands."

The book includes a proposal by architect Teddy Cruz, of the San Diego firm Estudio Teddy Cruz + Forman, to rethink border zones as public space, and an argument by Michael Dear, author of *Why Walls Won't Work: Repairing the U.S.-Mexico Divide* (2015), that a border should be "a permeable membrane connecting two countries." Contributions by writer Marcello Di Ciento and San Diego State professor Norma Iglesias-Prieto address related political and social concerns.

But the book's heart–34 of its 200 pages–is a chapter by Rael entitled "Recuerdos/Souvenirs: A Nuevo Grand Tour." The essay is structured as a journey along the U.S.-Mexico border, covering the same distance traveled by 18th- and 19th-century English aristocrats on their pedagogical passage from London to Rome. Along the way are fictional *recuerdos* (memories and souvenir trinkets) that are "counter-proposals" to "reimagine, hyperbolize, or question the wall." Though this is all a conceit too arch to be convincing, the proposals themselves, attempting to transform the boundary into something more than just an obstruction, are provocative and inventive. They include barriers that double as bicycle and pedestrian paths, aqueducts, wastewater-treatment facilities, solar collectors, and agricultural greenhouses—in other words, ideas that could lead to environmental or social improvements. Less utilitarian but nonetheless witty are an extra-long volleyball ("wall y ball") net and a "floating wall" of welded steel tubes, which undulates with the topography, in shapes that recall Christo and Jean-Claude's *Running Fence.*

The arty nature and ironic tone of some of these schemes seem odd in a book that claims to be a manifesto on an urgent political issue. But it's consistent with Rael's professed desire to show "how design could be a vehicle for addressing the politics of border security" that began when he and partner Virginia San Fratello assisted artists Michael Elmgreen and Ingar Dragset on *Prada Marfa* (2005). The faux Prada store, a "pop architectural land art project," was built on a desolate road near the border in Valentine, Texas, not too far from Marfa.

In his final chapter, Rael clarifies that he is not endorsing the construction of more fortifications, no matter how ingenious. Instead he is suggesting that "if architecture can be smuggled into a reimagining of the existing border," it could lead to various environmental or social improvements, "with the wall itself as the vehicle of delivery." It's a clever way to think about infrastructure, but it's no solution to a big, messy, political problem. ■

James Gauer, an architect and author based in Victoria, B.C.; Chicago; and San Miguel de Allende, Mexico, contributes regularly to RECORD.

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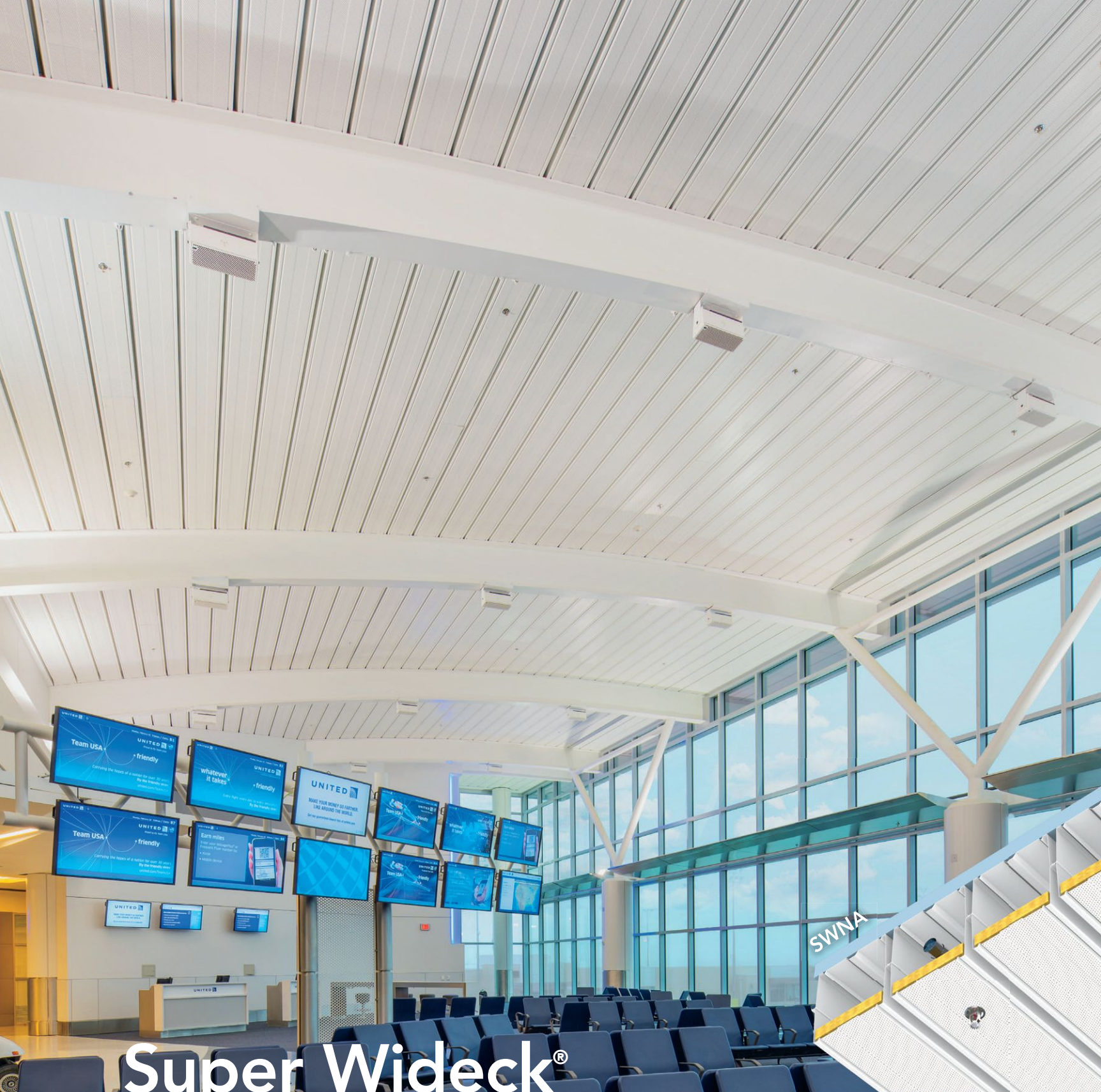

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The Perplexities of Keeping Fit

Maintenance Architecture, *by Hilary Sample. MIT Press, December 2016, 204 pages, $25.95.*

Reviewed by Aleksandr Bierig

WASHING, DUSTING, scraping, patching, and other overlooked acts of upkeep triggered Hilary Sample to direct her attention toward a subject at once forgotten and self-evident. The general absence of building maintenance in architectural discourse prompted her to urge a reevaluation of "terms like *cleaning* and *preservation*" and their "far-reaching implications for the conception, construction, and endurance" of the constructed environment.

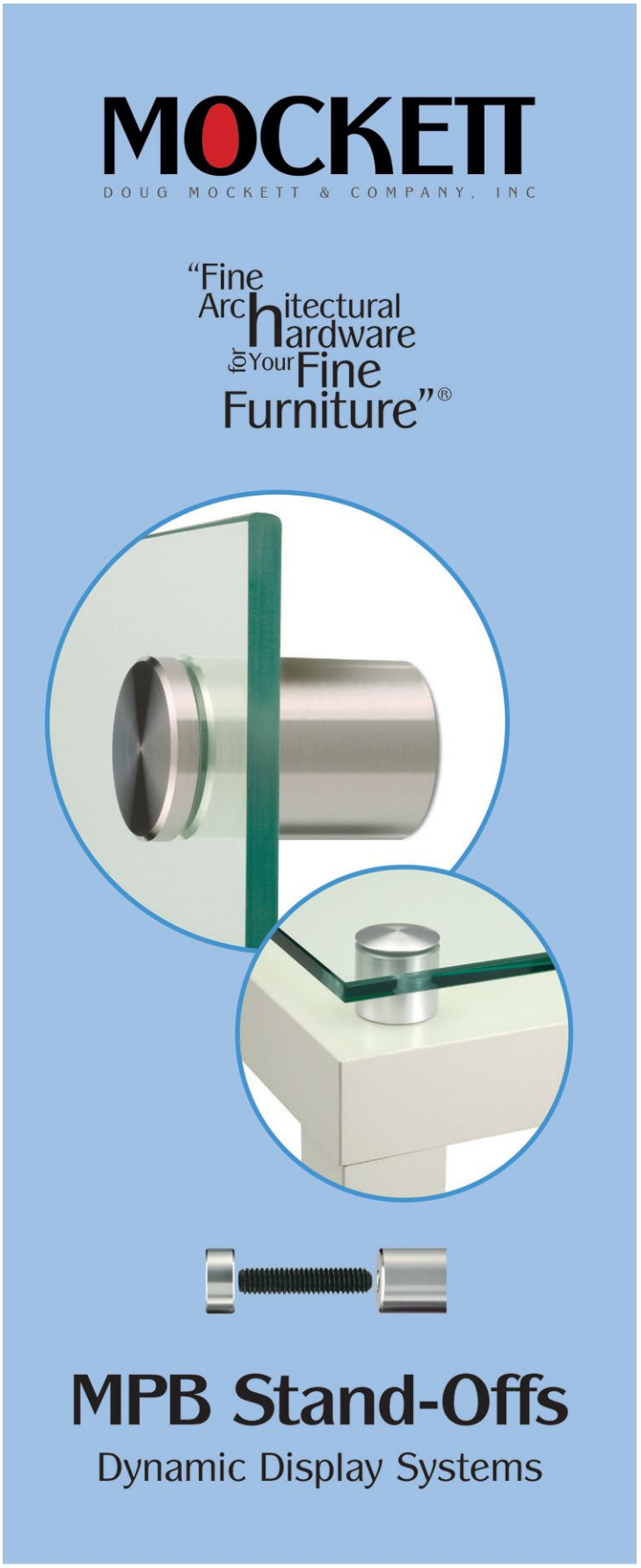
Sample, a partner and cofounder of New York–based MOS Architects, offers a smattering of short case studies and brief meditations on problems related to this practically invisible yet encompassing problem. Many examples are taken from contemporary artists, like Jeff Wall's large-format photograph *Morning Cleaning*, which shows a custodian washing windows in Mies van der Rohe's Barcelona Pavilion, evoking the labor and attention that act as an invisible support to the immaculate Modernist site. Elsewhere, short narratives extract moments of maintenance from within modern architectural history. For instance, she describes the development of cleaning strategies for skyscrapers, from the puny clips that washers took to strap themselves, one window at a time, to the Empire State Building, to the integrated exterior scaffold of Skidmore, Owing & Merrill (SOM)'s Lever House, whose cleanliness became a kind of architectural symbol for the soap brand itself.

Maintenance, here, is intended as part of a spectrum of operations from cleaning (more domestic and everyday) to preservation (the intention, often legally inscribed, of conserving a building in perpetuity). More than that, the nomenclature works as an alibi for Sample to examine the forgotten contributors to architectural history—not just the window washers and custodians, but the women architects whose names were written out, like SOM's Natalie de Blois. Sample also includes Mierle Laderman Ukeles's conceptual and performance art that for decades has highlighted the work of sanitation workers, custodians, and others who ceaselessly beat back the entropic forces that smear, clutter, and obscure the urban environment.

At its core, however, this book is about our ambiguous, perhaps inexplicable desire for order and cleanliness. What is it that motivates us to drive back the effects of time, gravity, or nature on our pristine constructions? While Sample provides no single answer to this, she clearly outlines the complex stakes of the question. Washing away the accretions of time tends to also cleanse buildings of evidence of the social, political, and economic structures that sustain their existence. *Maintenance* in these terms is another word for power, when you consider who performs the work and who receives the benefit.

Equally interesting is something missing: Sample's own work. We often expect architects' treatises, stretching back to Andrea Palladio, to be illustrated with their authors' designs. While its short, punchy texts and compelling images mark the book as the work of an architect, this is no straightforward manifesto. It could, however, have an effect on design, if others consider Sample's timely meditations that underscore the ethical, political, and social entanglements standing behind the spotless image of architecture. ■

Aleksandr Bierig is a Ph.D. student at Harvard University's Graduate School of Design.



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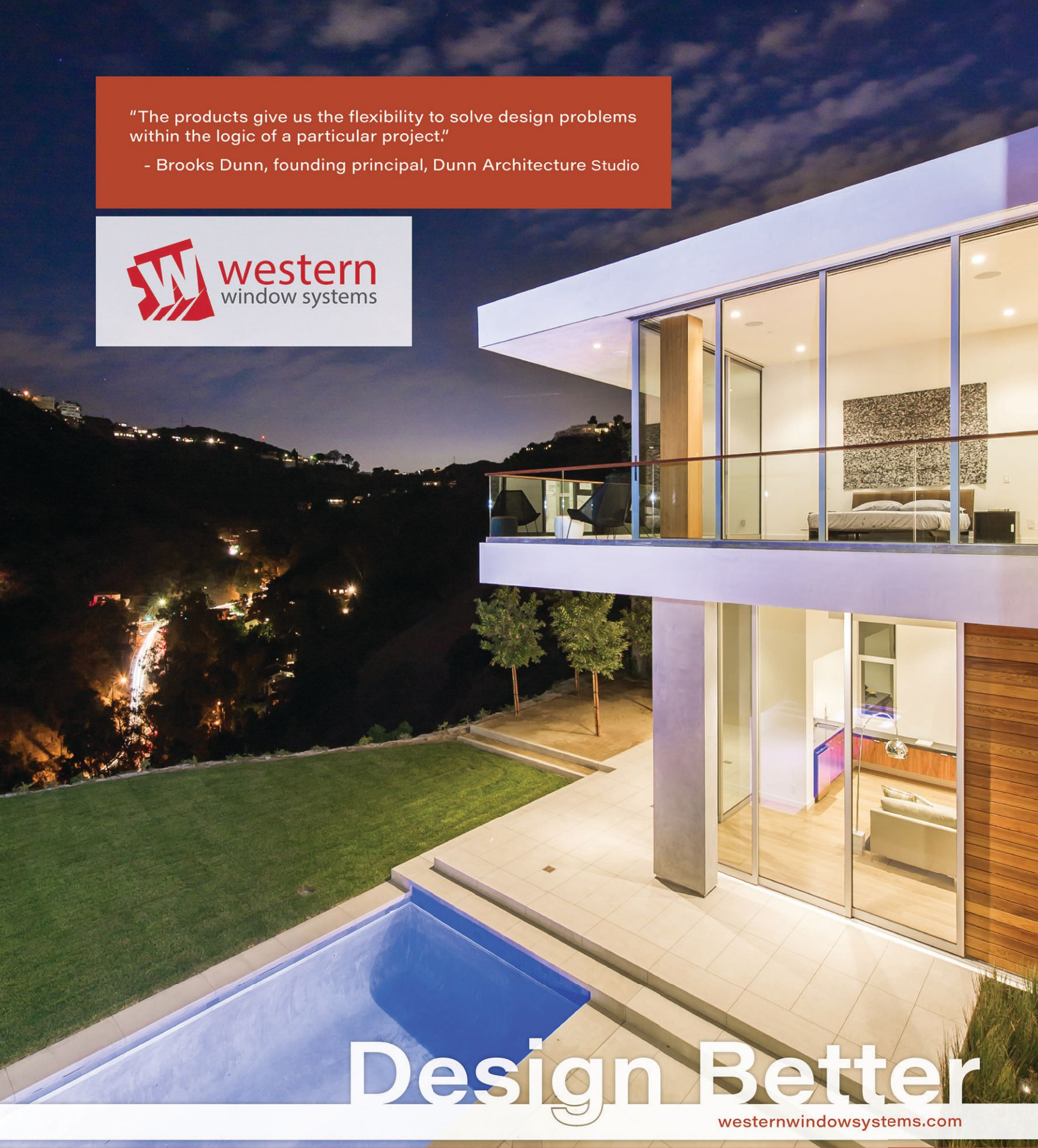

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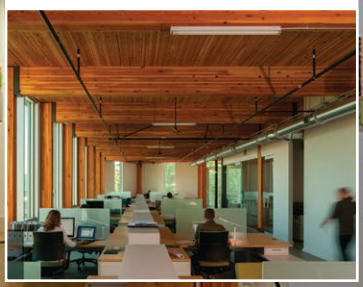

INDIAN MOUNTAIN STUDENT ARTS & INNOVATION CENTER

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CIRCLE 145

Detroit: The Remix

Motown thrums with new architecture and construction—but will the investment trickle down to the city's forgotten neighborhoods?

BY CATHLEEN MCGUIGAN

DETROIT WAS NEVER a beautiful city, but it had a muscular grandeur—broad boulevards radiating from its riverfront core, stolid stone-faced office towers crowding its downtown streets. The mammoth auto factories—including the innovative 1903 Packard plant by Albert Kahn, with its huge spans of column-free spaces—anchored more distant neighborhoods, surrounded by neat grids of wood-frame bungalows. Elsewhere there was street after street of more houses—many large and handsome, nestled under leafy canopies of trees. With so many streets of houses—cut through by wide avenues lined with mom-and-pop stores and small machine shops—the city seemed to go on forever toward the horizon: a vast, flat metropolis, 139 square miles of forever.

In the 1950s, Detroit was the fifth-most-populous city in America, with almost 2 million people, riding a decades-long surge of prosperity. Its wealth supported elegant downtown stores and white-starched restaurants, a first-rate symphony, and an exceptional art museum. Underpinning all the manufacturing and money was an industrious, up-by-the-bootstraps culture, buoyed up by waves of immigrants—Poles, Greeks, Germans, Irish, Mexicans, poor whites from Appalachia, African-Americans from the deep South—who kept remaking the neighborhoods with their own ingredients to create a vibrant urban stew. "The black middle class was born in Detroit in the '50s," said Maurice Cox, the city's visionary new planning director. "It was the locus of the American dream."

The death of that dream is sometimes marked as the summer of 1967, exactly 50 years ago, when civil unrest erupted in Detroit, during which 43 people were killed. But white flight and the closing or exodus of the auto factories to the suburbs had begun long before, leaving behind deep wounds of racism, displacement, and poverty. By the time the largest municipal bankruptcy in U.S. history was filed, in 2013, Detroit's population was 700,000 and still bleeding; many of its neighborhoods were as desolate as a moonscape, dotted with burned-out buildings and—for a city that once boasted exceptionally high home-ownership rates—80,000 abandoned, decaying houses.

But Detroit has always had its believers—local nonprofits and foun-

VAST METROPOLIS From Brush Park, with its few old mansions, you can see the downtown skyline (opposite), while the hulking ruins of Albert Kahn's innovative 1903 Packard Plant dominate a desolate neighborhood (above).

dations that spurred redevelopment; many loyal residents who held out hope; the artists, musicians, and millennials who came in the last decade, lured by cheap rents and a hipster vibe; and, of course, big investors like the developer Dan Gilbert, chief of Quicken Loans, who moved his company downtown from the suburbs in 2009 and saw gold in the 75 or so undervalued properties he has since snapped up.

Today, less than three years after Detroit emerged from bankruptcy, the mood is upbeat. "There's great optimism, within certain areas," said architect Lorcan O'Herlihy, of Los Angeles, who is working on four projects in Detroit and recently opened an office there. "People are really looking to the future." There are cranes and construction crews all over downtown, and in pockets elsewhere, and much more development is on the way. "In the last three to five years, there has been a lot of progress," said Sue Mosey, executive director of Midtown Detroit, a nonprofit that promotes economic development in a neighborhood where key medical, cultural, and educational institutions are based. Midtown now is so desirable that students and many urban pioneers can no longer afford to live there.

Yet there is a disconnect between the rush to build the future in certain parts of the city and the reality faced by many Detroiters who live in crumbling neighborhoods, among the vacant houses and weed-filled lots, beyond the reach of gentrification. As Thomas J. Sugrue, author of *The Origins of the Urban Crisis: Race and Inequality in Postwar Detroit*, wrote in a new preface to his award-winning history, "It will take more than a few thousand hipsters or white urban professionals . . . to revitalize a sprawling, mostly African-American, working-class city of 700,000."

Nonetheless, revitalization rushes onward, creating abundant opportunities for architects and designers. Last month, Dan Gilbert's development company unveiled a scheme for what will be the tallest building in the city (take that, Renaissance Center, the shiny, turreted John Portman complex from 1977). Designed by SHoP architects of New York, the building, with its over-the-top swoopy curves and sliced-out volumes, looks far more radical than anything else in Detroit. The skyscraper, on the downtown site of the old Hudson's Department Store, will be largely a 52-story luxury-apartment tower, but its nine-story, mixed-use podium will contain an expansive indoor-outdoor civic space. "It's got to connect at the street level, to draw people in," said Rainy Hamilton, Jr., a native Detroiter and founding principal of Hamilton Anderson Associates, the city's largest African-American–owned architecture firm, which is teamed with SHoP on the project.

Another huge downtown project, this one nearing completion, is an arena close to the city's two other stadia, Ford Field and Comerica Park (Detroiters are passionate sports fans). Designed by HOK for the Illich family—the founders of

PHOTOGRAPHY: © MICHELLE AND CHRIS GERARD (OPPOSITE); NIC LEHOUX

CITY SLICKER
The tower by SHoP for the downtown Hudson's site includes a large street-level civic space (top), while City Modern, a 400-unit housing and mixed-use development, is the work of five architects, including Lorcan O'Herlihy, designer of the four buildings at the corners of the new complex.

Little Caesar's pizza, who are major local developers—the arena where the Red Wings will play hockey and the Pistons shoot hoops will open next fall, and eventually will be surrounded by a 50-block complex of offices, entertainment venues, retail, apartments, and a hotel.

Meanwhile, ground has been broken for the biggest new multi-unit housing development in Detroit since Mies van der Rohe designed the still-sublime Lafayette Park, in the late 1950s and early '60s. City Modern, another Dan Gilbert development, is in a neighborhood called Brush Park, not far from downtown and Eastern Market, the city's great food and farmer's emporium, which has been in continuous operation since 1891. With 410 units of apartments, duplexes, and townhouses, the mid-rise City Modern exemplifies Detroit's current planning strategy: to densify key hubs, while leaving large swaths of land open for restoration as bioswales, parks, or urban agriculture. (This concept was an essential recommendation in 2012 of a long-term strategic framework plan by Detroit Future City, as the most realistic way to revitalize a deteriorating city of such large geographical sprawl.) The idea, too, is to exploit the talents of some top small firms, who will each design a piece of City Modern housing; they are O'Herlihy; Merge, the Boston office headed by Elizabeth Whittaker (RECORD, Vanguard, December 2014); Studio Dwell of Chicago; as well as Hamilton Anderson and another local firm, Christian Hurttienne. The plan for the mixed-use, mixed-income complex calls for contemporary designs of varying heights and materials, and also nods to the neighborhood's history by incorporating three restored Victorian brick mansions that survived on the site.

Among the most appealing designs in Detroit these days are some much smaller transformations, ones that fearlessly, and inexpensively, deploy the simplest materials and forms in inventive ways, whether it's converting a laundromat into one of the city's best new restaurants, the Selden Standard, or riffing on the form of the Quonset hut to make a playful live-work enclave called True North, aimed at creative tenants. That project began with a young developer, Philip Kafka, who bought five vacant acres on a typical nondescript street in central Detroit, with a few modest houses in various states of disrepair nearby. He brought in a Los Angeles architect, Edwin Chan, a veteran of Frank Gehry's office who, though skeptical at first of Kafka's Quonset-hut notion, realized it could work. For the collection of eight densely sited dwelling/studio structures in the project's first phase, Chan made two key moves: he tweaked the arched form so no two houses are alike—some are stretched higher or longer or cut in half like a sausage—and he arrayed them irregularly, recognizing that the spaces in between, for small gardens and terraces, would enliven the sense of place. "You want a casualness, an informality," he said, as well as "an industrial feel. Detroit is a tough city. We wanted it to have the spirit of early Detroit." With materials like painted corrugated metal, and polycarbonate to clad the structure's ends and let in daylight, True North cost only $100 a square foot to build. The first tenants, who include a curator, two chefs, and an art dealer, will move in later this spring.

While a project like that may catalyze improvements in its immediate neighborhood, the city's seriously devastated districts need a more comprehensive approach to revival—one that ideally would tackle unemployment, failing schools, and lack of reliable mass transit. Almost 30 percent of Motor City households don't own cars, and, so far, the only new transport to be introduced is the Q-Line, a cheery red-and-white train that just links the 3.3 miles between the already gentrifying downtown and Midtown. And while the streetlights are now turned on in most of Detroit—a priority of the popular mayor Mike Duggan, who was elected in 2013—there are still tens of thousands of decayed houses standing that are slated for demolition, among other urgent problems.

Planning director Maurice Cox is a champion of high-caliber architecture and design, but he also sees his mission as connecting directly with people living in disenfranchised and distressed neighborhoods. "My first obligation is to make the city work for those who have stuck it out for decades," he said. When he arrived in Detroit two years ago—trained as an architect, he most recently had been associate dean for community engagement at the architecture school at Tulane in New Orleans—he found a planning office with all the doors shut and files spilling out of stuffed cabinets; there hadn't been a staff meeting in three years. To begin to repair the trust with longtime citizens, he appointed design directors to work in three districts outside downtown and expanded the staff to nearly 30 people, including architects, landscape

IMAGES: © SHOP ARCHITECTS (TOP); LORCAN O'HERLIHY ARCHITECTS (BOTTOM)

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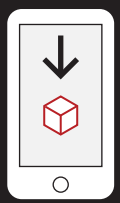

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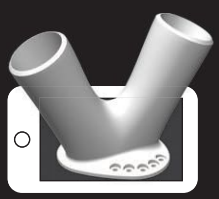

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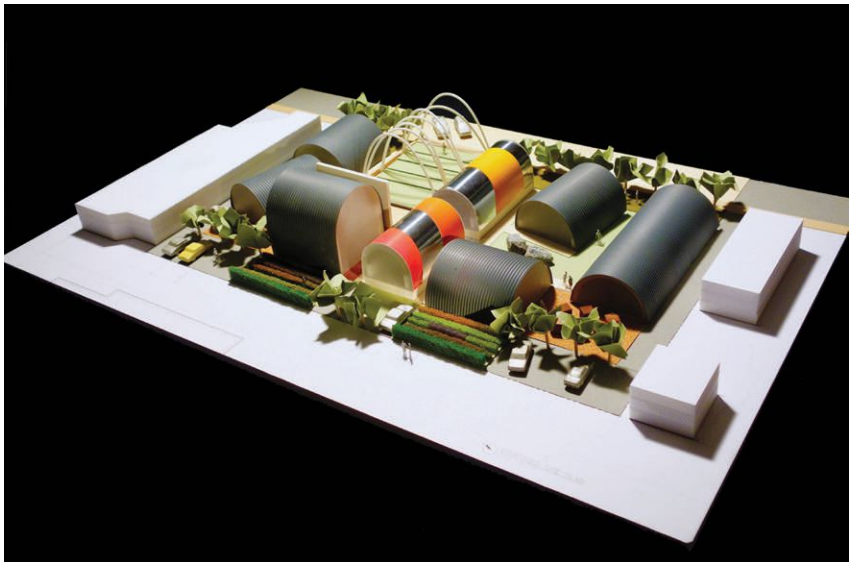

CLUSTER HUTS
In the True North development, architect Edwin Chan played with the Quonset hut form for live/work units aimed at creative tenants (above). Currently under construction (top), the project will finish in late spring.

architects, and historic-preservation experts. The staff is diverse in terms of gender and race; many new hires are African-American, like Cox himself.

Current planning initiatives range from the hugely ambitious—a plan to redevelop 400 acres of a formerly industrial area along the Detroit riverfront that was unveiled last month—to the smallest interventions, such as painting stripes on roadways to reduce traffic lanes and create bike paths (Cox is an avid biker around the city). The Chicago office of SOM, along with French landscape architect Michel de Vigne, won the competition to plan the riverfront project.

Meanwhile, Cox and his team have been targeting future hubs farther out in the city that could be transformed into "20-minute neighborhoods"—centers where, eventually, there would be restaurants at different price points, a quality school, a grocery store, and a park, all within a 20-minute walk from housing. Last winter, the city awarded $1.6 million to four teams, selected after an RFP, to come up with frameworks for revitalizing four neighborhoods, each with its own challenges. O'Herlihy, for example, is part of the team led by Design Workshop of Denver, for an area in northwest Detroit, where poor infrastructure and flooding are serious problems. Andre Brumfield of Gensler is heading another team, with landscape architect Walter Hood of Berkeley, California, planning interventions in the Rosa Parks/Clairmont neighborhood, along what was once a thriving African-American-business street, where the 1967 unrest first broke out. Steven Lewis, an architect who is an urban design director in the city's planning office, and is working with Brumfield and Hood on their project, spends most evenings at community meetings, explaining plans, getting feedback from residents, and helping connect them to resources for their own properties. "We want people to have a sense of progress," says Lewis, "that it's not being done *for* them but rather done *with* them."

Despite the daunting scale of the problems, it's worth remembering that Detroit has tremendous assets. It is the busiest North American border crossing, perched on the edge of a major waterway. It is the core of a five-county metropolitan region of 5 million people, with the 13th-highest GDP in the U.S. And it has a rich architectural legacy—of buildings by Kahn, Minoru Yamasaki, and many others from the 20th century, and earlier, that are worth preserving. A small blessing of decades-long economic stagnation is that fewer historic buildings were bulldozed in the name of progress—but that has led to what Cox calls "one of the most vexing challenges"—what to do with thousands of solid, vacant structures. Detroit is already the capital of adaptive reuse, but there are many more old schools, banks, churches, houses, and industrial buildings awaiting the touch of a sensitive designer.

It might seem surprising, but Detroit is the only designated UNESCO design city in America. Its long history of industrial and commercial design, as well as its past maker culture, has been reborn in 21st-century terms. At the current Sainte-Etienne Design Biennale in France (it runs until April 9th), Detroit is the guest of honor, celebrated for its contemporary design culture. And the U.S. pavilion exhibition *The Architectural Imagination*, from last year's Venice Biennale, is currently on view at the Museum of Contemporary Art Detroit (ARCHITECTURAL RECORD is the media sponsor) where, museum staff reports, it has attracted a new, younger audience. While that exhibition of speculative projects, for four Detroit sites, drew a mixed response in Venice, the idea that architecture and architectural thinking are incompatible with addressing the urgent problems of Detroit's neighborhoods is misguided. Architectural thinking is a vital part of the mix, and the city should strongly encourage contemporary architectural excellence.

A new culture of architecture is growing in Detroit, as local practices receive more commissions, and architects from outside move to the city. "We used to struggle to get young architects to come to Detroit," said Michael Poris, whose firm, McIntosh Poris, has worked in the city since 1994. Rainy Hamilton saw his office mushroom from 40 to 70 people last year and is now flooded with résumés. "I've always seen the potential for Detroit," he said. "I knew that, sooner or later, the rest of the world is going to acknowledge that." ■

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Welcome Effects

These contemporary classics engage guests with their color, texture, and form.

By Aileen Kwun

Spokes

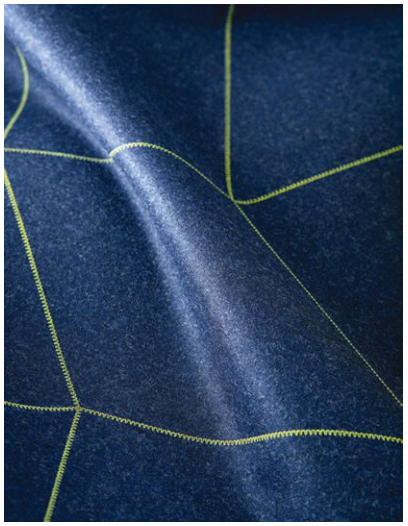
Inspired by a bicycle wheel, this Foscarini fixture has a bi-directional LED source at its base that illuminates surfaces beneath it and casts striated shadows around the room as light filters up through its wire rods. Made of epoxy-coated steel, with discreet wiring and an aluminum heat sink, it comes in white or yellow, and elliptical or spherical formats, including one that's extra-large.
foscarini.com
CIRCLE 100

Hairpin Stacking Table

In honor of cofounder Florence Knoll's 100th birthday in May, Knoll is adding new pieces to her eponymous collection—each inspired by archival designs. The Hairpin Stacking Table, a reintroduction of the Model 75 stool (1948), stacks up to five-high and pairs a circular laminate top (in black or white) with a bent, cold-rolled steel base available in powder-coated white, black, blue, red, yellow, or green.
Knoll.com
CIRCLE 101

Cozy

Designed by David Rockwell for Maya Romanoff, this woven heathered-wool wallcovering and upholstery collection features six graphic patterns in tonal, metallic, and high-contrast colorways. The sartorial offering includes Daydreamer, a dynamic Escheresque diamond motif available in five color combinations: Shearling/Cocoa, Cotton/Charcoal, Gray Fleece/Orange, Gray Fleece/Charcoal, and Peacoat/Chartreuse (shown).
mayaromanoff.com
CIRCLE 102



Keel Dining Chair

Part of the Moray outdoor collection but equally suitable for indoor use, Holly Hunt's stackable Keel Dining Chair features a spare powder-coated aluminum frame and a textured contoured seat made from a durable, woven synthetic-cord fiber that also wraps the arms. A proprietary combination of colors in each fiber gives depth and texture to the weave.
hollyhunt.com
CIRCLE 104

Edge

Rocky Mountain Hardware's latest door hardware provides the level of quality the company is known for, but with a more contemporary 2"-wide escutcheon—a ½" narrower than its existing art-bronze offerings. Ideal for high-end residential and hospitality projects, Edge comes in six textures, 10 finishes, and a range of components for all functions, from entry to interior and sliding. Custom options are available to the trade.
rockymountainhardware.com
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Pila

The simple cylindrical form of this versatile Estiluz fixture, made from cork and spun aluminum with a textile cable, makes for a handsome light source whether it is suspended from a ceiling and clustered in groups, or configured with a horizontal support and plug for placement on a shelf (above), table, or floor. Available in black or white, it houses an adjustable LED light source (10W/850-900 lumens).
estiluz.com
CIRCLE 106

Eyes Lounge Bench

Created by the Danish design studio Foersom & Hiort-Lorenzen, this new bench addition to the Erik Jørgensen Eyes collection provides comfortable individual seating for lounge, lobby, and waiting areas, with an option to accommodate as many as five upholstered shell-like seats on its steel base.
erik-joergensen.com
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Code

One of seven new designs from Carnegie Fabrics' Uncommon Threads collection of panel textiles, Code mimics the texture of raised Braille and dot matrices and has a hefty linear weave that intertwines high-sheen and matte yarns for a pronounced tactile quality and shimmer. Ideal for upholstered walls or panel systems, Code is UL-certified and comes in a 66" width.
carnegiefabrics.com
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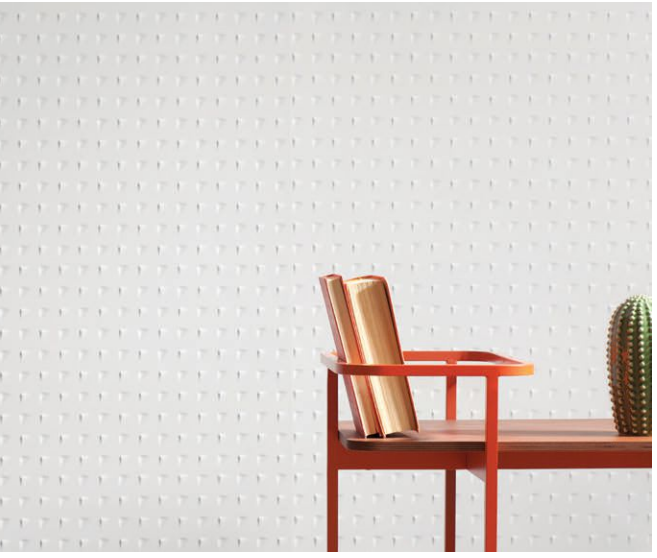

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peronda.com
CIRCLE 108

Yop

Designed by Lievore Altherr Molina for Arper, this folding table pairs a balanced four-legged base—available in seated or standing heights—with a high-pressure laminate surface that can be flipped down for easy storage. (A fixed version with a wood-top option is also available.) The tops come in three shapes (circular, rectangular, or square) ranging from compact 23½"-round or square models to larger 71" x 31½" rectangular versions supported by two bases.
arper.com
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Breaking the Curve

Architects designing Legacy Junior High School faced a challenge: create a space to inspire and excite students. Through lively community collaboration, the project came together, incorporating sinuous and sophisticated green metal contours hip enough to intrigue students.

Visit **www.mbci.com/curve** for more information.

PROJECT: Legacy Junior High School

LOCATION: Layton, Utah

ARCHITECT: VCBO Architecture

CONTRACTOR: All Metals Fabrication

PANEL PROFILE: PBU (Tundra / Laurel Green / Galvalume Plus®), Artisan (Tundra), Flat Sheet (Tundra / Laurel Green)

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Look Out, Below!

The latest indoor flooring offers varied options and durability in a diverse range of innovative materials.

By Aileen Kwun

Disruptor

A proprietary dyeing technology allows Bentley Mills to customize its Disruptor collection to match any color source, such as paint samples or fabric swatches. Made from twisted nylon yarns, the new Cradle to Cradle–certified carpet tile—made of Antron Legacy Type 6,6 Nylon—features a graphic pattern of variegated lines, and is available in two sizes (24" x 24" and 18" x 36"), as well 12 standard hues.

bentleymills.com

CIRCLE 111

Deep Impressions

Though the textural nylon weave of this FLOR carpet tile has a subtly raw industrial look reminiscent of concrete, stone, and oxidized metals, a varied loop pile gives it a soft, luxurious texture. Available in four colorways—Flax, Granite, Raffia, and Nimbus (shown), the recyclable, Green Label Plus–certified tiles measure about 20" square and can be customized with eight available cuts to accommodate a variety of spaces.

flor.com

CIRCLE 113

Mosaic

Made from durable woven vinyl with a commercial-grade, polyurethane cushion backing, this Chilewich floor mat features a diamond motif based on traditional Jacquard construction. Developed using innovative techniques and bicolor yarns, the Mosaic collection comes in two colors (blue and gray) and formats ranging from 23" x 36" to 72" x 106½". Runners and custom sizes are also available.

chilewich.com

CIRCLE 110

Organic Painted Pine

New to the U.S. and Canada, the UK-based hardwood flooring company Havwoods is debuting Organic Painted Pine, part of its Relik collection of engineered reclaimed timber and reproduction planks. Suitable for flooring applications as well as ceilings, doors, and walls, the planks are ⅞" thick and are offered in custom lengths and a range of widths from 2¾" to 8⅝".

havwoodsusa.com

CIRCLE 112

Legend

This collection from New Ravenna includes six mosaic patterns by Sara Baldwin and Paul Schatz. Inspired by ancient textiles, each geometric design is handcrafted in Virginia using natural stone that has been tumbled, polished, and hand-chopped, and can be fully customized for indoor and outdoor applications. Rimini (shown) features Cashmere, Afyon White, and Saint Laurent marbles.

newravenna.com

CIRCLE 114

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CIRCLE 208

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Winner:

Wrigley Field 1060 Project - Phase 2

Location: Chicago

Contractor: C.R. Schmidt, Inc.

Manufacturer: Belden Brick

beldenbrick.com

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CIRCLE 180

BELDEN

THE BELDEN BRICK COMPANY

National Award Winner

Wrigley Field is a Chicago landmark that is home to the Chicago Cubs and more than 100 years of history. In 2015, the stadium began a major restoration project to preserve the historic structure. The restoration will span several years and cost hundreds of millions of dollars. The first area to undergo renovation was the center field bleachers and their entrance. Approximately 11,400 square feet of new Belden clay pavers — of which approximately 80 percent were engraved — were installed at this location. The challenge to this project was working within the existing constraints of the building footprint and placing name pavers in the location designated so fans could easily identify their personal piece of Wrigley Field.

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THE 20TH YEAR of RECORD'S investigation into the value of architectural excellence to a business's bottom line confirms that design does matter. From the North American headquarters of a German prosthetics manufacturer to an established West Coast opera company, our featured projects showcase successful client-architect collaborations, resulting in thoughtful, healthy, and sustainable environments. The impact of their strategies—improved customer and community relations, enhanced employee satisfaction, and lower operating costs—reaches far beyond financial gain alone.

Ottobock North American Headquarters
Page

Orchestra Hall Renewal
KPMB Architects

BBVA Bancomer Operations Center
Skidmore, Owings & Merrill

Swift Agency
Beebe Skidmore Architects

CBRE Masonic Temple
Gensler

Banham Headquarters
Allies and Morrison

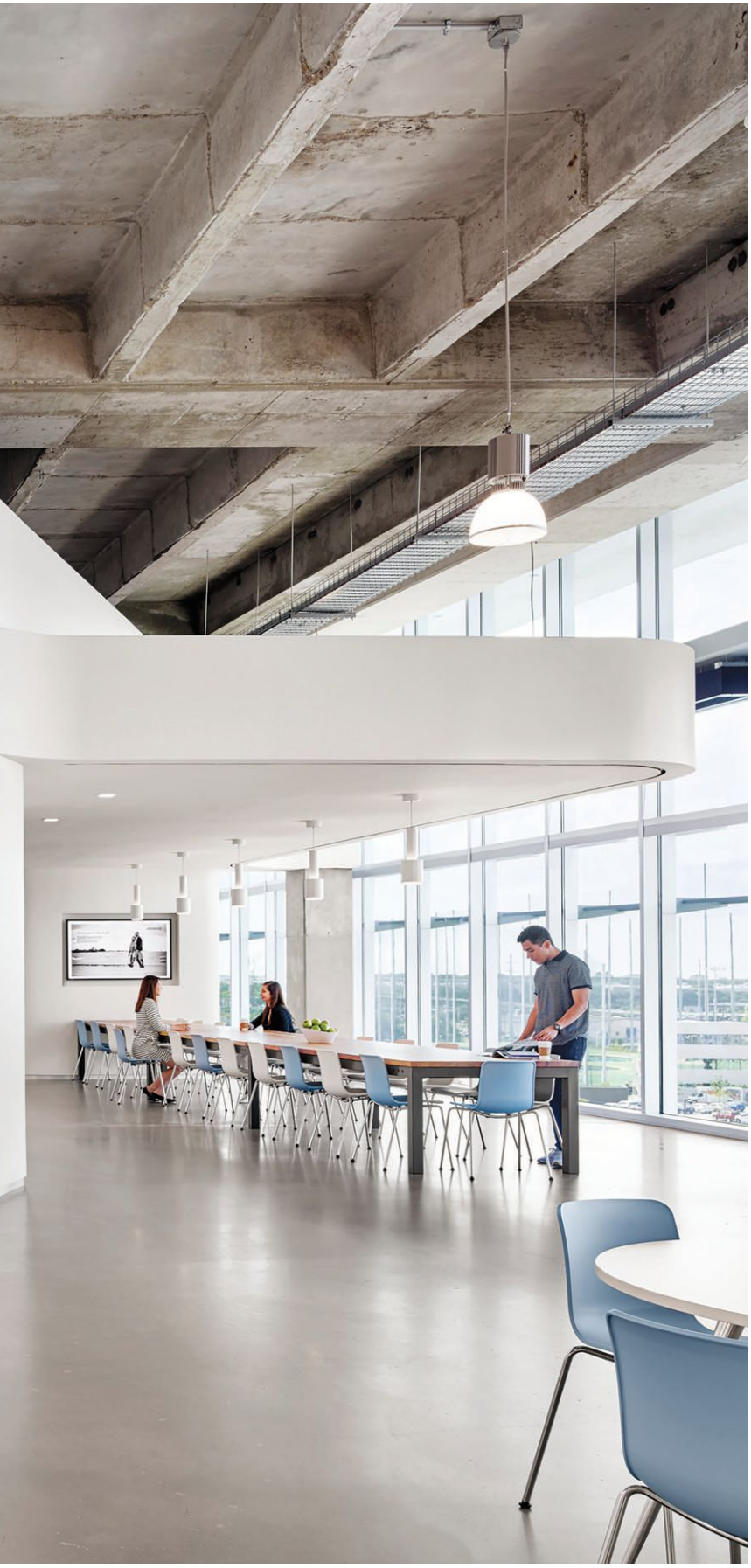
Perkins+Will Offices
Perkins+Will

Diane B. Wilsey Center for Opera
Mark Cavagnero Associates

PHOTOGRAPHY: © CASEY DUNN

OTTOBOCK NORTH AMERICAN HEADQUARTERS

GOOD DESIGN IS good business



PHOTOGRAPHY: © CASEY DUNN

Ottobock North American Headquarters
Page
Austin, Texas

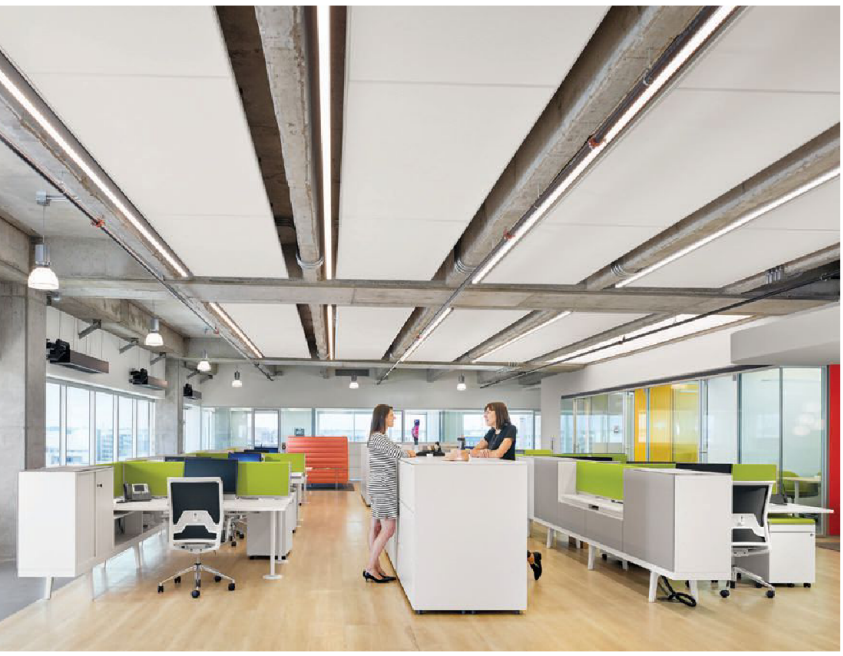
AS A PARTNER to the Paralympics since 1988, and with customers in 100 countries, Ottobock, a designer and manufacturer of prosthetic and orthotic devices and other mobility products, is a global citizen. Founded by German prosthetist Otto Bock in 1919, the company now employs 5,000 people in 46 locations around the world. It established its first North American office in Minneapolis to serve World War II and Korean War veterans in 1958. In 2015 Ottobock relocated its North American Headquarters to Austin, Texas, wanting to capitalize on the city's reputation as a hub for technology and innovation. With the goal of attracting a fresh crop of talented employees, it commissioned the Austin office of Page to design a new headquarters in a raw, 37,000-square-foot space of an existing commercial building north of the city's downtown.

Ottobock's core mission is to help people move with greater ease, and it has pioneered manufacturing techniques that allow its products to have a custom fit, due to highly adaptable components. Such a strategy helped define design goals for the office. "It's sculptural, it's precise, it's anthropomorphic," says Page principal Wendy Dunnam Tita. In addition to creating a space that would communicate high-tech bona fides, the company wanted to connect with Austin's authentic, edgy vibe, bringing rougher materials into the mix. Page exposed the base building's concrete joists and columns, then added curving walls and sleek planes of glass and laminate to gently sculpt the interior. According to Tita, this type of new intervention was part of the Ottobock aesthetic.

