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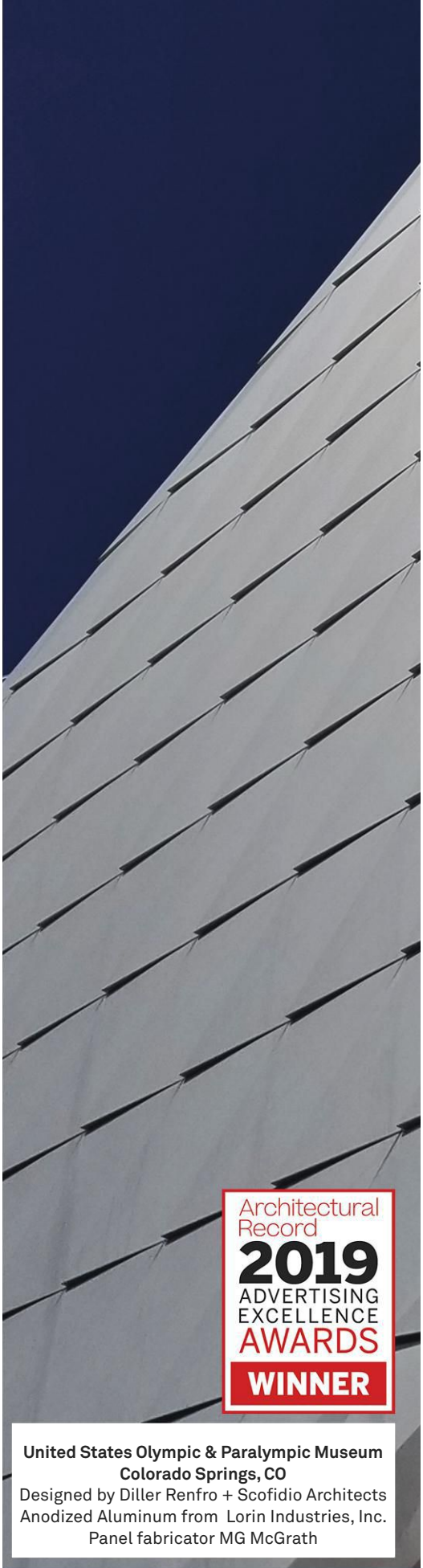
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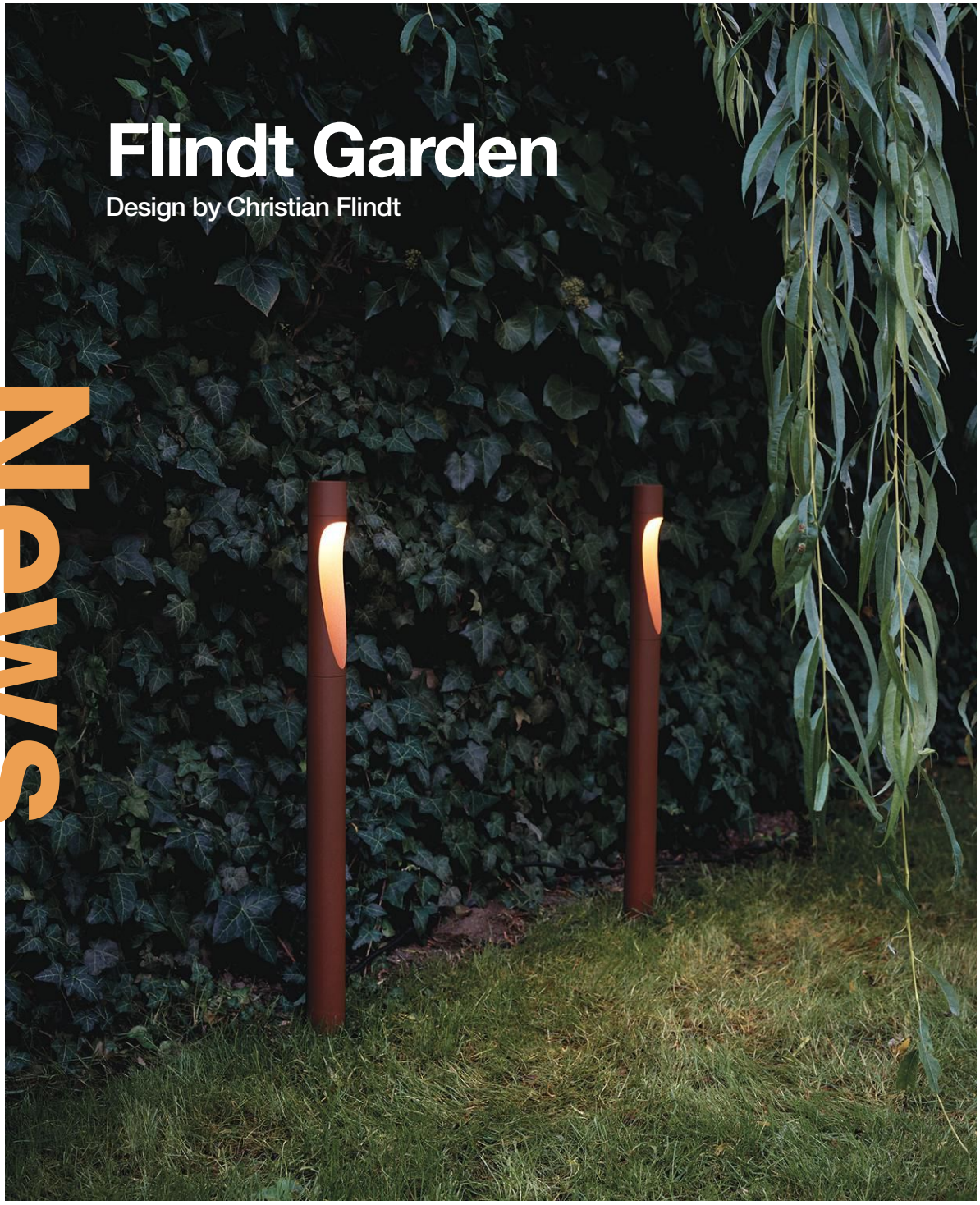
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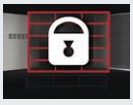
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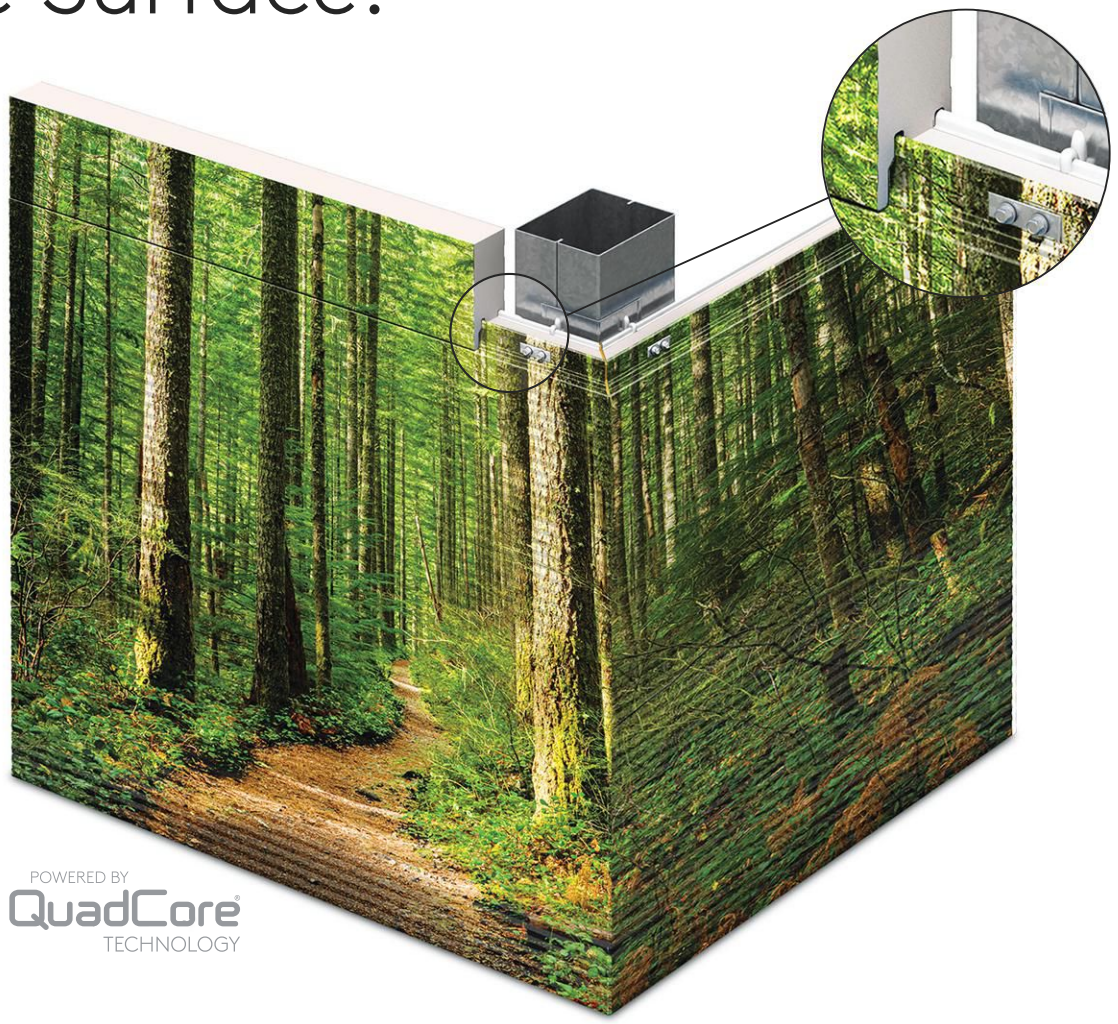
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The Architecture of Urban Infrastructure

Design teams create inspired public works for improving civic life.

THIS SUMMER, Congress and the White House have been hammering out an infrastructure agreement which—though far from a done deal—could result in nearly $600 billion in new federal dollars for roads, bridges, and railways. It is urgently needed: the last such bill, passed in 2015 during the Obama administration, was small—and today we are driving on potholed highways and dangerously cracked bridges, more than 7 percent of which are considered structurally deficient.

The Senate legislation now being developed is meant to earmark more than $100 billion for rail and mass transit, too; and $200 billion for water, sewer, and power upgrades. It would even include $65 billion for broadband internet infrastructure, desperately required in rural and other underserved communities, as well as $47 billion for climate resilience.

We all know what infrastructure is, but we still disagree on what it isn't. Already slashed from President Biden's wish list during this bipartisan round of negotiations were funds to support affordable housing (arguably an essential undergirding for a successful society) and soft infrastructure programs for childcare and education.

Yet let's hail these potential, long-overdue investments for civic projects in concrete and steel—and for enhancing public transit as well as automobile travel.

This month, RECORD reports on models of urban transportation infrastructure. In the pages ahead, we explore what it takes to build—or rebuild—public works in six cities around the globe. Some projects tackle long-standing, large-scale, complex problems, while others are relatively simple but nonetheless demand a well-designed response.

In two major cities, for example—Stuttgart, Germany, and Sydney, Australia—beloved, historic train stations, in the heart of those urban centers, are undergoing radical transformations. Stuttgart's proto-modern 1928 station by Bonatz and Scholer was a terminus; now, as part of a multibillion-dollar infrastructure plan, the tracks are being rotated 90 degrees—and going below grade—as the city links to the Paris-to-Budapest rail route (the original station is being repurposed and a section of it demolished). A new underground station has been designed by Christoph Ingenhoven, who won a competition in 1997. He worked on that scheme with the late Frei Otto, whose experiments in light construction helped inspire the graceful, chalice-like columns and light monitors that distinguish this remarkable project (page 70). In Sydney, a team led by Woods Bagot and John McAslan + Partners is creating new underground metro platforms; a connection to link the subway to inner-city rail lines and the street; and, most visibly, a vast, urban "room," adjacent to the venerable 1906 classical-style Central Station, which will bring together commuters, travelers, and the public (page 77).

Meanwhile, in the middle of Tokyo, Kengo Kuma, in designing the new Takanawa Gateway Station, has evoked both the soaring, elegantly engineered 19th-century rail hubs and—with origami-like roof planes and extensive use of wood—traditional Japanese construction (page 88).

More modest projects include Chybík+Kristof's facelift of a dreary Brutalist bus depot in Brno, Czechoslavakia (page 84); two new pavilions to park bikes, created by architecture students in a design-build program at the University of Colorado Denver (page 82); and a pedestrian bridge across a key multi-lane thoroughfare in lower Manhattan, designed by WXY (page 94).

Also inventive is Stanley Saitowitz's clever enhancement of two electrical substations in San Francisco, deploying precast-concrete screens that morph into benches, along with ingenious lighting, to create surprisingly lovely public spaces (page 101). To bring beauty to the most quotidian of infrastructure types is a remarkable achievement.

Elsewhere in this issue are three very different projects, where the architects clearly had skin in the game—from the shimmering, faceted walls of stainless-steel block in Frank Gehry's LUMA Arles art tower (page 48 and on the cover) to the fluted glass curtain wall of a Washington, D.C., office building by REX (page 62). Finally, in Paris, the long-awaited revival by SANAA of La Samaritaine department store has opened—though the Japanese firm's wavy translucent wrapping, a signature of the design, may well be upstaged by the magnificent restoration of the early 20th-century atrium of the legendary emporium (page 56).

From the essential to the extravagant, this is architectural imagination at every scale.

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Cathleen McGuigan

Cathleen McGuigan, Editor in Chief


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The disaster in Surfside, Florida, focuses attention on condominiums' flaws, but all forms of property ownership carry the potential for ugly surprises.

—*Matthew Gordon Lasner, in* The Atlantic *column "Condo Buildings Are at Risk. So Is All Real Estate."*

Henry Cobb's Last Tower Is Completed, in Boston

BY ERIC HÖWELER, AIA



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View of Boston's new skyscraper One Dalton, between the Prudential Tower and the Christian Science Plaza.

THE 61-STORY hotel and condominium tower known as One Dalton is done. Rising 742 feet, it is the tallest residential building in Boston, just 48 feet shy of the city's tallest structure, 200 Clarendon (originally known as the John Hancock Tower). Both were designed by the late Henry Cobb, of Pei Cobb Freed & Partners, and, in a way, they bookend Cobb's long career.

Built in 1976, the Hancock Tower provoked a fierce public backlash due to its height and proximity to Copley Square, where it looms over H.H. Richardson's Trinity Church and McKim, Mead & White's Boston Public Library. "The building's restraint to the point of muteness, its refusal to reveal anything other than its obsession with its urban context, is surely its greatest strength but also its ultimate limitation as a work of architecture," Cobb wrote in his memoir, *Words & Works, 1948–2018: Scenes From a Life in Architecture*. "Despite the forcefulness of its gesture, the tower remains virtually speechless, and this resolute self-denial is, in the end, both its triumph and its tragedy."

The most distinguishing feature of the Hancock Tower is its abstraction: singular, minimal, and monolithic. One Dalton continues that tradition, with an extruded shaft, clad in a taut glass curtain wall. But exploring the two buildings' key differences tells us about the context and culture in which each was conceived, a half-century apart, and about building in the present moment, when issues of sustainability, climate change, and civil society are inextricably tied to architectural and urban projects.

Cobb, who died last year at 93, described One Dalton as a "soft triangle." Its 13,500-square-foot floor plate consists of slightly bowed convex faces and rounded corners that abstract the geometry of its triangular site. The Hancock, however, famously did not maximize its site, presenting instead a narrow face toward Trinity Church and skewing its broad face toward a trapezoidal plaza, a gesture that minimizes its presence on Copley Square and acknowledges Trinity Church as the center of the urban ensemble. The "notched parallelogram" geometry of the Hancock Tower makes it shapeshift on the skyline, sometimes slender and sometimes broad. As similarly iconic as the two towers appear, they are each significantly shaped by their different urban contexts.

Their differing programs also have an impact on their architecture. One Dalton is home to a Four Seasons Hotel and apartments while the Hancock is an office building. The residential-hotel program required operable windows, blinds, and balconies, which work against a monolithic expression. Yet the tall 12-foot 2-inch floor-to-floor heights of One Dalton emphasize the facade's verticality, as does the use of light gray tinted glass in both the vision and spandrel areas that mask the slabs. But the presence of curtains just behind the surface hints at activities within.

The designers of One Dalton, which includes design architects Pei Cobb Freed and architect of record CambridgeSeven, introduced a series of indentations to conceal the operable windows in the returns, allowing the perimeter facade to appear surprisingly taut. The incisions in the facade create an inverted bay window effect, carving in instead of out. The vertical slots are also used to organize a series of balconies cut into the tower toward the top, with balustrades integrated into the convex face to maintain the illusion of a smooth form.

One Dalton's all-glass facade does raise questions about sustainability that were not top of mind when the Hancock was designed: in fact, can we still build an all-glass building today, or is it an image from another era? While wrapped entirely in a curtain wall, large portions of its facade—the spandrel glass—are insulated.

And while One Dalton succeeds the Hancock Tower by 45 years, it shares many of the same ambitions as its older cousin in its restraint, sculptural clarity, and abstrac-



Cobb's earlier Hancock Building can be seen in the distance from a penthouse balcony at One Dalton.

PHOTOGRAPHY: © FOUR SEASONS ONE DALTON STREET, BOSTON

tion. Yet it is a new generation of skyscraper, one that engages the urban surroundings, with its ground-floor restaurant and café activating the streetscape. In his memoir, Cobb wrote about the need to "give voice in architecture to the rich diversities of occupancy, activity, and culture that bring a city to life–diversities that ought to be celebrated in our buildings, not suppressed behind masks of uniformity."

The comparisons between the Hancock Tower and One Dalton remind us how Boston has evolved—along with cities in general—in pushing architecture to engage the civic realm. Urbanity is a condition that is coproduced with buildings through the alchemy of program, material, form, and disposition. Rather than standing apart, One Dalton participates in the city as its slender form takes its place within the urban ensemble of Boston's public life. ■





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Taryn Simon with Shohei Shigematsu at MASS MoCA

BY JOANN GONCHAR, FAIA

EARLIER THIS SUMMER, the Massachusetts Museum of Contemporary Art (MASS MoCA), in North Adams, unveiled *The Pipes,* a monumental sculpture of 11 cylindrical concrete towers created by artist Taryn Simon in collaboration with architect Shohei Shigematsu, a partner at OMA.

The work was first conceived as the set for *An Occupation of Loss,* Simon's 2016 exhibition at New York's Park Avenue Armory. There, the 42-foot-tall towers, each 8 feet in diameter and arranged in a semicircle, were activated by the laments of professional mourners who traveled from countries that included Burkina Faso, Russia, and Ecuador. During 30-minute sessions in the Armory's darkened drill hall, an audience of about 50 people experienced the haunting sounds resonating from the cylinders.



The Pipes **was installed at MASS MoCA in June.**

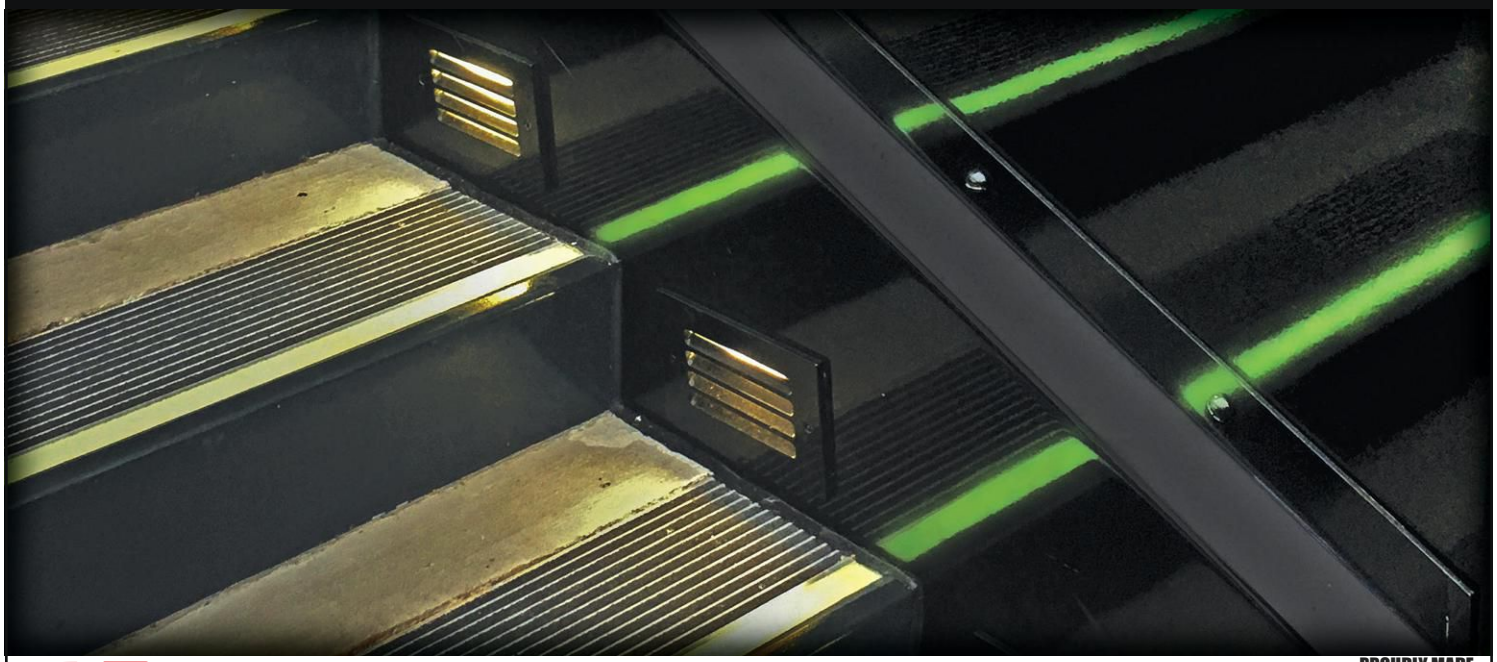
At MASS MoCA, where it will remain on long-term view, the sculpture has been installed outdoors and has a less somber character. The towers form the same semicircular footprint but have been shortened to 22 feet due to concerns about wind loads, while maintaining the design's sonic properties.

MASS MoCA visitors can fill *The Pipes* with the sounds of their own voices, or—since the top of each tower forms an aperture open to sky—quietly contemplate the clouds. Simon says that the concrete ledges inside are the perfect length for a person to lie down on and gaze up at the stars. The museum envisions the sculpture as a setting for performances, both organized and spontaneous.

The piece was designed from the start for a second life. Integrated within its 5-foot-tall segments are brackets that allow them to be lifted by a crane, points out Shigematsu. He says that the transportable and adaptable sculpture should be a model for other installations, adding that the robust materials and industrial forms work especially well with the museum's 19th-century former mill buildings as a backdrop. ■

PHOTOGRAPHY: COURTESY TARYN SIMON/WILL MCLAUGHLIN

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Newsmaker: Alison Killing

BY FRED A. BERNSTEIN

ALISON KILLING may be the first architect to win a Pulitzer Prize. Two weeks ago, when the list of honorees was announced, Killing, a 41-year-old Rotterdam-based architect, was on it, thanks to work she did using satellite imagery to spot hundreds of camps in China's Xinjiang region, many of them newly built, in which the Chinese government is believed to be detaining almost a million Muslims. The article that resulted, published in BuzzFeed News, has been praised not just for its revelations about China's war on Uighurs, Kazakhs, and other minority groups but also for Killing's investigative methods.

Born in Newcastle, England, Killing studied architecture at Cambridge and Oxford Brookes, then worked for the engineering firm Buro Happold and several architecture and urban-design firms in London and Rotterdam. In 2010, she decided that she wanted to work for herself. She took part in a community-design program called 72 Hour Urban Action and curated an exhibition about death and architecture. Then she created Migration Trail, the story of two European migrants told through data, and began seeing herself as a tech-based storyteller. At that point, she says, "if I had really wanted to be building, I would have been doing it."

How did the China project come about?

In 2018, I attended a workshop run by an organization from Berlin called Tactical Tech, about conducting online investigations. There I met Megha Rajagopalan, a tech reporter for BuzzFeed News who was the first journalist to visit one of the camps. Because she wasn't being allowed back into China, she was interested in continuing to investigate from a distance. We had 10 days of conversation at the conference, and then we kept in touch, batting ideas back and forth. In mid-2018 it was believed there were about 1,200 camps, but fewer than 100 had been found. Our idea was to find all of the camps.

How did you begin?

I knew that the Chinese search engine Baidu had a Street View equivalent called Total View, in which it tried to hide industrial facilities. I figured if they're censoring factories, they're almost certainly censoring the camps. And they were: on Baidu's equivalent of Google Earth, when I zoomed in on the



location of a known camp, a light gray tile would appear, masking the area. It looked as if the map wasn't really loading. But I knew what was going on, because of the work I had done with interactive maps on the migration project. We realized we had a technique that could be used to find all of the camps.

So their censorship was the very thing that enabled you to find what you were looking for?

Yes. Our next step was to make a list of all the censored locations in Xinjiang.

How many did you find?

About 5 million. It was a lot—everything from industrial parks to military bases and military training areas to solar panel arrays and wind farms, anything that has any kind of strategic value.

How did you winnow down the 5 million?

We knew the camps need certain things: workers to build them, roads to get people to them, water, electricity. Factoring in those things left us about 50,000 possible locations. I went through them systematically, about 10,000 a week, looking on Google Earth and other available satellite imagery for compounds that might be camps.

How did you know what to look for?

Until 2017, the camps were mostly former schools or hospitals. In the converted schools, the sports fields might be covered in blue-roofed industrial sheds. Instead of a playground there could be a barbed-wire passageway. By 2018 we were able to see massive high-security camps being built, with guard towers and heavy perimeter walls. The biggest of this new generation of camps can hold 32,000 people.

What did you do with your list of locations?

We then started to corroborate them, with eyewitness accounts, media reports, and government-tender documents. We worked in parallel. Megha would say she had an eyewitness who had been held in a camp in a certain town, and I would try to find it. By the time we published last August, we had confirmed 268 locations. Since then, we've found almost 100 more.

How did the Chinese react to your article?

We went to the government for comment prior to publication. They called our reporting "a groundless lie."

Do you refer to yourself as an architect or a journalist?

It depends on the forum. I continue to call myself an architect because I am licensed. And the reason I am able to do this work is that I have those skills. When we were trying to narrow down the areas that the camps were likely to be in, the work I had done in urban planning was very useful. And I was able to identify the architectural characteristics of a prison because I was used to looking at the world from above and understanding how something two-dimensional will look in three dimensions.

What's next for you?

We're still working on this. We think we have found close to the full network of camps. Now we're looking at factories in the camps. Forced labor is widespread, and we're hoping to investigate companies that are registered in those locations. One of the things that this project has shown is the way somebody with skills like mine can contribute to a journalistic project and produce interesting investigative work that might not have happened otherwise. ■

PHOTOGRAPHY: © THE SPACES



The building is a collaboration between Richard Serra and Thomas Phifer.

Glenstone Expands With a Pavilion for Richard Serra

BY BRIDGET COGLEY

GLENSTONE, the bucolic art museum 15 miles outside of Washington, D.C., is building a new pavilion to house one of Richard Serra's most recent large-scale steel sculptures. The 4,000-square-foot structure is expected to open next spring or summer. Its design is a collaboration between Serra and architect Thomas Phifer, whose New York firm, Thomas Phifer and Partners, expanded the private Maryland museum in 2018, adding 12 concrete pavilions clustered around a central water court. The complex, embedded in the property's verdant hillside, represents only a sliver of Glenstone's 230 pastoral acres that have been enhanced over the years, with 8,000 new trees and other plantings, by Adam Greenspan, design partner of the Berkeley-based PWP Landscape Architecture.

The new pavilion will resemble Phifer's previous volumes of large prefabricated concrete blocks, with open ¼-inch joints, but instead use poured-in-place concrete with plywood forms. Both artist and architect favored concrete: "Its sense of permanence and honesty seemed to resonate with both Richard and me," says Phifer. As you enter the skylit one-room space, with a 9-foot high ceiling, " you will come from the daylight and then go through this moment of shade and shadow, and back into the light," says Phifer. Unlike the rest of the museum, it will have no heating, no air-conditioning, no windows, no artificial light—only skylights and natural ventilation.

Glenstone's founders, and partners, Mitchell and Emily Rales, wanted "an extremely unique experience," the architect says. One of Serra's works, the spiraling weathering-steel *Sylvester*, already stands near the museum's entrance. Another steel piece of Serra's, *Contour 290*, is placed by the Woodland Trail. Visitors will approach the new pavilion by way of the trail on the eastern side of the property, following a gently curved path past a bridge over Greenbriar Stream. About a 5-minute walk from the main building, the path culminates with the minimalist volume surrounded by trees. Phifer notes, "The building will be a poetic clearing in the woods." ■

Surfside Condo Update

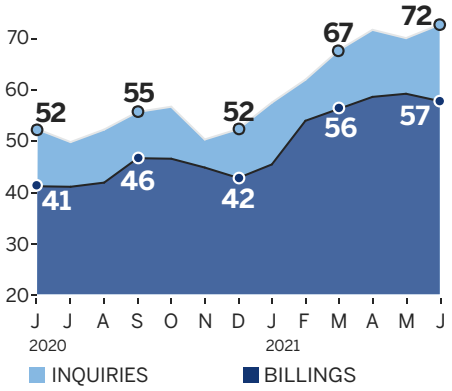
The investigations are ongoing into the cause of the partial collapse of Champlain Towers South in Surfside, Miami, on June 24. The remaining 12-story structure was imploded to enable a safer and expanded search-and-recovery effort, since the still-standing portion was unstable and dangerous for workers.

Editor Kristen Richards Dies

Editor of ArchNewsNow (ANN), Richards died of cancer at the age of 69 on July 1, 2021. For almost 20 years, she helped architects and her fellow design writers keep tabs on what was happening around the world with her wide-ranging news blog.

ZHA Exhibits in Shanghai

Zaha Hadid Architects' first exhibition in mainland China has opened at MAM Shanghai, titled *ZHA Close Up—Work & Research*. On view until August 29, the exhibit is part retrospective and part forward-looking, and displays projects from 1982 to today. "With this show, we aim to present who we are close-up—our depth of experience, our current preoccupations, and our aspirations for the future," says ZHA principal Patrik Schumacher.



Billings Stay Strong, While Inquiries Continue Upward

The latest data from the American Institute of Architects show that the Architecture Billings Index (ABI) moved down slightly from 58.5 in May to 57.1 in June. (A score below 50 indicates decreasing billings.) Design inquiries grew from 69.2 to 71.8, while the pace of contracts growth slowed slightly from 63.2 in May to 58.9 in June.

