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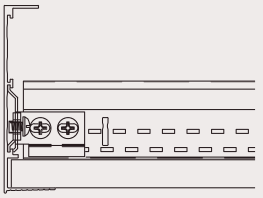

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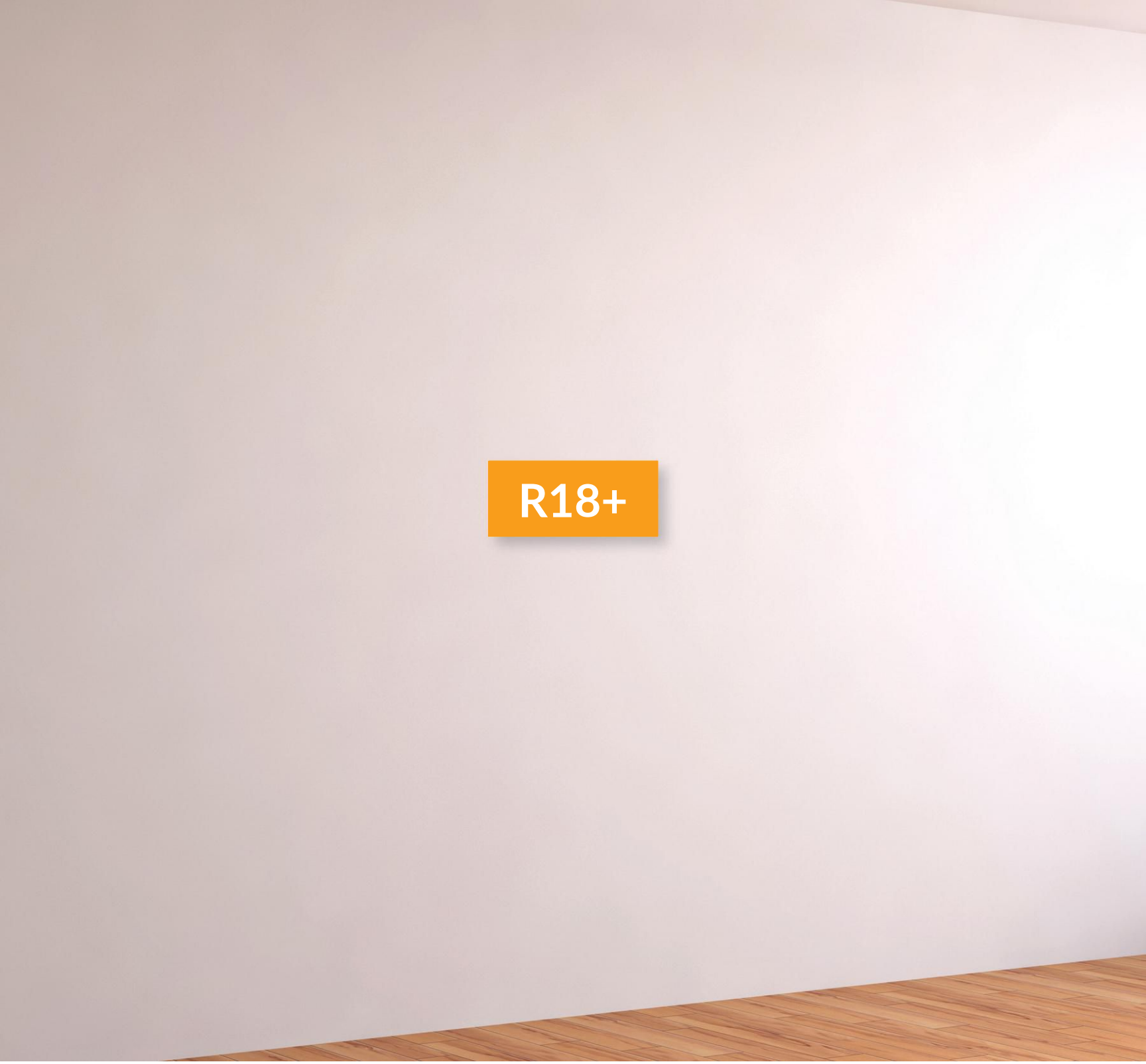

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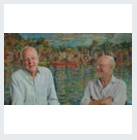

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The Long Game

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THIS ISSUE features several Pritzker Prize–winners and AIA Gold Medalists but is geared not only to architects at the top of their games, but, even more, to those just starting out.

The announcement last month that Riken Yamamoto had won the 2024 Pritzker Prize came as a surprise to most, including Yamamoto himself. He spoke with longtime RECORD Japan correspondent Naomi Pollock, FAIA, about his early days as an architect and the work he's done in over 50 years of leading his own practice (page 19). Of note to those of us at the magazine was his declaration, "I have been reading ARCHITECTURAL RECORD since I was a student!"

Of course, that not only thrilled us, but served as a reminder that the magazine's mission is to be an important resource for architects. With this goal in mind, our focus in this issue on "Sustainability in Practice" pairs with an event of the same name that we are hosting this month at the Massachusetts Institute of Technology. This is the second year of our collaboration, this time with the hope of reaching more students—future architects who will inevitably be drawn into a profession where designing sustainable buildings is no longer a choice or a preference but an integral part of practice.

Another section of this issue highlights interiors, which at first may not seem to have much to do with sustainability. But of the five interior projects featured, four are contained within well-known historic buildings. From a new office for Gensler inside Daniel Burnham's 1892 Mills Building in San Francisco and an art library in a Holabird & Roche Chicago landmark to a new lobby for Eero Saarinen's famed CBS headquarters in Manhattan and a renovated apartment on a high floor of SOM's 55-year-old Hancock Center in Chicago (aka 875 North Michigan Avenue), the ability to refresh and reimagine interior spaces extends the lives of these architecturally significant structures.

Lessons about sustainability, likewise, can benefit from a look back in time. We talk to 2024 AIA Gold Medalists David Lake and Ted Flato, speakers at our MIT event, who have repurposed more than 3 million square feet of space over the course of their careers. Even more important, they incorporate long-proven passive strategies as well as state-of-the-art technology in their sustainable designs. And we excerpt a personal passage from *The Future is a Journey to the Past*, a book by Italian architect Mario Cucinella, who is another presenter at MIT, along with Felix Heisel and 2023 AIA Gold Medalist Carol Ross Barney.

Perhaps fittingly, our cover this month is in black-and-white. The immense solar array topping Smith-Miller+Hawkinson's Energy Advancement and Innovation Center at Ohio State proclaims the project's forward-looking agenda, while the beautifully evocative image of the building captured by photographer Michael Moran illustrates that such "futuristic" structures are an increasingly familiar part of the contemporary landscape.

Josephine Minutillo, Editor in Chief

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The Circle (2020), in Zurich, mediates a park and a highway.

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Japan's Riken Yamamoto Wins 2024 Pritzker Prize

Last month, Tokyo architect Riken Yamamoto became the 53rd laureate of the Pritzker Architecture Prize. The ninth recipient from Japan, he launched his practice, Riken Yamamoto & Field Shop, in 1973. Since that time, he has built a wide range of works, from private residences to public-housing projects, museums, fire stations, schools, and entire university campuses. Yamamoto recently spoke with RECORD *contributing editor Naomi Pollock, FAIA, about the importance of community as a social construct and as the driving force of his architectural design over five decades of practice.*

What does this award mean to you?

Since my work is very different from that of other architects, I thought the Pritzker Prize was out of reach. But they found me. I am really amazed.

How is your work different from other architects'?

As a master's student at Tokyo University, I investigated villages around the world with my advisor, professor Hiroshi Hara. We traveled to many countries near the Mediterranean Sea as well as in Central America and South America. After that I went by myself to India, Nepal, and Iraq. These experiences had tremendous impact on me and gave form to the idea of community.

I was especially moved by a visit to Ghardaïa, in Algeria—one of five towns in the M'zab Valley in the Sahara Dessert. Each one occupies a small mountain covered by very narrow streets lined with houses, culminating in a minaret. This configuration revealed the meaning of communal living to me.

Whenever I think about architecture, I

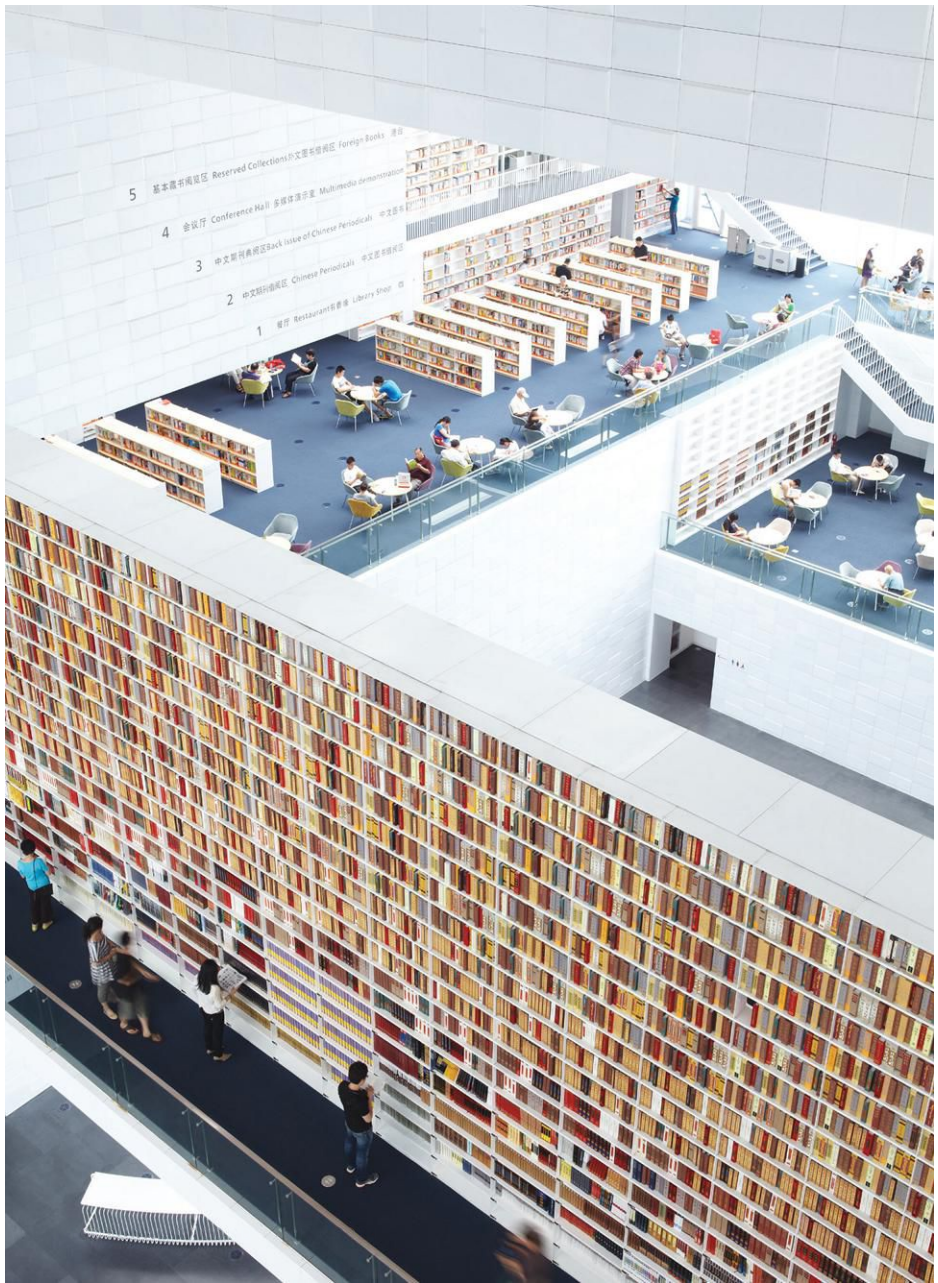
think about community. Any work of architecture is inside one. But it can be very difficult to find community in modern cities. My design goal is to make it visible. In that way, I am a little bit different from other architects.

What was your first design project that featured this concept?

The Yamakawa Villa, a very small mountain house. The terrace, which has no exterior walls, is the main living space during the day. It is completely open, even to people outside the family. Here there is no meaning of "inside" and "outside."

What are the components that define a strong community?

The most important thing is to make long-lasting architecture. Buildings should remain in a community for 100 or 200 years, so I choose durable materials with a long life span.



Your first communal residential project was Hotakubo Housing in Kumamoto Prefecture.

That's right. The project consists of 110 private apartments surrounding a shared courtyard. There is no direct access to this space from outside the development—the only access is through the apartments. Each apartment is divided into two parts linked by a covered, but outdoor, bridge. Stairs connect one half to the road and the other to the courtyard.

At the time, I was criticized by journalists and residents who expected standard housing. But this project was part of Kumamoto Artpolis—a prefectural initiative started in 1988 to build inspired public works introduced by the then governor of Kumamoto Prefecture, Morihiro Hosokawa, under the aegis of architect Arata Isozaki. Mr. Hosokawa and Mr. Isozaki both defended me. Today, the situation is different—and very peaceful.

Is your design approach influenced by your background? Where did you grow up?

Originally, my neighborhood had a very narrow shopping street, about 5 meters [about 16½ feet] wide, lined with *machiya* houses that combined living spaces with shops. Our house was fronted by my mother's pharmacy. People walking down the street and shopping at the stores developed social and economic connections to these homes and their owners.

Around 1955, the laws changed and the road was enlarged. Now it's 25 meters [82 feet] wide. After that, customers stopped coming, most of the shops disappeared, and the historic *machiya* were replaced with small apartment buildings whose tenants worked elsewhere. It was no longer a place for pedestrians, for community; it became a thoroughfare for cars, so that relationship between buildings and the street disappeared. I want to replicate that urban atmosphere, where living space and workplace are combined.

What are you working on now?

The Taoyuan Museum of Art in Taiwan, which consists of two sloped buildings with a railroad and a highway in between—it is like a city gate. Covered by

Tianjin Library (2012) holds 6 million books (opposite). Jian Wai SOHO (2004), in Beijing, comprises nine residential towers (above). Work continues at the Taoyuan Museum of Art (right).

greenery, it blends building and landscape design. The project is expected to finish in 2026. The client wishes it wouldn't take so long. But the Pritzker Prize will make them happy.

What do you want to design in the future?

I'd like to create small communities of about 500 people. When the first Europeans immigrated to America, they made townships with a very new system. I think we can build new types of townships in Japan too.

I am now designing a small condominium building in Yokohama for 10 families and various shop owners, with a big multipurpose hall in the middle.

PHOTOGRAPHY: COURTESY TOM WELSH (OPPOSITE, TOP); NACASA & PARTNERS (OPPOSITE, BOTTOM); RIKEN YAMAMOTO & FIELD SHOP (2).

Hotakubo Housing (1991), Yamamoto's first social-housing project, encompasses 16 clusters of residences (left).

Also, at Hotakubo Housing, I am proposing that the local government turn the ground level into shops and restaurants open to the common space where vegetables could be planted and used by the chefs.

In your opinion, why have so many Japanese architects won the Pritzker Architecture Prize?

Architects in Japan face a tough challenge. Here, the power of conformity is very strong. Everyone wants to do things according to the norm, including many designers. But talented architects are trying to create architecture for communities that addresses the characteristics of a particular place. To do so, they must have a strong point of view. Pritzker Prize–winners in Japan, like Shigeru Ban and Toyo Ito, put forth bold ideas in opposition to the prevailing standards. ■

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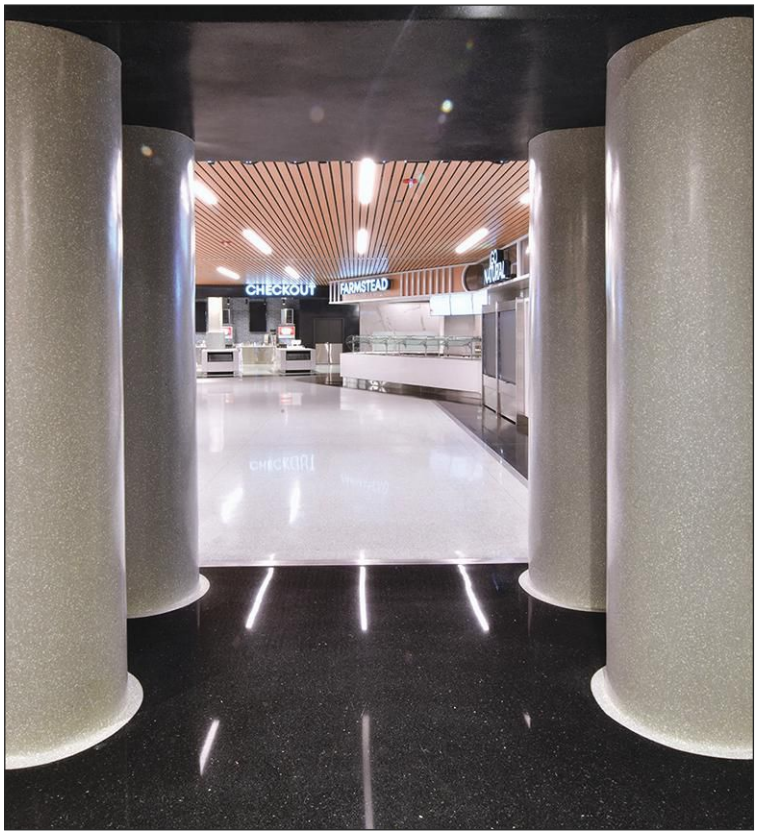

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Garey Gomez, gareygomez.com | Lucas Fladzinski Photography | Jason Mann Photography

Antoine Predock (1936–2024)

BY SARAH AMELAR

ARCHITECT Antoine Predock died on March 2, at age 87, at his home in Albuquerque. In a 65-plus-year career, he sought to create buildings that were, as he often put it, "grounded in the earth yet soaring toward the sky." Many were inspired by the landscapes of the American Southwest—its forms, its hues, its spiritual qualities—as well as his travels to ancient structures abroad. Although he was born in Lebanon, Missouri, on June 24, 1936—and, at one point, his Albuquerque firm had satellite offices in both Los Angeles and Taipei—he had a strong affinity for New Mexico. "He always felt the high desert had taught him how to be an architect," recalls Paul Fehlau, managing principal of Antoine Predock Architect (APA). "The idea was to take those lessons out into the world."

A dynamic, sometimes daredevil figure, who owned about 100 motorcycles—from rare vintage bikes to state-of-the-art electric ones—Predock rode into his 80s. But, about five years ago, according to his wife, sculptor Constance DeJong, he was diagnosed with a progressive interstitial lung disease. "Still, he was incredibly engaged in his work right to the end," says DeJong. "Just last week, he was on a Zoom to Costa Rica for one of his residential projects there."

The son of an engineer father and an artistic mother, Predock began college at the University of New Mexico, initially pursuing an engineering degree but eventually transferring to Columbia University to study architecture. Upon graduation, in 1962, he won a year-long travel fellowship from Columbia, allowing him to explore Spain, Portugal, and other parts of Europe, where he began the remarkable series of sketchbooks that would extend throughout his life. In 1985, more key drawings emerged during his time as a fellow at the American Academy in Rome. With just a few fluid lines in India ink (and sometimes flashes of overlaid color), he would capture the essence of structures from antiquity, including the Parthenon, as well as that of landscapes, cityscapes, and monuments. Reflecting on the life-altering impact of those experiences abroad, he wrote in 2002, "It was [as] a student traveling in Spain on a motorbike in the 1960s that I first encountered the Alhambra. I had limited understanding of Moorish architecture, since [my] architectural history courses . . . had barely touched on non-Western models. This moving, unforgettable encounter revealed a spatial realm that inalterably affected my path in architecture."

After apprenticing with I.M. Pei in New York, The Architects Collaborative in Cambridge, Massachusetts, and Gerald McCue in San Francisco, Predock founded his own firm, in 1967, in Albuquerque. The practice developed a primary focus on residential and institutional work such as museums and academic buildings.

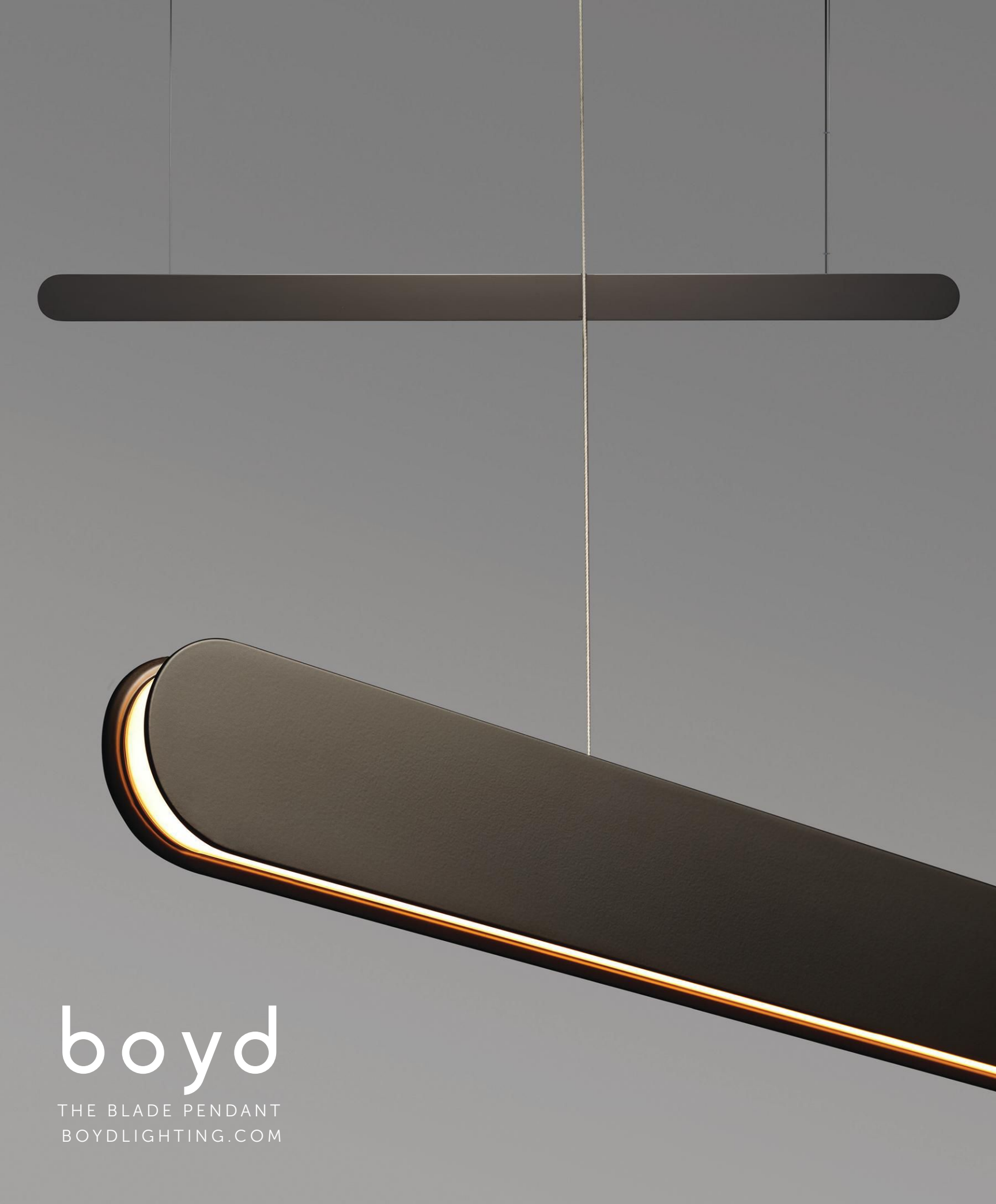
One of its first projects to gain national recognition was La Luz (1967–74), a planned townhouse community on Albuquerque's west side, terraced on open land between the Rio Grande River and Sandia Mountains. With exposed adobe walls, the buildings' earth tones and curving, clustered forms nestle compatibly into the landscape. Modern yet vernacular, the structures balance private with communal outdoor space, opening themselves to the natural world. The thick adobe shells also promote passive climate control (long before that was expected of new architecture).