The office does not shy away from openness or changes in elevation—both speak to its culture of accessibility, in the physical sense and in terms of company hierarchies. "The business is open and accessible. Not every conversation has to be behind a closed door," says Sara Gardner, director of marketing communications for Ottobock North America. To

White sculptural forms cantilever over the reception and employee-lounge areas (left); expansive white walls are an homage to the company's Bauhaus-era offices in East Germany. The showroom (above) features a "welcome wall" of local reclaimed pecan boards signed by employees and guests.

GOOD DESIGN IS good business



Every office element was carefully detailed; conduit is bundled to the surface of exposed concrete joists, freeing up space for acoustic ceiling panels and the elevated floor (top left). Arcing walls transition into glazed offices (middle, left), while seating by Vitra creates casual meeting areas.

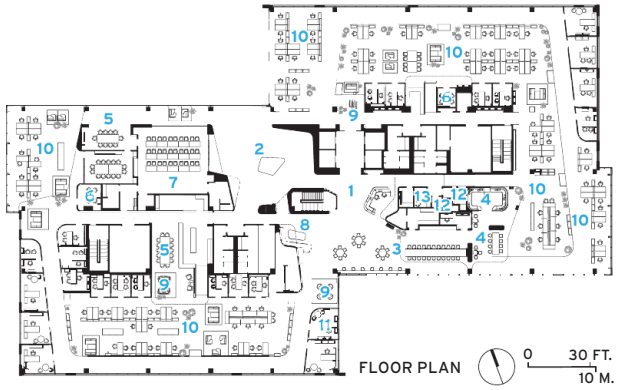
create a more vertical experience, Page embraced the use of ramps and an elevated floor in places. "We wanted everything to be not only ADA-compliant, but also very fluid," says Tita. A pathway through the office connects employees with social zones and directs foot traffic away from workstations. Raising the floor in the southeast and northwest sections of the office ensures that even workers not seated near windows have access to daylight and views. Internal offices have backlit panels that simulate skylights.

The design evolved as a response to drawbacks of open-plan work environments—namely, acoustic disruption. Placing air ducts entirely under the floor kept the ceiling more open, allowing Page to install acoustic panels over workstations. In some meeting areas, employees can draw a thick acoustic drape to define a quiet, private area.

Visitors who come for equipment training sessions first encounter a showroom detailing the company's history. Here, products are elevated as sculpture. "It's first, experiential and, second, informational," says Gardner. "I see a perfect reflection of what we do, which is the meeting of man and machine, of organic and technical." At a housewarming ceremony for the new offices, regional president and CFO of Ottobock North America Andreas Schultz spoke about the challenges of establishing a new team in Austin—of the approximately 100 employees in the office, only about one-third were relocated from Minneapolis. The office needed to build on Ottobock's culture of innovation while maximizing efficiency and being able to respond to growth. "From the time we moved in, we have seen increased collaboration and communication, and over the past years we see growth beginning to justify the investment," he said.

For people who have lost their range of movement, marrying the body to technology can restore a sense of humanity. And by considering how people will continue to interact with their work environments, the new headquarters should allow Ottobock to offer a similar experience to employees. *Jennifer Krichels*

Jennifer Krichels writes about architecture and design. She recently coauthored New Aging: Live Smarter Now to Live Better Forever *(Penguin Books 2016) with architect Matthias Hollwich.*



1 RECEPTION
2 SHOWROOM
3 SOCIAL HUB
4 EMPLOYEE LOUNGE
5 MEETING AREA
6 HUDDLE ROOM
7 TRAINING ROOM
8 GUEST LOUNGE
9 COLLABORATION AREA
10 OPEN OFFICE
11 ENCLOSED OFFICE
12 SHOWER/CHANGING
13 WELLNESS ROOM

credits

ARCHITECT: Page – Robert E. Burke, senior principal in charge; Wendy Dunnam Tita, project manager; Jen Bussinger, Bob Stapleton, senior interior designers; Natalie Cook, Shelby Blessing, designers

ENGINEER: Page (structural, m/e/p)

GENERAL CONTRACTOR: Balfour Beatty Construction

CLIENT: Ottobock

SIZE: 37,000 square feet

COST: withheld

COMPLETION DATE: August 2016

SOURCES

GLAZING: Cristacurva; Clestra Hauserman (partitions)

CEILINGS: Armstrong (acoustic); Barrisol (tensioned fabric)

MOVABLE WALL: Nanawall

FLOORS: Tate (raised); Mohawk (vinyl); Flor; Bentley Mills (carpet)

PAINT: Sherwin-Williams

FURNISHINGS: Vitra (workstations, reception, seating, upholstery); Hatch Workshop (conference/dining table)

TEXTILES: Gerriet (acoustical and leather); Mermet (vinyl draperies)

INTERIOR SURFACES: Corian; Zodiaq; Silestone; 3Form; Daltile; Porcelanosa; Graniti Fiandre; Concept Surfaces

LIGHTING: Finelight (ambient); Focal Point (downlights); Vitra (task)

CONTROLS: Acuity Brands (lighting)

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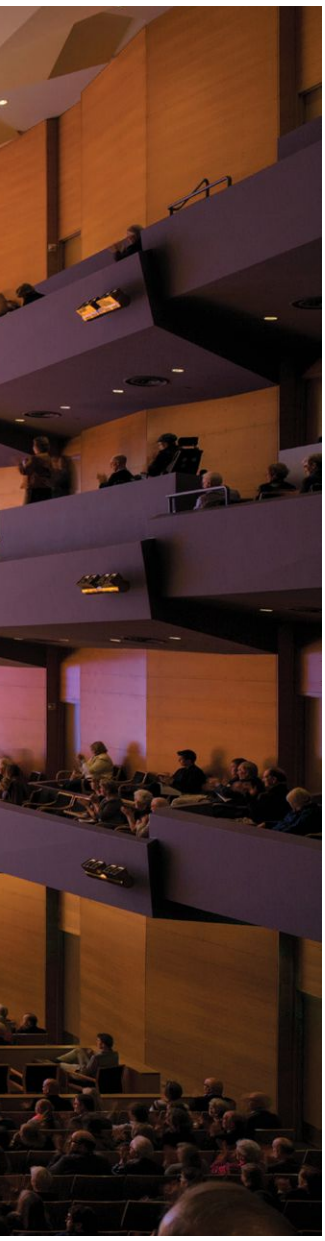
CIRCLE 311

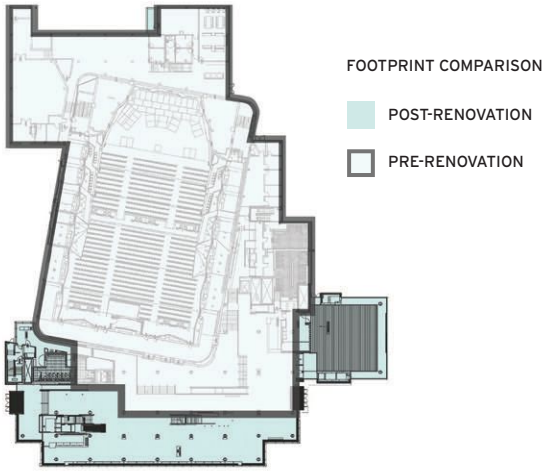
GOOD DESIGN IS good business

Orchestra Hall Renewal
KPMB Architects
Minneapolis

ANY PERFORMING-ARTS organization exists to serve the magic that happens in the hall. But what happens in the lobby can be just as important—to the experience of patrons and to the bottom line. The Minnesota Orchestra proved this with the recent renewal of its Orchestra Hall. This $52 million project saw KPMB Architects turn cramped, dated lobbies into civic spaces that have doubled the orchestra's event revenues and created valuable community outreach.

The project was born from the organization's sense that its facility, designed by Hardy Holzman Pfeiffer and opened in 1974, was turning off potential patrons. "They knew they had to reposition themselves within the city," explains KPMB





KPMB upgraded the auditorium with improved lighting, seats, and technology (opposite, top). But they transformed the original facade (right, bottom) with an expanded, glazed lobby that engages the community (top). The small Target Atrium projects onto a patio (opposite, bottom) and serves as an informal performance space.

PHOTOGRAPHY: © NIC LEHOUX

associate Chris Couse. An aging audience was "fanatically committed" to the orchestra, "but there was no uptake from younger generations." (This became a particularly acute problem during a 16-month labor dispute with the musicians from late 2012 to 2014, during the renovation.)

Accordingly, the architects left the acclaimed performance hall largely intact—discreetly upgrading the lighting, seats, and technology—but pushed for the lobby to take on a public spirit. "We said, We're going to reconnect this to the city, widen the sidewalks, and make people feel it is an amenity they could share in," says principal Marianne McKenna.

The old lobby structure extended from the north and east sides of the rectangular hall toward a multileveled public square called Peavey Plaza. KPMB retained this basic configuration and kept much of the lobby volume's steel structure and its recently updated mechanical systems. But the old walls, plastered with promotional images of the orchestra, came down. New additions pushed farther out toward the park and street with facades of pale blue glass curtain wall and Silver Shadow limestone from Alabama. The materials offer a gentle contrast with the orange-brick walls of the theater volume behind, whereas the new lobby differs radically from the old. The 1970s scheme divided attendees onto a series of terraces, limiting capacity and circulation. The new design more than doubles the lobby size, up from about 16,000 square feet to around 30,000, partly by eliminating terraces between floors and their accompanying stairs. This helped the building become fully accessible and ADA-compliant.

The architects extended the program by proposing an entirely new space: the Target Atrium, an informal performance hall that holds 200 people and connects to an adjacent patio. Orchestra CEO Kevin Smith calls the changes transformative. "The new lobby and the Target Atrium have expanded the experience of coming to the hall. Now when people arrive," he says, "they will see and hear different kinds of work around them"—performances by chamber

GOOD DESIGN IS good business

The 30,000-square-foot lobby expansion has become a flexible urban stage for events, gatherings, and celebrations. It has also made it possible for the Minnesota Orchestra to host the Symphony Ball, its largest fund-raising event, in its own home.

groups, jazz groups, or by one of about 30 community organizations that have partnered with the orchestra.

This has had a powerful effect, Smith says, on the orchestra's relationship with the city: "Not only do we have an environment that's more inviting to the public, but the number of rental events has increased." The hall hosted 90 private events in 2015–16, up from 38 the year before the renovation. The lobby and improved servery facilities have more than doubled food and beverage revenues to about $1.3 million in 2015–16; and subscriptions, donations, and ticket sales are up significantly. The lesson, McKenna says, is simple: "You have to take care of the patrons first." *Alex Bozikovic*

Alex Bozikovic is architecture critic of THE GLOBE AND MAIL *and author of* TORONTO ARCHITECTURE: A CITY GUIDE.

credits

ARCHITECT: KPMB Architects – Marianne McKenna, partner in charge; Chris Couse, principal; Bruce Kuwabara, partner; Robert Sims, senior associate

CLIENT: Minnesota Orchestral Association

SIZE: 139,000 square feet

COST: $52 million

COMPLETION DATE: August 2013

ENGINEERS: Meyer Borgman Johnson (structural); Dunham Engineering (m/e/p)

CONSULTANTS: Sound Space Design (acoustics); Schuler Shook (lighting)

SOURCES

STRUCTURAL STEEL: American Structural Metals

WOOD FLOORING: Anderson Ladd

METAL PANELS: MG McGrath

ACOUSTICAL CEILINGS: AE Conrad

FIXED SEATS: Irwin Seating

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CIRCLE 240

GOOD DESIGN IS good business

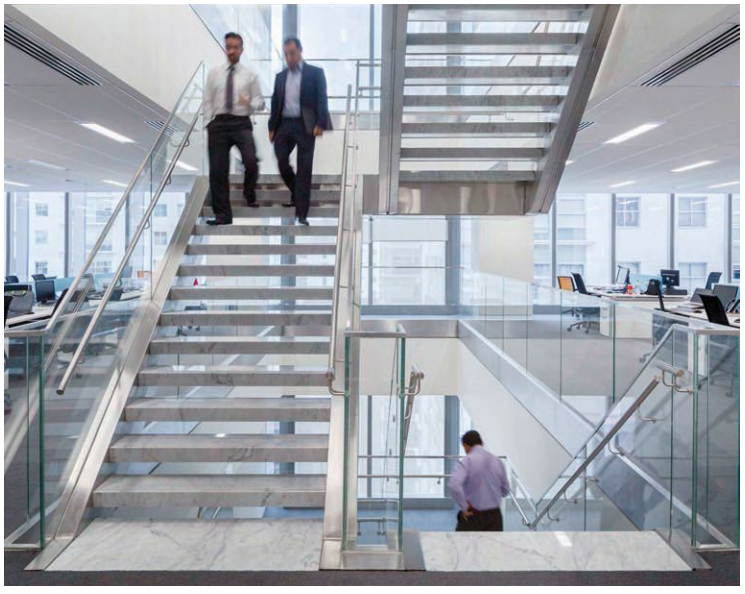
BBVA Bancomer Operations Center
Skidmore, Owings & Merrill
Mexico City

WHEN MEXICO'S largest financial institution, BBVA Bancomer, decided to move its Mexico City operations center from a Brutalist building in a leafy suburb to Parques Polanco, a development in the city's emerging mixed-use Nuevo Polanco area, it turned to Skidmore, Owings & Merrill (SOM) for a building that would reinvigorate the company.

The bank had collaborated with the firm on projects in the past, including the interiors of its Herzog & de Meuron–designed Madrid headquarters. SOM also developed the company's global design standards with the goal, among others, of creating spaces that would attract top-tier talent. These strategies are built into BBVA's new 30-story, 1.66 million-square-foot home. Employees and visitors sense the new and improved atmosphere upon arrival. "One of the ideas we had about the ground floor was that the lobby would be a street," says SOM design partner Gary Haney. With a long pool and greenery visible through an adjacent window wall, this avenue runs through the building, terminating in an exterior herb garden used by the cafeteria chefs. The interior boulevard also leads to a shuttle-bus drop-off point and bike path that provide easy access to subway lines—proof, Haney says, that companies with viable alternatives can devote less space to cars.

BBVA invested an additional $8.6 million beyond the cost of the building to engage the changing neighborhood: $4.4 million of that went toward direct community development, such as the planting of 355 trees. "It became a real outreach, way beyond the confines of the site," Haney says. But the architecture also contributes. Enclosing it with an elegantly shaded skin of aluminum and high-performance glass, SOM designed the building, on target for LEED Gold certification, to minimize its impact on the area's infrastructure: solar water heating, daylighting, and a cogeneration plant reduce its energy consumption and prevent it from burdening the local power grid; water-efficient fixtures, on-site gray/blackwater treatment, and rainwater harvesting protect the city's water supply and sewers.

The client is also taking a responsible approach to employee well-being. There is an average of 26 square feet of outdoor space per employee, providing a connection with nature during the workday as



A lively aluminum screen punctuates the structure's high-performance glass, regulating solar gain (top). The lobby was imagined as a "street" (above). Sunny stairwells encourage employees to climb between floors (right). A daylit cafeteria (opposite, top) and terrace (opposite, bottom) between the 11th and 12th floors provide places for employees to enjoy lunch on-site.

PHOTOGRAPHY: © RAFAEL GAMO

well as gathering and meeting places that are refreshing. Inside, the building's external solar shades assure a comfortable workplace with plenty of sunlight minus the glare and heat, and "communicating" stairs between floors encourage exercise.

The company's decision to place the cafeteria and amenity spaces at the center of the building, instead of on the ground floor, conveys a sense that the building belongs to everyone. This democratized distribution of space, views, and resources, and the removal of interior partitions within a "vertical city" are tangible reminders of BBVA's commitment to transparency. And, so far, it's been a positive factor in shaping a more collaborative rather than top-down approach to business. The dedicated building also reduces operating and real-estate costs. Compared to leasing a newly constructed tower nearby, the ground-up building will save the company 29 percent of those expenses within 10 years.

"I think the big lesson here is that office buildings today are not just about desks, efficiency, and packing people in. They're much more about lifestyle and amenities," Haney says. "When you're competing for a high-end workforce, these things aren't just nice—they're necessary."
Heather Corcoran

New York–based Heather Corcoran is a writer and editor focused on the intersection of art, design, and culture.

credits

ARCHITECT: Skidmore, Owings & Merrill – T.J. Gottesdiener, managing partner; Gary Haney, design partner; Stephen Apking, interior design partner; Charles Besjak, structural director; Joseph Ruocco, Ed Guerra, project managers; Kim Van Holsbeke, senior designer

CLIENT: BBVA Bancomer

SIZE: 1.66 million square feet

COST: withheld

COMPLETION DATE: April 2016

SOURCES

GLAZING: Viracon (curtain wall, skylight); Protective Structures (bulletproof glass); Tvitec (laminated structural glass)

CURTAIN WALL ANCHORS: Halfen

METAL SUNSCREENS: Inasus

FURNITURE: Riviera; Bernhardt; Arper; Interstuhl; Figueras Leather

UPHOLSTERY: Knoll Textiles; Edelman Leather

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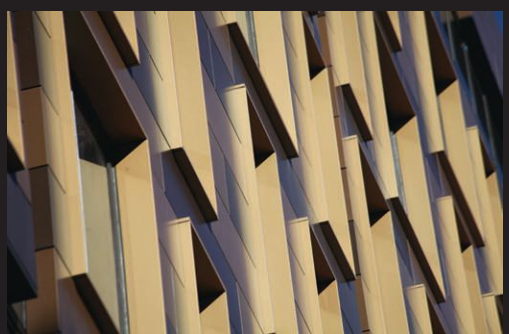

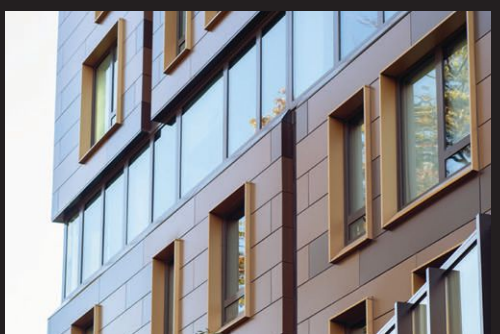

PIERHOUSE
Brooklyn Bridge Park

ARCHITECT: MARVEL ARCHITECTS PLLC - NEW YORK, NY

GC: HUDSON MERIDIAN CONSTRUCTION GROUP - NEW YORK, NY

PANEL INSTALLER: PG DRYWALL - TUCKAHOE, NY

PANEL SYSTEM PROVIDER: ESTOLGA 1000®/ ACP EXPRESS®

MATERIAL SUPPLIER: REYNOBAND

CIRCLE 249

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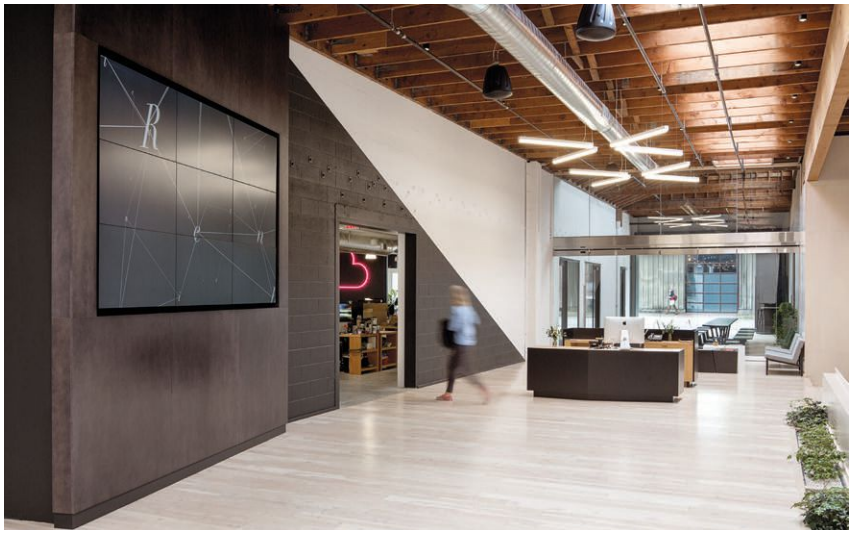


The former Rose City Awning factory was transformed for strategic creative agency Swift (above). An open lobby (left) expresses the ethos of transparency and welcome that the company fosters.

Swift Agency
Beebe Skidmore Architects
Portland, Oregon

IN 2015, as the Portland, Oregon–based strategic creative agency Swift sought a new home for its 150 employees, an opportunity emerged right under its nose. Local real-estate developer Project Ecological Development (PED) had begun rehabilitating the single-story Rose City Awning factory opposite Swift's existing Slabtown home. And, according to the plans, the warehouse would seem to check all the boxes of the boutique advertising firm but one: the updated building would fall about 5,000 square feet short of Swift's need to double its space.

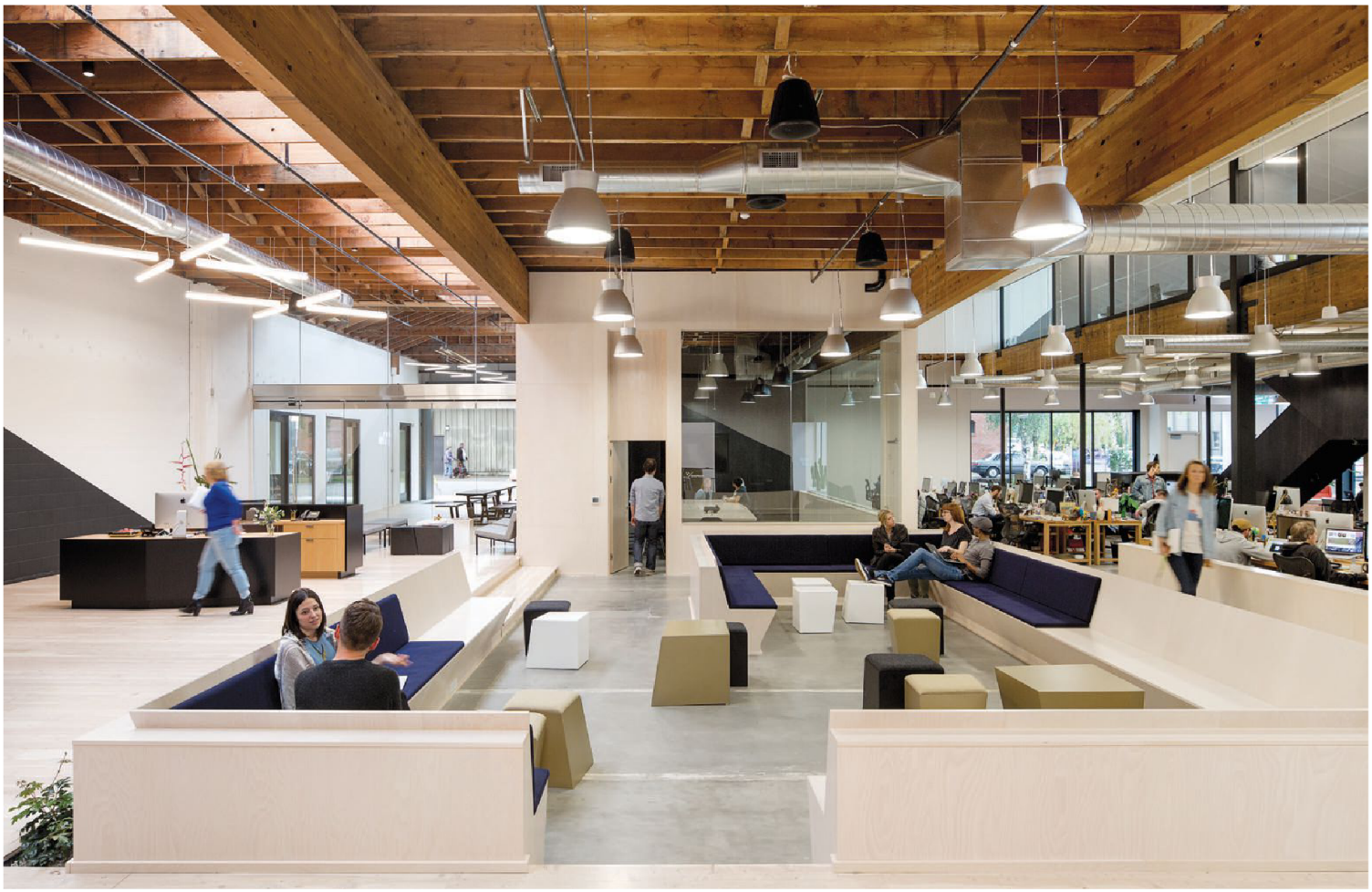
Although PED planned to lease the converted warehouse to five different occupants, the architect it tapped to upgrade the core and shell championed Swift's cause. Portland-based Beebe Skidmore encouraged single tenancy because the architects could then forge stronger connections between work and circulation zones and the office and the street, principal Doug Skidmore explains.

To achieve this cohesion, the architects proposed replacing two of the building's three north-facing sawtooths with a double-height version, and adding three similar roof monitors elsewhere. Placing mezzanines within those volumes would not only make up the square footage, but also enhance daylight and "unify the interior and exterior, giving the brand a physical presence in the city," says principal Heidi Beebe. The developer agreed to the more ambitious scheme for Swift, which then tapped Beebe Skidmore as its interior architect too.

Rose City Awning was built between 1950 and 1970, in 50-by-100-foot modules, and Beebe Skidmore could have squared that compartmentalization with its new client's mode of work. But "Swift is not your traditional advertising agency," chief creative officer Alicia McVey says of the company she founded with Liz Valentine in 2006. Instead of handing off concepts to a production company, it executes them in-house. The start-to-finish approach thrives on collaboration, and Swift requested that 50 percent of the interior be devoted to meeting areas and conference rooms.

PHOTOGRAPHY: © JEREMY BITTERMANN

GOOD DESIGN IS good business

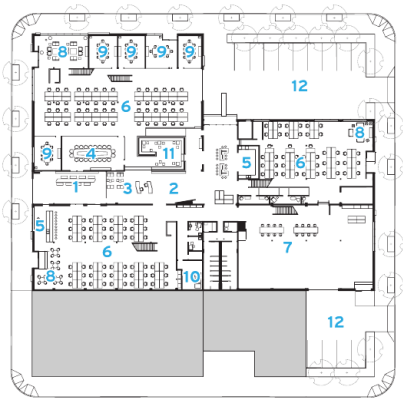


A central conversation pit encourages casual interaction among staff. Most of the other amenity spaces, and conference rooms, are arranged around the building perimeter on mezzanine levels.

McVey notes that dialogue happens casually just as frequently as it does formally. "This is laptop culture on steroids," says Beebe, and the headquarters project demanded an openness and homey ambience to encourage that interaction. So, in addition to inserting the four new sawtooths, the architects cut through the vintage CMU structure wherever possible, placed meeting rooms at the perimeter and on the mezzanines, and they enclosed spaces with glass.

They organized these moves around a common space with a kitchen, sunken conversation pit, and multiple bar- and dining-height surfaces for conversation. Besides creating an inviting feeling for staff, COO Maren Elliott adds, "this atrium is our main entrance for everyone, including clients and potential employees. That the space has a full-width glass door that folds away is a bit of a confidentiality risk, but it speaks to an ethos of transparency and welcome."

The feeling of inclusion is palpable, as are the payoffs. Since the move here in early 2016, Swift has significantly increased business with existing clients and landed several new accounts. It has also hosted more events and tours than it had across the street. Elliott reports that this activity and the new space overall have been boons to employee satisfaction and recruitment—boosting opportunities for learning from one another and sharing best practices. *David Sokol*



GROUND-FLOOR PLAN

0 50 FT. 15 M.

1 OPEN-AIR ENTRANCE
2 MEDIA WALL
3 RECEPTION
4 CONFERENCE ROOM
5 KITCHEN/BAR
6 OPEN WORK AREA
7 PHOTO STUDIO
8 COLLABORATIVE WORK AREA
9 PROJECT WORKROOMS
10 SERVER
11 COMMUNITY SEATING
12 PARKING

credits

ARCHITECT: Beebe Skidmore Architects – Heidi Beebe, Doug Skidmore, principals

ENGINEERS: Grummel Engineering (structural); Cochran (electrical)

CONSULTANTS: Lango Hansen (landscape); BEA (energy); Luma (lighting)

GENERAL CONTRACTOR: Yorke & Curtis

CLIENT: Swift + POSSIBLE

OWNER: Project Ecological Development

SIZE: 30,000 square feet

CONSTRUCTION COST: $3.8 million

COMPLETION DATE: February 2016

SOURCES

GLAZING: Oldcastle BuildingEnvelope

CURTAIN WALL: Dorma

WINDOWS: Kawneer

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CBRE Masonic Temple
Gensler
Glendale, California

AS A TITAN in the commercial real-estate industry, CBRE wants its own offices to reflect its know-how about the market. "When we make a real-estate decision, people scrutinize it," says David Josker, managing director of the company's Los Angeles North office.

Several years ago, the firm embarked on relocating its Universal City office, one of seven offices in the L.A. metro area, to a larger space. Ultimately the company chose an old Masonic temple in Glendale. The decision was largely driven by a growing interest in adaptive reuse. "This is the first adaptive reuse we've done as a company, and we have 450 offices across the world," says Josker.

The firm occupies the upper portion of the nine-story Art Deco tower, designed by Arthur Lindley and built in 1928. Mostly vacant since the 1950s, the property was purchased in 2015 by local builder Caruso, who hired Gensler to convert the dilapidated temple into a desirable office building.

The tower needed major upgrades. "A key goal was to expose the building's original character, at least what was left when we arrived, and to introduce modern elements," says Lindsay Malison, a Gensler L.A. design director.

The firm restored the concrete exterior and replaced small windows on the side elevations with bigger ones measuring 9 by 15 feet. It introduced mechanical systems and added stairs and elevators. For CBRE, it transformed the upper five floors into a 25,000-square-foot office that aligns with the company's Workplace 360 initiative, which aims to boost collaboration, efficiency, and employee well-being. To achieve this, CBRE uses a "free-address approach," meaning there are no assigned desks. Other measures include eliminating paper and banning eating at workstations.

Mindful of these dynamics, Gensler conceived a flexible and communal space that resembles a tech office. The most dramatic intervention occurred on the seventh floor, which contained an assembly hall with decorative wooden trusses traversing a vaulted ceiling. Oddly, the double-height space felt gloomy and cloistered. "Even though it was grand, it was

In a former Masonic temple, Gensler inserted an upper-level mezzanine for real-estate company CBRE, highlighting a decorative vaulted ceiling (above). The elegant Art Deco building was designed by Arthur Lindley and built in 1928 (opposite, left). Two floors of the office are connected by a sculptural steel stair (opposite, right).

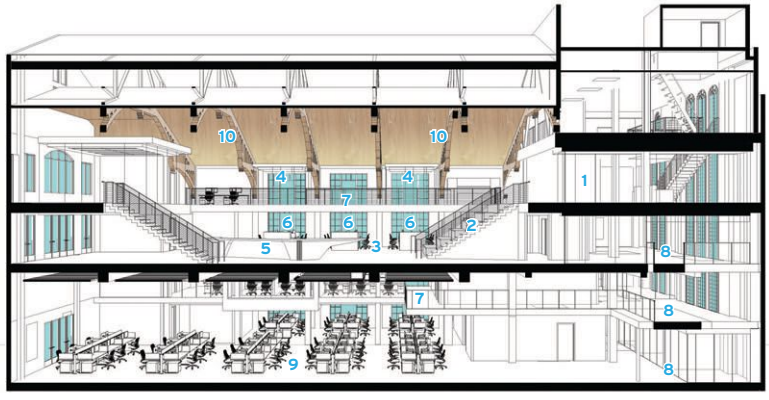
really dark," says Carlos Posada, a Gensler principal.

The new expansive windows brighten up the room and provide city views. The trusses were refurbished, and the ceiling was sheathed with faux-wood metal panels. A hung mezzanine was inserted into the volume and looks over "the Heart"—an open zone for dining and socializing, which features bleacher-style seating cum stairs and a sculptural bar where employees can munch on free, healthy snacks. Glass-walled conference rooms were placed throughout the space.

The firm created a similar atmosphere on the lower two floors. Glazed rooms and rows of workstations were situated in a double-height volume, which is bordered by an L-shaped mezzanine held up by cross-bracing. A spiral staircase with swooping white walls connects the two levels.

The new office has been a hit. A CBRE survey found that nearly all employees feel it has improved their productivity and well-being. Moreover, they are proud to bring in visitors, from high-profile clients to spouses and children. "When we started seeing family members coming through, I realized what a special place we had built," says Josker. "That was a huge indicator that we were successful." *Jenna M. McKnight*

Jenna M. McKnight is a former RECORD *editor who writes frequently about architecture.*



SECTIONAL RENDERING

1 ENTRANCE CONCIERGE
2 BLEACHER STAIR
3 "THE HEART"
4 GLAZED ROOM
5 BAR
6 NEW DOUBLE-HEIGHT WINDOW
7 MEZZANINE
8 SPIRAL STAIR
9 WORKSTATIONS
10 RESTORED TRUSS

credits

ARCHITECT: Gensler – Andy Cohen, Carlos Posada, principals in charge; Lindsay Malison, Kevin Kilmer, design directors; Gary Downer, job captain

ENGINEERS: Structural Focus (structural); Peak Surveys (civil); Davidovich & Associates (m/e/p)

GENERAL CONTRACTOR: W.E. O'Neil Construction

CLIENT: CBRE and Caruso

SIZE: 25,000 square feet

CONSTRUCTION COST: $16.2 million

COMPLETION DATE: December 2015

SOURCES

DOORS: Pella; Panda; Won-Door

CEILINGS: Armstrong; Ceilings Plus

SURFACES: Caesarstone; Formica

HARDWARE: Mockett, Allegion

PHOTOGRAPHY: © BENNY CHAN/FOTOWORKS

GOOD DESIGN IS good business

PHOTOGRAPHY: © STÅLE ERIKSEN

Banham Headquarters
Allies and Morrison
London

AT THE NEW London headquarters of security company Banham, architect Allies and Morrison has juggled the demands of a constrained site, a tight schedule, and a complex program, but the pieces have fallen into place with satisfying precision, like the tumblers of a well-engineered lock.

As a repository for customers' keys and alarm codes, the building is well protected but not defensive in appearance. Its triangular site, bounded by a river and a railway embankment, sits within a small enclave of light-industrial buildings, and its form responds to both the topography and the architectural context while efficiently organizing a diverse range of activities. The ground floor houses a product-display space and workshops for the manufacture of locks. Above, the building rises in two splayed wings containing offices and an "Alarm Receiving Center" (ARC). In this fortified room, operatives monitor CCTV cameras installed at clients' properties and respond to intruder and fire alarms—a 24/7 operation that requires adjacent staff bedrooms. Additional facilities include inventory storage, a café, and a training academy for apprentice locksmiths.

Brick facades and zinc-clad pitched roofs lend a calm coherence to this mix, and have a suitably industrial character. This choice was also driven by the architects' extensive experience with the materials, which allowed for the rapid development of the design. The need for speed was imposed by the city's decision to place a subway station on the site of Banham's former office, giving it two years to relocate. Banham had previously worked with Allies and Morrison on its own plans to redevelop that site, and the firm's familiarity with its operation saved valuable time—as did the client's openness to ideas. "We weren't fighting against people's preconceptions," says Allies and Morrison partner Robert Maxwell. "They trusted us to deliver the best building we could."

Early meetings were held at Allies and Morrison's purpose-built studio, where the architects could point to features that had proved successful. Among those reproduced in Banham's building are a south-facing roof terrace and a long cafeteria table, where staff from different parts of the business might meet. "We talked a lot about the importance for any business of breaking down silos," says Maxwell.

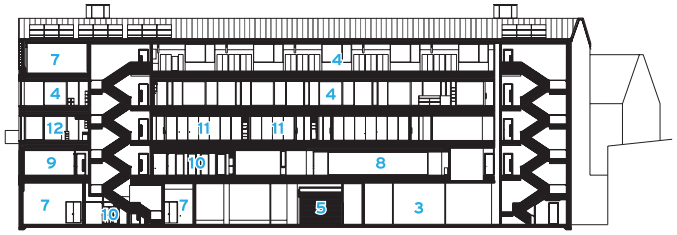
With many major decisions made quickly, the architects could devote time to important details. For example, industry standards demand that facilities such as the ARC are windowless, but the architects felt strongly that a window was important for both staff well-being and the building's outward expression. Their tenacity secured permission to incorporate a double-layered window with blast- and bullet-proof glass in an anteroom visible from the ARC. "The feedback is that it's much appreciated," says Maxwell.

Other custom features go beyond the requirements of the client's initial brief to add commercial value. At the company's previous office, also adjacent to a busy commuter rail line, illuminated signage facing the trains had prompted a useful stream of business leads, and was therefore recreated

Comfortably situated within its context, Banham's new headquarters offers excellent views of the nearby river (opposite). An airy reception area and showroom display the company's products (right). An open-plan office on the fourth floor of the Railway Wing provides a pleasant workspace (below).

GOOD DESIGN IS good business

The canteen opens to a balcony and has a long table for informal staff interaction (above). The brick building has plenty of additional outdoor space and fits in with the neighborhood (right).



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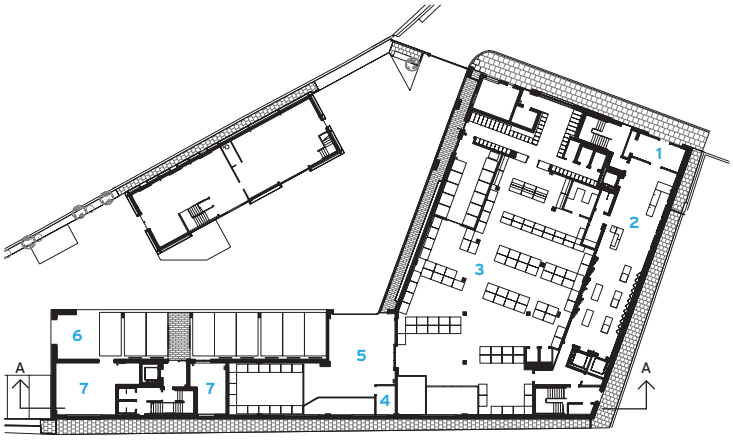
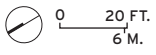


GROUND-FLOOR PLAN



1 PUBLIC ENTRANCE
2 SHOWROOM
3 WORKSHOP
4 OFFICE
5 LOADING BAY
6 BIKE PARKING
7 MECHANICAL ROOM
8 ARC
9 BEDROOM
10 LOCKERS
11 MEETING ROOM
12 CANTEEN

in the new building. The building, too, provides a working demonstration of Banham's products, with security features incorporated unobtrusively throughout. Maintaining a relaxed, domestic quality in the interiors was an important counterbalance, showing customers that protection need not compromise the comfort of their own homes.

As a 90-year-old family-run business, Banham is proud of being "unusual in this age of large, impersonal conglomerates," and Allies and Morrison has worked to weave its heritage and ethos into the fabric of the building. Wayfinding signage and artworks designed by the architects draw on Banham's graphic archive, and the company's mark is stamped on the exterior, where its name is picked out in different-colored brick on two gables. Forming the lettering in bricks rather than paint was architecturally labor-intensive but symbolically important: it is a signal that in its new building Banham has not simply developed office space, but found a home. *Chris Foges*

credits

ARCHITECT: Allies and Morrison – Anja Bradley, Federico Palazuelos Botella, Mark Ellison, Kenny Fitzmaurice, Alex Ford, Helena Gomes, Miranda Li, Robert Maxwell, John Milligan, Sarah Sperber, Eleni Stylianidou, Ruth Treacher, design team

ENGINEERS: Davies Maguire + Whitby (structural); Max Fordham (services/acoustical)

GENERAL CONTRACTOR: McLaren Construction

CONSULTANTS: Moulton Taggart (cost); The Fire Surgery (fire); Sinclair Knight Merz (traffic)

CLIENT: Banham Group

SIZE: 56,000 square feet

COST: withheld

COMPLETION DATE: 2015

SOURCES

BRICK: FreshField Lane

ROOFING: VM Zinc; Alumasc; Sika

WINDOWS: Schüco; Vitral

FLOORING: Desso (carpet); Altro (vinyl); WB Simpson (limestone)

GLAZED WALLS: Optima Systems

LIGHTING: Delta Light; Erco; Trilux; Selux; Philip Payne; DesignPlan; iGuzzini; Foscarini; Astro

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SITE FURNISHINGS

CIRCLE 05

GOOD DESIGN IS good business

Chicago 2016 The design of the new Wrigley Building office was based on staff preferences for an environment that is conducive to being more active, where they could choose where they work. The streamlined space includes a daylit multipurpose area on the top floor, reached by a stair near reception (top), height-adjustable desks, small conference rooms, and comfortable furnishings (above).

Perkins+Will Offices

Perkins+Will

Chicago, Minneapolis, New York, Seattle

FOR A global firm like Perkins+Will, with more than 20 offices across four continents, each year offers the chance to rethink spaces as leases expire and real-estate needs change. When it came time for a fresh look at its studios in New York, Chicago, Minneapolis, and Seattle, the firm took the opportunity to lead by example, pushing the boundaries of workspace design.

"We think of our offices as living laboratories," says CEO Phil Harrison. "We're testing ideas on ourselves before we recommend them to our clients." Instead of creating a showroom to demonstrate the latest trends, each of the four offices directly addressed the needs of their employees: commute times and neighborhood amenities for three offices that were moving (Chicago, Minneapolis, and Seattle) and, for all four, cutting-edge technological services and wellness-promoting moves in line with Fitwel guidelines, which were developed by the General Services Administration and U.S. Centers for Disease Control and Prevention to help create healthier workplaces.

Each of the offices was designed to reflect larger professional trends. Specifically, the work of architects and designers has become more transparent and more iterative, with smaller, more frequent meetings replacing formal status briefings. In general, employees report completing a wider

PHOTOGRAPHY: © STEVE HALL/HEDRICH BLESSING

range of tasks per day than ever before—tasks that require a greater variety of tools and settings. At the same time, architectural offices are looking to get the most from the smallest footprint possible, trading offices for flexible spaces that serve multiple functions.

Linked by firm-wide values, including Harrison's rallying cry to be more "bold, brave, and brilliant," the four Perkins+Will office schemes developed in parallel, with the local teams leading the way. In New York, this meant an interior refresh based on a crowd-sourced evaluation, with improved technology. In Chicago, the staff was split into "client" and design teams. And the Seattle office hired their colleagues at P+W Vancouver as designers. Perhaps the most radical shift came in Minneapolis, where assigned desks were eliminated in favor of a more democratic approach to space that lets the 65 employees choose from among 168 workstations. "It's actually quite empowering," Harrison says.

All of these strategies mirror a consumer-facing trend of customization, explains Rachel Casanova, director of workplace strategy for Perkins+Will New York. "When you have that ability in the consumer world, and you don't give people the ability to affect the environment

Minneapolis 2016 The single-floor Minneapolis office did away with assigned seating, providing 190 options for its 65 employees (above). The furniture, none of which is fixed, for flexibility, is largely repurposed, made out of materials from the previous location, like the harvest table in the café/meeting/event space (below), or from rapidly renewable Aspen plywood.

PHOTOGRAPHY: © COREY GAFFER

GOOD DESIGN IS good business

New York 2015

Less formal than its previous iteration, the New York location has fewer private offices and more open and/or flexible team and meeting areas outfitted with comfortable lounge furniture (below) and sit/stand desk options. The palette consists of more natural hues, with outdoor imagery (above) and an emphasis on healthy materials.

credits

ARCHITECT: Perkins+Will – Chicago: Tim Wolfe, design director; Minneapolis: Dave Dimond, design principal; New York: Joan Blumenfeld, design principal; Seattle: David Dove

GENERAL CONTRACTOR: Chicago: Executive Construction; Minneapolis: Gardner Builders; New York: ACC Construction; Seattle: Turner Construction

ENGINEERS: Chicago: TGRWA (structural); Environmental Systems Design (m/e/p, structured cabling/paging); New York: Cosentini (m/e/p)

CLIENT: Perkins+Will

SIZE: Chicago: 50,500 square feet; Minneapolis: 9,800 square feet; New York: 16,000 square feet; Seattle: 17,800

CONSTRUCTION COST: Chicago: $7.6 million; Minneapolis: withheld; New York: $473,000; Seattle: $2.1 million

COMPLETION DATE: Chicago and Minneapolis: February 2016; New York: December 2015; Seattle: April 2016

SOURCES

FRIT GLASS: New York: Acura Glass

DOORS: Chicago: Assa Abbloy

WOOD DOORS: Chicago: Eggers Industries; Minneapolis: Marshfield; Seattle: Barclay Dean

SLIDING DOORS: New York: PK-30 System

ACOUSTICAL CEILINGS: Chicago: Decoustics, Claro, Armstrong, Optima; Seattle: Ecophon, Linea Wood Ceiling System

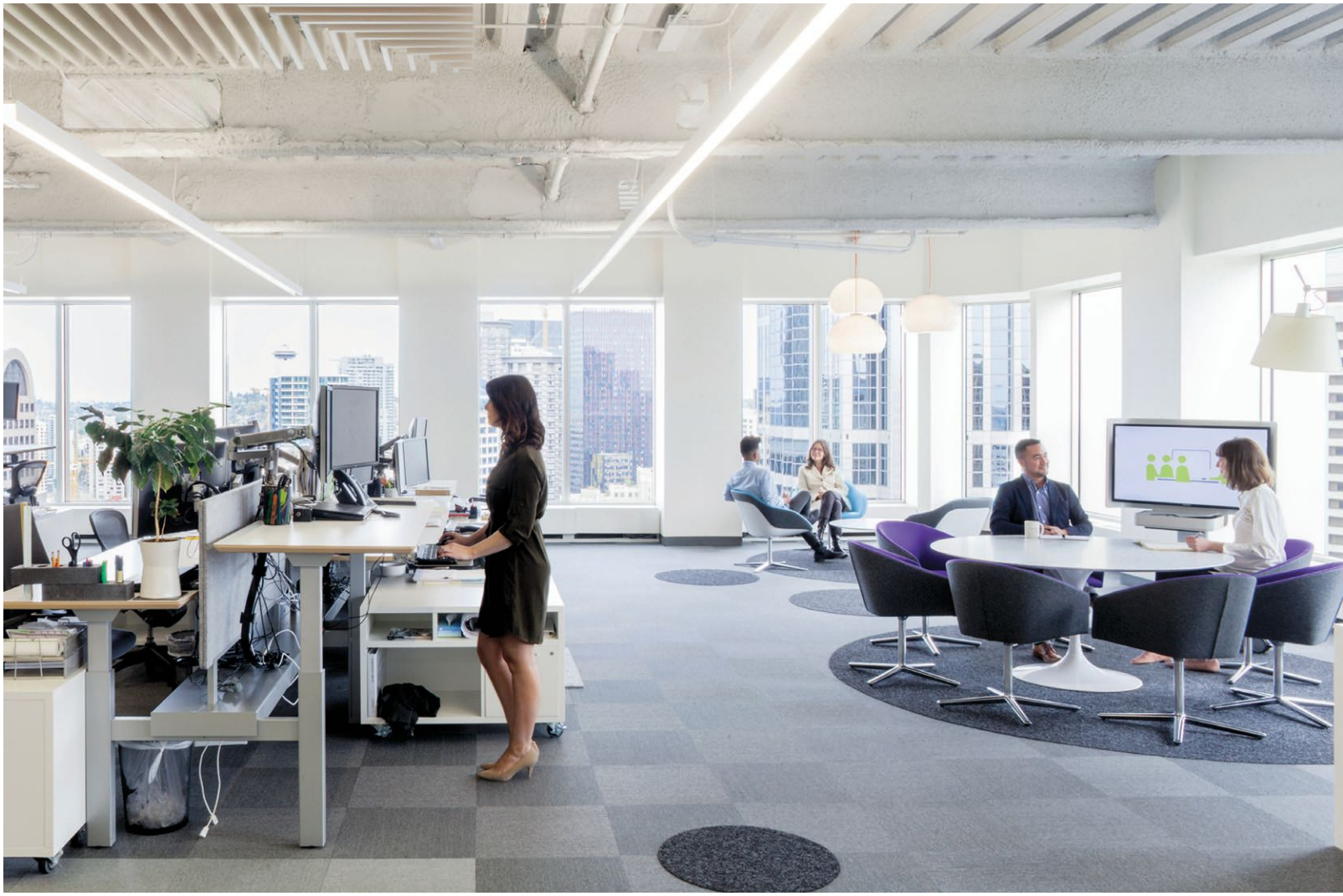
DEMOUNTABLE PARTITIONS: Chicago: Alurl; Minneapolis: Haworth

WALLCOVERINGS: Chicago: Carnegie, Xorel, MDC Wallcoverings; New York: Buzzispace, Flavor Paper; Seattle: Forbo

FLOOR AND WALL TILE: Chicago: Lea Ceramiche, Royal Mosa, Ceramic Techniques, Sonoma Loop; Seattle: Daltile

INTERIOR AMBIENT LIGHTING: Chicago: Lumato, Pinnacle Lighting, Lucifer Lighting, Lutron (controls); Minneapolis: Alcon, Audacy (controls); Seattle: Artemide, Flos, Lightnet, Louis Poulsen, Acuity Brands (controls)

PHOTOGRAPHY: © EDUARD HUEBER



Seattle 2016 A variety of places to meet, have coffee, and chat enhance the open and democratic layout in Seattle (right). Healthy materials were used throughout a design that incorporates height-adjustable desks, as well as soft seating and collaborative spaces for planned and impromptu meetings and alternate work environments (above).

they come to work in every day, they're going to be unhappy." That means creating amenity spaces, such as cafés and outdoor areas that might look more at home in a condominium or hotel, choosing a palette of natural, nontoxic materials, or including subtle reminders of a particular studio's mission: models scattered throughout the Chicago office; open library shelving in Minneapolis, and a wall of shadowboxes in New York where employees can display personal photographs, artworks, or inspiration. "It's this physical manifestation of what we do and what impact we have," Casanova says.