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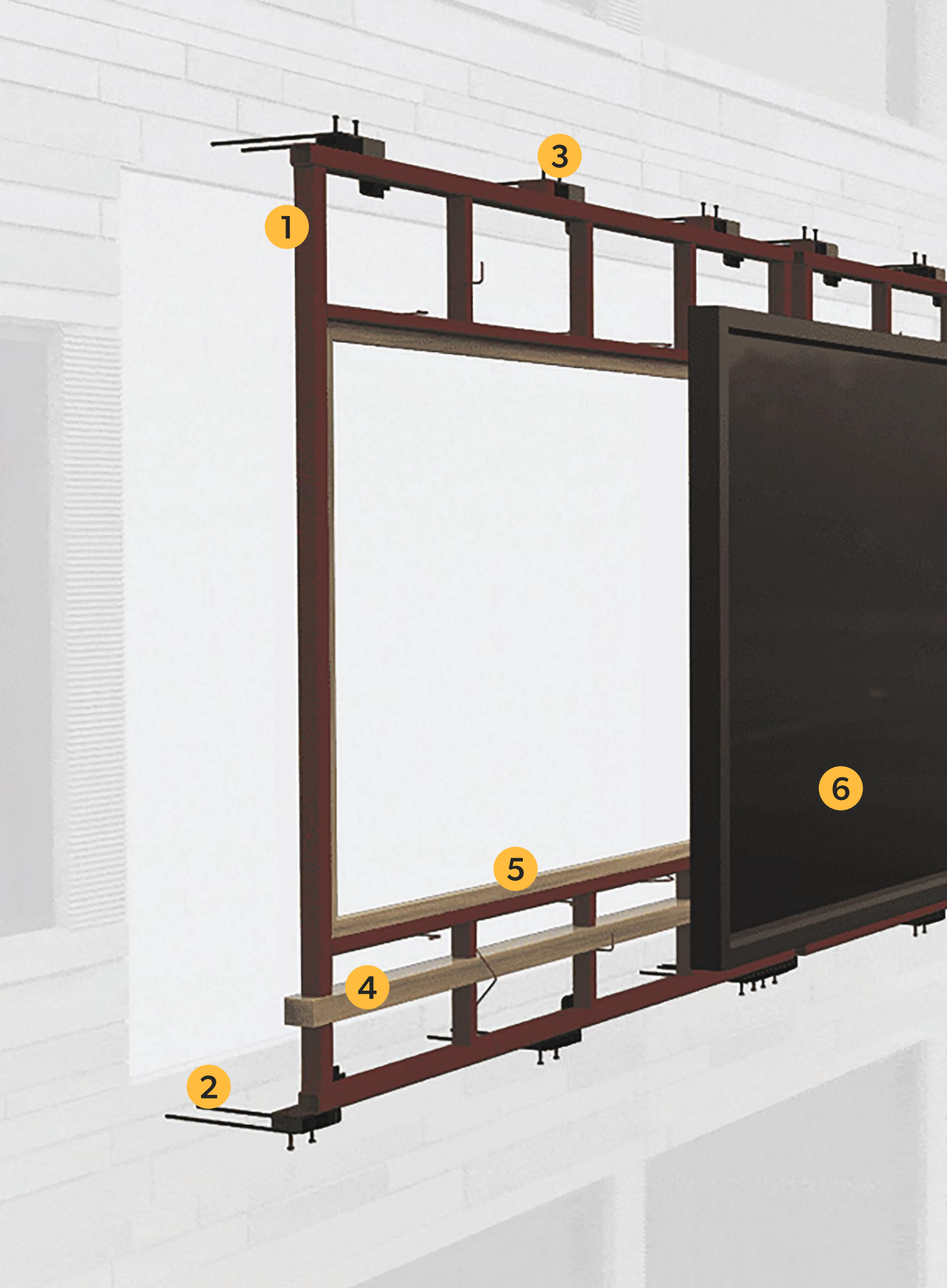
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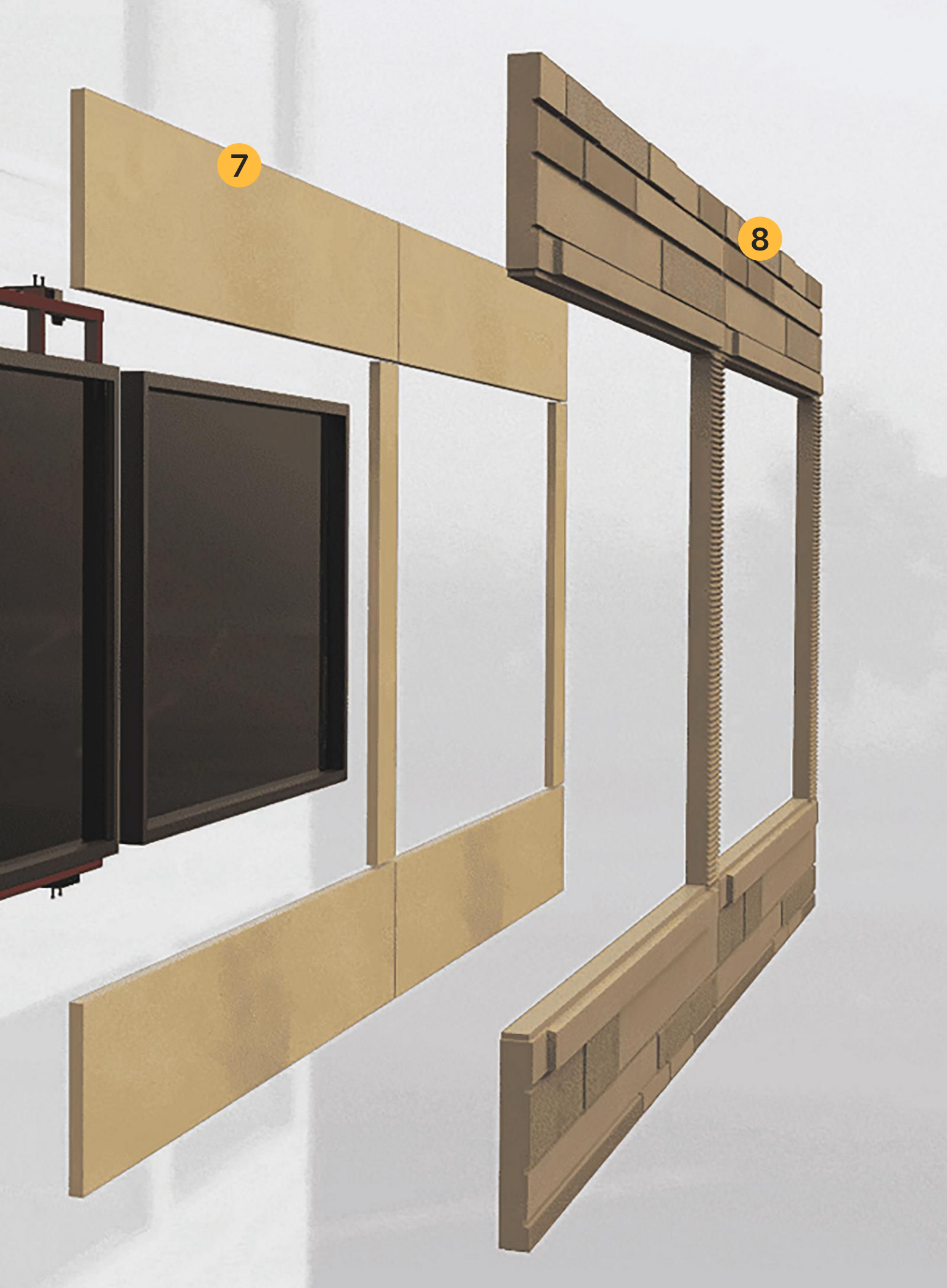
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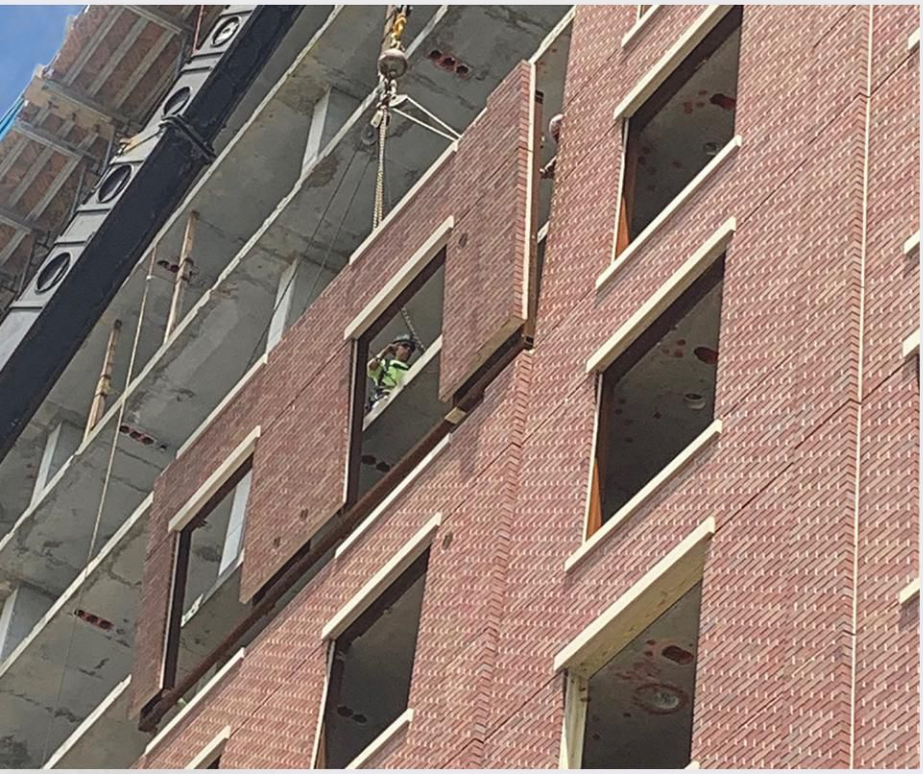
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3. Lateral Connection
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4. Firestop
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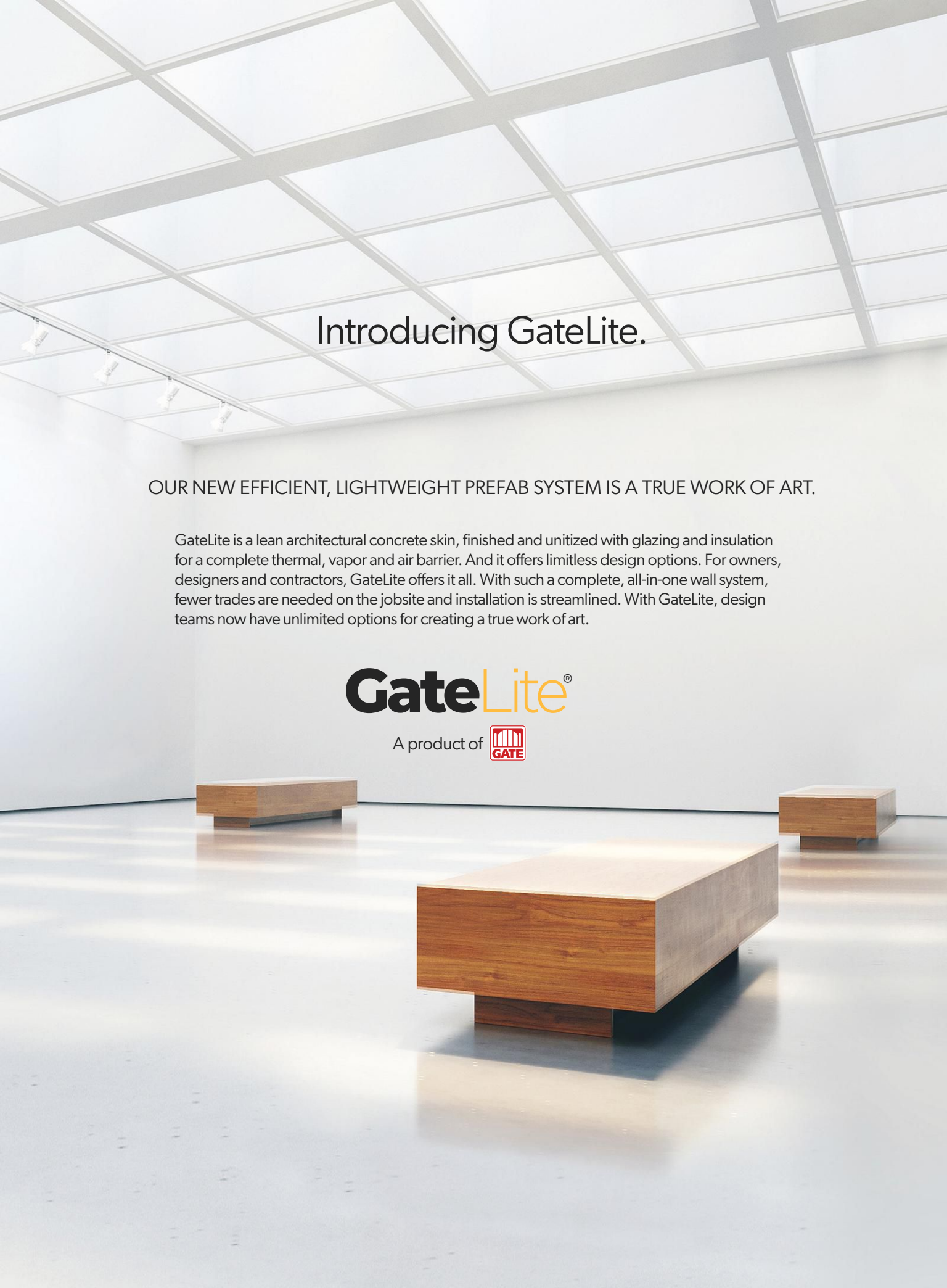
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HOUSE of the Month

FAULKNER ARCHITECTS DESIGNS A SKI HOUSE AROUND A COURTYARD IN LAKE TAHOE. **BY WENDY MOONAN**



SINCE founding Faulkner Architects in 1998, in Truckee, California (near Lake Tahoe), and later establishing an office in Berkeley, Gregory Faulkner has designed 20 ski retreats. The CAMPout house, some 6,800 feet above Lake Tahoe, demonstrates his sleekly natural approach. The client, Rowan Trollope, the CEO of Five9, a publicly traded cloud-software company in San Francisco, likes extreme ice climbing, cross-country skiing uphill (with no-wax skins), and camping in the dead of winter with his two youngest children.

Trollope chose Faulkner because "it was Greg's idea to be inside and outside at the same time—which is just our thing." Faulkner's proposed house was almost maintenance-free and largely fireproof (in an area prone to wildfires), owing to a poured-concrete structure, steel roof, and stone floors. (Granted, there are raw sugar-pine walls inside). "It's a base camp for me and my family, where we can ski in and out," he says.

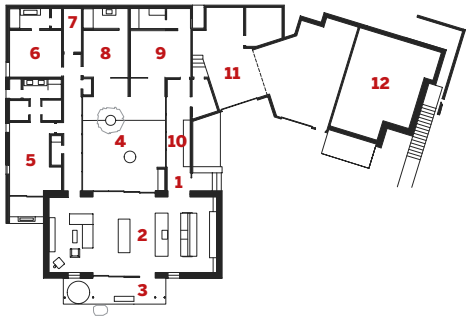
The site, a sloping half-acre, is surrounded by neighbors. The house—3,800 square feet for the living/dining/kitchen areas and bedrooms—steps incrementally down and adjoins an existing guest house. At the center is an open courtyard that provides privacy and brings light into the interior through glazed walls and sliding doors enclosing it. Faulkner strategically placed the windows to avoid views of the other houses; the prospects are of the valley below and a forest of hundred-year-old Jeffrey pines.

Part of the thin steel shed roof lifts up to receive light from the south, and, at night, light from the courtyard's firepit flickers into the living quarters. Black basalt floor tiles provide the appropriate background for the spartan Donald Judd–inspired interiors designed by NicoleHollis of San Francisco. The house, completed in late 2019, was in much use during 2020. As Trollope says, "It was a nice place to be in lockdown." ■





The house has a deck (top) opening out from the pavilion to contain living/dining/kitchen spaces (above). At the center of the house is the open courtyard (middle), with a firepit.



FLOOR PLAN

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1 ENTRY
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3 DECK
4 COURTYARD
5 MAIN BEDROOM
6 MEDIA SUITE
7 LAUNDRY
8 OFFICE SUITE
9 GUEST SUITE
10 MUDROOM
11 GARAGE
12 EXISTING GUEST HOUSE

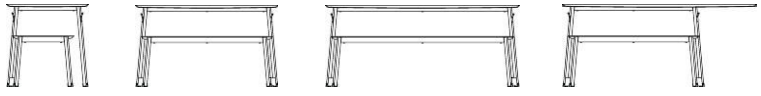
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LANDSCAPE

A REVITALIZED OAKLAND MUSEUM OF CALIFORNIA OPENS ITS GARDENS TO ALL. **BY KENNETH CALDWELL**



PHOTOGRAPHY: © TIM GRIFFITH

New portals in the building's concrete perimeter increase access to the museum and its terraced gardens.

CONCRETE is tough: tough to renovate, tough to moderate. But the most recent design changes at the Oakland Museum of California have succeeded in sensitively opening up Roche/Dinkeloo's Brutalist concrete complex from 1969 to better serve the diverse city and region. An earlier renovation, completed in 2010 and led by Mark Cavagnero Associates (RECORD, December 2010), subtly addressed many of the museum's programmatic challenges with the main entry and galleries, and maintained the wonderful, labyrinthian pedestrian experience inside the compound: a Babylon-like garden, originally designed by Dan Kiley with Geraldine Knight Scott. But from the outside, the complex still felt like a 1960s-era urban fortress.

The most recent intervention here, led by Oakland landscape architecture practice Hood Design Studio, in collaboration with Cavagnero's firm, is more radical than the earlier effort: it alters the original building's forbidding aesthetic and integrates the institution into the city. To do this, the team created strategic openings in the concrete perimeter. At the northeast corner facing Lake Merritt, they removed a low planter wall and added three portals to the full-height exterior wall. Passersby can now see and stroll into the gardens. An earlier rendering suggested steel and glass pivot doors at the openings. Unfortunately, there are roll-down metal screens instead that are, no doubt, easier to operate and maintain. Another opening, on the building's 10th Street side, allows access and views to the renovated café, which will be overseen by renowned chef Tanya Holland. This new entry and its ADA-accessible ramp interrupt the original building's blank facade, a change that Cavagnero has softened by using the same matte steel on the new additions as he used in his earlier renovation.

In keeping with the building's original concept, the interior multilevel, orthogonal gardens are the heart of the campus. But, after a half century, the dull planting scheme needed updating. Reflecting the museum's three collections—art, science, and California history—Hood has organized the many terraces according to five distinct California eco-regions: low desert outside the fine arts gallery, coastal forest outside the natural-sciences gallery, woodlands outside the California-history gallery, and Mediterranean on the roof (one of the early green roofs in a modern building). The coastal prairie, represented by wildflowers, is not restricted to a single level. The new plantings enliven the gardens but do not distract from the original Hanging Gardens of Babylon effect. Additionally, planters were created for the café to grow vegetables and herbs. Marking the center of the courtyard is a new stage for a variety of events; its overhead steel frame and dimensions are based on the building's 20-foot structural grid. New accessible ramps disrupt the careful geometry of the original plaza somewhat, but they are not jarring. And sculptures by local artists such as Ruth Asawa, Peter Voulkos, and Viola Frey have been restored and placed all through the outdoor spaces. At the time of reopening, the plantings were not complete and, of course, some will take years to mature. And more work remains to be done, especially the restoration of the extensive wood doors, windows, and trellises within the gardens.

Yet with its sensitive renovation, the team here has skillfully modified the landmark's tough exterior by quite literally opening the building's walls to the thoughtfully revitalized gardens, finally allowing the museum to fulfill its mission as a public space for all. ■

Kenneth Caldwell is an Oakland-based writer.

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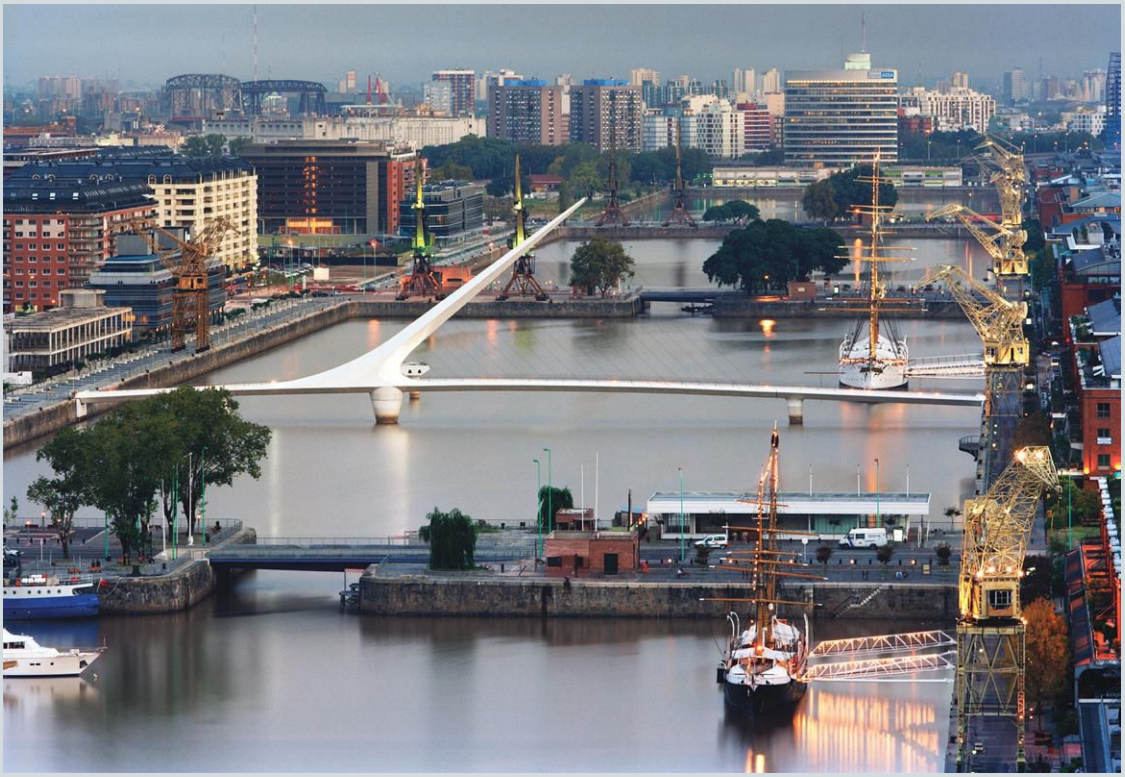
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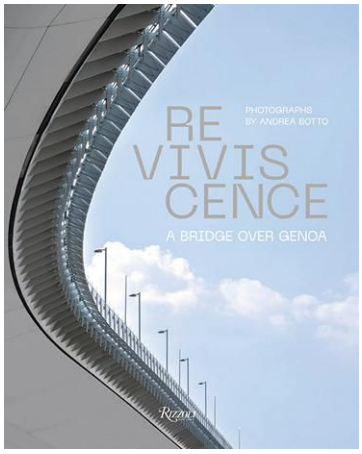


The architect for the Cité de Refuge for the Armée du Salut (Salvation Army) in Paris was **Le Corbusier**. Completed in 1933, the reinforced-concrete structure was built to shelter the homeless. Le Corbusier wanted it to have a sealed double-skin glazed wall with conditioned air in the cavity. Because of limited money, it ended up being a single-layer glazed curtain wall, hermetically sealed to keep out pollution. The result was famously uncomfortable, summer and winter. By 1952, a brise-soleil—a notable passive device the architect developed—was added to the exterior.

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After a Bridge Collapse, Genoa Comes Back to Life



Reviviscence: A Bridge Over Genoa, *by Andrea Botto. Rizzoli, 208 pages, $65.*

REVIEWED BY JOSEPHINE MINUTILLO



The towers and other sections of the bridge left standing were taken down by controlled explosions on June 28, 2019 (bottom). The replacement bridge opened to traffic in August 2020 (above).

IN EARLY MAY, a thick crack slicing through a critical steel support beam was discovered on the Hernando de Soto Bridge spanning the Mississippi River between Memphis and eastern Arkansas. Not only has car traffic since been banned on this major artery, but boat traffic beneath it was temporarily halted as well. Opened in 1973, this viaduct is on the younger side of this country's failing infrastructure. (About half of the 617,000 bridges in the U.S. are more than 50 years old.) Despite the delayed finding—reports indicate signs of a crack may have gone unnoticed for years—things could have ended much worse, a fate that was not spared to Genoa, Italy.

On August 14, 2018, a nearly 700-foot-section of the northern Italian port city's Polcevera Viaduct collapsed during a rainstorm, killing 43 people. The aftermath of that devastating day, from the demolition of the remaining portion of the 51-year-old bridge to the construction of a new one in just over a year—despite the severe Covid outbreak in Italy at the time—has been captured by Italian photographer Andrea Botto in a new book that features essays by city officials and key members of the rebuilding team. Also included is an interview with Renzo Piano, a Genoa native and the architect of the San Giorgio Bridge, Polcevera's replacement, which opened to traffic a year ago. Says Piano, "A bridge is not a wall, bridges are unifying. A bridge that collapses, collapses three times. It left a scar of 43 human lives lost, 260 families without a home, and a city split in two."



PHOTOGRAPHY: © ANDREA BOTTO

The Polcevera Viaduct, also known as the Ponte Morandi, after the noted civil engineer Riccardo Morandi, who designed it, was considered a symbol of innovation. But the cable-stayed bridge showed signs of creep almost from its completion in 1967, and had faced continual repairs since the 1970s, with the eyes of Morandi himself, who died in 1989, fixed on it and its shortcomings. Its ultimate demise has led to extensive analysis of the structural failure, and hotly debated assignment of responsibility to everything from design flaws and construction mistakes to bad maintenance and even lightning.

While *Reviviscence* is a celebration of rebirth—"the high number of technical and logistical difficulties in this project were accompanied by a strong feeling of a revival of one's city that drove me from day one," writes one local member of the rebuilding team—the tragic event that came before is a warning to authorities overseeing infrastructure in the U.S. and around the world. Meanwhile, as of press time, the Tennessee Department of Transportation was reportedly "racing" to reopen the Hernando de Soto Bridge by the end of July, because of the financial and traffic toll its closure has had on the region. ■



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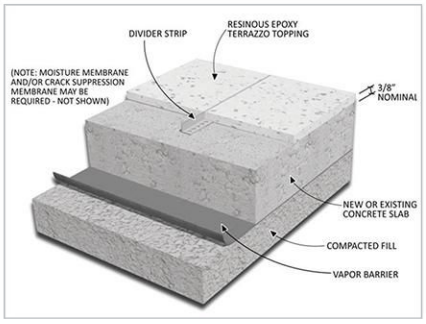




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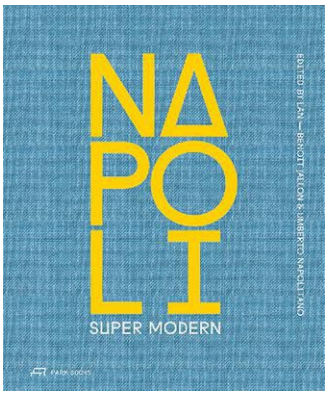


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Mediterranean Metropolis

Napoli Super Modern, *edited by LAN Local Architecture Network, Benoît Jallon, Umberto Napolitano, and Le Laboratoire R.A.A.R. Park Books, 232 pages, $50.*

REVIEWED BY ANDREW AYERS



WHEN one thinks of great Italian architecture, Naples is not necessarily the first destination that springs to mind. Even before the 1861 defeat of Francis II of the Kingdom of the Two Sicilies, when Naples fell from being the capital of an independent country to a mere port in a united Italy, its buildings had generally been rather derivative, often designed and built by men either born or trained elsewhere. This isn't to say that the city's architecture is bad or unworthy of consideration (far from it), merely that great originality of design was never Naples's forte. With the title *Napoli Super Modern*, this book—edited by Paris-based architects LAN, whose principals are Frenchman Benoît Jallon and the Naples-trained Umberto Napolitano—might lead you to think that you'd missed something where the architecture of the past century is concerned. Your expectations will soon be tempered, but the book, like the city's 20th-century buildings, is still worth a little detour.

Napoli Super Modern focuses on 18 buildings constructed between 1930 and 1960. The choice is unexplained—Napolitano's personal preferences, one suspects, after reading his introduction. Nor are we told why the arbitrary timeline was chosen, 1960 being a cutoff date that excludes, for example, Franz di Salvo's notorious Vele di Scampia housing project (begun in 1962, currently being demolished). Just as curious is the omission of the celebrated Casa Malaparte, on the island of Capri off the coast of Naples (Curzio Malaparte and Adalberto Libera, 1943), which, though it falls into the period covered, is barely alluded to. Too obvious and well-known to bother with, perhaps? Presumably the same was thought true of Luigi Cosenza's luminous Olivetti factory (1954) in Pozzuoli, a suburb of Naples, also tantalizingly alluded to but not shown.

Cosenza is honored nonetheless, since he was involved with three of the featured buildings: the Fish Market (1935), the Villa Oro (with Bernard Rudofsky, 1937), and the Cesare Battisti housing project (1947). A graduate of the engineering school in Naples and a lifelong anti-fascist, he is generally credited with introducing Modernism to the city with his vast, barrel-vaulted fish-market building. Another architect featured thrice is Marcello Canino, a graduate of Naples's Royal Polytechnic, who became "a central figure in the fascist power system" and would organize the city's 1939 *Mostra d'Oltremare* (colonial exhibition). The political difference can be felt in their buildings: where Canino is all Roman bricks, travertine, Classicism, and other obvious symbols of *italianità*, Cosenza is international to the point of universalism. A later important figure was Stefania Filo Speziale, a pupil of Canino's, who was one of Naples's first female architects and part of the trio that designed the Palazzo Della Morte condominium (1960), which makes brilliant use of a difficult hillside site. Faced with such a disparate selection of projects, Napolitano pleads an unconvincing case for Neapolitan specificity, while Manuel Orazi (one of several essayists), entertainingly sets the city's modern architecture in a wider national and international context.

Frustrations abound, though. The omissions. The competent but not-quite-good-enough English translation (an Italian edition is available from Quodlibet). The images—Cyrille Wiener's photos are fine as far as they go, but so much isn't shown of these buildings, and the drawings (beautifully done) and photographs are scattered in such a way that you're forced to flip back in search of the relevant plates when reading the project descriptions at the back of the book (by Andrea Maglio). But most of all, the hybrid concept hovers annoyingly between the serious in-depth study—which would have implied a volume of greater length and ambition—and the introductory survey, which would have required a more comprehensive approach. But, despite all that, *Napoli Super Modern* succeeds in making this reader yearn to hop on a plane and rediscover, among the city's older treasures, its 20th-century architecture, and appreciate it anew. ■





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Pictured: Atmosphera® Analog 3D for the National Museum of African American Music, Nashville, Tennessee, a collaboration with Donna Gilliam Interiors. Photo by Matt Wronski.

Sound of Music

Right on key, Gehry Partners completes the Youth Orchestra of Los Angeles' new home.

BY SARAH AMELAR

MOST SYMPHONIC halls are rarefied spaces, sequestered from urban street life. But in Inglewood, California, passersby along La Brea Avenue, a major thoroughfare, can look through the glazed facade of the Judith and Thomas L. Beckmen YOLA Center, across its shallow lobby and right into the 4,450-square-foot performance hall, all the way down to the orchestral stage. And that is entirely by design. "We wanted the goings-on here—the process of creating beautiful music together—to be visible to people walking by, not mysterious or shrouded," says Gustavo Dudamel, who oversees YOLA (Youth Orchestra of Los Angeles) as music and artistic director of its parent organization, the Los Angeles Philharmonic (LA Phil). "Cultural institutions must be vital parts of the communities they serve—it's all about transparency and connection."

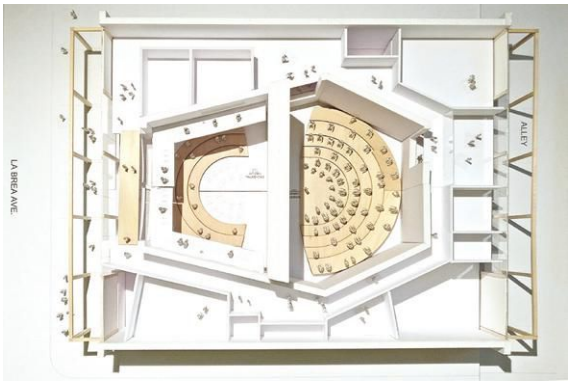
Such outreach is at the core of El Sistema, the progressive music-education program founded in Venezuela in 1975, that inspired YOLA's creation in 2007. Aspiring to empower social transformation through music, this widely emulated program offers free intensive orchestral training and instruments, with academic support and college or career guidance, to underserved youth. An immersive commitment, with after-school sessions five days a week, plus weekend activities, "it's often about engaging the entire family," says Dudamel, himself an El Sistema graduate who rose to lead its main orchestra (a title he still officially holds) in his native Venezuela before joining the LA Phil, in 2009, at age 28. "YOLA was a big factor in my decision to come to Los Angeles," says the maestro. In the program's 14 years of serving pupils from elementary through high school, it has grown from 80 to 1,300 students, and from a single site to four, within existing educational institutions across LA. Its orchestras have performed in top venues worldwide.

For YOLA's flagship and first purpose-built location, the community of Inglewood, in southwestern Los Angeles County, was chosen in part for its significant low-income, minority population. (The city is also undergoing ambitious renewal, including a state-of-the-art sports-and-entertainment district, with its



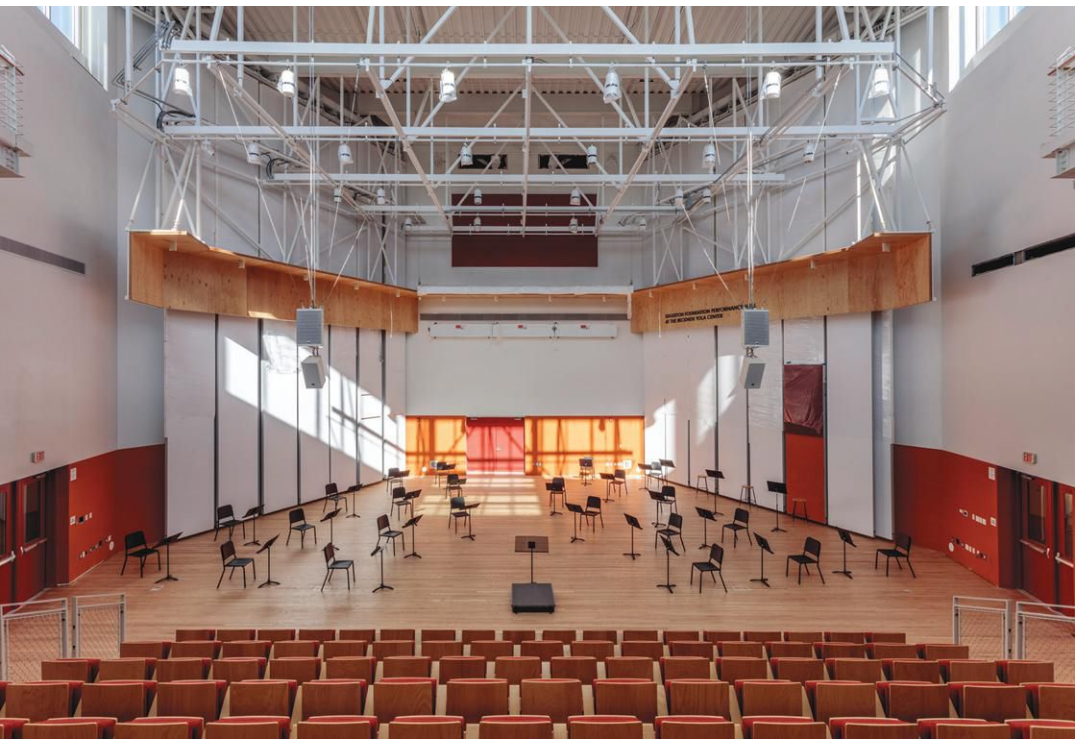
THE DAYLIT HALL has an angled glass wall at the back, plus skylights and clerestory windows (above). The restored Modernist facade (below, left) is more transparent than the 1965 original.





MODEL : BIRD'S-EYE VIEW OF CONCERT HALL

PHOTOGRAPHY: © JOSHUA WHITE (TOP); CHARLES WHITE (BOTTOM, LEFT); COURTESY GEHRY PARTNERS (BOTTOM, RIGHT)





THE SERENE white-surfaced hall has an exposed theatrical grid overhead (above). A walkway, outside the balcony's glass wall, overlooks the entry lobby and the street beyond. (left).

NFL stadium slated to host Super Bowl 2022 and its NBA Clippers arena in the works.)

To house a new symphonic hall, a rundown onetime burger joint in a former bank building might not seem an obvious choice. But Frank Gehry—who'd created Walt Disney Concert Hall, the LA Phil's main home, in 2003, and later offered his design services pro bono to YOLA—quickly saw the potential. The existing one-story pavilion had a column-free interior that he could open vertically by raising part of the flat roof and dropping the floor into an expanded basement level to achieve "that magic number of 45-feet high" for optimal acoustics. And he could give the stage the same dimensions as Disney Hall's. "I wanted the best possible acoustics for these students," he says, "and a hall that could attract members of the LA Phil and other professional orchestras to perform with YOLA and for the community." The free-standing 1965 building, with its clean-edged modern lines, had further advantages, notably its central location, near public schools, Inglewood's civic core, and transit lines.

Now sparklingly restored and transformed, the 25,895-square-foot building reopens on August 15th. On its exterior, the $14.5 million project's most significant change is a large, glassy cupola—the performance space's added height—which becomes a glowing beacon by night.

By day, sunlight filters into the hall through its transparent back wall, clerestory windows, and new skylight above its balcony and rear audience section—all openings with blackout screens and insulated acoustic glass. Also acoustical, the soaring 260-seat hall is an elongated hexagon. Designed for versatility, the space has raked, retractable theater seating and a double layer of space-dividing sliding panels that can create two acoustically isolated rehearsal venues, each holding a full orchestra.

With bare plywood and white-painted surfaces, the light-filled hall is a workspace. Its industrial-equipment and lighting grid is exposed overhead, and the balcony floor is polished concrete, with an underside of corrugated steel decking, visible from below.

The renovated interiors form a rectilinear "doughnut" configuration, with the central hall surrounded by three floors of circulation and support space, including practice, choir, and ensemble rooms, and backstage areas, plus a lobby, library, lounge, and kitchen (a particular convenience for the multigenerational family members often waiting hours in the wings). The doughnut's role is also acoustical, buffering the hall from outside noise, including jets landing at nearby LAX airport. But, in contrast to the performance space's acoustic purity, the passageways will hum with music spilling gently from practice rooms. Allowing such sounds to commingle is intentional, says LA Phil CEO Chad Smith. "It's about the energy of the place and inspiring students through the experience of overhearing one another playing."

During a recent rehearsal, the main space resonated with the rich tones of a Brandenburg Concerto, free of extraneous noise, as Nagata Acoustics International (NAI) put final touches on "tuning" the hall. Gehry had not only designed the center pro bono, but also gathered a team of top-notch longtime collaborators who donated their own services, including: NAI, under Yasuhisa Toyota's leadership; Tillotson Design Associates (for lighting); and Meyer Sound. (TheatreDNA and Sonitus participated at steeply reduced rates.) Together, they achieved a work of great functionality and experiential qualities. "It was a labor of love for us all," says Gehry. "We cried with joy when we heard the first notes played."