In 1985, the firm won an invited competition to design the Nelson Fine Arts Center at Arizona State University in Tempe (completed in 1990), marking APA's first major project outside of New Mexico. (The practice has since built in Europe, Asia, Central America, the Middle East, and North Africa.) Other noteworthy work includes several buildings on University of California campuses, at San Diego, Santa Cruz, and Davis; Tang Teaching Museum at Skidmore College (2000); the San Diego Padres Ballpark (2004); and Winnipeg's Canadian Museum for Human Rights (2014). In 2006, the firm received the AIA Gold Medal, and, in 2007, Predock won the Cooper-Hewitt National Design Museum's Lifetime Achievement Award.

Besides DeJong, Predock leaves two grown sons from his previous marriage, to dancer Jennifer Masley: Hadrian, an architect, and Jason, a lighting designer for film.

In contemplating her husband's contributions to architecture, DeJong says, "It was always about place, about how architecture related to it. Right from the start, he would always absorb himself in the site, doing many, many drawings, not just of the surroundings but also of the land, studying its character. Grounding architecture in its place was so important to him—I think that's how he'd want his life's work remembered." ■

PHOTOGRAPHY: COURTESY ANTOINE PREDOCK ARCHITECT



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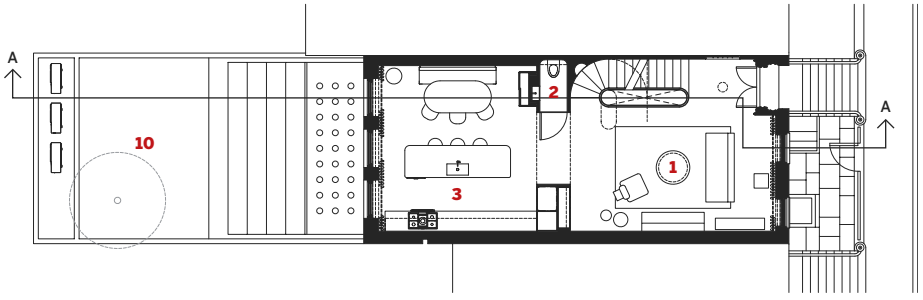
CENTURIES-OLD SALVAGED PINE LIVES ANEW IN A BROOKLYN TOWNHOUSE BY BRENT BUCK ARCHITECTS. **BY LEOPOLDO VILLARDI**

PHOTOGRAPHY: © CHRISTOPHER STURMAN

FOR A YOUNG COUPLE with a deep appreciation of craft—one is a hobby woodworker and the other a shoe designer—Brooklyn-based studio Brent Buck Architects has refashioned a historic townhouse near the borough's Williamsburg waterfront as an apt home. In addition to restoring the street-facing facade, the firm extended the original structure in three

A brass bathtub, on axis with a barrel-vaulted hall (above, right), holds court in the combined primary bedroom and bath (above, left). A sinuous staircase ascends through the townhouse (opposite, both).



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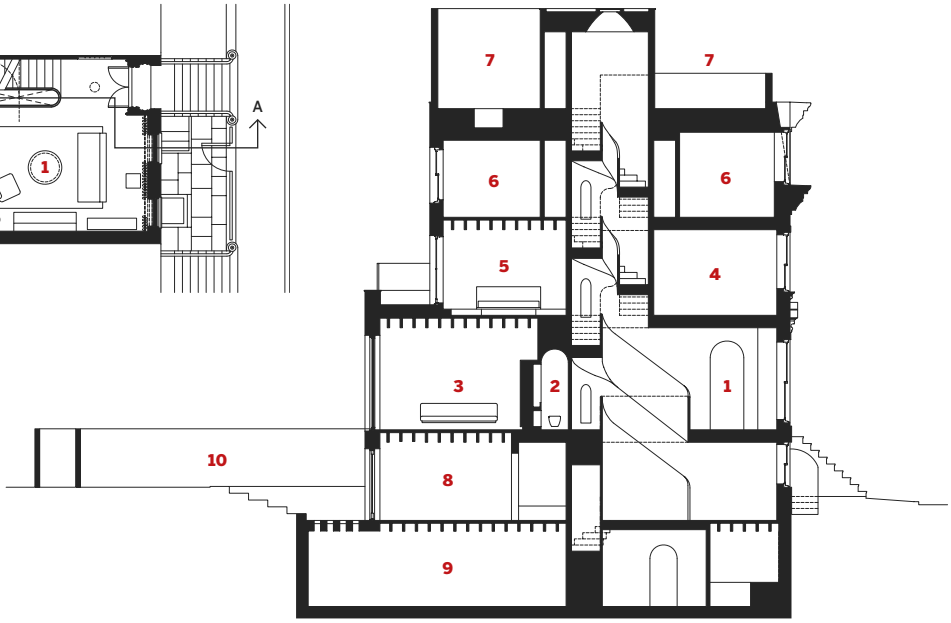

SECTION A - A

1	LIVING	**6**	GUEST BEDROOM
2	POWDER ROOM	**7**	ROOF TERRACE
3	KITCHEN/DINING	**8**	GARDEN LEVEL
4	OFFICE	**9**	CELLAR
5	PRIMARY BED/BATH	**10**	BACKYARD

directions—downward, to heighten a cellar-level studio; upward, to add a floor and roof terrace; and rearward, to lengthen the plan. Inside, a trove of delightful moments spring from an astonishingly minimal palette of pine, plaster, marble, and brass.

Throughout the townhouse, hand-troweled Venetian plaster walls have been coated with wax, adding a subtle texture and velvety shimmer to an otherwise muted ivory backdrop. Leaning into the plasterwork, the architects also used the material to accentuate soft, sculptural details—sharply creased corners counterbalance rounded ones, and, on occasion, they intermingle. At the grand archway on the parlor floor, which separates the living and dining spaces, curved edges terminate near the floor at pointed plinths—a pared-down take on traditional molding profiles commonplace in townhouses of the same era.

A sinuous staircase, also rendered in plaster, ascends through the residence, torquing along the way to accommodate different plan configurations. On the lower two levels, long runs of stairs assume a more conventional oval shape, while, on the upper floors, they turn and run perpendicular to the ones below, maximizing usable square footage along the street-facing and rear facades. A half-round handrail corkscrews up toward the bulkhead, where a circular skylight, with a coved surround, permits daylight to graze the many curvilinear surfaces, including arched niches. A certain classicism undergirds this wonderfully plastic staircase—rigor without the de rigueur fussiness.

The primary suite occupies the second floor. As clients sometimes do, the couple made an unusual request—that the bedroom and bathroom be combined. Beyond a set of French doors, past reeded glass partitions, and on axis with a barrel-vaulted hall, a striking brass bathtub holds court. Venetian plaster, here in a smoky charcoal, envelops the alluring space, which includes a custom bed frame and an oiled black soapstone double vanity. On the opposite end of this floor, there is a walk-in closet and separate workspace that one day could serve as a nursery.

Throughout the house, longleaf pine heartwood is a dominant material—it lines floors and treads, holds up ceilings as joists, forms millwork, and frames custom windows. But this pine was not hewn from newly felled trees—it was salvaged by The Hudson Company from a 19th-century warehouse along Fulton Street in Brooklyn. To reuse the old-growth timbers, workers meticulously denailed them (by hand) before they were rough

Portholes inspired by SoHo sidewalks bring light into the cellar (left). An Ingo Maurer pendant hangs above a soapstone mantel (opposite).

sawn, dried in a kiln, and milled to final specifications. "There is a lot of ambiguity and uncertainty in the work," says founder Jamie Hammel, noting that water or fire damage in salvaged lumber is typical. "We never know how much rot or unusable material there will be." But over 14 years, after getting his start deconstructing agrarian barns, Hammel has trained his eye—The Hudson Company sourced the reclaimed wood flooring used in the Whitney Museum of American Art's new building (2015).

Architect Brent Buck, who founded his studio in 2015, speculates that the pine used in the townhouse is between 350 and 450 years old. Leftover pockmarks from tacks and lag-bolts—reminders of the material's provenance—stipple the surface and add unconventional character. "With all those *perfect* little imperfections," he emphasizes, "wood like this would never make it to market. I just don't find rift-sawn, straight-grain wood as interesting, and it's far more wasteful."

By code, the joists were inspected by a structural engineer to ensure that any checking or holes would not compromise integrity. Where solid construction was not feasible, such as in the kitchen cabinetry, Buck tracked down a craftsman in Eastern Pennsylvania whose Japanese Marunaka surfacer could produce veneer flitches from the same lot of longleaf pine. "Everything has the same flavor," adds Buck, who seems to know the right person for any job. The broad range of applications, from furniture to architectural elements (like gridded return grates), has given completely new life to the reused lumber and all its embodied carbon.

Other local materials abound. The clients were particularly drawn to Italian marbles, but Buck steered them toward a closer-to-home alternative—Montclair Danby, sourced in Vermont from the world's largest underground quarry (page 108). With meandering

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ashen veins, this stone makes appearances in the bathrooms and in the kitchen, where it forms an island and the backsplash. The architects also designed every visible lock, knob, pull, and pocket-door latch, which were machined in brass by a shipwright in Maine. (This has become something of a repeat exercise in each of the studio's residential projects.) As with the bathtub, and the faucets and sinks scattered throughout the house, the hardware is unlacquered. With time, it will ripen and develop a distinctive patina.

The townhouse's successes—and its lucid celebration of craft and materiality—lay as much in the architect's own design decisions as in his ability to assemble a seasoned ensemble of collaborators, from expert carpenters to "mudslinging" plasterers. While Buck's six-person studio busily forges ahead with larger-scale projects, from a mass-timber apartment building in nearby Fort Greene to the adaptive reuse of a former brewery in Philadelphia, his characteristic penchant for detail will no doubt be put to the test. ■

Credits

ARCHITECT: Brent Buck Architects — Brent Buck, principal; William Gregory, project architect; Molly Allfather, Doug Bacon, designers

ENGINEERS: ANZ Consulting Engineering (m/e/p, sprinkler); Celin Muñoz Consulting Engineer (structural)

GENERAL CONTRACTOR: Andrew Zalewski

SIZE: 4,500 square feet (with cellar)

COST: withheld

COMPLETION DATE: November 2023

Sources

BRICK: Glen-Gery

WINDOWS: Duratherm, Loewen

GLAZING: Vitro Architectural Glass; Lynbrook Glass & Architectural Metals (skylights)

DOORS: Upstate Door, Duratherm, Loewen

LIGHTING: Lucifer, Apure, Lutron

PLUMBING: Vola, Jaclo (faucets); Toto (toilets)

INTERIOR FINISHES: Montclair Danby (stone); Hudson Company (reclaimed pine); Benjamin Moore (paints); Heath Ceramics (tile)

Architectural Record

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The sketches of the winners and runners-up will be published in the November 2024 issue of *Architectural Record* and shown online in the architecturalrecord.com Cocktail Napkin Sketch Gallery.

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- ❒ OTHER _____

Entry form the size of 5 x 5 cocktail napkin, for reference.

HOW TO ENTER:

- Sketches should be architecture-oriented and drawn specifically for this competition.
- Create a sketch on a 5-inch-by-5-inch white paper cocktail napkin. You may cut a larger napkin down to these dimensions.
- Use ink or ballpoint pen.
- Include the registration form below or from the website.
- You may submit up to 6 cocktail napkin sketches, but each one should be numbered on the back and include your name.
- All materials must be postmarked no later than August 26, 2024.

For more information and official rules visit:
architecturalrecord.com/cocktail-napkin-sketch-contest

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New this year, the Women in Architecture Awards will co-locate with the Innovation Conference. This celebration of women's design leadership and a cocktail reception will follow the conference.

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International home and contract textiles trade fair Heimtextil returned to Germany's sprawling Messe Frankfurt exhibition grounds in January for its latest—and biggest—edition, with more than 2,800 exhibitors hailing from 60 countries. Dubbed New Sensitivity, the theme of the Heimtextil Trends 24/25 program focused on innovative materials such as bioengineered and plant-based textiles, and on sustainable production methods. The following highlights, which range from carpets to wallcoverings and upholstery, are from exhibitors selected by the Heimtextil Trend Council as possessing this forward-thinking approach. In addition to being trend picks, many were also selected for a curated program showcasing the best in contract textiles for architects, interior designers, and the hospitality industry.

BY MATT HICKMAN

Econature

Launched as part of decorative-fabric manufacturer Bitex Industry's RE-CYCLE brand, Econature is a collection of recycled upholstery available in a range of warm tones and soft textures, with the same quality found in the sustainability-minded Spanish company's non-recycled lines.
industrias-bitex.com

Greenwall I

With its roots in Flemish flax-growing traditions, wallcovering manufacturer Masureel is a longtime industry pioneer in the realm of ecologically sound business practices. Its paper-based Greenwall I offerings, such as the linen-effect Sunny line pictured above, are PVC-free but just as durable and easy to clean as their vinyl counterparts.
masureel.com

Circular Home

De Poortere Frères specializes in the design and production of decorative velvet fabrics and wallcoverings for the high-end residential and contract markets. The Belgian company's Circular Home collection, available in a generous spectrum of colors, is produced using 100 percent-recycled polyester velvets. True to the line's name, the fabrics can be recycled once again at the end of their lifespan.
depoortere.com

Panorama

Established in 1962, Valencia, Spain–based wallpaper manufacturer ICH showcased its latest collections at Heimtextil, including the new large-format Panorama mural-style line. Available in four different paper and vinyl variations, Panorama, like ICH's other offerings, is produced in compliance with the latest environmental standards for manufacturing and material sourcing, including the use of responsibly forested paper products.
ichwallpaper.com

Maverick

Established in 1855, English fabric supplier Edmund Bell is best known as an industry leader in blackout textiles—a major focus of the company in the dark days of World War II. Made from 52 percent-recycled materials, the rugged-looking, soft-to-the-touch Maverick blackout, available in a spectrum of warm and cool neutral tones, "echoes the gnarled knots and textured ruggedness of wood."
edmundbell.com

3141 Alpha

Fresh off its 50th anniversary, Sotexpro, a leading French producer of flame-retardant decorative fabrics, returned to Heimtextil to showcase its newest offerings, including 3141 Alpha. Made from 80 percent-recycled polyester, this sheer curtain with remarkable acoustic performance is specially woven to reduce sound reverberations while maintaining optimal light transparency.
sotexpro.fr

Touch

Verbatex, a leading Belgian producer of carpets and interior textiles, has given sustainability a front-and-center role in its business model. High-density and ultrasoft, the Touch collection is made from recycled polyester and features embossed effects that give this durable, no-pill carpet extra luster and shine. Available in a wide range of colors, Touch is Global Recycled Standard–certified.
verbatex.be

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▶ TAKE A LOOK ON PAGE 57

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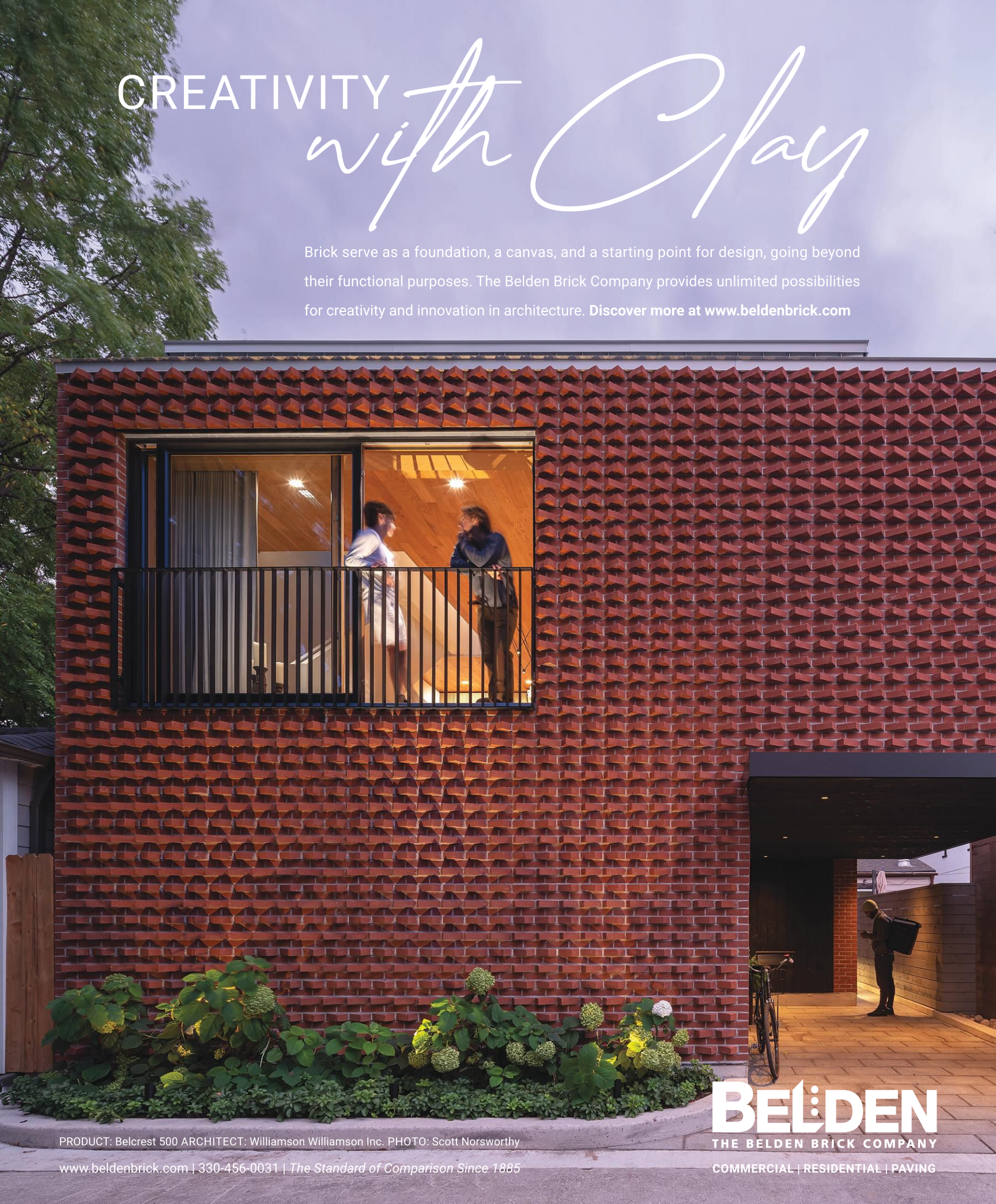

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Gone dark during Covid and switching to an abbreviated June edition for 2023, international furniture and interiors fair imm cologne returned this year to its usual January dates at the Koelnmesse for the first time since 2020. Themed as "Connecting Communities," the 2024 fair brought together roughly 750 exhibitors from 42 countries, with an emphasis on Northern European furniture makers. Record's selection of highlights includes durable, adaptable pieces with almost limitless customization possibilities, along with fresh takes on modern classics.

BY MATT HICKMAN

Canvas

Following a 2005 brand revamp, Bavarian furniture maker Schönbuch continues to surprise with this superlatively customizable product line. Comprising cabinets, consoles, and more, the fittings and finishes of the Christian Haas–designed Canvas series can be configured in a multitude of different ways. It includes three subframes, 29 matte and 21 high-gloss finishes, 20-door and 12-drawer options with seven types of grips, and more.
schoenbuch.com

Palm

Designed by French architect Jean-Michel Wilmotte for Parla, a century-old commercial-interiors brand based in Istanbul, Palm is a versatile line of low tables and seating/lounging options for indoor and outdoor environments. With pieces ranging from daybeds to armchairs and stools, the collection features what its designer describes as "dark, clean lines that flicker between light and shade."
parladesign.com

Audacious

The defining feature of the six-piece Audacious collection (a TV bench, side table, cabinet, sideboard, highboard, and curvaceous desk, all crafted from solid oak), designed by Jonas Søndergaard for Copenhagen-based Umage, are its interchangeable tambour doors. Available in faux leather or fabric options, the doors can be replaced for DIY interior refreshes.
umage.com

Echo

New from family-run German furniture maker COR, Echo side tables are likened to colorful toadstools when arranged in a compact cluster of three, with "caps" of uniform diameters and "stems" available in a choice of thicknesses and heights. The bases of the Lukas Heintschel–designed tables can be upholstered in fabric or leather, while the tops feature a glass surface with a lacquered underside.
cor.de

Eclips

Following its recent debut at the Euroluce lighting fair in Milan, Amsterdam-based Hollands Licht returned to imm with recent offerings including the Evert Koning–designed Timber collections, the new Xio range, and Eclips, the brand's revamped take on the Eclips floor lamp (pictured), an enduring Dutch design classic first introduced in 1960 by architect and industrial designer Evert Jelle Jelles.
hollandslicht.eu

Walter Knoll

Walter Knoll, the dynastic modern furniture mainstay founded in Stuttgart in 1865, debuted three special offerings at imm: a sustainable shell chair named Sheru Evo, five new carpet designs inspired by landscapes of Africa, and a series of limited-edition "artistic textiles" realized as hand-crafted cushions conceived in creative partnership with Swiss art and design duo Pascale Wiedemann and Daniel Mettler.
walterknoll.de

Pical

Released in 2021, Christian Haas's Pical collection—side tables, a coffee table, and console (pictured)—is one of 87-year-old German-manufacturer interlübke's most sought-after recent products. The signature shape of the sculptural lacquered metal table, the semicircle, featured prominently at its 2024 imm debut, which included a wall installation showcasing the deconstructed geometric forms comprising this lightweight, versatile piece.
interluebke.com

LUA

Known for its minimalist take on everything from serving platters to plungers, venerable German home accessories brand Blomus also does upholstered furniture. The new LUA sofa collection, designed by Sebastian Herkner, includes two- and three-seaters and a pair of stools. Available in 11 textiles, each in four muted colors, the range doesn't stray from the family-owned company's signature clean, pared-down aesthetic.
blomus.us

Pallone

First designed in 1989 by Roy de Scheemaker for a high-tech prototype residence conceived by a Dutch TV scientist, Leolux's Pallone ball chair has received a makeover in celebration of its 35th anniversary. For the first time, the quirky classic is available with cozy bouclé fabric seats in lieu of all-leather. The birthday redux features six "Soft Season" upholstered-seat and leather-back color combinations; complete customization is also possible for those who'd prefer to go off season.
leolux.com

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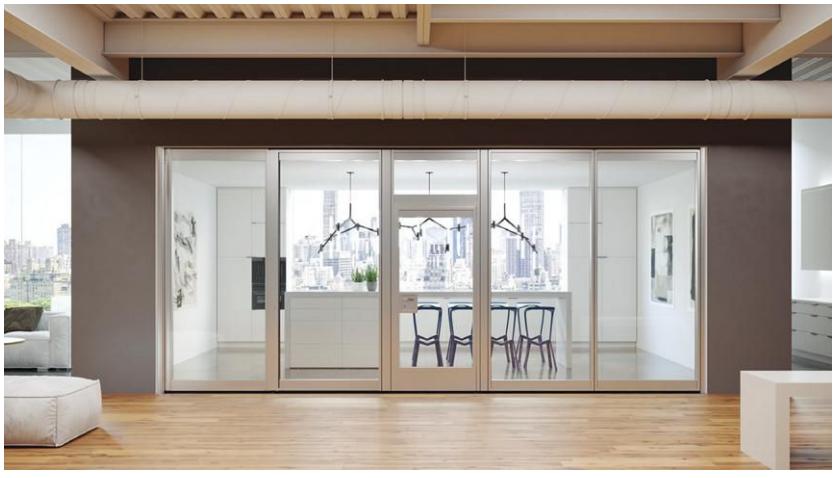

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CEVISAMA, one of the largest ceramics fairs in the world, convened in Valencia, Spain, this year for its 40th edition. Record's selected tile products showcase this year's trends, including muted neutrals, richly dimensional natural texture, rustic looks, and subtle biophilic nods expressed through an abundance of vibrant greens, blues, and warm earth tones.