Positive results have already been felt in all four offices. Employees in each reported satisfaction beyond Leesman+ industry standards (a respected, independent workplace-effectiveness benchmark), especially in regard to technology and variety of workspaces—even in Chicago and Minneapolis, where square footage per employee was reduced 17 percent and overall operations costs have decreased 11 percent. As one Seattle employee put it, "Not all architects are created similar, so why should all of their desks be?" *Heather Corcoran*

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CIRCLE 170

SAINT-GOBAIN

GOOD DESIGN IS good business

Diane B. Wilsey Center for Opera
Mark Cavagnero Associates
San Francisco

THE SAN FRANCISCO OPERA has been entrenched at the War Memorial Opera House since it opened in 1932. One of a pair of Beaux-Arts structures owned by the city and located across the street from City Hall, the cultural landmark has a stately 3,146-seat auditorium that is ideal for grand opera but lacks the intimacy and scale for more modest performances. Looking toward the future, the 94-year-old company wanted a secondary venue in which it could mount smaller chamber and avant-garde works to attract the next generation of operagoers. Consolidating its back-of-house operations and administrative offices, scattered in various commercial buildings nearby, was also on its wish list. So the opera company hired Mark Cavagnero Associates to design an addition to the Beaux-Arts twin of the opera house in the War Memorial complex, the neighboring Veterans Building. It asked the firm, as a potential alternate strategy, to analyze that four-story structure's uppermost level for a potential renovation. When the architects found that the latter strategy could be achieved at half the cost of an addition, SF Opera leased the fourth floor, and its rehabilitation proceeded accordingly.

The new Diane B. Wilsey Center for Opera is located directly above a popular 900-seat music and performing-arts venue. Once home of the San Francisco Museum of Art (now SFMOMA), the existing space consisted of gracious, skylit galleries and a central 4,600-square-foot sculpture court. After SFMOMA moved out in 1995, it was used as a law library, but then fell into disuse. Following historic-preservation guidelines, the design team's intervention highlights the original interior and also adds the necessary functionality.

Improving the acoustics of the echoing galleries and isolating the music halls from the theater below was a significant challenge. The design team added 6 inches of concrete and a layer of acoustic insulation to the floor of the sculpture court (already fortified to hold heavy works of art), transforming it into a flexible 299-seat performance space, the Taube Atrium Theater. Maintaining an impressive pair of scagliola columns at the entrance to the theater lobby, the architects installed acoustic paneling around the room, retaining its ornate crown moldings and enhancing the chamfered corners of the ceiling with concealed uplights. The panels are light gray to set them apart from the white walls, and there's a slight gap between the raised floors and original walls and columns. The small auditorium's floor is made of end-grain Douglas fir,

PHOTOGRAPHY: © TIM GRIFFITHS

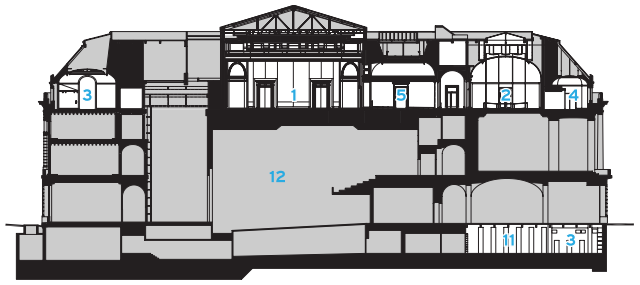
The architects transformed a floor previously occupied by SFMOMA in the Veterans Building, creating a new space for the San Francisco Opera that includes a small theater for chamber operas and avant-garde performances (opposite, top), a daylit costume shop for the company (left), and an exhibition gallery (opposite, bottom).

selected for its acoustic properties and minimally finished with oil to curtail its reflectivity.

Fulfilling the remainder of SF Opera's brief, the architects created an orchestra-rehearsal hall in one of the long galleries, giving the floor a similar treatment to the Atrium Theater's (minus the added concrete), inserting sound-insulating glass at the openings, and replacing a skylit laylight with a light-diffusive fabric that mimics the form and effect of the original glazing. This taut surface lets daylight into the room and transmits sound to an attic where it is received by discreet acoustic absorbers and reflectors. Two similar galleries house a dedicated costume studio and staff offices.

The Diane B. Wilsey Center for Opera is generating up to $20,000 per performance, and the company estimates that the consolidation of its operations is saving approximately $180,000 a year on rent alone. During its debut 2016 season, the new venue drew nearly 4,400 attendees, half of whom were new to SF Opera. "We were thrilled with that result," says Jennifer Lynch, SF Opera's managing director of philanthropy and audiences, adding that the first production of 2017 is sold out for its entire run. *Lydia Lee*

San Francisco–based journalist Lydia Lee writes on architecture, design, and urban development.



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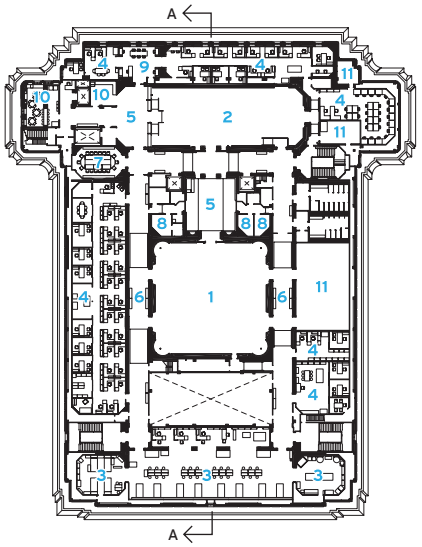

FOURTH-FLOOR PLAN

1 LOBBY
2 REHEARSAL SPACE
3 COSTUME SHOP
4 OFFICE
5 PERFORMANCE SPACE
6 GALLERY
7 CONFERENCE ROOM
8 MAKEUP ROOMS
9 OPERA ARCHIVE LOBBY
10 BREAK ROOM
11 STORAGE
12 HERBST THEATER

credits

ARCHITECT: Mark Cavagnero Associates – Mark Cavagnero, principal; Kang Kiang, principal in charge

ENGINEERS: Tipping (structural); Airco Mechanical (mechanical); Decker Electric (electrical)

CONSULTANTS: ARUP (theater/lighting/acoustics); Thornton Tomasetti (green building)

GENERAL CONTRACTOR: Webcor

CLIENT: San Francisco Opera

SIZE: 40,000 square feet

COST: $18.8 million

COMPLETION DATE: February 2016

SOURCES

FIRE-RATED GLASS: TGP

DOORS: IAC Acoustics

THEATER SEATS: Segis

WOOD FLOORING: Kaswell

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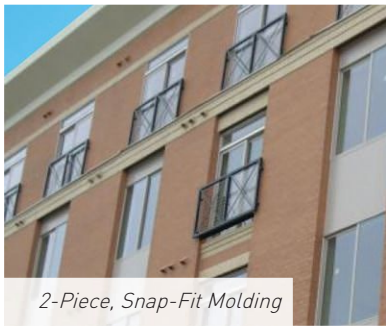

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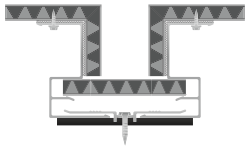

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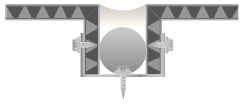

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LANDFORMS

At first blush, two cultural buildings, in China and in France, could not be more different. One is highly crafted—a textural montage of masonry with broad, swooping forms. The other, an angular take on a geological formation, is intentionally spare, appearing like a rock outcrop at the base of its hillside site. But both of these buildings meld art, architecture, and landscape, paying homage to the nature-driven works they contain while reflecting their respective contexts. The peaks of the Huang Gongwang Museum create new topographies, echoing the nearby mountains, while the Lascaux museum reproduces the Dordogne region's agricultural landscape with its planted roof. From ancient origins spring two completely modern interpretations.

HUANG GONGWANG MUSEUM, FUYANG, CHINA, AMATEUR ARCHITECTURE STUDIO

PHOTOGRAPHY: © IWAN BAAN

Huang Gongwang Museum | Fuyang, China | Amateur Architecture Studio

The Good Earth

Pritzker Prize–winner Wang Shu and Lu Wenyu, his partner, tie a museum and cultural complex to China's rich traditions of landscape painting.

BY CLIFFORD A. PEARSON

PHOTOGRAPHY BY IWAN BAAN

PEAKS AND VALLEYS
The architects choreographed a complex procession through the project, including terraces and walkways on the multipeaked roofs.

Since early in his career, when he worked on construction sites and got hands-on experience with vernacular building methods, Wang Shu has drawn inspiration from traditional Chinese attitudes toward architecture's place within the larger context of landscape. So he and Lu Wenyu, his wife and partner in Amateur Architecture Studio, were logical choices to design the Huang Gongwang Museum, named after an important landscape painter who lived from 1269 to 1354. Located in Fuyang, about 20 miles southwest of Hangzhou, where Wang and Lu practice, the 160,000-square-foot museum honors one of the "Four Masters of the Yuan Dynasty," whose work influenced Chinese artists for centuries. Appropriately, Huang painted one of his most famous works, *Dwelling in the Fuchun Mountains*, in the vicinity of the new building. Part of an assemblage of buildings dressed in rugged masonry and topped by multipeaked

LAND ART
Overlooking the Fuchun River, the Fuyang Cultural Complex resembles a traditional Chinese village (rendering, opposite, top). Seen from a small tower on the river side, the project unfolds as a series of terraces, courtyards, and paths (above). Visitors enter the museum from a covered walkway (left) and can exit at the opposite end of the complex (opposite, bottom).

roofs, the museum resembles a village or a range of mountains, evoking community and geology in equal measure.

As China has experienced unprecedented urbanization over the past 30 years, a growing number of its people have begun to look at rural areas as retreats from the stress and chaos of big cities, much as Huang saw Fuyang—which was then a sleepy village but is now a city of 7 million—as an escape from the intrigues of court life. Following a long tradition of *shanshui* (mountain and water) art, Huang painted pavilions comfortably ensconced in a mountainous setting, with the Fuchun River flowing nearby and mists clinging to trees.

After Wang won the Pritzker Prize in 2012, the only Chinese architect to do so, city leaders in Fuyang invited him and Lu to design a cultural complex that would include the Huang museum, as well as a 130,000-square-foot gallery for contemporary landscape painting and an 86,000-square-foot archive. The architects accepted the commission on the condition that they could renovate a portion of Wencun, a small village 30 miles from Fuyang, and replace dilapidated houses for the villagers. Reconnecting the urban and rural here was important to them. In both Fuyang and Wencun, Wang and Lu approach architecture as a means of integrating building with landscape, creating a narrative experience as people move through the projects.

Most of the Huang Museum opened this past September, along with the gallery (the archive should be completed by the end of the year).

LIGHT AND SHADOW
The architects love to contrast heavy elements such as concrete walls with large open spaces (above). Bamboo formwork leaves its imprint on concrete in the gallery of contemporary art (above, right) and in the main lobby (right).

PHOTOGRAPHY: © POUL BUCHARD

INSIDE OUT
As Chinese landscape painters have done for centuries, Wang and Lu frame views of pavilions and pathways (above). Their architecture offers multiple perspectives, instead of a fixed point of view.

Exhibition: The Architect's Studio

THE FIRST in a series of six monographic exhibitions focusing on socially conscious architects practicing today, *The Architect's Studio: Wang Shu* examines the work of China's only Pritzker Prize–winner. Wang, with Lu Wenyu, his wife and partner, runs Amateur Architecture Studio in Hangzhou, working to fuse modernism with vernacular building and traditional Chinese attitudes toward landscape and culture. The partners have been outspoken in decrying the negative impact of China's rapid urbanization, including the destruction of entire neighborhoods and the degradation of the environment. The next three architects in the series will be Alejandro Aravena and ELEMENTAL Studio in 2018, Tatiana Bilbao in 2019, and Anupama Kundoo in 2020. An earlier incarnation of the series looked at more established architects, including Frank Gehry in 1998, Henning Larsen in 1999, Norman Foster in 1999, Renzo Piano in 2003, and Jean Nouvel in 2005.

"The aim of the exhibition series is to focus on political and social criticism as seen from an architectural point of view," says Kjeld Kjeldsen, the curator of the current show. "Wang Shu was selected for his dedication to critical architecture [and for pioneering] a new definition of the role of the architect."

Designed by Kjeldsen and Brian Lottenburger in cooperation with Amateur Architecture Studio, the exhibition presents an introduction to Wang and Lu's inspirations from traditional Chinese culture and philosophy, using images of old buildings and places, as well as quotes from the architects. It also includes an abbreviated and reconfigured version of their installation *At The Parallel Scene* from the 2016 Venice Architecture Biennale, which extolled the value of rural China as a repository of culture and craft, and shows drawings, photos, and models of five of their most prominent projects—the Ningbo History Museum, the Xiangshan Campus of the China Academy of Art, the Wa Shan Guesthouse, the renovation of Wencun village, and the Fuyang Cultural Complex.

The Architect's Studio: Wang Shu. Louisiana Museum of Modern Art, Humlebaek, Denmark, through April 30.

The structures unfold as a series of pavilions that wrap around courtyards and are connected by zigzagging pathways, including one atop the rolling roofscape. “When you step into the building,” says Lu, “you feel as if you walked into a landscape painting.” Just as scroll paintings give the sense of wandering through a scene rather than viewing it from a fixed perspective, the Fuyang Cultural Complex takes visitors on a journey through outdoor and indoor rooms. Creating surprises along the way, the architects designed the project so you see it from different depths, heights, and angles, says Lu. And by arranging the various parts on a sloped site, Wang and Lu built an artificial mountain that speaks to the real ones behind it.

Both inside and out, the architecture presents visitors with a series of layers. Poured-concrete buildings—some clad with the same bricolage of recycled brick, tile, and stone that Amateur Architecture famously used in projects such as the Ningbo History Museum and the Xiangshan Campus of the China Academy of Art—ascend the site in concert with pools of water, terraces, and stairs. Inside, you keep wandering, from a spacious lobby, through cutouts in thick concrete walls, and into galleries topped by the multiple peaks of the tentlike roof. Lu notes that she and Wang saw the Fuyang Cultural Complex as part of a landscape that includes Wencun village. “They form a new painting in a larger geographical space,” she says. ■

Centre International de l'Art Pariétal | Montignac, France | Snøhetta

Cave Dweller

The new Lascaux museum takes its cues from the famous prehistoric vault.

BY JOSEPHINE MINUTILLO

PHOTOGRAPHY BY ERIC SOLÉ

Lascaux. That mystical place in France's Dordogne region is known throughout the world. Despite being one of numerous caves in southwestern France and neighboring Spain that features prehistoric art—some older, some bigger—Lascaux gained an international reputation for the quality, diversity, color, and sheer size of its animal paintings. The tale of its discovery and its unique history since then have only added to the allure.

Stumbled upon by a teenage boy and his dog in 1940 as France was embroiled in World War II, Lascaux opened to the public shortly after the war's end. It eventually became clear that the constant visitors were taking a toll on the grotto and its treasures, forcing it to permanently close in 1963. It has only been accessible to a very restricted group, mainly scientists, since then—ushering in a new era for the Paleolithic phenomenon.

Lascaux II, a full-scale replica of a portion of the cave, opened 20 years later in 1983, just beside it, and was, to the surprise of many, a hit. (Lascaux III, a traveling replica, followed in 2012.) This December, the Centre International de l'Art Pariétal—what has come to be known as Lascaux IV—opened 1,700 feet down the hill from the original on what was farmland, beside the small town of Montignac. It is a full-fledged museum housing yet another, larger, cave facsimile, plus interactive and contemporary art exhibits, theaters, a shop, restaurant, and offices. The new facility was built, in part, to alleviate stress caused to the original by the 250,000 annual visitors to the adjacent Lascaux II, which will remain partially open to groups.

The Oslo-based office of Snøhetta, partnering with London-based exhibition designers Casson Mann, won the commission for the center in 2012 after entering an open competition, a rarity for the firm. "Lascaux is sacred in France and important for Europe," says Snøhetta project architect Rune Veslegard. "To be able to participate in that history was very interesting for us."

Like much of its work, Snøhetta's project in Montignac is equal parts architecture and landscape. The design recalls Snøhetta's Oslo Opera

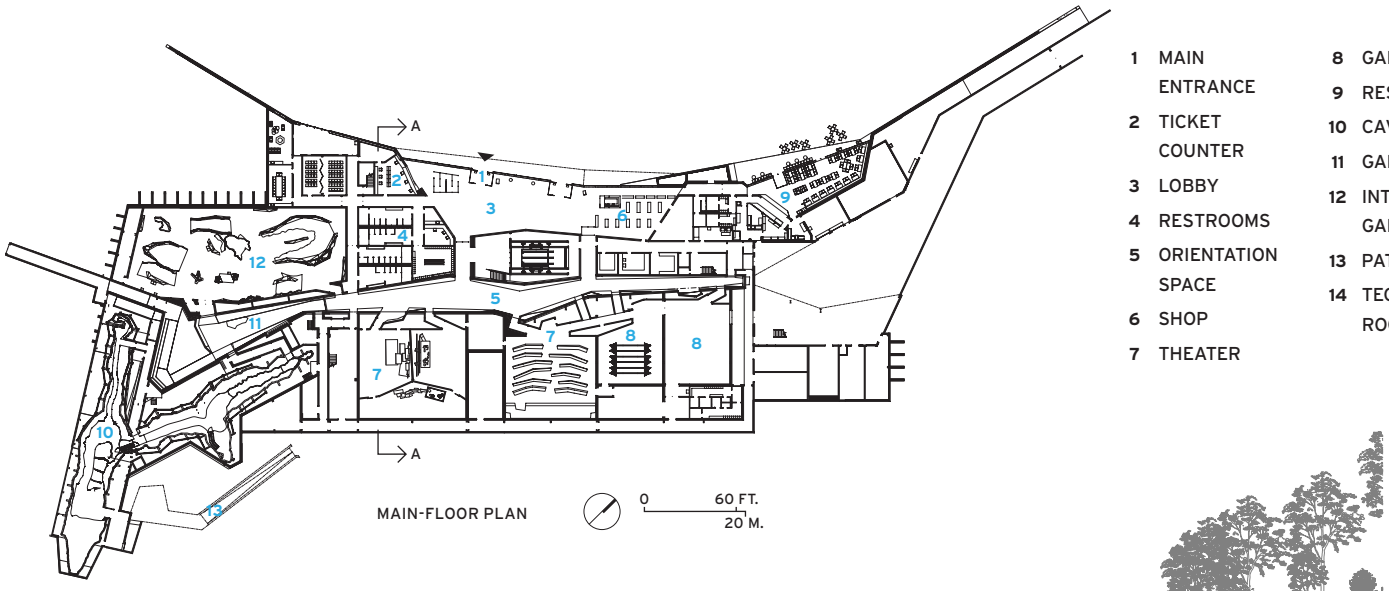
GRAND CANYON
The orientation space at the center of the museum is formed from canted poured-concrete walls and topped with skylights.

JAGGED EDGE The new museum cuts into the base of the hill in which the actual cave is located (above). A ramped outdoor passage leads to the cave replica (left).

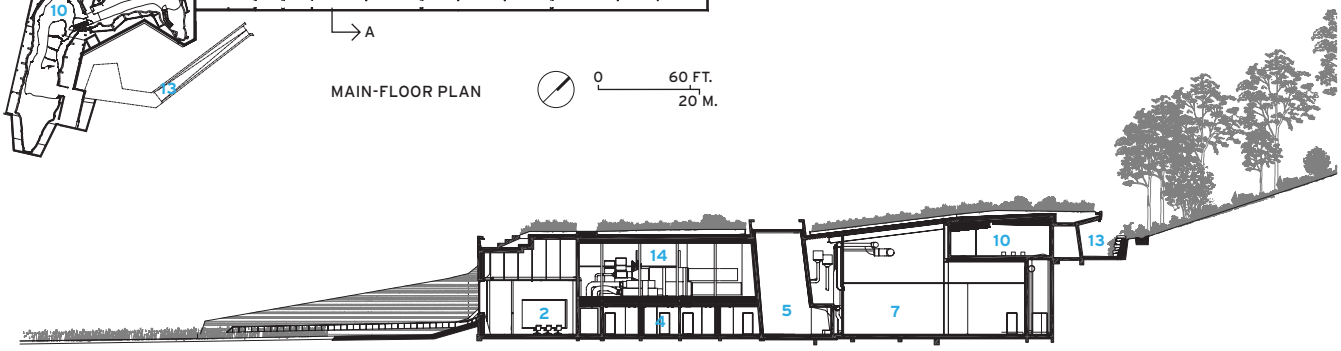
House (RECORD, August 2008, page 84), appearing like a rock formation upon whose roof people, including nonvisitors to the museum, can stroll and picnic. Ensconced within the base of the hill, the 93,000-square-foot building is faced with a 590-foot expanse of continuous glazing that ranges from a sliver to 24 feet high, and topped with a jagged concrete roofline, making it both slight and monolithic. Snøhetta carved three incisions into the hill—the first for the glassy façade, the second to allow daylight into the 34-foot-high canyonlike orientation space at the center of the museum, and the last, bordering the dense forest above, to form the outdoor entrance to the new cave replica.

The decision to enter the cave replica from the outside rather than from the museum was controversial, and one Snøhetta fought to maintain. "At some point, the client wanted to enclose everything, but the experience is stronger and more powerful to separate the cave from the rest of the museum," says Veslegard. "We wanted visitors to discover it as the boy did, and come into contact with the sights and smells of the forest."

Rain or shine, after passing through the interior orientation space's canted poured-concrete walls and being escorted by a guide and taken in an elevator to the planted roof, visitors in small groups take the ramped access route, lined by stone retaining walls, into the dark cave replica above the main museum space, where the temperature, acoustics, hu-



1 MAIN ENTRANCE
2 TICKET COUNTER
3 LOBBY
4 RESTROOMS
5 ORIENTATION SPACE
6 SHOP
7 THEATER
8 GALLERY
9 RESTAURANT
10 CAVE REPLICA
11 GARDEN
12 INTERACTIVE GALLERY
13 PATH TO CAVE
14 TECHNICAL ROOM



SECTION A - A

midity, and light levels are as close to those of the original as possible.

What did change, by necessity for a public building, was the geometry of some of the wall and floor surfaces. In the real cave, for instance, some passages are as narrow as 12 inches, and their counterparts had to be widened for the museum. Where the slope of the ground surface was too steep, the incline was adjusted to meet accessibility guidelines.

Apart from those modifications, advances in 3-D scanning allowed the contours of the new replica's walls—formed from CNC-milled molds and hung on steel ribs—and the paintings and etchings to come within micrometers of the original. "It took 11 years to reproduce 40 percent of the cave for Lascaux II, and only 30 months to do 90 percent of it here," says the center's managing director, Guillaume Colombo. In total, there were over 1,000 people involved in the project. "This was groundbreaking for us on so many levels—to integrate something so complex with architecture and make it work seamlessly," says Veslegard.

The success of Lascaux II already proved there was a large audience

SPITTING IMAGE Conditions within the cave replica (above) are as close as possible to the real thing. After reentering the museum from the cave, visitors can spend more time with specific artworks, reproduced again in an interactive gallery (left).

willing to visit a simulacrum. The experience of being within the cave replica is indeed impressive, without feeling like a Disney or Las Vegas–type reproduction. Yet despite the similarities to the Oslo Opera House, without the urban context and a more distinctive architectural expression, Lascaux IV falls a bit flat.

The best aspect of the architecture is the procession through the building—inside to outside and back inside—culminating in lush, green interior walls and gentle waterfalls, a symbol of man's imprint on nature, not unlike Lascaux itself.

"Almost no one can experience the real cave," says Veslegard, who actually got the once-in-a-lifetime chance to spend a half hour inside it, "so we had to create the new reality." ■

credits

ARCHITECT: Snøhetta
ASSOCIATE ARCHITECT: SRA Architectes
ENGINEERS: Alto Ingenierie (mechanical/civil); Khephren Ingenierie (structural)
CONSULTANTS: Casson Mann (scenography); Commins dlab (acoustics); 8'18" (lighting)
CLIENT: Département de la Dordogne
SIZE: 93,000 square feet
COST: $60.7 million
COMPLETION DATE: December 2016

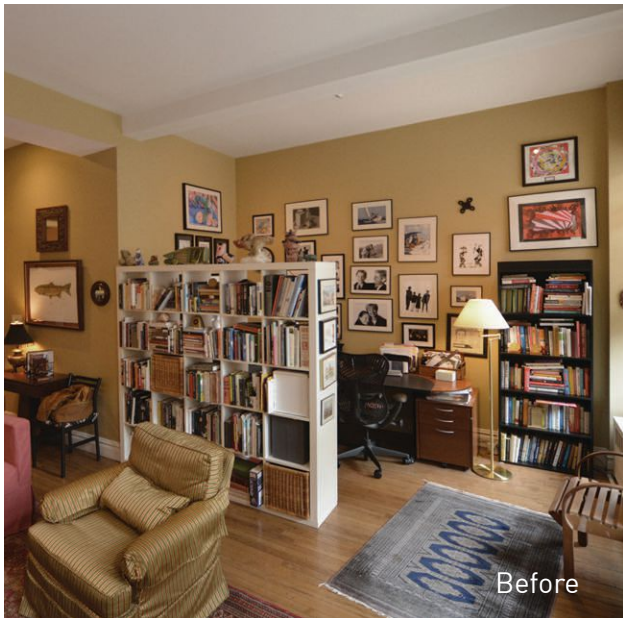
SOURCES

GLASS: Cristec
RESILIENT FLOORING: Tarkett
ELEVATOR: Kone
LIGHTING: Bega, Zumtobel
OFFICE FURNITURE: Vitra

PHOTOGRAPHY: © DAN COURTICE (BOTTOM)

CASE STUDY

After


Before

After

Project:
Private Residence - New York, NY

Architect:
Leila Satow Architect, PC

Credit:
VHT Studios - New York, NY

System:
Sliding Bypassing (SB4)

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AIA

CIRCLE 197

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CIRCLE 34

RETAIL & RESTAURANTS

The skilled designer creates spaces where people want to be. When those spaces are used to promote a brand, design plays an even bigger role. In this issue, we look at two large multilevel stores, in Tokyo and Beijing, and two more intimately scaled restaurants stateside. The shopping emporiums—both for high-end fashion houses—employ traditional materials in combination with digital technology and intricate lighting effects. The restaurants, on the other hand, offer dining spaces that exude old-school comfort and glamour. For all, design is an integral ingredient.

PHOTOGRAPHY: © PAUL WARCHOL

1436 ERDOS, BEIJING, BY GABELLINI SHEPPARD ASSOCIATES

1436 Erdos | Beijing | Gabellini Sheppard Associates

A Soft Touch

Luxurious cashmere goods stand out within an ethereal space.

BY SUZANNE STEPHENS

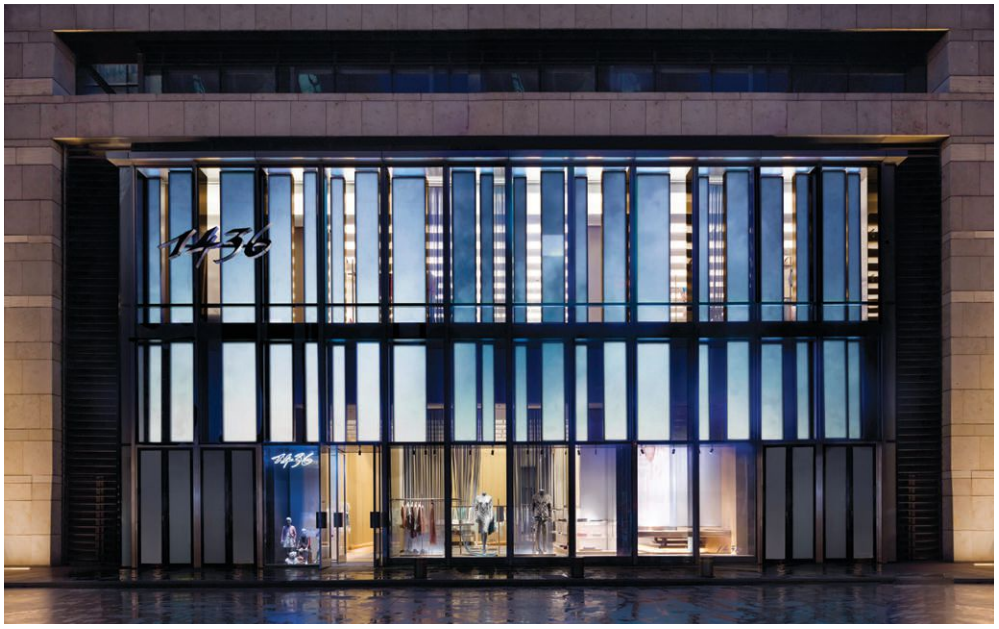
PHOTOGRAPHY BY PAUL WARCHOL

Most architects who design shops, art galleries, or even museums know too well the need for a delicate balance. You have to create a setting discreet enough for the goods or objects on display to stand out, while designing an architectural environment alluring enough to induce visitors to linger, look—and maybe buy.

A prime example of this intricate interaction between the container and the contained is the two-story boutique 1436 Erdos in Beijing's Kerry Centre, a centrally located office, hotel, apartment, and shopping complex. The New York firm Gabellini Sheppard Associates designed the 4,300-square-foot luxury emporium in 2016 to foster the identity of the purveyor of high-quality cashmere accessories and clothing. The owner is the Erdos Group, named for the city (aka Ordos) in Inner Mongolia where the company was founded in 1979. Erdos has several fashion lines, including the ultraluxurious 1436 cashmere brand, a high-quality gossamerlike knit spun from the down of baby Arbus goats. Based on a formula where threads have a diameter of only 14 micrometers and a length of 36 millimeters, the product is extremely lightweight yet strong.

The head of 1436 Erdos, a Cambridge University–trained engineer, Wang Zhen, began opening its stores in China in 2006 before turning to Gabellini Sheppard to design a new flagship in Beijing. She admired

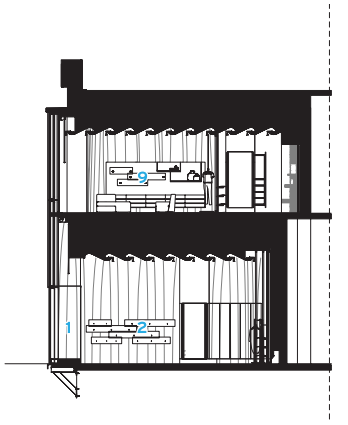
WAFTING THROUGH The upper floor of the boutique is subdivided by delicate display assemblies and fabric scrim (this page). As can be seen in the men's collection (opposite), the gracefully arced shelves echo the undulating curves of the cast-plaster ceiling, which is embedded with linear LEDs.



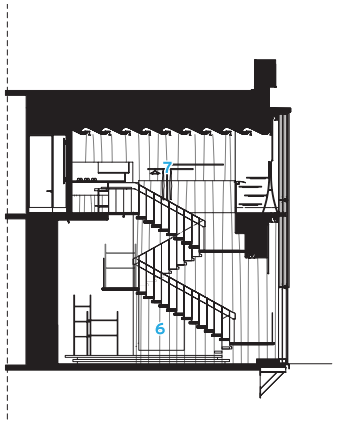
LET THERE BE LED From the street, the facade presents a distinctive array of LED panels on which a video can be projected (above). Inside, the scalloped profile of the ceiling is emphasized by LEDs (opposite, right). On the upper level, a video and display wall of projecting acrylic tubes is backed by LED lighting (opposite, left).

the firm's understated approach to fashion, which she first encountered through its Jil Sander store in Paris (1993) and, later, in the handful of Salvatore Ferragamo shops in Italy. Meanwhile, her creative director, Graeme Black, formerly a designer with both Ferragamo and Armani, was familiar with Gabellini Sheppard's Armani Center in Milan (2000). "Zhen felt we were kindred spirits," says principal Michael Gabellini, who intended the ambience to have a relaxed and elegant quality for its comfortable, luxurious collection. Above all, he wanted it to convey a sense of calm: "The streets of Beijing outside make New York City seem placid," he says. The setting also needed to be flexible, relying on movable display assemblies and furnishings as 1436 expands beyond cashmere; it now features men's and women's attire with silks, cotton-and-nylon blends for warm weather, and it plans on adding handbags and shoes to its portfolio.

From the street, the shop, embedded in the low-rise concrete-and-steel base of the Kerry



SECTION A - A



SECTION B - B

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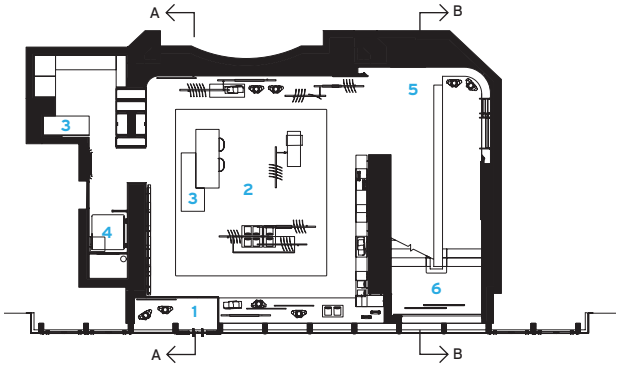
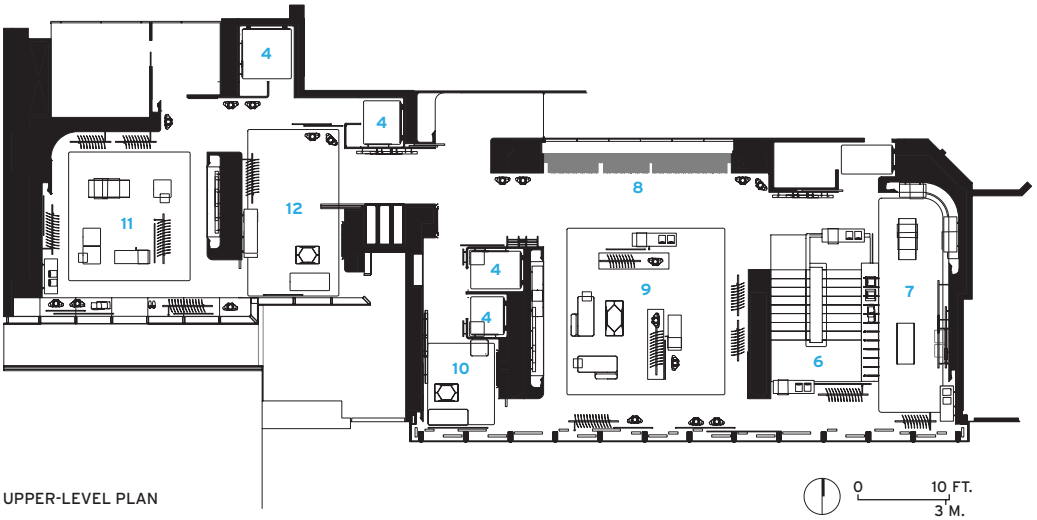


GROUND-LEVEL PLAN



UPPER-LEVEL PLAN

0 10 FT.
3 M.

1 ENTRANCE
2 RETAIL
3 CASH WRAP
4 FITTING ROOM
5 ARTISTIC PLASTER WALL
6 STAIR
7 HOME/GIFT AREA
8 ART/DISPLAY WALL
9 WOMEN'S RETAIL
10 WOMEN'S LOUNGE
11 MEN'S RETAIL
12 MEN'S LOUNGE

Centre, presents a tailored look: its glass and metal curtain wall is backed by a layer of vertical LED panels spaced apart to permit shafts of daylight to enter the interior. A digitally run video feed of moving images wafts over the LEDs to spark up the facade at night. Inside, a soft palette of beige and off-white oak, plaster, and travertine creates a soothing, airy background for the cashmere scarves, shawls, and other accessories displayed on the street level. (The much larger second floor carries the women's and menswear collections.) Diaphanous fabric scrims subdivide the various areas, where spare, slightly curved oak shelves and slender rods elegantly present the merchandise. The most substantial elements in the shop are the sleek, blocklike beige wool-and-leather chairs, benches, and hassocks, which the architects also designed.

But the ethereal atmosphere dominates, even overhead, where a series of slightly overlapping, curved, cast-plaster forms installed with linear LEDs span the length of the showrooms' ceilings on both levels. "Wang wanted us to capture the feeling of the light in Erdos, where earth and sky meet, and to approximate the serenity of the early morning or early evening," says Gabellini.

A sculptural open-riser stairway, clad in a wood-laminated composite over a steel frame, leads to the upper level. Over a dozen sections, each formed of eight steamed-bentwood treads, are "connected like a puzzle," says the architect. He wanted the stair to evoke "the way Graeme thinks about clothes, cutting on the bias to generate shapes that seem layered on the body." To further dramatize the lightness of this shaped, muscular construct, he tucked LEDs strategically within its handrails.

TOUR DE FORCE A plaster wall designed by Orazio De Gennaro Studio in a blurred-stripe pattern swerves toward the staircase on the first level (left). The interlocking bentwood open risers give the sculptural construction (opposite) a floating, layered appearance.

Lighting, as is typical of a Gabellini Sheppard interior, defines spaces as well as dramatizes architectural elements. A 21-foot-long wall of LEDs on the second level functions as a thick two-dimensional art and display installation: 16,000 tubes of etched and clear acrylic, lit by the same number of LEDs, transform the backdrop into an active wall where a video on the production of cashmere can be projected, or goods can be arranged carefully on the protruding sleeved tubes.

Gabellini Sheppard designed the Kerry Centre shop to define the look of the stores sprouting up in China under the 1436 name. Accordingly, the firm has provided guidelines and oversight for the newer shops planned through 2018. "We are passionate about retail design and brand development," says Gabellini, whose first appearance in RECORD in September 1993 (page 90), for the Jil Sander Boutique in Paris, foretold his successful career trajectory. Since Gabellini started his office in 1991, he has designed hotels, residences, and restaurants. But the retail building type is a foundational part of the work. "We always research the background of the client's company to understand its intricacies," says Gabellini. "We don't want to jump into a void but to see the company's future identity, and how a brand can move through time." ■

credits

ARCHITECT: Gabellini Sheppard Associates – Michael Gabellini, Kimberly Sheppard, design partners; Daniel Garbowit, managing partner; Silvia Maffei, associate, lead designer; Kentaro Ishihara, project designer, products designer; Bobby Young, senior associate, project architect; Xin Yang, interior designer

ASSOCIATE ARCHITECT: Eric Tsay

ENGINEER AND GENERAL CONTRACTOR: Rich Honour Design Group (structural, m/e/p)

CONSULTANTS: Cooley Monato Studio (lighting); TAD Associates (audiovisual)

CLIENT: Erdos Group

SIZE: 4,300 square feet

COST: withheld

COMPLETION DATE: March 2016

SOURCES

PAINTS AND STAINS: Benjamin Moore; Sherwin-Williams

WALLCOVERINGS: Phillip Jeffries; Surface Materials

DOWNLIGHTS: Lucent Lighting

INTERIOR AMBIENT LIGHTING: Acolyte LED

DIMMERS: Lutron Electronics

Gwen | Los Angeles | Home Studios

Set the Stage

Impeccable design steals the show at a Hollywood restaurant.

BY SARAH AMELAR

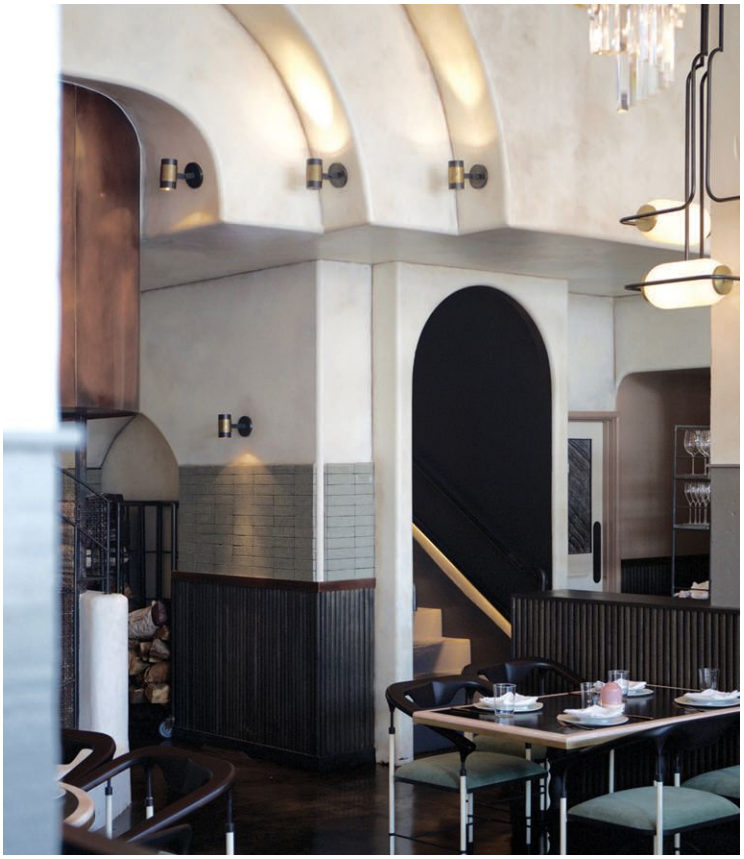
Deep red and luxuriantly marbled, meat is central to the experience of Gwen, a new restaurant in Hollywood, California. As patrons enter the grand, high-ceilinged dining room, they pass through the venue's small butcher shop, its retail vitrine brimming with aged Wagyu beef, plump fowl, savory sausages, and terrines of grouse or fois gras. Here, just over the restaurant's threshold, an inset of seemingly timeworn marble mosaic—that could easily pass as being original to this ornate 1920s building—punctuates the polished yet age-scarred concrete floor, spelling out "Gwen" with a lyrical flourish. Deceptively recent, this inlay (honoring the owners' grandmother, who was raised on a farm) simultaneously evokes old-time Hollywood glamour and the utilitarian floor tiles of a vintage butcher shop. And that play between the elegant and the raw runs through Gwen—underscored by aromas from a great copper-clad hearth. If this soaring rectangular dining room is a temple to meat, then the altar at the end of its "nave" is the wood-burning grill.

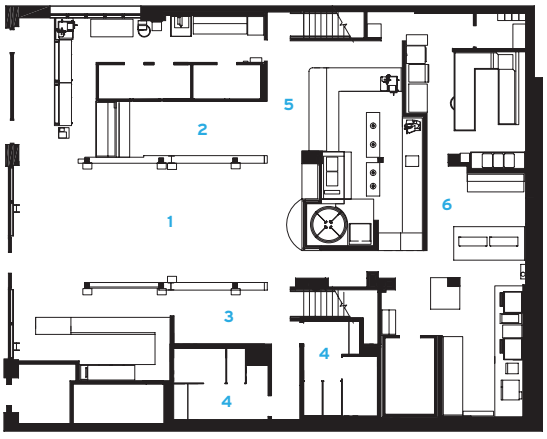
"We started out with the concept of roasting whole animals over an open pit," says Australian-born Luke Stone, who founded Gwen with his brother, chef Curtis Stone. "But with that rustic approach, we also wanted to create an authentic sense of luxury, nothing Disney or kitsch."

To design interiors worthy of the prime cuts and location—right on Sunset Boulevard—the owners turned to Brooklyn-based Home Studios (HS), which typically custom-fabricates everything from light fixtures to furniture, as it did here. The site was a two-story corner building from 1926, its creamy white, high-relief facade an exuberant cross of California Spanish, Baroque, and Art Deco styles. Yet very little original detail remained in the 6,000-square-foot interior (of which 4,500 square feet would be front-of-house space). So the designers paid homage to that stylistic provenance, but with a modern twist. Now a stepped series of concentric arches, like a

PHOTOGRAPHY: COURTESY HOME STUDIOS

SHOWTIME In the main dining room, a stepped series of concentric arches, like a proscenium, frames the spectacle at the copper-clad hearth. Overhead, large crystal chandeliers drip from the ceiling.





FLOOR PLAN

0 12 FT. 4 M.

1 MAIN DINING ROOM
2 BUTCHER SHOP
3 BAR ROOM
4 BATHROOM
5 CHEF'S TABLE
6 KITCHEN

credits

DESIGNER: Home Studios – Oliver Haslegrave, Evan Haslegrave, principals; Danielle Epstein, design director

GENERAL CONTRACTOR: Ford Development

SIZE: 6,000 square feet

COST: withheld

COMPLETION DATE: August 2016

SOURCES

FLOOR AND WALL TILE: Ann Sacks

PAINTS & STAINS: Farrow & Ball

PLUMBING: Kohler

RECESSED KITCHEN LIGHTING: Environmental Lights

WINE AND DINE Custom steel-and-glass light fixtures wrap structural columns (opposite, left). Diners can sit by the hearth, which was inspired by an Argentinian *asador* (opposite, bottom). A discreet stairway (opposite, top right) leads to the more intimate mezzanine level (above).

proscenium, frames the spectacle at the hearth. Over the main dining area, big crystal chandeliers spiral down, at once reminiscent of 1930s cinematic opulence and '70s styling. And wrapping structural columns along the nave, HS created steel-and-glass light fixtures that pair a Deco-like articulation of parallel lines with kinetic, industrial traits. Their modern milk-glass shades, inspired by classic period fixtures, filter incandescent light, softening the room's harder edges and giving the marble-smooth plaster walls a golden cast.

"Gwen's approach to food is elemental in its meatiness and very focused on displaying the high quality of the ingredients," says HS principal Oliver Haslegrave. "In a similar way, we wanted to expose and celebrate the fundamental character of the materials we used." The richness of that palette includes brass-edged tabletops of pink marble.

But the real drama happens amid the flames, near the fire pit (where meat is both cooked and smoked) and, beside it, in the open kitchen. There, a Carrara-marble counter with high stools caters to customers who prefer "ringside" dining to more relaxed tables or booths. Other options range from the intimate mezzanine level to banquettes tucked beside the glass-paneled cold room, which serves both the butcher shop and the restaurant. Glowing lanternlike from within, that meat locker showcases carcasses, prosciutto slabs, and sausages curing on hooks.