Though this adaptive-reuse project may not have the boldly expressive, sculptural experimentation typically associated with Gehry's work, it's a thoughtfully designed building, airy, luminous, and welcoming. And, as Dudamel recently told his young orchestra, "This is yours—your place, your home, where you can play, speak your minds, and, from here, change the world!" ■

PHOTOGRAPHY: © JOSHUA WHITE



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BY SHEILA KIM



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landscapeforms.com



Metropolis Post Windscreen System

C.R. Laurence's (CRL) new frameless-glass windscreen comprises slim, low-profile 316 stainless-steel partition posts that support glazed panels up to 8' high. The result is a durable wall or barrier that meets IBC 2018 and ASCE-$^{7}/_{16}$ wind-load requirements while preserving views. Brushed stainless steel is the standard finish, but custom powder coats are also available. The system is well suited to a variety of exterior applications such as rooftops, terraces, and swimming pools.
crl-arch.com



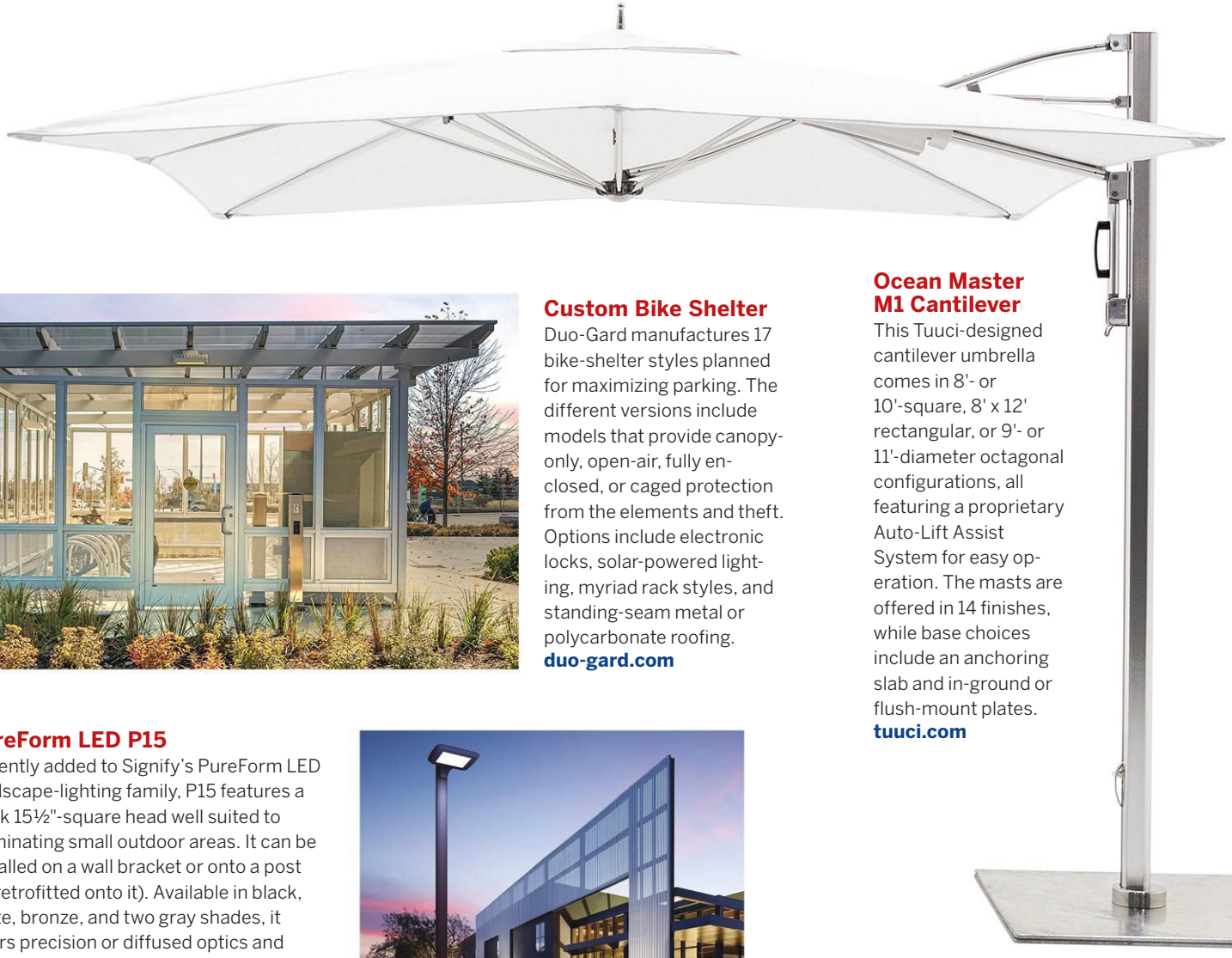
Spazio

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gibus.it



Tres Outdoor

Nanimarquina has added new outdoor versions of two of its Tres al fresco rugs. While similar to the original pieces, Tres Black Outdoor and Salvia Outdoor feature hand-loomed blocks of neutral hues with accents of black or sage green (respectively) and are composed of 100% recycled-PET fiber. Both are offered in three sizes, the largest being 9' 10" x 13' 1".
nanimarquina.com



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tuuci.com

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duo-gard.com

PureForm LED P15

Recently added to Signify's PureForm LED landscape-lighting family, P15 features a sleek 15½"-square head well suited to illuminating small outdoor areas. It can be installed on a wall bracket or onto a post (or retrofitted onto it). Available in black, white, bronze, and two gray shades, it offers precision or diffused optics and optional integrated motion sensor and emergency battery backup.
signify.com



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impertek.it



Weathered Plank 6

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dutchqualitystone.com



photo by Marc Sourbron

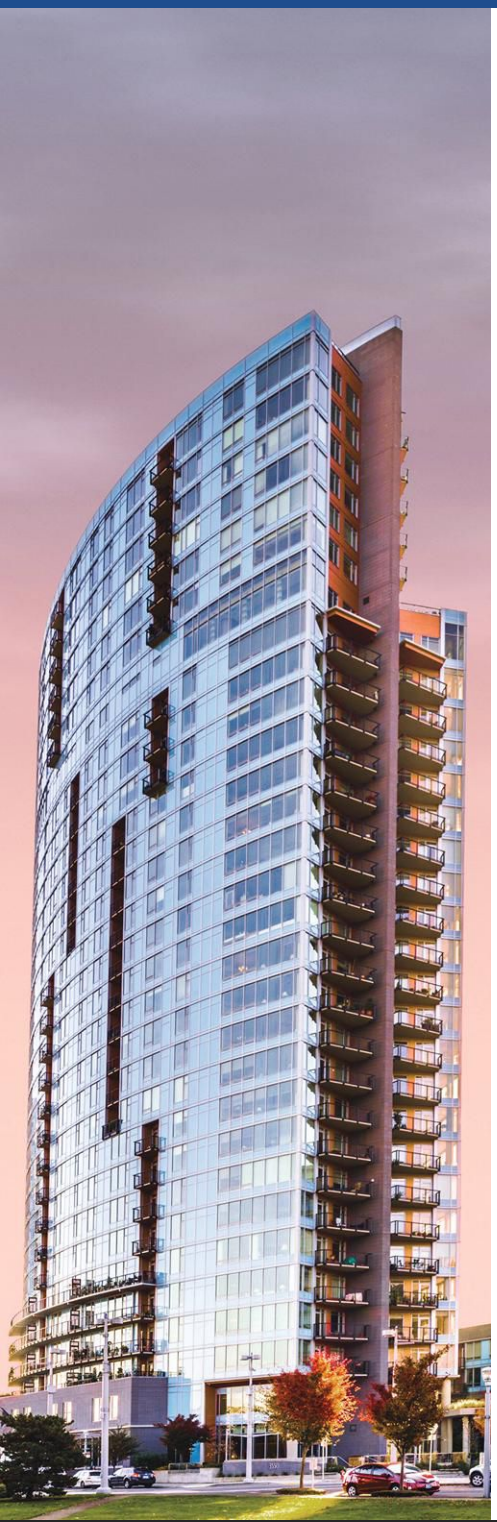
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This course will provide architects and designers education about silicone-based coating technologies that can be specified as an alternative to ceramic frit for spandrel glass applications. Attendees will learn how spandrel glass is used on a facade for aesthetic value and functionality. Specific factors related to high-performance silicone coatings will be discussed including sustainability, thermal stress breakage mitigation, facade visual harmonization, and color matching capabilities.

Using Building Performance Analysis to Enhance Data Driven Design

This course introduces the general concepts used in building performance and a practical case study on a tall building. Practitioners from the AEC industry will benefit from learning about the need for using daylight to guide design moves along with energy, glare, carbon, and cost in the early design process. Concepts will be demonstrated in an automated web-app called cove.tool but will be broadly applicable to a wide range of tools. A general overview will be followed by step-by-step guidance and a Q&A session.

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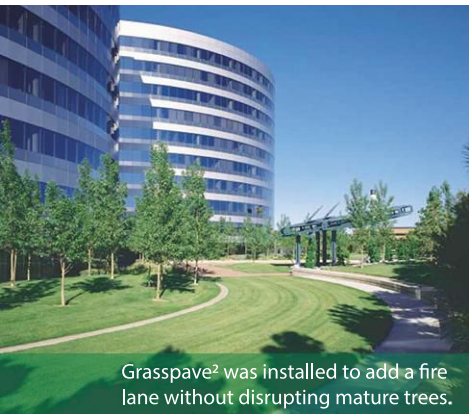
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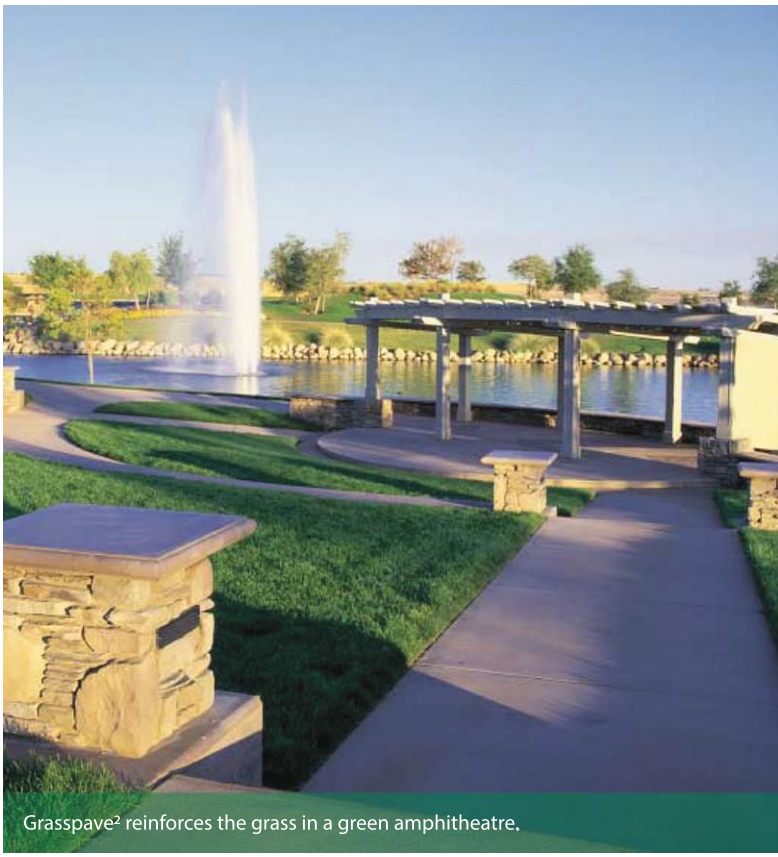
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Skin Deep

THERE'S MUCH MORE to a building than its facade, but first impressions do go a long way. This month, we look at three projects whose unusual envelopes can't help but attract attention. In Washington, D.C., a curtain wall composed entirely of concave glass panels designed by REX takes the speculative office building to a new level. In the South of France, Frank Gehry dazzles with a craggy structure, clad in glistening steel panels, that towers over the ancient city of Arles for the LUMA arts foundation. And a rippling wall of glass by SANAA is the most conspicuous, and controversial, part of a major overhaul of the venerable La Samaritaine department store in Paris.



PHOTOGRAPHY: © PIERRE-OLIVIER DESCHAMPS/VU L'AGENCE

SANAA'S FACADE FOR LA SAMARITAINE IN PARIS.

French Twist

Frank Gehry's ambitious turn for LUMA Arles rises up over the ancient city in Provence and captures its golden light.

BY ANDREW AYERS
PHOTOGRAPHY BY IWAN BAAN

"A QUESTION that pops up regularly is, 'Why a tower?'" preemptively declared billionaire Swiss pharmaceutical heiress Maja Hoffmann at the inauguration in June of the latest addition to her $175 million LUMA Foundation for the arts, on the outskirts of the ancient French town of Arles. "I just wanted to say it came out of me and not out of the architect alone." Hoffmann first got to know her architect when she coproduced Sydney Pollack's 2005 film *Sketches of Frank Gehry*. Two years later, as she was negotiating with the town of Arles to convert a 16-acre railroad repair yard into an ambitious new cultural campus, she sought out the Pritzker Prize–winner to begin "reflecting on the way art centers, creative spaces, and exhibition spaces have developed in the world."

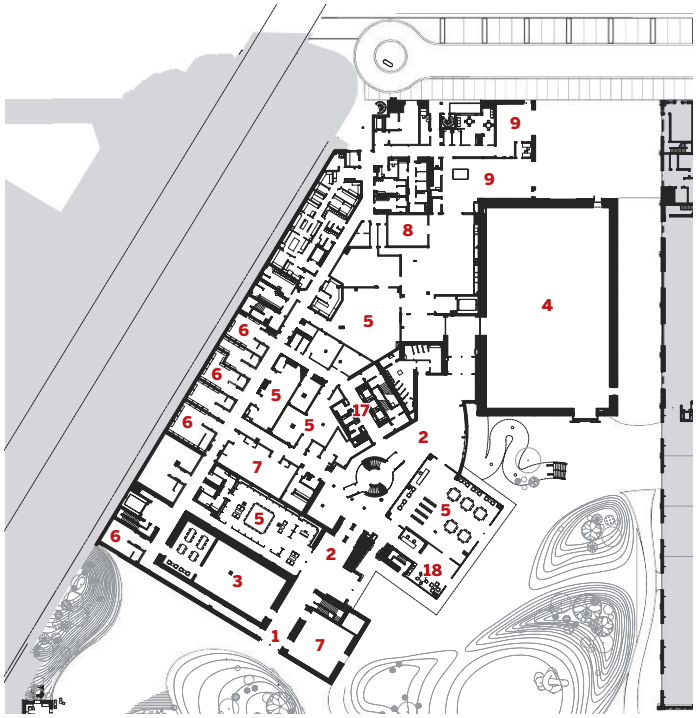
The Parc des Ateliers, as the former industrial site is known, was home to an impressive collection of 19th- and early 20th-century rail sheds and other buildings, which have since been partially demolished to create space for a new public park (brilliantly realized by Bel-





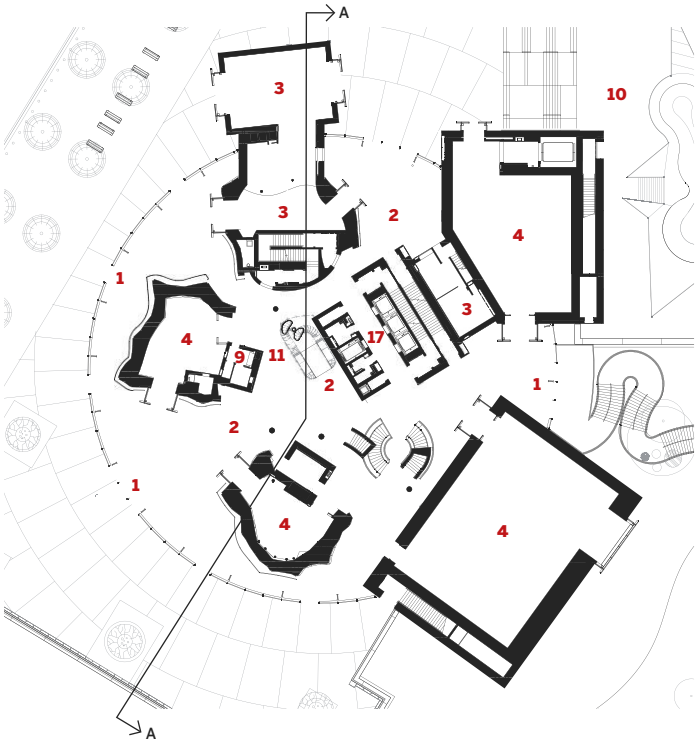


THE APPROACH to LUMA Arles on boulevard Victor Hugo – a walk from the city center with its ancient arena (opposite) – reveals the tower's base within the glazed drum.



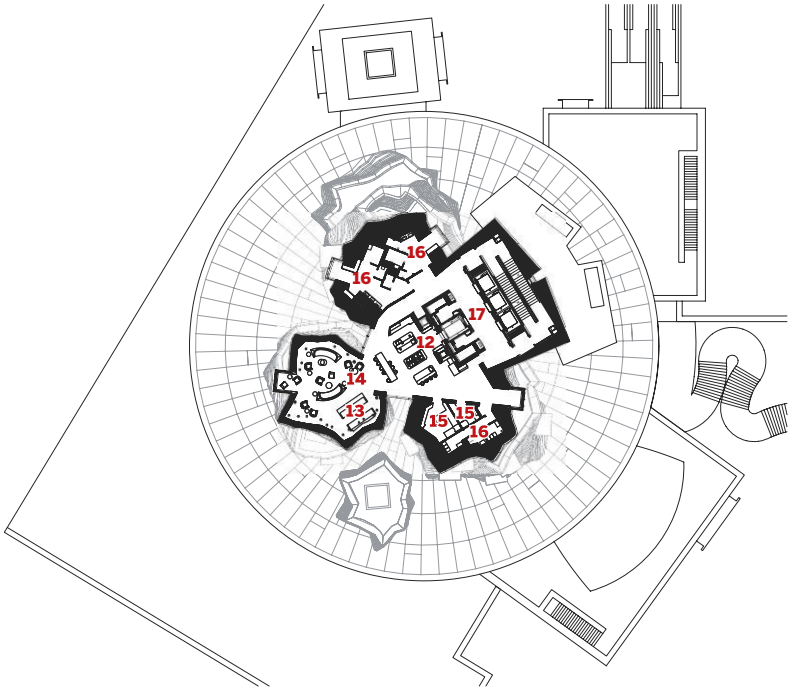
B02/GARDEN-LEVEL PLAN

0 30 FT. 10 M.



GROUND-FLOOR PLAN

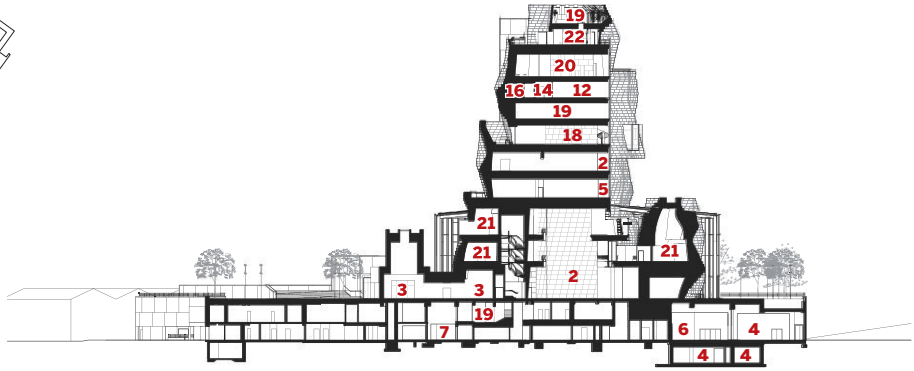
0 30 FT. 10 M.



EIGHTH-FLOOR PLAN

0 30 FT. 10 M.

1 ENTRANCE
2 LOBBY
3 CAFÉ
4 GALLERY
5 LIBRARY/READING ROOM
6 ARCHIVE
7 WORKSHOP
8 ART RESTORATION
9 LOADING DOCK
10 SKATE PARK
11 SLIDE ART INSTALLATION
12 PREP KITCHEN
13 BAR
14 LIVING ROOM/CHEF'S TABLE
15 LOCKERS
16 RESTROOM
17 ELEVATOR LOBBY
18 OFFICE
19 MECHANICAL
20 EVENT SPACE
21 SEMINAR ROOM
22 TERRACE



SECTION A - A

0 50 FT. 15 M.





THE TOWER rests on a podium (above) that faces a park created by Bas Smets (top), as well as structures previously converted for artistic use: one by Moatti Riviére (at right in top photo); two by Selldorf Architects (in top photo, above the lake and to its right).

PHOTOGRAPHY: © REMI BENALI (TOP)

gian landscape architect Bas Smets), with the remaining structures converted for artistic use—the Grande Halle by Moatti Rivière in 2007 and the rest, rather more sensitively, by Selldorf Architects in the years since (RECORD, February 2017). But, evidently believing her foundation (which combines the first two letters of her children's names, Lucas and Marina) needed a contemporary architectural statement, Hoffmann ordered up a bit of that old Bilbao magic to help put LUMA Arles on the global cultural map.

The program "developed as we went," says Frank Gehry. "Maja was not just a client who said, 'Do a building.' She turned out to be a fantastic artist on her own, and so I look at this as a collaboration." Yet it seems it was a collaboration in customization, since the basic concept of the LUMA tower is remarkably similar to Gehry's 2008 unbuilt design for the National Museum in Andorra (the subject of the notorious 2015 film *The Competition*). After seeing a rendering of the project, Hoff-



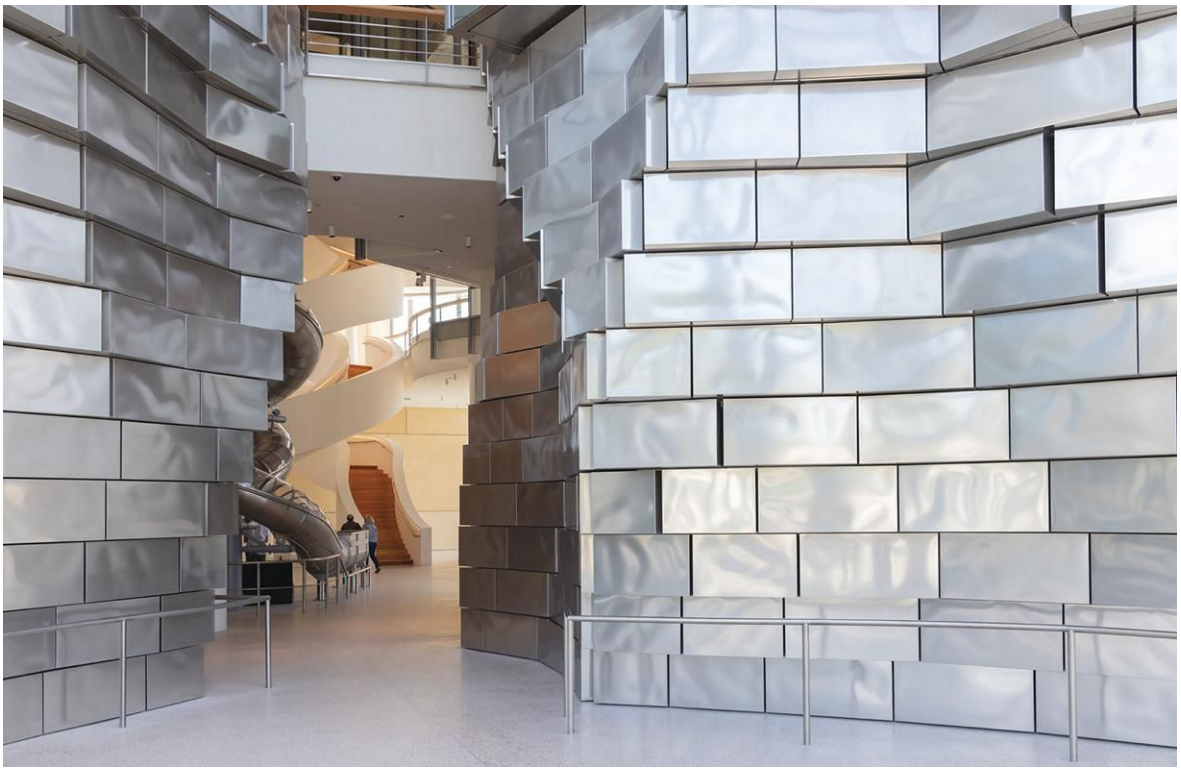
mann is said to have asked if she might have something similar. (In the film, Gehry can be heard saying, "I don't think we could do this anywhere else. This is kind of done for here.") In Andorra, the highly irregular form of the proposed tower was inspired by the craggy Pyrenees that loom over the principality; in Arles, where there are no crags in sight, Hoffmann justified her choice as evoking the rugged Alpilles hills far in the distance, as well as its being a "lighthouse"—"my desire was to see the sea from the tower," she said.

Twisting and turning 184 feet up into the Arlésien sky (if measured from the entrance on boulevard Victor Hugo—or 217 feet from the Parc des Ateliers, which was scraped down to bedrock when the railroad was first laid in 1844), the new LUMA building comprises a giant rectangular podium—containing exhibition galleries, meeting rooms, technical areas, and a library—on which rises the tower proper, a 10-story edifice containing more galleries, a café, an auditorium, "seminar rooms in which discussions can be engaged" (Hoffmann's words, since her foundation aims not just to display art but to produce it through artists' residencies), a whole floor of members' rooms, offices, and, of course, a viewing terrace at the top. On the podium, encircling the tower's first three levels, is a steel and glass "drum" (which Gehry facilely compared to Arles's Roman arena) that encloses a spectacular public atrium ascending between the various irregular massifs of the building's structure. This consists of a concrete core supporting a free-form steel frame, with the ensemble clad partly in giant concrete panels, made to resemble stone, and partly in an eye-catching cascade of ashlar-like "pixels" in stainless steel (11,500 of them altogether) that shimmer in the light. As the sun sets, they wink and twinkle in shades of peach and pink, leading Gehry to compare the effect to Van Gogh's *Starry Night Over the Rhône*, painted in Arles in 1888 (today at the Musée d'Orsay).

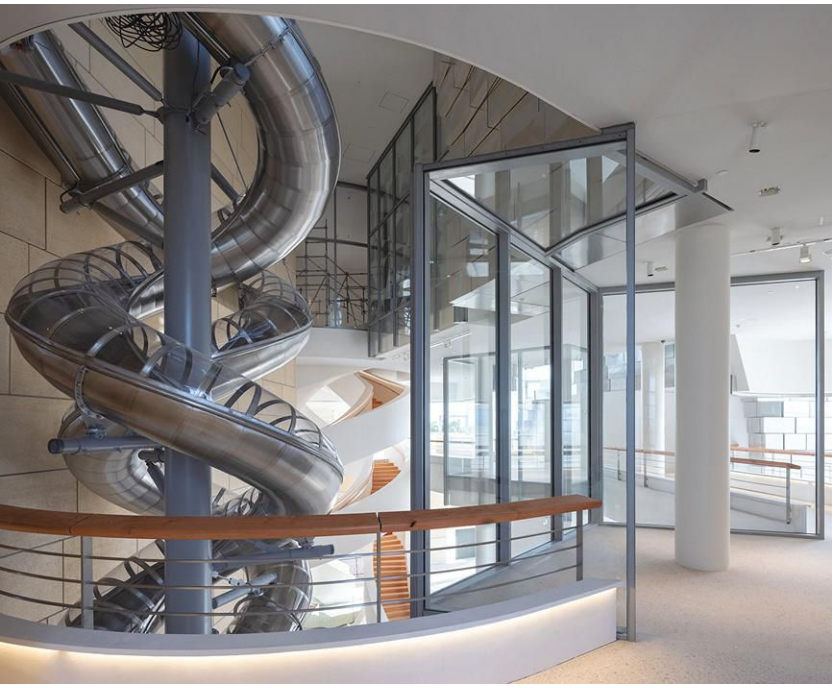
While the requisite Gehry fireworks whizz and bang as expected, the usual Gehry weaknesses are present too: convoluted spaces that often seem less than ideal for their purpose (while this may be the inevitable price to pay in the tortuous tower, it seems inexcusable in the orthogonal podium, where some poky, badly detailed galleries can be found); in a certain sloppy handling here and there (with so much going on, you can't control it all); and in a hard-to-negotiate layout (the hunt for the restrooms can be epic, and you may miss the door to some key galleries if you're not paying



INSIDE THE DRUM, glimpses of Carsten Höller's slides and a double-helix stair by Gehry (right) are visible from the atrium on the ground floor. Here one can look up toward the top of the tower through the glass roof (opposite). The atrium's third level (above) offers views, plus proximity to the stainless-steel blocks.









THE STAIR (top) and the Höller slides (left) are seen from the atrium's second floor as they ascend to the third level. LUMA Foundation artworks are displayed in a garden-level gallery (above). The tower reflects the sunset beyond the entrance to the existing Parc des Ateliers (opposite).



attention). Rather surprisingly, for a building that is a sculptural object in the landscape, it has a definite, and to some not so prepossessing, back side ("flat butt" wrote one commentator when I posted a picture of the rear view on Instagram). Site-specific artworks are incorporated everywhere, among them a skate park by Koo Jeong A on the roof of the main entrance-level gallery, a ceramic mural by Etel Adnan in the auditorium, and two of Carsten Höller's vertiginous slides in the atrium, which provide a fast route down from level three.

Located not only next to a UNESCO World Heritage Site, whose sole towers, until now, were the belfries of Romanesque churches, but also in the flat landscape of the Camargue, the LUMA tower can be seen from literally miles around. When asked if it was important that her building should dominate its context, Hoffmann shut down all discussion with a peremptory "It was not important to me." This disingenuousness—as monumental as the building she and Gehry have created—will be further grist for the more disgruntled locals, who have compared the tower to a crumpled tin can. Architect Marc Barani knew there was no competing with it when he built his 2019 École Nationale Supérieure de la Photographie just opposite, instead choosing to play with the proximity in his low-slung, horizontal building. The antithesis of the "Look at me!" billionaire's bauble, it creates mystery and a sense of place out of the intangibles of light, shade, and space. Where one side of the boulevard is all subtlety and suggestion, the other is relentless demonstration, the architectural equivalent of Coney Island. But it's Luna—sorry, LUMA—Park that is by far the more photogenic of the two and that, at least initially, will draw the crowds, perhaps turning Hoffmann's esoteric contemporary-arts campus into the popular destination she dearly wishes it might also become. ■

Credits

ARCHITECT: Gehry Partners — Frank Gehry, partner in charge; David Nam, design partner; Brian Aamoth, managing partner; John Bowers, technical partner; Kamran Ardalan, project manager/architect; Meaghan Lloyd, chief of staff

ARCHITECT OF RECORD: STUDIOS Architecture

ENGINEERS: Terrell (structural, m/e/p); T/E/S/S (facade)

CONSULTANTS: Bureau Bas Smets (landscape architect); Gehry Technologies (BIM); URSSA (steel structure); Eiffage Metal (metal facade); L'Observatoire and Ingelux (lighting); Cabinet LAMOUREUX (acoustics); CASSO & Associés (fire/life safety); Bureau MIchel Forgue (cost/specifications)

GENERAL CONTRACTOR: Vinci Construction

CLIENT: LUMA Foundation

SIZE: 170,000 square feet

COST: withheld

COMPLETION DATE: June 2021

Sources

STAINLESS-STEEL BLOCKS: Citynox

PRECAST PANELS: Mediteranée Préfabrication

INTERIOR GLASS WALLS & METALWORK: Alquier



Nouveau Riche

A historic emporium for the people is transformed into a luxury shopping mall.

BY ANDREW AYERS

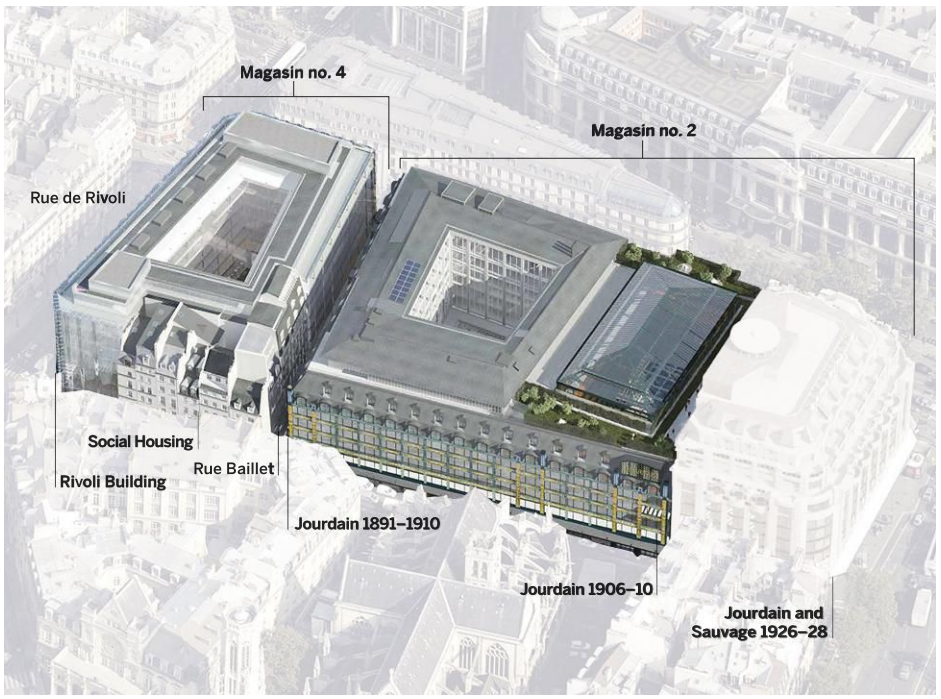
IT WAS ALL the fault of the glass flooring. When Paris department store La Samaritaine was first built, at the turn of the 20th century, electric lighting was in its infancy: to increase illumination, every level, from the atrium's summit to the three-floor basement, was paved with translucent Saint-Gobain glass block—1 million square feet of it—set into metal T joints. Covered up and forgotten in later decades, it would prove the building's undoing. In 2005, the authorities deemed the flooring a safety hazard—the T joints, they said, would buckle in a fire—and closed the store overnight. In the aftermath of the debacle, La Samaritaine's owner, luxury giant LVMH, drew up an $890 million redevelopment plan. Where once the Samar', as it was affectionately known, had sold everything imaginable to anyone who walked through the door, it would now cater exclusively to wealthy tourists: 215,278 square feet of shopping mall peddling high-end brands—a 26-room,46-suite five-star hotel—as well as 161,459 square feet of commercial office space. In return for rubber-stamping this giant gentrification job, the City demanded, and got, 96 social-sector apartments and a daycare center.

The 2010 architectural competition, won by Japanese firm SANAA, concerned two buildings: the iconic Magasin no. 2 (built in three phases: by Frantz Jourdain in 1891–1910 and 1906–10, and by Jourdain with Henri Sauvage in 1926–28), which occupies a huge city block between the Seine and the rue Baillet; and the smaller Magasin no. 4, which occupies the block between the rue Baillet and the rue de Rivoli, one of Paris's principal shopping streets. While Magasin no. 2, which contains Jourdain's celebrated Art Nouveau atrium, was land-

A HOTEL occupies the former department store's Seine-facing end (below). New retail occupies the building next door, which holds Jourdain's grand atrium (opposite), updated by Yabu Pushelberg.