BY PANSY SCHULMAN

My C Deluxe

The brand Natucer specializes in extruded, as opposed to flat-pressed, ceramic tile, which is marked by unique textures and irregular form. Part of the quirky CUORE collection, this three-dimensional wall tile can uniquely adapt to curved spaces, allowing for dynamic application. It is available in six semi-glossy finishes, including cream (shown here) as well as trendy green and terra-cotta tones. The complementary My V Deluxe line offers angular, rather than curved, extrusions.
natucer.es/en

Black&Cream

This porcelain floor and wall tile by Arcana offers a discreetly undulating texture, popular this year, that emulates the beautiful imperfection of natural stone. Shown here in Green Giada, the collection also includes the more true-to-life colors of black, brown, and cream, all of which maintain the rich tonal dimension seen in natural marble slabs.
arcanatiles.com

Tokyo

This year's show reinforced the enduring popularity of "wood-look" tiles, which allow designers to align with timber-centric interior design trends while reaping the benefits of tile's durability and low maintenance demands. The legacy brand El Molino offers this demure slatted version in three stains, which are given enhanced depth by the darkening between the extruded slats.
elmolino.es

Zilij

Though matte finishes largely reigned supreme this year, Realonda received the 2024 Alfa De Oro award for its development of a water-based enamel that uses contemporary digital ink-jet technology. The result, a glossy translucent finish, is seen in this collection, which was inspired by traditional Morrocan *zellige* tile, known for its watercolor-like chromatic depth and gradation.
en.realonda.com

Lava

This porcelain tile collection by Aparici emphasizes textural depth through multicolored veining. Available in three serene colors—silver, ivory, and the multichromatic Blend (pictured here)—the collection is suitable for a wide range of projects. Available in sizes as small as 11" x 11" hexagons to 40" x 40" squares.
aparici.com

Kasbah

The "Morrocco look" was prevalent in 2024's product launches. This large-format collection (available in 47" x 24" slabs) by tile giant Roca, is marked by warm tones of off-white, gray, and terracotta, and a silky matte but textural, stucco-inspired finish. Fez Deko shown here, has a uniquely tactile dappled surface.
rocatiles.com

Travertino

While, in recent years, manufacturers favored bold botanical prints to scratch the biophilic itch, 2024 saw more understated nods to the natural world. This collection by Gayaflores references travertine stone and is available in natural walnut, silvery gray, and a warm honeyed almond (pictured here). The complex veining of the pattern is emphasized by a softly ribbed relief.
gayafores.es

Micra

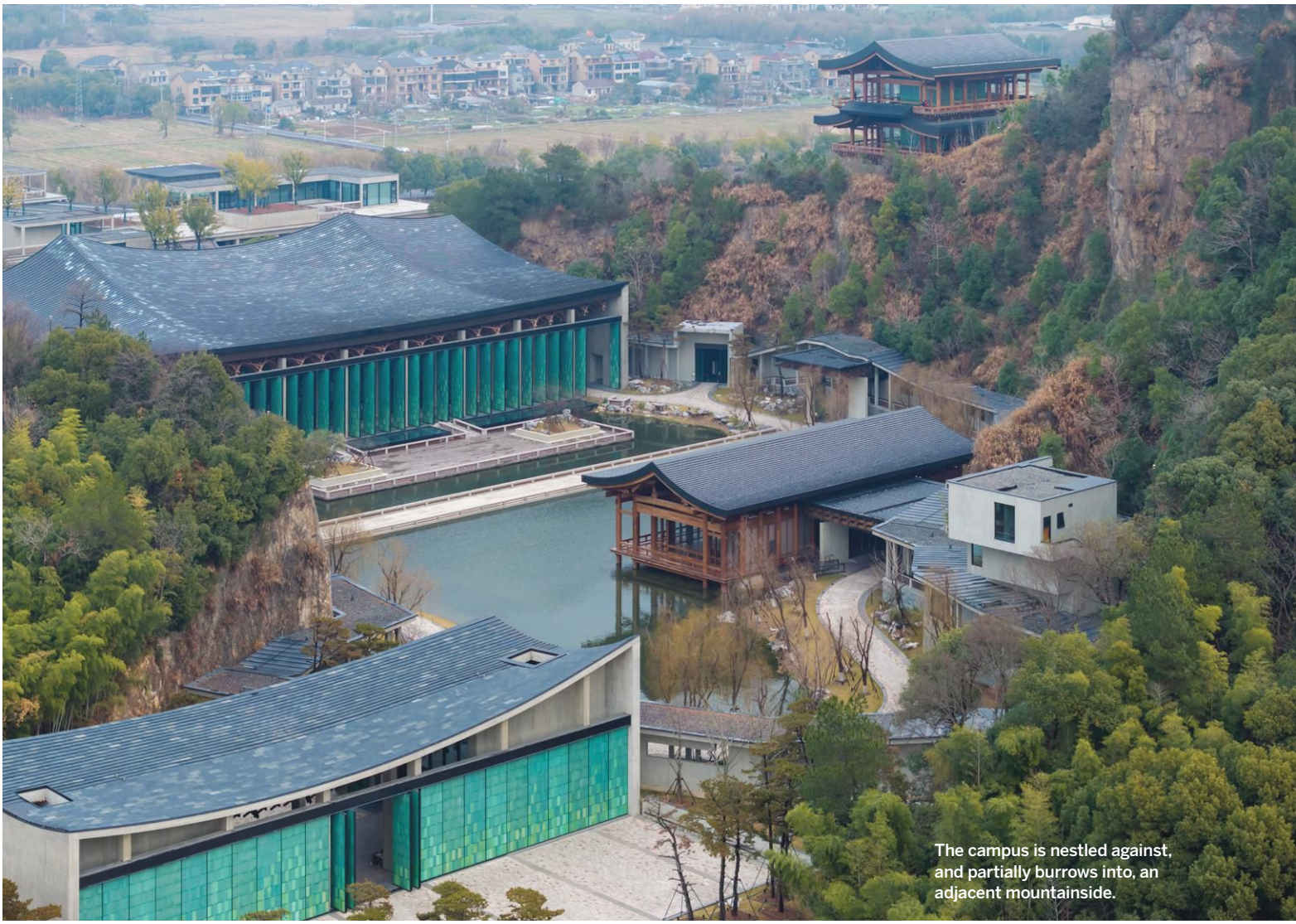
Vives Ceramica offers a subtle but vibrant version of the terrazzo look with this versatile collection, which has an intense palette of solid colors and graphic patterns inlaid with tiny stone fragments of varying color. Three different formats are shown here: in narrow vertical green tile above the banquette; in large-format black on the far wall, and on the floor in checkered squares.
vivesceramica.com

FS Block

A new product in Peronda's popular collaboration with Spanish designer Francisco Segarra is a more restrained complement to the intricately patterned and colorful collection. Inspired by concrete blocks used in the construction industry, these 8" x 16" tiles lend a sophisticated industrial feel to interior spaces.
peronda.com

Celadon Tiles Are a Striking Feature of This Chinese Archive

BY MATTHEW MARANI



The campus is nestled against, and partially burrows into, an adjacent mountainside.

PHOTOGRAPHY: © IWAN BAAN

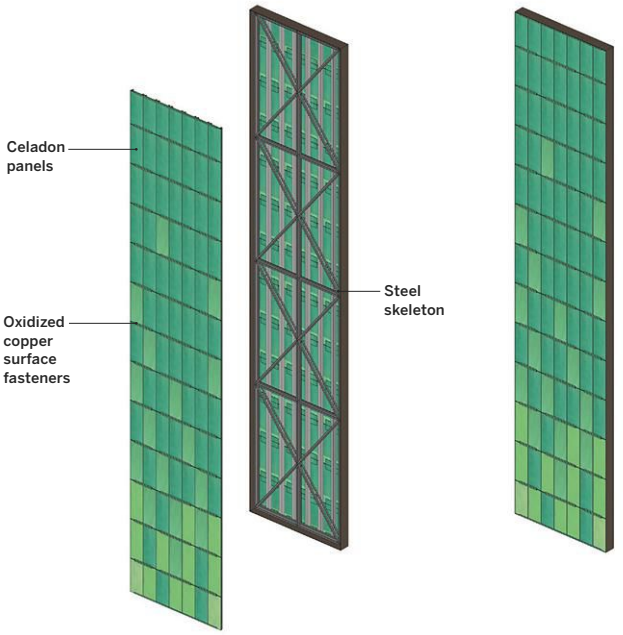
CHINA HAS no shortage of history; with more than 4,000 recorded years of it, the country is considered the oldest living civilization in the world. That comes with its own set of quandaries, such as how to collect, preserve, and curate countless artifacts, from ancient books and manuscripts to stamps. In 2022, the Chinese government responded to the challenge by inaugurating the National Archives of Publications and Culture as a repository of that heritage, with a headquarters in Beijing and three satellite campuses dispersed throughout the country. One is in Liangzhu—a UNESCO World Heritage Site on the outskirts of Hangzhou—and, designed by the city's own Amateur Architecture Studio, skillfully draws from the region's artistic and architectural vernacular with pagoda-like structures, complex woodwork, and, most conspicuously, thousands of celadon ceramic facade tiles.

The campus is gargantuan, covering approximately 1.1 million square feet, and includes 13 pavilions, each of which houses a different program, such as exhibition halls and libraries, with the archives partly buried in the adjacent mountainside. The rough topography becomes an integral aspect of the project's *shan shui*—a term from Chinese landscape painting meaning "mountains and water," in which vertical and horizontal elements are balanced.

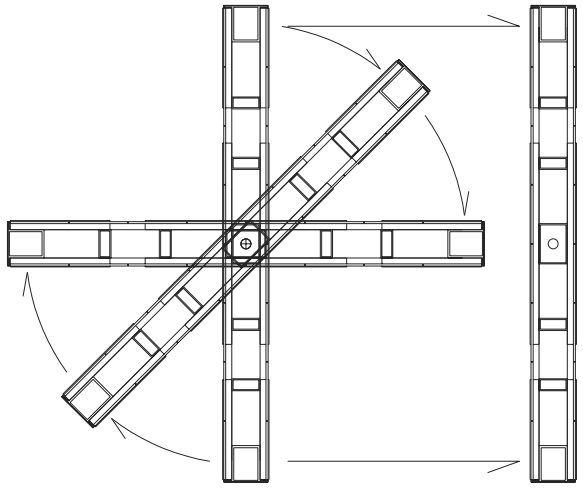
Celadon pottery has been produced in the city of Longquan, in the southwest corner of Zhejiang province—of which Hangzhou is the capital—since the Song dynasty about a millennium ago. Amateur Architecture Studio, led by Pritzker Prize–winner Wang Shu with Lu Wenyu, has experimented in the use of that fired and glazed clay as a cladding material twice before—the Ceramic House in Jinhau (2006) and Tea House at Linyin Buddhist Temple (2020)—but those projects are dwarfed in scale by the practice's comprehensive undertaking in Liangzhu.

Here the firm developed a detailed set of drawings specifying the tiles' dimensions, acceptable shades of green, and placement across the

Celadon-clad screen walls line the campus's arcades, and they can be rotated and moved.



CONCEPTUAL DRAWING



ROTATION AND MOVEMENT

0 20 IN.
50 CM.

campus's many buildings, specifications used by three celadon manufacturers, each with their own secret glaze recipes, to produce an array of samples that were carefully scrutinized. The process was a complex affair, and, after several full-scale mock-ups were built, the design team moved forward with 12 specific glaze types.

All in all, some 100,000 square feet of ceramic tiles clad the buildings—the bulk of which are used for the arcade screen walls that encircle the campus's larger buildings. The tiles, which measure 1 foot by 2½ feet by 5/16 inches, are held in place by oxidized copper surface fasteners that tie back to a nearly 35-foot-tall uniform steel skeleton. This straightforward system sped up construction and installation, and allows for convenient replacement should any tiles be damaged. The skeletal frames are also mounted on either side of steel beams, and can rotate and open with the help of motors to reveal the surrounding landscape, bringing the outdoors in.

This contemporary interpretation of the region's vernacular design extends to other materials and methods as well. Notably, the design team supervised live demonstrations of rammed-earth construction techniques for the project's contractor, and the lessons gleaned were then scaled up to carve out program within the larger concrete superstructures. In the campus's larger halls, intricate wood-and-steel canopies hearken back to traditional carpentry, though with monumental spans—the largest of which is nearly 330 feet wide. The Song dynasty may be long past, but its craftspeople would surely appreciate the complex and modern application of the traditional ceramic material for this cultural reliquary. ■

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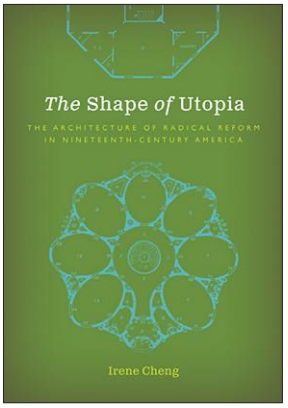
The Shape of Utopia: The Architecture of Radical Reform in Nineteenth-Century America, *by Irene Cheng. University of Minnesota Press, 349 pages, $35.*

REVIEWED BY RICHARD KORMAN

The same impulses that energized abolition and labor activism in the 1830s and 1840s produced a set of reformers in subsequent decades more interested in inward or individually oriented ideas, often expressed through unconventional architecture or realized in experimental communities. To convince Americans to join their causes, these reformers published plans of hexagonal, octagonal, and circular buildings and towns designed to shape more just or healthier living—or so they argued. These reformers included Orson Fowler, a leading phrenologist; Henry S. Clubb, who started the Kansas Vegetarian Settlement Company; and spiritualists Simon Crosby Hewitt and John Murray Spear, whose ideas arrived from the other side of the living-dead divide.



Discounting them as amusing dissidents or cranks has been a mistake. Irene Cheng, associate professor of architecture at the California College of the Arts, devotes overdue scholarly attention to several of these radicals and their architectural and urban visions in an illuminating book, *The Shape of Utopia*. Cheng's thesis is that the drawings produced for what she describes as "geometric utopias" solidified amorphous ideas and served as a vital tool of argument and publicity, or "visual rhetoric." Many reformers "believed illustrations had a unique power to sway viewers by cutting through the printed word and speaking directly to hearts and minds," she writes.

There was much that needed fixing in the new nation. With the developing market economy, harsh industrial working conditions, and well-defined class divisions, reformers tended to focus on land ownership and equitable commerce and commercial transactions. Clubb's vegetarian, antislavery, octagon-shaped colony in Kansas drew more than 70 families to sign up, with the first arriving in 1856, Cheng writes. He represented it in diagrammatic plans, showing a town with a central park, eight radiating avenues, and subdivided wedge-shaped lots. The experiment was to be a community of "sociality without socialism," Cheng explains, distinguishing it from other experimental communities that reflected Marxist principals.

In addition to enthusiastic dissemination of critical ideas and theory, the utopians used a certain amount of disingenuous conning and humbug in luring people out to remote places.

Clubb, for example, while acknowledging in 1856 some possible inconveniences of the settlement, located on Osage tribal land, nevertheless promoted it as a can't-miss near-paradise surrounded by an abundance of natural resources. Instead, as Cheng shows, "not a house [was] to be seen," according to arriving community member Miriam Davis Colt. The ground was too wet, and a promised river, an important source of power, was barely a creek. "Colt's family headed back east after months of fever, theft, rattlesnakes, and other calamities," Cheng writes, but Colt's husband and young son died before reaching home.

As an academic work, Cheng's thesis and findings may be too exhaustively contextualized for a reader concerned only with the basics of U.S. utopianism and architecture. But the book's variety of architectural plans, historical drawings, photos, advertising circulars, and even phrenological charts, provides a deeper understanding beyond the wacky futility of the colonizing experiments or the very real limits and problems of non-rectangular homes and buildings.

As Cheng shows, ideas follow unpredictable trajectories. For example, Fowler promoted octagonal houses, many of which still stand, as efficient enclosures without tight corners and full of sunlight and fresh air. Whether an owner was actually convinced of the octagonal house's advantages, or was a faithful devotee of Fowler's phrenological "science," such houses could also serve as a conspicuous signaling of an owner's individuality or independent mind.

Cheng contends that the complex legacy of utopian thought and 19th-century architectural experimentation includes Ebenezer Howard's garden city planning—not typically thought of today, she writes, as utopian or radical. She notes as well that some critics over the years have condemned utopian thought, along with styles and symbols, as an aestheticization of politics that confuses "political states and communities with works of art," or of trying to reshape society according to aesthetic ideals, instead of doing the hard work that leads to justice, equality, and liberty. And that, at its worst, utopianism culminates in authoritarianism or fascism. But Cheng points out the difference between conflating art and forms with politics itself, arguing that the geometric utopias enabled "at least some Americans in the 19th century to interrogate their world critically and visualize its hidden structure so that they could begin to remake it."

The tradition of envisioning a better world, and its physical shape and buildings, is long. Thomas More's purely fictional *Utopia*, with its implied criticism of his world, which briefly describes imagined towns with streets "twenty feet broad" and "buildings so uniform that a whole side of a street looks like one house," was first printed in 1516. Cheng's exploration of less well-known attempted utopias from the 19th century is not intended as the final word on such visions, but it is a valuable new account of the role of architectural drawing in the reformer's mind and work. ■

Richard Korman is a deputy editor of Engineering News-Record.