Though seasonal vegetables are integral to Gwen's farm-and-hunt menu—the tab can easily run to hundreds of dollars per person—a key ritual here involves inviting diners to pick their weapon from an eclectic collection of antique steak knives. Equally varied is the display of vintage cocktail glasses, many gold-rimmed, at the bar along one edge of the 80-seat dining area.

On a recent evening, men in sport coats without ties and women in stylish little dresses tucked into succulent-looking game as the chefs tossed more flesh onto the grill. By design, the place has a slightly rough-edged quality, but the glisten of sizzling fat and the overhead glitter of crystals season it with the essence of what restaurant critic Jonathan Gold has called "abattoir chic." ■

Dolce & Gabbana | Tokyo | Curiosity

Paint It Black

Against a dark backdrop, the masterful use of light accentuates a famous brand's creations.

BY NAOMI R. POLLOCK, AIA

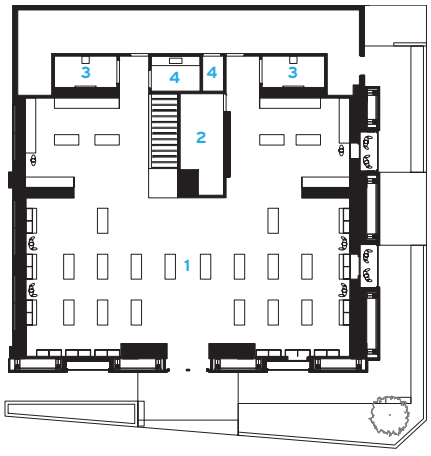
PHOTOGRAPHY BY SATOSHI SHIGETA

A striking contrast to Tokyo's collection of eye-popping fashion boutiques, Dolce & Gabbana's Omotesando shop is a basic black box. Against that backdrop, pulsating bursts of light set to a snappy beat showcase the brand's flashy shoes and floral-print dresses. Pinpointing select merchandise while keeping other items in the dark, this brilliant strategy uses minimal means for maximal impact.

Located on a corner site, the 5,600-square-foot boutique occupies an existing building developed in 1999. When the previous tenant moved out, Dolce & Gabbana commissioned the Tokyo firm Curiosity to tailor the two-story concrete structure to their brand. The client's only request was "surprise me." Gwenael Nicolas, the French-born founder of Curiosity, took this as an invitation to "reimagine what retail is all about." He responded with a straightforward plan that concentrates casual clothes on the ground floor, dress wear on the second, and connects the two with stairs at the back. Tucked beneath the treads are the stock room and other back-office functions. The second floor also contains dressing rooms plus a jewel box–like alcove for the brand's bijouterie.

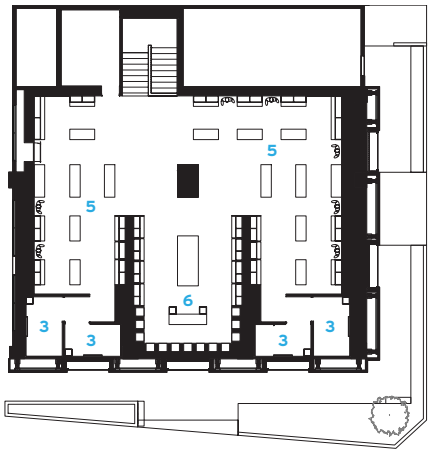
What turns the bare-bones space into a unique shopping experience is its lighting system: 200 adjustable 240W projectors suspended from

SPOTLIGHT Dolce & Gabbana's colorful fashion and accessories contrast with the dark setting. Individual items are highlighted by the 200 adjustable projectors overhead (this page). Black paint completely coats the exterior walls, allowing the two-story, marble-backed display windows to pop (opposite).



GROUND-FLOOR PLAN

0 12 FT.
4 M.



SECOND-FLOOR PLAN

1 CASUAL WEAR
2 STOCK ROOM
3 DRESSING ROOM
4 BATH
5 DRESS WEAR
6 JEWELRY

SHINE ON The stair's treads, handrails, and enclosure are clad entirely with gold-colored brass (above). Similarly, the fine jewelry collection is displayed within a golden niche (opposite, top). The compact two-story building is on a prominent corner (opposite, bottom).

credits

DESIGNER: Curiosity – Gwenael Nicolas

CONSULTANTS: Barbara Balestreri Lighting Design

GENERAL CONTRACTOR: Takashimaya Space Create

CLIENT: Dolce & Gabbana

SIZE: 5,600 square feet

COST: withheld

COMPLETION DATE: September 2016

SOURCES

CARPET: Kymo

LIGHTING: DNL (interior and exterior); Ushio Lighting (spotlights)

the ceiling on each level. Every projector is outfitted with a squared shutter frame that focuses and shapes the high-intensity beams, spotlighting individual items like precious objects in a museum. “Where you have light, you have product,” Nicolas says. Adding to the drama, the lights are set on one of four five-minute-long, computerized loops, each exposure lasting seven seconds (the time needed to register an image in the viewer’s mind). Thanks to this careful choreography, merchandise continually appears and disappears, captivating the customer with a fast-paced parade of Dolce & Gabbana goods.

Working in tandem with the lights are the finishes and furnishings. To absorb unwanted rays, matte-black paint coats the walls as well as the exposed ductwork and piping overhead. Omitting ceilings was necessary for access to the projectors but also makes the most of the 12-foot room height downstairs and 10½ feet above. “Height is an asset in retail,” says Nicolas. Matching matte-black ceramic surfaces cover the floors, which are inset with a series of digitally engineered rectangular marble panels measuring 4 feet by 16 inches. These dimensions correspond to the footprints of the faux marble–topped movable counters as well as the cushioned, leather-covered benches. Used for displays, both floor panels and counters may be illuminated by the projectors whose light beams align perfectly with their rectangular outlines. Understated surface-mounted glass shelves and steel hanging rods line the walls.

Incorporating Dolce & Gabbana’s signature aesthetic, the architects also included a few baroque elements, notably the gold-colored stair core and the glittering jewelry niche. While the stair’s treads, handrails, and enclosure are clad entirely with gold-colored brass, the jewelry area is done up in shimmery velvet for the chairs and accent panels, and luscious silk carpet and shiny brass walls around the casework.

As inside, matte-black paint completely coats the exterior walls. At night, these surfaces visually recede while the four display windows, plus the glazed main entrance, pop out. Extending the building’s full 33-foot height and measuring 5 feet across, each glazed slot is lined with faux marble and illuminated with LED linear tape and spotlights for the mannequins.

Defining a clothing boutique mainly through light may be a radical strategy, but, in doing so, Curiosity keeps the customer’s attention right where it should be. “The product is key,” says Nicolas. “Why do you need anything else?” ■

Union Square Café | New York | Rockwell Group

Second Course

An acclaimed chef and his unlikely designer reinvent a classic eatery in a new space.

BY WENDY MOONAN

PHOTOGRAPHY BY EMILY ANDREWS

Danny Meyer was only 27 when he opened his first restaurant, the Union Square Café, in New York in 1985, yet the CEO of what is now one of the world's most dynamic restaurant groups easily recalls his original design concept. He told Larry Bogdanow to "create a restaurant that will look like an architect never set foot in it, with a design that is so timeless it won't be dated in a couple of years."

That architect specialized in glamorous residences at the time, but Meyer wasn't going there. "I knew exactly what I wanted," he says. "I had visited trattorias in Italy, bistros in France, and liked the casual 1980s bar-and-grill culture of San Francisco. I'd been collecting ideas for years that I recorded in a notebook."

The restaurant space was a rabbit warren of low-ceilinged rooms joined by narrow corridors. What Bogdanow produced looked like a club, with wide-plank cherry floors, a 27-foot bar, vintage wood tables and chairs, green wainscoting, and, everywhere, colorful paintings by Judy Rifka. It was low-key, laid-back, and the food was good.

It was an immediate success and soon came to be known as America's neighborhood restaurant. But that particular neighborhood got a little less seedy over the years and is home now to high-tech headquarters, design firms, and high-end eateries. So in 2014, when Meyer's landlord wanted to double his rent, Meyer decided to move. He spent the next year and a half looking around Union Square. His requirement? The place could be no more than a six-minute hand-truck walk from the

LONG DRINK Just past the entry vestibule, patrons are greeted by the 27-foot-long mahogany bar. Its rounded light fixtures (opposite) are inspired by ones from the original restaurant. Behind the bar dining area and central staircase is the main dining room. Custom pendant lights hang at the ceiling height of the old space (below).

Union Square Greenmarket, where his chefs shop.

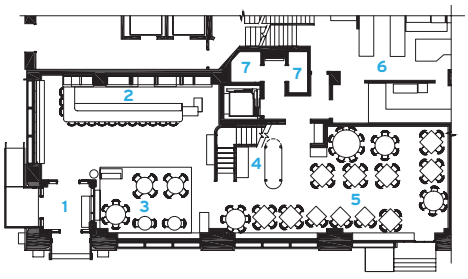
When he found a space on 19th Street and Park Avenue South, he asked the architect David Rockwell if he could recreate the old Union Square Café there.

That Meyer would hire Rockwell Group, a firm known for jazzy theater sets and flashy restaurants, to replicate an unpretentious joint is surprising. But, says Meyer, "David's office is on Union Square. He had been eating at the restaurant for 25 years, and I needed to work with someone who truly understood the original. At the same time, I told him, 'I don't want a Rockwell.'" Rockwell understood.

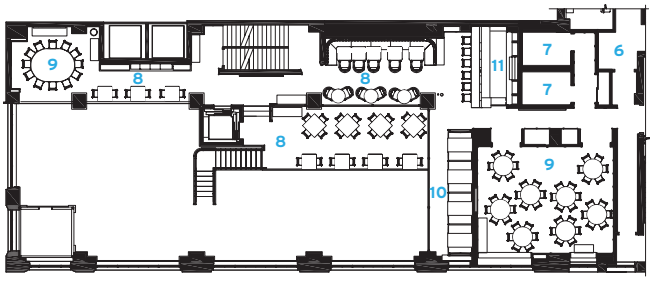
"What was memorable about the original was the feel and the experience; the idea was to take its DNA and implant it in a new body," Rockwell says. "This gave us the opportunity to examine on a granular level what made the old one special."

Because of its size—far larger than the original, with 1,800 square feet in the ground floor dining area, 2,400 on the mezzanine, and 4,700 in the cellar, which holds the bakery and main kitchen—Rockwell's concept was to break it down into distinct zones. "We wanted to define the space so the rooms had an appropriate scale," he says. The new

COMFORT FOOD
The staircase (right) is a focal point, breaking the loftlike space into distinct zones, including two levels of balcony dining above the main dining room. The upstairs bar was transplanted from the original restaurant (above). Booth seating lines the far end of the balcony level (opposite, bottom).



GROUND-FLOOR PLAN



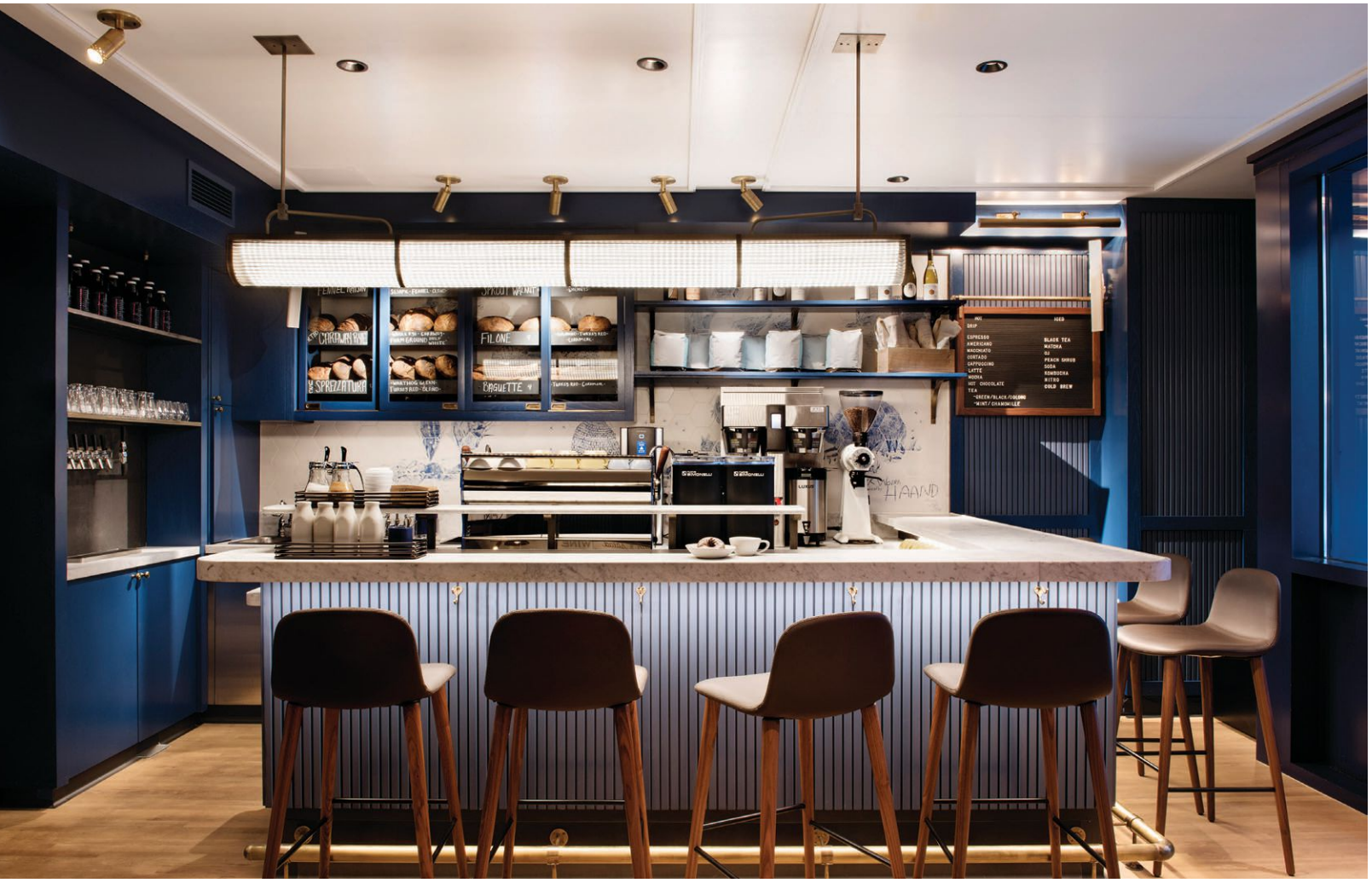
BALCONY-LEVEL PLAN

1 ENTRY VESTIBULE
2 MAIN BAR
3 BAR DINING
4 COFFEE STATION
5 MAIN DINING
6 KITCHEN
7 RESTROOM
8 BALCONY DINING
9 PRIVATE DINING
10 BOOTH DINING
11 SERVICE BAR

place can accommodate 215 diners and 20 bar seats. Private dining rooms upstairs can feed another 50.

The new restaurant sits on a prominent corner, but Rockwell put the entrance on the side street to give it a neighborhood feel. He installed two-story-high mullioned windows on both facades to mimic the windows of the old place and give it a sunny interior. The space next door, also leased by Meyer, was transformed into a separate establishment called Daily Provisions, that sells drinks, sandwiches, and fresh bread from the on-site bakery at reasonable prices. “Danny said we had to give the neighborhood a gift, a place for people to start the day, have lunch, and get things on the way home,” says Richard Coraine, chief of staff of the Union Square Hospitality Group.

Past the entry vestibule and the maître d’ desk at Union Square Café is a mahogany bar—still 27 feet, 1 inch long, like the old one—bordered by colorful cement tiles (to recall the former terra-cotta ones). The old DNA continues with wide-plank cherry floors, green wainscoting, and the same Rifka paintings. Opposite the bar are five round walnut dining tables for walk-ins.



FEELING BLUE Daily Provisions, the 675-square-foot next-door eatery, has a different color palette but similar relaxed feel as the restaurant (above).

A dramatic new staircase serves as both focal point and space divider. From eating balconies on the two upper levels, diners can survey the action below. In the rear is a smaller upstairs bar (transplanted from the original space) and an alcove with red leather banquettes.

Rockwell designed new café chairs in ash, with elongated, curved backs, for comfort, and square cherry tables with elegant brass inserts. He introduced many other refinements. Custom golden pendant lights hang at precisely the ceiling level of the old restaurant, 9 feet from the ground, and divide the soaring height of the space in half visually. LED strips inside them point up toward bronze mesh "hats." Here the Broadway set designer shows his mettle. "It's hard to create sparkle with LED lighting," Rockwell says. "If you have flat lighting, your eye falls asleep. So he installed spotlights on the ceiling that beam down on the mesh fixtures—making them glow.

Danny Meyer is famously sensitive to noise; tables are purposefully spaced far enough apart so conversations cannot be overheard. For sound absorption, Rockwell installed ceiling panels wrapped in acoustic fabric and wood beams with micro-perforations. Explains Rockwell: "Here the sound is alive, but you can hear yourself."

"Danny and I met twice a week to review every detail," says Rockwell. "We retained the soul of the place by not trying to copy it." In his 2006 book, *Setting the Table*, Meyer wrote: "In the end, what is most meaningful is creating positive, uplifting outcomes for human experiences and human relationships. Business, like life, is all about how you make people feel. It's that simple, and it's that hard." Amen. ■

credits

ARCHITECT: Rockwell Group – David Rockwell, president; Greg Keffer, principal; Richard Chandler, Paris Swann, project architects; Jay Kim, interior design

ENGINEERS: Old Structures Engineering (structural); AMA Consulting Engineers (mechanical)

CONSULTANTS: BOLD (lighting); Jacobs Doland Beer (food service)

GENERAL CONTRACTOR: Shawmut Design & Construction

CLIENT: Union Square Hospitality Group

SIZE: 11,500 square feet

COST: withheld

COMPLETION DATE: December 2016

SOURCES

GLAZING: GlasSolutions

HARDWARE: Dorma, Rocky Mountain Hardware

CUSTOM WOODWORK: Ferrante Manufacturing, John Houshmand, Mark White

PAINTS AND STAINS: Benjamin Moore

WALLCOVERINGS: Innovations

FLOOR AND WALL TILE: Artistic Tile, Daltile, Hudson Tile Supply, Villa Lagoon

RUBBER FLOORING: Johnsonite

CARPET TILE: Interface

ART GLASS: Bendheim

ACOUSTICAL PANELS: Johns Manville, BASWAphon

BATHROOM FAUCETS: Kallista

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Design of the PUBLIC REALM

From an abandoned hotel transformed into affordable senior residences in an Arizona border town and a colorful community pool in Los Angeles, to the redesign of the Crossroads of the World, architects shape the spaces of our daily lives. This special section explores civic centers, housing, parks, plazas, and health-care and transportation projects, their funding, and the blurring lines between public and private, as cities and communities take the lead in developing essential social infrastructure.

PHOTOGRAPHY: © MICHAEL GRIMM

REDESIGN OF TIMES SQUARE, NEW YORK, SNØHETTA

Civic Lesson

Cities are finding new ways to invest in social infrastructure, helping to bridge gaps among diverse socioeconomic groups and foster a greater sense of community.

BY DIANA LIND

Of all President Trump's campaign promises, the proposal to invest $1 trillion in infrastructure was one of the few to appeal to Republicans and Democrats alike. That level of spending would have dramatically reversed decades of dwindling public investment in the country's roads, transit, and utilities. Now that scale of investment is less likely than ever, given the reality of the cuts the President called for in the budget he sent to Congress, and the wrangling over spending that will unfold on Capitol Hill. But all the attention on major infrastructure needs clouded other concerns about the built environment.

More than bridges and airports need updating. The assumption that infrastructure only means pouring concrete and laying fiber is outdated. In the past, infrastructure sought to connect people across great distances and provide basic amenities for everyone. Today, proximity and access are not enough to cross the chasms of race, economic class, and new social boundaries like media bubbles and deeply partisan politics.

The need for "soft" or civic infrastructure in our cities and communities has never been greater. It comes at a time when declining social capital has left much of America divided, suspicious, and aloof. Today, one-third of people report having no interactions with their neighbors, and average Americans spend up to five hours a day watching television. The share of the population that says, "Most people can be trusted" has fallen from a majority in the 1970s to about one-third. And income inequality and wage stagnation have decimated the middle class, further dividing society into haves and have-nots.

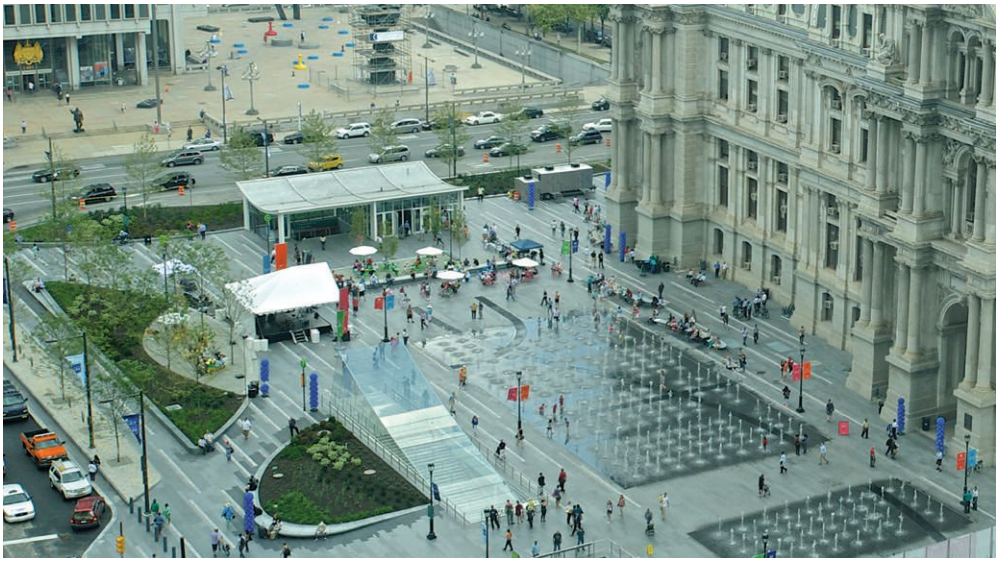
Cities, meanwhile, have been taking the lead to address these social disparities by vastly improving the public realm, though not all new civic spaces have been successful in doing so. The High Line in New

A rendering of the 11th Street Bridge Park in Washington, D.C., which would link two different neighborhoods

York, built mostly with city funds but maintained by a private nonprofit, attracts almost 5 million tourists and visitors a year, but its outsize popularity has driven up real-estate prices and sparked so much gentrification that many residents of nearby public housing projects feel as if the 1½-mile elevated promenade is not for them. Millennium Park in Chicago provides a great open space for all, but was financed in part through real-estate taxes from a growing periphery of luxury developments. These civic spaces and others like them send mixed messages: Are they high design for everyone, or are they really trickle-down urbanism, where an amenity for the donor class happens to have some benefits for the other 99 percent?

A raft of projects across the country demonstrate how the public and private sectors, along with the design community, are taking new approaches to addressing economic and social segregation, often by reclaiming underused, existing civic spaces. Parks, rec centers, and libraries, among other familiar typologies, have long played an important role in providing a sense of social connectedness, but up until recently, they have been stuck in a vicious cycle of lack of investment and fluctuating public interest. "We own this very rich collection of civic assets, but they have been increasingly abandoned by people who could afford to pay for private alternatives," says Carol Coletta, senior fellow at the Kresge Foundation. She cites people who are able to buy on Amazon rather than go to the library, or use a private gym instead of a rec center. "All of those things have conspired to pull the middle class and upper-middle class away from these assets, and, once that happens, political support for them declines."

Now cities are rediscovering this legacy of neighborhood-level investment as a way to foster social cohesion. Coletta is one of the guiding forces behind a $40 million initiative called Reimagining the Civic Commons, funded by the John S. and James L. Knight Foundation, the Kresge Foundation, the Rockefeller Foundation, the JPB Foundation, and local funders. This initiative is investing in five cities—Akron, Chicago, Detroit, Memphis, and Philadelphia—to upgrade existing infrastructure to reflect 21st-century needs. In Chicago, Theaster Gates' Rebuild Foundation and the University of Chicago's Place Lab have already transformed an abandoned bank into a hybrid gallery, library, and community space, among other projects. In Detroit, where Maurice Cox, the city's planning director, is leading the effort in the Livernois-McNichols neighborhood, 25 acres of vacant land will become a passive greenway, while the de-



Denver's FasTracks light rail line, with improvement by SOM (top); Dilworth Park in Philadelphia (middle and bottom)

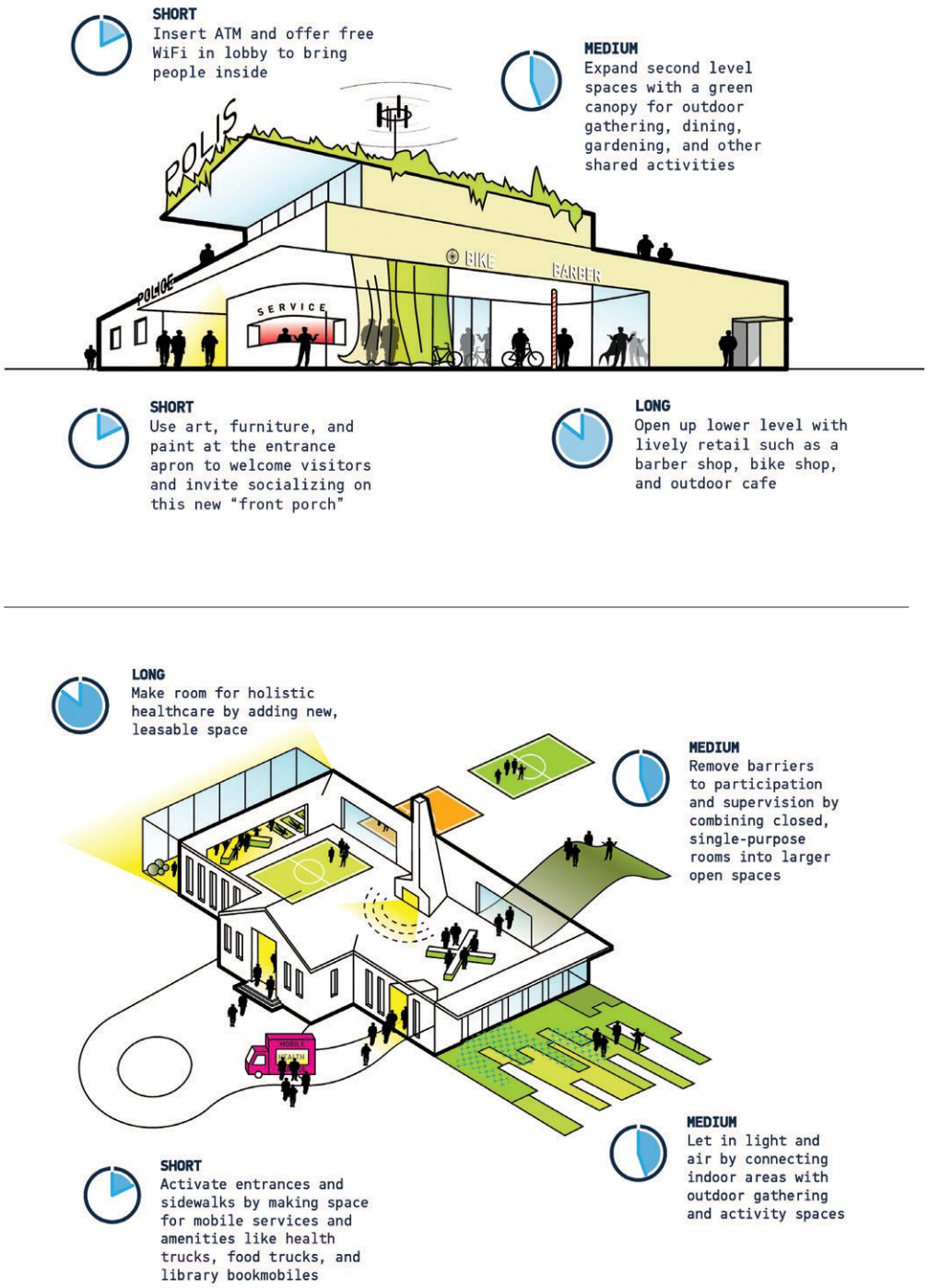
IMAGES: © OMA (OPPOSITE); RYAN DRAVITZ (TOP); MATT STANLEY (MIDDLE); MELVIN EPPS (BOTTOM)

pressed Livernois Corridor, surrounded by established and relatively thriving neighborhoods, as well as University of Detroit Mercy, will be revitalized to showcase more local entrepreneurs and feature gathering places for the neighborhood.

Adding to the Civic Commons' roster of notable design talent is Studio Gang of Chicago, which was enlisted to provide a general primer on imaginative solutions to unappealing civic spaces, as well as to demonstrate how to apply those design strategies to a neighborhood in Philadelphia.

In Studio Gang's hands, a police station could better engage the community with public art on its facade, an ATM and free wifi in the lobby, or by adding a bike shop or barbershop to its first floor. A rec center could be reborn as a wellness zone by inserting an on-site health-care clinic, connecting indoor and outdoor activity spaces with floor-to-ceiling windows, and adding leasable spaces for other wellness tenants. Libraries, built for borrowing books, could become less fortresslike by opening facades with more windows, reconfiguring interior spaces to suit today's technology, and extending facilities with covered outdoor space. "We need these systems to move from being transactional to transformational," says Gia Biagi, Studio Gang's lead on the project, who comes to the practice after a decade working for the City of Chicago, including a stint as director of the Department of Planning and Development. "Design can connect the big visionary thing to the meat and potatoes of these incremental projects."

For many cities, the big visionary thing is an equity agenda that revisits the basics of community spaces, housing, and transportation, all with an eye toward increasing access for everyone. In Seattle, an equitable development plan includes building a multicultural community center and an economic opportunity center. In Nashville and Pittsburgh, some soul searching about gentrification has led those cities to focus on affordable housing in their urban cores. And, at a time when people are increasingly relying on Uber to get around and hotly anticipating self-driving cars, Boston's MBTA created an online performance dashboard that updates daily information on the reliability, ridership, and financials of the organization, while Indianapolis and Cincinnati are doubling down on bus rapid-transit and streetcars.



Studio Gang's primer for transforming police stations (top) and rec centers to better engage the community

One city to watch is Philadelphia, which is investing $500 million—$400 million raised in bonds and revenue from a sugary-beverages tax and $100 million from the local William Penn Foundation—in a seven-year program called Rebuild, which will revitalize existing city parks, rec centers, libraries, and other pieces of civic infrastructure. With a focus on community engagement and economic development, the program will both gauge the true needs of various citizens and prioritize businesses owned by women, members of minorities, or disabled people to improve resident involvement with their local community assets.

Without waiting for federal approval or funding, cities are devising their own solutions to inequality and social segregation. Bruce Katz, Centennial Scholar at the Brookings Institution in Washington, has long believed that metropolitan regions are the ones nimble enough to execute real urban innovation. His book, with coauthor Jennifer

IMAGES: © TOM HARRIS/HEDRICH BLESSING (OPPOSITE, 2); STUDIO GANG

Bradley, *The Metropolitan Revolution*, devotes chapters to cities like Denver, where citizens voted to tax themselves to build FasTracks, a light-rail line expansion that is the largest regional transportation initiative in U.S. history. He believes this focus on civic infrastructure is part of a "maturation of cities' understanding the role that the public, private, and civic sectors have in improving life opportunities." Rather than create a federal infrastructure plan from the top down, Katz suggests that plans should come from the cities up. "Imagine if cities were able to identify their priority projects, and then we were able to reverse-engineer a federal program from there," he says.

If cities were to call all the shots, they might propose projects like the 11th Street Bridge Park in Washington, D.C. (page 212). When the old 11th Street Bridge needed replacing, a new span was built, leaving behind old infrastructure without an apparent purpose. The city's planning director at the time, Harriet Tregoning, envisioned reusing the old bridge as a park that would link Southeast D.C.'s less prosperous neighborhoods, such as Anacostia and Fairlawn, with the Navy Yard and now-gentrified Capitol Hill. The Bridge Park's executive director, Scott Kratz was able to leverage the city's backing and $11.45 in funding toward a total capital stack of $45 million to transform the nearly four-acre bridge into a space for recreation, urban farming, education, and performance. With 76,000 people within a radius of 2 miles, it is meant to be a draw for all Washingtonians, but its focus is on neighborhood repeat visitors. Only after a lengthy design competition and 700 community meetings—yes, you read that correctly—was a team of OMA and OLIN chosen as the park's designer, demonstrating that the planning process, not just the ultimate structure, can create social capital. Through those meetings, more than a dozen designers were informed about the community's needs—with communal gathering space, ways to access the Anacostia River, and public health benefits at the top of the list. "Looking back, the process was just as important as the outcome," says Kratz.

Theaster Gates' Stony Island Arts Bank and its library in Chicago

As he notes, neighborhoods east of the river "have long felt that planning happens to them, not with them," so the constant requests for community members' input and feedback helped overcome a lack of trust. The park in turn became a platform for greater community planning. To address the possibility that this park would elevate housing values, Kratz's team has developed an Equitable Development Plan. LISC, the national community-development nonprofit, is providing $50 million toward helping "foster equity, inclusiveness, and an improved quality of life in the neighborhoods surrounding the future 11th Street Bridge Park." The plan calls for hiring locals for construction jobs; sourcing the park's vendors from local businesses; mentorship programs to support small businesses in nearby neighborhoods; and preserving existing affordable housing and creating new affordable housing in the area. "Sometimes we get so focused on the physical space that we don't think about the [project's] larger impact," says Kratz. "It can be overwhelming, but we ignore that at our peril." ■

Diana Lind is the founding managing director of the Penn Fels Policy Research Initiative. Previously, she was editor in chief and executive director of Next City.

COMMUNITY CENTERS

New facilities provide much-needed services while creating neighborhood gathering spaces and bringing together diverse populations.

Boston Public Library
Boston

William Rawn Associates

A DUNGEON, a prison, a bunker—locals had many nicknames for Philip Johnson's landmarked 1972 addition to the central branch of the Boston Public Library (BPL), none of them flattering. (Johnson himself called it "a fortress without windows," which seems less outrageous when you realize that it was surrounded by vacant lots and rundown properties when it was constructed.) Last year, Boston-based William Rawn Associates completed a sweeping $78 million, 156,000-square-foot renovation that improves its connection to the branch's renowned 1895 Renaissance Revival building by McKim, Mead & White and, perhaps more critically, opens up the imposing granite building to Copley Square for the very first time.

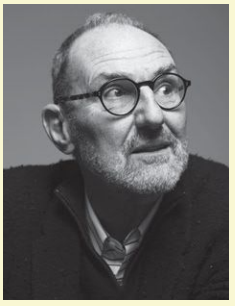
BPL spent a year soliciting input on the project from the

PHOTOGRAPHY: © BRUCE T. MARTIN (OPPOSITE, TOP); THE BOSTON PUBLIC LIBRARY (OPPOSITE, BOTTOM); ROBERT BENSON PHOTOGRAPHY (RIGHT, 2); MICHAEL POWERS (TOP, RIGHT)

Thom Mayne

MORPHOSIS, LOS ANGELES AND NEW YORK

On Infrastructure vs. Design



The architecture world seems to be overly invested in design with a capital D. I'm interested in broadening that. The problems in the 21st century are going to be much more infrastructural than architectural, and they're the ones I'm preparing my students for. I'm not giving up design; it isn't either/or. But the most compelling work in front of us today is infrastructural. I've run the Now Institute at UCLA for 10 years. We did social housing in Madrid, and in Haiti we're about to complete a system to bring people drinkable water. And our report on the future of L.A. is about to come out. The goals are to make L.A. energy-neutral and water-neutral by 2050—and it's anticipating that, by 2050, one-third of the city's food will come from hydroponic farms. We're building a prototype now. Overall, I'm attacking what I see as a passivity in architectural education. And I'm reuniting with my '60s activist past.

local community and its millions of patrons, and formed an advisory committee that transformed their feedback into key principles for the city-funded effort. (Topping the list: fun.) William Rawn was then selected via an interview process, and the architects continued to reach out to key constituents as the design progressed. "Given the library's central location, the outreach effort was necessarily broad and inclusive all along," says Rawn, whose firm had designed two other branches for the BPL.

The ambitious renovation comprised upgrades to the library's numerous collections, a revamped lecture hall, and ADA improvements, among many other enhancements. But the new heart and soul of the building is the double-height Boylston Hall (a "big urban room," says Cliff Gayley, co-principal on the project), which enlivens a 210-foot stretch of the busy street it's named after. Gone are the fence-like granite slabs and mirror glass that once shrouded the ground floor from public view; in their place are crystal-clear, low-iron glass walls that lure passersby into the dynamic interior via three new entrances. The space houses a welcome center, borrower services, new and notable titles in print and digital forms, seating areas, public computers and research kiosks, a café (yes, food is allowed), and a glass-enclosed broadcast studio for local public radio station WGBH.

With its remarkable transparency, the redesign of the BPL celebrates its role as a forward-thinking public institution that elevates civic life. Boylston Hall itself has become a popular meet-up and hangout spot, attracting a larger and more diverse crowd to the building than ever before. It's a vibrant tribute to the nation's first large municipal library, whose motto, "Free To All," could be the resistance theme for our times.
Deborah Snoonian Glenn

Central Recreation Center Pool
South Los Angeles
Lehrer Architects LA

THE CITY of Los Angeles operates dozens of community pools each summer to help residents beat the heat. But South L.A.'s Council District 9 had been without one since 2004, when the Central Recreation Center Pool closed due to earthquake damage. In June 2016, city officials finally unveiled a new $4 million pool and bathhouse in its place. Designed by Lehrer Architects LA, the sparkling facility was an instant hit, quickly becoming a popular gathering spot for the working-class neighborhood.

As he's done for other public projects, principal Michael B. Lehrer relied on humble, durable materials—painted concrete masonry units (CMUs), corrugated and perforated metal, and ceramic tile—to craft a dignified space on a tight budget. Bright whites and citrus greens and yellows announce the entry from the street, and a metal canopy nods to the dormers of 1920s-era houses on the block. Once inside, guests can take a dip in the 6,300-square-foot pool, or lounge and congregate on built-in bench seating that's arranged in clubhouse-like configurations at the pool's perimeter. The bathhouse's extended roof canopy and a quartet of 30-foot shade towers filter sunlight and cast dynamic shadows on the water and deck. The towers, visible for several blocks and illuminated at night, have become a local landmark.

Park staff report less gang activity in the area since the pool reopened. For years, the boarded-up site was such a blight on the community that when city officials solicited comments about replacing the pool, says Lehrer, some neighbors were skeptical that a pool should go there at all. Those doubts have been put to rest. "We wanted the project to be a source of pride, a place that tells the neighborhood that where they live matters," says Lehrer. "Great design is almost a moral enterprise when you're using public funds to accomplish it." *D.S.G.*

PHOTOGRAPHY: COURTESY LEHRER ARCHITECTS (TOP AND BOTTOM); © MATTHEW MILLMAN (OPPOSITE, 3)

Boeddeker Park
San Francisco
WRNS Studio

AFFECTIONATELY CALLED the "Green Dragon" by its architects, the new clubhouse for San Francisco's Boeddeker Park is clad in scale-like zinc panels and has a rakish form: a long, low structure, the building rises to a 30-foot-high "head" on one end and a tail-like roof monitor on the other. The playful 4,000-square-foot facility, designed by local firm WRNS Studio, replaces a sunken, bunker-like clubhouse and is central to the park's welcoming new approach. "There's been a threshold moment where we've moved from defensible architecture to open and transparent spaces," says design partner Bryan Shiles.

Located in the Tenderloin, the city's poorest and densest neighborhood, the park opened in 1985 to provide much-needed public space. However, security measures designed to prevent people from camping out overnight (among other things) overwhelmed its usability. The one-acre infill site was surrounded and subdivided by formidable fences. It was also bisected diagonally by a wide walkway, breaking the space up into awkward parcels.

The $9.3 million redesign, funded through a combination of public money and private donations to the Trust for Public Land (TPL), represents a complete rethinking of the amenity. WRNS Studio and TPL collaborated on the master plan, moving the park entrance so that all comings and goings are in view of the at-grade clubhouse. In addition to providing full transparency to the activity outside—"It's like a porch overlooking the street," says Shiles—the building's window walls face the full-size basketball court, playground, and large lawn. The architects also removed the internal fences and switched out the wrought iron perimeter enclosure to a visually porous wire mesh. The clubhouse is one of the first city-operated properties to use geothermal wells for radiant heating.

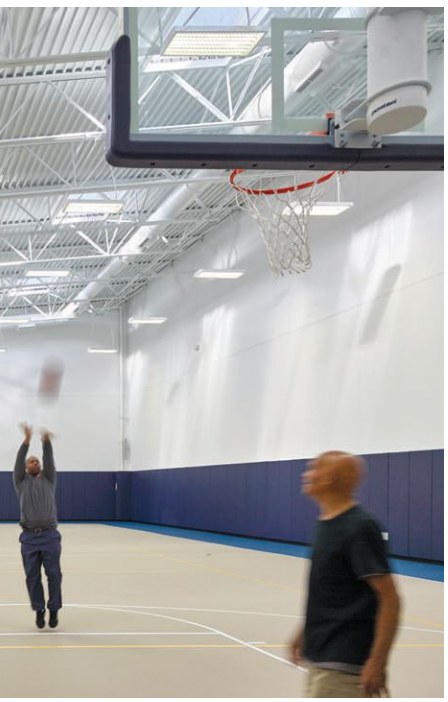
Since opening at the end of 2014, park usage has increased threefold, with a large leap in numbers of children, teens, and seniors. For the latter group, there are now amenities designed just for them, including a walking path that encircles the park, and a community garden. *Lydia Lee*

Training Recreation Education Center
Newark
Ikon 5 Architects

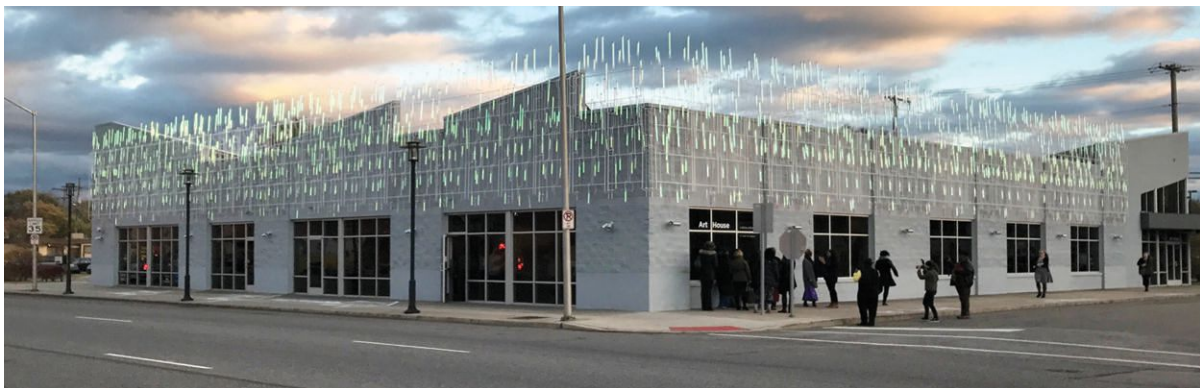
WHILE PROVIDING much-needed services to a marginalized community in Newark, the Training Recreation Education Center (TREC) also demonstrates design excellence on a budget. The $11 million facility, which opened in November 2016, was commissioned by the Newark Housing Authority for the city's South Ward and designed by Princeton, New Jersey–based Ikon 5 Architects. The goal was to give the area's low-income families more economic opportunities by providing easily accessible job training and continuing-education classes. To increase the center's gravitational pull, recreation and fitness were also part of the brief. The resulting 24,000-square-foot building includes a regulation-size basketball court, a community meeting room and kitchen, classrooms, and a daycare center.

The building's parti, two triangular wedges (a transparent one that holds training spaces and an opaque one that houses athletic facilities), is a subtle nod to the surrounding diagonal street grid. But, more overtly, it is an iconic volume that announces its presence within the neighborhood of modest clapboard homes and brick public housing. "The city wanted this building to be unique in its appearance so that it would attract people from the community," says Ikon 5 principal Joseph Tattoni.

To this end, the architects used white aluminum fins to create a rhythm on the facades while also shading the curtain wall. And to dress up the stucco expanses, the team installed the fins across the opaque surfaces as well, in place of control joints—the architectural equivalent of a white pinstripe suit. Since the start of the year, more than 550 people have come to the center; the city is still negotiating with providers for job training, but the children's "Rising Stars Sports Academy" is in full swing and has been very successful, reports TREC. *L.L.*



PHOTOGRAPHY: © JEFFEREY TOTARO (OPPOSITE, 2); KARA BOYD (TOP, RIGHT); COURTESY RIPPLE ARCHTECTURE STUDIO (MIDDLE, RIGHT); COURTESY UNITED STATES CONGRESS (BOTTOM, RIGHT)



ArtHouse: A Social Kitchen

Gary, Indiana

Ripple Architecture Studio with Barbara Brown Wilson

A BUFFET restaurant in downtown Gary, Indiana, is becoming a different kind of cultural smorgasbord. Following a recent facelift, the former eatery is now the home of "ArtHouse: A Social Kitchen"—a culinary business incubator and community events space.

Built in 2008, the restaurant was short-lived and sat vacant for the better part of a decade. To revive the 14,300-square-foot building, owned by the Gary Economic Development Corporation, the city collaborated with artist Theaster Gates's Place Lab and successfully applied for grants to create and operate the ArtHouse for two years. The $1.65 million in grants included $177,000 for an exterior art intervention that would draw attention to the nondescript building (outfitted with a large commercial kitchen, it did not need substantial interior renovations). Charlottesville, Virginia–based architect Jeana Ripple and urban planner Barbara Brown Wilson won the competition for the public art portion.

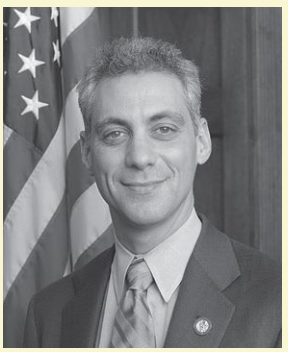
The resulting lighting installation, which crowns the building, comprises a 257-foot-long stretch of wire scaffolding hung with 2,000 solar-powered lights made from acrylic tubing. To create a daytime effect, Ripple lined the lanterns with dichroic film, which changes colors depending on the viewing angle. Protruding above the roof, the artwork acts as a modern "false front" and creates a beacon for the neighborhood.

Working with the designers, the ArtHouse team made the transformation a community project. As work progressed, they held workshops for foster youth that focused on public artwork, and they invited community members to furniture-making classes, enlisting them to build outdoor benches. Since ArtHouse's opening last November, hundreds of people have attended its weekly events and 20 individuals are enrolled in the culinary business program. "As with a lot of other Rust Belt cities, the narrative in Gary has been about the decay of the city—but we're showing that there's a really rich network of ambitious entrepreneurs here," says Michele Larimer, ArtHouse's project manager. *L.L.*

Rahm Emanuel

MAYOR OF CHICAGO

On Urban Revival



To make the renaissance that is currently happening in cities continue, we need to underscore and amplify our values of tolerance, inclusion, and equity. In Chicago, projects like the Riverwalk, the 606 elevated trail, and the Maggie Daley Park help to bring distinct neighborhoods together.