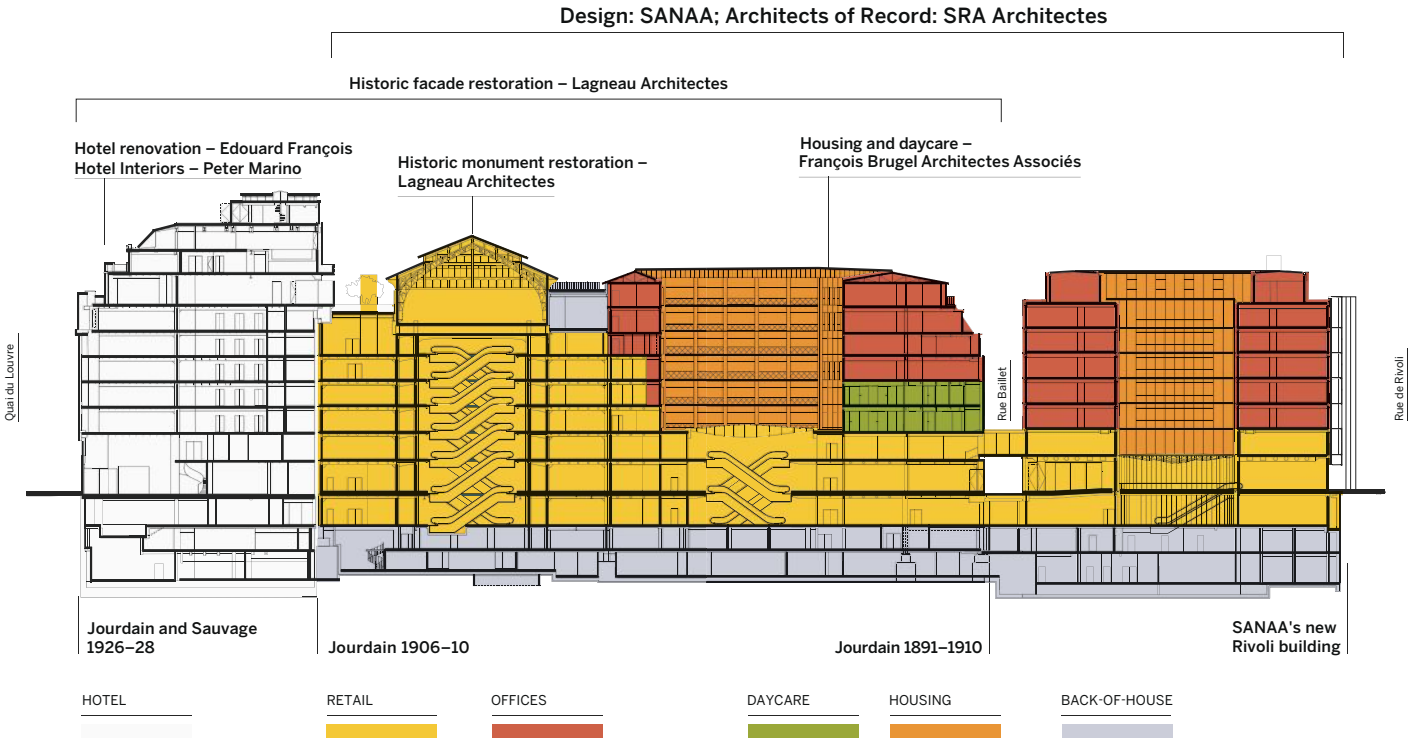
PHOTOGRAPHY: © WEARECONTENTS



AXONOMETRIC

marked, Magasin no. 4—a hodgepodge of 19th-century buildings hastily knocked together in 1932–34—was not. SANAA's first, and most controversial, decision was to demolish Magasin no. 4, with its many awkward changes of level, and build anew. Since it was only natural that five-star guests should enjoy views of the Seine, the end of Magasin no. 2 overlooking the river (the Jourdain/Sauvage part) has become the hotel (opening this fall, it was renovated by Édouard François, with interiors by Peter Marino); the grand atrium part (1906–10) has been fully restored for retail; while the rue Baillet end (1891–1910) accommodates retail, offices, social housing, and daycare. The new Rivoli building contains both retail and offices, while on the same block, a side-street row of 17th-century houses, whose demolition the City refused, has been converted into more social apartments.

In the spirit of the historic store, SANAA chose steel and glass for their new Rivoli building and sought to bring daylight into

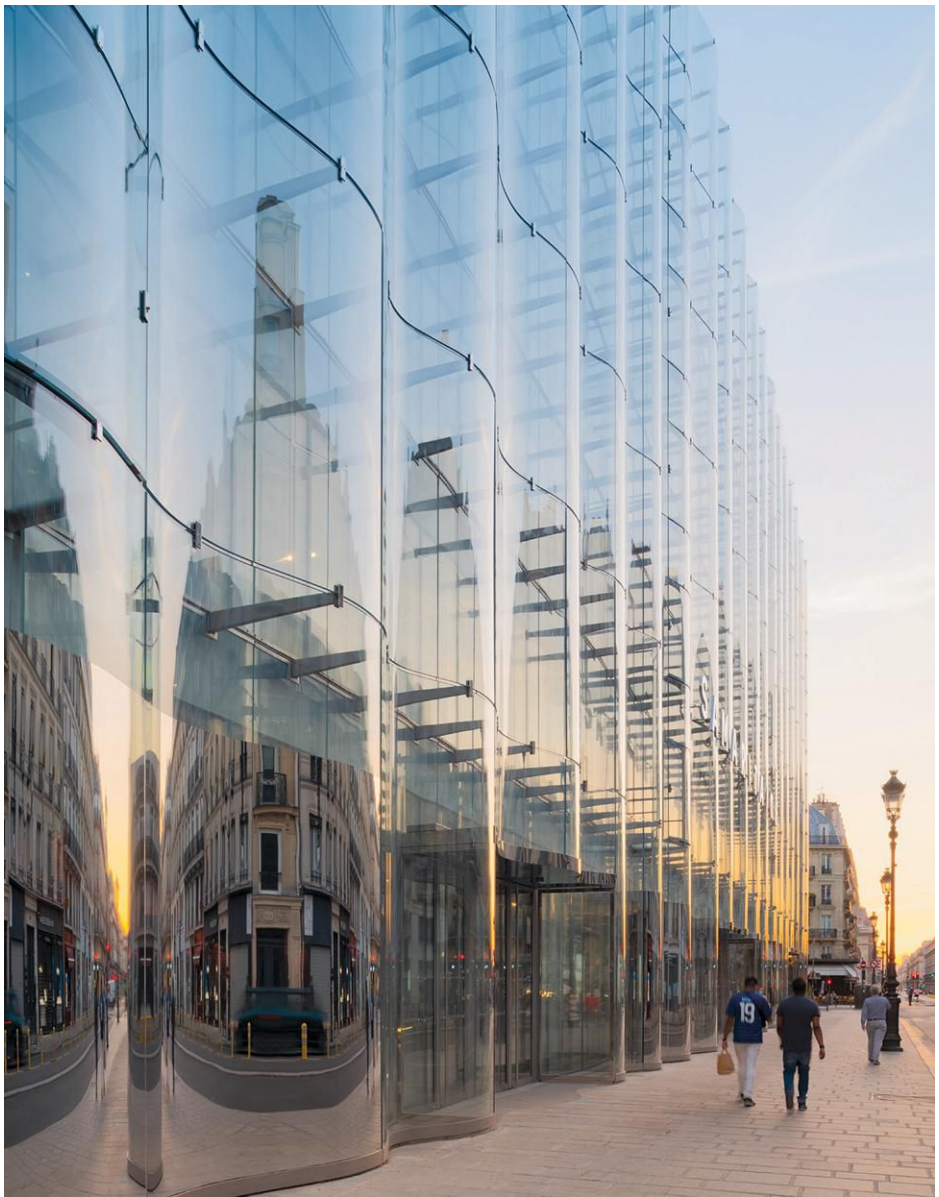


LONGITUDINAL SECTION AND ORGANIZATION OF FUNCTIONS

0 40 FT.
10 M.

A RESTORED PEACOCK fresco and decorative ironwork grace the historic atrium's upper levels (right). SANAA's wavy glass facade (right, bottom) is the face of the new Rivoli building.





every part of the complex, both new and old, organizing it around three giant light wells—one in their new building, another that they have carved out of the rue Baillet end of Magasin no. 2 (100,000 square feet were lost in the conversion), while the third and final is Jourdain's atrium. Where the retail parts of the complex were concerned, the client was LVMH subsidiary DFS Group, formerly Duty Free Shoppers, which is present in airports the world over.

Most customers will enter from the new rue de Rivoli building, where, by demolishing Magasin no. 4, SANAA and LVMH engineered themselves the chance to write an entirely contemporary chapter in the storied saga of La Samaritaine. But while, in 1910, open floor plates and glass curtain walls were the acme of radicality, a century later they are the epitome of banality, especially in an era that refuses the decorative splashes so dear to our great-grandparents. SANAA's renderings promised a milky, diaphanous, rippling facade, like draped silvery gauze, that would allow tantalizing views in (detractors nicknamed it "the shower curtain"); what we got is a double elevation, with an orthogonal, waterproof, heavily fritted inner layer of glass, over which is placed an entirely ornamental and miserably stiff corrugated outer layer, with display windows awkwardly inserted at street level. On rare occasions, when conditions are right, the facade lights up with reflections, but most of the time it is glassily dull, like a dead-fish eye (James Carpenter got far closer to the spirit of SANAA's renderings at the new Nordstrom in New York).

Things get worse inside. Low-ceilinged and lackluster, the retail floors of the Rivoli building (the basement, ground, and second levels, since "shoppers won't climb any higher," according to DFS) are so generic and joyless you might be in any airport anywhere in the world. To link its new building to Magasin no. 2, SANAA immediately forces visitors down escalators into the basement, which it has opened up to the sky, thanks to a glass-walled, irregular, cylindrical courtyard structure—a nicely realized piece of complex geometry that gives unfortunate views onto dreary gray inner facades. From there, a subterranean link takes you under the rue Baillet to the restructured part of Magasin no. 2, where a more conventional skylight looks up onto another set of dull new courtyard eleva-

PHOTOGRAPHY: © SAMARITAINE (TOP); JARED CHULSKI · SRA ARCHITECTES (BOTTOM)





A GLASS-TOPPED bank of escalators rises from the basement level of the transformed Magasin no. 2 (above). Low-ceilinged retail (left) typifies the experience in SANAA's new Rivoli building. On the atrium's top level, an eatery displays LVMH's bottled brands (opposite).

PHOTOGRAPHY: © WEARECONTENTS, SAMARITAINE (OPPOSITE)



tions, after which the *promenade architecturale* continues into the 1906–10 part of the building, where you climb, finally, into Jourdain's splendid atrium.

Though there was no way of modifying or replicating the Saint-Gobain glass floors to comply with safety regulations, the restoration of this Art Nouveau glory, and of the historic street facades, is the one triumph in this otherwise sorry, soulless, cynical story. Heritage specialist Jean-François Lagneau has seen to it that wrought-iron balustrades have been imperceptibly stretched to regulation height, that ceramics and other decorative elements hidden over the years have been uncovered and restored, and that the original color scheme and gilding has been reinstated. He has even attempted an evocation of the Saint-Gobain glass block on the top floor of the atrium beneath the roof, which has regained its lost glazing bars and gained in thermal comfort, thanks to state-of-the-art electrochromic glass in the skylights. But if you're hoping to access the famous panoramic restaurant terrace from up here, forget it: annexed by the hotel, it is now reserved for guests and private functions. Them that's got shall get, them that's not shall lose. ■

Credits

DESIGN TEAM: SANAA

ARCHITECT OF RECORD: SRA Architects

INTERIOR DESIGNER: Yabu Pushelberg (retail)

HISTORIC-MONUMENT RESTORATION : Lagneau Architectes

EXECUTING PROJECT MANAGER: Egis

GENERAL CONTRACTOR: Vinci Construction France

CONSULTANTS: Frener & Reifer (facade installation on Rivoli building); SMB-CCS Consortium (structural steel); VIRY (glass roof); SOCRA (decorative-element renovation); AOF (ironwork restoration); Atelier Bouvier (plasterwork restoration)

CLIENTS: Grands Magasins de La Samaritaine (entire project); DFS (department store)

SIZE: 753,000 square feet (total project); 215,000 square feet (department store)

TOTAL PROJECT COST: $891 million

COMPLETION DATE: June 2021 (retail only)

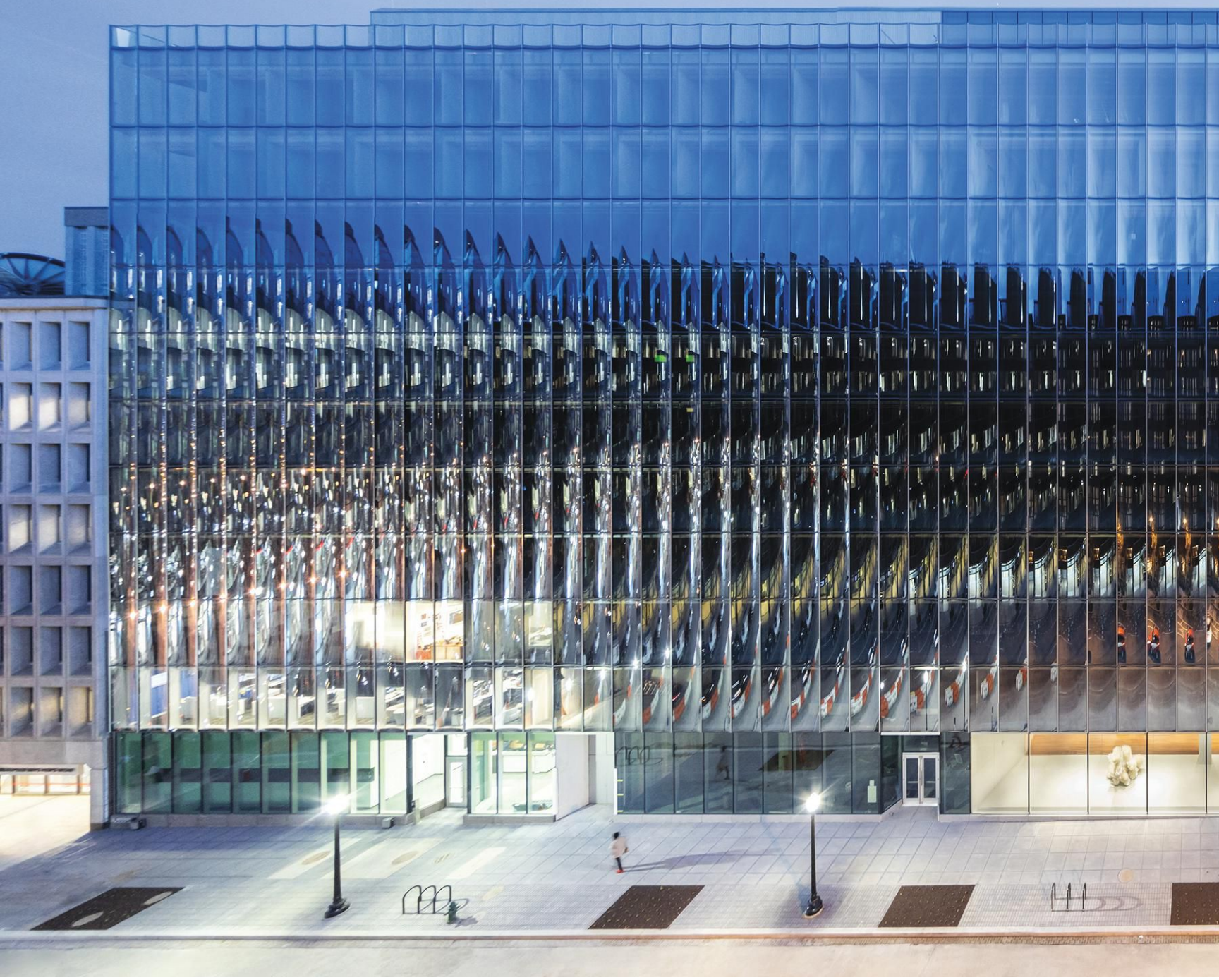
Sources

GLASS CURTAIN WALL: Pilkington, UK (laminated float glass); Interpane; Cricursa

Rise and Shine

A quiet business district in Washington, D.C., comes alive with a shimmering office building by REX.

BY JOSEPHINE MINUTILLO





PHOTOGRAPHY: © IWAN BAAN

THE LONGER of the two fully glazed facades faces north. The 280 feet of concave glass panels there produce a kaleidoscopic effect.

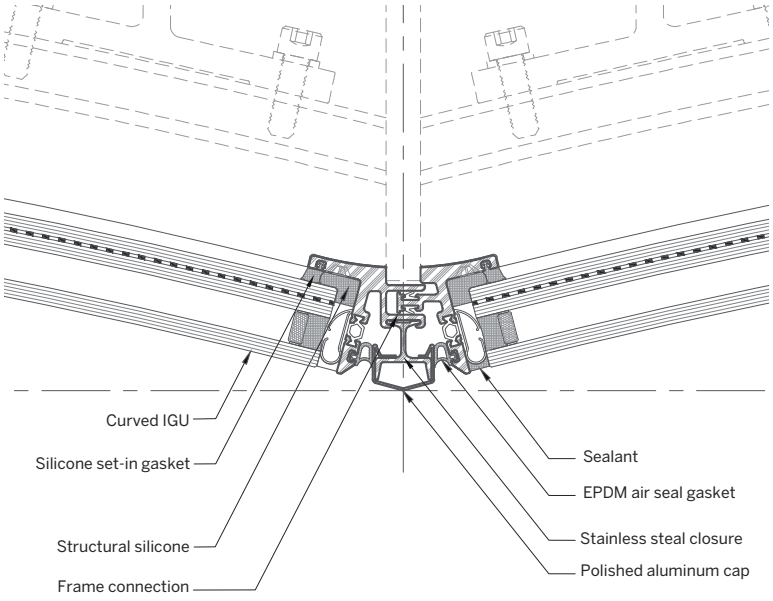
"WE TEND to innovate on our facades," Joshua Ramus of REX says about his New York–based firm's portfolio, which now includes a 450,000-square-foot office building in Washington, D.C. It helped that, until recently, REX shared a studio with facade consultant Front, a collaborator on nearly every major project the architecture firm has undertaken. Two projects, Vakko Fashion and Power Media Center in Istanbul (RECORD, November 2010) and Five Manhattan West in New York's Hudson Yards (RECORD, March 2018), involved putting a fresh face on old structures: the former incorporated large panels of curving slumped glass and the latter a pleated glass curtain wall. By virtue of its typology—requiring flexible raw space—and its corner site, with two prominent street frontages, the 12-story office building in the nation's capital, despite being new construction, again focuses on the building's skin. With an ethereal all-glass facade comprising 978 identically fluted panels along the entirety of its north and west sides, the rectangular 2050 M Street sits like a jewel in the city's Golden Triangle business district, between Dupont Circle and the White House.

According to Ramus, the facade design—its modulation was inspired in part by the high-relief exteriors of the building's Neoclassical and Brutalist D.C. neighbors—came about almost immediately after his being approached by Tishman Speyer, the building's developer, in 2015. Tishman Speyer wanted premium office space that, unlike many of those neighbors, would offer tenants as much daylight and transparency as possible—but, as a spec building, keep costs down. The mullionless glass curtain wall of concave panels that Ramus proposed would have been prohibitively expensive if not for an unusual plan to procure the glass, conceived with Marc Simmons, a principal of Front, and presented to Tishman Speyer with the design. (Herzog & de Meuron's Conrad hotel [RECORD, June 2021], built at the same time just a mile away—and of similar height, as limited by D.C. zoning—was meant to feature floor-to-ceiling convex glass panels from top to bottom, but that was value-engineered to just a band of curved glass at street level.)

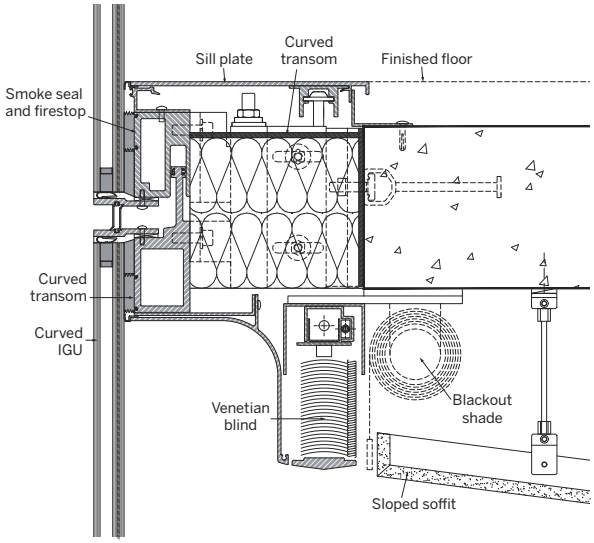
Tishman Speyer was willing to try something untested. "We committed to the glass before we had a contractor, and then we assigned the glass to the contractor," says the







CURTAIN WALL PLAN DETAIL



CURTAIN WALL SECTION DETAIL

Credits

ARCHITECT: REX — Joshua Ramus, principal in charge/design principal; Matthew Uselman and Cristina Webb, project leaders

ARCHITECT OF RECORD: Kendall/Heaton Associates

ENGINEERS: WSP (m/e/p); LERA (structural); Wiles Mensch (civil); ECS (geotechnical)

GENERAL CONTRACTOR: Davis Construction; TSI Corporation (curtain wall installation)

CONSULTANTS: Front (facade); Cerami (acoustics); George Sexton (lighting); Arup (life safety/code); Lerch Bates (window-washing); Fabbrica (curtain wall engineering and fabrication)

CLIENT: Tishman Speyer

SIZE: 450,000 square feet

COST: withheld

COMPLETION DATE: March 2020

Sources

GLASS: North Glass

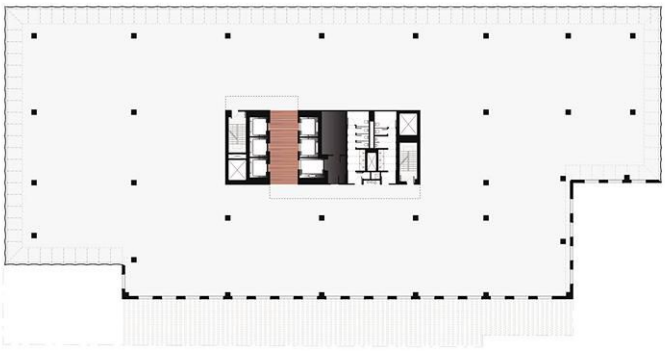
PRECAST CONCRETE: Arban & Carosi

ELEVATORS: Otis Elevator Company

LAMINATED STONE PANELS: R. Bratti Associates

CUSTOM WOODWORK: Jefferson Millwork & Design

SOLID SURFACING: ASSI Fabricators



TYPICAL FLOOR PLAN

0 20 FT.
5 M.



A LAW OFFICE on an upper floor, designed by Washington, D.C.–based LSM, offers enhanced views of the city.

developer's managing director, Rustom Cowasjee, calling the non-traditional procurement process the designers proposed enlightening, and ultimately successful. "We've prepurchased large, complicated pieces of equipment in the past, particularly mechanical, but never before had we done that for glass."

Typically, final design is assigned to the facade contractor, who is brought on much earlier in the design process. "As a commercial building, you give up competitive leverage if you do that," says Simmons. Instead, REX and Front, with associate architect Kendall/Heaton, did a full analysis of the glass panel, then asked several international companies to give an estimate to produce the glass. Five fabricators were shortlisted and paid to make prototypes of the actual 11-foot-3-inch-tall by 5-foot-wide fluted panels. Tishman Speyer funded team members to go around the world to review the prototypes' quality. "The price range was more than two to one, which was just crazy," recalls Simmons. "If you worked with only one or two facade contractors, you could be paying twice as much." They selected North Glass in China.

Another cost-cutting measure came with the use of a bending tempering furnace (BTF)—which heats and curves flat glass like a sushi rolling mat—rather than using molds, as REX and Front had done at Vakko. "BTF's have been around for at least 20 years," explains Simmons, "but have been increasing in scale and precision so that the optical quality and geometrical repetition is very good." From the exterior, the overall effect of the building's finished facade—constructed with an easy-to-install unitized system—is that of a sparkling gem reflecting its surroundings with crystalline precision. From the interior, there is extreme openness to the outside without distortion, but with an added dimension that elevates the view from that of the ordinary floor-to-ceiling flat glass we've all become accustomed to.

Perimeter columns are set 12½ feet away from the curtain wall to further enhance that feeling of openness. At the northwest corner, where the two prominent walls of glass meet, the thin (8-inch) floor slabs, clearly visible through the glass, appear like floating sheets of paper rather than stacks of concrete. Despite being located on a corner, the building does not have party walls; the south and east facades feature a combination of the fluted glass panels and fenestrated walls. The conventional plan puts the service core right at the center within the fully glazed perimeter. The curtain wall's insulated glass has two high-

PHOTOGRAPHY: © IWAN BAAN (OPPOSITE, BOTH); ALAN KARCHMER (TOP)





THE LOBBY features rich finishes and an artwork by Tara Donovan (above). The 8-inch floor slabs appear paper-thin through the glass (left).

performance low-E coatings to lessen solar-heat gain. Because the most exposed wall of glass faces north, it was advantageous in reducing energy consumption, too. Crowning the assembly is a cornice of 156 shorter but similarly fluted panels (4 feet 6 inches tall by 5 feet wide) that serve as a railing for the penthouse's common roof garden.

A small portion of the building was finished in 2018 to allow CBS TV studios, which occupied the site's previous structure, to move in early. Much of the remaining office space, substantially completed early this year, has since been leased to law firms, which have also taken over parts of the REX-designed lobby, clad in rich wood and graphic marble as a counterpoint to the crystalline glass.

Though Tishman Speyer won't divulge the final cost of the building, or the facade—"We had a budget, and we were within it using this procurement process," Cowasjee maintains—Ramus says the high-end, bespoke product his team produced was only slightly more expensive than a commodity facade: "This is a spec office building; they weren't going to do a facade that was 30 percent more expensive than a conventional system. It just wouldn't pencil." By taking a calculated risk, however, they ended up with architecture that fits right into its context but is a world apart. ■

PHOTOGRAPHY: © ALAN KARCHMER (TOP); IWAN BAAN (BOTTOM)



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INTERIORS SYMPOSIUM: ON-DEMAND

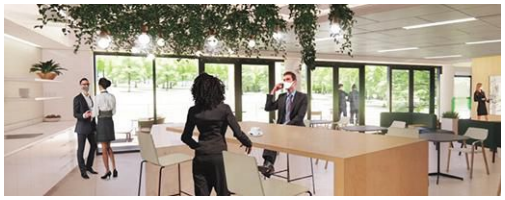
Join *Architectural Record* for an exploration of color, wellness, and sustainability in interior spaces.

Learn from experts about how to use walls to convey a message, how to choose colors to illicit a desired response, how to control airflow, clean and filter the air, and how to properly evaluate interior materials for sustainability.

Plus, learn how COVID-19 has impacted the design needs for interior spaces, including changes to building programs, as well as how to protect building occupants from COVID transmission.

Earn 1 AIA LU/Elective; 4 AIA LU/HSW; 1 IDCEC CEU; 4 IDCEC CEU/HSW; 3 GBCI CE Hour.

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Ceilings and Wall Partitions for Healthy, Sustainable Spaces

Credits: 1 AIA LU/HSW; 1 GBCI CE Hour; 1 IDCEC CEU/HSW; 1 LEED AP BD+C; 1 LEED AP ID+C; 1 WELL AP; 1 AIBD P-CE; 0.1 IACET CEU

This course will discuss the key elements of healthy and sustainable interiors based on a recent Occupant research study, and the added considerations related to COVID-19 virus transmission. Participants will learn how interior finishing systems, in particular ceilings and wall partitions, can help address these concerns.

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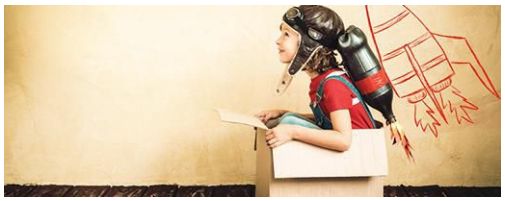


Three Lenses of Health & Materials

Credits: 1 AIA LU/HSW; 1 GBCI CE Hour; 1 IDCEC CEU/HSW; 1 AIBD P-CE; 0.1 IACET CEU

This presentation offers a more holistic approach to material evaluation – the Three Lenses of Health & Materials. Each lens examines a key impact of building products on our health and the environment: embodied carbon, green chemistry, and circular economy. In addition to identifying these impacts, this course offers questions we can ask to move the market toward better products for ourselves, our clients, and the world.

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This course reviews the current state of hygiene, health and wellness expectations in commercial and public restrooms. Presenters will share quantitative insights from building industry and design professionals and explore emerging health and wellness certification standards, such as WELL Certified and GBAC STAR. Restroom touchpoint and problem areas will be reviewed, along with relevant solutions.

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The Human Color Experience and Color Trends 2021

Credits: 1 AIA LU/HSW; 1 IDCEC CEU/HSW; 1 AIBD P-CE; 0.1 IACET CEU

This course explores physical and emotional responses to color that shape our color preferences, in addition to insight on color trends with the Color Trends 2021 Palette and Color of the Year.

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CEU

BUILDING TYPE STUDY 1,032

URBAN TRANSPORTATION

As the vital arteries that connect people and places within and beyond metropolitan areas, transportation hubs are the lifeblood of urban centers. On the pages ahead, RECORD explores imaginative solutions for such infrastructure, from an elegant pedestrian bridge in Lower Manhattan to an ongoing megaproject transforming Stuttgart's central rail station and the heart of the city. Despite the range in scale, these architecturally inventive projects enhance the appeal of getting from point A to point B by train, bus, bike, or on foot. Reading about them and taking the online quiz earns one hour of continuing-education credit.



PHOTOGRAPHY © DAICI ANO / PHOTO: SHEARD ARCHITECTURE.COM

TAKANAWA GATEWAY STATION, TOKYO
KENGO KUMA AND ASSOCIATES

CONTINUING EDUCATION

AIA Continuing Education Provider

To earn one AIA learning unit (LU), including one hour of health, safety, and welfare (HSW) credit, read the "Urban Transportation" section and complete the quiz at continuingeducation.bnpmedia.com. Upon passing the test, you will receive a certificate of completion, and your credit will be automatically reported to the AIA. Additional information regarding credit-reporting and continuing-education requirements can be found at continuingeducation.bnpmedia.com.

Learning Objectives

1 Outline strategies for expanding landmarked or listed transportation facilities that preserve their historic character while improving their utility for contemporary users.

2 Explain how urban transportation hubs can be designed to catalyze development and provide linkages among previously disconnected districts for both passengers and pedestrians.

3 Describe low-energy climate-control and illumination strategies suitable for transportation facilities.

4 Describe the innovative structural solutions and advanced construction methods showcased in the featured transportation facilities.

AIA/CES Course #K2108A





PHOTOGRAPHY: © ACHIM BIRNBAUM

Into the Deep

Ingenhoven Architects' long-running project will expand Stuttgart's main station with a light-filled, below-grade train hall in smooth, sculpted concrete.

BY MARY PEPCHINSKI

THE VIBRANT CITY of Stuttgart has long been a strategic commercial hub, nestled in southwest Germany and home to companies such as Bosch, Mercedes-Benz, and Porsche. Its rail infrastructure is vital to local and regional mobility, and a major upgrade has been planned since the early 1990s. Stuttgart21, as it is called, includes four new stations, 40 miles of tunnels, and 44 bridges at a cost of $9.75 billion. The centerpiece is the new main station, designed by Christoph Ingenhoven (founder of Düsseldorf-based Ingenhoven Architects) with the late Frei Otto, the 2015 Pritzker Prize laureate known for his experiments with lightweight structures. The team was chosen after a competition in 1997.

The brief was challenging. Stuttgart's inner city is oriented roughly north–south in a valley, with an existing terminus train station at its northern tip. The Neo-Romanesque edifice by Bonatz and Scholer, completed in 1928, has 16 aboveground tracks, and the competition called for creating a through station with half as many tracks, rotated 90 degrees from the existing ones and sunk below grade through new rail tunnels parallel to the northern facade of the old station. The realignment will shorten travel and transfer times, allow for a direct airport connection, and locate Stuttgart on a Paris-to-Budapest rail link. After completion, in 2025, the aboveground tracks will be replaced with a residential district for 10,000 inhabitants.

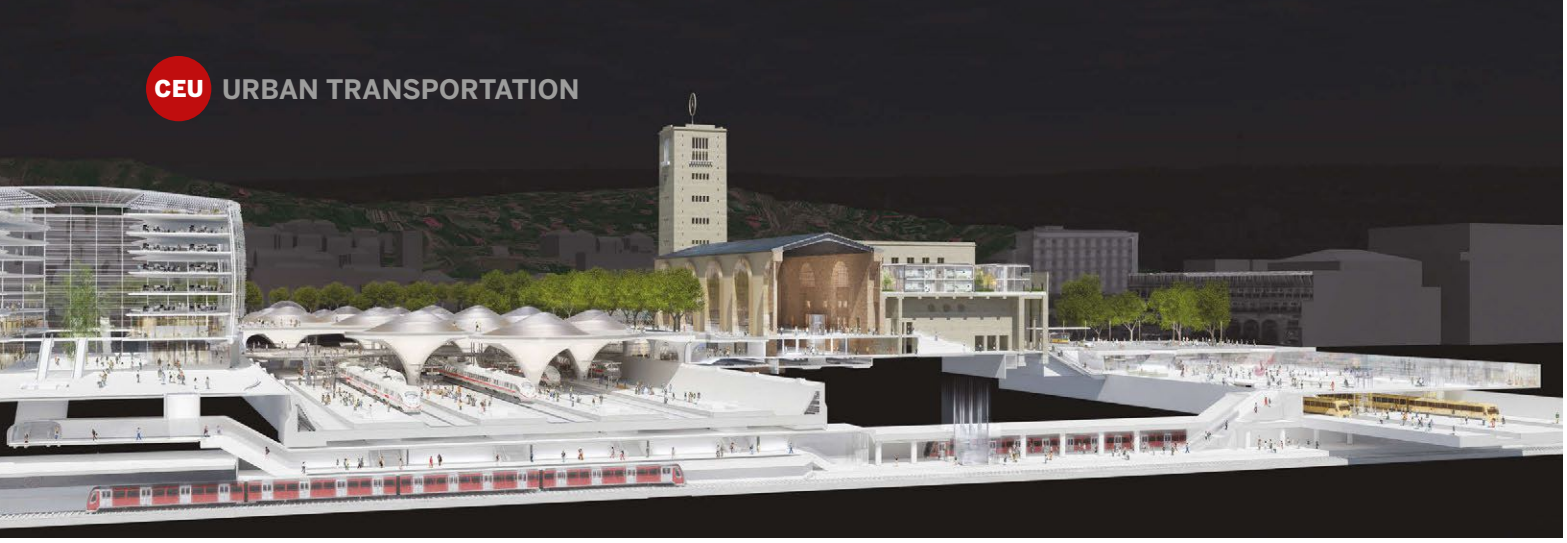
Ingenhoven and Otto were an unusual pairing. At the time of the competition, Ingenhoven was launching his career with large buildings that featured innovative approaches to sustainability, such as the 1996 RWE Tower in Essen, while Otto was the acknowledged pioneer of lightweight tensile structures. Previously, they had collaborated on a scheme for an ecological skyscraper, the Commerzbank Tower in Frankfurt-am-Main, a commission that ultimately went to Sir Norman Foster. For Stuttgart21, Otto's role was scientific support for development, design, construction, and structure.

THE DEFINING element of the station will be delicately unfurling cast-in-place chalice-shaped columns.

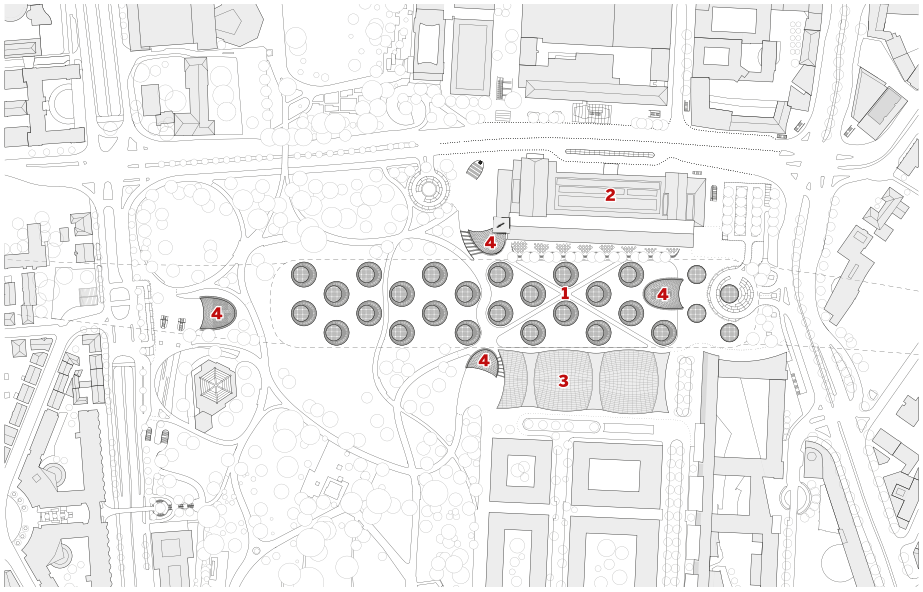
To enclose the below-grade tracks and expand the station, the architects rejected a tall structure, noting that cool air from the surrounding hills falls to the valley at night, and a high building would inhibit this flow. They proposed a low, naturally illuminated station hall, measuring 1,475 feet by 260 feet, with several entrances at the shorter sides. Above, a new plaza and park would be a part of continuous 10-acre public area.