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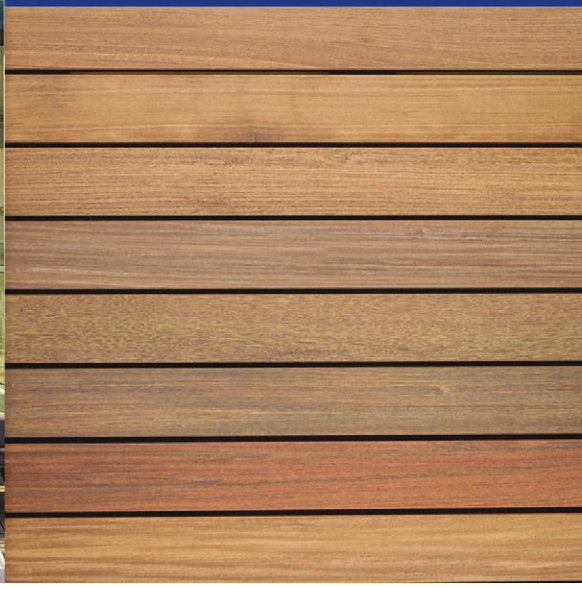

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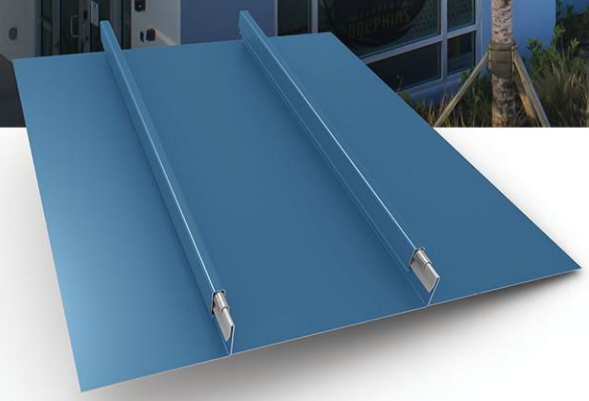

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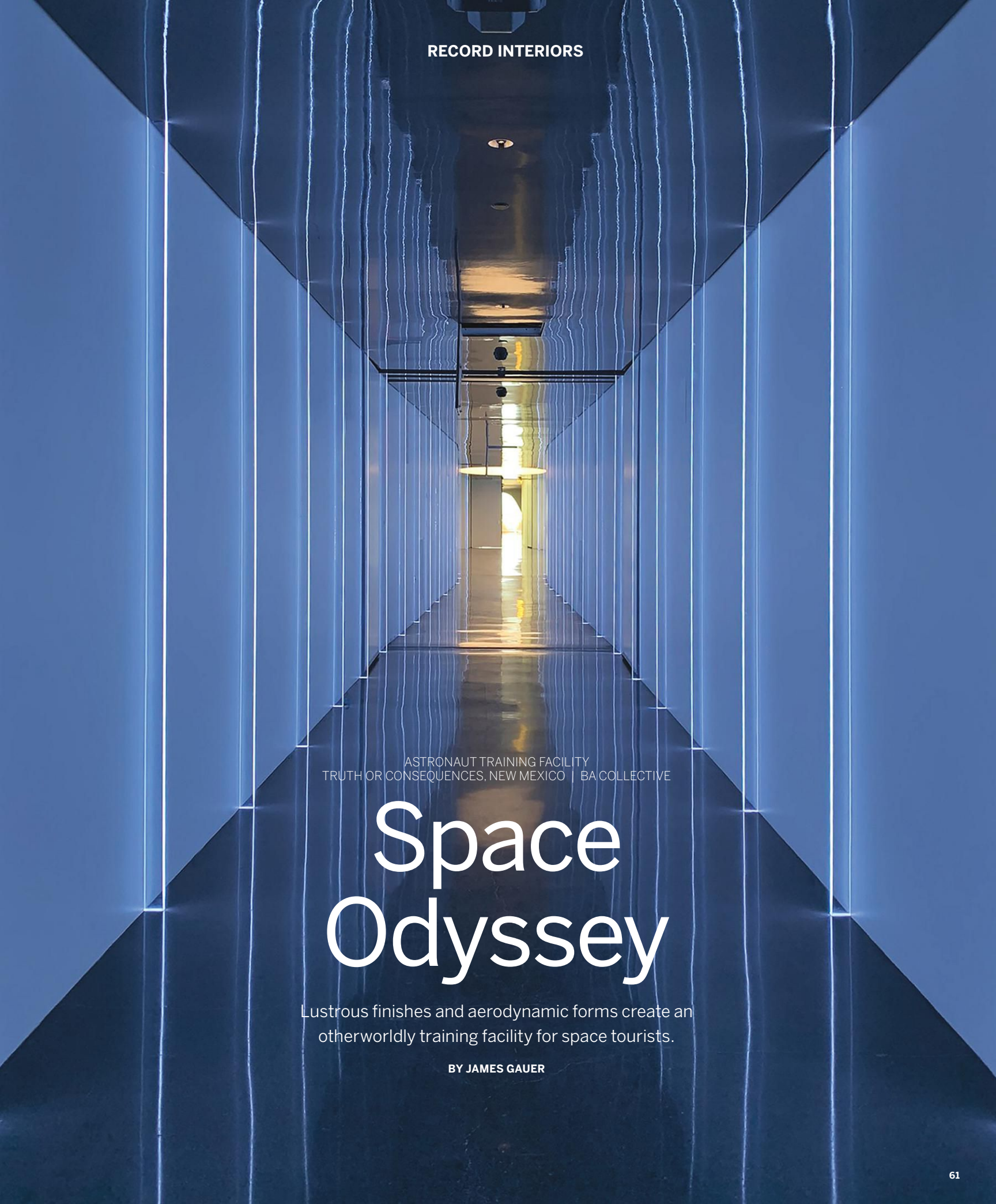

ASTRONAUT TRAINING FACILITY
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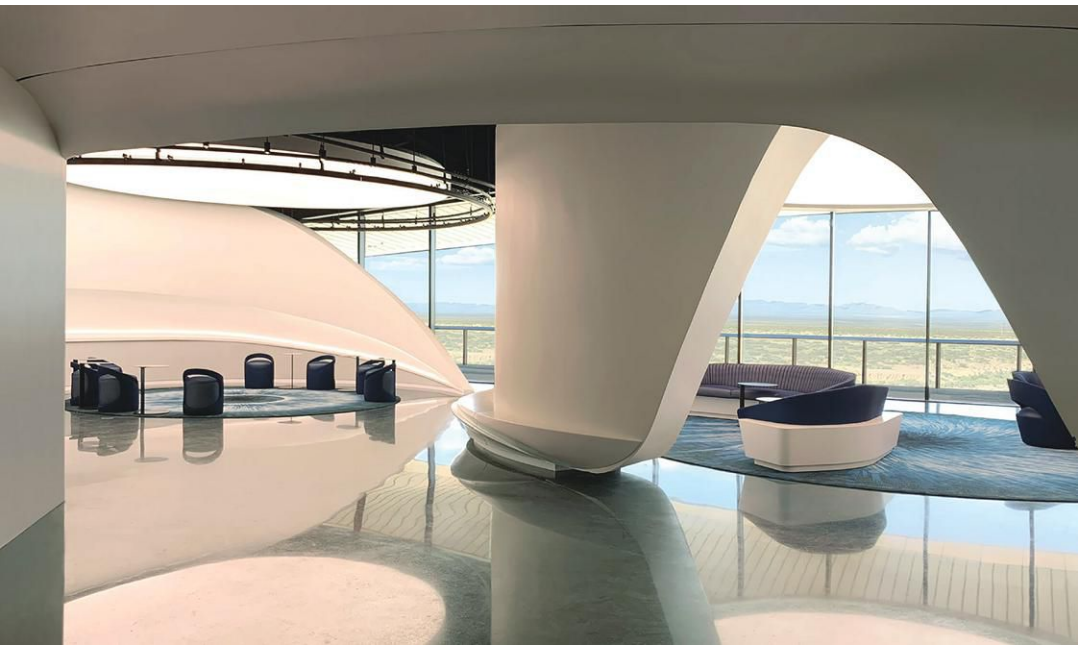
Space Odyssey

Lustrous finishes and aerodynamic forms create an otherworldly training facility for space tourists.

BY JAMES GAUER



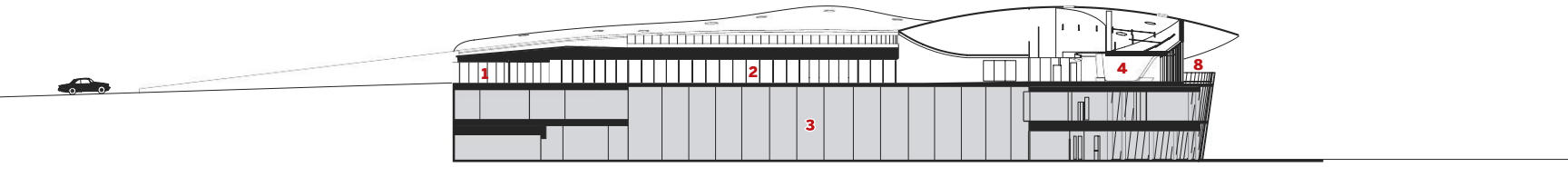
IF YOU'RE paying $450,000 per person for a two-hour rocket ride into space, you might reasonably expect the place where you spend four days training for the experience to be out-of-this-world, if not downright celestial. In designing the Astronaut Training Facility for Virgin Galactic, the spaceflight company founded by Virgin Group entrepreneur Richard Branson, the architects at BA Collective (BAC) collaborated with their client to meet that expectation.

The interior space of just over 10,000 square feet is situated within the 110,000-square-foot Spaceport America, designed by London-based Foster + Partners. Almost 200 miles south of Albuquerque, it's located near Truth or Consequences, New Mexico (formerly Hot Springs, renamed in 1950 after the popular game show).

Los Angeles–based BAC, headed by founding partner Hagy Belzberg, had been on Virgin's radar for several years when the aeronautics giant invited the firm to compete for the design of a lounge at LAX in 2015. That didn't work out, but it led to a second competition in 2017 for Virgin Galactic's New Mexico project. This time, BAC got the job. Challenges included getting labor and materials in a remote location, completing construction during the Covid pandemic, and a budget that was surprisingly grounded.

The client brief was straightforward: create a wow-inducing training facility to prepare space tourists for short flights into the lower orbital environment. (Branding seems to have been a lesser priority, since Foster had already addressed that: viewed from space, the terminal evokes Virgin Galactic's eye logo.) The largest program requirement was a multipurpose lounge that could provide a relaxed learning environment suitable for health assessment, instruction on safety protocols, and equipment preparation. BAC's design team, including partners Cory Taylor and Jennifer Wu with associate principal Liz Pyatt, gave them all of that and quite a bit more.

Arriving at the lounge is a journey in itself.



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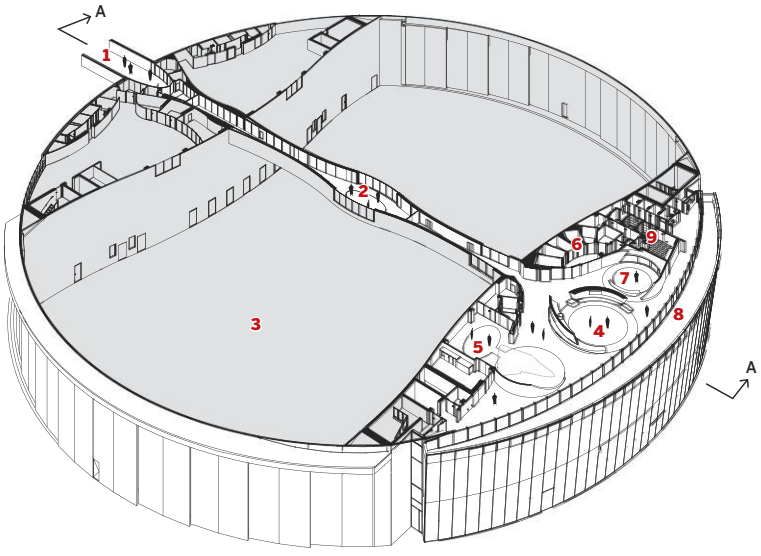

AXONOMETRIC

1 ENTRY
2 BRIDGE
3 HANGAR
4 LOUNGE
5 CLASSROOM
6 SUITES
7 DEMO POD
8 TERRACE
9 MEDICAL SUITE

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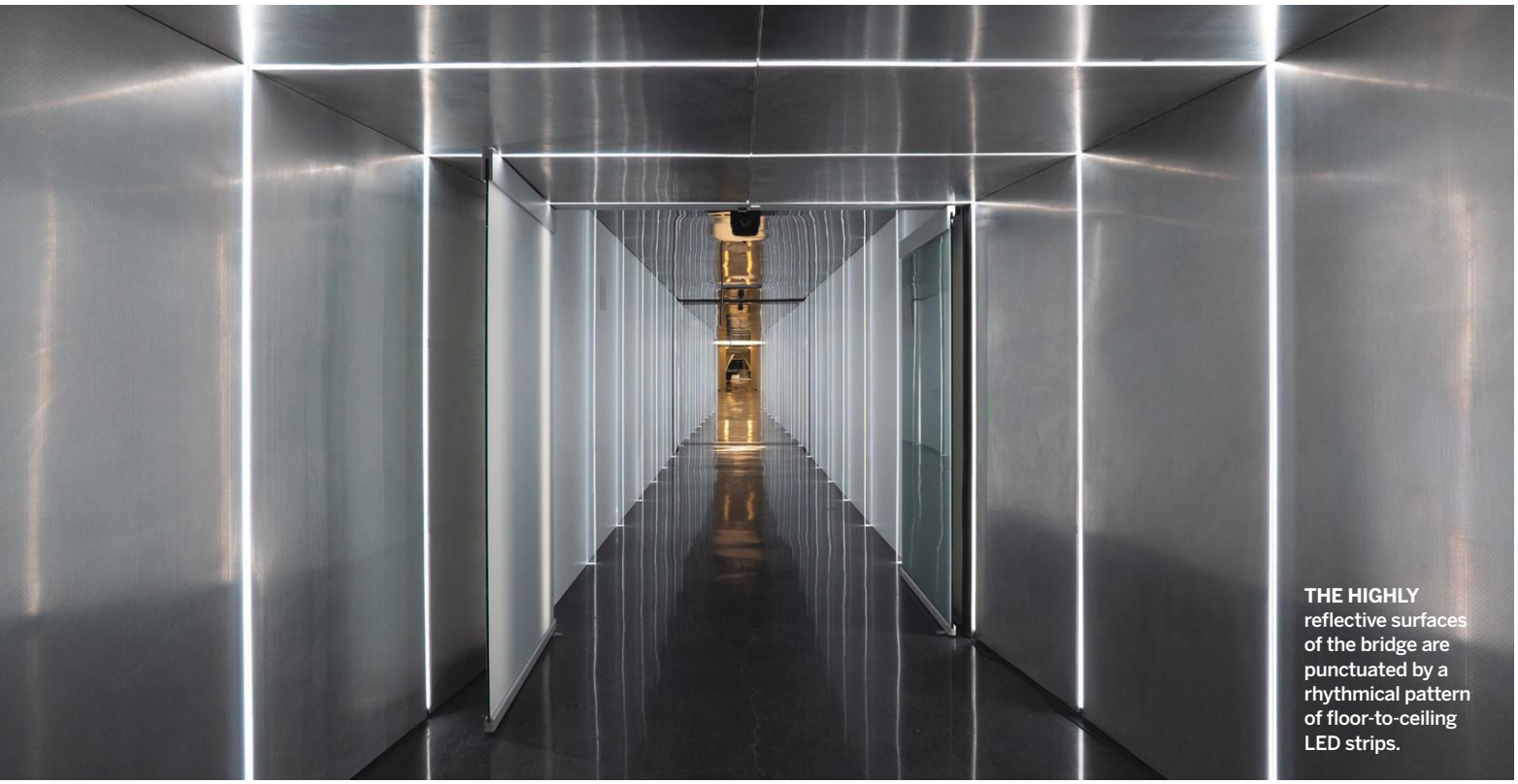
THE LOUNGE is dominated by three circular pods, defined by dramatic sculptural partitions that morph into benches.

After an hour-long drive from a local municipal airport along the historic Camino Real Trail, astronauts-in-training approach the spaceport, an earth-toned circular form approximately 300 feet in diameter, which appears to rise organically from the rocky desert. They enter through double doors of rough weathering steel, the same material that sheathes much of the building's exterior. So begins a carefully syncopated axial sequence whose total length runs approximately 225 feet.

A discreet vestibule leads to a long, narrow enclosed bridge. Stainless-steel panels line the walls, while floors and ceilings are finished in high-gloss epoxy lacquer. These highly reflective surfaces are punctuated by a rhythmical pattern of floor-to-ceiling LED strips. This makes the enclosure appear to dissolve, creating the illusion of light projecting infinitely. At the midpoint of its length, the bridge



THE HIGHLY reflective surfaces of the bridge are punctuated by a rhythmical pattern of floor-to-ceiling LED strips.

widens, revealing an enormous spacecraft hanger below, its buzz of activity visible through full-height glass walls and audible through speakers. Finally the bridge opens to the lounge. What might have been just circulation is an otherworldly procession.

In plan, the lounge occupies a large segment—about 75 feet wide—of the building's low-slung cylindrical form. Its exterior enclosure is entirely glazed, flooding the space with daylight while providing panoramic views of the rugged New Mexico landscape. Doors integrated into the curtain wall open to a terrace. A vast central area is dominated by three circular pods, defined by dramatic sculptural partitions that morph into benches. These are intended for social gathering and education. Layered translucent curtains, hung from ceiling tracks, can obscure two of the pods like diaphanous clouds. "The design plays with moments of community and individuality, expansiveness and intimacy, excitement and quiet, which parallels the rhythm of the training experience," says Belzberg, the son of a sculptor and an aerospace engineer.

The interior perimeter, mostly enclosed by full-height walls, contains classrooms and private spaces. The most dramatic, clustered around a dimly lit crescent-shaped vestibule, are the individual suites. Here, aspiring rocketeers can decompress and find moments of solitude and reflection. Doors double as vitrines, each containing a personalized space suit, softly lit and displayed like a religious icon. Inside, hung from the ceiling, are sinuous daybeds, lushly upholstered with cushions of graduated size. Customized side tables and cabinets hold personal belongings.

Finishes are lustrous, while forms and furnishings are appropriately aerodynamic. Curved walls are fire-rated plywood egg-crate frames filled with foam and covered in plaster painted eggshell white. Large-scale seating upholstered in custom-woven fabric reinforces the curvilinear geometry. Floors are concrete, stained and highly polished, softened in two of the pods by custom rugs. "The base building has a rugged Cor-Ten and glass exterior palette that's in keeping with the harsh New Mexico–desert climate," explains Belzberg. "However, on the inside, the palette is in direct contrast, to feature and celebrate the technological refinement associated with space exploration. The materials are sleek and seamless."

So, is Virgin Galactic's Astronaut Training Facility worth the astronomical price of admission? Only the few deep-pocketed space travelers who get the chance to use it can really say. But it's an inspired design, elegantly executed, which meets a high-profile client's very specialized needs. According to former Virgin Galactic design director Jeremy Brown, "It elevates the impact of the journey ahead." ■

Credits

ARCHITECT: BA Collective — Jennifer Wu, Kristofer Leese, Elizabeth Pyatt, Amanda Schwarz, Alexis Roohani, Cory Taylor, Hagy Belzberg

ENGINEERS: High Mesa Consulting Engineers (civil); Red Mountain Engineering (structural); Bridgers & Paxton Consulting Engineers (m/e/p)

CONSULTANTS: Progressive Construction Management (pm); Spectrum Oak (millwork)

GENERAL CONTRACTOR: Flintco

OWNER: Spaceport America

SIZE: 10,000 square feet

COST: withheld

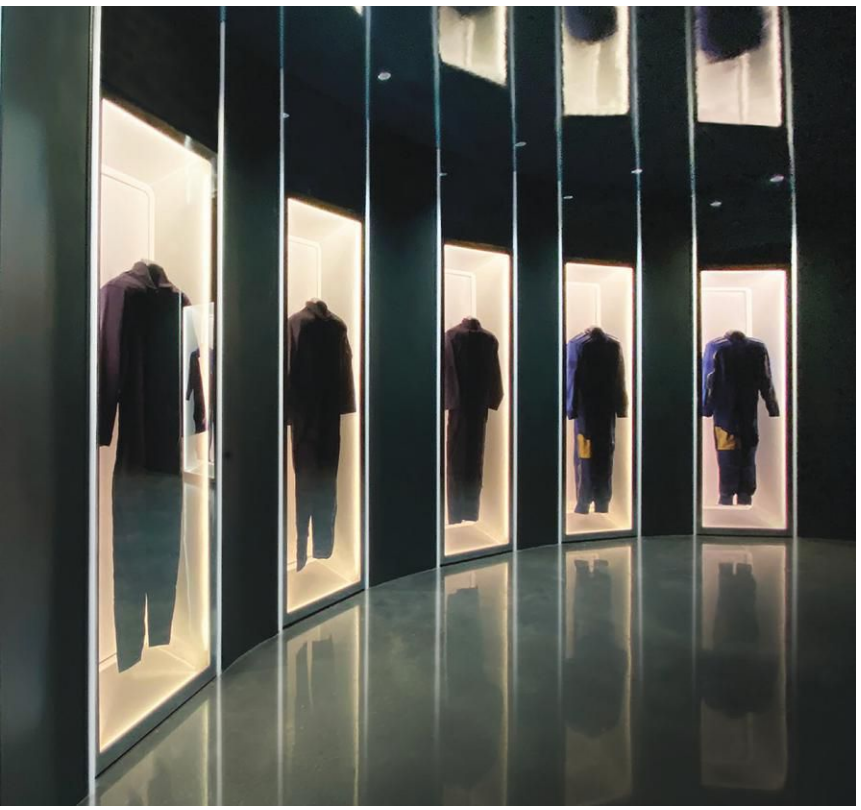
COMPLETION DATE: June 2023

Sources

HARDWARE: Corbin Russwin, Comp X, CR Laurence, Nabco, Assa Abloy, Ives, LCN, Glynn-Johnson, Rockwood, Mockett, Schoolhouse,

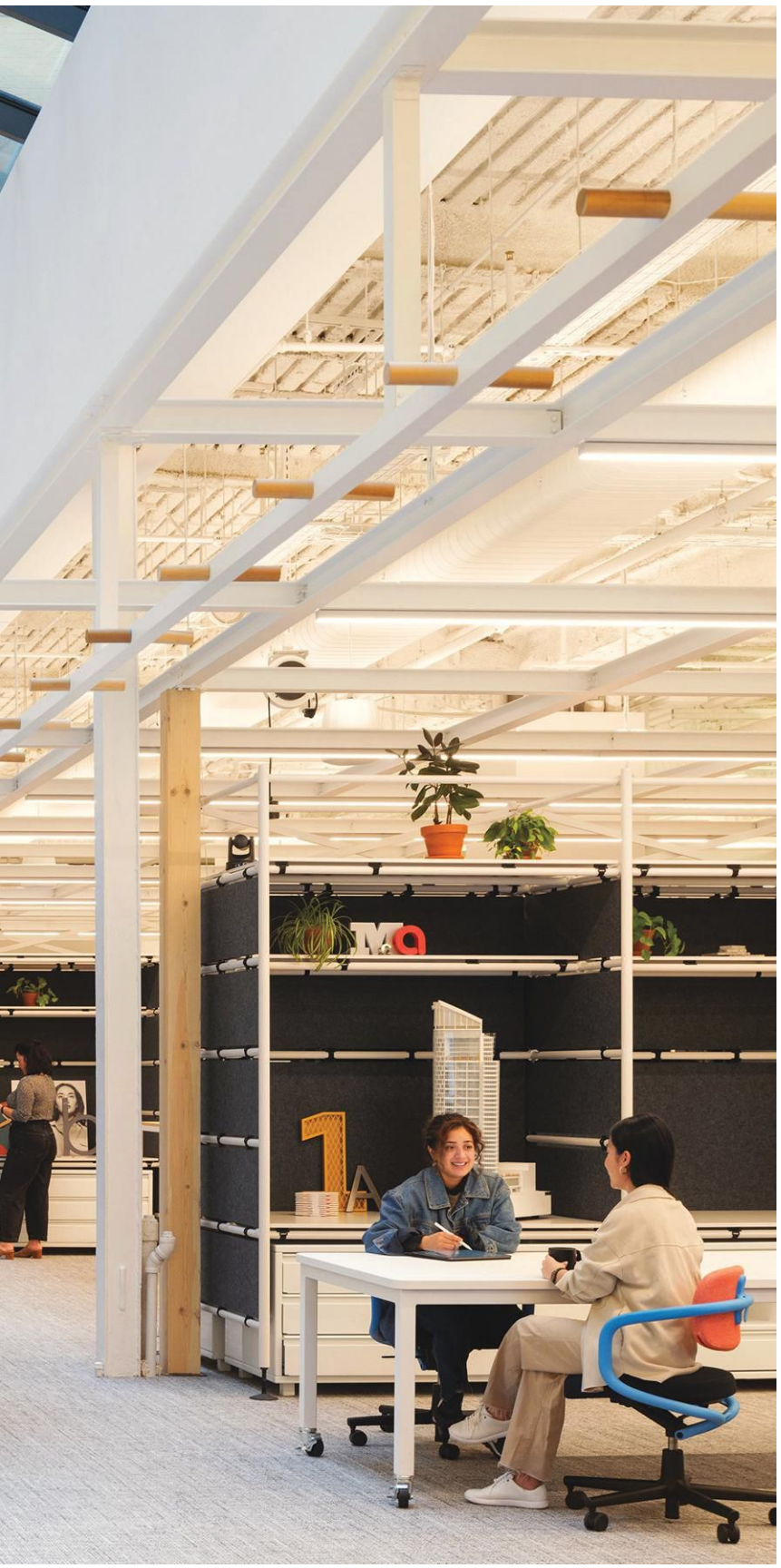
INTERIOR FINISHES: Sherwin-Williams, Behr, Benjamin Moore (paints); Porcelanosa, Stone Source (tiles); Pulp Studio (glazing)

LIGHTING: Barrisol, Perigold, Juniper Design, Acolyte, Intense Lighting, Lumithree, Spectrum Lighting, Lucent



SPACE SUITS are displayed like religious icons (top, left). Large-scale seating is upholstered in custom-woven fabric (top, right and this image).