Edible Schoolyard New York

WORKac

BACK IN 2008, when WORKac created an installation at MoMA P.S.1 in Queens, NY—an urban farm planted in giant cardboard tubes within the museum's courtyard—it caught the attention of a celebrity chef and a filmmaker on the opposite coast. Chez Panisse founder Alice Waters had begun the Edible Schoolyard Project in Berkeley a decade before. When Waters later collaborated with movie producer and philanthropist John Lyons to bring the program to New York, WORKac seemed a perfect fit.

The architects designed their first Edible Schoolyard for a public elementary school in Brooklyn in 2014. Then-City Council speaker Christine Quinn had already set aside enough money to have at least one built in each of the five boroughs. (The city pays for construction and maintenance, while the nonprofit Edible Schoolyard NYC raises funds to pay for teachers, supplies, and programming.) Now a second version has just been completed at Public School 7 in Harlem. Since the goal of the program is to transform the eating habits of kids by integrating gardening and kitchen classes into the school day, neighborhoods with little public green space and access to healthy grocery stores were selected.

As they did with their Brooklyn project, WORKac created a greenhouse clad in colorful cementitious shingles that form a pixelated version of a flower pattern designed by Venturi Scott Brown. Adjacent to this bridgelike structure—which is built over a reinforced foundation and the existing one-story cafeteria—a green roof is used to grow garlic, beets, turnips, and a host of other vegetables. A garden on the lower level features painted troughs that serve as planters.

The greenhouse has become a gathering space for special events, including parent breakfasts, and its visibility has attracted neighbors to volunteer in the program. "As a project, it's so rewarding because it's really a typological invention," says WORKac principal Dan Wood. "And, of course, everyone involved is so committed, compassionate, and creative. We're impacting an urban community while transforming a school." *Josephine Minutillo*

PHOTOGRAPHY: © RAYMOND ADAMS (3)

HEALTH CARE

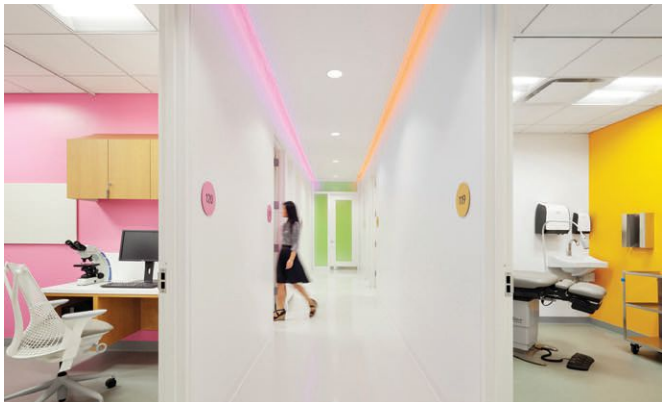
Five projects in Seattle, San Francisco, New York, and Washington, D.C., demonstrate that good design can be the best medicine.

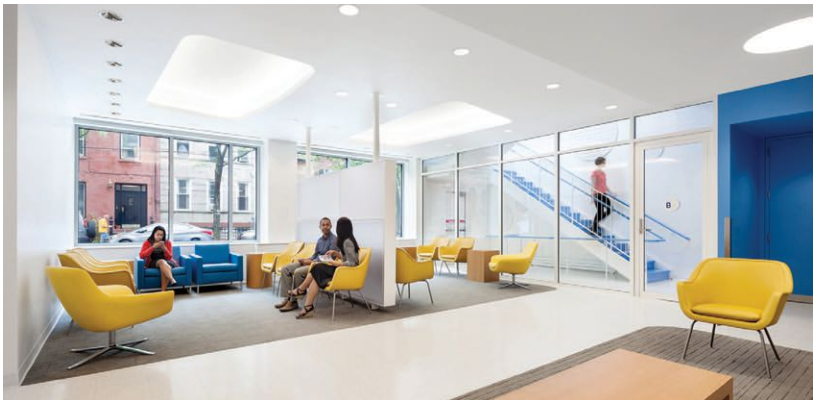
Diane L. Max Health Center
Queens, New York
Stephen Yablon Architecture

WHEN Planned Parenthood of New York City (PPNYC) set out to build its first facility in the borough of Queens, the organization commissioned New York–based Stephen Yablon Architecture to lead the design. "They were an exceptional client," says the architect. "They recognized the importance of architecture in helping to create a positive patient experience." The architects were challenged with designing an open, welcoming space on a tight site while meeting stringent security requirements and privacy concerns. The building, which opened in two phases, at the end of 2015 and beginning of 2016, also needed to respond sensitively to its context in a diverse, primarily residential neighborhood. Matching the scale of the adjacent brownstones if not the look, the low-slung, unabashedly modern 15,000-square-foot Diane L. Max Health Center has an assertive yet sympathetic presence on the street. Asymmetric fenestration of high-security glass and porcelain panels in the organization's characteristic blue punctuate rows of light gray brick.

The compact facility, named for and largely funded by the current PPNYC board chair, contains counseling, exam, procedure, and recovery rooms in addition to waiting areas and offices. A second-floor community health-education space, which can be accessed even when the clinic is closed, has already seen significant use. "They've had staff training, sex-ed workshops for teens—even other nonprofits have used it," Yablon says. "It's been very busy."

In configuring the interior spaces, the architects aimed to keep it simple and easy to navigate by placing exam rooms in the center and bathrooms, labs, and waiting and circulation areas on the perimenter. "We don't want it to feel like an endless warren of corridors," says Yablon. "This is a community where over 130 languages are spoken. How are we going to make people from so many different cultures feel welcome here?" Responding to this question, the team employed a wayfinding system based on colors and numbers. These bold graphics, coordinated with colored LED strips, provide a counterpoint to the sleek, white interiors and help convey the state-of-the-art nature of the facility's services. *Miriam Sitz*





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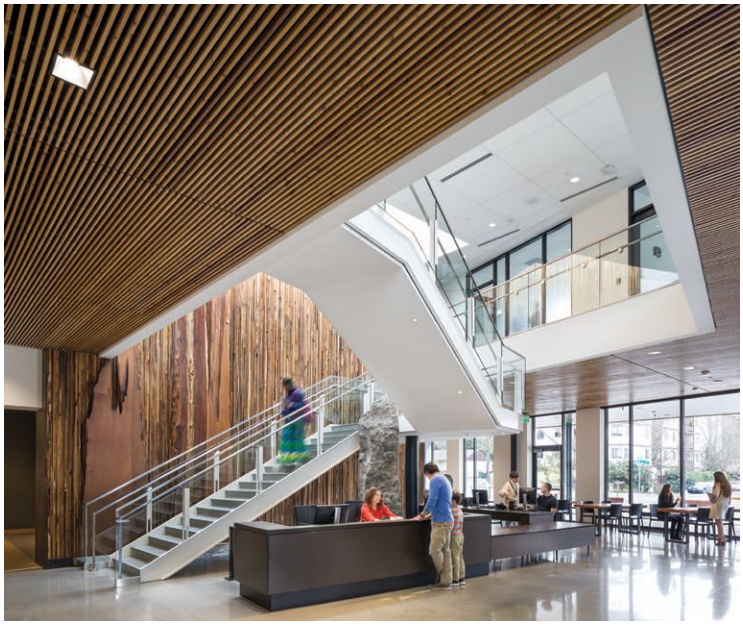

Meridian Center for Health Seattle

NBBJ

FOR INDIVIDUALS in Licton Springs, an underserved community in northwest Seattle, accessing medical services used to mean traveling long distances to multiple appointments at distant clinics. But in 2015, Neighborcare Health—a nonprofit community health provider that caters to low-income and uninsured clients—set about changing that. Backed by funding from both public and private sources, the organization worked in collaboration with Seattle-based firm NBBJ to build an integrated, patient-focused center that would provide comprehensive care to locals with diverse needs.

Meridian Center for Health, which opened last fall, houses family doctors, dentists, mental health practitioners, and other medical providers under one solar-paneled roof. The building's versatile design allows patients to get almost all the treatment they need in the same place—a "one-stop shop," says senior associate Brian Uyesugi—while also encouraging collaboration between staff.

Upon entering the facility, patients encounter an expansive lobby dominated by a large staircase and a wall of reclaimed wood. Senior associate Christina Yates says the unified entryway and reception area was designed "to make sure the patient experience is the same no matter who you are coming to see."

Throughout the two-story building, there are more than two dozen small multipurpose-consultation rooms that can be adapted for use by different providers, while other,

PHOTOGRAPHY: © SEAN AIRHART/NBBJ (3); AARON LEITZ (OPPOSITE, 2)

larger areas are dedicated to maternity care and group therapy. Yates says the team strove to create a layout that was "flexible but standardized, so services can ebb and flow in the future." Staff offices are arranged in adjustable "pods," with cross-disciplinary teamwork in mind, and just since the center opened last fall, Uyesugi says he has heard stories of doctors' discovering that their patients have an unexpected need and setting them up with another practitioner in the facility on the same day.

To take advantage of the verdant, park-side site, the architects added floor-to-ceiling glazing to second-story exam rooms and placed exterior walkways around the building's perimeter, offering views of the mature trees and wetland landscape. Weathering-steel cladding, selected for its ability to withstand Seattle's rainy climate, further connects the facility to its context: according to Uyesugi, the burnt-orange hue recalls the color of a medicinal clay used by a Native American tribe that once occupied the area. *Jake Bittle*

Seattle Children's Hospital, South Clinic
Seattle
ZGF Architects

WITH A PLAYFUL perforated-metal facade, colorful columns welcoming visitors at the entry, and a floor plan designed to maximize positive patient experiences and collaborative workflows, ZGF Architects has transformed a former big-box Circuit City store into a bright 37,000-square-foot outpatient facility. Completed in August 2015 for the Seattle Children's Hospital, the South Clinic serves the suburbs south of Seattle and is a prototype for the hospital's expansion across the Puget Sound Region.

Parks represent the most significant public forums in the area, and the building acts similarly, uniting the community as a child-centered connector that goes beyond functioning as a clinic to offer after-hours health education. The plan is organized with social spaces—a waiting room especially for patients' siblings that also accommodates after-hours programming; a gym that doubles as a physical therapy facility—flanking the lobby and more private rooms beyond. ZGF principal Victoria Nichols credits the former store's elongated footprint with the ability to centralize services and create "efficient workspaces and modules that incorporate principles of lean design."

Inspired by nearby Dash Point Park and the hospital's bright, branded color palette, the team focused on references to nature in the design. Artist Marta Windeisen's abstract graphics, the wood wall, the prominence of the gym, and the welcoming native-plant garden all emphasize nature and play.

The $10 million clinic, which was fully funded by the client, provides specialized care close to patients' homes, including ophthalmology, speech therapy, and sports therapy. Nichols credits the work of 13 design charrettes (the formats of which ranged from tabletop events and full-scale mock-ups to real-time modeling with patients, families, providers, and hospital staff) as essential to the design and planning process. Nearing two years in operation, the South Clinic has been a huge success. Multipurpose exam rooms have reduced the number of specialty rooms from 20 to 5, "which is pretty impressive," says Mandy Hansen, the hospital's director of facility planning and design. And the gym? As ZGF principal Taka Soga reports, "It's booked and full of kids all of the time!" *Catherine Gavin*

Whitman-Walker Health
Washington, D.C.
Perkins+Will

A CHERISHED pillar of Washington, D.C.'s LGBTQ community, the nonprofit Whitman-Walker Health (WWH) has grown significantly since its establishment in 1978 as a free STD clinic for gay men. Now WWH offers a broad range of LGBTQ health care and social services at several locations throughout the city and benefits almost 16,000 people annually. In 2012, as part of a capital effort to better serve a client base that had doubled over the previous six years, WWH began a search for a space that could house comprehensive care services. In 2013 it leased a planned six-story, 42,000-square-foot building just two blocks south of the Elizabeth Taylor Medical Center—WWH's primary location—in the Dupont-Logan neighborhoods that have been the heart of D.C. gay life for decades. The nonprofit turned to the D.C. office of Perkins+Will (P+W) to bring its vision to life.

The designers' challenge? Creating a health-care facility in what the shell and core architects—local firm Eric Colbert & Associates—had originally envisioned as a boutique office mid-rise with a ground-floor restaurant. As the building's construction hadn't

started, P+W was able to coordinate several changes, says project designer David Cordell, including dental-chair drain lines and certain slab penetrations, before the concrete was poured. The most significant alteration, however, was to the bathroom core: Whitman-Walker's desire for all restrooms to be gender-neutral proved something of an interior-design puzzle. "The fixture count stayed the same," says Cordell, "but we had to be incredibly efficient with the layout to keep the overall footprint from growing."

Taking cues from a pre-occupancy survey of staff and patients, the new Whitman-Walker Health center follows a "medical home" model, says Cordell, "where all health-care needs are taken care of in one place." Services are grouped by floor, with two teams of providers occupying each of the four stories dedicated to patient care. The top floor houses administrative offices and meeting spaces, and, at street level, P+W designed a cheerful pharmacy inspired by the brightly lit, open-plan drugstore design found throughout Europe. "The pharmacy is a big revenue source" for WWH, says Cordell, and aims to serve the general community as well, so the space was given extra design attention to enable it to compete with nearby pharmacies.

The $9.8 million facility, fully funded by WWH, opened in 2015. According to Cordell, the design has been highly successful, doubling Whitman-Walker's medical-exam-room capacity, tripling its dental program, and providing ample space for wellness programs, including massage therapy and yoga classes. But WWH isn't done repositioning itself as a leading provider of LGBTQ health care: it's already tapped P+W to lead the interior design efforts as the organization redevelops its existing R Street complex into a large, mixed-use building that will include 30,000 square feet of administrative offices, space for clinical services, and a new community center.
Braulio Agnese

PHOTOGRAPHY: © ERIC LAIGNEL (TOP AND OPPOSITE, 2); SIOUX NESI, COURTESY WXY (BOTTOM)

Claire Weisz

WXY, NEW YORK

On Connecting People in Public Space

Any time architects get a building commission, they need to look at it as an opportunity for public engagement. Maybe part of the ground floor or even sections of the roof can be made public. And of course every building affects the area around it. So it's important to think about the tone it sets for the block, the neighborhood, the city. When architects are sitting on a board, or working at their kids' school, or brainstorming with a client, they should advocate for public space. In an era when people are becoming more isolated, and perhaps less empathetic, public space is our only hope for bringing people together—especially spaces that serve multiple functions, like a plaza where you can run, or hold a health fair, or have a wedding.

The boardwalk we did in Rockaway [in Queens, New York] after Hurricane Sandy performs like a giant, 5-mile-long public space. If you want to see people, you can find them on the boardwalk. But it's also a connector of public spaces, and that's incredibly important. Connecting parks and other public spaces, so people can get from one to another safely, is as important as the parks themselves.

Nancy & Stephen Grand Family House
San Francisco
Leddy Maytum Stacy Architects

FOR THE LAST two decades, the privately funded Nancy & Stephen Grand Family House has provided free accommodations for young, often terminally ill patients—and their families—who are being treated at the University of California San Francisco Benioff Children's Hospital. In 2011, faced with growing demand, the nonprofit organization enlisted San Francisco–based Leddy Maytum Stacy Architects to design a new 80-family facility, which opened in the Mission Bay neighborhood in April 2016, achieving LEED Platinum certification. In developing the design, the architects looked to both the staff and the families for inspiration.

"This is a traumatic experience for families," notes principal Richard Stacy, "so we wanted the first impression coming through the door to be welcoming and non-institutional." In this vein, the team created a playroom for young patients and their siblings by the reception area and, at the staff's request, included private counseling and meditation rooms nearby.

To help develop the program, the design team conducted interviews with families who have stayed in the house multiple times. "One of the main things they talked about was how much they bonded with other families there," says Stacy. So the architects focused on creating a sense of community by separating the facility into eight intimate 10-family clusters spread across the building's four upper floors. While each family has either a single or double suite with a private bathroom and bay windows, they share a living and dining room, kitchen, play area, and laundry with nine others. Ample glazing in the wide corridors allows views of the second-story courtyard, where an "infinity loop" pathway wraps around a large, grassy play area and a paved terrace for gatherings and events. "We tried as much as possible to bring in natural light," says Stacy. "It contributes to healing, both for the children and for the trauma these families are going through."

Janelle Zara

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SOCIAL HOUSING

Whether through adaptive reuse or new construction, these projects provide supportive programs for urban populations.

Boston Road Supportive Housing

The Bronx, New York

Alexander Gorlin Architects

LONG BEFORE the South Bronx neighborhood of Morrisania was a predominantly low-income residential area, it was the Manor of Morrisania—the estate of aristocrat and signer of the Declaration of Independence Lewis Morris. The facade of a recently opened affordable-apartment building there, designed by Alexander Gorlin Architects, draws upon this history with the use of a rich color palette for a series of rhythmically patterned metal panels. Paired with handsome gray brick cladding, the concrete block structure's simple material treatment avoids the stereotypical affordable housing aesthetic. "People actually think it's luxury housing," says Alex Gorlin.

The 86,000-square-foot project, called Boston Road Supportive Housing, is Gorlin's second with Breaking Ground, a New York nonprofit that provides permanent affordable housing for the chronically homeless. The organization used funds from government subsidies, private investors, and bank loans to finance the $47 million development.

The 12-story building comprises 154 studio units and a range of amenities, including a patio and garden, fitness and community rooms, a computer lab, and on-site laundry; social services facilities for self-sufficiency workshops, and case-management offices are also provided. "The idea was to create spaces where people can do things together and not feel alone," says Gorlin.

The structure also features a number of sustainable-design elements. With its low-environmental-impact construction, high-efficiency mechanical systems and lighting, water-saving fixtures, and green roof, the project is in line to receive Enterprise Green Communities certification.

Since opening last year, Boston Road has been a welcome addition to the community, especially for the formerly homeless—many of whom are living with HIV/AIDS—and low-income working adults who reside there. "It's designed to be upbeat," says Gorlin, "and people seem to be responding to that." *Alex Klimoski*

PHOTOGRAPHY: © MICHAEL MORAN

THE SIX
Los Angeles
Brooks + Scarpa

FOR VETERANS, more than 3,000 of whom are homeless in Los Angeles County, the struggle to return to civilian life is both physical and mental. "They often carry with them the trauma of war, and so integrating them back into society is one of the main goals of Skid Row Housing Trust," says Lawrence Scarpa of the L.A.-based practice Brooks + Scarpa. Funded by a combination of public and private grants, the firm completed the local nonprofit's newest, $10 million housing project, THE SIX, in mid-2016.

Located in the city's MacArthur Park neighborhood, the 40,000-square-foot, 52-unit community was designed specifically for the rehabilitation of disabled veterans. All floors are wheelchair accessible, and additional features, including braille signs and light-equipped alarm systems, add access for the visually and hearing impaired. The central feature is the elevated courtyard on the second floor, which is seen through a large opening on the front-facing facade. Because the courtyard is raised, it doesn't open to street level—a detail that, along with the open corridors and staircases that line the perimeter of this atrium, aims to strike a balance between a sense of openness and security.

To combat reclusiveness, says Scarpa, "We tried to create spaces where residents can take part if they like, or they can sit on the sidelines and feel comfortable." The firm also minimized energy use by orienting the building so that prevailing winds provide natural ventilation, designing windows for maximum daylighting, and implementing a stormwater-management system in which runoff flows down through the planters on the bottom level.
Janelle Zara

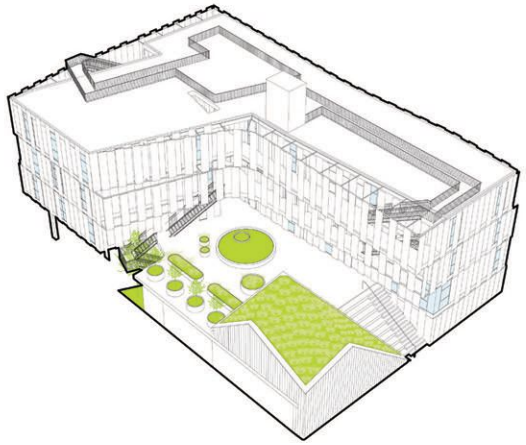
IMAGES: © TARA WUCJIK (TOP AND BOTTOM; OPPOSITE, LEFT: TOP AND BOTTOM); COURTESY LOHA (OPPOSITE, RIGHT: TOP, AND BOTTOM)

MLK1101
Los Angeles
Lorcan O'Herlihy Architects

NOT FAR from THE SIX, a 34,000-square-foot South L.A. veteran's-housing complex called MLK1101 is slated for completion within the next 18 months. Designed by local firm Lorcan O'Herlihy Architects (LOHA), the 26-unit building, estimated to come in at $11 million funded by grants through affordable housing developer Clifford Beers Housing, shares THE SIX's goals of reintegrating veterans into normal life. Both projects involved veterans and veteran-support groups to conceptualize their designs; consequently, the two share many of the same amenities: an all-white color scheme ("because of its optimistic qualities," according to LOHA's Patricia Bacalao), elevator access to every floor, a rooftop patio, exterior walkways, and community vegetable gardens.

In contrast to THE SIX, however, MLK1101 is designed to be more outward-facing: light flows through the facade's perforated panels of corrugated aluminum, and nonresidents are welcome in the retail space on the ground floor. And while the courtyard is also elevated, it connects directly to the street via a grand staircase, which can also function as a social gathering space.

"The idea was social and civic connections," says O'Herlihy. "How can these projects engage with the sidewalk, the street, and the community? Our approach is always that architecture is for everybody; you can't let the budget lessen the impact of the building, but you can bring inventiveness to the solution." *J.Z.*

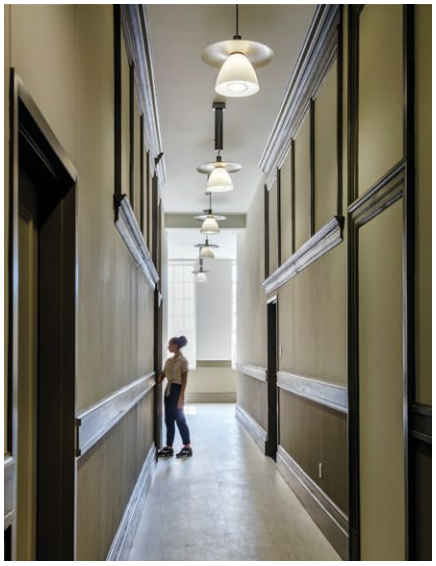


The Residences at P.S. 186
New York
Dattner Architects

BY THE MID-1970S, deteriorating building conditions had caused this former Harlem elementary school to shut its doors to students. Designed by C.B.J. Snyder, the prolific architect for dozens of New York public schools at the turn of the 20th century, the five-story Renaissance Revival edifice (1903) continued to decay after its abandonment: trees had taken root inside, growing out through windows, rotting floor boards, and the roof, and the exterior's crumbling classical cornice had been removed. When the Boys & Girls Club of Harlem (BGCHarlem) bought the property in 1986, it planned to demolish the structure and build a new mixed-use facility.

But by the time BGCHarlem could proceed with development two decades later, downzoning had imposed limitations on how much new construction could be built. Furthermore, the community expressed interest in saving the stately structure, especially since many local residents had attended school there in their youth. "At that point, we began to rethink how to proceed, looking at how the project could be financed," says Joe Coppola of Dattner Architects.

To pay for the $45 million project, the team, including Alembic Community Development and Monadnock Construction, applied for the site to be placed on the National Register of Historic Places. Using historic tax credits and funding from the city's Department of Housing Preservation and Development (HPD), the architects restored and adapted the old school, creating a new Boys & Girls facility and 79 units of affordable housing (far right).



"The National Park Service thought that we should conserve a number of the interior elements, which was surprising to us, given the state of the building," explains Coppola. So features such as Snyder's innovative H-plan and wrought iron staircases were preserved and incorporated into the design for the 110,000-square-foot program. The Boys & Girls Club, located on the first floor, makes use of the spacious south courtyard and ornamental grille entrance gate, while residents enter on the north side of the building.

"Saving the building was a positive thing for everybody," says Coppola. "It's very rewarding that we were able to bring it back to life and help to better serve the Harlem community." *A.K.*

Parkside of Oldtown, Phase IIb
Chicago
Landon Bone Baker Architects

CHICAGO'S PUBLIC housing has undergone drastic changes in the past two decades. With a sweeping urban policy implemented in 2000, its grim, isolated towers were razed and replaced by a new model: tidy rows of townhouses and smaller apartment complexes that mix tenants of varied income levels. The North Side neighborhood where the troubled former Cabrini-Green apartment towers stood—once home to 15,000 public housing residents—has undergone a particularly radical transformation.

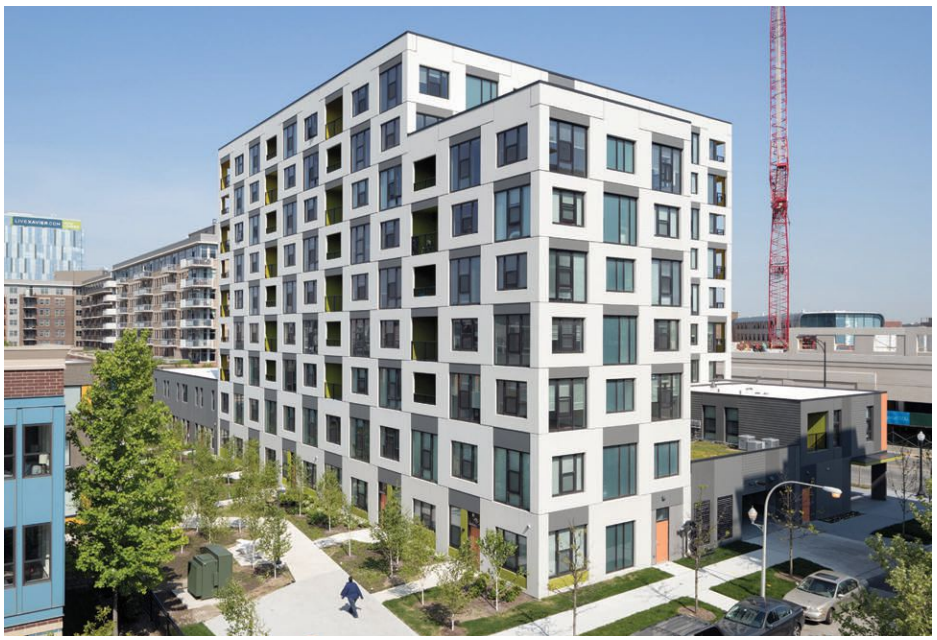
A good example of the new housing type is the mixed-income apartment complex by local firm Landon Bone Baker Architects (LBBA). It seeks to foster community ties, enliven the street, and eschew design conventions that typify—and stigmatize—affordable housing. "Over the years we've come to understand that public housing is really just housing," says firm principal Peter Landon.

The 178,000-square-foot project—one phase of a greater development called Parkside of Old Town, by local developer Holsten—consists of a mid-rise, precast-concrete structure on West Division Street and a separate three-story building of townhouses to its south. Out of the total 106 rental units, 27 are affordable and 36 are subsidized further for the displaced Cabrini-Green residents. The $31 million project was funded through a mix of tax credits and TIF subsidies, as well as funds from the city's housing authority, among other sources.

To create a sense of permeability at the base of the larger building, LBBA oriented communal spaces such as a fitness center and community room toward West Division Street. The space between the two rectangular buildings functions as both a circulation route and space for outdoor activities like cookouts. For visual rhythm, the building's checkerboard-like facade is punctuated with splashes of color painted in recessed balconies.

Heeding conversations with former Cabrini-Green residents and a local advisory council, LBBA incorporated a mix of apartment sizes—from the townhouses to one-bedroom units—to accommodate everyone from multigenerational families to singles. Crucially, there is no difference in the design of the lower-rate units: generous windows frame views of the Chicago skyline, and finishes, like vinyl plank flooring, that are cost-effective but not institutional-looking.

Since the building opened last year, all of the units, including market-rate ones, have been rented, evidence of the extreme demand that remains for dignified public housing. The success of this award-winning project is due in part to the persistence of the former Cabrini-Green residents in pushing for better housing and the commitment of the architecture firm, which is building more of this type. "There was a competition back in 1996 for Cabrini-Green, and we met with residents and activists once a week for a few months," Landon remembers. "Amazingly enough, they are still there—and we are too." *Anna Fixsen*



PHOTOGRAPHY: © DAVID SUNDBERG/ESTO (OPPOSITE, 3); DAVID SCHALLIOL (LEFT); TONY SMITH (RIGHT)

Amanda Williams
ARTIST AND ARCHITECT IN CHICAGO

On Transforming but Respecting Traditional Neighborhoods

I'm in love with the South Side of Chicago, watching it constantly evolve and change. I trained as an architect at Cornell University, but now I'm known as an artist. My art is about asking questions, about making issues visible, whereas architects lean toward solving problems.

I'm part of the exhibition design team for the Obama Presidential Center. I'll have my South Side Chicago–girl hat on at the table. But I'll also have my artist and my designer hats on. The mandate is how do we make a place that motivates people to effect change. That change could be national or international. But the building itself will have its greatest impact on the South Side of Chicago. How do we make sure that the change is for the better—that it doesn't have unintended consequences?

Because of the magnetism of the individuals behind it, the Obama center has the ability to totally shift real-estate values in the area. What we need to try to do is use the building to improve the neighborhood but not completely transform it, so that it gives agency to people who've been there their whole lives.

Teachers Village
Newark
Richard Meier & Partners Architects with KSS Architects

UNTIL 2012, a visitor to downtown Newark would have encountered a bleak expanse of asphalt and weathered facades. Teachers Village, a new six-building mixed-use development, however, is helping to transform the cityscape by cultivating community, energizing street life, and supporting education. Construction of the 400,000-square-foot complex's final building is currently under way and is scheduled for completion this spring.

The project, which was masterplanned by Richard Meier & Partners Architects, comprises three charter schools, an early-learning center, retail space, and 123 residential rental units—20 percent of which are affordable (teachers are given priority for housing).

Meier & Partners designed the three completed residential buildings, which were constructed with prefabricated panelized steel bearing walls. The other three structures resulted from collaboration with KSS Architects, a Princeton, New Jersey– and Philadelphia-based firm specializing in academic and mixed-use facilities. Richard Meier's trademark white aluminum facade unifies the Teachers Village, although the schools employ brick cladding that relates to the surrounding urban fabric. According to project manager Vivien Lee, integrating the complex properly into the historic milieu of Newark was important; in accordance with the Newark Living Downtown redevelopment plans, buildings do not exceed 60 feet in height.

As one of the first communities to pursue a LEED Neighborhood Development designation by the U.S. Green Building Council, the architecture features generous window openings with high-performance glass. These not only bring in natural light but also allow transparency between inside and the street—a testament to the evolving downtown.

The $150 million project was developed by Newark-based RBH Group and funded by a variety of financial institutions, individual investors, and city, state, and federal governments. Through its program, ambition, and location, the project also earned substantial tax subsidies, including the federal New Markets and state Urban Transit Hub credits. A short jaunt from Newark Penn Station, Teachers Village is an accessible landing pad.

But why a "teachers" village? According to RBH CEO Ron Beit, it was critical that the project receive public investment. As builders of the first ground-up residential construction in Newark in decades, he says, "we needed to create a tool or a benefit for the community, and we became inspired by the teachers who were working in Newark." In addition, it's a recruitment tool that aims to attract top-tier teachers to the city. *Lila Allen*

Bowman Senior Residences
Nogales, Arizona
Poster Frost Mirto

NOGALES MAY be Arizona's largest border city, but factors such as its hilly topography and lack of public transportation have limited adequate housing options, especially for seniors. A long-abandoned hotel in this quaint frontier town, however, has been adapted to provide affordable apartments for residents 62 and over.

Originally built in 1917 as temporary lodging for workers passing through the border, the

PHOTOGRAPHY: © TEKTEN (OPPOSITE, TOP AND MIDDLE); SCOTT FRANCES (TOP); LIAM FREDERICK PHOTOGRAPHY (BOTTOM AND OPPOSITE, BOTTOM)

erstwhile Bowman Hotel's century-old structure recalls a time when the railroad was new to Nogales, then a nascent hub of transportation and business. In 1976, the guesthouse ceased operation, and the three-story building's top floors were left vacant for 40 years. Seeing an opportunity to revitalize the city's sleepy downtown, the nonprofit Nogales Community Development Corporation partnered with Tucson-based firm Poster Frost Mirto and affordable housing developer Gorman & Company to give the weathered brick edifice a new life.

"The historic facade has been important to the fabric of Nogales," says Poster Frost Mirto principal Corky Poster, "so a main priority was to salvage as much of the original building as we could." In order to support the masonry and preserve the street front while gutting the interior, the firm expanded the building's height and length by adding a new concrete masonry unit structure, like a Tetris piece. Using funds from low-income housing tax credits and bank loans to finance the $8 million project, the team created 48 units at 650 square feet each.

The architects brought light and air into the 50,000-square-foot facility by placing a courtyard on the ground level and carving out a four-story atrium (right) so that residents are connected to the outside when entering and exiting apartments. To foster a sense of community, the architects included a fitness center, business center, multipurpose room, and shared kitchen.

A result of close collaboration with the community, the Bowman residences—which opened last year—exemplify how partnership and a respect for the past can resuscitate an aging landmark while adding social value. *A.K.*

TRANSPORTATION

New transit centers demonstrate that there is more to urban mobility than merely getting from point A to point B.

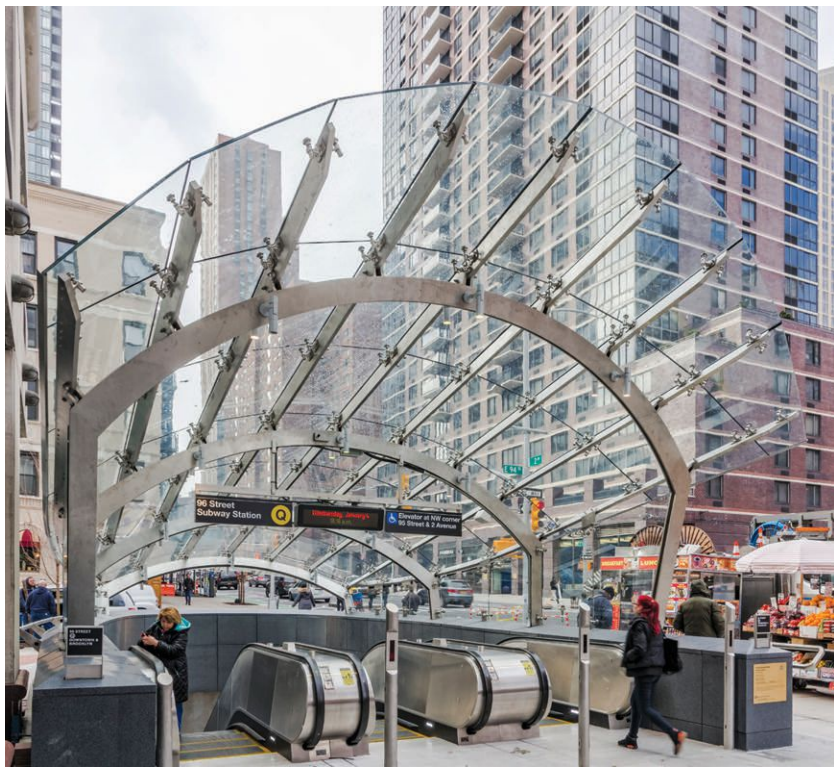
Second Avenue Subway
New York

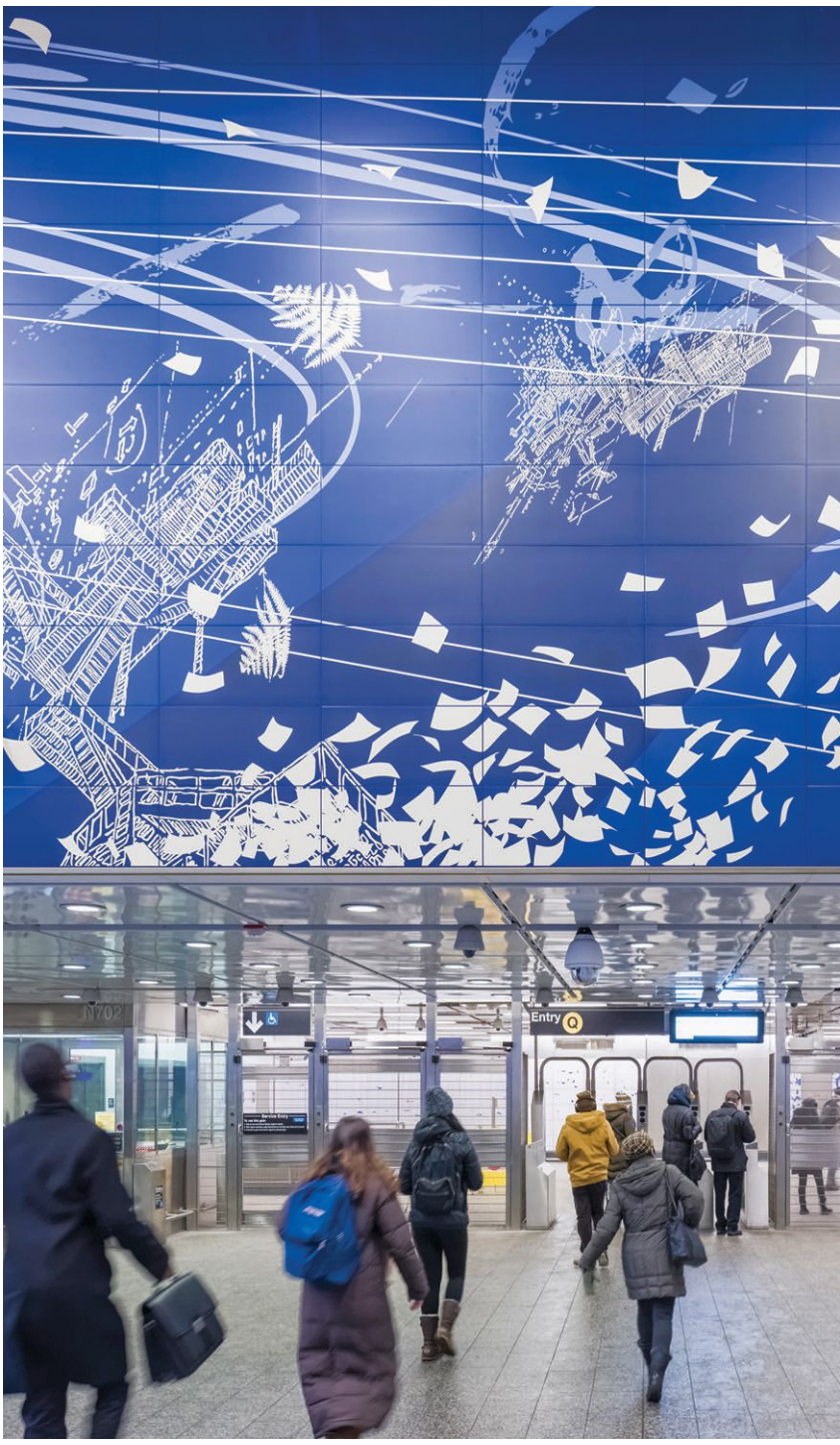
AECOM / ARUP

NEW YORKERS, especially Upper East Siders, thought the day would never come. But after many false starts, numerous delays, and seemingly unending construction grime and inconvenience, the Second Avenue Subway (SAS) finally opened—nearly 90 years after it was first proposed.

The just-inaugurated 2-mile stretch, which connects the Upper East Side to Midtown, is only a portion of what could ultimately be an 8.5-mile-long line, stretching from Manhattan's southern tip to Harlem. But already, even in its partially realized state, the SAS has relieved some of the pressure in other parts of the city's overburdened transit system.

But this $4.5 billion first phase, funded by the state and federal governments and the MTA, is more than a means of traveling quickly and efficiently between points A and B. The gleaming platforms for the line's three new stations, which sit as far as 55 feet below the street, are reached by way of capacious mezzanines that recently retired architect Ken Griffin, the former national practice manager for transportation at AECOM, describes as "civic quality spaces." (A joint venture of AECOM and ARUP served as the project's prime engineering and design consultant.) These intermediary levels feature vaulted, coffered ceilings and robust but





PHOTOGRAPHY: © JEFF GOLDBERG/ESTO

handsome materials, including granite, ceramic tile, and exposed concrete.

Griffin says the mezzanines are "almost like a museum," a claim that is not so outlandish given that they are home to an ambitious public art program, with permanent installations by Chuck Close (above, left), Sarah Sze (above, right), Jean Shin, and Vik Muniz. People on their way to and from the platforms stop to interact with the pieces, often taking photos with the murals or touching the textured mosaic surfaces.

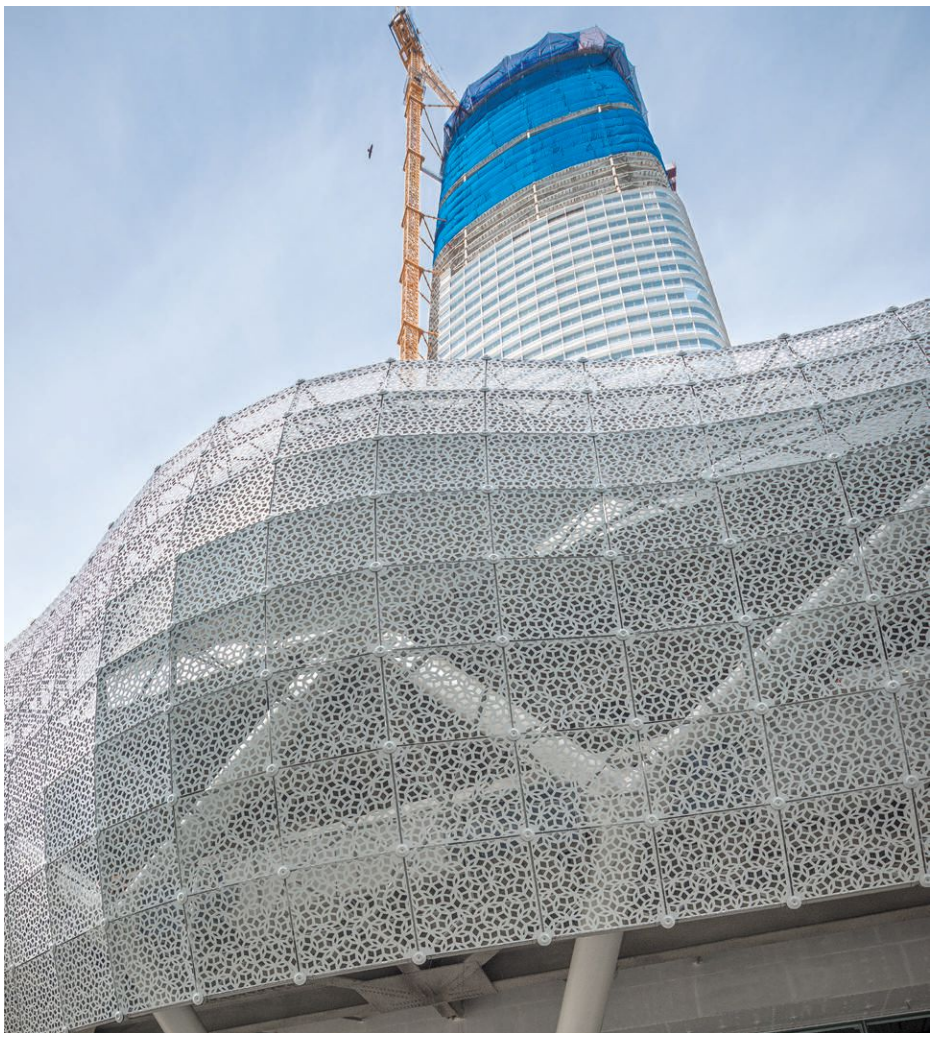
At street level, the station entrances announce themselves with winglike awnings of glass and stainless steel. Elsewhere, aboveground, the goal was to be less conspicuous. Multistory ancillary structures—one for each station—house ventilation towers and address new smoke-evacuation requirements. These are camouflaged in terra-cotta louvers meant to tie the enclosures to the predominantly masonry buildings surrounding them. "The material relates to brick but isn't brick," explains Griffin.

The next phase of the project, slated to extend the line uptown another 2 miles and cost $6 billion, according to some estimates, will be designed by architect-engineer STV and global engineering consultant WSP/Parsons Brinckerhoff. The timetable for construction has yet to be announced. With any luck, New Yorkers won't need to wait another 90 years. *Joann Gonchar, AIA*

Transbay Transit Center
San Francisco
Pelli Clarke Pelli Architects

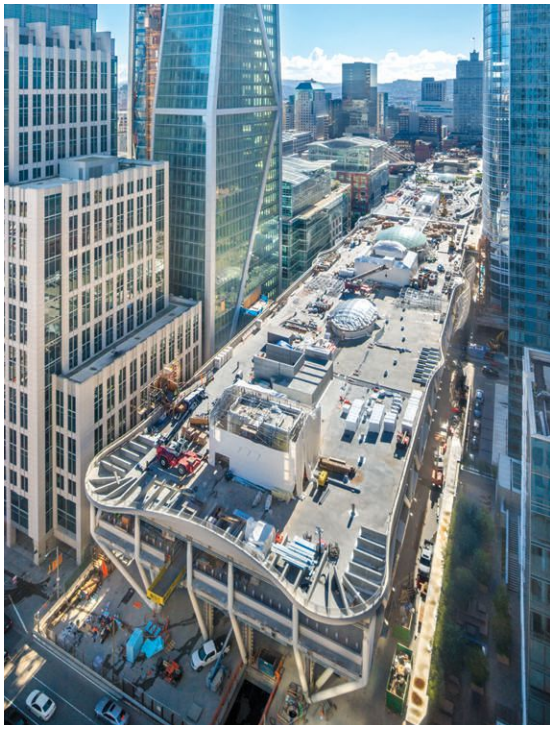
IT IS OFTEN referred to as "the Grand Central of the West." But while San Francisco's Transbay Transit Center won't look anything like New York's Beaux-Arts commuter palace, it has been designed to be an impressive public amenity, not just a functional one. The 1 million-square-foot Transbay facility, which replaces an outmoded and shabby 1930s station, won't have a limestone facade or a ceiling depicting the stars. Instead, it will have a billowing, veil-like enclosure and expressive skylight-topped structural elements that the architects call "light columns," which will allow daylight to penetrate the structure's lowest levels. But the new station's most unusual feature will be a publicly accessible garden over the entire almost-five-block-long building. "We were the only firm that proposed covering the station with a 5.4-acre park. This is the reason we were chosen," says Fred Clarke, senior principal at Pelli Clarke Pelli, referring to his firm's winning entry to a 2006 international competition.

The Transit Center's first phase—with a total project cost of $2.3 billion, funded by a variety of local, regional, state, and federal sources—is slated to open late this year. It includes all of the station's aboveground spaces: the rooftop park, a bus deck, a main hall, and a mezzanine level, as well as a below-grade "train box" for regional commuter rail and California's planned high-speed line that should one day link San Francisco to Los Angeles. But the timing and financing of the second phase, including the rail connections, are still uncertain. For at least the next several years, only buses will be rolling in and



out of the Transit Center.