Experimenting with plaster and tensile-skin models, they designed a structure that appears both dynamic and transcendent. A field of giant oculi, angled to face south, cover the roof. On the interior, the bottom rim of each oculus stretches down to form a column, directing a cascade of natural light along its surface. Due to the immense loads, the scheme was developed for reinforced concrete, with engineering by Büro Ted Happold (Berlin) and Leonhardt, Andrä and Partners (Stuttgart). And, though the original train station was a protected monument, the design called for retaining only its main section and tower, for offices, shops, and an entrance, while its north and south wings were to be demolished.

The project initially languished, finding renewed impetus in the early 2000s. In 2009, Frei Otto left the team (he died in 2015). In the same year, the Stuttgart-based Werner Sobek—who has conducted research on lightweight materials with minimal structure, and with a computer-assisted design approach







SITE PLAN

0 300 FT. 100 M.

1 NEW TRAIN HALL BELOW
2 EXISTING STATION
3 NORTHERN BUILDING (PROPOSED)
4 ENTRANCE

THE AMBITIOUS project includes submerging tracks below level under a roof supported by 28 of the distinctive columns (above), about half of which have been completed (left).

integrating architecture, engineering, and sustainability—became the chief engineer.

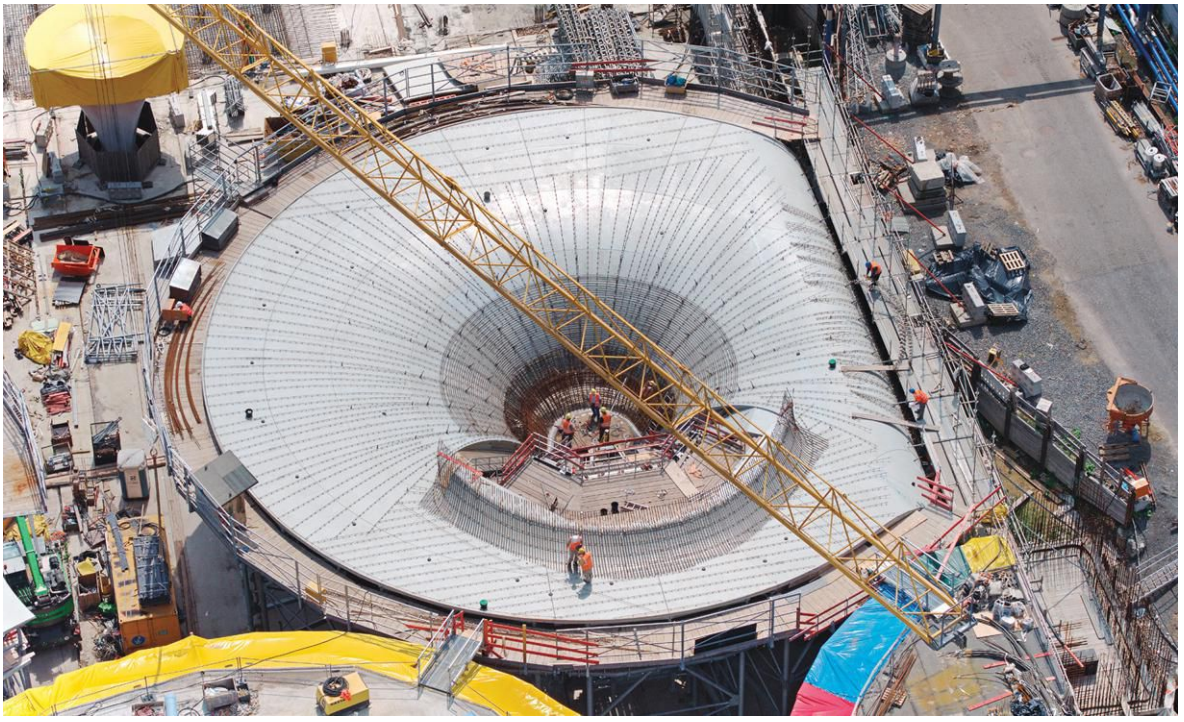
But more obstacles and controversy lay ahead. Demonstrations against Stuttgart21, which had been taking place for years, gained momentum, with protestors decrying the high costs, the years-long inner-city construction site, potential environmental damage, and the partial demolition of the original station, among other issues. In late September 2010, the conflict escalated; after the police used pepper spray and water cannons to clear peaceful protestors who were blocking the tunnel construction, the public was outraged. Not long after, in scheduled elections, the regional government, led by the Christian Democrats, who supported the project, was voted out and replaced by a coalition headed by the Greens, who were opponents. A referendum in November 2011, however, was decided in favor of continuing Stuttgart21. Ironically, the current regional government, with the Greens in charge, is overseeing the station's completion.

The polarization and unrest put additional strain on those developing the project for construction. The greatest challenge, says Sobek, "was the extremely high level of geometric complexity of the calculations that were being carried out while the very negative public reception to the project was at its height."

Soon, this tumultuous period may fade from memory, replaced with awe at the station's arresting interior. In February 2021, ceremonies celebrated the completion of half of the 28 delicately unfurling, chalice-like reinforced-concrete columns. Along with the two 1,475-foot-long, 19½-foot-high reinforced-concrete side walls, the columns support the station roof, which is designed as a reinforced jointless shell with variable thick-

IMAGES: © INGENHOVEN ARCHITECTS (TOP AND BOTTOM); HG ESCH (MIDDLE); ACHIM BIRNBAUM (OPPOSITE)





THE REBARS, up to 32,000 of them in a single column, are precisely placed via a digital model and laser projection (above). Resin-coated formwork helps produce the desired concrete surface (left).



SOUTH-FACING circular skylights called *Lichtaugen*, or light eyes, top each column, contributing to the station's zero energy concept (above and left).

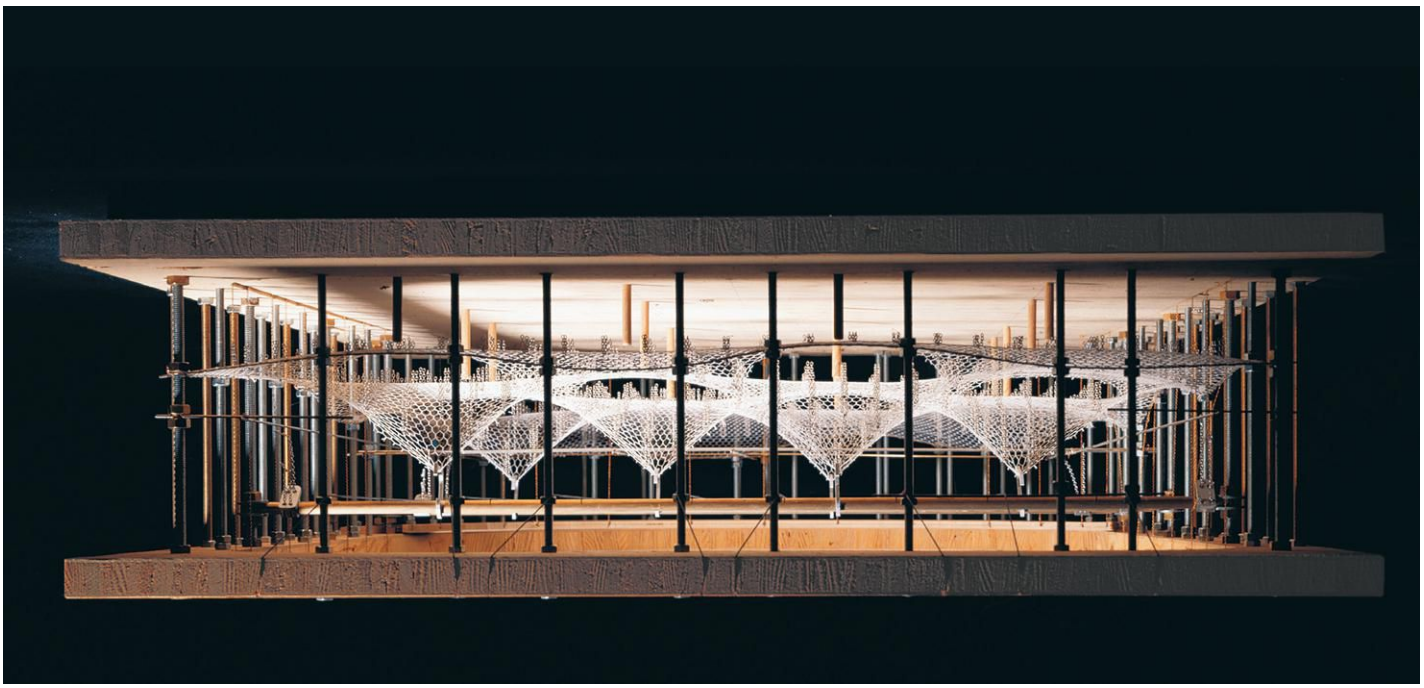
IMAGES: © ACHIM BIRNBAUM (TOP); INGENHOVEN ARCHITECTS (BOTTOM); HOLGER KNAUF (OPPOSITE 2)

EXPERIMENTATION with tensile structure and physical models (right and bottom) informed the columns' chalice shape.



ness, depending on the strain. The columns are narrow at the base and expand upward like a finely sculpted cone, with a convex southeastern side and concave northwestern one. At the roof, they have a diameter of 100 feet, half of which is taken up by the round, angled skylight, now called a *Lichtauge*, or light eye.

Varying in height from 30 feet to 39 feet, each column is unique due to its location and performance, and 3-D digital models were employed to optimize and calculate the forms. Their aesthetic and structural demands necessitated a reversal of typical construction methods. Each column requires between 22,000 to 32,000 rebars, which are fabricated in a special facility in Esslingen, transported to the site, and then precisely configured to describe the chalice-like form. Their positions are controlled via laser projection, which compares the positions of the rebars to a digital model of the reinforcements. Then the rebars are enclosed in custom-built wood formwork. To achieve a nonporous and joint-free surface, the forms are coated with specially developed resins; they are also recycled for various positions on the site. During the pouring, a moderate use of vibrators and a highly fluid concrete mixture insures that any voids and the areas around the dense rebars





A PARK above the station will be part of a continuous 10-acre public area.

IMAGE: INGENHOVEN ARCHITECTS

are reached. Per column, the construction time is three months, requiring 750 tons of concrete and 350 tons of steel reinforcement.

A special concrete mixture consisting of white cement, granulated slag (a by-product of iron manufacture), and fine plastic fibers was developed to satisfy the columns' complex geometry and the fire-protection regulations for exposed concrete. When poured, the material has a dull pewter hue, but after it oxidizes, the surface lightens "and becomes the luminous train station that we all desire," says Ingenhoven.

The columns also contribute to the station's "zero energy" concept, meaning electricity is not required for ventilation, heating, or basic lighting. During the day, the *Lichtaugen* illuminate the station's interior; at night, the concrete's pearly white surface reflects the luminaires on the tracks. Meanwhile, the movement of the trains brings air from the tunnels, where there is a constant temperature of 62 degrees Fahrenheit, into the station. The moderating effect of the massive construction and the below-grade location will keep temperatures between 50 and 77 degrees Fahrenheit, while louvres in the *Lichtaugen* provide ventilation. Solar panels on the roof of the old station will supply some electricity for signage, supplemental lighting, and elevators and escalators.

With completion of the new Stuttgart main train station scheduled for 2025, a cautious optimism pervades: "It is like halftime in soccer," says Ingenhoven. "We are leading with 2 goals to 0, but we still have a long, difficult path ahead. There is still a lot of exciting stuff to come." ■

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

Credits

ARCHITECT: Ingenhoven Architects — Christoph Ingenhoven, Klaus Frankenheim, Hinrich Schumacher, Michael Rathgeb, Bjørn Polzin, Dr. Dieter Henze, Peter Pistorius, Martin Gehrmann, Jascha Klusen, Huub Donkers, Matej Ferenc, Anemone Ingenhoven-Feld, Victor Braun, Vanessa García Carnicero, Elvan Urungu, Peter Georg Vahlhaus, Pavlos Antoniou, Julian Blönnigen (project team)

CONSULTANTS: Werner Sobek, Engineering Consortium Tragwerksplanung S21, Leonhardt, Andrä and Partners, Happold Engineering (structure); Drees & Sommerv, NEK Ingenieure, HL-Technik Consulting Engineers (mechanical services); Tropp Lighting Design (lighting); IFI Institute for Industrial Aerodynamics (airflow); Smoltczyk & Partner (geotechnical); Drees & Sommer (building physics); BPK Fire Safety Consultants (fire protection)

GENERAL CONTRACTOR: Zublin (core and shell)

CLIENT: Deutsche Bahn

SIZE: 2 million square feet

COST: withheld

COMPLETION DATE: 2025



IMAGE: © JOHN MCASLAN + PARTNERS AND WOODS BAGOT

Heart of the City

A revamp to Sydney's Central Station by Woods Bagot and John McAslan + Partners eases circulation and strengthens connections, for passengers and pedestrians.

BY ELIZABETH FARRELLY

IT IS ONE of the great joys of train travel to pop up on arrival right in the city center. This is especially true compared with the taxi queues and suburban drear of arrival by air. But it brings an inevitable conundrum, since, even as it connects, any central station acts as a great blockage in the city's heart. In Sydney, for the last century or so, this has been particularly pronounced. Now the new, $716 million adaptation of Central Station by Sydney's Woods Bagot and London's John McAslan + Partners (JMP), led by contractor Laing O'Rourke, is moving toward a remedy, set to open in 2024.

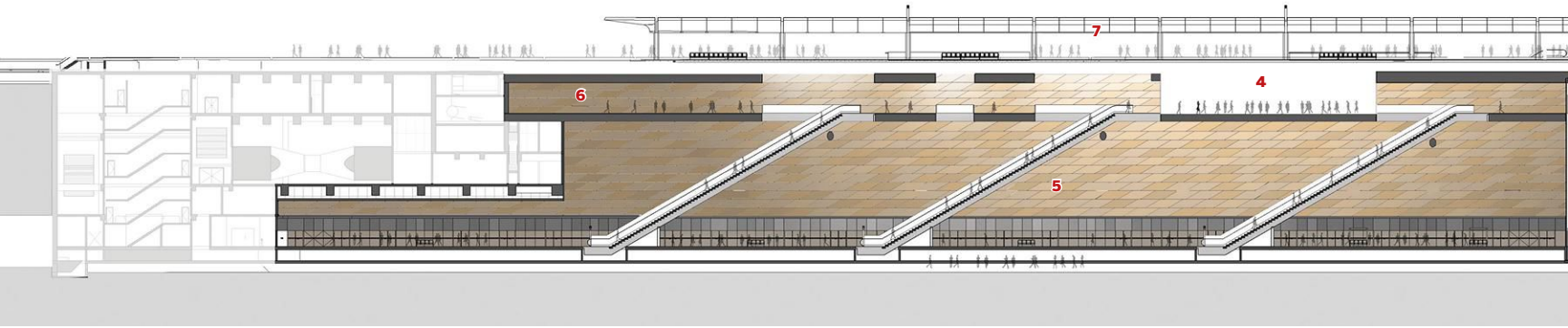
Inner Sydney occupies a narrow peninsula jutting into Sydney Harbor. Central Station was built quite late, in 1906, at the southern, landward end of that peninsula. This enchanting water-encircled topography ensured the city's success yet hampered its expansion. To the north, Sydney built its famous Harbour Bridge (opened in 1932), and other bridges east and west. But the major land connection was south, and Central was in the way.

Exacerbating the impediment was the colony's largest brewery, dating from the early 1800s and directly adjacent. Both the brewery and the station had been built on swampy ground that, previously spurned for other uses, had contained a cemetery, a parsonage, a police barracks, a morgue, a gallows, and a convent. Fast-forward to this century, when the disused brewery was transformed into Central Park Sydney, a mixed-use complex that includes a garden-clad tower by Jean Nouvel (RECORD, February 2015) as part of its elegant, street-connected master plan.

In connectivity terms, it was a start. But the problem of Central remained. The old station, designed by New South Wales government architect Walter Liberty Vernon (one of the few architects to support Walter Burley Griffin against the bureaucratic dilution of the latter's

A LOFTY URBAN room has been created between the new metro and the historic station with a roof that cantilevers 115 feet.

1 EXISTING STATION
2 NORTHERN CONCOURSE
3 CENTRAL ELECTRIC BUILDING
4 CENTRAL WALK
5 METRO BOX
6 NORTH–SOUTH CONCOURSE
7 INTERCITY PLATFORMS



SECTION

prizewinning plan for Canberra) was a grand and much beloved sandstone job, with a vaulted hall and double-storey loggia running the full 500-foot-long street frontage. Catering to over 270,000 passengers a day makes it busier than London's King's Cross and St. Pancras combined.

The new architects were accustomed to complexity. Woods Bagot had already designed the award-winning Wynyard Walk, a pedestrian tunnel linking Wynyard Station, in downtown Sydney, to the vast Richard Rogers, Wilkinson Eyre, and Renzo Piano–designed Barangaroo residential and commercial tower development downtown. JMP had designed the 2012 pre-Olympic revamp of London's King's Cross station (RECORD, June 2012). The result, says McAslan, shows "the richness of what can happen when you work with, not against, what exists."

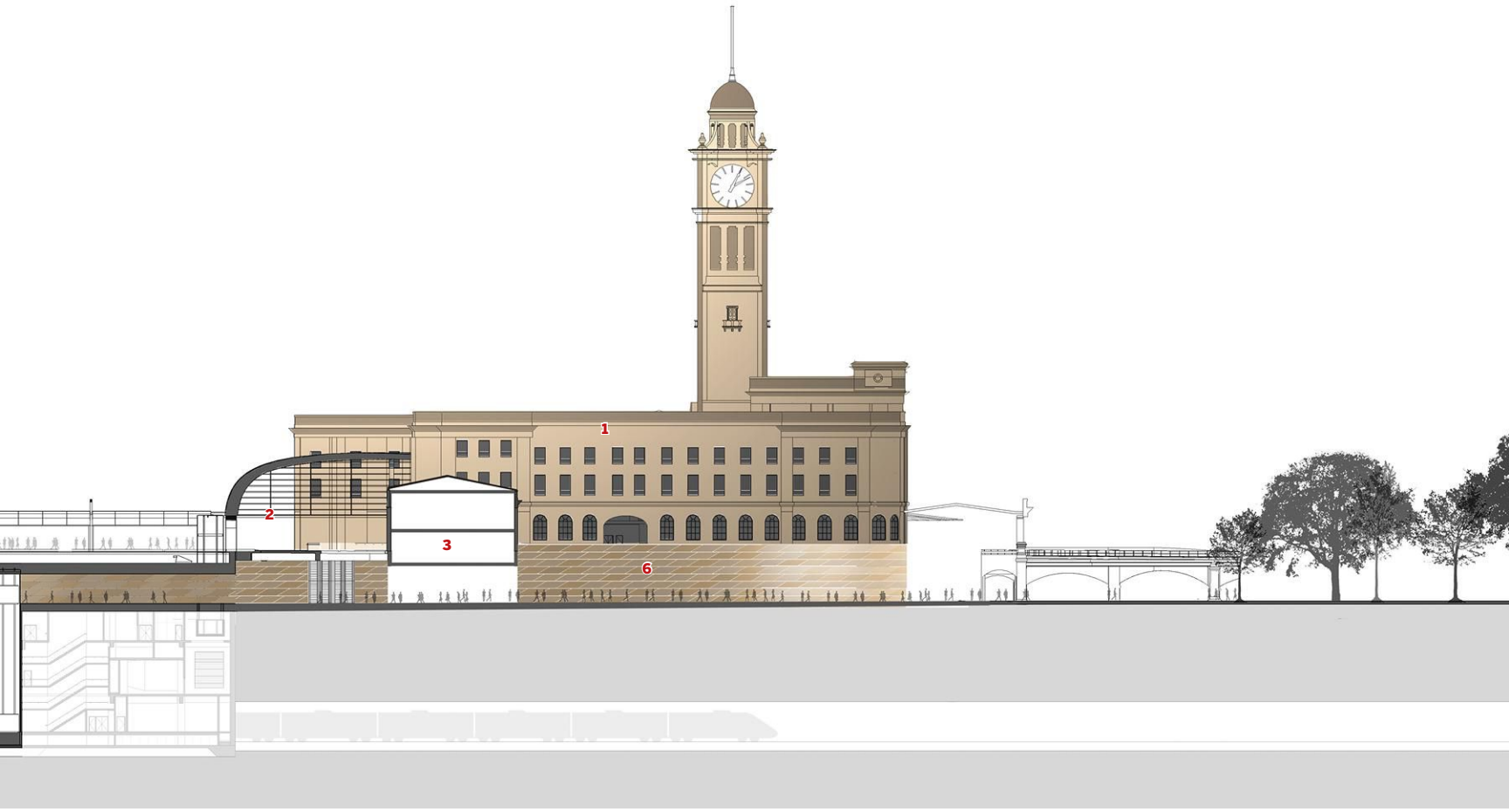
The project has three main elements: the long north–south metro platforms, 80 feet beneath two existing intercity rail platforms; the east–west Central Walk that links to these from a new, eastern street entrance; and the lofty new "urban room," known as the Northern Concourse, that mediates between the new metro station and the old sandstone building.

It sounds simple and, to the design team's credit, the resulting project, though still only half complete, feels quite simple to the user.

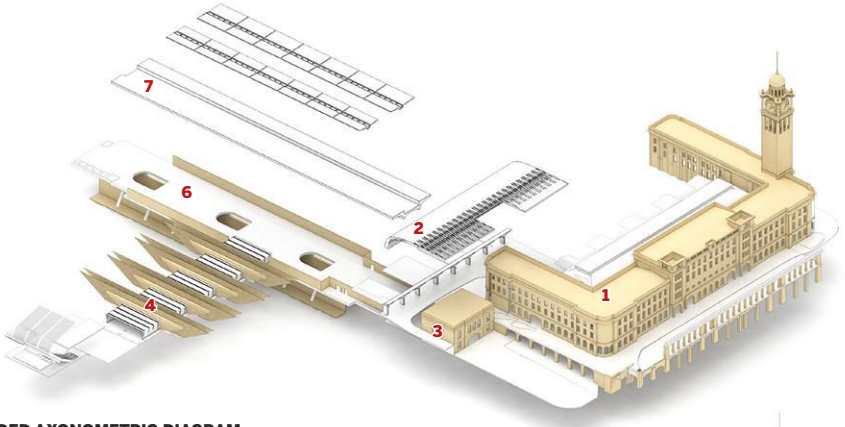
Lead structural engineer Tony Lavorato from AGJV, the project-specific joint venture of engineering firms GHD and Aurecon, says it has been "very challenging" but extremely rewarding. That the result so closely resembles the earliest conceptual sketches is, he says, testament to the close collaboration, from the competition



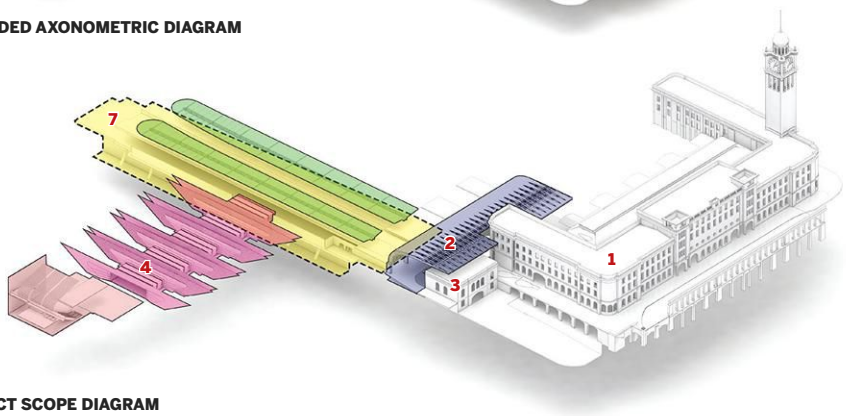
THE NORTHERN Concourse roof carefully engages Central Station's 1908 building, conforming to international reversibility standards for adaptive reuse.



0 50 FT.
15 M.



EXPLODED AXONOMETRIC DIAGRAM



PROJECT SCOPE DIAGRAM

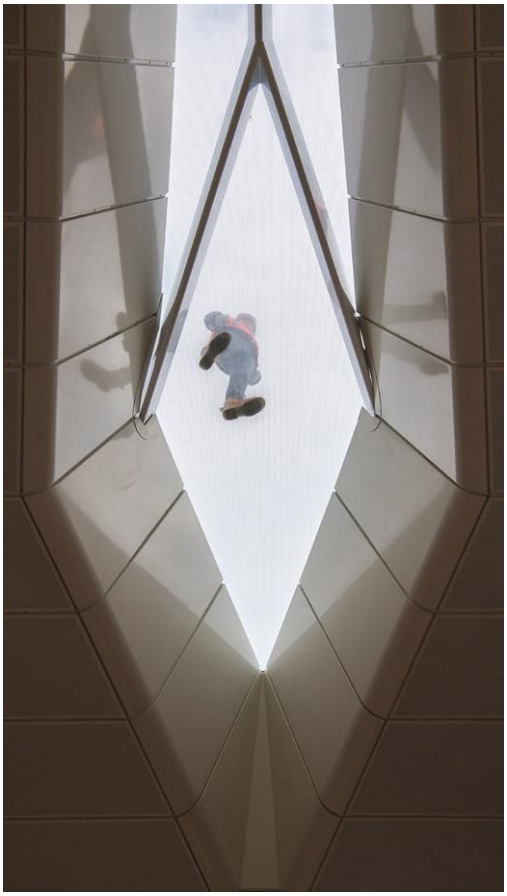
IMAGES: © LAING O'ROURKE/SYDNEY METRO (OPPOSITE, BOTTOM); WOODS BAGOT AND JOHN MCASLAN + PARTNERS

stage, among the engineers, contractors, and architects.

There were many challenges. For example, the immense 80-foot-deep trench that holds the "metro-box," or subway tunnel, had already been excavated into rock, under an entirely separate contract. Within it, incoming trains and platforms had to be suspended. The project team also had to accommodate a sewer line, an existing pedestrian tunnel, and the 62-foot-wide Central Walk above the metro. When this trench proved too narrow for supporting columns, an ingenious strut-and-tie system was invented, propping 43-inch-square diagonal struts against the rock face.

Similarly, when the work revealed the handsome century-old Central Electric building that had been hidden by accumulated station works behind the grand old station, it was decided to retain and renovate the building as one wall of the new space. Because level differences meant exposing the building's foundations, however, it had to be safely underpinned with an entire new understory. This, in allowing pedestrian movement through a grand new stone-clad arch from the







THE TRUSS-SUPPORTED Northern Concourse roof was assembled first off-site in Kurri Kurri (all images this page), before being taken apart to be transported to the city.

ALTHOUGH THE METRO will not open until 2024, people are already moving through the daylight-filled Northern Concourse (right).

street, transforms a dour dungeon space into a light-filled crossing.

What remains unchanged from those early freehand sketches was the great roof of the new station, which cantilevers 115 feet. This roof, comprising hockey stick–shaped steel trusses, clad with perforated white aluminum and fritted glass, was assembled off-site in Kurri Kurri, 100 miles north of the city, checked to be sure everything worked, and then disassembled for transport to Sydney. And work it does, sailing delicately above the heritage-listed Grand Concourse, Central Electric, and Stationmaster's buildings.

This creates an airy transitional space and obviates the usual avalanche of wayfinding signage, providing easy visual links to streets and trains and suggesting the possibility of a new rooftop bar, all while upholding international standards for reversibility in adaptive reuse.

Already, though the metro doesn't open for three years, this lofty and light-filled Northern Concourse is a pleasure to use. For me, it also offers a metaphor that points to even greater potential: unblocking Sydney's congested heart. With new pedestrian connections east, north, and through to the old station, this project eases and enriches Sydney's walking experience.

And there is even more promise. Sydney, naturally rich with spatial drama and surprise, is a great pedestrian city. Three further extensions to the Central project would greatly enhance this delight. They include extending Central Walk west, through to the proposed Atlassian tower (by SHoP architects with Sydney's BVN); extending Prince Alfred Park to the station's south across the rail tracks and encircling the park with buildings; and extending north, through the old station's lower loggia to a revamped Belmore Park.

The current Metro project effectively installs a stent in Sydney's sclerotic heart. These two further thoroughfares, in linking street to street and park to park, would triple that effect. Covid has prioritized walking as a transport mode in its own right; recognizing this, the new connections would let Sydney's freewheeling pedestrian life percolate throughout. ■

Elizabeth Farrelly is a columnist for The Sydney Morning Herald. *Her latest book is* Killing Sydney: The Fight for a City's Soul (2021).

PHOTOGRAPHY: © CTH BOWEN | RUSTY GOAT MEDIA (OPPOSITE 3): MARTIN SIEGNER/FRMEZ



Credits

ARCHITECTS:
Woods Bagot and John McAslan + Partners

CONSULTANTS: AGJC (structure, civil, m/e/p, rail); WarringtonFire (fire); Wilkinson Murray (acoustics); Taylor Thomson Witting (facades); Steensen Varming (lighting); OCP Architects (heritage); Artefact (indigenous heritage)

GENERAL CONTRACTOR: Laing O'Rourke

CLIENT: Laing O'Rourke for Sydney Metro

SIZE: 238,000 square feet

COST: $716 million

COMPLETION DATE: December 2022 (operational, 2024)

Sources

CURTAIN WALL: Alfabs

METAL ROOFING: Kingspan

WINDOWS AND SKYLIGHTS: JML-Craft

PRECAST-CONCRETE CLADDING: SA Precast

GRC CLADDING: Stone Alliance

SANDSTONE CLADDING: Stone Mason & Artist

TERRAZZO TILE: BetterTiles

ELEVATORS/ESCALATORS: TK Elevator



Park and Ride

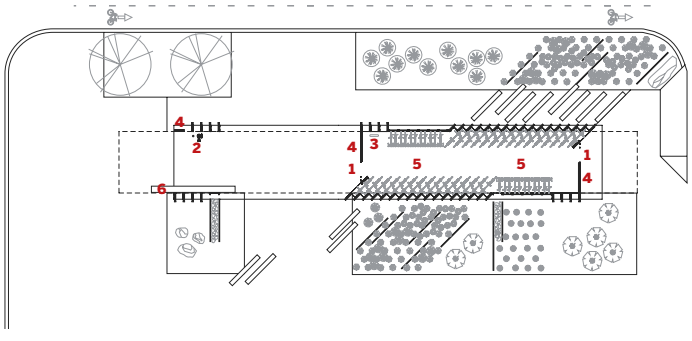
CU Denver architecture students design and build two bike pavilions for a shared downtown campus.

BY DAVID HILL
PHOTOGRAPHY BY JESSE KUROIWA

ESTABLISHED MORE than a decade ago, the Colorado Building Workshop, a design-build program at the College of Architecture and Planning at the University of Colorado Denver (CU Denver), has won numerous AIA awards for work that demonstrates the innovative use of common building materials. Led by architect and assistant professor Erik (Rick) Sommerfeld, its portfolio includes housing on the Navajo Nation, cabins for the Colorado Outward Bound School, and what may be the best-looking outhouses in the United States—four steel-and-stone privies that appear to emerge from the rugged landscape on the Longs Peak trail in Rocky Mountain National Park.

The graduate-level workshop's latest project is closer to home. Completed during the pandemic, the Auraria Bike Pavilions are located in downtown Denver, on the campus of the Auraria Higher Education Center, home to CU Denver, Metropolitan State University, and the Community College of Denver.

The project began in 2019, when Chris Herr, sustainability officer for Auraria's Sustainable Campus Program, approached Sommerfeld about designing a pair of bicycle-storage facilities for the mostly-commuter campus. Getting around on two wheels is already popular, but Herr wanted to encourage even more nonmotorized transportation, while also combating bike theft, which is rampant on the campus. (Ironically, a bike belonging to one of Sommerfeld's students was stolen on the very first day of construction.)



FLOOR PLAN

0 16 FT. 5 M.

1 SECURE ENTRY/EXIT
2 FIX-IT STATION
3 SKATEBOARD RACK
4 SIGNAGE
5 BIKE STORAGE
6 BENCH

Working in teams, the workshop's 25 students met often (but virtually) with the client and eventually arrived at a simple yet elegant design for the pavilions, which are located near high-use buildings on campus. Each is constructed with louvered walls made of limestone and steel mesh. The plan allows daylight to enter the buildings from the sides, while also permitting users to peer in to see if there are available spaces for bikes. A flat, 4-inch-thick cross-laminated timber roof spans the 16-foot width of both structures.

At the entrance of each pavilion, a graphic image of a hanging bicycle makes clear what the buildings are for. The facilities, accessed by registered users with key cards, hold 50 bicycles apiece and a few skateboards, and contain fix-it stations with tools and pumps.

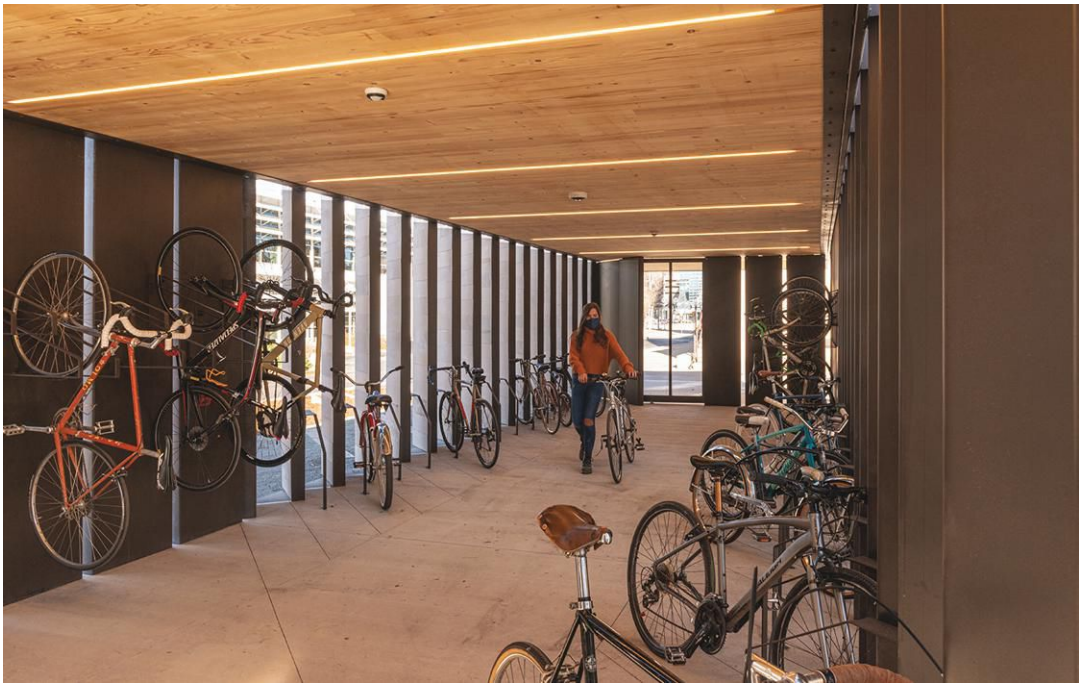
The workshop students used Tally, a Revit plug-in developed by architecture firm KieranTimberlake, to assess the pavilions' environmental impact. "It helped guide our decision to use cross-laminated timber [CLT] for the roofs instead of traditional framing," Sommerfeld says. The buildings aren't exactly temporary, but they were designed to be easily disassembled and the materials recycled if they ever become obsolete or need to be replaced with other structures. For that reason, the limestone blocks are dry-stacked and the CLT panels unmodified.