LONG ODDS
LOVE WHAT YOU DO



GENSLER SAN FRANCISCO | GENSLER

Back At It

A studio softens the blow of its return-to-office mandate with a transformative workplace revamp.

BY JOHN KING
PHOTOGRAPHY BY JASON O'REAR

GENSLER'S AMBITIOUS new full-floor office in San Francisco is a balancing act between future and past, with a healthy dollop of marketing thrown in.

The past is obvious to anyone stepping through a cherub-adorned stone arch into the lobby of a building originally designed by legendary Chicago architect Daniel Burnham in 1892. Or the steel structural column that stands incongruously off-center toward one end of a polished, white barrel-vaulted passage inserted by Gensler to connect two portions of the 45,000-square-foot second-floor space. The present is marked by elements such as the passage, embedded with speakers providing ambient noise and illuminated by a sinuous neon tube overhead. As for the marketing, the choreographed overlap of materials, eras, and moods aims to conjure up a comfortable vibe attuned to the post-pandemic landscape, yet rooted in a sense of place.

"The functionality of work is the primary thing being showcased," says Luda Hoe, a senior associate at the firm, which was founded by Art Gensler in San Francisco in 1965 and now has more than 6,000 employees worldwide. "The palette and look might not be everyone's, but we can demonstrate how we got there."

The office is Gensler's third location in the city in the past decade, a trajectory that reflects the city's changing fortunes.

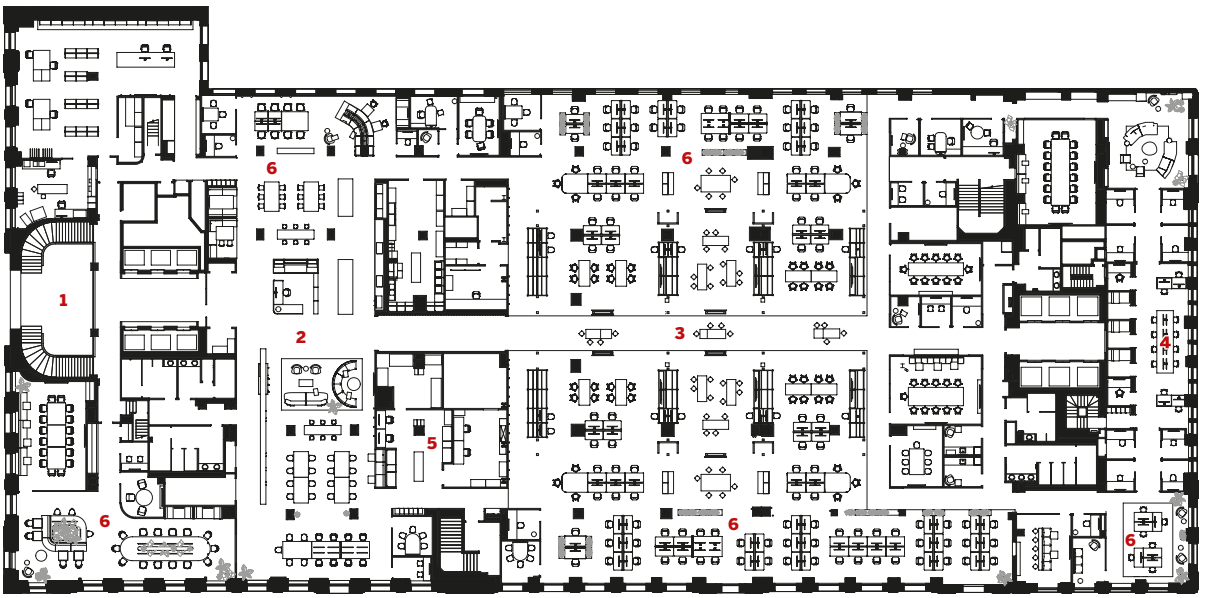
The first move came when a booming tech sector priced the firm out of its space along the Embarcadero and into a nondescript 1970s tower (part of the office, one of Gensler's six "hub" headquarters, was spun off to nearby Oakland). The move to Burnham's Mills Building takes advantage of lower rents to occupy a marquee space in the heart of the traditional Financial District; it also allows the firm to test out running an office with no assigned seating, even though all employees are required to be in the office or on-site five days a week. So the goal when design began in the summer of 2022 was to conceive a workplace with a variety of spaces and sensations, both to placate employees and to intrigue current or potential clients.

The response was a space loosely divided into three sections—the Exchange, the Hall, and the Vault.

The first is very much a lively common area, with a variety of sofas and lounge-like seating booths as well as the obligatory stylized coffee station. The structural brick walls and ceiling ducts are exposed but then painted white, that trendy cross between a chic café and a dentist's office, while the flooring is wood salvaged from Bay Area construction sites.

Commotion is constant, and that was anticipated from the start: "We're a global company," points out Kelly Dubisar, a Gensler principal and the project's design director. "We get a ton of visitors."

A SKYLIGHT introduces daylight into the Hall—a collaborative workspace with pin-up boards (left).



FLOOR PLAN

1 ENTRY
2 THE EXCHANGE
3 THE HALL
4 THE VAULT
5 STORAGE
6 FLEXIBLE SEATING

THE OFFICE includes a variety of work areas—from lounges (opposite) and communal gathering spots (top) to spaces for the display of samples (right).

The Hall is reached through the barrel-vaulted passage, with its limewashed walls. "The tunnel is meant to be a palate cleanser," Dubisar says (though the steel column, discovered when walls were being torn out, adds a happily discordant note), and is conceived as an easily adaptable environment for teams gathering to work on projects. The flexibility includes custom pin-up boards that can hang from wooden pegs. These line the central walkway beneath a 60-foot-long skylight, creating easily movable "walls" when needed.

The final section of the office, the Vault, draws its name from a long-ago bank vault that has been converted into a conference room; the area itself is dimly lit, with seating and tables arranged to allow space for quiet, more concentrated work.

If this sequential arrangement sounds mannered, in real life it feels natural, despite the (at times) theatrical air. There's also a richness derived from an emphasis on sustainability that runs throughout, down to mock-terrazzo flooring in the Hall made from a biopolymer that mimics concrete without the carbon impact. Even the product library adds to the messaging: every item on display meets preset Gensler standards aimed at reducing carbon emissions.

A VAULTED passageway (opposite) connects the Hall with the Exchange, a social hub (top). Gensler's original sign (left) is hand-painted onto two windows of the Mills Building (above).

"A huge part of this is showcasing what we believe is the future and how to demonstrate sustainability," Dubisar explains. "It doesn't have to break the bank, but clients have to see what's possible and know the questions to ask."

Gensler employees—320 of them—began settling in last September, and both Hoe and Dubisar say the transition has been smooth, though inevitably some areas have proved more popular than others. In the Vault, glassed-in nooks not much larger than phone booths tend to be claimed by the same employees day after day. Nearby spaces overlooking a shadowed alleyway are, by contrast, often vacant.

"People have found their homes. We didn't want to assign places to sit, but people are gradually assigning spots to themselves," Dubisar says philosophically. "It's fascinating to see the way everyone uses the office—sometimes as I planned it, and sometimes not." ■

John King is the San Francisco Chronicle*'s urban-design critic. An excerpt from his book* Portal *appeared in the January issue of* RECORD.

Credits

ARCHITECT: Gensler — Randy Howder, Hao Ko, managing directors and principals; Daniel Pamperin, project director and principal; Kelly Dubisar, design director and principal; Louis Schump, strategy director and principal; Luda Hoe, technical director

ENGINEERS: PAE (m/e/p); Tipping Structural Engineers (structural)

CONSULTANTS: Schuler Shook (lighting); Salter (acoustics); Incrementum (planting); WBE (IT/security)

GENERAL CONTRACTOR: Principal Builders

OWNER: The Swig Company

SIZE: 45,500 square feet

COST: withheld

COMPLETION DATE: September 2023

Sources

LIGHTING: Litenet, Lucifer, Ecosense, Tivoli, Lumenture, Vode, And Light, Louis Poulsen, Barbican, Nemo, Santa & Cole, In Common With, Marset, Cedar & Moss, Marset (ambient); Lumenworks, Finelite, Litenet (downlights); Lutron (dimming)

HARDWARE: Glyn Johnson, LCN (closers); Schlage (locksets); Tectus Blind Door Hinges (special hardware)

DOORS: S/I Door and Hardware

INTERIOR FINISHES: Armstrong, Filzfelt (acoustical ceilings); Trivati (demountable partitions); Design Workshops, One Hat One Hand (custom woodwork); Benjamin Moore, Dunn Edwards, Farrow & Ball, Wolf Gordon, Portola Paints (paints and stains); Wall & Deco, Kristy Stafford, Forbo, Brewster Home Fashions, Slalom (wallcoverings); HPL, Formica, Abet Laminati (surfaces); Coverings ETC, Durat, Kvadrat

DRAMATIC, gridded light installations hang from the ceiling of the lounge (this image).

51W52 | NEW YORK | VOCON & MDEAS ARCHITECTS

Classic Rock

Eero Saarinen's CBS Building—nicknamed "Black Rock"—is honed and polished with new amenities.

BY CLIFFORD A. PEARSON
PHOTOGRAPHY BY COLIN MILLER

THE ONLY HIGH-RISE designed by Eero Saarinen, the 38-story CBS headquarters in Midtown Manhattan, turned heads from the very start. Clad in black granite with aggressive diamond-shaped piers wrapping around all four sides, the building offered a muscular contrast to the ethereal curtain-wall office towers rising around it when it opened in 1965. Instead of employing a steel frame and resting lightly on *pilotis* or slender columns, it had a reinforced-concrete structure at its core and along its perimeter. Sitting directly on the ground, it emerged like a sharply chiseled mountain from a sunken plaza separating it from the city's sidewalks. No wonder everyone called it "Black Rock."

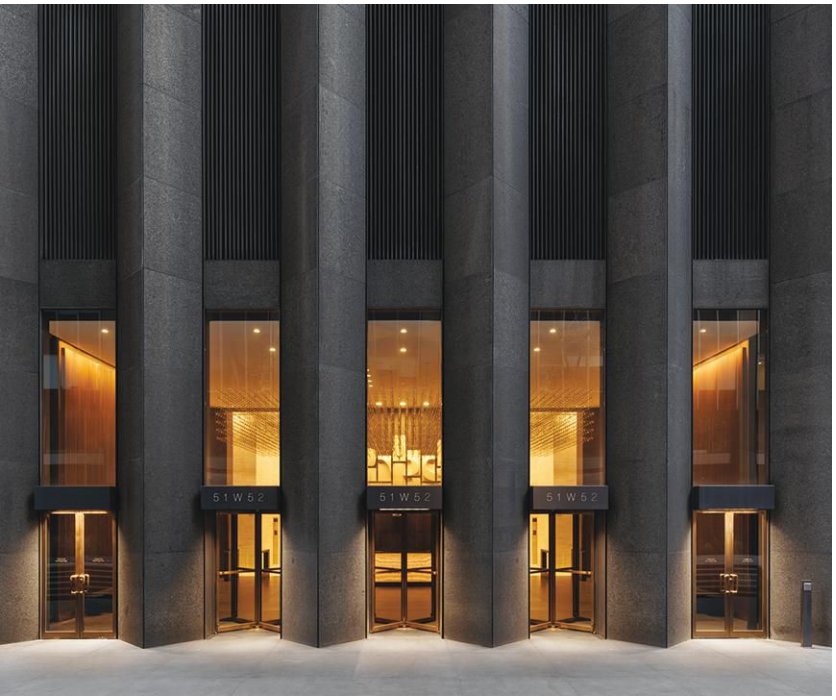
Once the epitome of corporate America—the proud headquarters of a major media enterprise—the building started bowing to new realities in the early 1990s when CBS brought in other tenants to occupy 20 floors and added large planters on the wall around the plaza to keep the homeless away. In 2021, Harbor Group International acquired the building and began repositioning it as a high-end speculative office tower. CBS will leave the building completely by the end of this year.

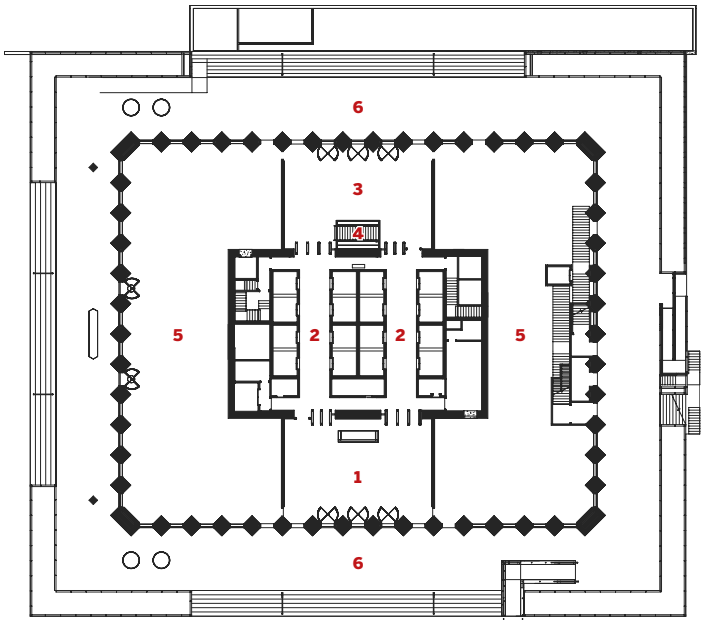
The challenge to Vocon and MdeAS Architects, the design firms charged with renovating the plaza, the ground floor, and a lower level, was to update the building's common areas to attract tenants operating in a post-Covid, hybrid-work era while retaining the unapologetic midcentury swagger of Saarinen's iconic structure. Designated a New York City landmark in 1997, the building is protected in terms of its exterior, but not its interiors. Nonetheless, Vocon and MdeAS deferred to Saarinen, both inside and out.

"We wanted to respect the building's history and identity," says Sofia Juperius, the Vocon design director for the project. "Our strategy was to make subtle but powerful changes."

Outside, MdeAS removed the large planters installed in the 1990s, repaired the low stone wall adjacent to the sidewalks (so people could once again sit on it), restored bronze railings and details, and cleaned the building's distinctive cladding. Saarinen would certainly approve, but the plaza is still a sterile moat distancing the office tower from the city around it.

In the past, visitors could enter the building from either 52nd Street on the south or 53rd on the north. Now they must arrive at 52nd Street and check in at a new reception desk that is lower and less intimidating than the old one. While recent lobby renovations of nearby buildings along the Avenue of the Americas have replaced the dark stone finishes popular in the 1960s and '70s with lighter-colored walls and floors, Vocon and MdeAS kept the original black-granite surfaces inside 51W52, merely cleaning and repairing them.





GROUND-LEVEL PLAN

0 30 FT. 9 M.

1 LOBBY
2 ELEVATOR BANK
3 LOUNGE
4 STAIR TO AMENITIES
5 OFFICE
6 SUNKEN PLAZA

They stripped away most of the changes made in 1992, restoring the bronze luster to the tightly spaced metal fins on the east and west walls of the lobbies on 52nd and 53rd streets. The most noticeable additions are a pair of three-dimensional gridded chandeliers made of slender cables and dozens of tiny spotlights. With the building's broad piers and dark glazing, its interiors had always been somber. "We wanted to make the lobbies brighter and more welcoming, without changing the materials," says Juperius.

On the 53rd Street side of the building, the architects turned the lobby into a lounge for tenants and their guests—introducing an area rug, comfortable chairs, sofas, and circular wood tables. Acknowledging Saarinen's long working relationship with Florence Knoll, Vocon specified mostly Knoll furnishings. To further enhance the tenant experience, MdeAS cut a rectangular opening in the floor and designed a sleek metal-and-stone stair to a lower level with more amenities, such as a food-and-beverage bar, lounge, event space, conference rooms, and fitness center. What had been the CBS mail room and storage is now a stylish place where managers can hold town halls and employees can grab a cappuccino in the morning, a salad at lunch, and, eventually, a glass of wine in the evening. The stair hovers above a shallow pool, echoing the form of one that Saarinen designed for the General Motors Technical Center in Warren, Michigan, says Tricia Ebner, a director at MdeAS. A wall of fluted, laminated glass along one side of the stair enhances a sense of subdued elegance that belies any notion of this below-grade area's being a basement.

Between the 52nd and 53rd Street lobbies, the designers refreshed the building core—cleaning the cream-colored travertine walls of decades of dust and cigarette smoke, installing signage by Pentagram, and refurbishing the elevator cabs.

As companies continue to lure employees back to the office, more buildings are offering amenities to help them do so. Lobbies are now lounges and once-hidden-away spaces are transformed into places for learning, eating, and socializing. And, if wisely renovated, a building like 51W52 can combine heroic Modernism with features attractive to a new generation of office workers. ■

AMENITIES include a lounge (above), locker rooms (right), and meeting areas (opposite, right). Pointed piers line the exterior (opposite, left).

Credits

ARCHITECT: Vocon — Tom Vecchione, Sofia Juperius, Persefoni Anastasopoulos, William Lee, Jeanne Chiang, Morgan Miller, Giuseppe Amato

MdeAS — Dan Shannon, Tricia Ebner, Stephanie Cuevas

ENGINEERS: AKF Group Consulting Engineers (m/e/p, fire alarm, sprinkler); Shmerykowsky Consulting Engineers (structural); Cerami Associates (acoustical, AV, IT)

CONSULTANTS: Lighting Workshop (lighting)

GENERAL CONTRACTOR: James E. Fitzgerald, Inc.

CLIENT: Harbor Group International

SIZE: 900,000 square feet

COST: $128 million (construction)

COMPLETION DATE: March 2024

Sources

GLAZING: Depp Glass, Galaxy Glass

DOORS: Gradient (refinishing); Teknion

HARDWARE: Dorma (closers); PBA (pulls)

INTERIOR FINISHES: USG, Armstrong (acoustical ceilings); Sherwin-Williams (paints); Laminam, Mosa, Crossville, Caesarstone, Mariotti, Artistic Tiles, ABC Stone (surfaces); AFR, Nemo Tiles, Grato (tiles)

LIGHTING: Viso, Luminart, Modern Forms, Marset

UNIT 8408 | CHICAGO | VLADIMIR RADUTNY ARCHITECTS

Bracing for Change

A Chicago skyscraper's distinctive exoskeleton gets a new look on the inside of an updated top-floor apartment.

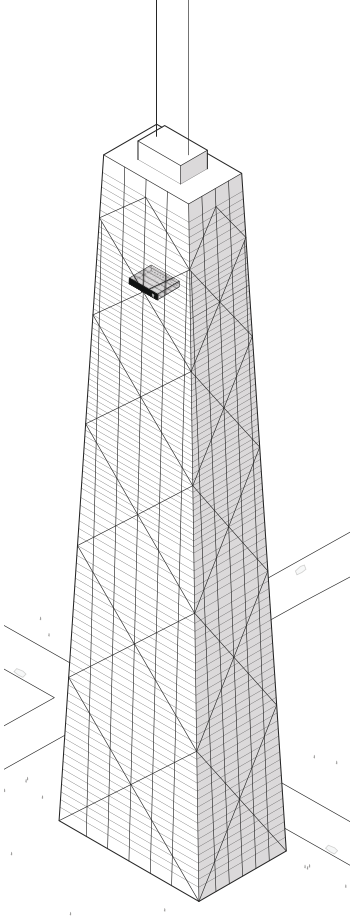
BY JAMES GAUER
PHOTOGRAPHY BY ADRIEN WILLIAMS

EIGHT-SEVENTY-FIVE North Michigan Avenue is one of Chicago's most recognizable Modernist landmarks. Formerly known as the John Hancock Center, the 100-story mixed-use skyscraper, with condominiums on floors 44–92, was designed by the SOM team of Bruce Graham and Fazlur Rahman Khan. Completed in 1969, its tapering elevations are distinguished by steel cross bracing. Given the eminent architectural lineage and the posh location, you might expect its upper-floor apartments to be fabulous. Alas, they usually are not.

One elegant exception is an 1,800-square-foot, south-facing unit on the 84th floor, recently renovated by Vladimir Radutny Architects. This project was a good fit for Radutny, a 2020 Design Vanguard. Well versed in high Modernism, he teaches in the College of Architecture at the Illinois Institute of Technology, whose campus was designed by Mies van der Rohe, and he and his family live in a Mies tower just a few blocks from the jobsite.

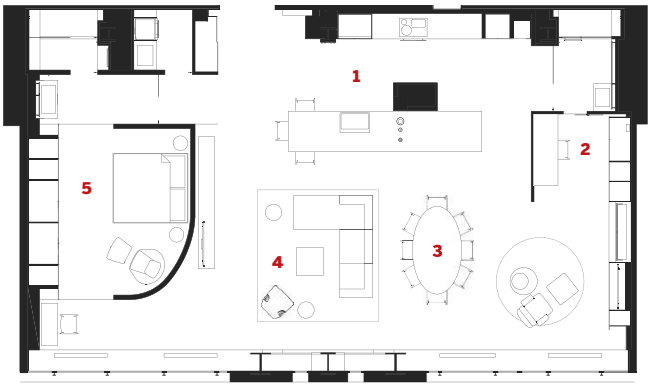
The apartment's floor plan was boxy and banal. The kitchen's enclosed volume protruded into what might otherwise have been a large rectangular living area, which was further compromised by the building's signature X-bracing, buried deep within bulky layers of

DISTINCT cross bracing (right) continues throughout the apartment (this image).



1 KITCHEN
2 STUDY
3 DINING
4 LIVING
5 BEDROOM

FLOOR PLAN BEFORE RENOVATION



FLOOR PLAN AFTER RENOVATION

0 10 FT.
3 M.

fireproofing and drywall. "On our first visit," Radutny recalls, "we were surprised by how compartmentalized and dark the unit felt. Unless we stood directly at the exterior wall, the deep footprint, built-out structure and low ceilings severely limited outside views and natural light."

Radutny saw past these flaws to the apartment's potential and devised a strategy to realize it. "Open up the space" might sound like a shelter-magazine cliché, but here it was the right move. The architect eliminated the partitions perpendicular to the exterior wall, transforming what had been the windows of three separate rooms into one continuous 55-foot-long aperture. Next, he cleaned up the footprint of the central area by relocating the kitchen to the back wall and adding a large parallel island, its location determined by plumbing stacks.

The result is a model of spatial clarity. A gracious, well-proportioned rectangle of public space for living and dining is flanked by semi-private quarters. One is the bedroom, partially enclosed by a wall that curves to widen the viewing angle from the kitchen. The other, more open, serves as a study, TV room, and guest bedroom. It can be screened by ripple-fold drapery on a recessed track. Interior perimeter walls are unified by wood paneling and cabinets. The entire apartment now enjoys unobstructed views, both within it and out to the Chicago skyline and Lake Michigan.