The station is just one piece of a much larger redevelopment zone on the edge of San Francisco's financial district, made possible in part by the demolition of an elevated freeway and its access ramps after the 1989 Loma Prieta earthquake. The approximately 145-acre area is envisioned as a high-density neighborhood of office buildings, hotels, and both market-rate and affordable housing. Pelli Clarke Pelli has designed what will be the tallest building in the district as well as the city—a 60-story tower for the enterprise software company Salesforce (above), slated for completion next year. Several other skyscrapers for the district are planned or are under construction, including buildings by Foster + Partners, Renzo Piano, and Jeanne Gang. *J.G*



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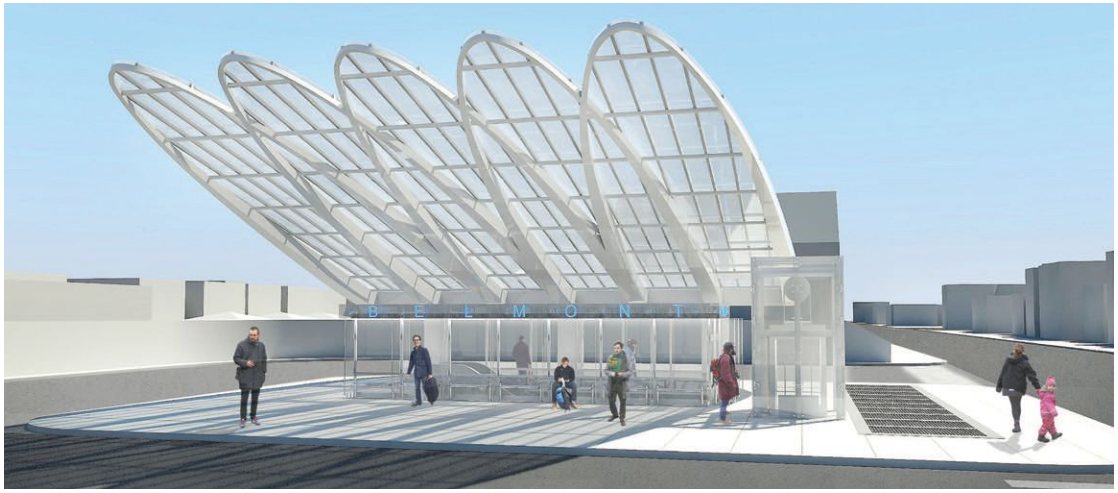
Charles Renfro

DILLER SCOFIDIO + RENFRO, NEW YORK

On Private Projects for the Public

As a design firm interested in the public realm and social space and the importance of person-to-person exchanges, we push clients to include program elements that address civic culture in generous and even provocative ways. In the past, civic placemaking was more in the realm of government agencies. Now, more of our private projects offer the opportunity to impact public experience. We want our buildings to be expansive, inclusive, and welcoming to people who would not normally think of themselves as invited in. We did it, for example, at Stanford University, where our scheme for the art and art history building drew the public into, through, and onto the top of a building originally envisioned to be secured at the front door.

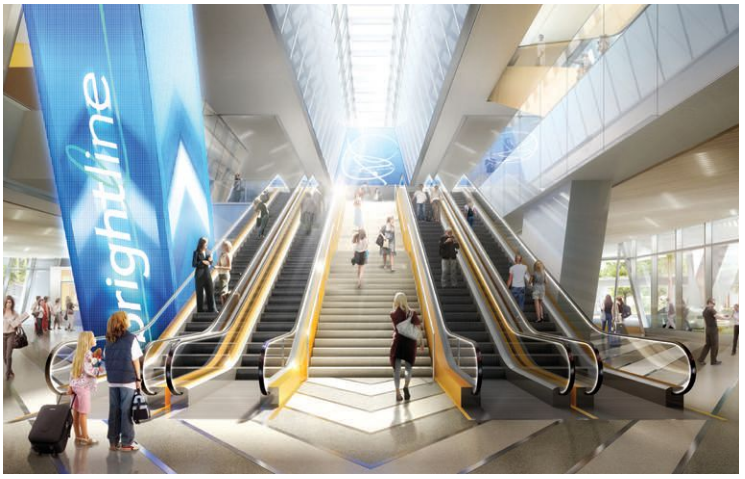
And we're doing it with the Museum of Image and Sound in Rio de Janeiro. There, it all starts with the beach, the most democratic surface in that geographically and economically segregated city. The building extends that democratic surface vertically, inviting the general public to walk up its facade to a new public park nine stories in the air. It's the only public lookout over the beaches of Rio, where historically you've needed a hotel or condo key to gain access.



Belmont Blue Line Station
Chicago
Ross Barney Architects

ORIGINALLY OPENED in 1970 as part of the extension of the passenger rail line that today connects downtown Chicago to O'Hare International Airport, the Belmont Blue Line Station serves 1.8 million subway and bus riders each year. But the facility, located in the northwest side of the neighborhood of Avondale, has never been renovated and is badly in need of an overhaul. Fortunately, it is soon to receive a $15 million

Brightline
Southeast Florida
SOM with Zyscovich Architects



IMAGES: COURTESY SOM/© SMILODAN (TOP, RIGHT AND OPPOSITE, TOP); SOM (MIDDLE)

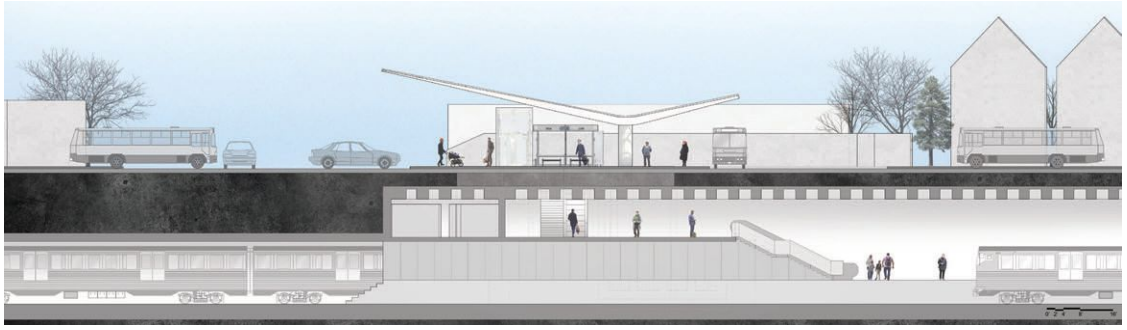
THE LAST time a private American company built rail infrastructure was more than 100 years ago. But this summer's launch of Brightline service, connecting downtown Miami (shown) with Fort Lauderdale and West Palm Beach, could propel private passenger rail forward.

The trio of southeast coastal-Florida cities, which comprise the destinations in the first phase of the $3 billion, 235-mile project, are well suited to testing a privately funded rail revival. "We have to challenge the monopoly of the car and adapt to changing trends of millennials," says Brightline president Mike Reininger, referring to the dual desires of young adults to settle in cities and do without cars. Between 2000 and 2012, this demographic increased in population 24.7 percent around Brightline's service corridor, 118 percent around Miami alone, while auto congestion in the area consistently ranked among the world's worst traffic. Brightline uses the century-old Florida East Coast Railway corridor, on which its parent organization ships freight, although the right-of-way access still had to undergo extensive community review.

The company's new investments should yield benefits for passengers and the wider public. Perhaps most significant, its Miami terminal links three different commuter lines while its ground-floor retail space stitches together four downtown neighborhoods, says Roger Duffy, design partner of Skidmore, Owings & Merrill in New York. The firm designed all three stations in association with Miami-based Zyscovich Architects.

The terminal is noteworthy visually as well. "The architectural expression is in the base structure," says Duffy, who adds that visible V-bracing and multimodal connections at the smaller Fort Lauderdale and West Palm Beach stations unify the three. Rockwell Group was responsible for Brightline's colorful branding, including exterior train graphics and car interiors.

The project's second phase, which is slated to open with the completion of the Intermodal Terminal Facility at Orlando International Airport in 2018, will connect coastal South Florida to that city. *Bonnie Schreiner*



IMAGES: © COURTESY ROSS BARNEY ARCHITECTS (OPPOSITE, BOTTOM AND RIGHT)

upgrade, funded from the Chicago Transit Authority (CTA) capital budget. The project could be completed as early as the end of 2017.

The revamp, designed by Ross Barney Architects, who have done other work for the CTA, including renovations of the Morgan Street and Cermak-McMormick stations, will offer amenities such as pre-paid boarding for bus riders. But the project's defining feature will be a striking winglike canopy of steel-and-polycarbonate panels.

In renderings, the new shelter, where people will wait for their buses to arrive, seems to recall a bird in flight. However, Carol Ross Barney, design principal, says that its inspiration was a faux waterfall once located not far from the station. The popular neighborhood landmark, built by the owner of the Olson Rug Company next to his factory, was replaced by a parking lot decades ago. "We thought it would give the older generation a chance to recall the waterfall, without being slavish to the original," she says. "And it will give younger people the opportunity to hear stories about the place." *Andrew Schneider*

Newport Transit Station
Newport, Minnesota
Snow Kreilich Architects

THE DIMINUTIVE Newport Transit Station, on Highway 61 just southeast of St. Paul, is the first step in a much larger redevelopment project: it sits amid 300 acres of former industrial land that local officials hope will one day become a bustling mixed-use complex. Now a stop on an express-bus line, it is a future link to the Red Rock Corridor, a multimodal transport system that will connect the Twin Cities with their southeastern suburbs.

Completed in late 2014, the 1,900-square-foot station "needed to hold its own until the surrounding site was fully developed," said Matthew Kreilich, principal at Minneapolis-based Snow Kreilich, the project's architect. To that end, the firm created a long, gently sloping roof that shelters a climate-controlled, glass-enclosed indoor area and an open-air plaza. And, in order to make the station a space that would engage residents beyond its commuter base, the design team provided landscaping, seating, and other amenities that would encourage weekend uses such as a farmers market.

The $970,000 project, paid for with federal, state, county, and municipal funds, is already serving as an economic catalyst. At the end of 2016, a developer broke ground on a 42-unit affordable housing complex near the station. Ultimately, the site could support housing for up to 650 families and provide more than 100,000 square feet of offices and industrial uses.

The transit station shows, says Kreilich, that a building need not be large to have a significant impact. "I see it as a really small project with big ambitions," he says. "It's trying to fill a lot of different needs as that site evolves over time." *A.S.*

PHOTOGRAPHY: COURTESY ESTUDIO TEDDY CRUZ + FORMAN (BOTTOM); © COREY GAFFER (2)

Teddy Cruz
ESTUDIO TEDDY CRUZ + FORMAN, SAN DIEGO

On Making the Public the Essential Client

To be political today in architecture is to prioritize. As architects we need to prioritize the public over privatization, marginalization, exclusion. The profession in general has been focused on the 1 percent. Our client has not been the public. With my partner, Fonna Forman, we are trying to recover the institutional memory of the New Deal and the many decades after the Great Depression that were defined by a robust investment in the public.

We have declared the Mexican-border region, where we see the most dramatic proximity between wealth and poverty, as a laboratory for urban and political creativity. While the public realm has been eroding in the United States, and austerity has become a mantra of European governments, Latin American cities have constructed a very different brand of politics that is transparent, inclusive, and devoted to the public realm. We are learning from Latin America that public space cannot just be a space of beautification, a neutral space of leisure. It needs to be a space of knowledge and education, and an agent for community engagement.

IMAGE: COURTESY CITY OF LOS ANGELES, BUREAU OF ENGINEERING, MICHAEL MALTZAN ARCHITECTURE/HNTB

Sixth Street Viaduct
Los Angeles
Michael Maltzan Architecture/HNTB

YOU MAY not know its name, but you've definitely seen Los Angeles' original Sixth Street Viaduct. Built in 1932 to span the L.A. River, railroad tracks, and local roads, the 3,500-foot-long Art Deco structure—the longest of 14 historic bridges that cross the river—has appeared in dozens of films, TV shows, and commercials. After a seismic study in 2004, engineers concluded that it had to be torn down because its concrete supports were deteriorating from within. Preservationists fought to maintain the icon, but in 2016, it was demolished. Nevertheless, thanks in large part to their efforts, in 2012 the city's Bureau of Engineering held its first-ever international design competition to replace it. The selected scheme, "The Ribbon of Light," will be the largest bridge project in L.A.'s history at nearly $500 million, which will be funded primarily by federal and state transportation sources. Local architect Michael Maltzan, who won the competition with engineering and architecture firm HNTB, hopes the new bridge will transform the city and the idea of infrastructure itself.

The new span will feature 10 pairs of ribbonlike concrete arches, a nod to the old one's twin pairs of steel arches. When finished in 2020, it will reconnect two neighborhoods vastly different from each other: Boyle Heights to the east, once a Jewish enclave and now largely a working-class Mexican-American neighborhood, and the Arts District to the west, a former industrial zone that's rapidly morphing into a mixed-use community of lofts, condos, and creative businesses.

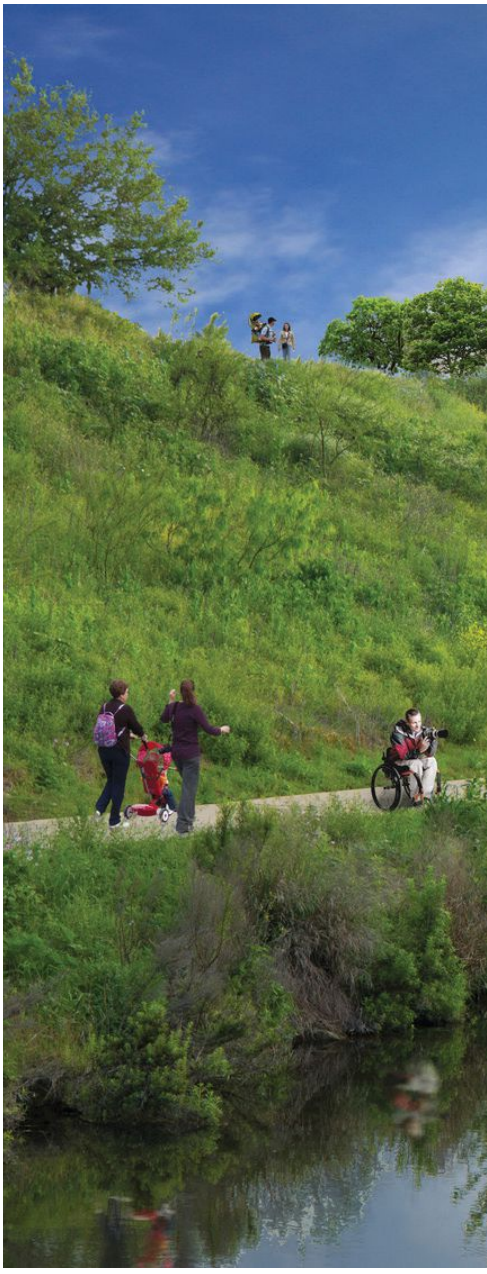
Though it will still carry cars, of course, the new viaduct will also feature pedestrian and bike lanes, linked via staircases and ramps to new parks and public spaces below the road deck. These amenities are still taking shape, but there's been unease about potential gentrification, particularly among Boyle Heights residents. The city and design team have been holding regular community meetings throughout the project.

"The concerns of these residents also exist in other parts of L.A. as the pressure to build more housing and reduce traffic ripples through areas that had been relatively unchanged for years," says Maltzan. Nonetheless, he believes the viaduct will—and should—improve life. "From the very beginning, there was broad stakeholder consensus that this bridge should do more than move vehicles," he says. "L.A. is changing. The river is becoming accessible. People want to walk and bike instead of driving. They want green spaces. So the viaduct must enable this future and connect these neighborhoods in a deeper, more meaningful way."

Deborah Snoonian Glenn

PARKS & PLAZAS

Outdoor spaces bring greenery, repurpose infrastructure, and bridge communities.



Confluence Park
San Antonio

Lake|Flato, Matsys, and Rialto Studio

AT THE CONFLUENCE of the San Pedro Creek and San Antonio River just south of downtown, a sculptural new pavilion is rising from the banks. Commissioned by the nonprofit San Antonio River Foundation (SARF) and slated to open at the end of 2017, the three-acre Confluence Park will serve as an educational outpost for teaching schoolchildren about the watershed, and as a recreational facility for the wider community. The total project budget of $12.8 million, raised primarily through private donors but with some public funding, includes a maintenance and education endowment, which—in response to local educators' needs—will allow for transportation for students to and from the park.

Local architectural firm Lake|Flato was selected for the project in 2014 and engaged Andrew Kudless of San Francisco–based office Matsys—known for its work in material research and computational design—to consult on the pavilion. "Andrew's work is formally much different from that of our firm, but it's not form for the sake of form," says Lake|Flato associate partner Tenna Florian. Kudless developed a scheme for a 30-foot-high canopy of enormous cast-on-site concrete panels that will capture and funnel rainwater into a 100,000-gallon underground storage tank, to be used later for irrigation and toilets. The park will also include a classroom building, native-plant gardens designed by Rialto Studio, and a bike-share station.

The site—a city-owned empty lot, previously used as a staging area for utility trucks—backs up to a residential street in an underserved part of San Antonio. During initial public meetings, neighbors were skeptical, citing safety concerns and asking for a fence between the end of the street and the park. But since construction began, feelings seem to have changed: "They're now overwhelmingly enthusiastic," says Florian, "and have asked for gates in the fence, to have easy access to this new neighborhood amenity." *Miriam Sitz*

IMAGES: COURTESY MATSYS (3); © SILVIA ROS (OPPOSITE, INSET)

Elizabeth Plater-Zyberk

DPZ, MIAMI

On Architecture that Addresses the Street

The best things architects can do is to ensure that their buildings contribute to the public spaces to which they are adjacent. If a building is next to a street or a square, its facade should improve the ambience of that street or square. Usually that means frequent doors and windows. The building can certainly have personality, but a blank wall, no matter how beautiful the material, doesn't contribute to the public realm.

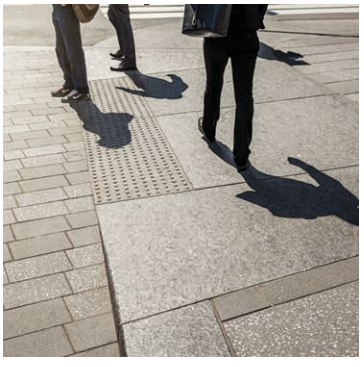
During my time on the U.S. Commission of Fine Arts, I could see many architects either striving to enhance the public realm or ignoring it. The difference was very clear. That's not to say there can't be object buildings—the African American Museum is appropriate as a civic object. Architects of civic objects can go for the wow factor, but the rest of us should imagine that we are part of an ensemble.

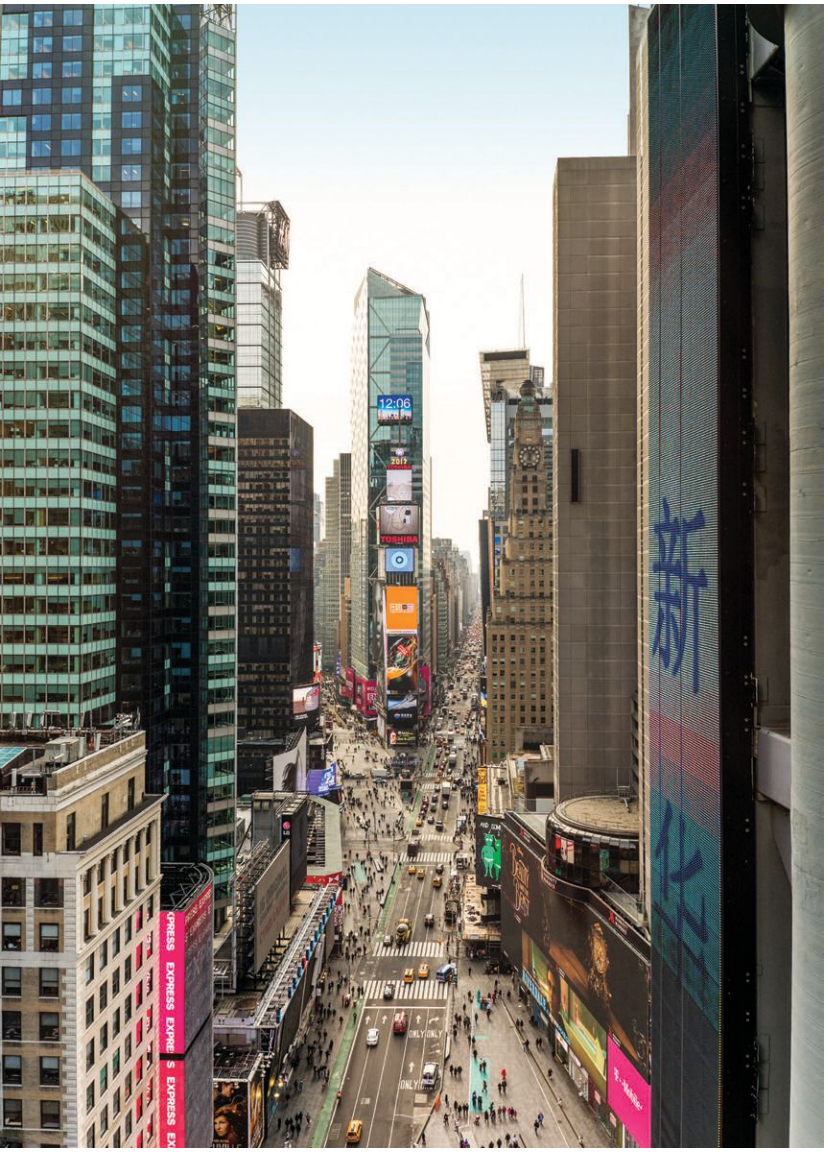
Times Square Reconstruction
New York
Snøhetta

REDESIGNING one of the world's most visited places is no small feat. In 2010, Snøhetta was selected to transform Times Square in Midtown Manhattan from a congested crossroads—one most New Yorkers avoided—into a pedestrian-friendly public plaza. The $55 million project focuses on the glitzy, billboard-laden heart of the Theater District—a 5.1-acre, bow-tie-shaped area between 42nd and 47th streets where Broadway and Seventh Avenue intersect.

A crucial aspect of the plan permanently closed off that portion of Broadway to car traffic. Snøhetta's design, which eliminated most curbs and introduced dark precast concrete pavers embedded with nickel-size steel discs that capture the neon glow from above, creates a cohesive ground plane. "Even when cars were temporarily banned previously, people would still only walk on the sidewalks," says Snøhetta cofounder Craig Dykers. "There was a preponderance of people smashed along very narrow zones. We wanted our design to allow for the natural movement and collection of people. Removing the curbs created a sense of a plaza."

In fact, according to Dykers, the project was "as much about taking things away as it was about putting things in." Numerous traffic lights and obsolete phone booths were discarded. To minimize the threat of flooding, long a problem in Times Square, the drainage system was upgraded. Aboveground, Snøhetta added 10 30- to 50-foot-long granite benches along





Broadway to orient visitors and act as an infrastructural spine. Power supply is embedded within the benches to eliminate the need to bring in temporary generators for events.

On any given day, Times Square hosts public art projects, open rehearsals, political demonstrations, film shoots, and small commercial ventures including food kiosks and sometimes-rowdy buskers and costumed characters. Of course, it's also home to larger happenings—from tens of thousands of people participating in outdoor yoga classes to the annual New Year's Eve celebration that in 2017 alone attracted an estimated 2 million. "Times Square is itself like a theater set," says Tim Tompkins, president of the Times Square Alliance. "It's a context where things are constantly changing. We needed a design that responded to day-to-day activities as well as meta-events."

Snøhetta's design nearly doubled the amount of public space for pedestrians in Times Square. Since aspects of the scheme were implemented—more permanent kiosks and planters have yet to be installed—there has been a 20 percent drop in crime and a 60 percent decrease in air pollution. And whether you're a tourist or a local, today, fewer people say they avoid Times Square. *Josephine Minutillo*

PHOTOGRAPHY: © MICHAEL GRIMM (LEFT AND OPPOSITE, 3); CORYN KEMPSTER (TOP, RIGHT); ALANA FAJEMISIN (BOTTOM, RIGHT)

Full Circle Swing
Buffalo
Julia Jamrozik and Coryn Kempster

BUFFALO HAS been turning a corner in recent years, thanks to a significant influx of refugees. Families from Syria, Somalia, Bhutan, and Iraq are filling vacant houses and setting up shop in empty storefronts, notably on the city's west side. Still, their largely low-income neighborhood lacks essential public space. In a vacant corner lot, however, a circular hot-pink swing set has not only become a new amenity but an unlikely symbol of unity.

The swing set was created by local designers Coryn Kempster and Julia Jamrozik as part of a gallery-sponsored competition to activate empty city lots with a temporary work of public art. The duo was interested in combining play with the political nature of circles, a configuration that evokes everything from ancient talking circles to roundtable discussions. But ultimately, says Jamrozik, they wanted to create a lively place "where the kid world and adult world could come together."

The installation is spare—a circular steel frame with seven seats—but, according to Jamrozik, this "mixture of familiar and unfamiliar makes it approachable." Since it was installed last fall (a grant from the National Endowment for the Arts, the Andy Warhol Foundation, and other organizations covered its $5,000 construction costs), the community has embraced the swing as an ad hoc landmark and as a place to play. In the afternoon, children from a neighboring school—where students speak 44 different languages and hail from 70 different countries—rush to the swing to collectively reach giddy new heights. *Anna Fixsen*

Michael Murphy

MASS DESIGN GROUP, BOSTON

On Interventions that Catalyze Greater Change

What I've learned, working around the world, is that with the right projects, places can change, often quite rapidly. Now we've started the Hudson Valley Design Lab, to encourage equitable development in Poughkeepsie, New York, where I grew up. My social consciousness was born in Poughkeepsie, which had been a vibrant city. But what happened in the '70s and '80s around the nation—the unjust rejection of the city as a place for investment—happened in Poughkeepsie, in microcosm. You can still see the scars. The Design Lab will be a place for exhibitions, for research, for publications focused on how to use design thinking as a driver of change. Right now, we're looking at an affordable-housing project on Main Street and a new art and cultural center in an old trolley barn. We've seen these kinds of catalytic projects improve people's lives. It's worked in tougher places than Poughkeepsie.

11th Street Bridge Park Washington, D.C.

OMA with OLIN

IT GOES without saying that building bridges connects things, both literally and figuratively. The 11th Street Bridge Park in Southeast Washington, D.C., attempts to do much more. Its designer, OMA, together with landscape architect OLIN, sees it as a place of exchange—and its X shape, rising like criss-crossing springboards over the Anacostia River, will offer various indoor and outdoor spaces for the ambitious programs planned, including an environmental education center, performance venue, café, and an open plaza for markets and festivals. "Our hope is that the shape is iconic but also inviting," says OMA partner Jason Long. "We want to create an inclusive place where people feel welcome."

In this case, the bridge connects two disparate neighborhoods that for years have been separated by a racial and income divide—the Navy Yards on one side of the river, currently witnessing intense commercial and residential development, and the historically black neighborhood of Anacostia on the other.

While owned by the District Department of Transportation—the project will be built over existing piers from a disused overpass—the park will be run by the nonprofit Building Bridges Across the River (BBAR) and funded through a combination of private and local-government contributions. A feasibility report is currently being prepared, which includes load testing of the piers (the project is expected to complete in late 2019). Additionally, BBAR created an Equitable Development task force to help ensure that the 11th Street Bridge Park will spur inclusive development.

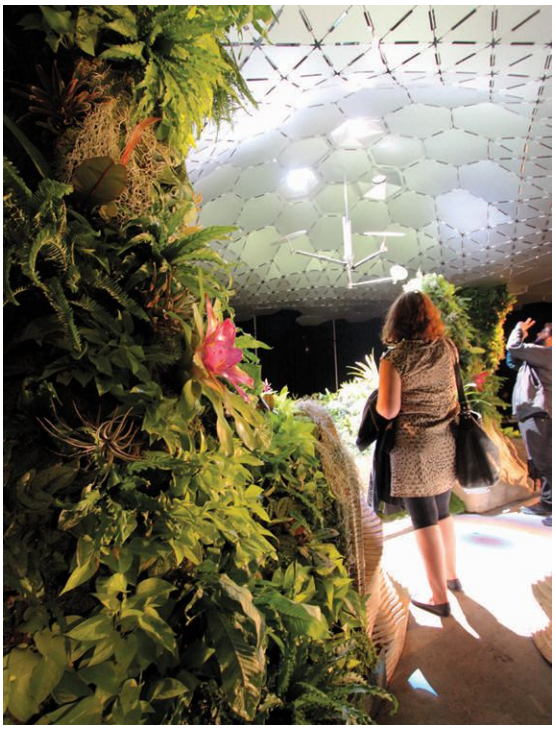
Waterfalls at either end of the crossing's upper extensions are planned as prominent features that will simultaneously be attractors, sound buffers, and cooling devices. The eastern one will also help with river-water filtration. Together with other ecological features along and under the bridge, such as the wetlands that frame its piers, the filtration system will work to help clean the river and serve as an important symbol of its renaissance. According to OMA, the full integration of architecture, landscape, and infrastructure allows the creation of a socially and environmentally sustainable civic experience. *J.M.*

The Lowline
New York
RAAD Studio

AS NEW YORK furiously expands skyward, one of the most exciting projects is happening underground. The Lowline, cofounded by James Ramsey, of the design practice RAAD Studio, and Dan Barasch, innovatively transforming a long-abandoned MTA-owned trolley station below Delancey Street on Manhattan's Lower East Side into a new kind of public space. Using cutting-edge solar-capture technologies and old-fashioned botany, Ramsey wants to reengineer the dilapidated station into a self-contained ecosystem that serves as a neighborhood resource, an empowering educational hub, and an "oasis for people to retreat to from the chaos of the street."

Ramsey hit on the idea for the Lowline (shown in the above rendering) seven years ago, and in 2015 the team opened a working model, the Lowline Lab, a stone's throw from the actual site. It gave the community a peek into the future, and what they saw was straight out of science fiction. In a dark room in a set-to-be-demolished market building, sunlight beamed into the space through rooftop-mounted reflectors and a series of clear tubes. This light was splayed across a metallic canopy that radiated the solar energy onto a thriving terrarium, which included 3,000 different plants of 50 unique varieties: ferns, grasses, berries, spiderwort, and greenery that dripped from the ceiling like stalactites.

The Lab (shown in action, below) closed in February, and there's a long road ahead for the actual project to make its proposed 2021 opening. Ramsey and team need to solve a series of technological and design problems, as well as raise something like $70 million before construction can begin (at some unspecified date). But the prototype has proved invaluable on two fronts: it helped them test and hone the technology, while generating interest and commitments from the city government and the public—an outcome as important to Ramsey as radical rethinking and fund-raising. *Dante A. Ciampaglia*



IMAGES: © THE LOWLINE (3); COURTESY OMA (OPPOSITE); MASS DESIGN GROUP (OPPOSITE, INSET)

Buckhead Park Over GA400
Atlanta

Rogers Partners with Nelson Byrd Woltz Landscape Architects

AMONG THE shops, restaurants, and venues of Atlanta's affluent Buckhead section, there's barely a hint of public green space—a problem compounded by what surrounds visitors: cars and interstates. Without an old elevated train trestle or similar out-of-use piece of infrastructure to convert into parkland, how do you solve the problem? The Buckhead Community Improvement District decided to take a half-mile stretch over the Georgia State Route 400 highway to create an elevated park from scratch.

About two years ago, the organization put out an RFP and selected New York–based architects Rogers Partners, working with Nelson Byrd Woltz Landscape Architects, to conduct a concept study. Their Buckhead Park Over GA400 proposal calls for a curvilinear greenway that meanders over the highway. The scheme is eye-catching and unexpected, complete with picnic areas, cycling paths, native landscaping, and links to Atlanta's subway system. But it was also born out of a sense of reality: the proposed park abuts private property, making the strategic connections that will be built to street level more appealing to would-be developers.

"We're building 7½ acres over the highway," says firm principal Rob Rogers. "That's a lot of open space. So we were able to program the big area we call the Commons at the north; the town square, which is the plaza in the middle; and a whole series of more colorful botanic gardens that reach down to the landmark crossing at Peachtree Street."

But all this is still some way off. Rogers estimates a three-year period of design, engineering, and obtaining permits, followed by two to three years of construction. Then there's securing a mix of public and private financing (the project could cost as much as $250 million) and establishing a conservancy to operate the park with the City of Atlanta. So the project is still in its infancy. But in an area starved for parkland, it can't happen fast enough. *D.A.C.*

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CIRCLE 83

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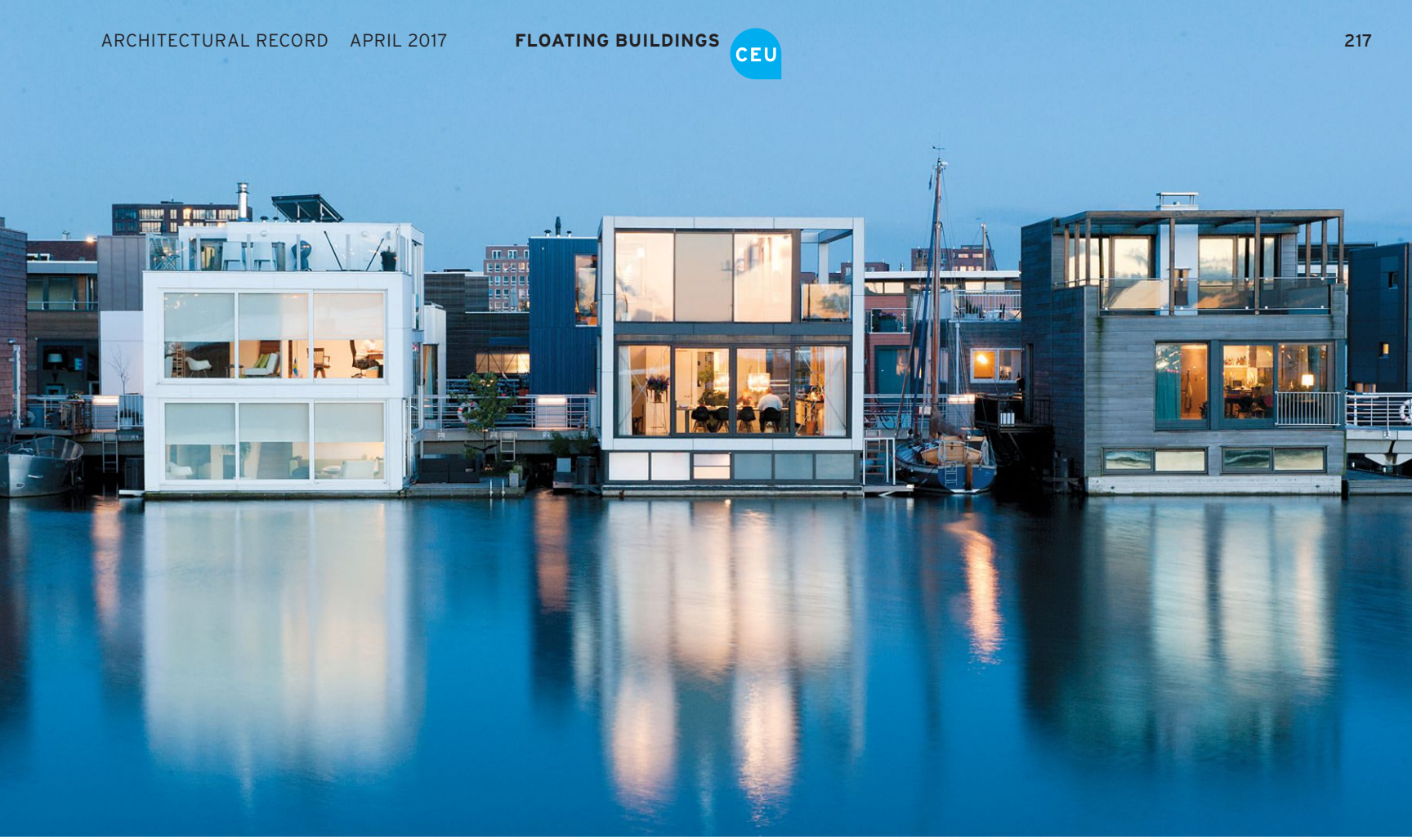

Noah's Ark-itecture

Buoyant buildings offer one solution for sea-level rise, escalating property values, and the desire to be near the water.

By Katharine Logan

VILLA FLOTILLA The floating houses designed by Waterstudio, which make up a neighborhood on Amsterdam's Lake Ijssel, have "foundations" formed in a single pour to eliminate joints.

PHOTOGRAPHY: © WATERSTUDIO

AS THE ice melts and the seas rise, building on waterfront and flood-prone sites begins to look a lot like foolishness, yet backing away from the water takes more willpower than most cities and towns can muster. Ever since the first settlements took root on flood-fertilized riverbanks, next to the water is where people have always wanted to be.

So what are the options for staying put and living with water rather than moving away from it? They range from keeping water out—with barriers, stilts, and raised ground planes—to letting water in, with ground floors designed for periodic inundation, to, ultimately, rising above it all, with floating architecture. Yes, really. "Whether it's New York or London, Bangkok or Dhaka, all these cities are growing, all these cities are next to the water, and all are threatened by the water," says Koen Olthuis, founding principal of Netherlands-based Waterstudio. "Floating developments can be part of the solution."

The technology of floating architecture isn't new. Each of the projects considered here uses tried-and-true technology adapted from marine applications to achieve its unusual results, whether it's a floating house, an island, a church, or a plaza.

Houseboats, for example, have been around for centuries, and the floating houses that make up a neighborhood in Ijburg, under development in Amsterdam's Lake Ijssel, are "really just better houseboats," says Olthuis, "built to the same standards as a house on land, using the same methods and materials."

For all their similarities to houses on *terra firma*, however, the float houses Olthuis has designed for Ijburg differ in a crucial aspect: their buoyant "foundations," or lower levels. Formed in a single pour to eliminate joints, and emphatically free of cracks, a prefabricated concrete tub—or hull—is designed to displace a volume of water with a weight equivalent to the weight of the house. The hull is submerged the depth of half a story and secured to telescoping piles at diagonally opposite corners, allowing the house to rise and fall with the water but not wander about. (Typically, bedrooms are located on the partially submerged level, and the water reduces heating and cooling loads on the house.) As a refinement, automatic air-water balancing tanks help keep the house level when the residents invite more than a few friends to a party.

A buoyant foundation can also be used to build amphibious architecture on flood-prone land. Amphibious architecture retains a connection to the ground under ordinary circumstances and floats as high as needed when flooding occurs. As a flood-mitigation strategy, amphibious architecture works with natural cycles, instead of trying to resist them.

Waterstudio's 1,440-square-foot Villa De Hoef, for example, usually sits in a garden beside a waterway in the small Dutch town of

NOT ALL WET The Waterstudio's Villa De Hoef (left), in the Netherlands, normally sits on dry ground alongside a waterway. But when it floods, the house floats. A developer is currently seeking zoning approval to build 29 Waterstudio-designed private floating islands (below) on an inlet north of Miami Beach.

De Hoef. When the waterway floods, which happens every 10 years or so, the house floats; as the flood recedes, the house returns to its original position. With a maximum anticipated flood level for the site of only 4 feet, the project's engineers deemed it safe to tether the house with cables and surround it with a wooden deck, in preference to telescoping piles. A skirt of nylon net prevents flood debris from becoming lodged beneath the house. "Low-tech, low-maintenance," says Olthuis. Maintaining the amphibious system requires periodic visual inspection of the cables and deck, and, every five years, a recalculation of the house's added or moved live load to determine and adjust its center of gravity. This is in case the occupants have accumulated more belongings or rearranged the furniture.

Expanding the applications for floating architecture, Waterstudio is now designing private islands that will float on a patented platform moored to the seabed. With projects under way for Dubai and the Maldives, the firm's Amillarah project is currently seeking zoning approval for a "villa flotilla," as the *Miami Herald* dubbed the proposal, with 29 floating islands on Maule Lake, an inlet north of Miami Beach.

Expected to sell for about $12.5 million each, the floating islands will make only a few hundred very wealthy people happy, notes Olthuis. Ultimately, however, he sees a more egalitarian future for the technology, as a solution for people worldwide who live in slums that are close to open water and vulnerable to flooding. Improving these so-called wet slums is almost impossible, since governments are unwilling to condone illegal settlements by sponsoring upgrades and because lenders are unwilling to invest in something that will be flooded out.

But, building on their experience developing floating islands, Waterstudio has proposed simple schools and critical infrastructure, such as water-treatment plants, that would sit on small floating islands and be connected to the slums. The firm has recently completed a prefabricated floating school that will be shipped to Dhaka and assembled next to a wet slum there. Such facilities typically qualify as temporary solutions, which makes them acceptable to government officials. They can be relocated as needed, retaining their value, which makes them attractive to investors. And they can be leased for limited periods, which makes them accessible to the communities that need them. "It's a delicate system, where you get investors, regulators, and users all together to improve life in these wet slums," says Olthuis.

A versatile, affordable, and mobile solution is exactly what the Church of England's Diocese of London was looking for when it commissioned London-based Denizen Works to design a floating church and community hub to support the diocese's outreach program along London's waterways.

With the rocketing cost of land, London's waterways are the busiest they've been since the industrial revolution, with a floating bookshop, cinema, restaurants, and even a puppet theater, as well as a significant residential component. The activity on the water could soon be eclipsed, however, by the activity of new development along the water's edge. In 2015, the mayor's London Plan identified key brownfield "Opportunity Areas," many of which lie along these waterways.

With its floating church, the diocese is responding both to the anticipated growth of new waterfront communities on brownfields and underdeveloped lands, and to the difficulty of finding space in the rapidly redeveloping city for a new church. "We spotted this

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CIRCLE 238

POP-UP CHURCH Denizen Work's proposal for a floating and relocatable church (above and right) for the Diocese of London features a roof composed of a pair of asymmetrical, pleated wings. These are lifted, like the pop-top of a vintage camper, once the vessel is docked.

opportunity," says Hayley Harding, program management officer with the diocese, "and felt that it was something that could grow and support development and change."

The priority for the diocese is to establish a presence in emerging communities—on and beside the water—as early as possible, and in a space that the local parish can own and manage, running both secular and worship activities as it sees fit. The floating church will moor at key regeneration sites for three- to five-year periods, offering services, and developing relationships with growing communities. Ultimately the Diocese will evaluate whether and how to build a permanent facility.

The competition brief for the project called for a multifunctional space that could accommodate a diverse program of worship and celebrations, art exhibitions, yoga classes, parent-and-toddler groups, and supper clubs. "They're not just looking to bring the church to these emerging communities," says Murray Kerr, director at Denizen Works, "but a sense of community as well."

Denizen's winning scheme, developed in collaboration with Turks Shipyard and based on a traditional wide beam canal boat, provides 500 square feet of interior space, plus decks, in a vessel that is 60 feet long and 12 feet wide but less than 6 feet above the waterline, so that it can easily clear the London canal system's low bridges. The design, which is projected to cost about $370,000, includes an innovative roof that generates a play of light and volume. Once the vessel is docked, the roof's two asymmetrical segments can be raised to reveal pleated sides much like the bellows of a church organ (or, more prosaically, the pop-top of a vintage camper). The longer wing shelters the hall, while the shorter one covers the ancillary spaces, including a kitchen and an office. Crafted from resin-impregnated sailcloth, the translucent bellows will provide a soft, ambient light during the day and act as a Chinese lantern at night, says Kerr, "creating a warm, inviting glow for passers-by and imbuing the interiors with a celestial quality."

"They delivered something we weren't expecting," says Harding. "This beautiful volume is something that can be a sacred space as well as a community asset. And Denizen's partnership with a shipyard demonstrates that it is viable."

The church will be Denizen's first project to float. By contrast, the work of Turin, Italy–based Carlo Ratti Associati demonstrates an abiding fascination with water, so it's no surprise that the firm's 2016 master plan for the Currie Park waterfront at West Palm Beach, Florida, incorporates a significant water-based element. What is unexpected is the use of a technology adapted from submarines to carve

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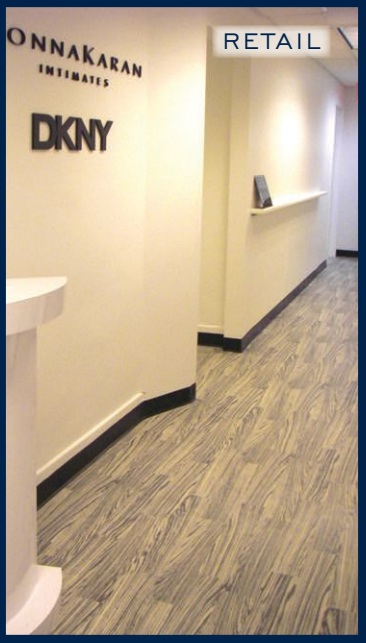

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WALKING ON WATER
Carlo Ratti's scheme for Currie Park (above and left) in West Palm Beach, Florida, consists of interconnected *piazzette*. The park, which will float on Lake Worth Lagoon, incorporates amenities such as a restaurant, an amphitheater, and a circular pool.

IMAGES: © CARLO RATTI ASSOCIATI

volumes of habitable space into the surface of the Lake Worth Lagoon.

"One of the aims of our work is to imagine an architecture that adapts to human need, rather than the other way around—a living, tailored space that is molded to its inhabitants' needs, characters, and desires," says Carlo Ratti, the firm's founding partner and the director of the Senseable City Lab at the Massachusetts Institute of Technology. "Water is a reconfigurable material, and it allows us to develop adaptive, 'fluid' designs."

The plan envisions a floating plaza (or, perhaps more accurately, a series of floating *piazzette*) projecting out onto the lagoon. The plaza will hang in the water, with its surface about 5 feet below sea level, providing views across the water from this unusual perspective. The project is anticipated to have virtually no environmental impact, floating in the lagoon just like a midsize boat, using no fuel, and discharging nothing into the water.

As part of the 50-acre master plan, the plaza will connect to West Palm Beach's city center along a pair of leafy promenades, and will incorporate such facilities as an organic restaurant with its own hydroponic cultivations, a circular pool, and an amphitheater.

Now in design development while seeking municipal approvals, the plaza will consist of a series of lightweight steel modules composing a peninsula of about 5,000 square feet. The structure's deck will be made of galvanized steel (similar to boat construction), with teak finishes. Beneath the plaza, a series of sensor-activated air-water chambers will open and close, releasing or taking in water according to the number of people walking on the surface, and adjusting for a height differential of up to 20 inches, which accommodates loading changes of up to 100 pounds per square foot. "The use of responsive digital technologies is often employed to introduce movement and complexity to static architecture," says Ratti, "but it can equally be used to achieve stasis and equilibrium within a moving landscape."

With this project, West Palm Beach aims to reclaim its connection to the natural environment it is part of, give shape to a vibrant new district, and, says Ratti, "radically redefine the relationship between architecture and water." Ratti has identified the theme that unites these disparate examples of floating architecture: a floating plaza that engages with water in a playful new way; a floating church that enables an ancient institution to reach out to its changing city; floating islands that uplift the few and the many; amphibious architecture that celebrates a river even in flood; and a floating neighborhood that provides a city with new "ground." All of these offer new possibilities for changing waterfronts and new possibilities for us to stay where we really want to be—by the water. ■

Katharine Logan is an architectural designer and writer focusing on design, sustainability, and well-being.