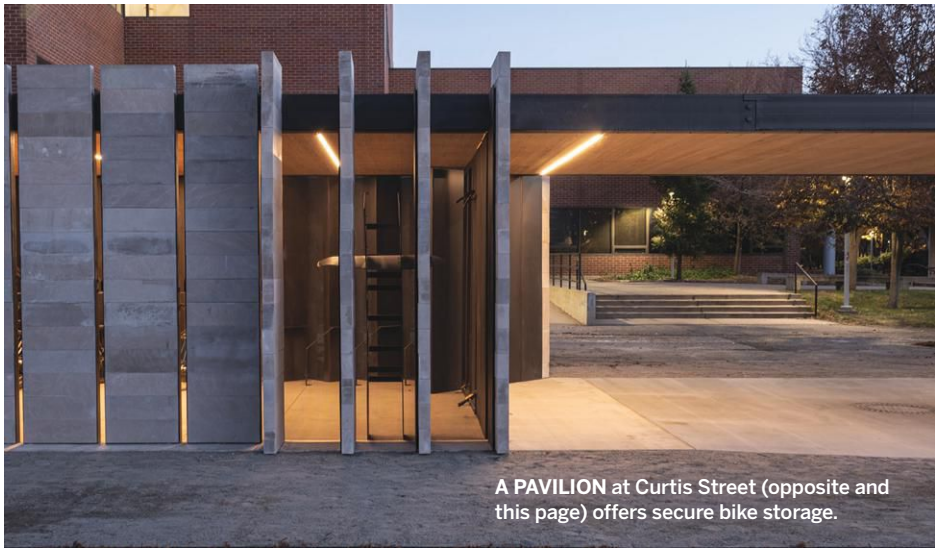
The students, wearing masks and working with building professionals, began construction last August. "Very few of them had experience," Sommerfeld says, "but the advantage of doing small buildings is that they're not overly complicated. We're not trying to make the students into builders but rather to have an appreciation for people that they'll be working with."

Recent graduate Cecilia Richey, who had previously done a few DIY projects around the house, found herself lifting 40-pound limestone blocks and learning how to weld. "The workshop was the highlight of the master's program," she says. "You learn much more by doing than by just drawing."

Herr, who's had two bikes stolen from the Auraria campus, is thrilled with the pavilions. "I think they look amazing," he says. "They're better than anything I could have imagined." He expects them to get plenty of use starting this month, when students return to the campus (largely empty during the pandemic). He's already fielding inquiries about them. "Hopefully, they'll encourage more students to commute on bikes. That's the idea." ■

Denver-based journalist David Hill writes about architecture, design, and urban planning.





A PAVILION at Curtis Street (opposite and this page) offers secure bike storage.

Credits

ARCHITECT: Colorado Building Workshop — Will Koning, Šárka Malošíková, Paul Stockhoff, design team

ENGINEERS: Andy Paddock (structural); AE Design (electrical)

GENERAL CONTRACTOR: Colorado Building Workshop

CONSULTANTS: Design Workshop (landscape); MH Companies (lighting); TMW Stonemasons (stone); Front Range Roofing (roofs); Justin Morse, Ricky Ludeman (welding); RAW Creative (fabrication); Ellis Construction, Brannan Concrete, Brundage Bone (concrete)

CLIENT: Auraria Sustainable Campus Program

OWNER: Auraria Higher Education Center (AHEC)

SIZE: 3,000 square feet

COST: $200,000

COMPLETION DATE: November 2020

Sources

MASONRY: Indiana Limestone

PERFORATED METAL PANELS: Peterson

CROSS-LAMINATED TIMBER: SmartLam

ROOFING: Carlisle

FASTENERS: Simpson Strong Tie

PIVOT HINGES: FritzJurgens

COATINGS: Tnemec

LIGHTING: Beulux; Hubbell; Wattstopper

BUILDING SOFTWARE: Tally

Civic Pride

Chybík+Krištof's upgrade of Brno's Zvonařka Bus Terminal transforms a neglected hub.

BY JENNIFER KRICHELS
PHOTOGRAPHY BY ALEXANDRA TIMPAU



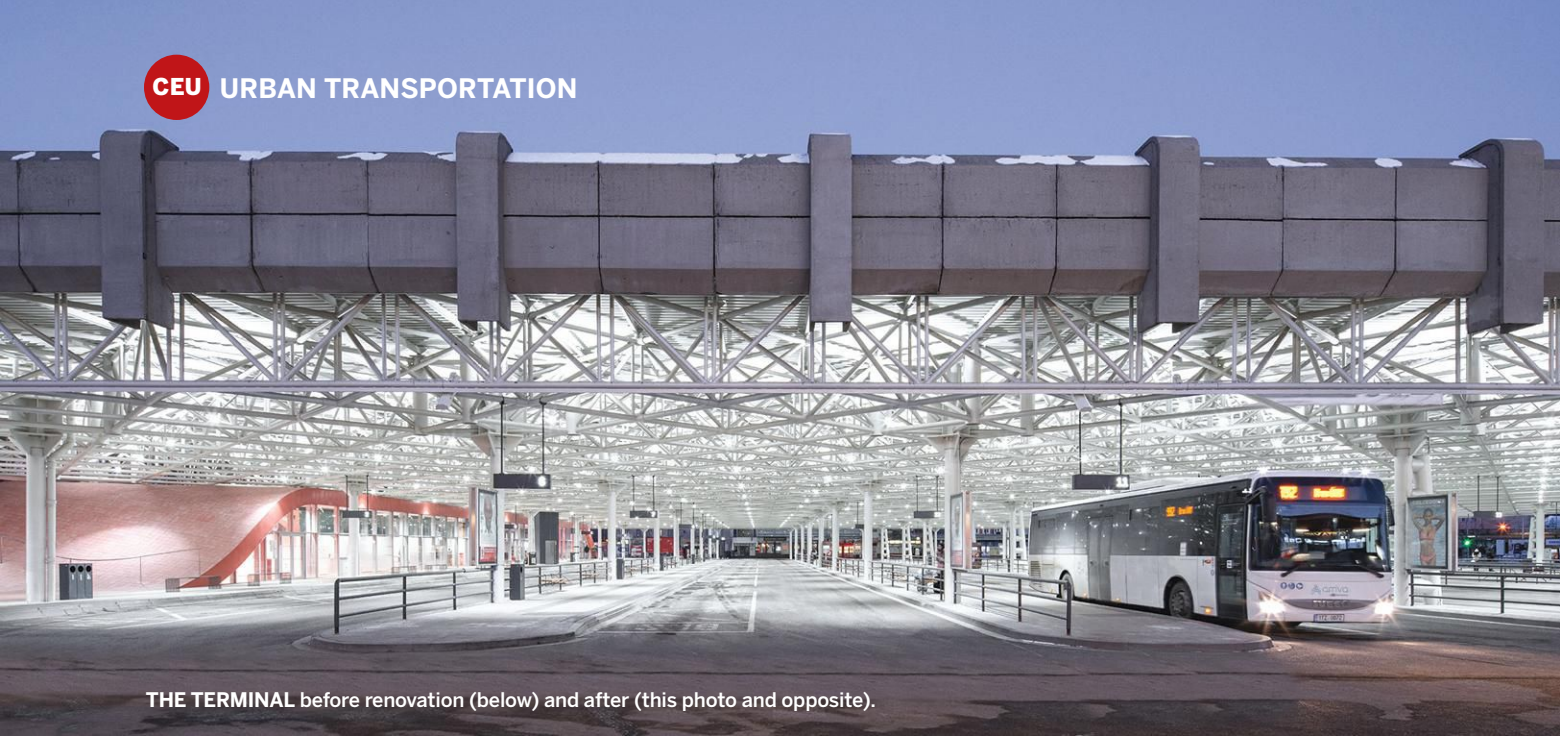
IT IS WITH pride that Ondřej Chybík reveals he has no driver's license, and his partner, Michal Krištof, has only recently obtained one. The architects are cofounders of the Czech Republic–based Chybík+Krištof, a 2019 Record Design Vanguard firm, and, Chybík explains, they find that experiencing as many aspects of a city as possible, even (or especially) poor public transportation infrastructure, is essential to their practice. Born in Brno, the country's second-largest city, both of them were well acquainted with Zvonařka Central Bus Terminal, which makes more than 820 regional, national, and international connections and serves approximately 17,000 passengers each day. In spite of its central location and critical role in the city's infrastructure, the Brno municipality lost control of the terminal when it was privatized in the 1990s, and it subsequently fell into disrepair. "Zvonařka seemed a dark, unfriendly place," says the city's mayor, Markéta Vaňková. A frequent bus rider, Chybík agrees: "It was really the worst place in the city."

Chybík and Krištof see themselves as activist architects, with a history of seeking out projects that will have social impact. They set out to learn what it would take to rehabilitate the 1980s terminal, a steel column and space frame structure, encircled by a parapet of reinforced precast concrete, designed by architect Radúz Russ. The private entity that rented the terminal's platforms to bus providers, it turned out, did not make enough money to maintain or renovate the building, but, during a nearly five-year advocacy process, the architects helped secure public funding to finance the terminal's rehabilitation before taking on the project as designers in 2018.

Chybík+Krištof is part of a growing movement to preserve Brutalist-era structures, in hope of saving them from the fate of the now-demolished Hotel Praha and Transgas buildings in Prague. While the Zvonařka terminal is recognized as a Brutalist heritage site, years of neglect and poor add-ons had obscured its architectural pedigree. "There was a lack of light, and the entire space was full of temporary stands with no architectural quality," says Chybík. After the building—at 107,650 square feet, larger than Brno's central city square—was emptied of all but its steel columns, and repainted bright white, the architects reconfigured the plan to make it more transparent and accessible. Now the terminal's vast main hall has uninterrupted pathways and sight lines to signage for arrivals and departures, with an inner space for each bus platform. From the time it was built, up to 100 buses could park on the terminal's roof—hence its robust structure. The architects were able to add 50 "park-and-ride" spaces while retaining the same capacity for buses, and also a new

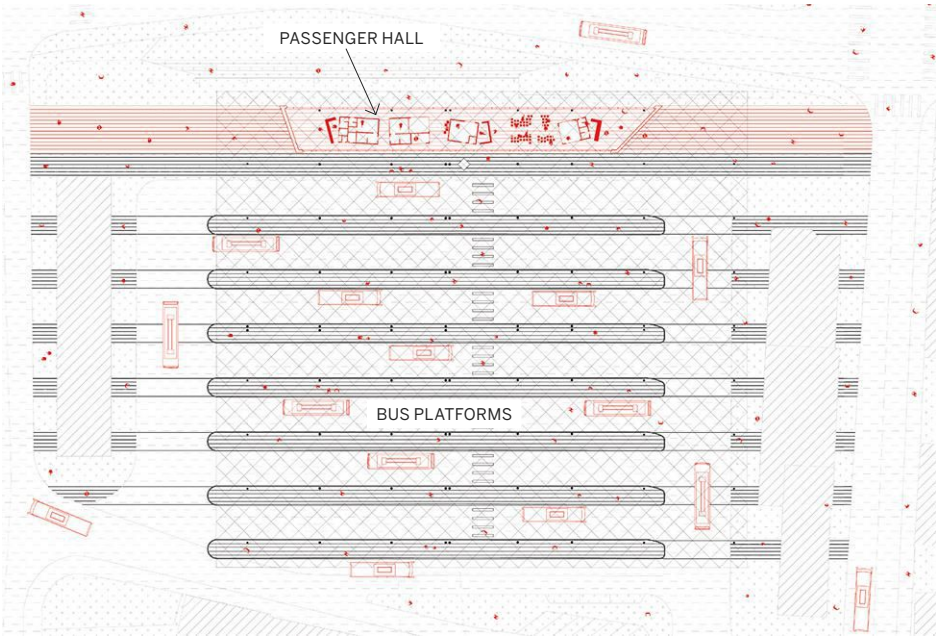


THE WAVELIKE new passenger hall gives the restored terminal a prominent entry from the street.



THE TERMINAL before renovation (below) and after (this photo and opposite).





FLOOR PLAN

elevator to connect the parking area with the platforms below. A new passenger hall opens to a very visible entrance on Zvonařka Street, opposite a major shopping center. The hall's wavelike glass, steel, and concrete form contrasts with the angularity of the original structure and enhances wayfinding. Passenger walkways now flow into the hall clearly from city streets, eliminating a formerly circuitous route.

Lighting is crucial to the modernized terminal: "It was project-specific, because the beauty of the steel structure is key," says Chybík. "We hung the lighting on the steel structure to illuminate it upward, so the structure appears to be floating above the platforms." The terminal's original curved skylight, which bisects the roof, was restored to bring in more natural light.

Yet to be completed is a publicly owned entrance plaza, between the building and the roadway. Chybík and Krištof see the station and that surrounding plaza as an essential urban gathering place, and they interviewed many of its users, including homeless people who had called its benches their own for years. "They considered some public spaces we didn't even see," says Chybík.

Now the city has added a new tram line to the terminal. "The part of the city where Zvonařka is located has seen considerable development recently," says Mayor Vaňková. "The area has a huge industrial heritage and now is turning to new purposes." Nearby is the reconstruction of Mendel Square, a busy hub next to the monastery where Johann Gregor Mendel discovered the principles of genetics in the 1860s, and where Chybík+Krištof are designing a reimagined version of Mendel's greenhouse.

But the architects say the city's transportation infrastructure is far from saved: an ongo-

ing architecture competition for a new train station to be built outside the city's center would erode the street life that adds energy to Brno's core. But there's hope that the existing 130-year-old station can remain in use as a vital part of the city. If the architects could spend close to a decade shepherding the bus terminal toward renewal, they may do the same for more of Brno's other transportation buildings as well. ■

Jennifer Krichels is a Brooklyn-based writer.



Credits

ARCHITECT: Chybík+Krištof Architects & Urban Designers

ENGINEERS: ENGIE Services (electrical); Jan Kašpar (traffic)

GENERAL CONTRACTOR: PS Brno

CONSULTANTS: K4 (lighting); RIDE Technic (ceiling systems)

CLIENT: ČSAD Brno Holding

SIZE: 107,650 square feet

COST: $5.5 million

COMPLETION DATE: December 2020

Sources

PAINT: Hempel

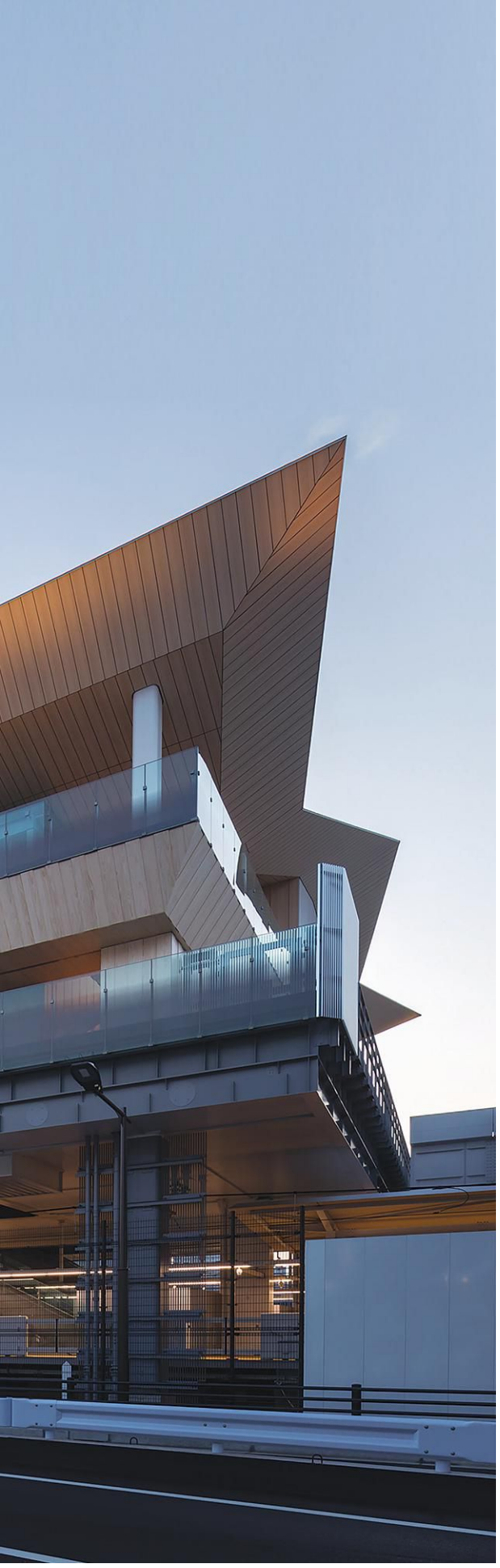
HARDWARE: Bustec

Beyond Tradition

Kengo Kuma draws on the grand train halls of the past, adding a contemporary Japanese spin, for a new Tokyo station.

BY NAOMI R. POLLOCK, FAIA





PHOTOGRAPHY: © EAST JAPAN RAILWAY COMPANY

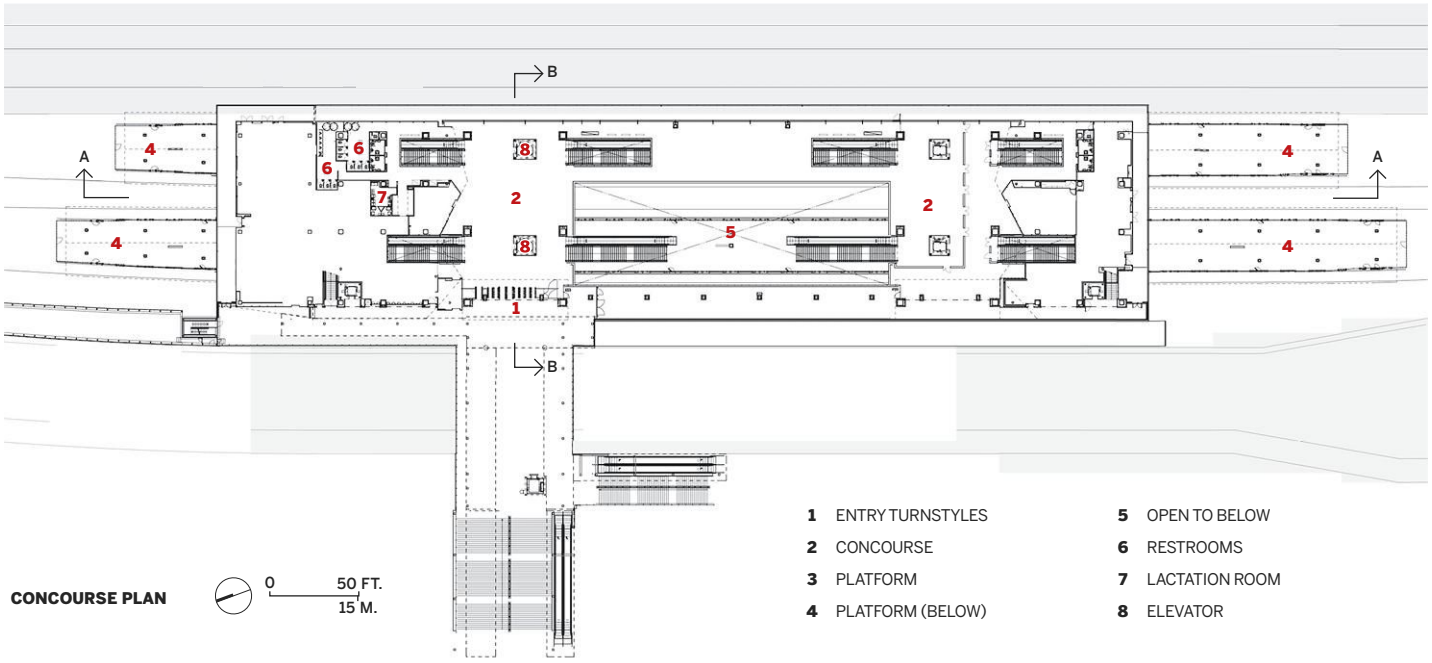


THE ROOF surfaces—resembling shoji, folded like origami—and abundant use of wood, underscore the building's Japaneseness (above and left).

TOPPED BY a monolithic undulating roof, the Takanawa Gateway Station recalls the elegance of the historic European train station—but in the heart of Tokyo. Designed by Kengo Kuma, the building is the first addition in 50 years to the Yamanote Line, the famous elevated train encircling the city center. Also serving the Keihin-Tohoku suburban commuter railway, the building is poised to become a main access point for a 32-acre urban-renewal project spearheaded by the station client, East Japan Railway Company. Titled Global Gateway Shinagawa, the phased development (master-planned by New Haven firm Pickard Chilton) is intended to transform a trainyard into an international business center and is slated for completion in 2040.

Passengers arriving at the station from Dai-ichi Keihin, a key multilane thoroughfare, ascend stairs and traverse a partially covered walkway to enter the concourse, a soaring space extending to the roof. This level includes the station office and restrooms at its north end, while its south end will hold a second entrance when the redevelopment project is finished. Connecting to a pedestrian deck, the additional entrance will also enable passengers to walk to Shinagawa Station, a nearby major transportation hub and Bullet-train stop. Beneath the concourse level are platforms for the four sets of train tracks while, above, balconies flank either end of the linear space, providing places to look down at the hustle and bustle. The entire interior is united by an enormous atrium at the building's center, which rises up from the tracks to the ceiling and enables air and daylight to flow from top to bottom. Gazing up from the platform, the eye is filled with views of the roof underpinnings and soft light from above. "As they did with 19th-century terminals, we wanted to make one large space," explains Kengo Kuma.

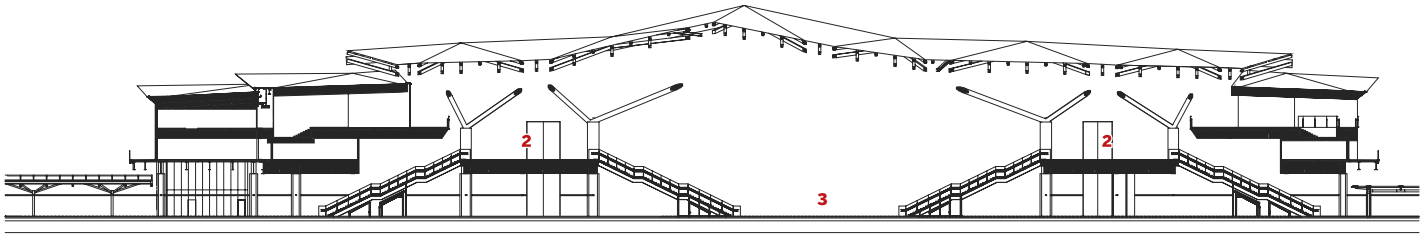
This idea of a singular voluminous space is underscored by the roof, whose hovering white planes unify the station. Its shoji-like white surface is composed of translucent



CONCOURSE PLAN

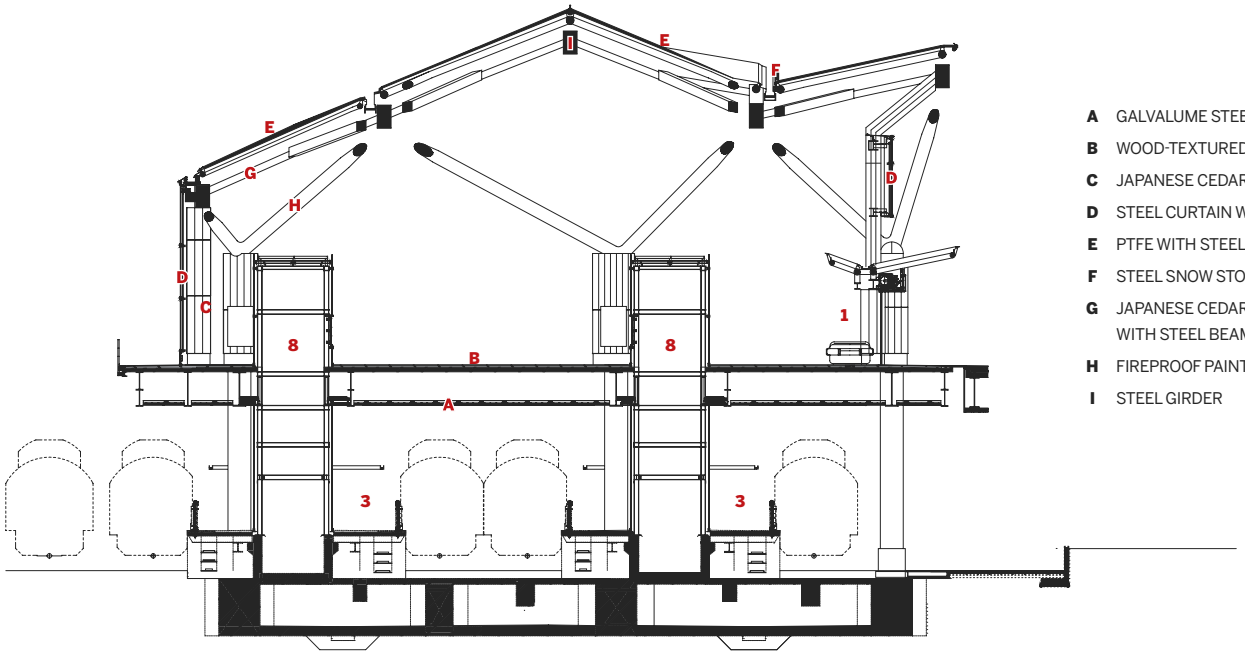
0 50 FT. 15 M.

1 ENTRY TURNSTYLES
2 CONCOURSE
3 PLATFORM
4 PLATFORM (BELOW)
5 OPEN TO BELOW
6 RESTROOMS
7 LACTATION ROOM
8 ELEVATOR



SECTION A - A

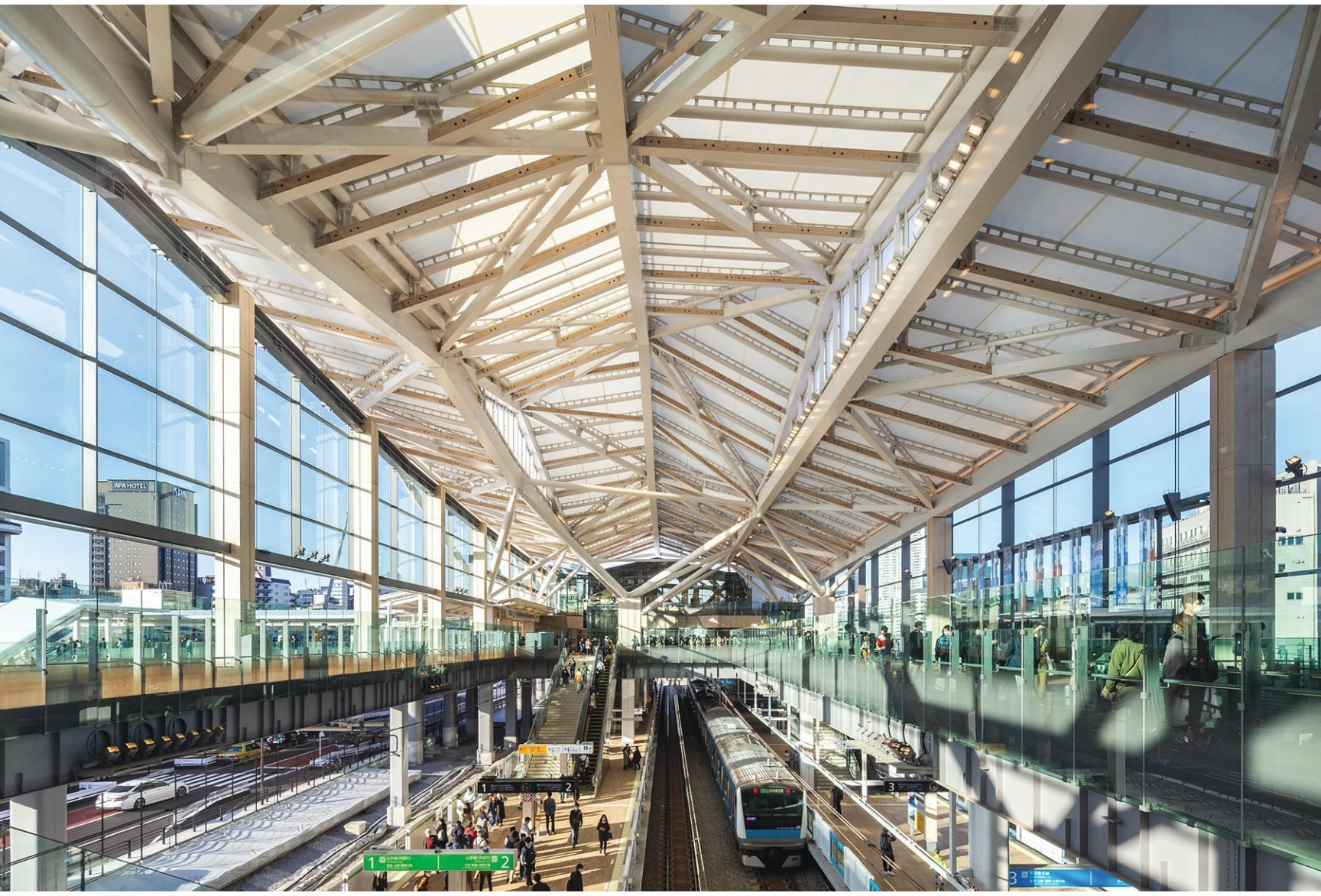
0 30 FT. 10 M.



SECTION B - B DETAIL

A GALVALUME STEEL PLATE
B WOOD-TEXTURED TILE ON CONCRETE
C JAPANESE CEDAR
D STEEL CURTAIN WALL
E PTFE WITH STEEL STRUCTURE
F STEEL SNOW STOP
G JAPANESE CEDAR (LAMINATED WOOD) WITH STEEL BEAM
H FIREPROOF PAINT
I STEEL GIRDER

0 10 FT. 3 M.



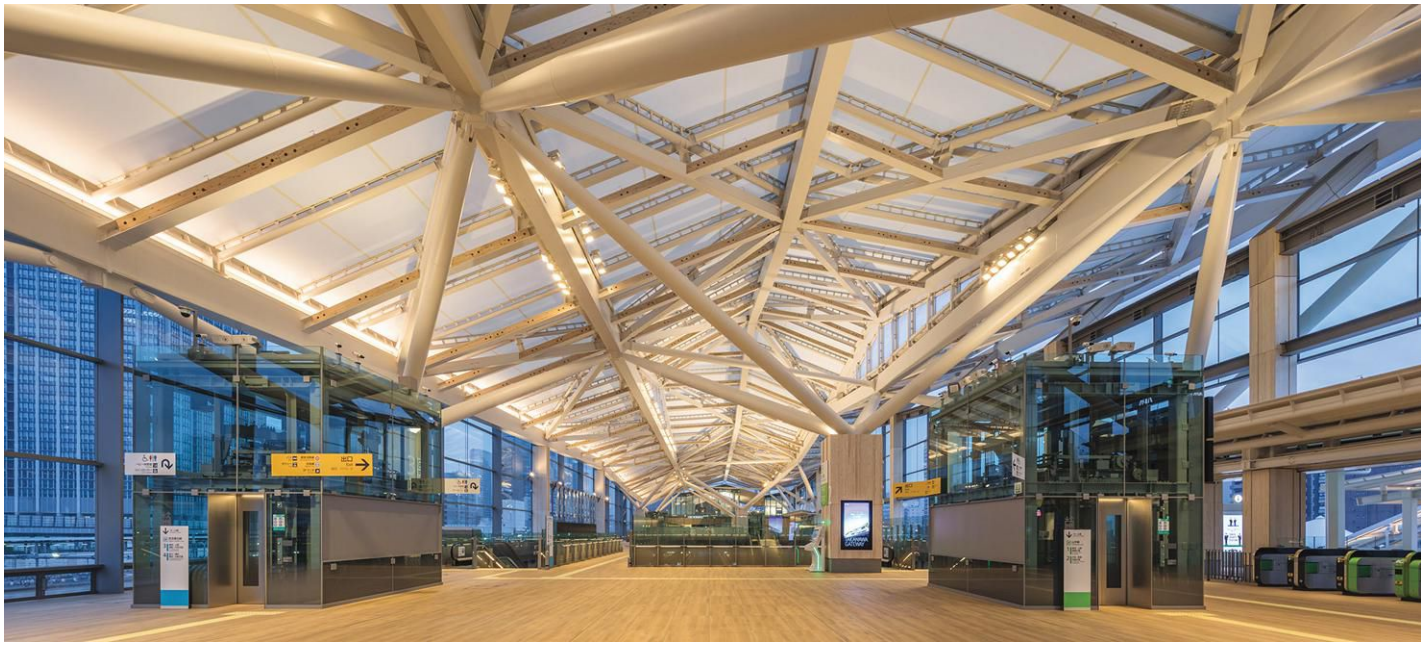
FLOOR-TO-CEILING glass connects passengers to the outside and makes the roof appear as a floating canopy.

PTFE-coated glass-fiber sheets arranged in four 394-foot-long ribbons. Inspired by origami paper, each strip is delicately creased with a series of "mountain" and "valley" folds. Where the folds do not align, there are vertical gaps between strips that, filled with panels of transparent ETFE plastic, function as clerestories. "I wanted to see the sky from the station," says Kuma. The architect also wanted the building to "breathe," a feat achieved by inserting a 7-foot gap between the roof and the curtain wall. While deep eaves prevent rain from entering the building, these gaps provide sufficient natural ventilation to eliminate the need for mechanical air-conditioning except in the lavatories and other enclosed areas. The transparent outer walls, made of floor-to-ceiling glass secured in steel frames, enable a strong visual connection between the station interior and the surrounding neighborhood—especially at night, when uplighting illuminates the roof and the building glows, in the words of Kuma, like a *chochin* lantern.

Integrated within the curtain wall are wood-clad steel columns supporting the roof perimeter. In the concourse, the roof is held up by eight more columns, tree-shaped and strategically located to impede pedestrian traffic as little as possible. Also made of wood-clad steel, these members' 5-foot-square trunk-like bases are topped with steel tubes that radiate outward, resembling branches. High-tension bolts join the roof structure's wood and steel, ensuring their tight connection even when trains come rumbling through below.