Radutny has detailed this project with his usual minimalist precision. (It helped that contractor Matt Harder was trained as an architect.) Below the windows, continuous wood cabinets in high-gloss white, and topped by quartz counters, conceal HVAC units and storage. White-painted drywall and frameless etched-glass doors integrate seamlessly with wood flooring and horizontally grained millwork, both made of engineered walnut. Bathrooms glow with white porcelain tile on walls and floors. Kitchen counters of graphite-colored engineered stone punctuate the otherwise muted palette. Classic midcentury furnishings, including an Eames lounge chair and a Saarinen dining table, seem right at home. "This combination of refined finishes and period furnishings," says the architect, "creates a link with the building's legacy."

The artistic masterstroke is Radutny's handling of the X-bracing. He stripped away drywall and fireproofing to expose the structural steel members at the window wall, along with a ceiling beam that spans to a column at the back wall. These have been fireproofed with an intumescent coating, which required a lot of persuasion at both the building and the Department of Buildings, since its application in the residential portion of the tower was unprecedented, and Chicago's code had not caught up with this technology. They are painted black, and dramatically illuminated by LED strip lights recessed in linear ceiling channels. What had been a bulky obstruction is now a riveting—and riveted—structural artifact so refined it reads as sculpture. "The steel bracing becomes a visual and tactile element that stretches across the living space, bringing the building's exoskeletal frame inside," says Radutny with justifiable pride and pleasure. ■

Credits

ARCHITECT: Vladimir Radutny Architects — Vladimir Radutny, Ryan Sarros, Fanny Hothan

CONSULTANTS: Midwest Fireproofing (fireproofing); One World Consulting (m/e/p)

GENERAL CONTRACTOR: Harder Brothers

SIZE: 1,800 square feet

COST: $600,000 (construction)

COMPLETION DATE: January 2023

Sources

LIGHTING: Perfect LED, Artemide, Flos; Lutron (dimming)

DOORS & PANELING: Alpi

HARDWARE: FSB (locksets); Krownlab Kor

INTERIOR FINISHES: Wood Harmony (woodwork); Benjamin Moore (paints); Fiandre (tiles)

FLOORING: Saroyan

PLUMBING: Hansgrohe, Alape, Kohler, Rohl

WALNUT and midcentury furnishings fill the apartment (above and top) while bright white porcelain tiles line the bathroom (left).

SCHOOL OF THE ART INSTITUTE OF CHICAGO FLAXMAN LIBRARY RENOVATION | KWONG VON GLINOW

Next Level

A luminous two-story scheme opens up and connects the collections at an art school's library.

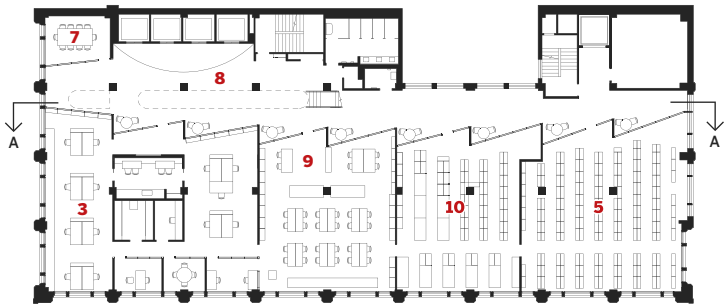
BY NAOMI POLLOCK, FAIA
PHOTOGRAPHY BY MIKAEL OLSSON

WHO SAYS you can't teach an old dog new tricks? Certainly not Kwong Von Glinow (KVG), the Chicago practice tasked with the recent redesign of the 21,400-square-foot John M. Flaxman Library at School of the Art Institute of Chicago (SAIC). Located in the Loop, SAIC occupies parts of 13 buildings. "It is not a typical campus," explains KVG principal Lap Chi Kwong. "It is a city school, with most of its spaces stacked in buildings." With the goal of improving the library's Joan Flasch Artists Book Collection on the fifth floor of the Sharp Building, a Holabird & Roche landmark erected in 1902, the SAIC issued a request for proposals. KVG, a 2022 Design Vanguard, responded with a two-story scheme that revamped the meandering layout of the special collection on the fifth floor and linked it to the circulating main collection upstairs. This brilliant refreshment of tired space didn't just unify two floors. It also created a learning center that draws students from across artistic disciplines—a rarity on a campus so dispersed.

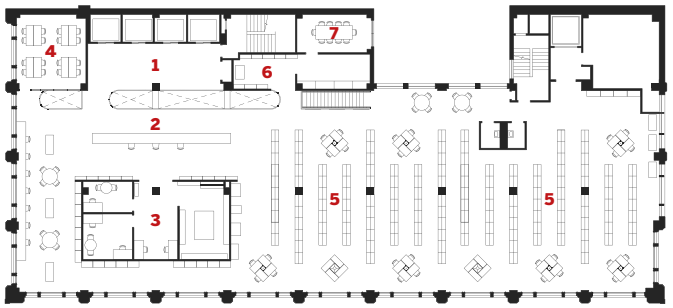
These results were realized by adding a sculptural steel stair to connect the two levels internally and removing a small portion of their shared floor slab—a 5-by-100-foot opening allowing open sight lines and free passage of light and sound. "Now we're one library," says Brittan Nannenga, head of library special collections and digital services. "Before, we were much more siloed." Within each floor, the architects used different approaches. While the sixth floor mainly needed reorganization, the fifth floor had to be gutted, since its layout was convoluted and its book storage willy-nilly—not to mention that student access was limited.

The fifth floor now begins with the Corridor+, a gently curving 165-foot-long

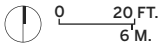
THE SPECIAL collection on the fifth floor (opposite) is now linked to the circulating main collection upstairs (left).

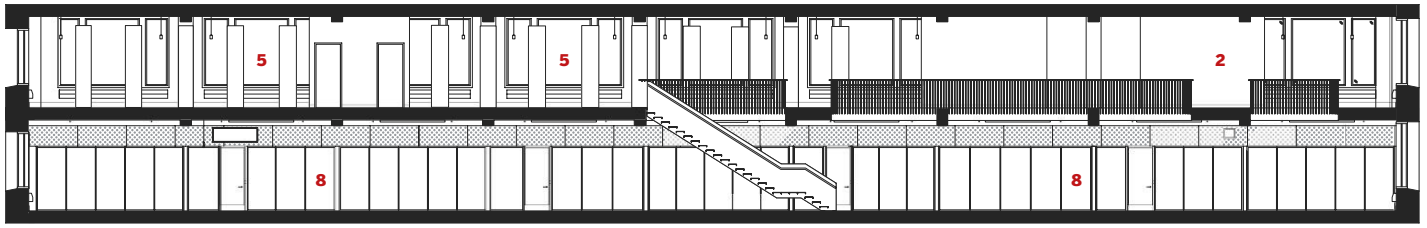


LEVEL-FIVE PLAN

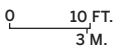


LEVEL-SIX PLAN





SECTION A - A



1 LOBBY
2 CIRCULATION DESK
3 LIBRARIAN OFFICES
4 INSTRUCTION ROOM
5 MAIN-COLLECTION STACKS
6 MEDIA/VIEWING STATIONS
7 CONFERENCE ROOM
8 CORRIDOR+
9 SPECIAL-COLLECTIONS READING ROOM
10 SPECIAL COLLECTIONS

A SCULPTURAL steel stair was inserted where part of the floor slab was removed (right and below). A full-height glass wall lines Corridor+ (opposite and bottom), bringing daylight in from the large windows.

space fanning out from the elevators. It is defined by a full-height glass wall revealing the special collection's inner workings. From west to east, this includes the librarian hub (open work areas, task rooms, and offices), the special-collection stacks and reading rooms as well as supplemental main-collection stacks. While doors from the Corridor+ access each space, internal doors connecting room to room are for librarians. A conference room and an all-gender restroom are on the north side of the Corridor+. The sixth floor holds most of the main-collection stacks plus librarian work areas, offices, and the circulation desk at the west end. Conference, instructional, and media viewing rooms are across the hall.

As its name attests, the Corridor+ provides much more than circulation. A place for events, exhibitions, and even learning, this sweeping space is the heart of KVG's renovation. It is defined by the sawtooth profile of its double-paned glass wall, which is topped by a curved, polka-dotted transom made of medium density overlay plywood (MDO) panels that conceal mechanical ductwork. The wall's notched profile yields both display areas with built-in shelving and semi-enclosed study nooks. Thanks to the wall's overall arched shape, the Corridor+ space tapers at either end but swells in the middle—the perfect place for informal gatherings as well as the flight of steps. Made of welded half-

THE SAWTOOTH profile of the double-paned glass wall is topped by a polka-dotted transom made of MDO panels.

inch steel plate and angles, the staircase is anchored by a beam at the sixth story and a post on the fifth story, where the bottom tread hovers just above the concrete floor.

Choosing steel for the stairs underscores the expression of the building's existing steel frame. "The whole project was really about revealing the structure of this tall building," says KVG principal Alison Von Glinow. Clad with historic clay-tile fireproofing, the original columns and beams guided many design decisions. On the fifth floor, the 18-foot column spacing dictated wall placement and bay width, while the 5-foot gap between beams determined the floor opening. No new structure was added—nor was any taken away.

The two levels are also unified by a shared material palette—birch plywood shelving, white or neutral-colored walls, and carpet or concrete flooring—and an abundance of daylight. The SAIC's standard-issue suspended fixtures illuminate the study areas, but the internal glass walls, a new glass-block panel at the east end of the Corridor+, and existing windows admit daylight from all four directions.

While surface treatments and daylight brighten the atmosphere, the architects could not enlarge the space. But careful consideration of student use and functional efficiency enabled a place that now works better, seems bigger, and even has room to grow. ■

Credits

ARCHITECT: Kwong Von Glinow — Lap Chi Kwong, Alison Von Glinow, partners in charge; Nathan Geller, project architect; Tianjiao Wang, Jonah Laduca, Oana Giuglea, Jiachen Wang, Steven Huang, design team

ENGINEERS: Bob Magruder (structural); Advanced Consulting Group International (m/e/p/fp); Threshold Acoustics (acoustical)

CONSULTANTS: MAPS (permit expeditor)

GENERAL CONTRACTOR: Mortenson

CLIENT: School of the Art Institute of Chicago

SIZE: 21,400 square feet

COST: withheld

COMPLETION DATE: September 2023

Sources

CABINETWORK: Demeter Millwork

ACOUSTICAL CEILINGS: USG, Tectum

INTERIOR FINISHES: Chemetal (paneling); Daltile (solid surfacing); Naturali Stone (tile); Matter Surfaces, Flor (carpet); Infinium (glazing); Scranton Products (partitions); Great Lake Stair & Steel (custom metal)

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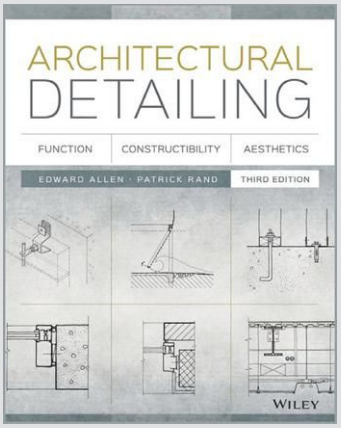

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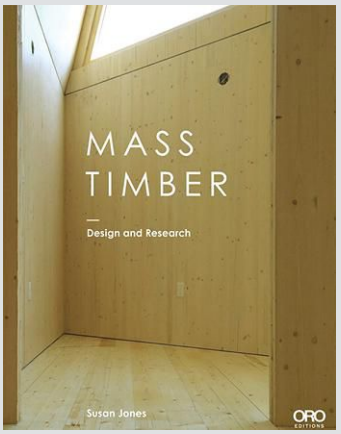

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Learning Objectives

1. Discuss design solutions that can improve building performance and reduce embodied carbon.
2. Understand practices for sourcing sustainable materials and the processes behind their extraction, manufacture, and fabrication.
3. Describe strategies to incorporate renewable-energy systems as key elements of project design.
4. Discuss Passive House and net zero approaches for commercial and institutional projects.

AIA/CES Course #K2404

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SAINT DIZIER'S MARKET, FRANCE, BY STUDIOLADA

WINTHROP CENTER | BOSTON | HANDEL ARCHITECTS

Moving the Needle

The world's largest Passive House office building, part of a mixed-use complex, anticipates a new energy code.

BY JOANN GONCHAR, FAIA

AT 691 FEET and 53 stories, Winthrop Center, a recently completed glassy mixed-use tower in Boston, developed by Millennium Partners and designed by Handel Architects, is now the tallest in the downtown core. It surpasses—though by just a few feet—the height of an earlier collaboration between the developer and Handel, Millennium Tower, a nearby condo building completed in 2016.

The newer tower's base contains 812,000 square feet of office space on 20 floors and, at ground level, a semipublic civic-scale room, nearly three stories tall and 200 feet long, dubbed the Connector, which links Devonshire and Federal, the streets that are the site's east and west boundaries. From its T-shaped lower half, a 26-story pleated shaft rises, housing 317 high-end condos. The tower culminates in a subtly fluted crown highlighted by nighttime illumination. The scheme takes its cues from the Art Deco buildings interspersed among the financial district's eclectic architectural mix, says Blake Middleton, Handel's partner in charge of the project.

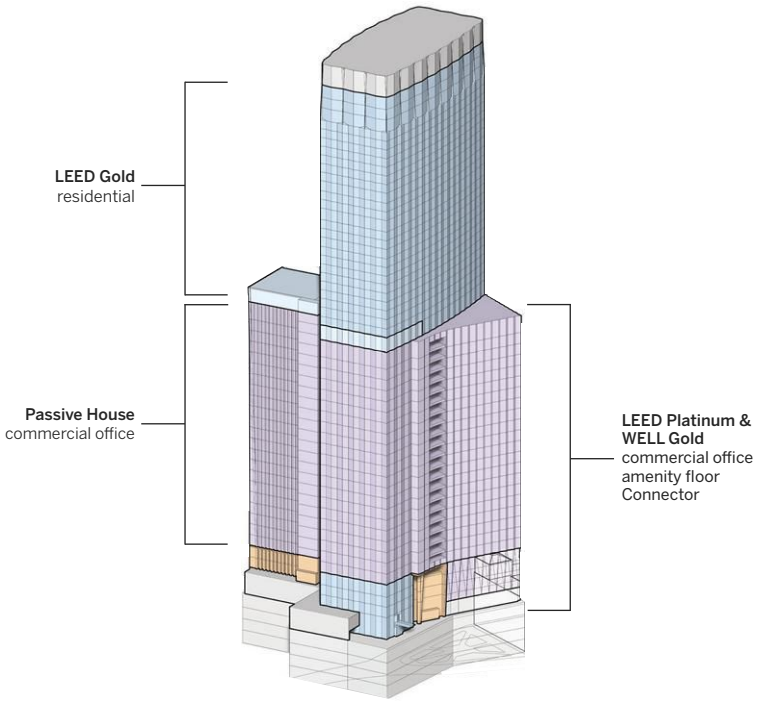
Winthrop's presence on the skyline, however, is not what makes it remarkable. The $1.3 billion, nearly 1.9 million-square-foot development, which sits on the former site of a city-owned parking garage, is instead most notable for its long list of green credentials: its residential portion is on track for a LEED Gold rating, while the office space is targeting WELL Gold and LEED Platinum and has already garnered Passive House certification. It is this last achievement that is the most impressive—at least at this scale. On its own, the workplace portion of the complex is the world's largest Passive House office building.

What is "Passive House"? It is a methodology focused almost exclusively on energy efficiency (compared to LEED, which covers additional aspects, such as water conservation). Known as Passivhaus in Germany, where it was first developed, the standard, which is applicable to any building type (not just residential construction, as the name would seem to suggest), seeks to minimize energy expended for heating and cooling. Its tenets include an extra-insulated, airtight building envelope with minimal thermal bridging, ultrahigh-performance windows, and mechanical ventilation with heat recovery.

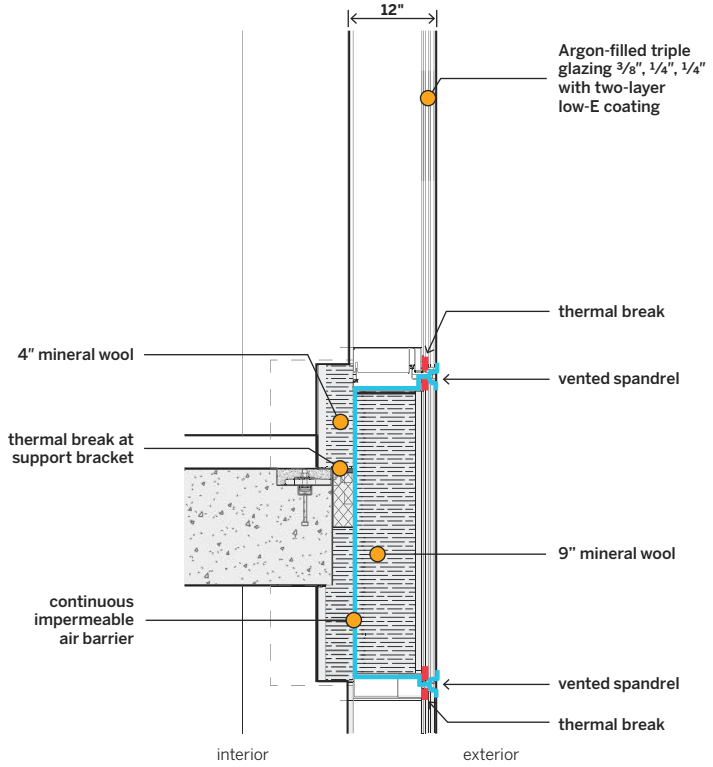
Millennium says that its use of the standard at Winthrop has produced a radically efficient building: a typical Class-A office building in Boston's existing stock uses 150 percent more energy than Winthrop's office floors, while LEED Platinum buildings in the city use 60 percent more energy. In addition to these savings, the developer touts other benefits, including

Winthrop Center makes its mark on the skyline with a fluted crown (opposite). At the ground, a 200-foot-long civic-scale space houses eateries and retail (right).

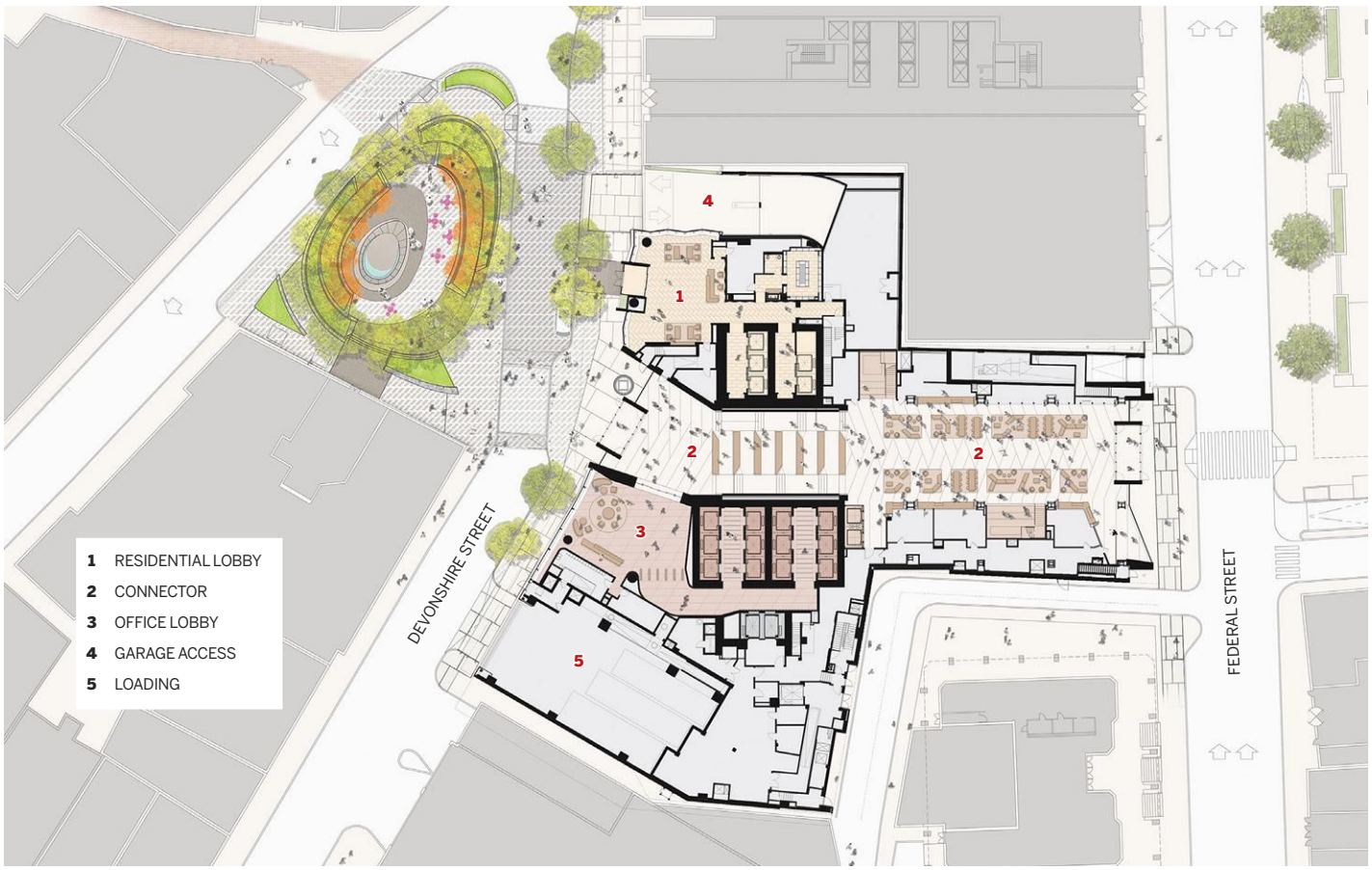
PHOTOGRAPHY: © BRUCE T. MARTIN



SUSTAINABILITY CERTIFICATIONS



OFFICE CURTAIN WALL SECTION



GROUND-FLOOR PLAN

improved indoor air quality. The ventilation system brings in 30 to 50 percent more fresh air than in a standard building of this type.