Continuing Education

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Learning Objectives

1 Outline the range of solutions for flood-prone areas that involve living with water rather than trying to keep it out.

2 Describe how marine technologies can be adapted to create floating buildings, islands, and public spaces.

3 Outline the distinguishing characteristics of amphibious architecture.

4 Discuss what makes floating islands an appropriate location for critical facilities and infrastructure in wet slums.

AIA/CES Course #K1704A

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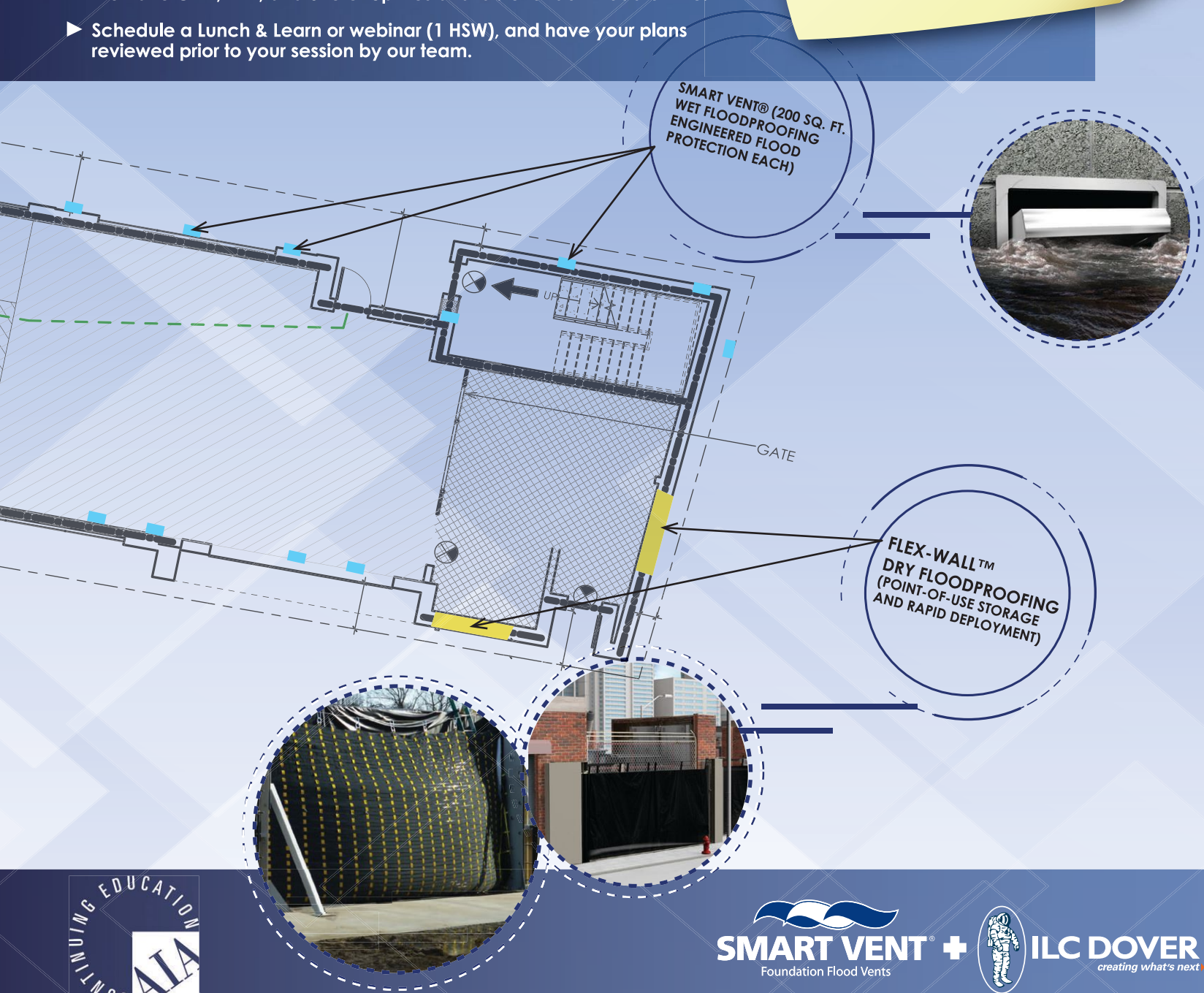

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Crafting the Intersection Between Indoors and Outdoors

Sponsored by LaCantina Doors

BE | LS | PM

CREDIT: 1 AIA LU/HSW; 1 GBCI CE HOUR

Photo courtesy of Armstrong Ceiling and Wall Solutions

Wood Specialty Ceilings and Walls: Art, Science, and System

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AC | IN | PM

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Continuous Insulation in Framed Exterior Walls

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Dramatic, Durable Interiors Using Sintered Stone

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Actively Pursuing Passivhaus Enclosures

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CATEGORIES

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- **PM** PRODUCTS AND MATERIALS
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- **RR** RENOVATION AND RESTORATION
- **ST** STRUCTURAL
- **SU** SUSTAINABILITY

Photo courtesy of Build LLC

Multi-panel door systems eliminate barriers between interior and exterior spaces, creating a natural and open flow. Aluminum thermally broken folding doors showcase the beauty of surrounding landscaping at this home.

Crafting the Intersection Between Indoors and Outdoors

An in-depth look at multi-panel door systems

Sponsored by LaCantina Doors | *By Amanda Voss, MPP*

An architect puts pen to paper, dreaming up an initial sketch that melds a building seamlessly with its environment, complementing topography, and surroundings. The ability to bring the outdoors in, and for a building to reflect its surroundings, is a hallmark of modern design. Outdoor rooms that flow naturally into interior spaces not only enhance a structure's footprint, they also provide ventilation, fresh air, and daylight, and connect occupants to nature.

Facilitating the fusion between the interior and the outside is the job of multi-panel door systems. A multi-panel door system is a door or window system with multiple operable panels that open sequentially to create a large opening. Reaching beyond the capability of a traditional hinged door, multi-panel systems don't just transition between indoors and out. Instead, the wide and seamless opening they furnish blends nature into a room or series of rooms, eliminating the perceived divide.

Not only do multi-panel door systems improve important health metrics, like indoor air quality, but as enhancements in manufacturing and technology have augmented door efficiency, these systems can also occupy a greater area in the building envelope without compromising overall performance.

MEET THE FAMILY: AN INTRODUCTION TO TYPES OF MULTI-PANEL DOOR SYSTEMS

Multi-panel door systems are, as the name describes, composed of multiple panels. The ways in which these panels operate defines the type of system. The most common types of multi-panel door systems are folding and multi-slide. Multi-slide doors may be further separated into stacking multi-slide or pocketing multi-slide.

Multi-Slide Doors

In a multi-slide door, panels stack within the opening.

CONTINUING EDUCATION

1 AIA LU/HSW

1 GBCI CE HOUR

Learning Objectives

After reading this article, you should be able to:

1. Examine the types of multi-panel systems available and their most appropriate applications, both aesthetically and from an energy performance standpoint.
2. Describe the range of material and threshold options, and their critical energy performance and sustainability impacts on the building envelope.
3. Identify the key specifying considerations for multi-panel door systems.
4. Discuss essential manufacturing core competencies when considering multi-panel systems providers, including necessary energy performance testing, sustainability considerations, and certifications.

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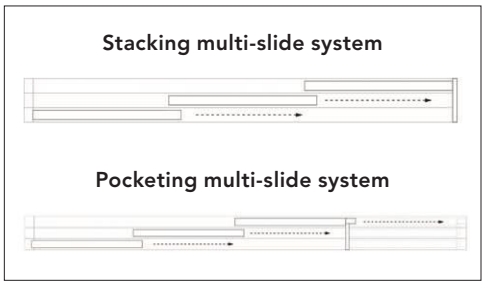
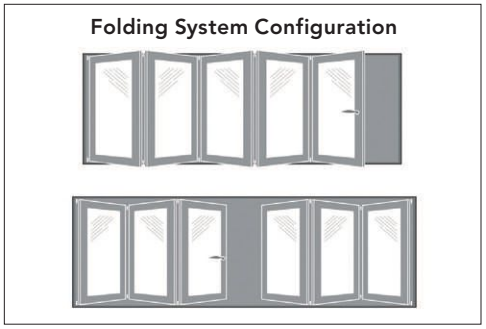
Multi-slide glass doors are generally used to create large openings in walls or to take the place of an exterior wall altogether. The size of the panels and the total door unit can vary and may be custom fabricated to suit a particular building project. Usually, it is the glass itself that imposes limits on the size of each individual multi-slide panel. Most single pieces of glass are limited to 60 square feet in size, with a typical maximum height of 12 feet and a width of 8 feet. The number of individual panels can be varied to meet the desired opening dimensions.

The configuration of multi-slide door panels can be designed so that all panels stack behind each other on one side of the opening, or so that panels are split to stack on both sides of the opening. There are two basic options for how the individual panels appear when stacked. The first option is to keep one glass panel fixed, or stationary, and to slide all adjacent panels to stack evenly behind this stationary panel. In using this option, when fully stacked, some manufactured designs appear as a single panel when viewed from the inside or outside. The second option is to conceal the sliding panels in a wall pocket when open. In this style, the sliding panels disappear altogether, giving the appearance of a full opening in an otherwise solid wall area.

Images courtesy of LaCantina Doors



Multi-slide doors are classified by their different operation methods: stacking multi-slide doors and pocketing multi-slide doors.



Daily access door on any configuration that includes an odd number of panels.

Photo courtesy of LaCantina Doors

Multi-panel door systems capture energy efficiency, natural daylighting, and boost indoor air quality. The multi-slide doors open this home dramatically to its environment.

Multi-slide doors do not need to be limited to a single wall plane. Manufacturers have developed methods to allow doors to meet at a corner location, eliminating the need for a post or frame element. When open, the corner virtually disappears, allowing a full visual and physical three-dimensional connection between outdoors and inside. When fully closed, the door panels come together to form the corner.

Folding Doors

In a folding multi-panel door system, panels stack perpendicular to the opening when fully opened. As with multi-slide systems, in folding systems, doors may stack to one side when open, or can divide and stack to both sides of the opening. The folding action mimics the expansion and contraction of an accordion. The panels may be inswing or outswing, depending on design preference and use. Because of the weight of the system, individual folding door panels are typically limited to 39 inches in width; standard heights may be 7 to 8 feet tall or can be made to measure up to 10 feet tall. Despite those limitations, openings for a full system of folding doors can reach up to a staggering 65 feet wide.

Folding glass doors may either be floor-mounted or top-hung, with top-hung systems the predominant method. In a top-hung folding door system, the top track carries the weight of the doors and the floor track serves as a guide. Precision bearings and rolling hardware are used to operate the door. Top-hung systems allow for effortless and smoother operation and longer lifespans. The frame must be secured to an adequate header that does not deflect downward when the doors are installed. The structural support required and header size depends both on the weight of the doors and the surrounding structural conditions.

BRINGING MORE GREEN TO YOUR BUILDING: SUSTAINABILITY AND ENVIRONMENTAL BENEFITS

Multi-panel door systems not only open up design opportunities by erasing the border between inside and out, they also enhance the sustainability of a structure. The benefits of a multi-panel system are not confined just to their operation—a thoughtfully selected product has environmental advantages inherent in the very materials it uses.

Natural Daylighting: Allowing for more glass and light, multi-panel door systems can be a good passive heat source and minimize use of electricity for daytime lighting.

Energy Efficient: Most multi-panel door systems offer dual-paned tempered glass, creating an insulating barrier between the inside and out. Manufacturers may offer advanced low-e glass options to help reduce cooling costs in the summer and heating costs in the winter.

Continues at ce.architecturalrecord.com

Amanda Voss, MPP, *is an author, editor, and policy analyst based in Colorado. She serves as the managing editor for* Energy Design Update, *has taught multiple live AIA CEU classes, and served on the board of Energy Literacy Advocates. She has a background in public policy, residential construction, and custom building.*

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All photos courtesy of Armstrong Ceiling and Wall Solutions

Project: Gulf Canada Square Food Court
Location: Calgary, Alberta, Canada
Architect: Stantec

Figure 1: Wood ceilings make powerful visual statements in focal point spaces. Acoustic, seismic, environmental, and fire performance are built into the aesthetics of the installation.

Wood Specialty Ceilings and Walls: Art, Science, and System

Sponsored by Armstrong Ceiling and Wall Solutions

The sheer visual impact of wood means that it is often chosen as a focal point in dramatic "statement" spaces, such as corporate headquarters, research centers, performance spaces, and other signature buildings from university campuses to city halls. Wood, one of the oldest and most traditional of building materials, is now being used as the heart of some of the most inventive new designs, meeting exacting technical requirements.

Beautiful wood ceilings are certainly not new, but traditionally, they were made by hand, and until recently, piece-by-piece custom millwork was still the primary option for specialty wood interiors, even in commercial spaces.

Now new manufactured panels and systems make it possible to combine the design versatility and intrinsic appeal of wood with the performance, reliability, precision, durability, and cost advantage of manufactured components and systems. Almost unlimited choices in finish, form, and size are available, from various combinations of standard components to custom shapes and layouts to the creation of one-of-a-kind, entirely bespoke ceilings and walls.

However, aesthetic choices in today's systems are closely related to performance. The essential characteristics of wood and the way it is manufactured determine not only visual effects but critical aspects of performance and a long, durable service life: acoustics, fire and seismic safety, efficient access to the plenum, moisture resistance, sustainable materials, and healthy interiors. Effectively integrating these features with other elements within the ceiling and in the rest of the space is the key to delivering these benefits along with a specialty ceiling's good looks.

CONTINUING EDUCATION

1.5 AIA LU/HSW

Learning Objectives

After reading this article, you should be able to:

1. Discuss the role of wood specialty ceilings in commercial buildings, including new integrated, preengineered systems.
2. Evaluate how aesthetic choices interact with performance, safety, and durability in a broad range of standard, custom, and one-of-a-kind design options.
3. Examine key performance attributes: acoustics, fire performance, accessibility to the plenum, seismic performance, moisture resistance, sustainability including contribution to LEED, and installation.
4. Recognize how the manufacturing process of wood panels determines their appearance, performance, lead time, and cost.

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The earlier in the design process the architect can see the range of possibilities and understand the implications of each design and manufacturing decision, the lower the cost, the shorter the lead time, and the better the performance.

AESTHETICS AS PERFORMANCE

Although the design of wood specialty ceilings is highly technical in many respects, one of the primary reasons wood is chosen in many projects is more emotional: the innate connection of humans to natural materials. In this sense, the aesthetic value of wood interiors is an important performance attribute.

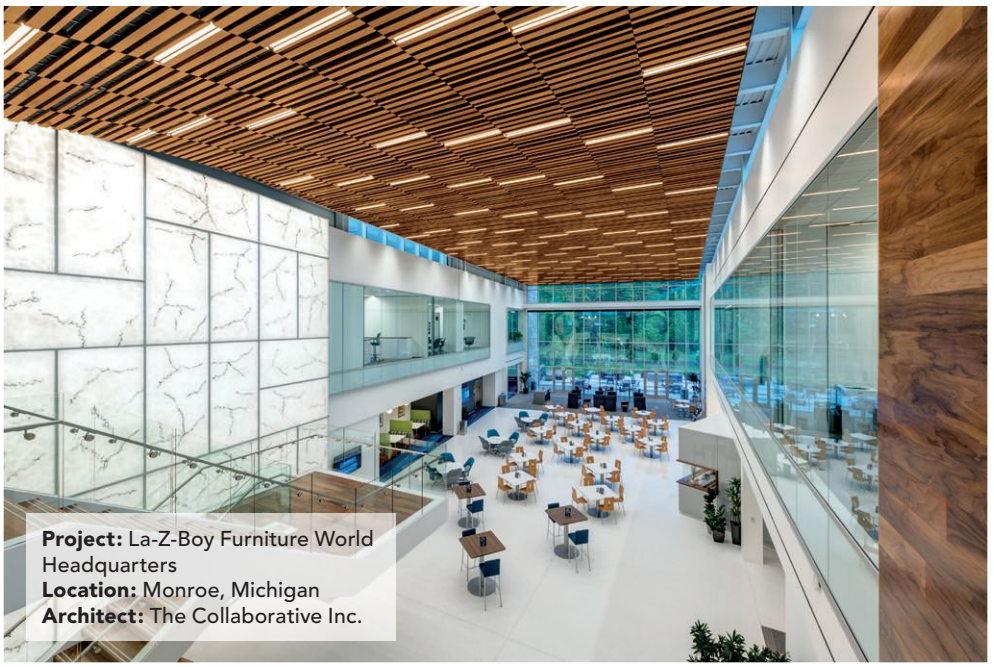
The positive impact of wood in a person's surroundings is used in health-care settings to emphasize calm and promote healing, in education facilities for statement spaces, in offices to reduce stress and improve concentration, and as shown in some of the examples in this course, to heighten design effects, such as adding warmth to an industrial space, bringing a sense of community to a civic space, or emphasizing aspects of the surrounding landscape.

These effects are achieved through combinations of many variables in size, shape, form, finish, wood species, perforation pattern, and installation type. The following are major categories of design options, with examples of how they have been used in a range of remarkable interiors.

Material: Most manufactured panels are made of veneer, a thin layer of real, high-grade wood, adhered to a substrate, typically a composite of wood material called medium-density fiber board (MDF). Veneered panels, unlike solid wood, can meet Class A fire performance requirements for finish materials used in commercial spaces. Solid wood is typically limited to decorative elements, railings and moldings. In general, veneered panels are dimensionally more stable than solid wood. The infinite variations in the color, grain, and texture of both solid wood and wood veneer give ceilings and walls their beauty. (See Fire Performance.)

Project: Randall Children's Hospital at Legacy Emanuel
Location: Portland, Oregon
Architect: ZGF Architects LLP

Figure 2: The custom perforations provide visual appeal and an acoustical solution.



Project: La-Z-Boy Furniture World Headquarters
Location: Monroe, Michigan
Architect: The Collaborative Inc.

Figure 3: The grille look of the wood ceiling of the three-story atrium is inspired by the company's original wooden patio chair from 1928.

Veneer: Thousands of species of wood can be made into veneer. Each species has a unique color, shade, and graining pattern and receives stain differently. Each individual tree is unique as well, so visual possibilities are almost unlimited. Many common species can also be stained to match more exotic, expensive, difficult-to-obtain, or environmentally sensitive species. When large quantities of a certain veneer are needed, careful attention is required to make sure different finishes match, complement, or contrast as envisioned in the design.

In properly manufactured panels, veneers are applied to both sides of the substrate for balanced construction and to eliminate warping. This is just one of many factors of manufacturing that can affect appearance, performance, and durability. (See Manufacturing.)

Perforation patterns: Like any hard surface, wood panels inherently reflect sound. One of the major strategies for improving acoustic performance in wood ceilings and walls is to make openings, or perforations, in the face of the panel to allow sound to penetrate the panel and be absorbed by acoustical material. The pattern of perforations can also have a striking visual effect. Perforations of different shapes can be used in a number of standard patterns—rows, slots, diagonals—and also in imaginative schemes that enhance the design as well as the acoustics; for example at Randall Children's Hospital shown in Figure 2. (See Acoustic Performance.)

Panel sizes: In general, the larger the panel, the more costly the ceiling will be. At the same time, very large panels are used to great effect in spaces such as the 4-foot-by-4-foot panels in areas of the La-Z-Boy Headquarters shown in Figure 3. Panels can come in a wide variety of sizes, with a general range of standard 24 by 24 inches to 48 by 96 inches (typically the maximum size). Because of the dimensional stability of wood, particularly veneered wood, panels can be significantly larger with less concern for pillowing or sagging. But large size can also affect installation; for example if the weight of panels requires safety cables and additional personnel, adding to cost. Where access is not required, it is sometimes easier to attach suspension directly to the back of larger panels. (See Installation.)

Shapes and forms: Throughout this course, you will see examples of the sizes, shapes, lines, and curves available with wood ceilings. A large manufacturer specializing in ceilings will have a broad portfolio of standard components in a variety of finishes, sizes, edge treatments, reveal profiles, and other options that can be mixed, matched, and combined. Even the simplest, easiest-to-install, standard flat panels can be varied by the sizes and shapes of the panels, the design of the suspension system, or by staggering or canting the panels. Curved elements can adjust to different heights and angles, and mounting hardware can be concealed for a clean look when the panels can be seen from above and below.

But the possibilities only begin there. Some of the elements available for wood ceilings include:

- *Linear components*, flat, channeled or tapered, including panels, planks, slats, and grilles.

Figure 4: This is an example of many aspects of excellence in wood ceiling design, including beauty, acoustics, a preengineered integrated system for plenum accessibility, and LEED-NC Platinum sustainability.

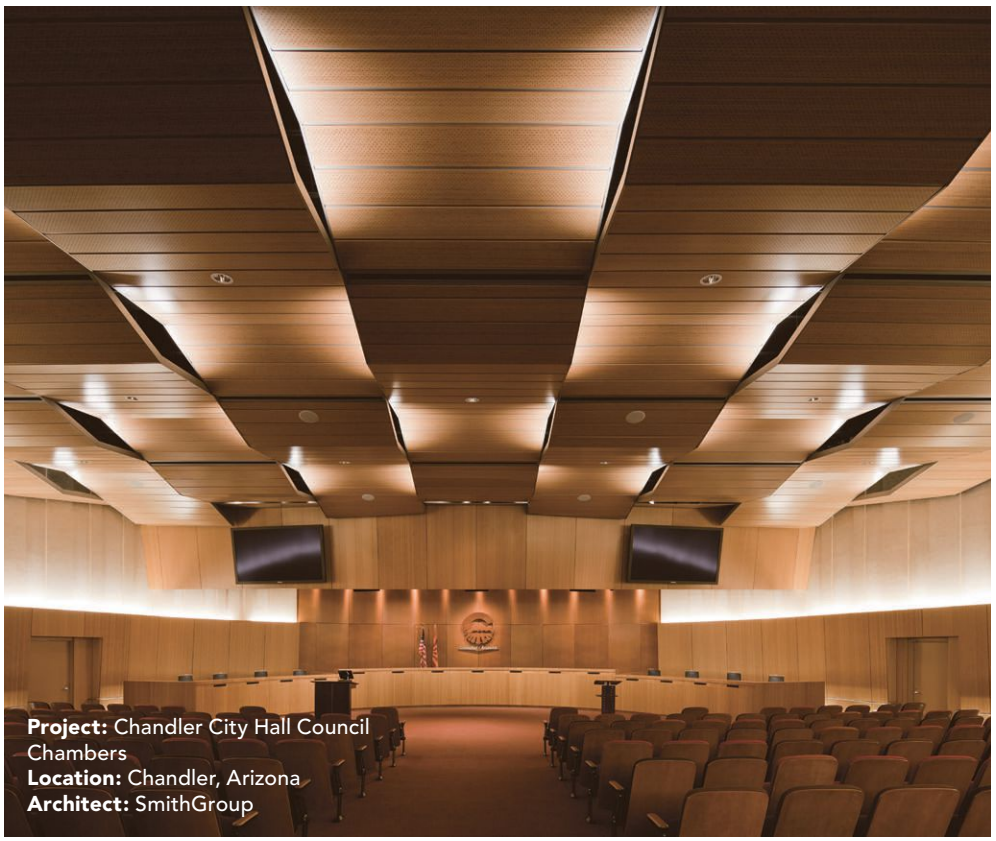


Figure 5: The dramatic saw-tooth wood ceiling is comprised of 1-foot-by-8-foot planks, perforated for sound absorption and installed in a series of clouds. Matching finishes are used in the custom curved 4-foot-by-8-foot wood walls.

- *Curved edges* on panels for a radius effect.
- *Canopies* formed in convex and concave curves—hills and valleys—as well as s-curves, as individual elements, or installed to create waves or clouds.
- *Three-dimensional* effects, such as facets, coffers, and open cells.
- *Installations* can conceal the suspension entirely with a continuous monolithic surface or partially in clouds. The design of the Botanical Research Center shown in Figure 4 features panels of different sizes installed in a series of large clouds with a reveal every 10 feet and uses a completely integrated premanufactured access system, which is discussed in more detail below. A wood ceiling comprised of a series of clouds is also a prominent design element in the Chandler City Hall Council Chambers (Figure 5). The matching curved walls are canted slightly outward to add a sense of intimacy to a space designed to be a community gathering spot.
- *Ceiling planes* installed at different angles or continuing down into walls.

In all of these ambitious designs, the aesthetic possibilities of the materials and shapes interact with performance. In the La-Z-Boy World Headquarters, wood panels in a linear grille form were selected to give a three-story atrium a sense of warmth and intimacy, and also for a very specific reason related to the company's products and history. The 6,000-square-foot wood ceiling's grille look recalls the very similar linear slats of the original La-Z-Boy wooden patio chair from 1928. The ceiling panels are a custom 4 feet by 4 feet, on a traditional grid system, but within each panel, the width of the slats varies, some 2 inches wide and some 3¾ inches wide. The variation gives the ceiling its unique look and also allows the incorporation of 4-inch-wide light fixtures in the gaps between slats.

In another gesture recalling the movement of the original La-Z-Boy chair, the ceiling curves down at the back of the atrium near the top of a dramatic staircase. The curved section of the ceiling was accomplished using panels with a flexible backer installed on a faceted grid system.

Acoustic performance is carefully calibrated in perforation patterns that are also essential to the visual effect in the UCSD Telemedicine & Medical Education Building (Figure 6). Nearly 28,000 square feet of custom wood ceilings and walls in a matching cherry finish are installed in the center's auditorium and computer learning center. The sloped, stepped ceiling has five different elevations from front to back.

The majority of the panels are 2 feet by 5 feet in size, although 15 different sizes are part of the overall design. All panels incorporate custom perforation for carefully calibrated acoustic performance. In areas where sound reflection is desired, the perforations only go halfway through the panel. Where more sound absorption is required, the perforations go all the way through and are backed with a black acoustical fleece or infill panel.

The wall panels match the ceiling panels in size, finish, and perforation pattern, and the panel joints are staggered to create an interesting modular pattern. The rows of perforations, however, are in perfect alignment, panel to panel.

The following sections discuss in more detail important considerations for combining beauty, performance, and cost-effectiveness in wood ceilings and walls, focusing on:

- Acoustics
- Fire performance
- Seismic performance
- Accessibility to the plenum
- Sustainable spaces, including LEED contribution

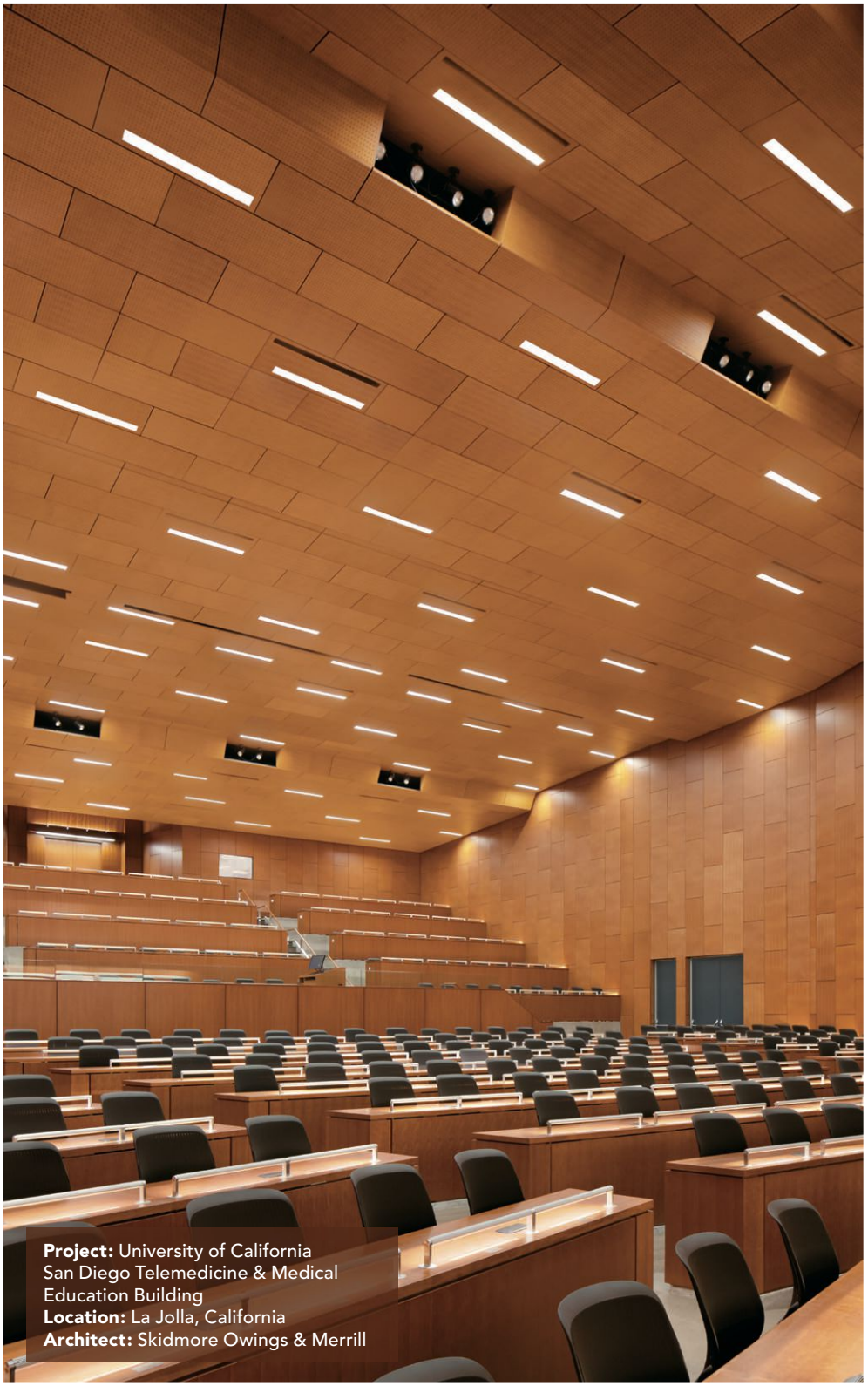


Figure 6: Nearly 28,000 square feet of custom wood ceilings and walls in a coordinating cherry finish impart a warm ambience to the auditorium and computer learning center. Panels incorporate custom perforation for acoustic performance and visual effect.

- Installation type and process, and integration with other elements in the space, particularly the walls, and within the ceiling itself, such as, lighting, HVAC, and fire protection.

ACOUSTIC PERFORMANCE

Noisy, chaotic environments have always been unpleasant, but decades of research confirm that they are also unhealthy and unproductive. The acoustics of a space can directly affect human performance—not just in theaters and concert halls but in all the other spaces where people spend much more time: health-care settings, where quiet has a direct impact on sleep and healing; educational settings for concentration and clear communications; and workspaces to create the ability to focus when needed, or to achieve speech privacy, productivity, and to minimize stress and discomfort that damages performance and leads to low employee satisfaction. Office spaces with open plenums and exposed structures have proven to be especially problematic, as sound reflects off the deck above and bounces between open-plan cubicles, resulting in excessive reverberation and high overall noise levels.

Avoiding negative acoustic conditions is one issue. Creating positive responses and improved performance is another. Multisensory integration is a concept originating in cutting-edge neurological research and video-game design, now being applied to the design of interior spaces to enhance positive human response. In simple terms, the idea is that the five senses, particularly the dominant ones of vision and hearing, work closely together, and when both are stimulated, the result is "super-additive:" intensified far beyond the sum of what each sense might contribute separately.

Until very recently, however, in the case of ceilings, there was a severe tradeoff between sight and sound, aesthetics, and acoustics. Today, there is a broad range of options that effect acoustical performance; panel size, edge details, trims, and accessories, all enhancing the acoustics in traditional and specialty ceilings.

For ceilings and walls in particular, how well materials and systems will accomplish the desired acoustic performance in the space is basically a combination of sound absorption (noise reduction coefficient, or NRC), and sound blocking (ceiling attenuation class, or CAC). NRC measurements are on a scale from 0, representing perfect reflection, and 1, perfect absorption. A ceiling system with an NRC of 0.65 would absorb 65 percent of the noise energy striking it.

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FROM THE CREATORS OF AdvanTech

CIRCLE 19

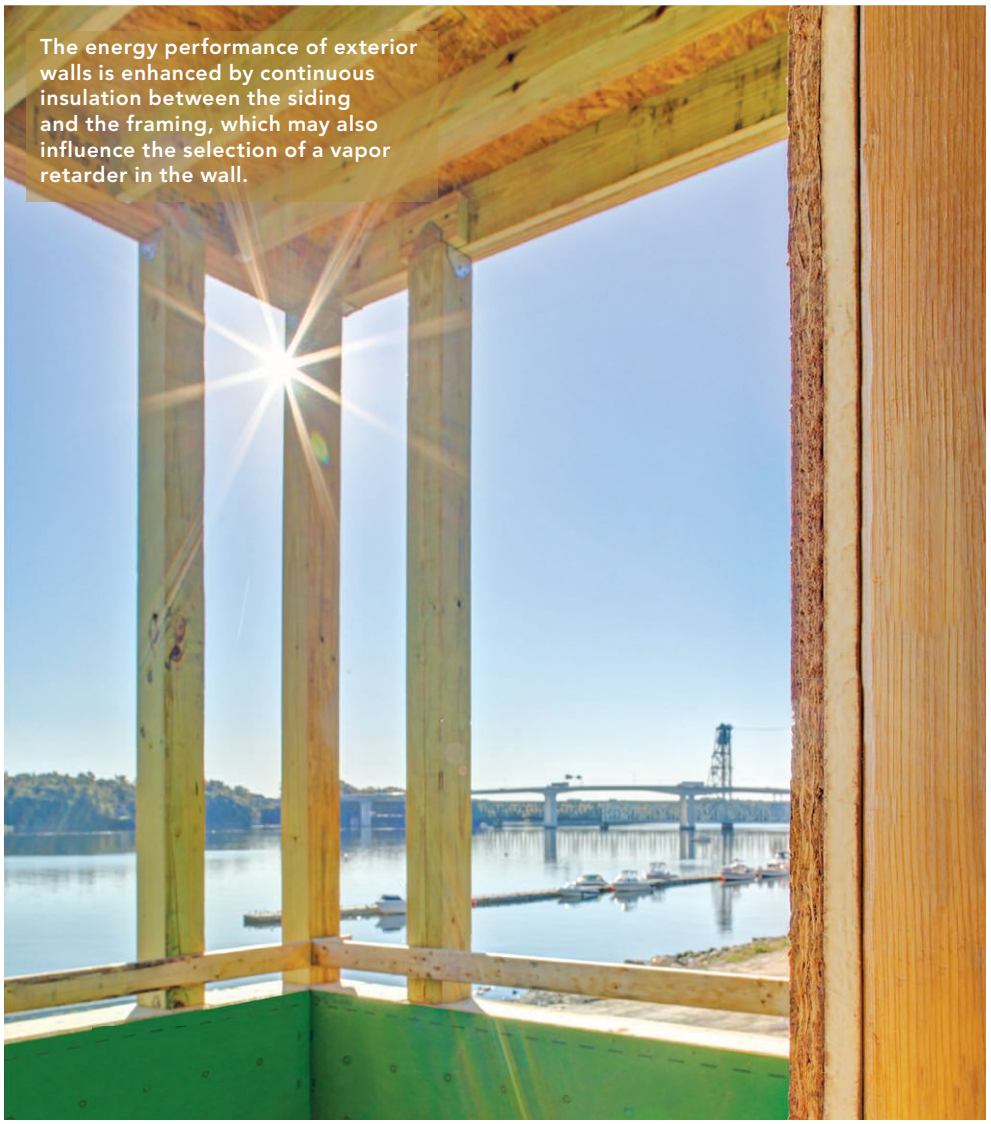
Continuous Insulation in Framed Exterior Walls

How to determine the amount of continuous insulation required by codes, while still retarding water vapor according to climate zone locations

Sponsored by ZIP System R-sheathing by Huber Engineered Woods LLC | *By Peter J. Arsenault, FAIA, NCARB, LEED AP*

Building codes and green building standards are continuing to raise the bar on energy efficiency and high performance in buildings. This is achieved in wood-framed buildings by addressing both insulation levels and airtightness. While this is a positive trend, there are some notable wall design issues to address. Specifically, determining the best amount and type of insulation to use may be unclear, particularly in light of controlling water vapor or moisture that can become trapped in constructed wall assemblies. This is especially true in the case of providing continuous insulation as part of a framed exterior wall. Codes and best practices suggest different amounts of continuous insulation for different climate zones. There is also concern that the continuous insulation can impact the ability of the wall to "breathe" and release any trapped moisture from within the assembly so, in some cases, it can impact the choice of an interior vapor retarder on the warm, inner side of the building. All of these variables and options have led to some significant confusion concerning the best way to properly address both code-required thermal insulation and vapor management in wall assemblies.

Continues at ce.architecturalrecord.com



The energy performance of exterior walls is enhanced by continuous insulation between the siding and the framing, which may also influence the selection of a vapor retarder in the wall.

Photo courtesy of Huber Engineered Woods LLC

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 design.*
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CONTINUING EDUCATION

1 AIA LU/HSW

1 GBCI CE HOUR

Learning Objectives

After reading this article, you should be able to:

1. Explain the concept of thermal bridging and how it impacts building energy usage in green and sustainable building design.
2. Define the commercial and residential wood-framed wall insulation requirements found in the 2015 International Energy Conservation Code (IECC).
3. Discuss how condensation forms in wall cavities, and investigate strategies to mitigate risk of damage to construction, while maintaining sustainable and healthy indoor environments.
4. Identify the practical and green building characteristics of continuous insulation as part of the exterior wall sheathing with other alternatives.

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

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The new hinge and post toilet compartment eliminates those unsettling sightlines and creates a high-privacy occupant experience in a public bathroom stall.

All images courtesy of Scranton Products

The New High-Privacy Toilet Compartment

Eliminate sightlines and improve aesthetics with the HDPE hinge and post bathroom enclosure

Sponsored by Scranton Products | *By Jeanette Fitzgerald Pitts*

The typical specification for the standard commercial toilet compartment in the United States does not leave much to the imagination—but not in the way that one might think. Yes, it is straightforward. The common pilaster system comprised of pilasters, dividing panels, doors, and hinges has not changed much in the past few decades, but, most surprisingly, neither have the gaping sightlines that offer more than a glimpse into and out of an occupied restroom stall.

Luckily, designers now have a solution that will leave people feeling less exposed. A new toilet compartment system, called the hinge and post bathroom system, has been developed to provide more privacy in this most private space. This course will explore the semi-private nature of the typical pilaster system, introduce the new hinge and post bathroom compartment system, and detail the features that make this solution a superior privacy option. The aesthetics of the two systems will also be compared, as will their support of sustainable design tenets. Finally, best practices for specifying the new hinge and post system will be shared.

THE COMMON PILASTER TOILET COMPARTMENT

The design of the pilaster toilet compartment commonly used in the United States is based upon flat rectangular columns, called pilasters. The pilasters are secured to the floor or ceiling, creating the basic frame for the entire bathroom stall structure. The individual compartments are crafted by mounting the doors and dividing panels to the pilasters with exposed metal hinges.

In terms of assembly, the specification for the pilaster-based toilet compartment provides some guidance on how the various components must be cobbled together. The standard spec directs installers to "locate the bottom edge of doors and panels 14 inches above finished floor" and "provide uniform, maximum $\frac{3}{8}$-inch vertical clearance at doors."

CONTINUING EDUCATION

1 AIA LU/HSW

0.1 IDCEC CEU

1 LFA CEU

Learning Objectives

After reading this article, you should be able to:

1. Explain why a gap exists on either side of the toilet compartment door in traditional restroom partition systems, and how the new hinge and post system eliminates those unsettling gaps and improves the privacy provided to occupants in the bathroom stall.
2. Choose a material for the toilet compartment that is naturally resistant to the mold, mildew, rust, and bacteria that can occur in the damp bathroom environment.
3. Describe the many sustainable design features of the high-density polyethylene (HDPE) toilet compartment, including its fully recyclable nature, ability to contain recycled content, and zero emissions rating.
4. Specify HDPE hinge and post systems to create a high-privacy toilet compartment.

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

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IDCEC COURSE #CC-106213-1000

While the included tips are certainly relevant to fashioning a functional and code-compliant toilet compartment, there seems to be one glaring omission. The standard toilet compartment specification does not define the size deemed acceptable for the gap that is created on either side of the stall door where the hinge or latch fastens the door to the adjacent pilaster. The gap, or how to avoid it, is not mentioned at all.

Unfortunately, the gap in a pilaster-style bathroom compartment is a function (and flaw) of the system's design. The flat, rectangular column anchors a flat, rectangular door as it swings open and shut on a heavy-duty hinge. The problem arises because space must be provided to allow these rigid and straight-edged elements to accommodate a rotation of almost 90 degrees without causing the door to stick. Providing enough space so that the door can move freely creates gaps between the door and the pilasters on either side. The typical gap in a well-constructed, pilaster-based toilet compartment is $^{3}/_{16}$ inch, which is large enough to create a substantial sightline into and out of the bathroom stall. Installation errors and poor assembly practices can result in much larger openings at the door, leaving people extremely exposed and uncomfortable.

Only in America

While gaps in the toilet compartment may be considered business as usual in the United States, travelers from abroad are often horrified to find that the design of our bathroom stalls turns every trip to the restroom into an unsolicited peep show. In fact, there is an entire BuzzFeed thread dedicated to the topic of toilet door gaps in America.

For years, specifiers in Europe and China have rejected American-made partitions and toilet compartments because of their somewhat exhibitionist nature, opting, instead, for compartments that provide a more complete visual barrier and greater degree of privacy. In conversations with large partition dealers in China, it was explained that United States pilaster-based partitions were not an acceptable product option for their specification community due to the lack of privacy they provided.

The pilaster toilet compartment commonly used in the United States is based upon flat, rectangular columns called pilasters.

The new hinge and post toilet compartment redefines the structure of the typical bathroom partition system, eliminating the pilasters.

However, even Americans are becoming wary of their potential exposure while on the pot. With smart phones now equipping every bathroom occupant with camera and video-recording capabilities, and the means to distribute those images worldwide, the demand to improve the privacy of the bathroom compartment has now reached our shores. To answer this call, specifiers need a toilet compartment solution without those unsettling sightlines and with doors and partitions that can sit closer to the floor. They need the new hinge and post toilet compartment.

INTRODUCING THE NEW HINGE AND POST TOILET COMPARTMENT

The new hinge and post toilet compartment redefines the structure of the typical bathroom partition system by eliminating the use of pilasters. Instead of building the enclosure on a framework of rectangular columns, this new style of bathroom partition is based upon a metal post and headrail frame. The small diameter, corrosion-resistant aluminum post removes much of the vertical visual bulk created by the pilasters that run from the top of the stall to the bottom in the traditional system. The headrail, constructed from heavy-duty extruded aluminum, provides the lateral support for the panels and doors. While the pilaster systems often incorporate headrails as well, the new hinge and post system features a more contemporary headrail design with an anti-grip feature that more effectively deters inappropriate or unwanted behavior in the bathroom environment.

Continues at ce.architecturalrecord.com

Jeanette Fitzgerald Pitts *has written dozens of continuing education articles for* Architectural Record *covering a wide range of building products and practices.*

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Masonry mortar is critical to the integrity and performance of masonry construction. The use of pre-blended mortar creates a much more highly controlled mixture of ingredients to help assure that the desired results are achieved.

Modern Masonry Using Pre-blended Mortar

Blending and certification in the factory overcomes field mix uncertainties

Sponsored by Echelon™ Masonry by Oldcastle | *By Peter J. Arsenault, FAIA, NCARB, LEED AP*

The use of mortar is a process that has changed little since the days of ancient Greece. Unlike lumber, steel, and other building materials found on today's construction sites, mortar ingredients are typically brought individually onto the site and stored where the masonry work is being done. Then they are shoveled into some form of mixer (manual or powered) to combine the dry ingredients along with a measured quantity of water. The results have been quite understandably dependent on the quality of the ingredients used, the skills of the people doing the portioning and mixing, and the outdoor environmental conditions—all variables that can and have produced quite variable outcomes in terms of mortar quality and performance. In our current time, there are some well-documented conditions that also come into play. Shortages of skilled construction labor means that it is uncertain how precisely the mortar is being mixed on-site. At the same time, manufacturers have made substantial strides in bringing modern production techniques to mortar by employing computerized technology that allows great precision in many factory settings. Therefore, rather than trusting the production process to hand mixing in unpredictable conditions, factory pre-blended mortar is becoming more and more the preferred norm for masonry construction of all types. Architects, engineers, contractors, and building owners are realizing that pre-blended mortar eliminates many of the variables and uncertainties of site-mixed mortar, thus reducing the potential for problems and

CONTINUING EDUCATION

1 AIA LU/HSW

Learning Objectives

After reading this article, you should be able to:

1. Identify the durability and performance impacts of mortar in a masonry wall and the ingredients that define its makeup and attributes.
2. Investigate the differences in various types of mortar and the standards that apply to them.
3. Compare the differences between site-mixed and pre-blended masonry mortar.
4. Specify pre-blended mortar for a variety of buildings and with appropriate selections related to specific applications.

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AIA COURSE #K1704J

liability with the finished masonry construction. In this course, we will look at the types of mortar available, the process and pitfalls of field mixing versus pre-blended mortar, and the significance of mortar in masonry assemblies.

MORTAR STANDARDS

Given the variability in the ingredient choices, how can we be sure that the ultimate mortar mix is proper and appropriate for use on a particular building? To address that, there are two different ASTM standards that are available—essentially one for site-mixed mortar and one for pre-blended mortar. ASTM International provides objective, consistent testing and specification protocols that are relied on across the construction industry to establish a benchmark for materials. By referencing and understanding the relevant ASTM standards for mortar, architects can write specifications based on these industry standards that help streamline construction and provide a basis for quality control. Therefore, each of the two ASTM standards for mortar are discussed further as follows.

ASTM C270: Standard Specification for Mortar for Unit Masonry

This is the standard specification that covers mortars mixed together for use in the construction of non-reinforced and reinforced unit masonry structures. It applies directly to site-mixed mortars and is also referenced in the specification for pre-blended mortars. The specification offers two different paths to comply. The first is a proportion specification that identifies the relevant proportion of each identified ingredient of a mortar mix to the other ingredients. It is easy to see why this is popularly and commonly used on construction sites since measuring quantities of ingredients are the easiest to accommodate with on-site labor. The second option is to follow a property specification that is based on specific properties of the mortar and necessarily requires testing to confirm that those properties are met. However, this standard is not a specification to determine mortar strengths through field testing. That is handled separately under ASTM C780 16a: Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.

ASTM standards have been developed to provide a basis for the formulation and strength characteristics of both site-mixed and pre-blended mortar.

ASTM C270 Selection Guide for Masonry Mortars

Location	Building Segment	Mortar type	
		Recommended	Alternative
Exterior, above grade	Load-bearing wall	N	S or M
	Non-load bearing wall	O	N or S
	Parapet wall	N	
Exterior, at or below grade	Foundation wall Retaining walls Manholes, sewers Pavements, walks, and patios	S	M or N
Interior	Load-bearing walls Non-bearing partitions	N	S or M
Interior or exterior	Tuckpointing	O	N

ASTM C1714: Standard Specification for Pre-blended Dry Mortar Mix for Unit Masonry

The cement and mortar industry began addressing some of the inherent issues of the number of variables in mortar and cement types by creating pre-blended dry mixes of cement, lime, and sand, plus admixtures where appropriate, in a controlled factory environment. The pre-blended products were then packaged in large sacks or in bulk and delivered to job-sites. By the early 2000s this pre-blended alternative to site-blended mortars had been growing in use to the point that it began to account for the majority of masonry mortar applications.

In the years just prior to 2009, ASTM International and the Committee C12 on Mortars and Grouts for Unit Masonry recognized this growing use of pre-blended dry mortar, which was following the requirements of ASTM C270. However, certain aspects of using pre-blended dry mortar are not covered by ASTM C270, such as factory testing, packaging, and confirmation of the ingredients used. As a result, a new standard was developed by ASTM International to address issues specifically related to pre-blended dry mortar designated ASTM C1714/C1714M: Specification for Pre-blended Dry Mortar Mix for Unit Masonry.

This standard, while separate from ASTM C270, covers masonry mortars whose materials and design requirements are still governed by the C270 specifications but, instead of being produced from individual raw materials delivered to the job-site, they are pre-blended dry in a factory. This standard specifically addresses the issues of field sampling, testing, directly comparable test results, packaging, and the traceability of ingredients of pre-blended dry mortar mix. The tight control of ingredient ratios possible with pre-blended dry mortar is also covered. Overall, there are five main components to ASTM C1714: 1) traceability of mortar mix ingredients; 2) ingredient blending consistency; 3) testing frequency; 4) allowance of additives based on performance; and 5) dryness of all included ingredients. In addition, ASTM C1714 provides guidance on the use of admixtures that is specific to pre-blended dry mortar and not included in ASTMC270 or ASTM C1384: Specification for Admixtures for Masonry Mortars.