Kuma used a similar hybrid system for the roof trusses in the Japan National Stadium, built for the 2020 Tokyo Olympics. In many ways, wood, the medium of traditional Japanese architecture, is Kuma's signature. He has used it across the country in museums, municipal centers, academic buildings, and other projects not regularly associated with timber construction. "In the station, we used wood everywhere to let visitors feel the Japanese space," he explains. Like the structural components, the interior soffits are clad with cedar from Fukushima Prefecture. For fire protection and ease of maintenance, many of the wood elements were treated with a fire-proof glass coating and tinged


高輪ゲートウェイ駅
Takanawa Gateway Station

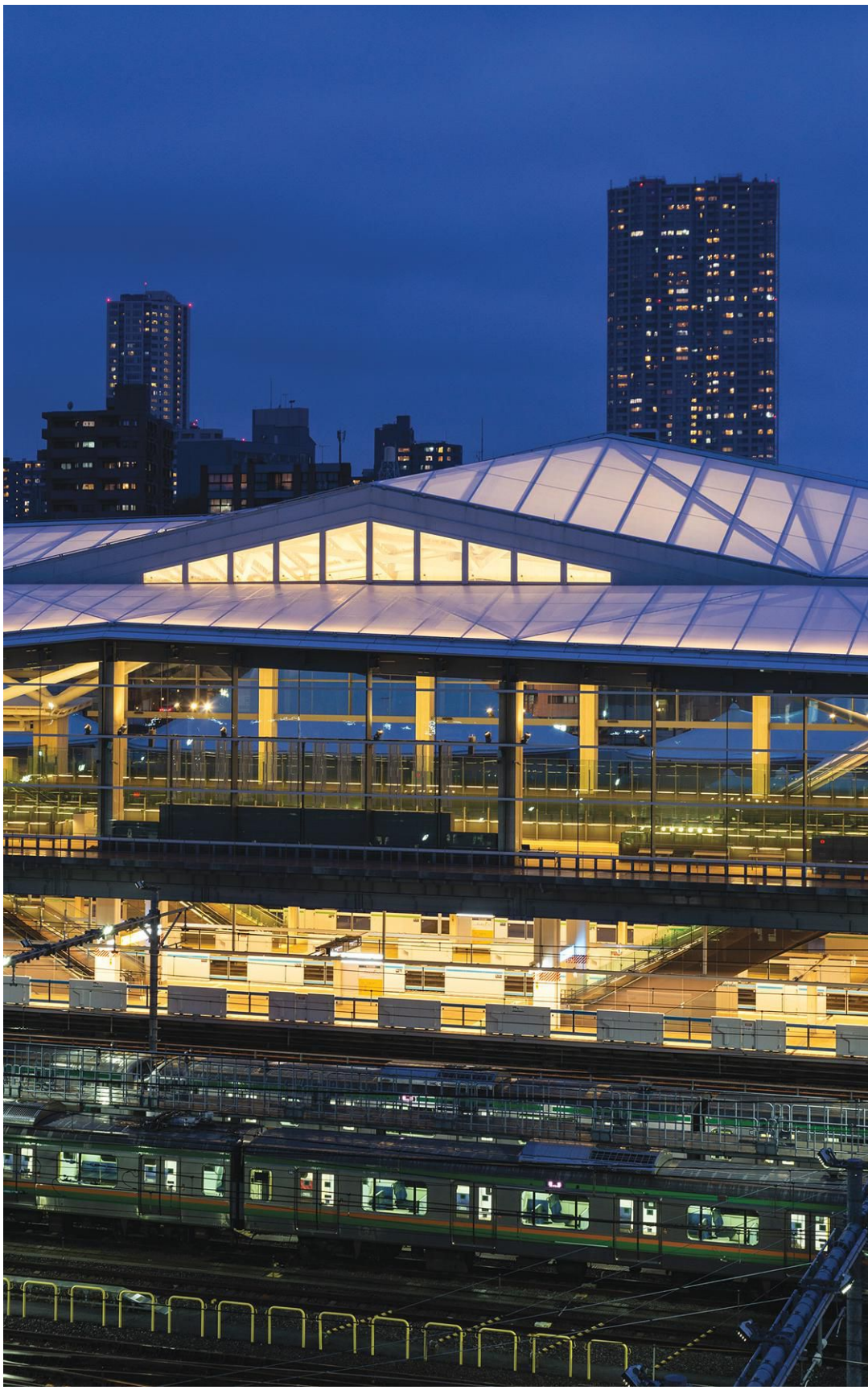


THE ROOF STRUCTURE is visible throughout the station (opposite) and, at night, from afar (right), as the building glows like a lantern.

with white paint to match the roof, while letting the grain show through. Outside, where the material also needed to be able to withstand water exposure, engineered New Zealand pine was used for wall cladding beneath the roof. Even the platform's tiled floor has a woodgrain pattern. Unexpected in a heavily trafficked transportation hub through which 130,000 passengers will eventually pass every day, the wood softens the hard surfaces and cold metallics typical of station buildings.

The use of wood is especially evident on the platform level in the Kuma-designed bentwood benches and hip-height bars that passengers can lean against while waiting for their train. Manufactured in Yamagata Prefecture by Tendo Co. Ltd, the venerated furniture factory that first produced Sori Yanagi's Butterfly Stool, both seating elements are made of molded cedar plywood, and their curving forms are as easy on the eye as they are on the body.

Between the presence of wood and the origami-like roof, with its reference to lanterns, the Takanawa Gateway Station bows politely to traditional Japan. Its individual components are employed with the refinement, grace, and exquisite craftsmanship we have come to expect of a Kengo Kuma building. Rendered at a large scale and with a high degree of abstraction, the station's Japaneseness is legible but without being kitsch or commercial. ■



Credits

ARCHITECT: Kengo Kuma and Associates — Minoru Yokoo, Keita Watanabe, Yokoi Tomoyuki, Kimio Suzuki, Yuzuru Kamiya, Go Terasawa, Hisako Tokai, Atsushi Kawanishi*, Takumi Nakahara*, Minako Izumi* (*former staff)

ARCHITECT OF RECORD & ENGINEERS: East Japan Railway Company + JR East Design Corporation

CONSULTANT: LPA (lighting)

GENERAL CONTRACTORS: Obayashi Corporation + Tekken Corporation

CLIENT: East Japan Railway Company

SIZE: 68,245 square feet

COST: withheld

COMPLETION DATE: March 2020

Sources

ROOFING/SKYLIGHTS: Taiyo Kogyo Corporation (PTFE & ETFE)

ELEVATORS/ESCALATORS: Hitachi



Walk This Way

WXY connects two downtown Manhattan neighborhoods with an intricate pedestrian bridge.

BY KARA MAVROS
PHOTOGRAPHY BY ALBERT VECERKA/ESTO

"IF YOU DIG a hole in New York City, it costs a million dollars and generates a million meetings," jokes Mark Yoes, design principal at WXY. The design process for the Robert R. Douglass pedestrian bridge, which crosses West Street in lower Manhattan, backs up his point. Seven years and $45 million later, just before the 20th anniversary of 9/11, WXY has completed the last piece of the Lower Manhattan Development Corporation's (LMDC) plan for rebuilding and restoring the area below Houston Street affected by the destruction of the World Trade Center towers. For the New York–based architects, the 240-foot-long walkway bookends two decades of work—the firm also helped with LMDC's first project, restoring the Battery Park City esplanade and assisting with the disaster-recovery plan in 2001. "Now people can cross the bridge and not think about any of those things," says Claire Weisz, principal in charge at WXY.

Named for Robert R. Douglass, the late LMDC board member who led post-9/11 efforts in Manhattan, the new structure replaces SHoP Architects' interim Rector Street footbridge one block north. "It was very controversial," says Weisz. "Even though Rector Street was a temporary bridge that was built to be dismantled and recycled, people wanted it up." And although it became a neighborhood fixture over the years, a replacement—by WXY—was still needed, as it wasn't built to last.

Working with the New York City Economic Development Corporation (NYEDC) on a project funded entirely by LMDC's federal funds meant the architects needed to adhere to extra layers of rules and regulations. (Both NYEDC and LMDC are clients of the architects, though the Battery Park City Authority maintains the

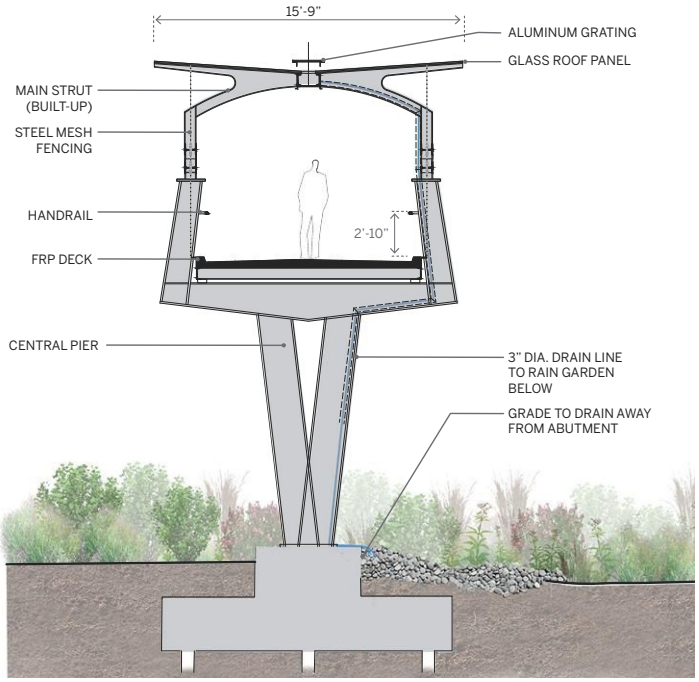


CONNECTING the Financial District to Battery Park City, both bridge approaches are accessible by stair and elevator and are illuminated by LEDs (opposite and above).

bridge). For example, WXY had to ensure that the structure's steel was American-made, per the FTC's Buy America program. Fabricated in steel shops in upstate New York and in Pennsylvania, the bridge was assembled off-site, stored in Brooklyn's Red Hook neighborhood, and delivered to the downtown water's edge by barge. It was then hoisted over the Battery Park City esplanade by crane. "The need to assemble it quickly was a major driver of the whole design," says Yoes. For two nights in a single weekend, traffic on West Street was closed for 20-minute increments while the bridge was erected.

For this reason, it was especially important that the materials were lightweight for efficiency and ease of transport, according to Courtney Clark, associate principal at Thornton Tomasetti, the structural engineers. "We didn't have room for a big foundation," Clark says, explaining why the team created a lightweight superstructure of steel trusses and a fiber-reinforced plastic deck. The distinctive curved lenticular truss design and its spans—there are two, due to weight—are supported by three individual steel buttresses. According to Clark, the bridge's central pier, in the road median, misses the Brooklyn-Battery Tunnel "by a few feet," and the eastern end is constrained by underground utility lines, hence requiring a larger west footprint with an A-framed pier.

Across both spans, a glass roof with convex steel supports provides



SECTION DETAIL

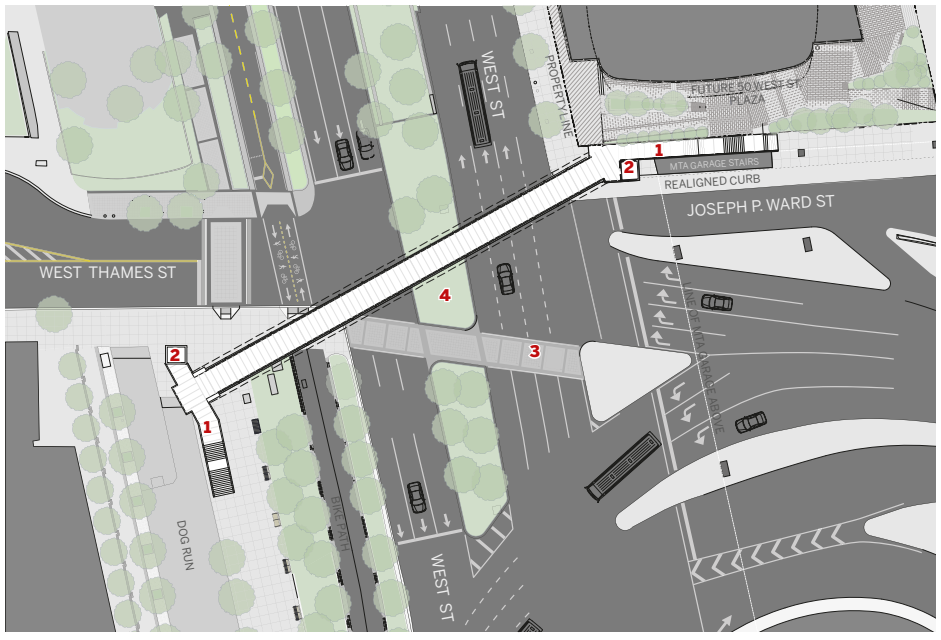


THE LENTICULAR truss bridge satisfies the need for a lightweight structure and boldly spans the multilane West Street.

lateral bracing and shields people from the elements while still admitting daylight to the passageway below. Along the elevated path, diamond steel mesh is used as fencing—to prevent jumping or falling—while allowing for air movement and a sense of openness. "With infrastructure, it's important to look at codes as a warning, but not as something to design to," says Weisz. Above the traffic and several blocks from the water, the gentle sea breeze and shaded walkway are a welcome respite from the heat and create a low-energy microclimate for comfortable crossing. (Though in the winter, the gusts may be less refreshing.)

"There are two goals when you do a public-space project," says Weisz. "You want to make what's already there look better, and you want it to feel as if it was always there."

From above West Street, there's a good chance the professionals who work in the Financial District and the families who live in Battery Park City will focus on the whoosh of the cars below, the dramatic shadows cast by the arched steel roof supports, and the stellar view of One World Trade Center to the north. It's impossible to ignore how the skyline has changed, but easy to forget the bridge hasn't always been there. ■



PLAN

1 STAIRS
2 ELEVATORS
3 CROSSWALK
4 RAIN GARDEN

Credits

ARCHITECT:
WXY architecture + urban design

ENGINEERS: Thornton Tomasetti (structural), Wesler-Cohen Associates (mechanical)

GENERAL CONTRACTOR: Skansa

CONSULTANTS: NV5 (landscape architecture), FRONT (facade), ARUP (lighting)

CLIENTS: New York City Economic Development Corporation, Battery Park City Authority, and the Lower Manhattan Development Corporation

SIZE: 240 feet long

COST: $45 million

COMPLETION DATE: 2020

Sources

GLAZING: Prelco Glass

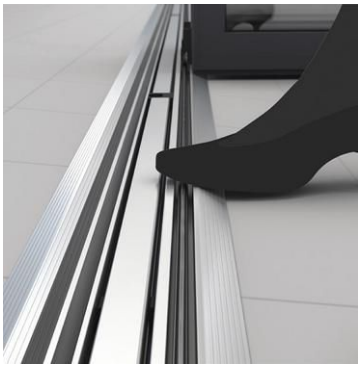
LIGHTING: Ecosense (wall wash lights), Axis Lighting (stairs & handrails)

CLADDING: Sherwin-Williams (steel paint), Jakob (cable mesh), Composite Advantage (fiber-reinforced polymers), Schüco (facade system), Rockwool (insulation)

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2021 Record Products of the Year

The editors of *Architectural Record* are currently inviting submissions for the 2021 Products of the Year Awards, which salute the best building materials and furnishings introduced to the U.S. market within the last year (no earlier than August 15, 2020).

A panel of architects and designers will judge the entries on the basis of innovation, function, sustainability, and aesthetics. Winners will be published in the December 2021 issue of RECORD.

DEADLINE TO ENTER:
WEDNESDAY, AUGUST 18

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Pictured: A selection of 2020 Record Products of the Year (RECORD, December 2020)

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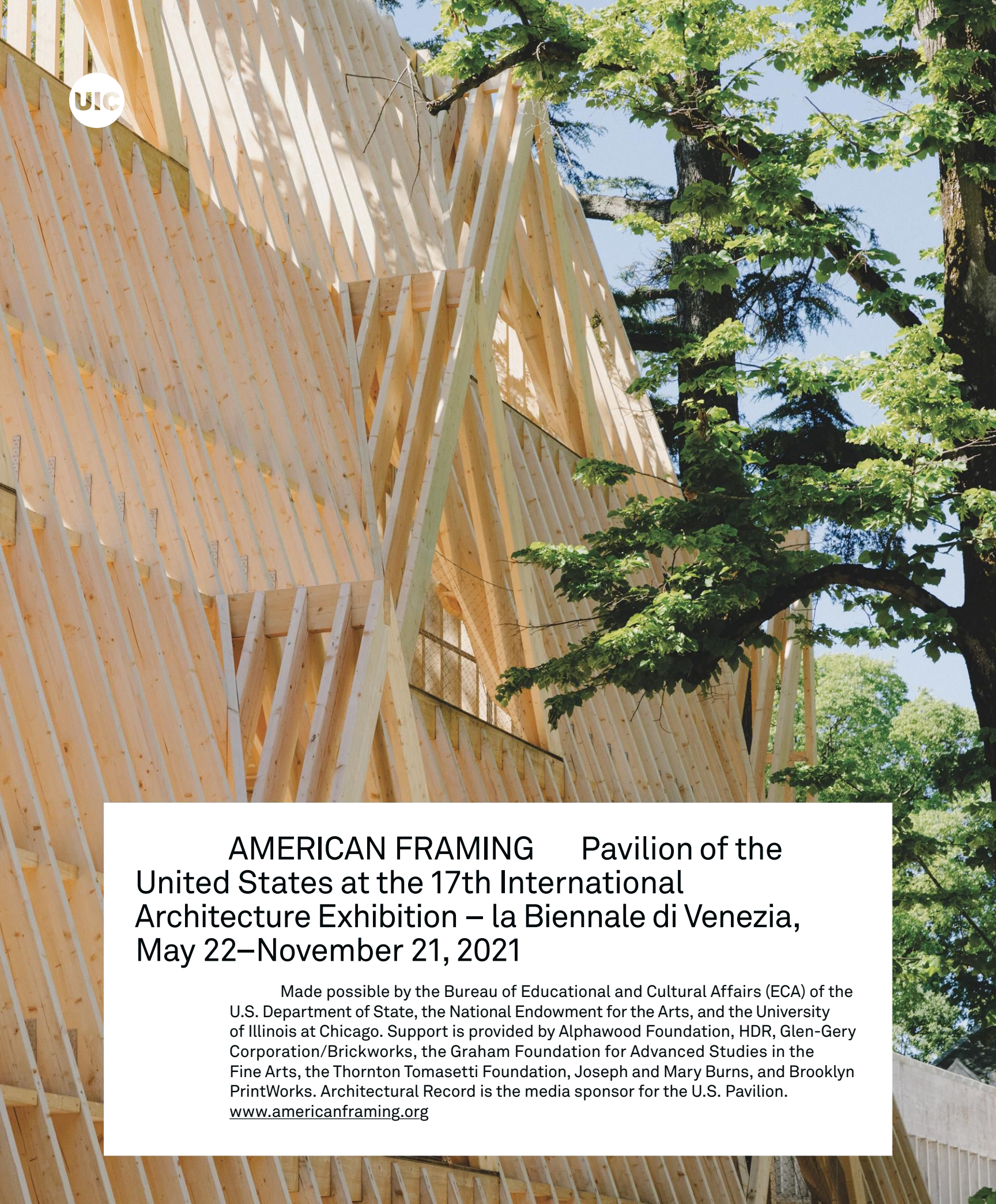
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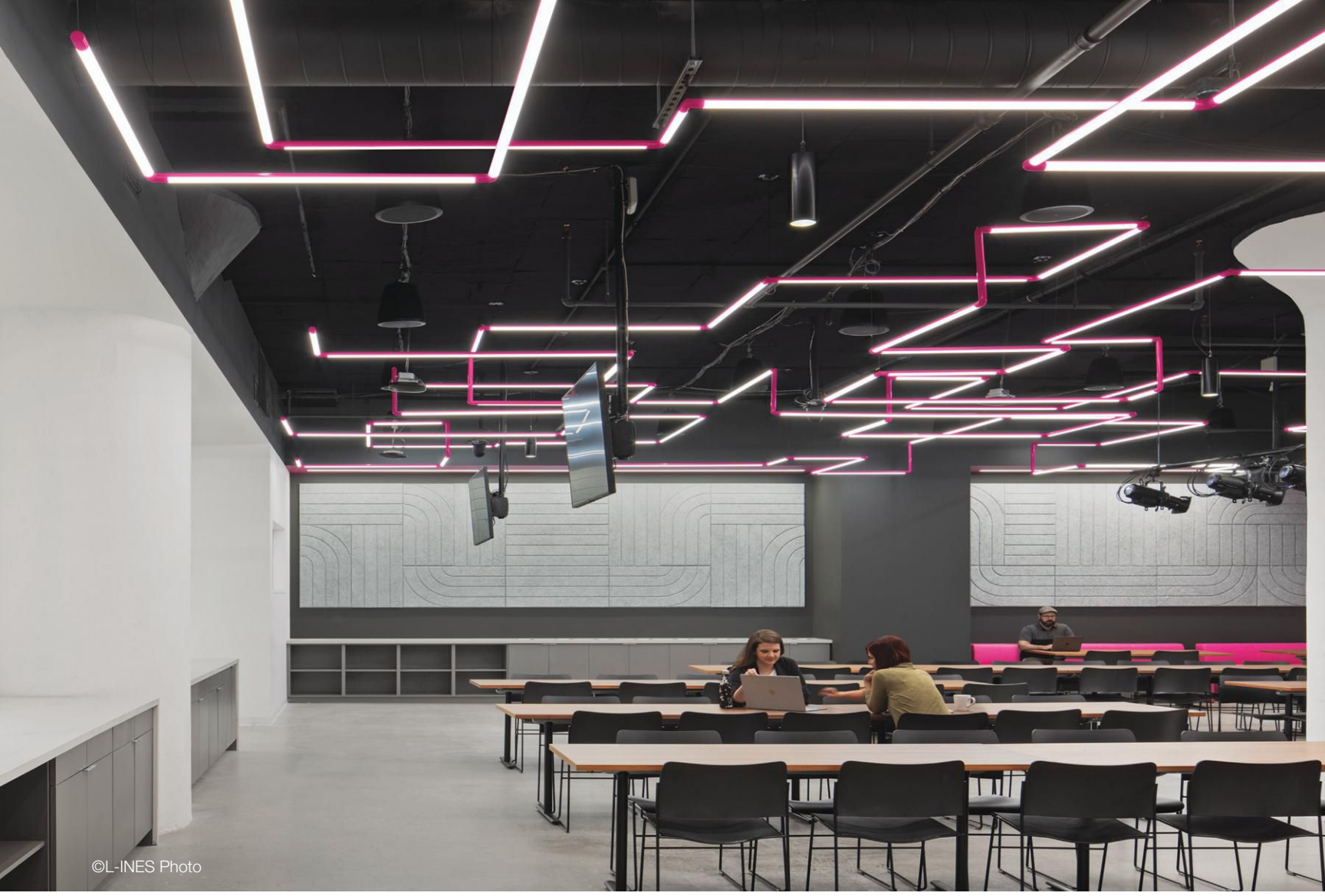
Ornamental Metal Institute of New York

Steel Institute of New York



AMERICAN FRAMING Pavilion of the United States at the 17th International Architecture Exhibition – la Biennale di Venezia, May 22–November 21, 2021

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LIGHTING

POWER TO THE PEOPLE

Stanley Saitowitz conceals a pair of electrical substations with glowing public spaces.

BY LYDIA LEE

YOU WON'T normally find a daybed at an electrical substation, but leave it to San Francisco architect Stanley Saitowitz to make the most of what would appear to be a meager architectural opportunity. The original brief was to enliven the stark tilt-up concrete facades of



As night falls, LED lighting highlights the dips and peaks of the Potrero substation's undulating facade.

PHOTOGRAPHY: © RICHARD BARNES/JBSA

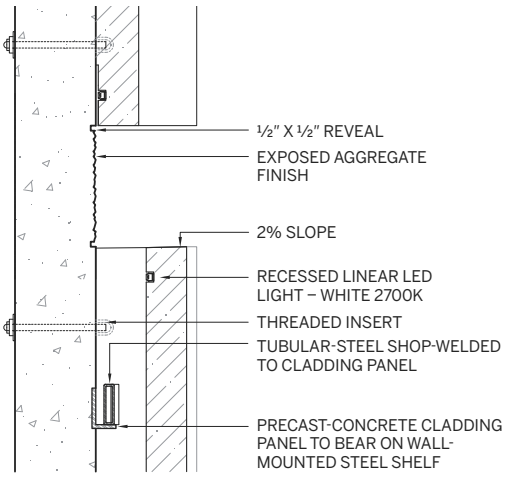


Developed from five different shapes, the facade patterns are "rich enough to be musical without being repetitive," says Saitowitz.

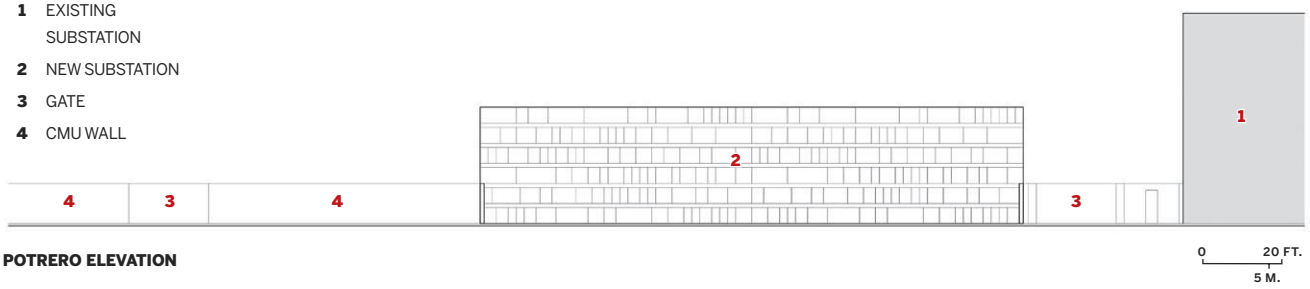
two new PG&E substations. But Saitowitz expanded the program to encompass illuminated plazas with sculptural seating—a generous civic gesture.

To increase the electrical supply to downtown San Francisco, California utility company PG&E needed to add a new power line from its Potrero switchyard, located three miles south, and construct a new substation at either end. Saitowitz saw that there was room to push each substation back from the sidewalk in order to prioritize pedestrians and the streetscape. "The idea that we had was to make the plaza and the facade surface continuous—the structure wraps down into the plaza and becomes furniture," says Saitowitz, principal and founder of Natoma Architects.

The design team devised a system of precast-concrete pieces in five different shapes, which could be combined to create a pleasingly irregular pattern and work both horizontally and vertically. The Potrero substation, a long building, received the horizontal treatment, while the relatively compact Embarcadero substation, located next to an existing 171-foot-tall facility, got the vertical treatment. The 4-foot-wide, 4-inch-thick ribbons—with ridges that deform as much as 14 inches away from a level surface—are bolted to the facades in rows 1 foot apart. The spacing highlights the thickness of the strips and clearly reveals that they are a distinct surface treatment, separate from the structure. The conceit of the continuous facade is particularly pro-



POTRERO WALL SECTION DETAIL



POTRERO ELEVATION

nounced at the Embarcadero substation, where most of the strips contort into benches and chaise longue–like seating when they reach the ground. When unoccupied, the plazas look like sculpture gardens, thanks to the abundance and variety of benches (there are seven different shapes), instead of lonely vacant spaces.

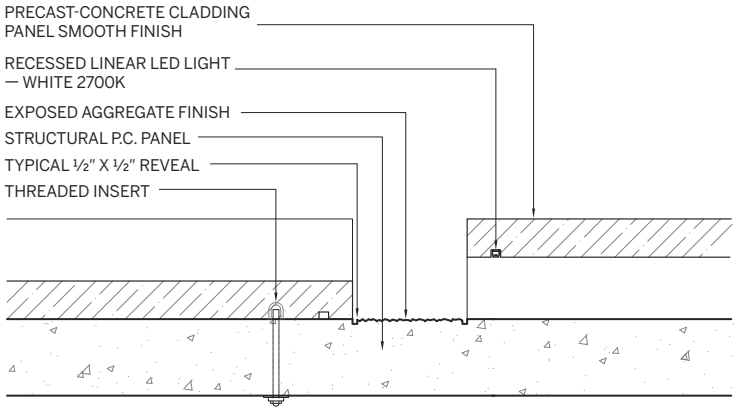
The sculptural qualities of the precast-concrete installations are particularly apparent in the evening, when a discreet lighting scheme underscores the rippling forms. To conceal the LED-strip system, the design team placed the fixtures in shallow grooves along the inside edges of the facade and bench components. After testing the lighting in full-scale prototypes, Saitowitz selected a color temperature of 2700K, a "warm white" that maintains the neutral gray of the concrete. The illumination level is 25 foot-candles, which is bright enough to create a sense of security for these public spaces.

While the Potrero substation is in the industrial outskirts, the Embarcadero addition is in the heart of the city's posh new Transbay district. On a recent summer Saturday evening, one young passerby took advantage of the gently illuminated perches there to sit down briefly and check his whereabouts in relation to the Avery, a glittering high-rise nearby, designed by OMA. For this bystander, however, it was an ideal time—and place—to stop and lounge, taking in the changing urban scene. ■

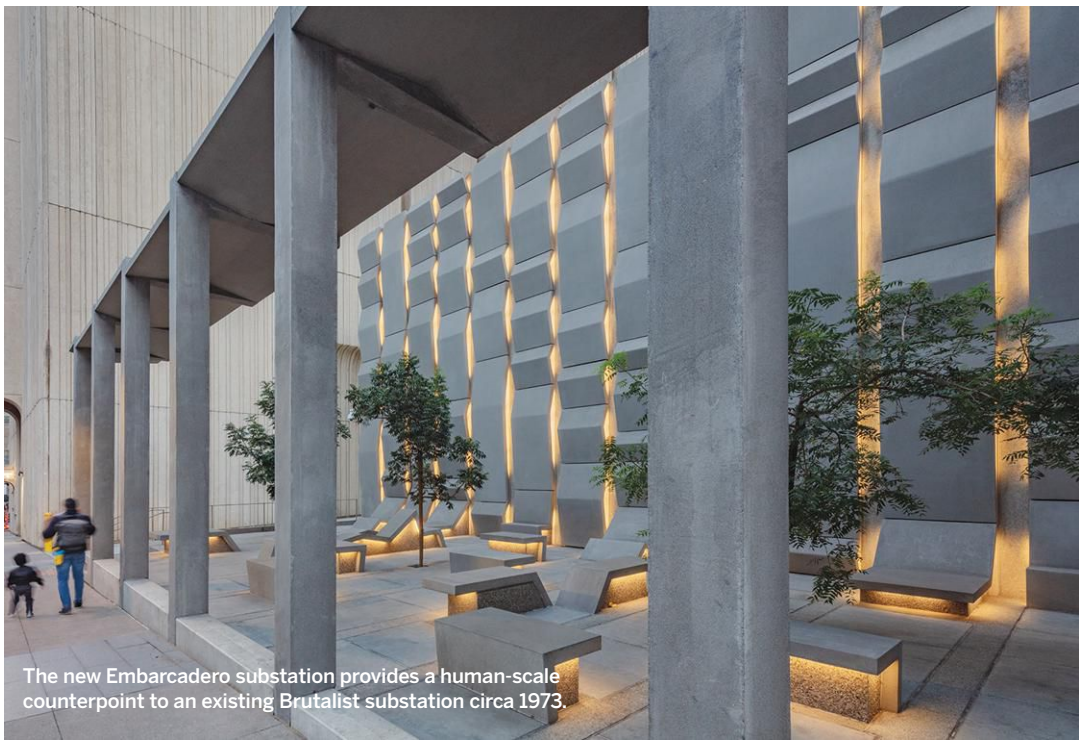
Lydia Lee is a freelance writer based in the San Francisco Bay Area, with a concentration on architecture and design.



EMBARCADERO ELEVATION



EMBARCADERO WALL PLAN DETAIL



The new Embarcadero substation provides a human-scale counterpoint to an existing Brutalist substation circa 1973.

Credits

ARCHITECT: Stanley Saitowitz | Natoma Architects – Stanley Saitowitz, design principal; Ulysses Lim, project manager; Neil Kaye, project architect

ENGINEERS: WRK Engineers (structural); Telemon Engineering (civil)

GENERAL CONTRACTOR: ABB/Linxon

CONSULTANTS: Rana Creek (landscape)

CLIENT: PG&E

SIZE: 1,534 square feet (Embarcadero); 1,632 square feet (Potrero)

COST: withheld

COMPLETION DATE: 2020

Sources

CONCRETE: CTU Precast (structural walls); Structurecast (cladding)

LIGHTING: YD Illumination

Arc of Progress

These luminaires and systems present welcome variations on existing forms and technologies.

BY SHEILA KIM



UNIVERSE System

Reimagining traditional track lighting, Juniper developed this grid-based network, designed to be integral to the architectural scheme of a space. It revolves around a series of slim 7mm-thick linear modules and connectors that conceal low-voltage conduits. These components then power and magnetically hold coordinating mini-spotlights. The system is offered in three finishes.
juniper-design.com



Ayno

Visually graphic yet whimsical, this table and floor lamp series from Midgard features a simple plastic shade on a flexible arched fiberglass rod. Textile-covered cables, each connected at two points on the rod, allow users to manipulate its radius and curve. Ayno is available through Ameico.
ameico.com

Alisse

An elegant solution from Lutron Electronics, this lighting control panel is both understated and customizable, offering options that range from engraved labels to a choice of one to three backlit buttons. The fingerprint-resistant metal plate comes in a range of metallic and painted finishes including aged bronze and matte black.
lutron.com





Trapz New Finishes

Modular Lighting Instruments has updated this wall sconce with sophisticated finish combinations such as an anodized bronze outer body (left) paired with an aluminum interior. Trapz's sleek flattened cylinder has two oblique openings that offer glimpses of the contrasting interior.
supermodular.us



The LittleOnes

USAI Lighting has unveiled a line of tiny architecture-grade recessed fixtures that practically disappear into ceilings while delivering more than 1,000 lumens of light. Boasting a mere ¾" lens aperture, the luminaire is available as a round or square fixed downlight, wall washer, or adjustable accent fixture.
usailighting.com

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Photo courtesy of Humboldt Sawmill Company



Landscape Architecture: Design Ideas for "Taking It Outside"

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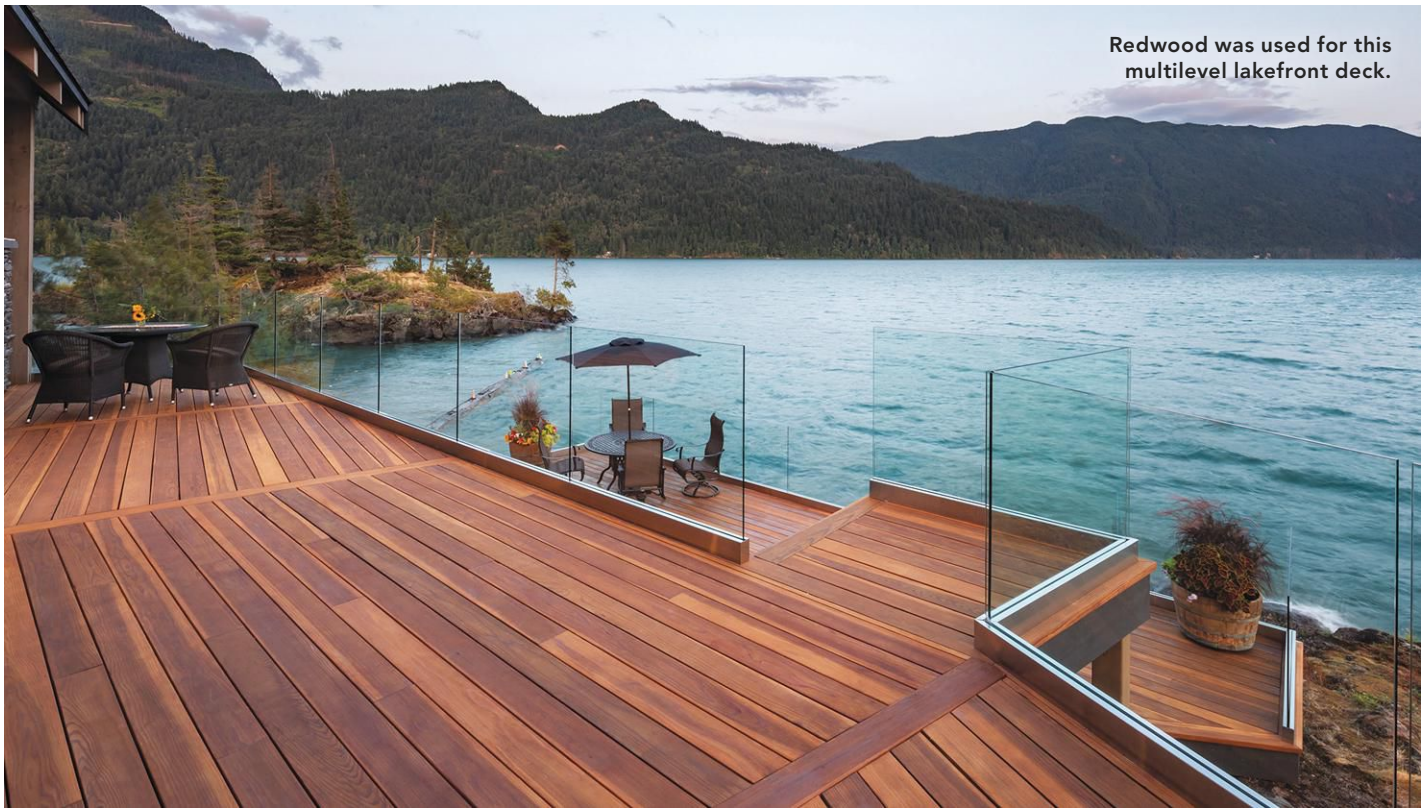
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Courses may qualify for learning hours through most Canadian provincial architectural associations.