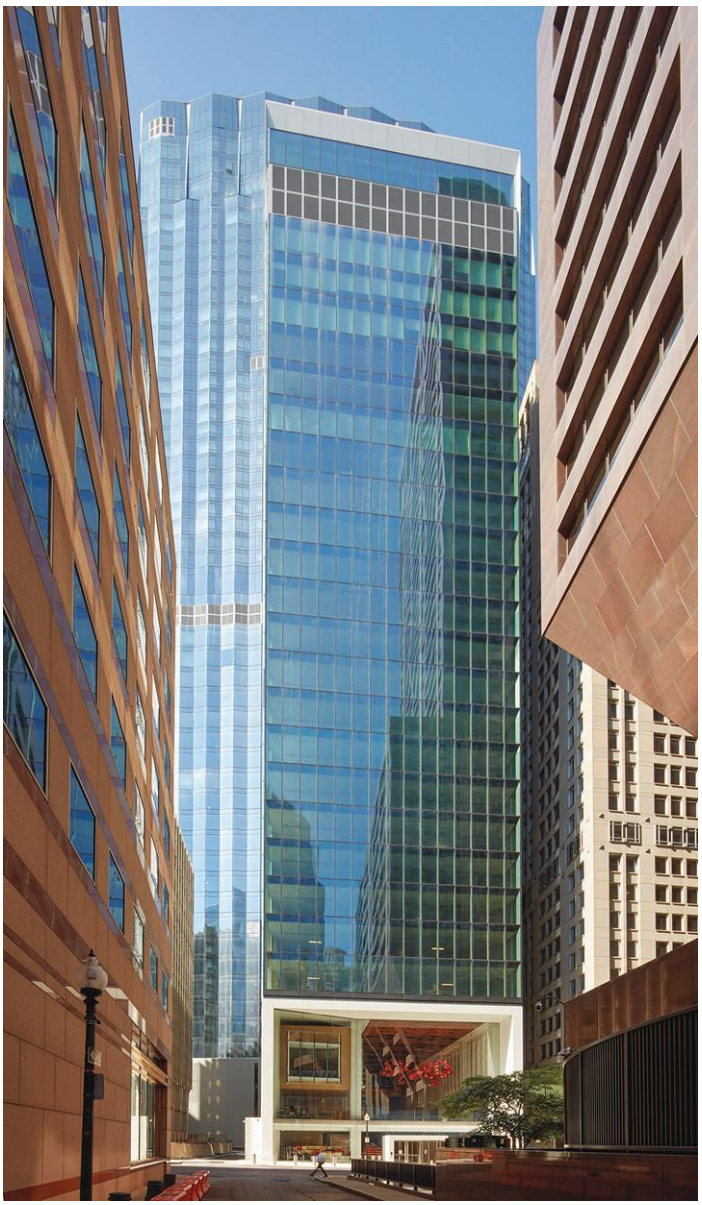
Handel has a long record with Passive House projects at scale. When it was completed seven years ago, the House, a 352-unit residence for graduate students at Cornell Tech on New York's Roosevelt Island (RECORD, November 2017) was the largest and tallest residential building in the world built to Passive House standards. Among Handel's current projects is Sendero Verde, a 709-apartment affordable-housing complex in the Bronx, which will be the country's largest Passive House development when completed later this spring.

Passive House was new to Millennium, but the developers recognized the standard as an opportunity. "We saw Passive House as a key market differentiator," says Brad Mahoney, the company's director of sustainable development. The approach, Millennium reasoned, would have particular appeal to companies with ambitious environmental, social, and governance (ESG) goals. Tenants started moving in this past summer, and leasing activity is strong, according to Mahoney, with 60 percent of the office area occupied by or committed to by firms in industries such as banking, investing, and management consulting. A January *Boston Globe* article referred to one recent deal for office space at Winthrop as one of the "few bright spots amid an overall gloomy picture for Boston's office market."

There are, of course, other attributes attracting companies to Winthrop, including the more than 38,000-square-foot office floor plates whose long spans and T-shaped footprints lend themselves to flexible layouts in "neighborhoods"; 12-foot ceilings and nearly full-height windows; east-facing terraces on each floor; and shared amenities including coworking spaces, a coffee shop, and a fitness center. The ground-floor Connector, which is open to workers from surrounding buildings as well as to the general public, also offers retail and food options and is envisioned as space that will host activities such as farmers markets, concerts, and other cultural activities. (On level 26, the condominiums have their own set of amenities, such as an indoor lap pool, a residents-only bar and restaurant that opens onto a landscaped terrace with views over the Charles River and Back Bay, a wellness center, and even a pet-grooming service.)

The Passive House attributes are probably indiscernible to Winthrop's tenants, including the energy-saving features of the building's enclosure: while the residential levels are wrapped in a mostly conventional double-glazed unitized curtain wall, the system on the office floors includes argon-filled triple-glazing with a two-layer low-E coating. The mullions are a hefty 12 inches deep to support the extra weight of the additional lite and incorporate thermal breaks. And, though Winthrop appears to be an all-glass building, much of the enclosure—especially on those

On the tower's west face (right), the office levels are expressed with a flat, taut skin. The condos (below), on the top 26 floors, capture dramatic views.



PHOTOGRAPHY: © BRUCE T. MARTIN (TOP); COURTESY MILLENNIUM PARTNERS (BOTTOM)

A number of tenants have leased multiple floors, connecting them with communicating stairs, including one office by IA Interior Architects (above).

faces that are obstructed by adjacent buildings—is a high-performance assembly of spandrel glass backed by a generous amount of mineral wool insulation and a continuous air barrier. All in all, vision glass makes up only about 44 percent of the office portion's building envelope, says Middleton.

Another hidden aspect is the energy-recovery ventilators (ERVs), which bring in fresh air, exhaust stale air, and capture heat for reuse. Passive House buildings typically depend on mechanical equipment that has already been certified as complying with the standard's requirements. But, due to the project's size, Winthrop needed custom ERVs—four of them—which entailed lengthy and detailed performance testing to demonstrate compliance. Dylan Martello, senior building-systems consultant at Steven Winter Associates, the project's Passive House specialist, notes that the units are "massive," which challenged the team to create space for them within the building's footprint.

The project's Passive House ambition also necessitated some inventive project phasing. For instance, to demonstrate airtightness, Passive House requires a blower door test, which is typically performed after completion on smaller projects. But here, the test was performed floor by floor, with contractors carefully sealing off the locations of the still-in-use construction hoists. They also conducted intermediate testing on individual components, such as windows. The process, says Martello, "was much less risky than waiting until just before everyone moved in."

Millennium's focus on Passive House at Winthrop has proved prescient, helping advance the strategy as a mainstream market solution. "We felt it was the best approach for moving the needle," says Mahoney, adding that the project "further opens the conversation for other building types to pursue Passive House or Passive House methodologies." Indeed, just last year, Massachusetts adopted new code provisions that essentially require Passive House design for multifamily buildings over 12,000 square feet, in the majority of jurisdictions in the state, including Boston. The provisions also include the Passive House standard as a compliance path for all other typologies. "This building," says Middleton, "became a catalyst for change." ■

Credits

ARCHITECT: Handel Architects — Gary Handel, managing partner; Blake Middleton, partner in charge; Glenn Rescalvo, partner in charge (interiors); Kevin Samuels, project manager

ASSOCIATE ARCHITECT: DREAM Collaborative

ENGINEERS: DeSimone Consulting Engineers (structural); WSP-Built Ecology (m/e/p); Haley & Aldrich (underground engineering, environmental science, management consulting); Steven Winter Associates (Passive House, energy, sustainability, accessibility); Nitsch Engineering (civil)

CONSULTANTS: Ground Inc. (landscape); Lam Partners, Tillotson Design Associates (lighting); SOCOTEC (building envelope)

GENERAL CONTRACTOR: Suffolk Construction

CLIENT: Millennium Partners Boston

SIZE: 1.9 million square feet

COST: $1.3 billion

COMPLETION DATE: June 2023

Sources

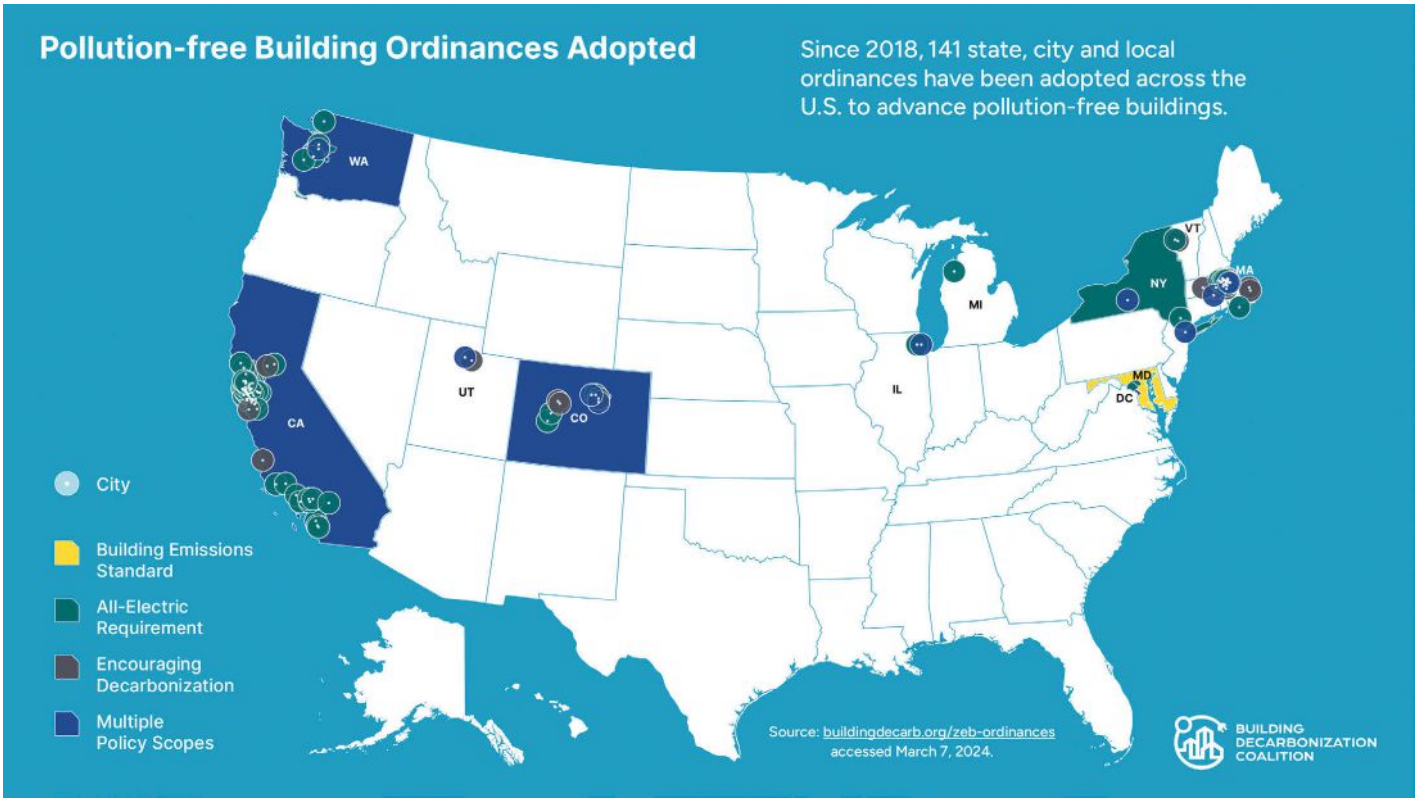
GLAZING: AGC Interpane

CURTAIN WALL: Sotawall

LIMESTONE: Vetter Stone

VERTICAL TRANSPORTATION: Schindler

PHOTOGRAPHY: COURTESY MILLENNIUM PARTNERS



Building Electrification Charges Forward

BY MATTHEW MARANI

AMERICA'S cities and states are increasingly turning toward building electrification as a tool to further decarbonization goals. According to the EPA, building operations account for nearly 40 percent of U.S. energy consumption and approximately 30 percent of greenhouse-gas emissions. Switching over to equipment such as induction stovetops and heat pumps, coupled with the use of renewable energy and efficiency measures, could bring those numbers closer to zero. In the last year, in a riposte to the growing upswell, the House of Representatives passed a bipartisan bill to block the Consumer Product Safety Commission from using federal funds to ban gas stoves, and litigation has turned the courtroom into a battleground in the race to decarbonize.

In April 2023, the United States Court of Appeals for the Ninth Circuit—the court is headquartered in San Francisco and encompasses much of the western United States—ruled in favor of plaintiff California Restaurant Association against defendant City of Berkeley, which in 2019 had passed the country's first prohibition on the installation of natural gas pipes in new construction. The Ninth Circuit argued that the local ban is incongruent with the federal government's Energy Policy and Conservation Act and infringed on its exclusive power to regulate gas appliances. Last May, the City of Berkeley filed a petition for a rehearing and was granted an amicus brief by the Ninth Circuit, though the court ultimately struck down the petition in January.

Berkeley is not alone in its attempt to ban gas lines in new construction; dozens of the nation's cities have followed suit, including New York, Seattle, and San Francisco. States are also joining the fray. Washington updated its building codes in 2022 to require heat pumps in new construction—though, prompted by the Berkeley ruling, it later revised the building code to incentivize electrification rather than prohibit the use of fossil-fuel-burning equipment. New York and California have rolled out similar restrictions, set for 2026 and 2030, respectively. So far, over 100 cities and states have instituted policies to prohibit or discourage the installation of gas lines in new buildings.

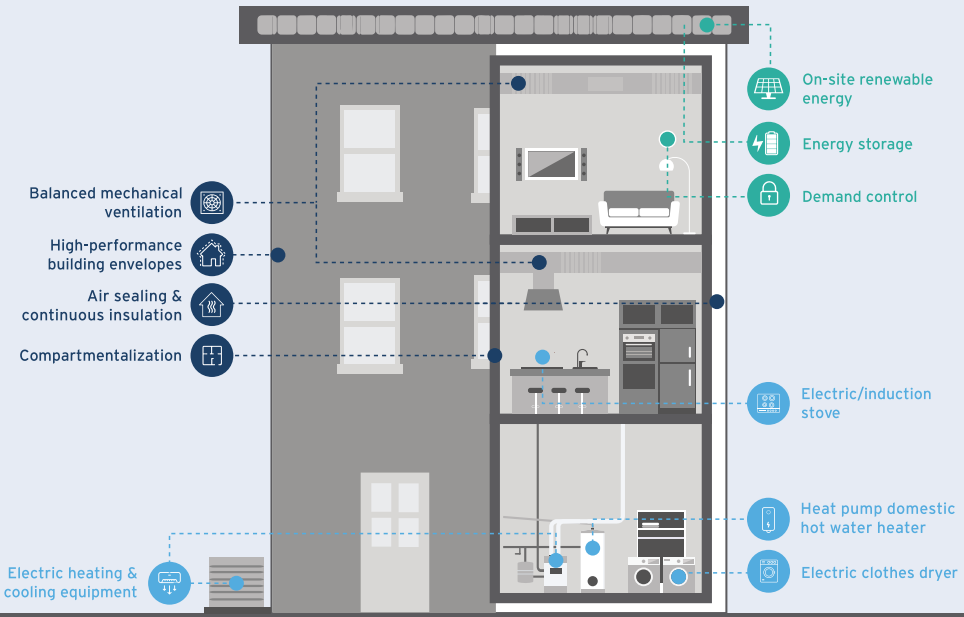
What are the implications of the Berkeley ruling and other lawsuits for the country's decarbonization ambitions? According to Stet Sanborn—a vice president at design firm SmithGroup and a mechanical-engineering and in-house decarbonization expert—the ruling, and similar ones, is likely to have minimal impact on the building industry, as government incentives and market forces are already pushing toward electrification. "The train has already left the station," Sanborn says. "The gas lobby can go fight city by city, but the momentum is already there, and building electrification is cheaper and safer than the alternative." Those savings result from the reduced installation and maintenance costs of just the one system, rather than both gas and electric. In terms of

Electrification of housing, to be beneficial, should lower housing costs and raise quality, creating a safe and healthful indoor environment while reducing greenhouse-gas emissions and improving interaction with the electric grid.

1 Reducing energy load with safe, high-performance building envelopes and safeguarding indoor environmental quality by controlling indoor air movement through air sealing, compartmentalization, and balanced mechanical ventilation

2 Installing highly efficient, all-electric equipment and appliances, such as heating and cooling equipment, domestic hot water heaters, stoves, and clothes dryers, and ensuring adequate electrical service

3 Using demand controls, on-site renewable energy, and energy storage to manage the amount and timing of electric energy consumption



safety, houses with gas stoves are estimated to have nitrogen dioxide concentrations up to four times that of electric stoves, increasing childhood asthma risks by over 40 percent.

The gathering of speed in the direction of electrification was on full display last September when the United States Climate Alliance, a bipartisan coalition representing 25 states and nearly 180 million citizens, announced alongside the Biden administration that, through a range of incentives, it aims to boost the annual number of heat pumps installed nationwide from just under 5 million to 20 million by 2030.

For Panama Bartholomy, the founder and executive director of the Building Decarbonization Coalition, incentives are all well and good, but without regulation of new gas appliances, there are still several roadblocks, such as so-called "stranded assets," that could prove stubborn in the years ahead. One example is "the pipe that gets put in the ground now has a life span of up to 80-years. We are knowingly investing in [gas] infrastructure even though we need to phase out fossil fuels within 25 years," he explains, noting that ratepayers or taxpayers are likely to be on the hook for the gas utilities' sunken costs. The issue of stranded assets extends to household appliances, such as furnaces and water heaters, or stoves, which have life expectancies of up to 20 years. "You cannot be installing fossil-fuel equipment past the middle of the next decade. That will keep the need for gas to continue flowing through neighborhoods and not allow those places the opportunity to transition to clean energy," he says.

At the Rocky Mountain Institute, Denise Grab, principal on its carbon-free buildings team, suggests that while the court decision on Berkeley potentially rules out policies directly prohibiting natural gas lines in new construction, there is a grab bag of indirect measures, ranging from building codes to performance and air-pollution standards, that can be strengthened to drive the market in the direction of building electrification. Moreover, the precedent set by the Ninth Circuit may not hold in its peer courts. "There were very strong dissents within the court regarding the decision—which is quite rare—indicating in thoughtful and strong terms why the majority was wrong," Grab says.

The road to decarbonization in the building industry has many twists and turns, but, on this road, court decisions may prove more of a speed bump than a blockade. ■

IMAGE: COURTESY ROCKY MOUNTAIN INSTITUTE

ENERGY ADVANCEMENT AND INNOVATION CENTER | COLUMBUS, OHIO
SMITH-MILLER+HAWKINSON ARCHITECTS

Power Play

At Ohio State, a translucent structure houses a living lab for renewable energy and direct current.

BY WANDA LAU
PHOTOGRAPHY BY MICHAEL MORAN

STANDING AT the gateway to the Ohio State University's (OSU) nascent Carmenton campus, the 64,000-square-foot Energy Advancement and Innovation Center (EAIC) is about one-fifth the size of a neighboring research building, but "it can hold its own on the site," says Brendan Flaherty, a senior project manager with the institution's facilities, design, and construction group. For starters, the luminous structure of glass, polycarbonate, and precast concrete significantly departs from the campus vernacular of brick rectangular buildings, he points out.

Even more distinguishing is the EAIC's 281-kilowatt array of 704 photovoltaic (PV) panels, held 9½ feet above its roofline in a ragged-edged canopy that overhangs its footprint. Combined with a nearly two-story-tall "Block O"—OSU's logo—rendered in flexible white LED strip lights, the center embodies its mission as a living laboratory and incubator for academia and practitioners to research renewable energy and direct current (DC) power.

"Many in the industry believe a DC-powered future is possible, given the efficiencies available by distributing DC power throughout buildings," says Lindsay Smith, principal at New York–based Smith-Miller+Hawkinson Architects (SM+H), the project's design architect, which collaborated with architect of record Moody Nolan, headquartered locally in Columbus. "This was an opportunity to make a university building of scale that was using the direct current straight from the solar panel."

In 2017, the multinational energy company Engie and Axium Infrastructure US won a 50-year contract to operate and optimize OSU's utility system. As part of its proposal, Flaherty says, Engie pledged $38.5 million of the EAIC's ultimate $49 million price tag, along with additional funds for research and building operations. SM+H worked with OSU faculty, researchers, and leadership to create a programming vision for the EAIC, which broke ground in 2021 and opened its doors in November 2023.

The center's holistic design is the result of careful intention, says SM+H cofounder Laurie Hawkinson: "Things that look normal or simple here are not."

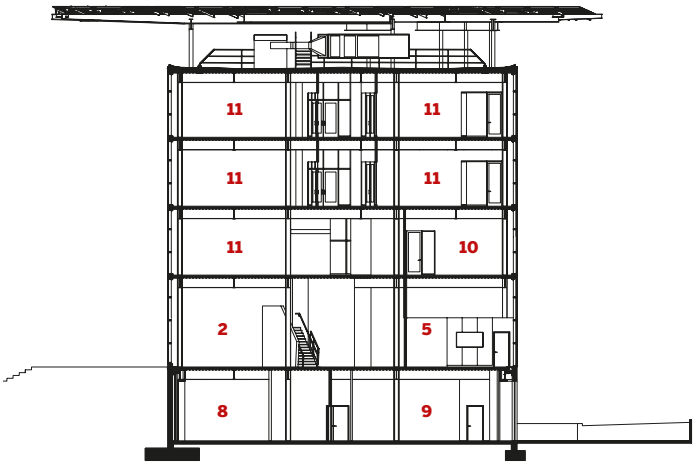
The EAIC's offset from the adjacent Pelotonia Research Center ensures clearance for fire separation and shade-free solar exposure year-round—a goal helped by the addition of a fourth floor during construction documentation. A loading area angles the east elevation inward; ensuring that views to the main OSU campus, from a plaza to the west, nudged the footprint north.

SM+H 3D-printed numerous study models to devise the striking solar canopy, which arranges 44 16-panel modules into a plaidlike pattern that filters in daylight and creates dynamic shadows below. The firm worked with structural engineer Thornton Tomasetti to design a steel armature for the racking system.

The enclosure's materials mix (opposite, top) creates different qualities of light within the building (above and right). The solar canopy comprises 704 PV panels (opposite, bottom).

"We wanted the canopy to feel light," Hawkinson says. "We didn't want to use any excess weight or energy."