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***

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All images courtesy of Neolith, a division of TheSize Surfaces SL

Sintered stone is a new product that is being used increasingly more often for interior floors, walls, and other surfaces because of its extensive design options and extremely strong performance characteristics.

Dramatic, Durable Interiors Using Sintered Stone

Large-format panels create beautiful and long-lasting vertical and horizontal surfaces

Sponsored by Neolith by TheSize Surfaces SL | *By Peter J. Arsenault, FAIA, NCARB, LEED AP*

Sintered stone is a new product category for interior surfaces that is becoming more popular in the United States and Canada due to several very appealing characteristics. To begin with, it is available in a wide range of standard or custom appearances and colors that allow it to look like natural stone, wood grain, or uniformly finished panels, among others. Unlike using the materials it may look like, though, sintered stone provides superior hardness and durability, making it very well suited for commercial and institutional building areas subject to heavy use. In terms of cost effectiveness, sintered stone panels are typically available in large-format sizes, requiring less labor and allowing for shorter installation times. In addition, they are readily installed using known site cutting and handling techniques for large-format tile coupled with common thinset application processes. Altogether, these products are becoming a preferred choice for many wall, floor, and other interior surfaces in commercial, residential, and institutional buildings of all types.

WHAT IS SINTERED STONE?

Sintering is a manufacturing process that has been around for a long time. It is a method to create objects from powders, including mineral, metal, and ceramic powders. As such, sintering has been traditionally used for manufacturing ceramic objects, but there are common applications found across many industrial fields. It is basically the process of using natural materials in powder form and processing them, usually under heat, pressure, or both, to create a desired product. In the case of sintered stone for building products, stone and other natural materials are ground to a powder and subjected to specific heat and pressure to produce the desired end results.

CONTINUING EDUCATION

1 AIA LU/HSW

0.1 IDCEC CEU

Learning Objectives

After reading this article, you should be able to:

1. Identify the characteristics and beneficial properties of sintered compact surfaces for building interiors.
2. Investigate the manufacturing process of sintered compact surfaces and the ability of the product to provide beauty and durability to interior building applications.
3. Assess the functional contributions of sintered stone as it contributes to green and sustainable building design.
4. Specify sintered stone in a variety of green and conventional buildings, including proper installation techniques for thinset applications.

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AIA COURSE #K1704E
IDCEC COURSE #CC-106209-1000

Sintered stone panels are available in a wide variety of colors, finishes, and textures to suit a variety of room and building types.

Looking more closely, sintering is based on atomic diffusion of particles that occurs most quickly at higher temperatures. The atoms in powder particles diffuse across the boundaries of the particles, fusing them together and creating one solid piece. A simple observable example of sintering can be seen when ice cubes in a glass of water adhere to each other. The edges of the ice cubes, although not powder, can become irregular in the relatively warmer water surrounding it. The water atoms in each of the adjacent ice cubes react and bond together, even though they were originally separate. The same thing happens in stone and other powders when they are sintered together atomically.

Applying this process to create thin, lightweight, and very strong sintered stone panels may lead some people to mistakenly think that the finished result is the same as porcelain ceramic tile. However, there are real differences that become evident just by comparing the characteristics. While traditional ceramics might have one characteristic in common with sintered stone, no single ceramic product possesses all of the characteristics, including stain, scratch, chemical, and heat resistance, that sintered stone does. These characteristics come about in part because sintered products are made from selected natural minerals that are different than those to make tile. The combination of powdered minerals with a minimal amount of water is referred to as the compact, which densifies first under pressure and then becomes nonporous during firing at temperatures just below the melting point of the minerals. The powder particles thus sinter and bond together due to the applied pressure and heat, which force all surfaces of the particles to be directly connected to all of the surfaces of the adjacent particles, creating a very dense and strong end result. Due to its all-mineral composition, sintered stone has high heat and fire resistance, while its density makes it virtually waterproof—it has a porosity less than 0.09 percent, meaning no sealers are required.

From a design standpoint, the surface of sintered stone can provide the look of stone, tile, wood, smooth, or textured surfaces in a variety of colors and hues. However, it is lighter in weight than many other materials, coming in at only 1.1 to 1.5 pounds per square foot for a ⅛-inch-thick panel. For those who maintain the building, they find the dense, nonporous surface easy to clean, including the removal of graffiti so the appearance and color are maintained over time. Even harsh chemicals aren't a problem to use since sintered stone is chemical resistant. The material has even been shown to be hygienic and suitable for food contact, which has also led to its use for countertops and food-handling surfaces. All of these design attributes have helped to promote its use not only on interior walls and floors but also on building exteriors.

With all of these high-performance and desirable characteristics, it is easy to have the misconception that using sintered stone for a building surface is expensive. In fact, it has been proven repeatedly as being very cost neutral when looking at first costs and comparing it to many other commodity interior finish products. When considering it over the life of the building and factoring in its anti-graffiti, impact-resistant, and wear-resistant agelessness, it readily lends itself to being an everyday common-sense solution for many architects and designers. Building owners are quick to see its long-term cost saving benefits too when they realize that it is completely vandalism proof (scratch, paint/ink, impact) and virtually maintenance free for the life of the building.

CREATING SINTERED STONE

The manufacturing process is essentially the same for most sintered stone products, regardless of their final use. We will review this process briefly as follows.

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NEOLITH by THESIZE

Founded in 2009, TheSize is a natural stone company headquartered in Castellón, Spain. In 2010, TheSize launched an all-natural sintered compact surface called Neolith. This product is a durable material created through a high-temperature, high-pressure process known as sinterization. **www.thesize.es/neolith**

Ultra energy-efficient, European-originated Passivhaus building designs are viable in North America, concludes FXFOWLE in a New York State Energy Research and Development Authority-sponsored study of a large, mixed-use New York City multifamily housing development with a curtain wall system.

Image courtesy of FXFOWLE

Actively Pursuing Passivhaus Enclosures

With high-performance curtain walls and windows, thermal bridge-free designs, and airtight building enclosures, more U.S. projects seek to achieve the rigorous European-based Passivhaus standard

Sponsored by the Ornamental Metal Institute of New York

As the pursuit of sustainable, energy-efficient buildings continues to intensify, a more rigorous building design certification is starting to gain traction here in North America.

Originally developed in Germany in 1990 and well-established in Europe, the Passivhaus standard produces extremely low-energy buildings with high-performance, airtight building enclosures.

"One of the most effective and proven tools we have to drive down carbon emissions and reach a post-carbon world is Passive House," say Bronwyn Barry and Ken Levenson, co-presidents of the North American Passive House Network (NAPHN) in Passive House Accelerates, an in-depth review of the standard's development for residential and commerical buildings—called Passive House in lieu of Passivhaus—in North America.

"A Passivhaus building meets the world's most stringent operating energy-efficiency standard and generally will produce the least climate-changing emissions," echoes Christina Snyder, Passive House Institute U.S.-accredited building certifier and principal of Equilibrium Energy Spaces, Manchester, Michigan.

Although the market conditions, climate, and culture are riper for Passivhaus buildings overseas, interest in the standard is growing as

CONTINUING EDUCATION

1 AIA LU/HSW

Learning Objectives

After reading this article, you should be able to:

1. Describe how Passivhaus designs deliver superior energy efficiencies, better indoor air quality, outstanding acoustics, and enhanced occupant health and comfort.
2. Explain how carefully designed and fabricated curtain wall systems within an airtight building envelope can help building teams achieve rigorous Passivhaus standards.
3. Evaluate the performance benefits and superior thermal and visual comfort levels that Passivhaus-certified curtain wall systems and windows provide.
4. Recognize the cultural, market, and building practice differences between the United States and Europe, and the challenges posed by local adoption of the European-based Passivhaus system.

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AIA COURSE #K1704D

more North American Passivhaus projects are establishing the fact that the strict standards can be realized stateside.

In a new study sponsored by the New York State Energy Research and Development Authority (NYSERDA), FXFOWLE Architects Principal Ilana Judah, International Associate AIA, OAQ, LEED AP, CPHD, and Senior Associate Daniel Piselli, AIA, LEED AP, CPHD, analyzed a large, mixed-use New York City multifamily housing development currently under construction. The report concludes that high-rise residential buildings in New York can be designed to Passivhaus' high levels of energy efficiency and resilience. Information taken from this report was current as of press time, but may be adjusted in future versions of the report.

The report, "Feasibility Study to Implement the Passivhaus Standard on Tall Residential Buildings," also finds that Passivhaus can be achieved with limited aesthetic adjustments and reasonable glazing ratios in a financially viable manner.

As noted by Judah and Piselli, the German term Passivhaus is often referred to in English as "Passive House." This course, and the report, use the German term because the English word "house" can cause misperception that the standard is only for single-family houses. Passivhaus can be translated from German to a more applicable English phrase "passive building."

THE PASSIVHAUS BLUEPRINT

To meet the Passivhaus standard, building designs must achieve high performance in the following areas: thermal insulation, thermal bridge-free design, airtightness, and windows and mechanical ventilation with heat recovery.

Ultra-low energy consumption requirements include 4.75 kBtu/{ft2yr} in heating demand, 5.39 kBtu/{ft2yr} for cooling demand, and a total building primary energy demand of 38.0 kBtu/{ft2yr}. For airtightness blower testing must produce 0.6 ACH@50Pa.

Granted, achieving these rigorous performance levels is requiring greater effort from architects, engineers, and contractors, but the benefits are worthwhile.

As laid out by Deborah Moelis, AIA, senior associate for Handel Architects, Passivhaus buildings yield building energy savings of 60 to 70 percent in heating and cooling, produce an acoustically superior, comfortable indoor environment, and deliver better indoor air quality free of condensation and mold.

"Passivhaus is a whole systems-integrated approach to designing the best, most efficient building envelopes possible," Snyder says.

Beyond good design, Passivhaus advocates assert that the system delivers the triple bottom line benefits of lower operating costs, a more durable building, and enhanced occupant health, comfort, and performance.

In fact, the Geneva-based Intergovernmental Panel on Climate Change identified Passivhaus as one of the only whole-building strategies capable of reducing building energy use enough to achieve greenhouse gas mitigation targets for the building sector.

Buildings pursuing Passivhaus will have an easy time meeting the less-stringent energy-code requirements currently in place. Very similar to Passivhaus, the 2012 International Energy Conservation Code now requires air duct tightness, mandatory blower testing, additional wall insulation, increased fenestration U-factor thermal performance and decreased heat gain, and energy-efficient lighting and equipment.

"It is as if the building industry that has long focused on improving energy efficiency in buildings by upgrading the efficiency of the mechanical equipment has had a collective awakening. It's the envelope!" writes architect Laura Nettleton, founder of Pittsburgh-based Thoughtful Balance Architecture, in her blog "Passive House Is Coming—Ready or Not."

Starting to jump on board, close to a dozen states—including Pennsylvania, New York, Rhode Island, Massachusetts, Connecticut, New Jersey, New Hampshire, Idaho, Ohio, Illinois, and South Dakota—are now including Passive House certification as earning potential points in their state's Low Income Housing Tax Credit and qualifying for 9 percent in tax credits.

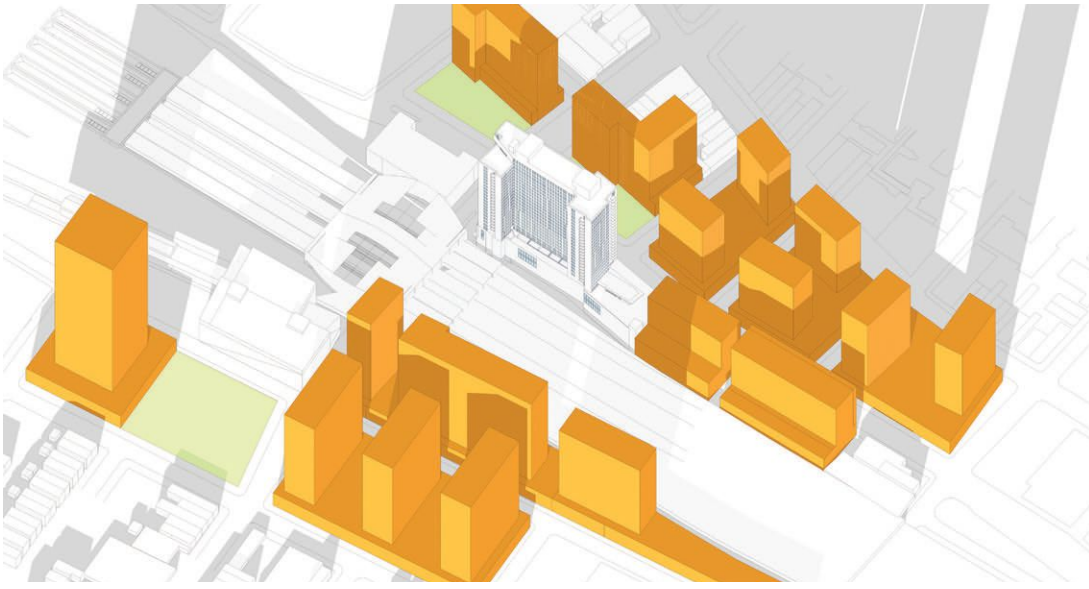
"A building meeting the Passive House Standard aligns well with the Architecture 2030 goals, California's impending net-zero energy requirements, New York City's building operating energy goals, and Vancouver, British Columbia's incentives," Snyder adds.

New York City, in its Local law 31, is targeting City buildings to achieve a 50 percent reduction in energy use intensity or meet Passivhaus energy use intensity targets. "This is a very ambitious target," reports Judah of FXFOWLE. "City agencies have also been championing Passivhaus with City-funded Requests for Proposals and the New York City Housing Authority including Passivhaus language in recent RFPs. The City also has an overall goal of meeting an 80 percent reduction in greenhouse gas emissions by 2050."

Along these lines, New York City's Zone Green zoning incentive directs that a portion of a building's exterior wall—up to 8 inches—can be excluded from floor area calculations if the wall's thermal performance exceeds code requirements. The goal is achieving high-performance enclosures and energy efficiency by encouraging developers to provide more highly insulated exterior walls.

Continues at ce.architecturalrecord.com

Image courtesy of FXFOWLE



Within the context of the densly packed New York City, FXLOWLE's NYSERDA report suggests that aggressive, energy-efficent Passivhaus designs are feasible.

Ornamental Metal Institute of New York

The Ornamental Metal Institute of New York is a not-for-profit association created to advance the interests of the architectural, ornamental, and miscellaneous metal industries by helping architects, engineers, developers, and construction managers transform designs into reality. **www.ominy.org**

Photo courtesy of Vectorworks, Inc./Flansburgh Architects

Designing buildings to be energy efficient enough to meet or exceed selected codes and standards is made more effective and easier through the use of building information modeling (BIM) software.

Meeting and Exceeding Energy Standards with BIM Software

Building design professionals rely on building information models and other computer software as integrated tools for design and performance

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

Energy efficiency in buildings has been a hot topic ever since the 1970s oil crisis focused public and private attention on the matter. Since then, an increasing number of mandatory and voluntary codes and standards have been developed that impact building design. Each of them have been updated and sometimes expanded based on input from regulators, designers, constructors, owners, and others. All of these codes and standards have been informed, and in part made possible, by the availability of computer software programs that allow for total building assessments of energy use under defined conditions. Beyond creating a separate, computerized energy model of a building, architects and other design professionals are now also able to use building information model (BIM) software to design, assess, and revise a building to achieve targeted levels of energy performance. Some BIM software has inherent energy analysis capabilities, while others link to separate specialized software based on information available in the building model. In this course, we will look at the current status of some of the best-known and most-used energy codes and standards, and how computer analysis is an integral part of not only demonstrating performance, but also a tool that helps with making better design decisions.

ESTABLISHING MINIMUM STANDARDS WITH ENERGY CODES

While most architects and engineers are familiar with the need to address energy codes, there are in fact multiple codes that may be in play at any given time.

CONTINUING EDUCATION

1.25 AIA LU/HSW

1 GBCI CE HOUR

1 LFA CEU

Learning Objectives

After reading this article, you should be able to:

1. Identify the basic focus of national energy conservation codes for buildings, including ways that computer software helps demonstrate compliance.
2. Investigate voluntary standards that allow for independent certification of green and sustainable buildings that go beyond code minimum levels of energy conservation with the aid of building information modeling and related software.
3. Define net-zero energy buildings and target dates for all buildings to be designed to achieve that capability.
4. Consider designing very high-performance, net-zero energy buildings using available building information modeling software as an effective design tool.

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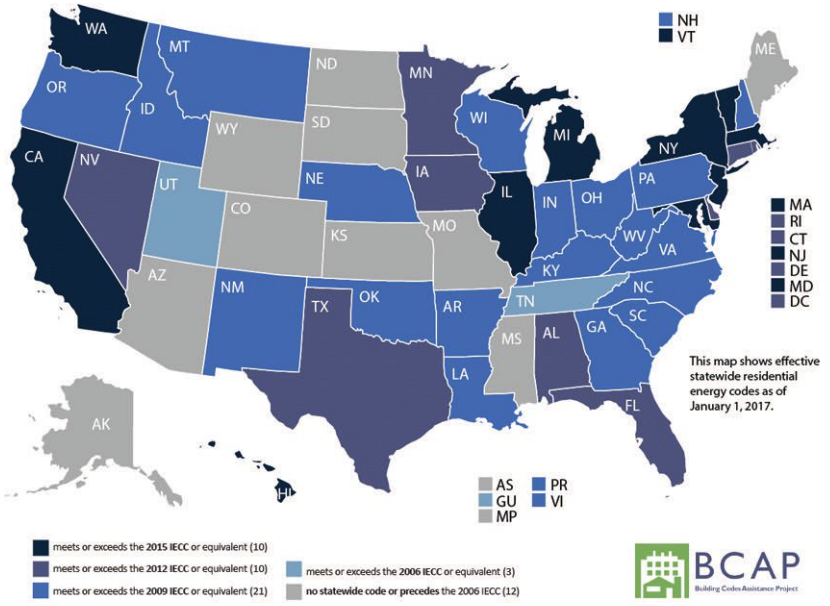

The not-for-profit Building Codes Assistance Project (BCAP) keeps track of which version of the IECC energy code has been adopted by different states and jurisdictions around the country.

International Energy Conservation Code

The International Code Council (ICC) was formed in the United States in 1994 as a singular model code agency that consolidated three prior model code organizations (BOCA, ICBO, and SBCCI) that each had limited applications in different parts of the country. The resulting family of International Codes, or I-Codes, includes a full range of integrated building, fire, and other codes that are publicly reviewed, revised, and vetted by regulators and design professionals on a three-year cycle. Jurisdictions in all 50 states, the District of Columbia, and many federal agencies have formally adopted versions of the I-Codes, with or without amendments, as the governing code for their jurisdictions. This currently includes the 2009, 2012, and 2015 versions of the International Energy Conservation Code (IECC), all of which have the same intent: the IECC "regulates the design and construction of buildings for the use and conservation of energy over the life of each building."

In order to achieve this goal of energy conservation, the IECC addresses four primary areas that are designed and specified directly by architects and engineers:

1. The building envelope (or building enclosure), including insulated walls, floors, and roofs; fenestration such as windows, doors, and skylights; and reducing air infiltration. It is generally regarded that addressing all of these areas first is the most cost-effective and efficient means of reducing a building's need for energy to run the other three systems below.
2. HVAC systems, including requirements for proper system sizing, equipment efficiencies, controls, and other items.
3. Service hot water systems that heat water for any purpose other than space heating (i.e., bathrooms, kitchens, laundries, etc.)
4. Electrical systems used for lighting and electrical equipment.

As adopted, the IECC applies to virtually all new or renovated residential and commercial buildings that contain conditioned space (i.e., heating, cooling, and/or ventilation) with almost no exceptions. In a very real sense, it is the basic, minimum energy conservation standard for all new and renovated buildings in the United States. The not-for-profit organization Building Codes Assistance Project (BCAP) monitors adoption of the different versions of the IECC across the country and advocates for responsible improvements during the three-year review process. Maureen Guttman, AIA, president of BCAP, points out the significance of architects participating by noting, "It is imperative that architects become engaged in the development of building codes, especially the advancement of the energy code, to ease the burden that code compliance has on a firm. More so than other codes, the energy code allows architects to associate value with their design strategies, and therefore it gives them more influence with clients on design decisions."

ASHRAE 90.1

During the time that the IECC was being developed in the 1990s, the American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE) was also developing a standard for energy-efficient design in commercial buildings. Currently known as ANSI/ASHRAE/IES Standard 90.1: Energy Standard for Buildings Except Low-Rise Residential Buildings, it has similarly been updated regularly since 1999 with input primarily from the engineering community. As of 2017, the versions in use around the country include the 2010, 2013, and 2016 editions. The IECC recognizes this standard as producing energy performance equivalent, albeit not identical, to its own buildings. Therefore, the code allows this standard to be selected and followed to demonstrate compliance for commercial buildings, provided it is used singularly for that purpose—it is not possible to select some provisions from the IECC and others from ASHRAE 90.1 within a single building design. The reasoning is simple: they each have slightly different requirements that work together to produce an efficient building system but cannot be mixed and matched and still show the same results. Generally speaking, the IECC has more stringent building envelope requirements, while ASHRAE 90.1 has more stringent mechanical and electrical requirements, although actual differences will vary based on building types, sizes, and other details.

Designing to Comply with Code

Once a decision is made to follow the provisions of either the IECC or ASHRAE 90.1, how do architects tend to incorporate and demonstrate the needed energy code compliance? The answer varies by project and by firm, but there are two fundamental options. The first is a "prescriptive" compliance path, which amounts to essentially following checklists of traits or characteristics of specific building components (i.e., walls, windows, HVAC equipment, etc.) meeting certain minimum performance or efficiency requirements.

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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***

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LCA tools can help practioners quantify and analyze potential environmental impacts from materials, assemblies, and even whole buildings. As an example, environmental impacts of steel include being derived from mining iron ore.

Promoting Sustainable Design Through Life-Cycle Assessment Applications

LCA software, in conjunction with BIM, provides greater ease in creating high-quality, environmentally responsible design

Sponsored by Tally | *By Robyn M. Feller*

Architects and designers are increasingly seeking out better ways to understand their work and decrease environmental impacts in order to be good stewards of the environment in their building practices. While sustainable building materials and products have traditionally been evaluated in terms of characteristics such as transportation distance, recycled content, or bio-based materials that are assumed to correlate with low environmental impacts, we are now seeing a gradual turn toward more transparent environmental performance data. The industry, it seems, is moving away from proxies of environmental impact toward actually trying to measure, with specificity, environmental impact.

In keeping with this shift, the industry is embracing the integration of life-cycle assessment (LCA) as a mechanism to quantify, communicate, and better manage potential environmental impacts from products, assemblies, and whole buildings. LCA has typically been kept in the realm of building sciences. However, as LCA is a relatively new practice for most architects and engineers, there is a need for resources, training, and tools to aid in the use and interpretation of LCA results. The true point in all of this effort really is fairly simple: How can we design better buildings, and how can we make really good decisions on projects?

That said, by not doing LCA—whether out of fear of the unknown, misconceptions about a lack of benefit, or hesitation due to perceived high cost—architects are missing an important tool that can support high-quality, environmentally responsible design. A building's constituent materials may have significant embodied

CONTINUING EDUCATION

1 AIA LU/HSW

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Learning Objectives

After reading this article, you should be able to:

1. Describe the value of life-cycle assessment (LCA) in significantly reducing embodied environmental impacts of building materials.
2. Explain the challenges of using traditional LCA methods and how newer software applications can provide easier and more useful real-time assessments during the design process.
3. Detail the LCA process and describe how software applications help to assess the environmental impact of building material selection throughout all phases of design.
4. Identify environmental standards and certifications available through whole-building LCA, including USGBC LEED v4 and Living Building Challenge certification.

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environmental impacts that can be easy to reduce. To do so though, you first need to identify those impacts. While it is true that in the past LCAs have been costly and time consuming, streamlined and automated techniques are now being used to help facilitate this important aspect of the green building process, encouraging a wider user base to incorporate LCA.

While LCA is a methodology that has been around for 30-plus years, it hasn't always been applied to architecture. Within the past decade, advancements have been made in this arena, particularly with the advent of building information modeling (BIM)-integrated life-cycle analysis software that calculates the environmental impact of building materials in a Revit model, allowing real-time LCAs during the entire design process. The benefits of using this type of tool include speed, ease, accuracy, collaboration, and cost.

Within this context, LCA can work at multiple scales and aid in decision making from the following three types of analysis:

Whole-building LCA: Assess the embodied environmental impact of your entire building; benchmark your impact throughout design.

Design-option comparison: Compare two or more distinct sets of building components side by side.

Material selection: Compare LCA impacts and ingredients of materials and assemblies, including information from manufacturer environmental product declarations (EPDs).

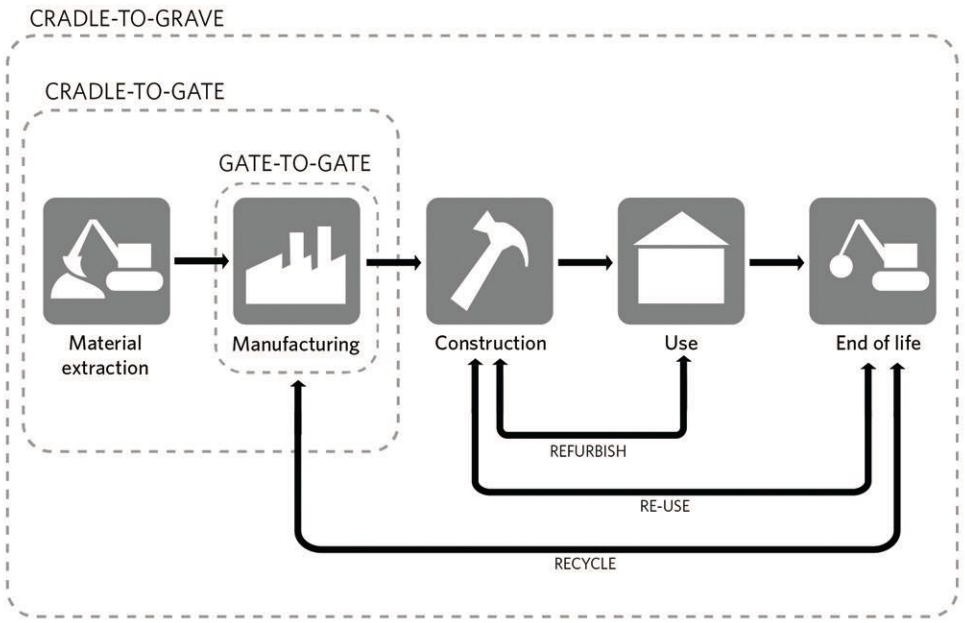
In this course, we will take a look at the value of LCA in the context of sustainable building practices and the ways in which practitioners can extract meaning from the data they are collecting. We will also examine how technological advancements in the field are providing a platform for more widespread use of LCA.

OVERVIEW OF LCA

As described in ISO14040:2006 Life-Cycle Assessment – Principles and Guidelines, LCA is "a systematic set of procedures for compiling and examining inputs and outputs of materials and energy and the associated environmental impacts directly attributable to the functioning of a product or service system throughout its life cycle." This includes all stages from the time materials are extracted through manufacture, transportation, storage, use, recovery, reuse, and disposal.

This technique for assessing the potential environmental impacts associated with a product (or service) compiles an inventory of relevant inputs and outputs. We can think about inputs as ingredients or processes such as chemicals, energy, labor, water—everything that goes into the system. An output is something like mercury, methane, smoke, phthalates, or emissions. An environmental impact is measured according to potential environmental impact categories, such as global warming, acidification, eutrophication, smog formation, or human health impacts. The purpose of the LCA is to evaluate the potential environmental impacts associated with inputs and outputs and interpret the results of the inventory and impact phases in relation to the objectives of the study.

Source: Adapted from K. Simonen, Life Cycle Assessment



Adapted from K. Simonen, Life Cycle Assessment

Shown are the simplified life-cycle stages of a building.

LCA is part of a larger framework of initiatives for reducing the environmental impact of buildings, which includes current standards such as Passive House, Living Building Challenge, and the 2030 Challenge. As energy codes become more stringent and operations-related environmental impacts drop, the demand for LCA results is increasing. Updated rating systems, such as LEEDv4, reward project teams that utilize whole-building LCA via a new Materials and Resources credit.

LCA analyzes the burdens throughout the entire building life cycle, quantifying the embodied environmental impacts of the building and its constituent materials. The quantitative data gleaned from LCA provides a basis by which architects and construction professionals can provide building owners with practical means and measures for initiating ecological building practices. As described by Kathrina Simonen in her book *Life Cycle Assessment*, "All building results in environmental impacts. … The challenge of developing truly sustainable or even regenerative buildings has led to a desire to understand building and construction from a systems-based perspective." As Simonen adds, "Understanding a building or product from the perspective of its entire life cycle is the first step in developing sustainable and regenerative buildings."

What Is LCA?

At its core, LCA is an in-depth, standardized analytical framework that allows for the quantification of environmental impacts and the comparison of design options. It is a means to study the environmental impacts on whole buildings, building products, and material assemblies. As previously mentioned, this valuable analysis calculates the direct and indirect inputs (such as energy and raw materials) and outputs (such as carbon dioxide and other pollutants) that result from a material or assembly's manufacturing process, transportation, installation, use, maintenance, and disposal and translates those inputs and outputs into potential environmental impacts (such as global warming potential and smog).

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Robyn M. Feller** is a freelance writer and editor specializing in the architecture, design, and construction industry. **www.linkedin.com/in/robynfeller

Tally® is the first life-cycle assessment application that calculates the environmental impacts of building material selections directly in an Autodesk® Revit® model. It has been used by hundreds of designers to conduct whole-building LCAs and build more sustainably in accordance with LEEDv4 and other rating systems. Trials are available at **choosetally.com**.

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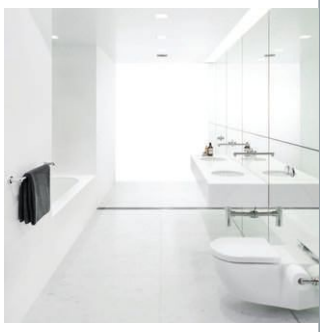

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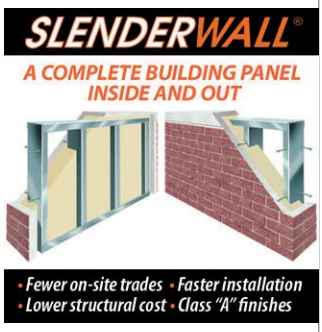

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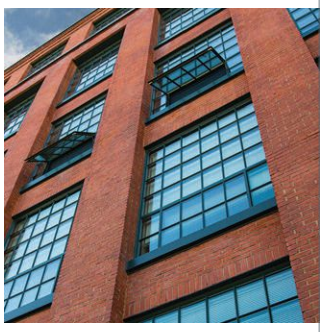

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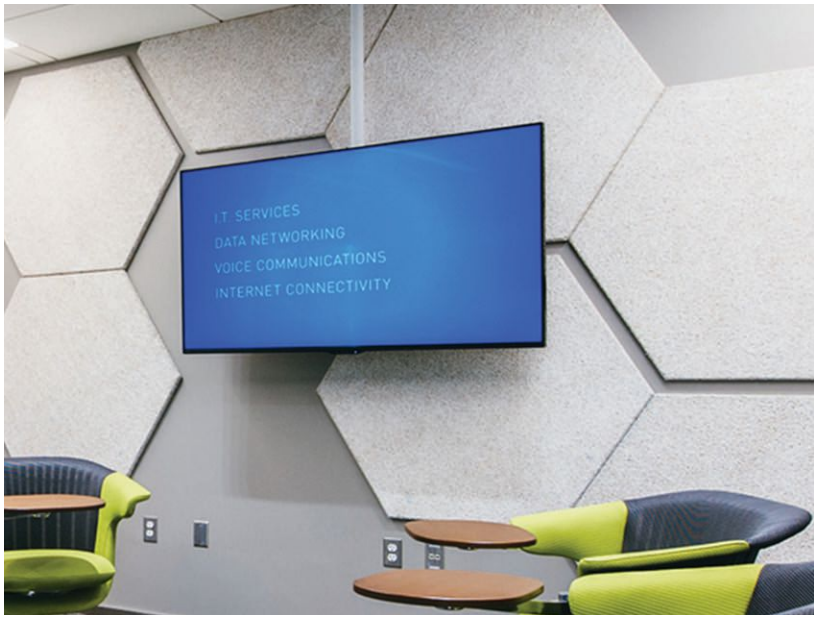

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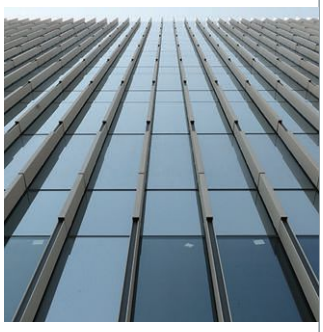

Product Application
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Performance Data
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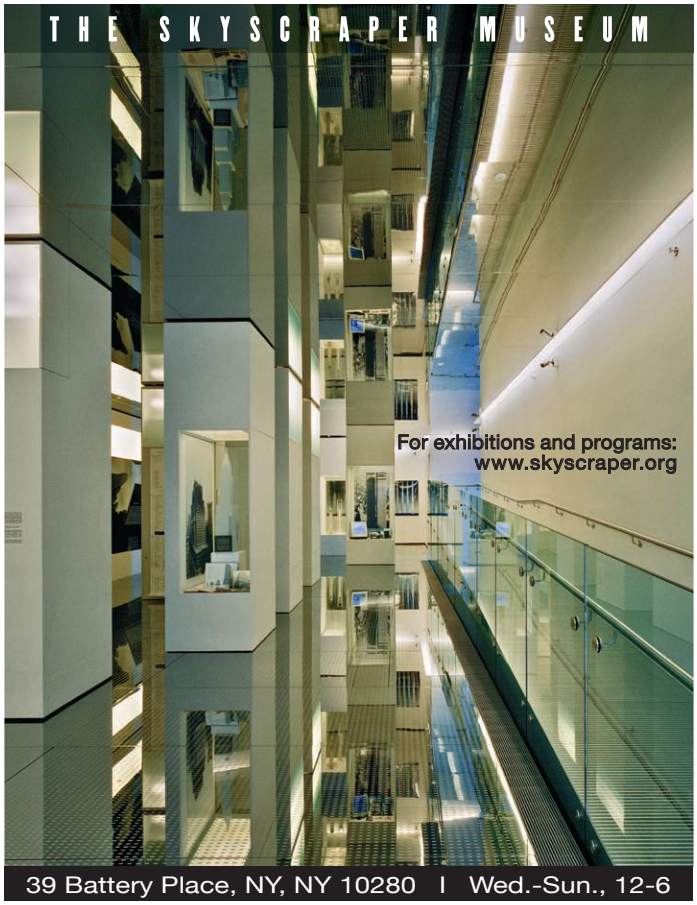

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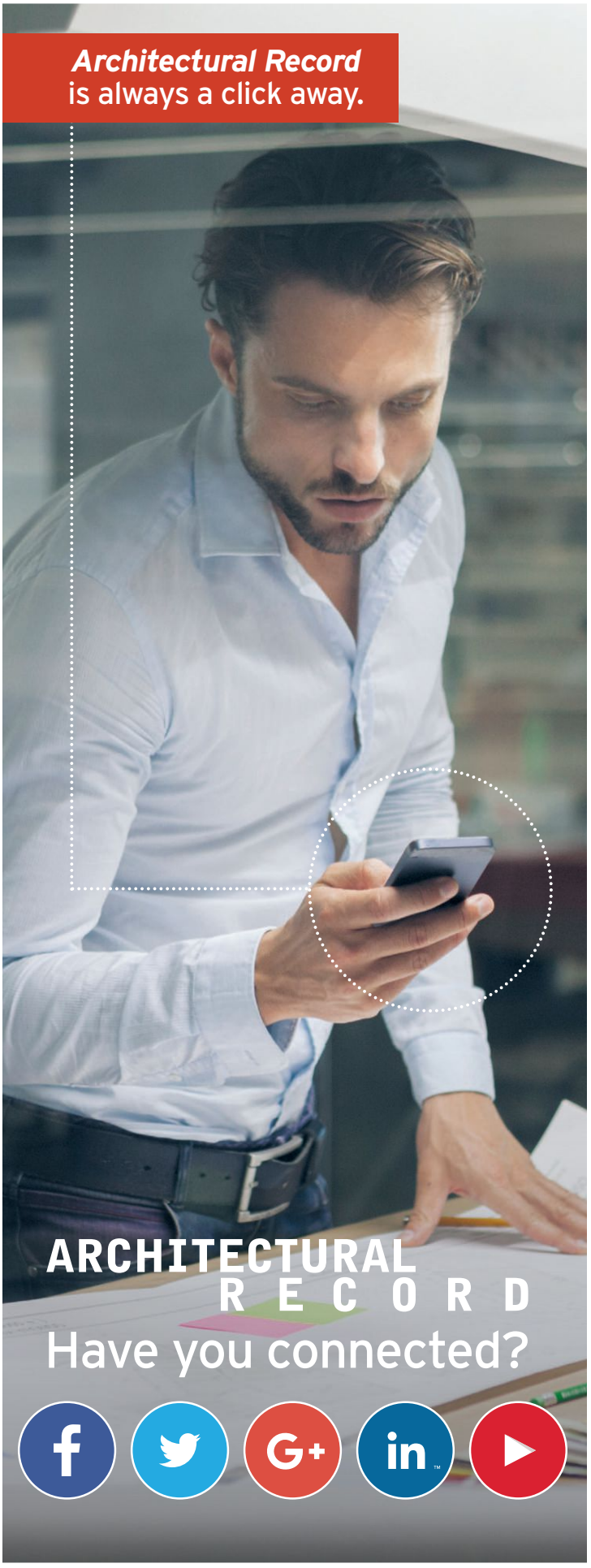

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LET'S GO FURTHER

2017 CALL FOR ENTRIES
Record Kitchen & Bath

The editors of ARCHITECTURAL RECORD are currently accepting submissions for the **2017 Record Kitchen & Bath** competition. Entry is open to any registered architect, as well as any designer working in collaboration with architects, who has completed an innovative residential and/or commercial kitchen or bath project in the last year. We are looking for projects that feature unexpected materials, address unique client needs, or are designed in a manner that allows these utilitarian spaces to be functional, sustainable, and beautiful. Winning projects will be featured in the September 2017 issue.

The fee is US$75 per entry. To enter, visit: architecturalrecord.com/call4entries. E-mail questions to ARCallForEntries@bnpmedia.com. (Please indicate **Record Kitchen & Bath** as the subject of the e-mail.) **Submissions are due June 1, 2017.**

2017 CALL FOR ENTRIES
Record Interiors

The editors of ARCHITECTURAL RECORD are currently inviting submissions for the **2017 Record Interiors** issue. All architects registered in the United States or abroad, as well as interior designers working in collaboration with architects, are welcome to submit interiors-only projects that have been completed in the last year. The projects may be new construction, renovation, or adaptive reuse; commercial or residential; domestic or international. Special consideration will be given to works that incorporate innovation in design, program, building technology, sustainability, and/or materials. The winning projects will be featured in the September 2017 issue.

The fee is US$75 per entry. To enter, visit: architecturalrecord.com/call4entries. E-mail questions to ARCallForEntries@bnpmedia.com. (Please indicate **Record Interiors** as the subject of the e-mail.) **Submissions are due June 1, 2017.**

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Regional AD

New and Upcoming Exhibitions

Frank Lloyd Wright at 150: Unpacking the Archive
New York City
June 12–October 1, 2017
Marking the 150th anniversary of the American architect's birth, this exhibition at the Museum of Modern Art will comprise approximately 450 works made from the 1890s through the 1950s, including architectural drawings, models, building fragments, films, television broadcasts, prints, furniture, tableware, textiles, paintings, photographs, and scrapbooks, a number of which have rarely or never been publicly exhibited. Visit moma.org.

Ongoing Exhibitions

WOHA Exhibits: Garden City Mega City
Mexico City
Through April 16, 2017
This exhibition—WOHA Architects' first in Latin America—presents more than two decades of the Singapore-based firm's international designs. Featuring 16 architectural models, an immersive video installation, large-scale drawings and images, the exhibition illustrates high-density, climate-sensitive proposals for vertical communities in the tropical megacities. At the Museo de la Ciudad de Mexico. For more information, visit woha.net.

Lectures, Conferences, and Symposia

Salone Internazionale del Mobile
Milan
April 4–9, 2017
The *Salone* showcase mixes business with culture in a conference that is split into three sections: Classic, Design, and xLux—the latter of which is dedicated to timeless luxury reworked with a contemporary touch. Some 2,000 exhibitors will be showing their wares to more than 300,000 visitors from 165 different nations. At the Milan Fairgrounds. For more information, visit salonemilano.it.

BEING MATERIAL
Cambridge, Massachusetts
April 21–22, 2017
This symposium will explore new and unexpected meetings of the digital and material worlds, such as programmable matter, self-assembling structures, 3-D/4-D printing, wearable technologies, and bio-inspired design. It will showcase recent developments in materials systems and design, placing this work in dialogue with kindred and contrasting philosophy, art practice, and critiques. At the MIT Samberg Conference Center. For more information, visit arts.mit.edu.

AIA Conference on Architecture
Orlando
April 27–29, 2017
Over three days, keynoters including Francis Kéré, Alejandro Aravena, Michael Murphy, and Elizabeth Diller will explore what it means to anticipate need, challenge, and change in architecture and design. At the Orange County Convention Center. For more information, visit conferenceonarchitecture.com.

Mundaneum 2017: re_Thinking Architecture and Cities in the Americas
San Jose, Costa Rica
July 5–7, 2017
This event at the School of Architecture of the Universidad Véritas offers a critical observation of the current state of architecture and cities in the Americas, and explores new visions of the built environment within the scope of clashing realities in the region. Speakers include Alejandro Echeverri, Michael Sorkin, Neil Brenner, Michael Rotondi, Juvenal Baracco, James Wines, Carlos Cubillos, and Patrick Dillon. For more information, visit facebook.com/MundaneumCostaRica2017.

Competitions

Modernism in America Awards
Nomination deadline: April 14, 2017
This awards program celebrates the documentation, preservation, and reuse of modern structures and landscape design in the United States. It recognizes those building owners, design teams, and preservation organizations that have made significant efforts to retain, restore, and advocate for the aesthetic and cultural value of such places. For more information, visit docomomo-us.org.

RIBA Norman Foster Traveling Scholarship
Nomination deadline: April 28, 2017
This scholarship, supported by Foster + Partners, offers one traveling scholarship of £7,000 to an architecture student in support of international research on a topic and at locations of the student's choosing. Upon completion of travel, the student will be invited to present his or her research to an audience at the Foster + Partners office in London. For more information, visit architecture.com/riba.

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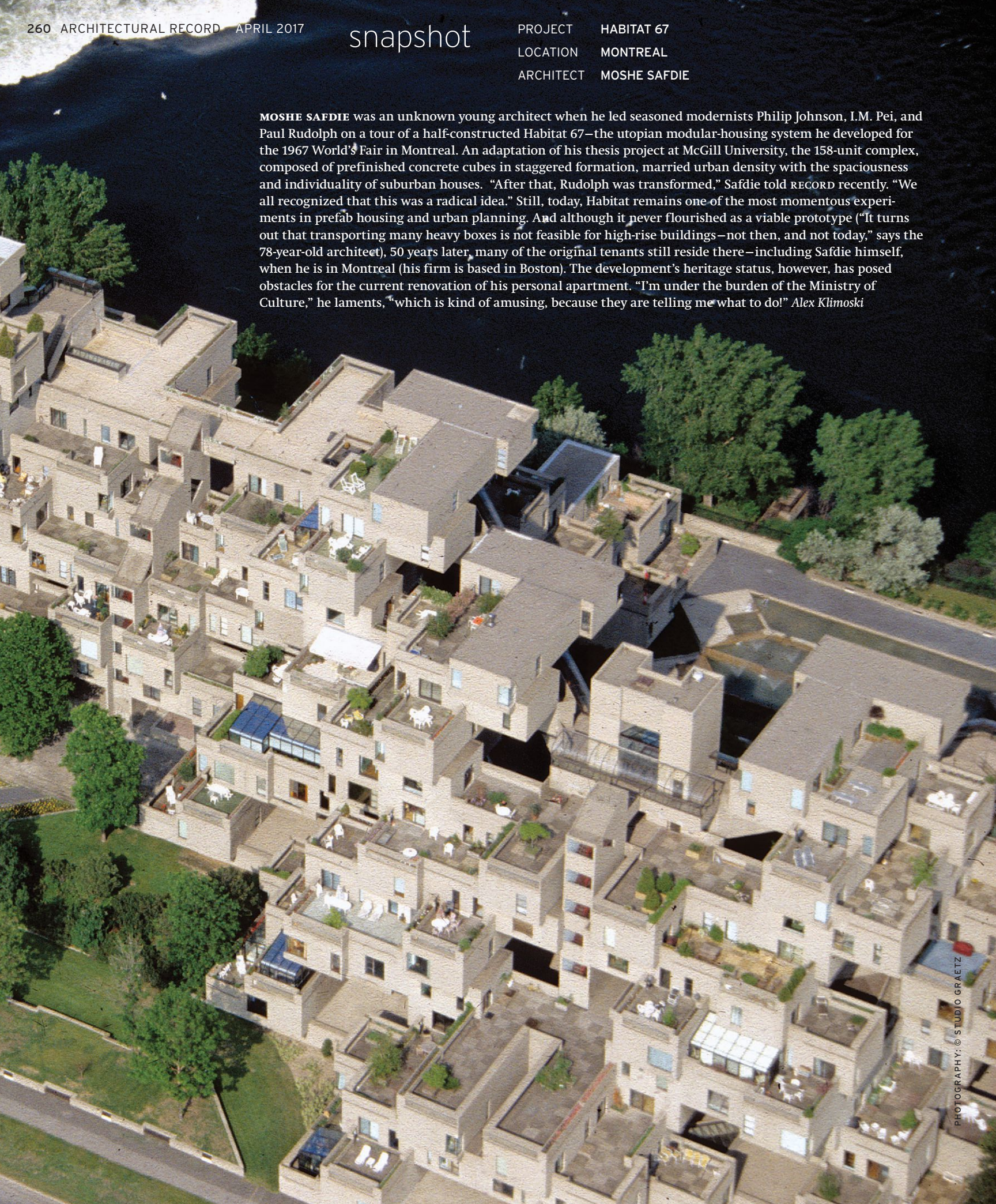
snapshot

PROJECT **HABITAT 67**
LOCATION **MONTREAL**
ARCHITECT **MOSHE SAFDIE**

MOSHE SAFDIE was an unknown young architect when he led seasoned modernists Philip Johnson, I.M. Pei, and Paul Rudolph on a tour of a half-constructed Habitat 67—the utopian modular-housing system he developed for the 1967 World's Fair in Montreal. An adaptation of his thesis project at McGill University, the 158-unit complex, composed of prefinished concrete cubes in staggered formation, married urban density with the spaciousness and individuality of suburban houses. "After that, Rudolph was transformed," Safdie told RECORD recently. "We all recognized that this was a radical idea." Still, today, Habitat remains one of the most momentous experiments in prefab housing and urban planning. And although it never flourished as a viable prototype ("It turns out that transporting many heavy boxes is not feasible for high-rise buildings—not then, and not today," says the 78-year-old architect), 50 years later, many of the original tenants still reside there—including Safdie himself, when he is in Montreal (his firm is based in Boston). The development's heritage status, however, has posed obstacles for the current renovation of his personal apartment. "I'm under the burden of the Ministry of Culture," he laments, "which is kind of amusing, because they are telling me what to do!" *Alex Klimoski*



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