Photo courtesy of Humboldt Sawmill Company



Redwood was used for this multilevel lakefront deck.

Landscape Architecture: Design Ideas for "Taking It Outside"

Materials and strategies for creating safe and comfortable outdoor experiences

Sponsored by Bison Innovative Products and Humboldt Sawmill Company | *By Elena M. Pascarella, RLA, ASLA*

Landscape architecture by definition is the design of outdoor spaces. The American Society of Landscape Architects (ASLA) provides a detailed explanation in response to the question, "What is landscape architecture?" It states that landscape architects have a significant impact on both the natural environment and the people who live in the surrounding communities. As we adjust our design criteria for meeting COVID-19 recommendations for safe social distancing as well as spending more time outside, there are several options available for landscape architects to create attractive outdoor spaces that allow people to enjoy social interaction outside, both safely and comfortably.

During the pandemic of 2020, we experienced social isolation because of various restrictions that limited access to our normal patterns of work, play, and socialization. Yet even during the tightest restrictions, outdoor locations were considered the safest environments for social interaction. Many news articles

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Learning Objectives

After reading this article, you should be able to:

1. Discuss the key results of a new life-cycle assessment (LCA) and related environmental product declarations (EPDs) for redwood lumber.
2. Define the key sustainability criteria (LEED and SITES) that apply to exterior materials that are used in landscape architectural design.
3. Identify and explain the product compliances that meet LEED and SITES sustainability criteria.
4. Gain technical knowledge about some of the products and systems that are currently available for designing durable outdoor areas.

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Symphony House Apartments, New York NY | architect: FXFowle

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have pointed out that it took a pandemic to finally force Americans to rethink the way we relate to the outdoors. And as the pandemic restrictions have lifted, many people still feel "safest" interacting and socializing outside.

Post-pandemic, as we look forward to the restoration of healthy socializing and community engagement, designers and landscape architects are presented with more opportunities to provide outdoor spaces that:

- Improve and regenerate environmental conditions;
- Benefit people's health;
- Enhance safe social interaction; and
- Are sustainable and economically beneficial.

Well-designed outdoor spaces can meet the goals of social distancing while providing comfortable and desirable environments for users to frequent.

In addition to providing ideas for creating outdoor spaces that contribute to the health and welfare of communities, this course will also address ways in which outdoor spaces can meet both LEED and Sustainable SITES guidelines.

Sustainability has expanded its definition and applications beyond material content and safety, material resource resiliency, and design adaptability. The most recent versions of LEED include considerations relating to human health and well-being as well as social and cultural connections. Both LEED for Neighborhood Development (LEED ND) and Sustainable SITES provide performance measures for designing functional and regenerative landscapes that increase outdoor opportunities.

Key design criteria of both SITES and LEED, which focus on sustainability in the design elements for outdoor spaces, include Materials Selection, Environmental Quality, Human Health and Well-Being, and Energy and Optimization. This course will explore the ways that designers can create an attractive and sustainable outdoor environment compliant with these LEED and SITES criteria, while also effectively addressing health and community benefits.

So, how can we create outdoor spaces that provide safe and comfortable outdoor environments while also contributing to environmental sustainability?

REDWOOD: AN ENVIRONMENTALLY FRIENDLY, RENEWABLE RESOURCE

Redwood is an aesthetically beautiful wood that is an environmentally friendly, renewable resource. Sourced from Forest Stewardship Council (FSC C013133) certified forests and manufactured with 100 percent natural materials, redwood lumber and timbers are renewable resources that are also nontoxic and safe for children and pets due to their natural preservative properties that make the wood naturally resistant to insects and decay. Redwood lumber and timbers meet environmental concerns through both the FSC certification and the USDA Forest Service Life-Cycle Analysis.

FSC certification indicates that the forest from which the wood is harvested has been environmentally managed. FSC certification ensures that products come from responsibly managed forests that provide social and economic as well as environmental benefits. The FSC U.S. National Standard (v1.0) guides forest management certification in the United States.

Redwood lumber and timbers will count toward credit achievement under both the LEED rating system and the Sustainable SITES initiative based on the following criteria.

The applicable LEED rating criteria include:

- **Renewable Resource:** Redwood is a sustainable natural wood product.
- **Certified Wood:** FSC certification indicating that redwood forests are environmentally managed.
- **Low Carbon Footprint:** Environmental product declarations (EPDs) are available for redwood noting low carbon footprint in the milling and processing of products.
- **Heat Island Effect:** Redwood forests help to mitigate the heat island effect and the effects of climate change.

The applicable Sustainable SITES rating criteria for redwood include:

- **Renewable Resource:** Redwood is environmentally managed.
- **Materials Selection:** Redwood has a positive life-cycle assessment (LCA).
- **Environmental Quality:** Redwood is an environmentally managed and durable product.
- **Energy and Optimization:** The processing of redwood is a low-carbon-footprint operation.
- **Human Health and Well-Being:** Redwood products are used to create attractive outdoor spaces that invite frequent use, thus benefiting human health and well-being.

An LCA has been done by the USDA Forest Service on the manufacturing process of redwood decking from harvesting through to final disposal of the product. This study evaluated material flows, energy use, and cumulative energy consumptions associated with the manufacturing process. The conclusions were that low carbon emissions during the manufacturing process for redwood decking and carbon storage during the service life of a redwood deck are both positive environmental attributes to be considered when selecting a decking product

The LCA measures the total impact that a material has on the environment, taking into consideration the resources used to create it, the pollution created by its production, and the product's end-of-life impact.

Redwood has an extremely low LCA because it is both renewable and recyclable. Redwood forests are replanted after harvesting so they are renewable, and redwood decking can be recycled at the end of its life cycle. The wood can be repurposed into wood chips or reused on other projects, and the wood has a long service life.

Redwood Is Sustainably Harvested

Redwood is grown and harvested in compliance with FSC as well as California Forest Practice Rules, which are some of the most stringent regulations in the world. When redwoods are harvested, the stump is able to send out shoots of new growth fairly rapidly because the full root system that drives the growth has remained. There are two harvesting practices that comply with sustainable forestry methods:

1. Preserving old growth and harvesting from new growth.
2. For each mature tree that is cut down, a number of seedlings are planted in its place.

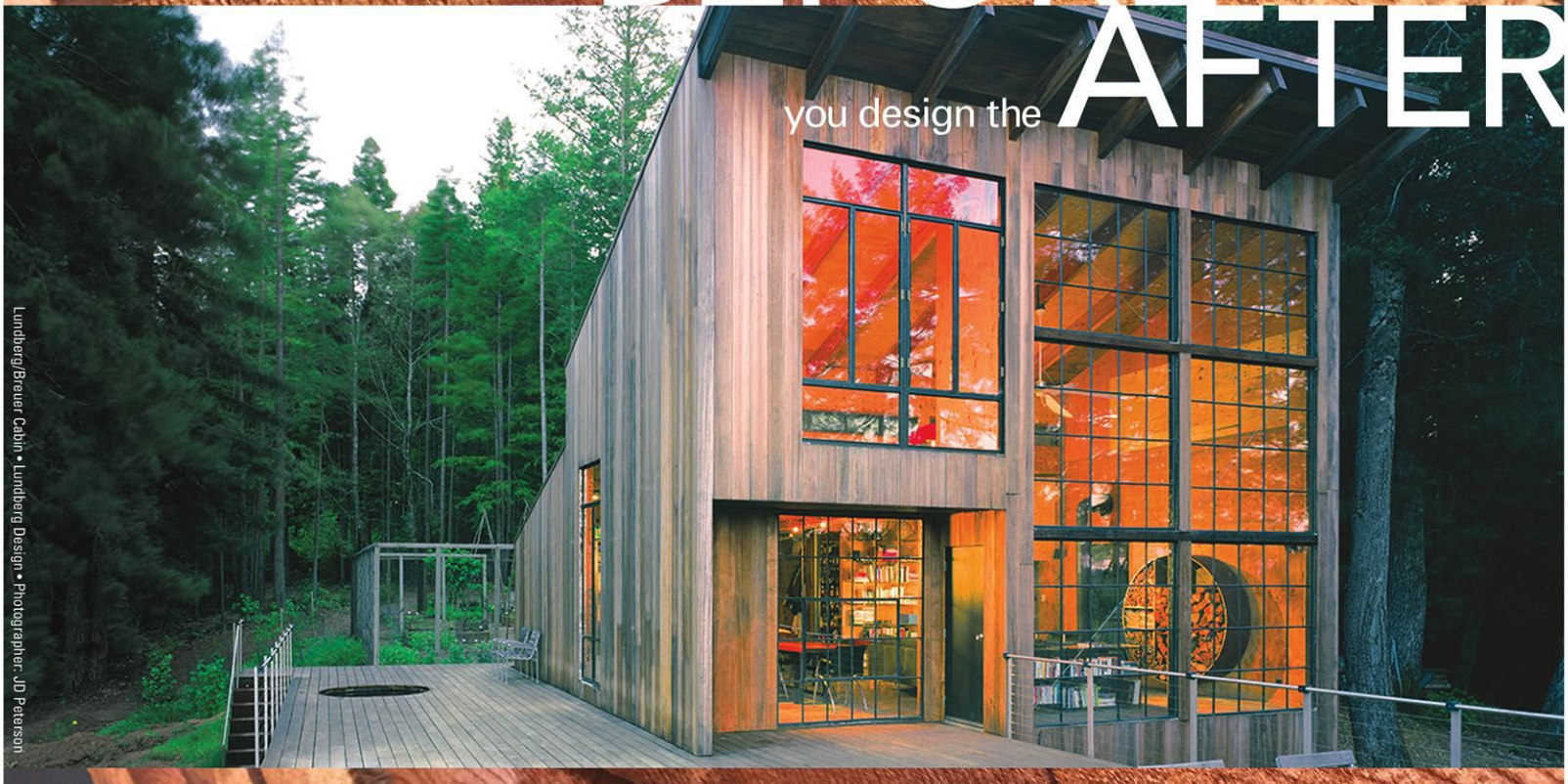
Redwood Reduces Carbon Emissions

All wood has the capacity to remove carbon from the air and store it in wood fibers even after the wood has been harvested and made into lumber. Studies have shown that redwood is very efficient at removing carbon from the atmosphere, with up to half a ton of carbon being stored in one redwood deck. Redwood's carbon storage is also maximized through its sustainable forestry practices because faster-growing younger trees are better able to take in carbon than older trees.

The American Wood Council also has prepared reports on EPDs of U.S. redwood lumber. It evaluated redwood from extraction through transport to the facility (log delivery) and manufacturing process, which includes sawmilling, drying, planing, and packaging. The EPDs for products provide a basis for evaluation of the environmental performance

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Adjustable pedestals support wood tiles.

of the product but does not "judge" whether the product meets any environmental quality standards. It does provide information about the environmental impacts from some or all of a product's life-cycle stages.

Architects and designers should note that the key results of new LCA and related EPD results for redwood lumber are not the same as the LCA/EPD for redwood decking. There have been two separate studies done, one for lumber and one for decking.

DESIGNING OUTDOOR SPACES USING MODULAR SYSTEMS

Many of today's products provide design flexibility through modular systems. Modular decking and modular pavement systems provide landscape architects with a variety of surface options for creatively designing outdoor spaces both on-grade and on rooftops. Modular cubes and modular outdoor structures such as pergolas present opportunities for creating privacy and separation by providing options for vertically defining outdoor spaces.

On the ground level, modular pavers can be used to define entrances, pathways, parking spaces, sitting spaces, and large open areas. Modular wood elements can be mixed with pavers or used by themselves to create unique aesthetics. Modular cubes provide spaces for plantings in rooftop gardens, decks, or parklets. Modular structures provide opportunities to create outdoor rooms for shade and privacy.

Surfaces for rooftop and ground-level spaces can be designed using wood, stone, or concrete pavers to create unique custom looks. All these materials can be applied either on a rooftop or over a prepared ground-level subgrade over a pedestal support system.

Versatile Modular Deck Systems Provide Flexibility

Modular and versatile deck systems give architects and designers the design flexibility to create unique and beautiful rooftop environments as well as ground-level outdoor spaces. Designers can include a mix of pavers and surface materials, including wood, stone, structural porcelain, crushed rock, grating, artificial turf, and concrete, as well as planter cubes and benches to create unique, custom looks. The versatile, adjustable pedestal deck systems can be utilized over any structural surface, including bare structural decks, rooftop decks, roof membranes, green roofs, terraces, compacted grade-level surfaces, pavements, pool surrounds, and within water features.

These deck systems provide solutions for designers to expand social functions outside by utilizing unused space in the city, constructing a new porch or backyard in the suburbs, or creating a large decking area for outdoor dining. Creative outdoor spaces allow for an extension of indoor areas or the creation of a new outdoor oasis of its own. Outdoor spaces can contain kitchens, fire pits, bars, living areas, gardens, and, if large enough, play areas.

Outdoor decks connect guests to the natural environment through the use of natural materials, such as wood and stone, and provide opportunities to incorporate vegetation and greenery into the space through the use of planter cubes and pots. This exposure to the outdoors benefits the health and well-being of people, as regular interactions with the natural environment are proven to lower blood pressure, reduce stress, expedite healing, and improve one's mood and focus.

Through the use of a modular decking systems, designers can create an abundance of different design visions without the need for custom or costly materials. These deck systems allow for quick and easy installation through fastening kits that facilitate swift and secure installations of wood surface tiles and paver-tray-backed pavers without harm to the wood tiles or pavers.

Deck System Components

Deck systems are comprised of two major components: pedestals and tiles/pavers. The pedestals are designed to elevate and support a variety of tiles/paver surfaces, including structural porcelain, stone, granite or concrete pavers, wood tiles, composite materials, fiberglass grating, or conventional joist and plank systems.

As a component of the deck system, the pedestals offer tremendous design flexibility coupled with ease of installation. This adjustable component provides a unique and viable alternative to traditional deck-building systems for the following key reasons:

Continues at ce.architecturalrecord.com

Elena M. Pascarella, RLA, ASLA, *is a practicing landscape architect, continuing education presenter, and consultant engaged in a private practice based in Rhode Island. The firm's portfolio can be viewed at* ***www.landscapeelementsllc.com.***

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PRODUCT REVIEW

Landscape Architecture: Design Ideas for "Taking It Outside"

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Rooftop Deck Systems

Bison pedestals are manufactured in Denver with 20 percent post-industrial recycled materials and have patented features that improve performance and stability. These versatile, adjustable-height pedestal deck systems create level rooftop decks over sloped surfaces, support a variety of different surface materials, and can be installed over any structural surface.

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Humboldt Sawmill Company

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Lumber and Timbers

Redwood lumber and timbers are popular for landscaping projects where the natural beauty and durability of wood is desired. Redwood lumber encompasses 1-inch and 2-inch material. Redwood timbers encompass 4-inch, 6-inch, 8-inch, and larger members. Redwood from Humboldt Sawmill Company is available Forest Stewardship Council (FSC C013133) certified.

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The award-winning Richard J. Daley College Manufacturing Technology & Engineering Center in Chicago features colorful metal wall panels on the exterior, creating a stunning design.

Photo courtesy of Tom Rossiter

Modern Metal Walls and Roofs: Colorful, Evocative, Innovative

Award-winning projects where metal cladding achieved the modern aesthetic and performance

Sponsored by The Metal Construction Association | *By Kathy Price-Robinson*

The specification of metal for roofs and walls has led to some of the most colorful, evocative, and innovative buildings in the country. These include San Francisco's Chase Center, home to the Golden State Warriors, where metal achieves the desired look of prestige with custom color options, sleek and seamless configuration, and modern luster; to a Texas residence whose unique undulating roof reflects the sky and trees. At a North Dakota airport, insulated metal panels mimic the look of the region's stratified limestone without the weight and environmental impact associated with stone. A 10-story building in New York's Tribeca stands out with single-skin aluminum panels painted with organic pigments and pearlescent inks and formed into geometric angular shapes. And at a health center in Chicago, a prismatic finish allows for the color to shift with the angle of the light, so the metal panels appear to have fluidity and movement. This course dives into award-winning projects, and illustrates the benefits of metal architecture for meeting environmental goals, ease of installation, performance, and cost-effectiveness.

Continues at ce.architecturalrecord.com

Kathy Price-Robinson *writes about building and design. Her remodeling series "Pardon Our Dust" ran 12 years in the* Los Angeles Times. *She specializes in buildings that are durable and resilient to climate disruptions, as well as products and designs that provide shade in hot climates.* ***www.kathyprice.com***

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Learning Objectives

After reading this article, you should be able to:

1. Define the benefits of metal architecture for meeting environmental goals, ease of installation, performance, and cost-effectiveness.
2. Discuss how metal cladding for roofs and walls provides a large array of color, including custom colors, and can match specific brand colors.
3. Identify unique finishes that provide aesthetic options with metal to mimic wood grain, weathering, and natural materials.
4. Describe extraordinary designs that can be created with metal by using rainscreens, varying panel widths, lengths, direction, curves, angles, and perforations.

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The Metal Construction Association brings together a diverse industry for the purpose of expanding the use of metal in construction through marketing, research, technology, and education. MCA member companies gain tremendous benefit from association activities that focus on research, codes and standards, market development, and technical programs. **www.metalconstruction.org**



Photo courtesy of The BILCO Company

Buildings that contain large, undivided open interiors, such as performing arts facilities, theaters, casinos, and convention centers, can benefit from acoustically sound-rated smoke vents to prevent environmental noise from entering sound-sensitive interior spaces.

Designing Roofs for Life Safety and Sound Isolation

Explore expert insights on how to specify sound-rated automatic smoke vents

Sponsored by The BILCO Company

"There are many reasons that a project may need to be designed to mitigate exterior noise," explains Harold Merck, INCE, LEED AP, principal at Merck & Hill Consultants. "Some spaces are sound sensitive, like the audience chamber or stage in a performing arts facility, while others have been constructed on noisy sites, near a railroad track or under a flight path. Sometimes the mechanical equipment on the roof generates a lot of noise that needs to be addressed as well. Whatever the reason, the building envelope can be designed to control the transmission of sound, just as it is designed to control temperatures and prevent water infiltration, and the roof area plays a critical role in achieving a sound management objective."

When projects must deliver greater levels of exterior sound mitigation, architects are required to spend more time shoring up the paths through which sound can most easily move from the outside to the inside. Openings are a common target of their attention. Just as openings in a building facade—doors and windows—can require soundproofing to reduce the transmission of noise from one side of the wall assembly to the other, openings made on the roof to accommodate automatic smoke vents or other products can benefit from solutions that have been specially engineered to manage sound.

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Learning Objectives

After reading this article, you should be able to:

1. Summarize how automatic smoke vents work in response to a fire event and how they modify the way that a fire progresses through a burning building.
2. Select the appropriate noise-measuring metric to evaluate the sound-buffering performance of building facade products that need to mitigate noise made from airplanes, construction activities, and traffic.
3. Explain the ways that automatic smoke vents are required to be incorporated into a design by the standard NFPA 204, authored by the National Fire Protection Association (NFPA), the 2018 International Building Code, and the International Fire Code (IFC).
4. Describe the many ways that automatic smoke vents offer better protection for people, firefighters, and property in the event of a fire.

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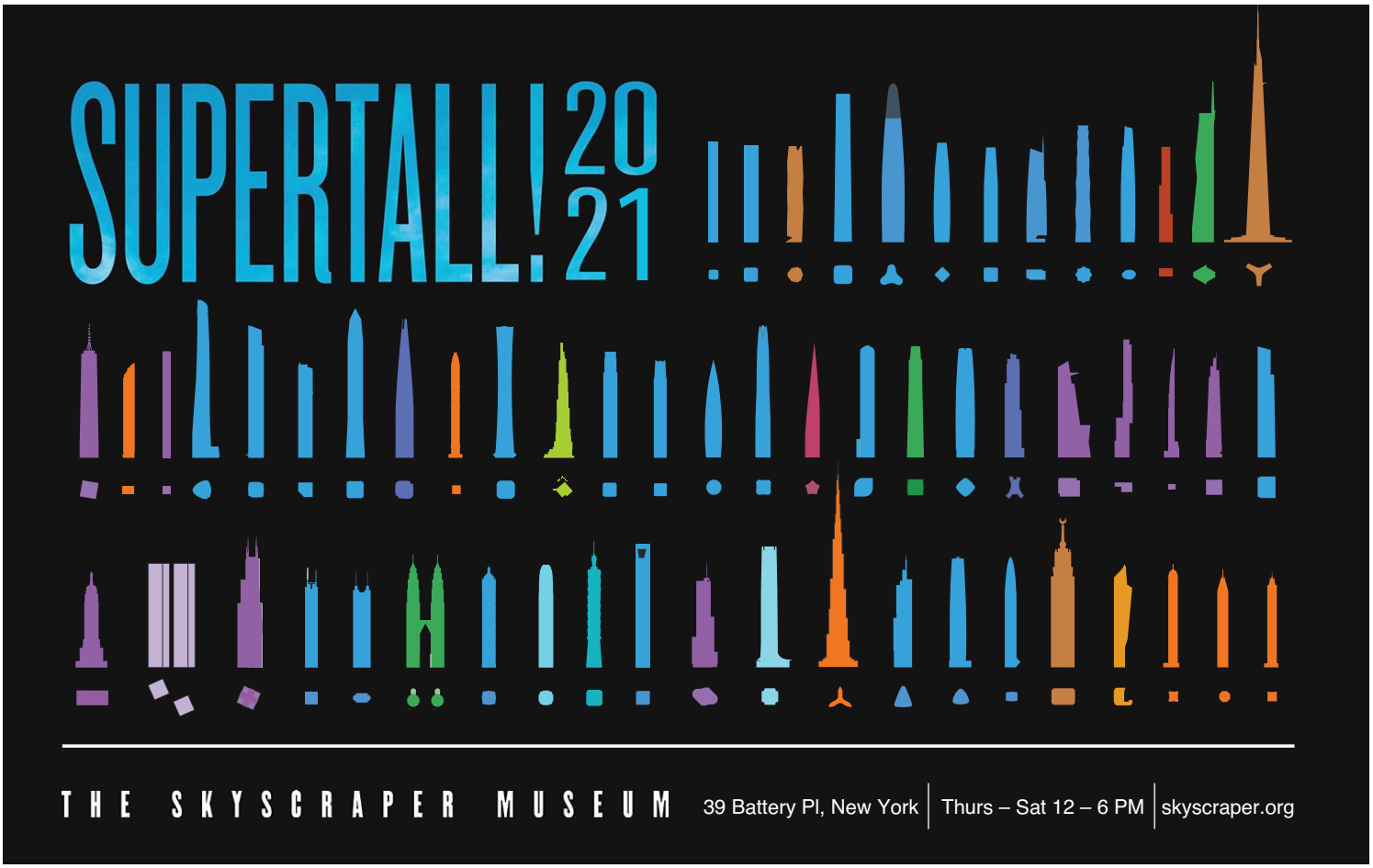
Upcoming Exhibitions

Improvisation in Wood: Kawamata x Munakata
New York
September 30, 2021–January 16, 2022
Japan Society presents an ambitious exhibition of major works by two preeminent Japanese artists of different generations: Tadashi Kawamata (born in 1953) and Shikō Munakata (1903–75). Kawamata pays homage to Japan Society's building—the first structure in New York built by a Japanese citizen, Junzo Yoshimura—as well as to the master 20th-century woodblock artist Munakata. Kawamata's site-specific installation engages prints by Munakata and draws inspiration from his signature materials of wood, paper, and ink. For more information, see japansociety.org.

Ongoing Exhibitions

Kéré Architecture, Berlin
Arbre à Palabres
Berlin
Through September 9, 2021
In collaboration with AW Architektur & Wohnen, Aedes Architecture Forum presents projects both planned and built by Francis Kéré and Kéré Architecture—recipient of the AW Architect of the Year award for 2021. Within the *Arbre à Palabres* installation (an abstracted kapok tree "under which people meet to learn from one another"), the exhibition, which opened in July, showcases the Burkina Faso–born, Berlin-based architect's works of "radical simplicity." The exhibited projects—which include National Park of Mali, Burkina Institute of Technology, Taylor Bridge (Mannheim, Germany), Freie Waldorfschule Weilheim (Huglfing, Germany), and buildings of the national assemblies of Benin and Burkina Faso—explore aspects of West Africa's ancient democratic practices, social structures, and educational infrastructure, as well as cultural dialogues across the African and European continents. For more, see aedes-arc.de.

Helmut Jahn: Life + Architecture
Chicago
Through October 2021
The Chicago Architecture Center's Skyscraper Gallery has organized a career retrospective celebrating the life and work of the late architect Helmut Jahn (1940–2021). The new exhibit, which opened in July, includes photography, models, and sketches of the design and engineering processes behind trademark projects like Chicago's James R. Thompson Center (1985) and Berlin's Sony Center (2000). *Life + Architecture* follows the journey of the German-born architect after arriving in Chicago to study at the Illinois Institute of Technology in 1966 and covers his



work from early projects like the Michigan City Public Library (1977) to recent designs such as the Pritzker Military Archives Center. See architecture.org.

Time Space Existence
Venice
Through November 21, 2021
The European Cultural Centre presents the biennial architecture exhibition's fifth iteration. It features completed and ongoing projects, in addition to proposals and research, with over 200 participants investigating the themes of time, space, and existence and how they relate to design of the built environment. With the goal of creating an exchange among architects, developers, photographers, artists, engineers, universities, emerging studios, and established global presences, the center aims to bring together those helping to shape the future. See ecc-italy.eu.

Justice is Beauty: The Work of MASS Design Group
Washington, D.C.
Through September 25, 2022
The National Building Museum's exhibition displays the MASS Design Group's portfolio, including applied research, proposals, and completed buildings related to the architecture of health. It incorporates photographs, videos, renderings, and models and is accompanied by *The Gun Violence Memorial Project*, an installation by the artist Hank Willis Thomas in collaboration with the Everytown for Gun Safety Support Fund and Purpose Over Pain. The memorial is comprised of four "houses" of glass bricks containing mementos representing lives lost to gun violence in America. See massdesigngroup.org.

Events

Venice Architecture Biennale 2021
Venice
Through November 21, 2021
The 17th International Architecture Exhibition, curated by architect Hashim Sarkis and organized by La Biennale di Venezia, includes over 100 participants from 46 countries. Meetings on Architecture, composed of a series of lectures and programs with architects and scholars from around the globe, addresses the title question, "How Will We Live Together?" Topics include the challenges of climate crisis, the role of urban space in public uprisings, changing forms of collective building, the architecture of education, and the relationship between curation and architecture. For more, see labiennale.org/en.

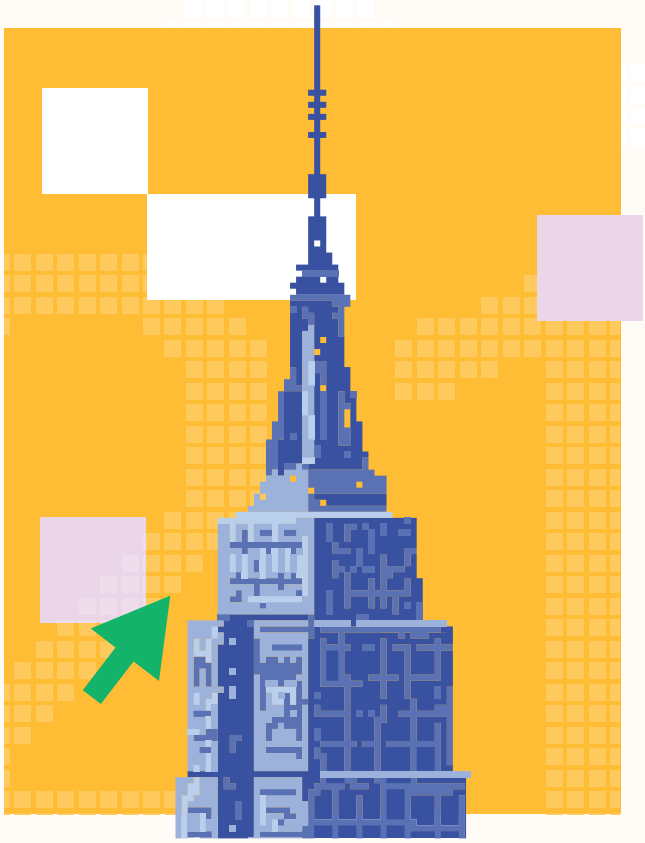
Metropolis: The New Now
Berlin & online
August 11–14, 2021
The city of Berlin will host the fourth edition of the Berlin Questions international conference. Experts in the fields of politics, science, art, and activism will meet to discuss their experiences of the pandemic, issues of civil

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responsibility, quarantine economies, local and global solutions, and visions for urban life. Hosted by Berlin's mayor Michael Müller, Berlin Questions 2021 will include High Line architect Elizabeth Diller, Lesley Lokko of the African Futures Institute Accra, and Sabine Oberhuber, cofounder of Turntoo. For more, see berlinquestions.com.

Competitions

AIA Film Challenge
Deadline: August 16, 2021
The 2021 challenge invites filmmakers to share stories of collaborative partnership among architects, civic leaders, and communities to achieve zero carbon, resilient, healthy, and just designs for the built environment. To win various cash prizes, participants can produce one-and-a-half- to three-minute documentary films. Winner announcement: December 1, 2021. See aiafilmchallenge.org.

Fentress Global Challenge 2021
Airport of the Future
Deadline: October 1, 2021
Fentress Architects' 2021 competition is open for entries. The eighth annual international challenge invites students to envision innovative terminal designs for future airports. Shortlist announcement: November 1, 2021. Winner announcement: December 1, 2021. For more information, see fentressarchitects.com.

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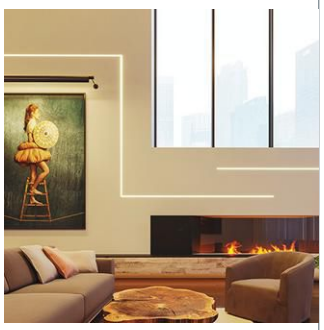
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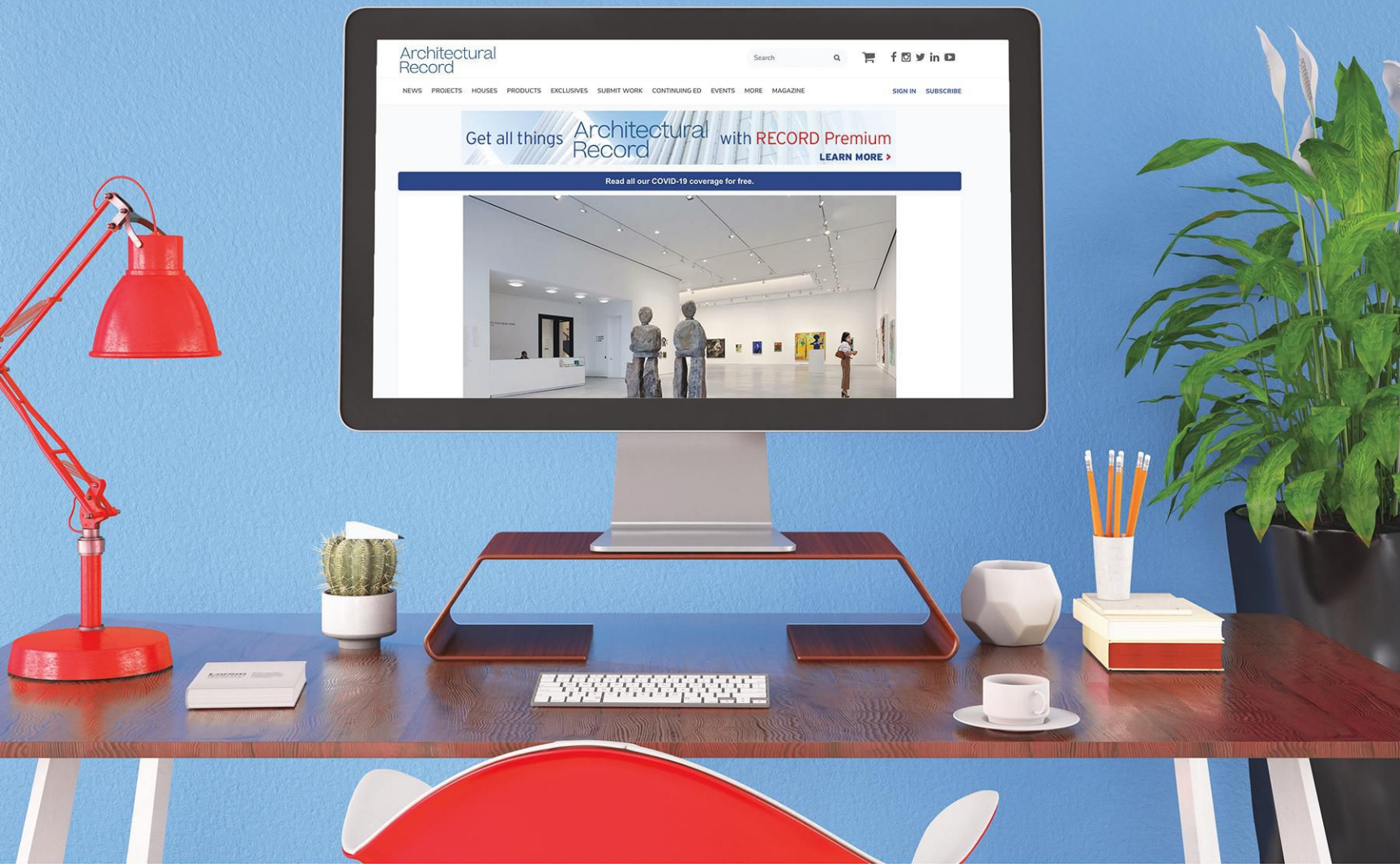
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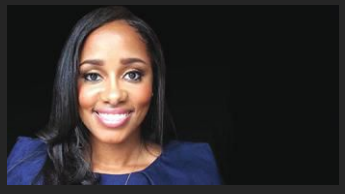
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STAINLESS-STEEL cables support the curved glass of Skidmore, Owings & Merrill's East End Gateway, the new entrance to New York's Penn Station. The 40-foot-high thrusting portal conveys a sense of arrival while bringing in natural light to the underground station. A turquoise ceiling map (a high-resolution print on vinyl) of New York City embraces passengers descending escalators from a new street-level pedestrian plaza. The MTA-commissioned project—on which SOM collaborated with AECOM and Skanska, among others—is part of the large-scale reimagining of the unloved station (which includes the newly opened Moynihan Train Hall) to improve passenger experience and access. SOM associate director Luke Bridle and director of structural engineering Preetam Biswas deem the entryway Penn Station's "unambiguous front door." The project, says Biswas, "evokes a sense of movement that hints at the dynamism of transportation." *Ilana Herzig*

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