The EAIC's envelope comprises a glass curtain wall interspersed with translucent polycarbonate panels—up to 42 feet tall by 19 feet wide—and precast concrete panels, which soften the hard grid lines with a rippling effect. Though both the insulated glazing and polycarbonate systems have a U-factor of 0.24 (equivalent to R-4.2), the size and continuity of the polycarbonate panels result in fewer opportunities for thermal bridging. The precast, backed with spray-foam insulation, delivers an R-value of 16.25. The mix



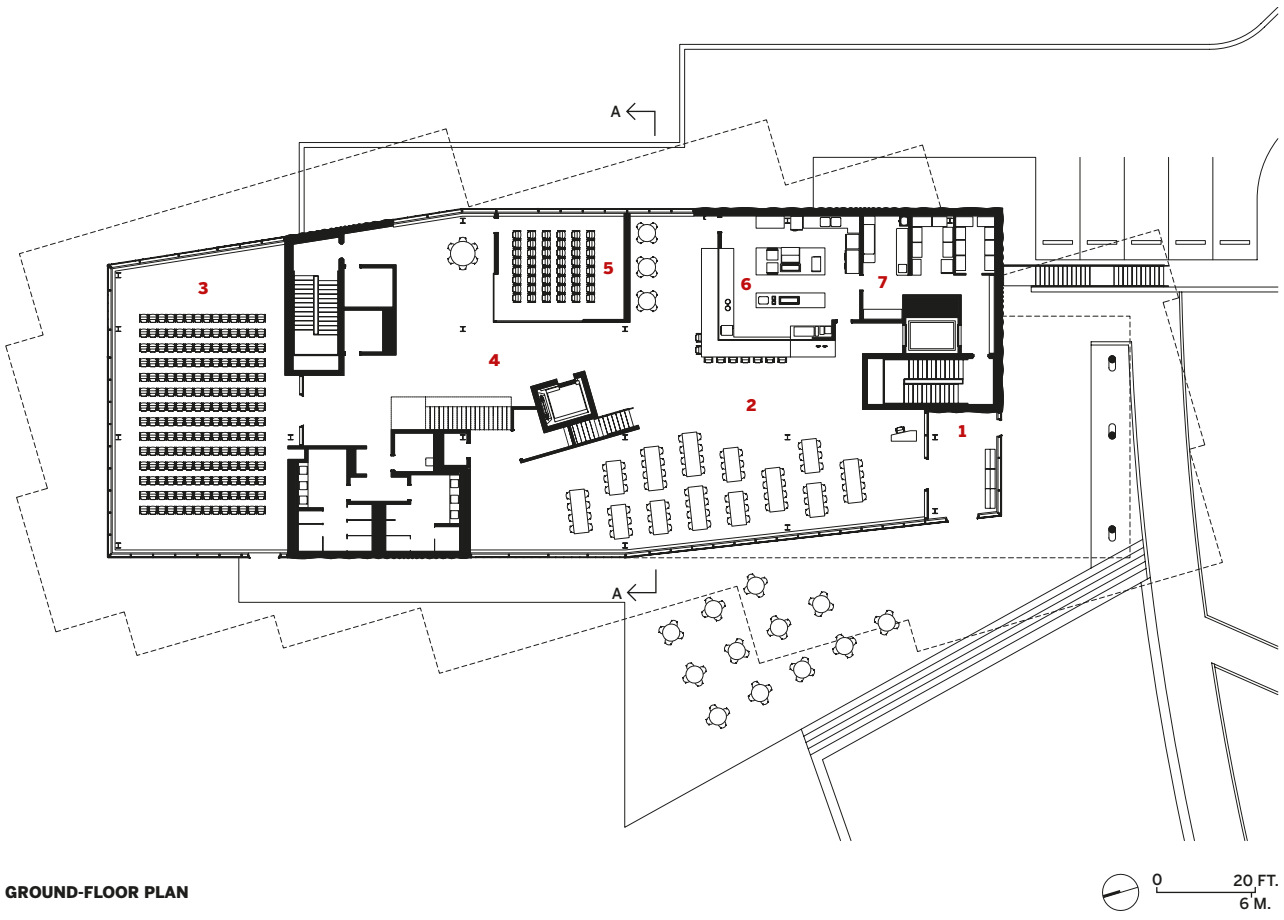
SECTION A - A

of materials results in an interior that offers different qualities of light and clear views out in every direction.

Accessible from the east, the loading zone, makerspace, vehicle testing bays, and a room for future battery storage fill the ground floor of the EAIC, which is built into a slope. Event space and a café occupy much of the first floor, which is open to the public and can be accessed from the west plaza.

The second through fourth floors contain a mix of offices, meeting rooms, flexible workspaces and collaboration areas, and testing pods with electrical panels fed directly with power generated from the PV array for the development of "technologies that would bring the DC microgrid world to the next level," Smith says.

Today, many devices—computers, electric vehicles, and LEDs—run on DC. By distributing DC power at high voltage, the EAIC prevents an estimated 3 to 5 percent in conversion losses, says Kevin McCaughey, a principal at Advanced Engineering Consultants, which oversaw the project's m/e/p design. Other innovations piloted in the center include driverless LED luminaires, which can run more efficiently and have a longer operating life than standard LED fixtures that must convert



GROUND-FLOOR PLAN

1 ENTRY
2 CAFÉ
3 EVENT HALL
4 GALLERY
5 SEMINAR
6 KITCHEN
7 PANTRY
8 BATTERY
9 MAKERSPACE
10 TESTING POD
11 OPEN WORK AREA

The DC power generated by the overhanging PV array (above) is distributed throughout the EAIC, avoiding an estimated 3 to 5 percent in conversion losses.

incoming AC power to DC; a conduit system able to support future mechanical equipment via Power over Ethernet; and a variable refrigerant-flow system that leverages the campus's chilled-water loop.

Though the EAIC is expected to be 60 percent more efficient than a comparable baseline building, it still relies on the campus's AC power grid to supply up to two-thirds of its energy, says McCaughey, due to the high needs of a research facility. He worked with the Houston-based controls manufacturer to design a custom bidirectional inverter that optimizes the conversion of electricity and sends excess energy from the PV array to the grid.

OSU's Flaherty says that the team had initially considered making the EAIC net zero, but quickly realized that a PV array to meet the project's full demand would be "way, way too big." By pivoting to a research facility that allows for the firsthand study of renewable-energy systems and DC microgrids, he says, "we can make advancements that will help thousands of buildings." ■

Based in greater Chicago, Wanda Lau is an award-winning writer and editor who covers architecture and energy.

Credits

ARCHITECT: Smith-Miller +Hawkinson Architects — Laurie Hawkinson, partner/lead designer; Henry Smith-Miller partner; Lindsay Smith, principal; Andrea Tonc, project manager; Alex Mann, Jacqueline Stern, project designers; Emily Po, Galen Pardee, Sarah Bujnowski, Rahul Gupta, Beste Aykut, Yini Xu, Evan Chiang, design team

ARCHITECT OF RECORD: Moody Nolan

CONSULTANTS: Thornton Tomasetti (structure/facade), Advanced Engineering Consultants (m/e/p/fp/AV/IT), Buro Happold (conceptual m/e/p); EMH&T (civil), Claude Engle (lighting), Realm Collaborative (landscape), Ricca Design Studios (food service), Acentech (acoustical)

CONSTRUCTION MANAGER: Whiting Turner Corna Kokosin Joint Venture

CLIENT: The Ohio State University

SIZE: 64,000 square feet

PROJECT COST: $49 Million

COMPLETION DATE: November 2023

Sources

PRECAST CONCRETE: Gate Precast

CURTAIN WALL: Oldcastle BuildingEnvelope, Vitro Architectural Glass

TRANSLUCENT WALL SYSTEM: Extech, Gallina Polycarbonate

DC LIGHTING: Acuity Brands

DC LIGHTING CONTROLS: Nextek, Amatis

DC MICROGRID: Cordyne

PHOTOVOLTAICS: ENGIE Distributed Solar and Storage

VRF SYSTEM: Mitsubishi Electric

The 2024 AIA Gold Medalists Discuss their Design Philosophy

BY JOANN GONCHAR, FAIA

David Lake and Ted Flato founded Lake | Flato Architects in 1984 in San Antonio. They started their practice designing ranch houses in Texas, but in the intervening decades have created a diverse portfolio that includes schools, workplaces, and mixed-used developments spread throughout the country. The duo, whose projects are characterized by an attention to craft and a respect for nature, are the joint recipients of the 2024 Gold Medal from the American Institute of Architects (AIA). Known for ultra-high-performing buildings, Lake | Flato has earned 15 AIA Committee on the Environment (COTE) Awards—more than any other firm—and it achieved the first Living Building certification in Texas. RECORD *deputy editor Joann Gonchar spoke with Flato and Lake about their design philosophy and approach to practice.*

Lake (top) and Flato (above) started their practice in 1984. Harold Simmons Park (bottom), in Dallas, is set to start construction next year.

Lake | Flato has expanded over the years, now with 150 staff members and a second office in Austin. At that size, how have you maintained the firm's culture?

Ted Flato: One of the things that has been really helpful is our space in San Antonio. During Covid, we decided to remodel the office that we'd been in for almost 40 years. The experience of being apart informed how we would come back together after the pandemic. Though we had outgrown it, we realized we could make our desks smaller, create more thoughtful shared space, and—most importantly—create an incredible outdoor gathering space. We took away an area where we used to park our cars and turned it into a courtyard. We have lunch there together every week. We host a farmer's market.

Even though we now have 150 people, it doesn't feel very big. It's a very collaborative office because that's how we began. David and I began as a team.

How do you organize the office, according to skill sets or by project type?

David Lake: We like to consider ourselves galloping generalists, but we do have studios. We have a residential studio, a K–12 studio, a higher-ed studio, and an ecology/conservation studio, which designs everything from visitors centers to eco-hospitality projects. Another studio focuses on making our downtowns and our cities' cores more vibrant, doing urban planning, civic buildings, and a lot of adaptive reuse. Each studio is led by one or two partners.

Given this setup, how do you instill a sense of ownership of the work among the staff?

TF: We have design reviews where different studios review other studios' work. That promotes engagement around design and discussion about philosophy. Those are things that end up creating group ownership, but it goes back to starting a firm rooted in collaboration.

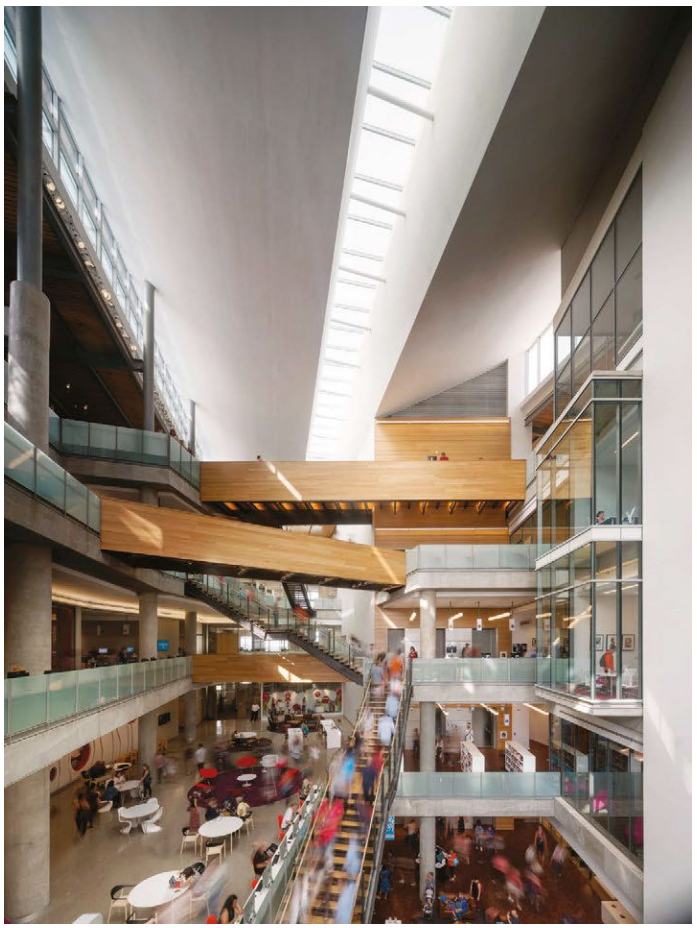
You have consistently created sustainable, environmentally sensitive buildings. How have you managed to maintain such high levels of performance?

DL: You have to be aspirational at the start. In the case of the Austin Central Library, the client came to us in late 2008 and said, "We want a LEED Silver building," which was a city requirement. Then we sat down and started talking about what it was that they wanted and how it could be better. We said, "You're in Austin, the library should be the city's living room. It should be Platinum. It should be as close to net-zero water as possible." The process teaches people that you can aspire to these things and achieve them. That's really the fun of what we do: bringing everybody along.

Is there a common thread that ties your buildings together?

DL: From the very beginning, Ted and I felt that architecture should bring down the walls between us and nature. And that philosophy yields buildings that are connected to each place. It takes the idea of critical regionalism and pushes it forward with technology, innovation, and construction. We love building things. We love detailing things. You take the culture and the climate and the context of each place, and you overlay that with craft and local resources. Then you balance that with habitat conservation and the sciences of engineering.

Your projects not only seek to connect people to the landscape, but often to heal it, and,



Among the firm's projects are the Austin Central Library (above), the Pearl Brewery (right, top), and its San Antonio office (right, bottom).

in addition, be socially restorative. Can you explain how?

TF: In Dallas, we are working with Michael Van Valkenburgh's office along the Trinity River, which slices through the city and separates east and west. The idea is to create a park as a bridge. Our site is a brownfield containing an old steel industrial structure that will form part of the armature of a garden. The new buildings that we're designing will pick up on that industrial character. It should be transformative for the city and for an underserved part of Dallas. The challenge is strengthening the neighborhood instead of completely changing it. The project, Harold Simmons Park, should start construction next year.

Lake | Flato has repurposed more than 3 million square feet of buildings. What makes this work so attractive to you?

DL: The beauty of repurposing is, it's the most sustainable move we can make—clearly. But also, it brings out our inner ingenuity, because we've got to find a new use for an old building. But more importantly, it's also keeping the historic fabric of the city in place and strengthens the city and urban districts by inserting new uses. So that's always been a great love. We had that at the Pearl Brewery [RECORD, July 2013], master-planning that whole 26-acre district in San Antonio, and thinking about how to reuse half a million square feet of old buildings. It required us to think about experience and district-making, what draws people to a place, and what will keep them there.

What do you hope that other architects take from your work?

TF: We've got an enormous challenge ahead of us—we architects and we the planet. One architect, or one firm of 150 people, can't solve it. So it's really about creating a design approach that others can embrace. If others see us as an inspiration for their own work, and do it better, that's great. ■

IMAGES: © JOSH HUSKIN (OPPOSITE TOP, MIDDLE); COURTESY LAKE | FLATO (ALL OPPOSITE); NICLEHOUX (LEFT); LARA SWIMMER (TOP, RIGHT); ROBERT G. GOMEZ (BOTTOM, RIGHT)

NASA AEROSPACE COMMUNICATIONS FACILITY | CLEVELAND | ROSS BARNEY ARCHITECTS

Mission Critical

A state-of-the-art research laboratory expertly balances aesthetics, cost, and performance.

BY KATHARINE LOGAN
PHOTOGRAPHY BY KENDALL MCCAUGHERTY

THE SUCCESS of transformative programs currently under development at NASA, such as the Artemis mission to establish a long-term human presence on the moon and the Advanced Air Mobility project to integrate electric air taxis and drones into America's airspace, will depend on breakthroughs in the technology of communication. To support the necessary innovations, NASA's Glenn Research Center, in Cleveland, has brought together 25 research labs from across its campus in a dedicated state-of-the-art Aerospace Communications Facility. Designed by Ross Barney Architects and completed in late 2023, the 54,000-square-foot, $40.5 million building integrates stringent programmatic and budgetary requirements with the desire for supportive daylit workspaces and the need to meet ambitious sustainability targets.

The architectural concept and its expression are unabashedly pragmatic, says Carol Ross Barney, founder of Ross Barney Architects. "This is a building that's driven by its function and by the need to be carbon- and energy-efficient," she says of the net zero energy–ready facility—one designed to be highly efficient, so that if a renewable-power generation system were installed, it would produce at least as much energy as is consumed. "We've used what the building has to do to make it beautiful," she adds.

Layers of scrawled math equations embellish a precast facade (opposite). Equipment enters through an enormous bifold glass door (at far right in photo, right).

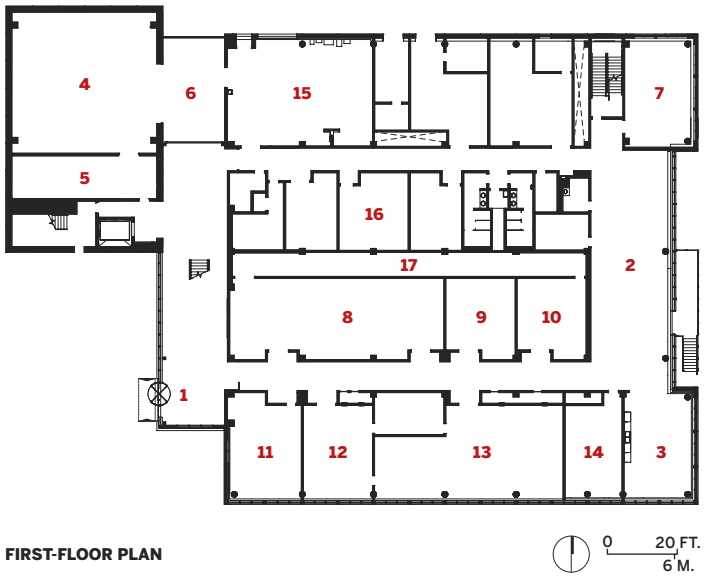
The new facility reads as three volumes. The highest, a three-story block executed in concrete—precast for the walls and site-cast for the floor and roof—houses an antenna test range. Required to be completely shielded from radio frequency and electromagnetic interference, the concrete includes a proprietary conductive aggregate that acts as a Faraday shield, keeping high-frequency electromagnetic radiation from penetrating the structure. Making use of precast's expressive potential, a graphic that layers mathematical equations like palimpsests on researchers' chalkboards has been etched into the surface using a paper form-liner. The pattern embellishes the facade and reduces the block's scale while signaling the building's function to anyone familiar with the equations.

The graphic wraps into a glassy two-story volume that serves as a double-height lobby. Sight lines to the loading area, where enormous antennae dishes are brought into the testing bay through an 18-foot-square bifold glass door at one end of the lobby, make a show of the building's ordinary goings-on.

Across the lobby from the testing bay, a two-story volume clad in dark blue corrugated steel houses research labs and collaborative and "hoteling" work zones (for space efficiency, there are no assigned desks or offices). These are organized to optimize daylighting and views into the tree canopy of a nearby ravine. On east- and west-facing glazing, a ceramic frit supplements shading from deciduous trees. On the south elevation, undulating perforated-aluminum shading devices provide glare-free daylighting. They also happen to look like radio waves.

The design team integrated

Some labs can be closed to all light or sound (opposite, bottom), while others have abundant daylight (left). The building includes a variety of collaborative workspaces (opposite, top).



FIRST-FLOOR PLAN

1 ENTRY
2 "HOTELING" WORKSPACES
3 BREAK ROOM
4 NEAR FIELD RANGE
5 COMPACT RANGE
6 LOADING BAY
7 GROUND STATION CONTROL ROOM
8 OPEN OPTICAL LAB
9 CLOSED OPTICAL LAB
10 QUANTUM OPTICAL LAB
11 MEETING ROOM
12 COMMAND/CONTROL
13 MODELING/SIMULATION
14 MEETING ROOM
15 MACHINE SHOP
16 NETWORKING EMULATION LAB
17 OPTICAL RANGE

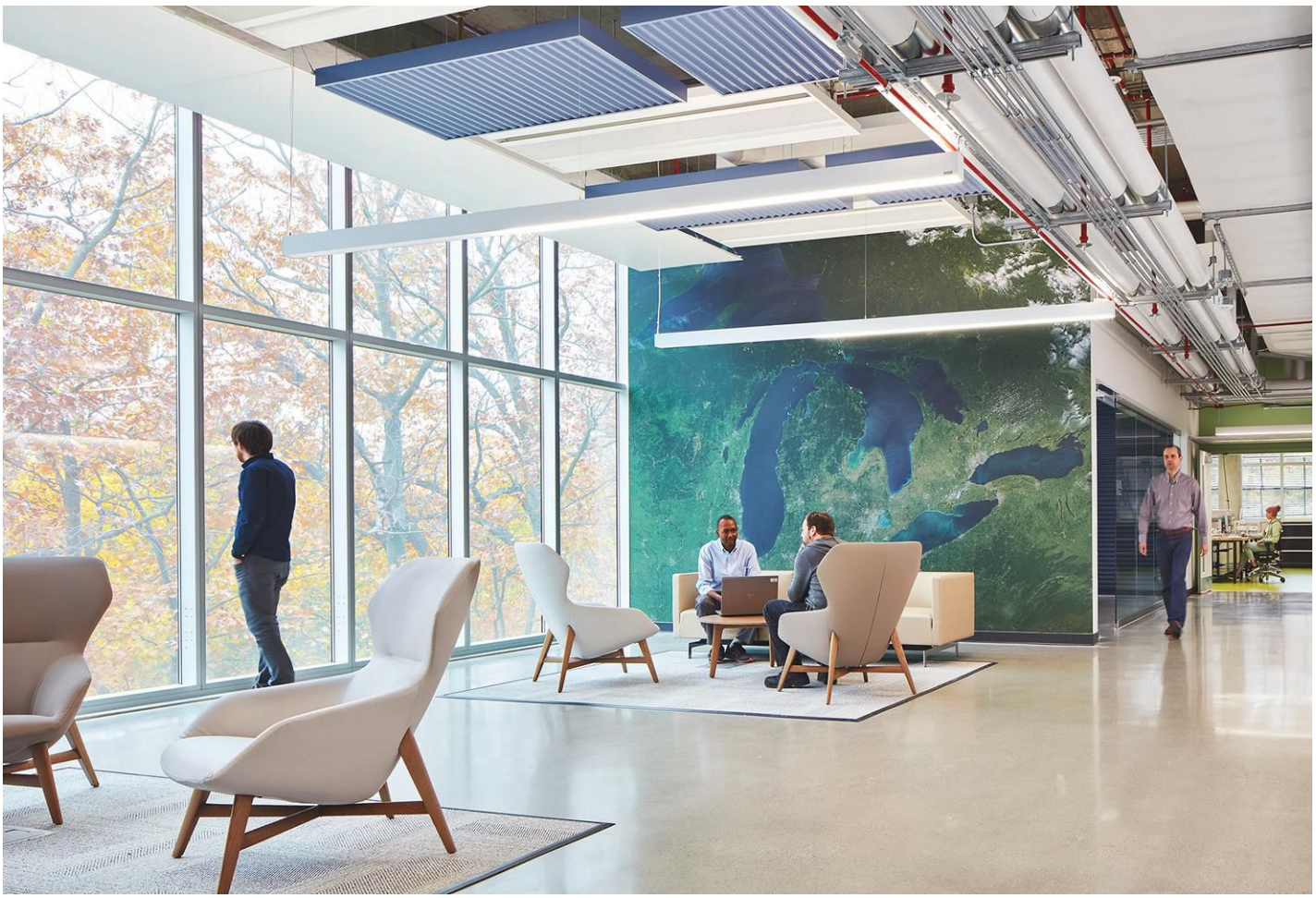
sustainability as a priority from the outset, selecting the building configuration based on iterative evaluations of the passive-energy performance of four alternative schemes. Among the guidelines and energy-performance benchmarks informing the design was the Net Zero Energy Buildings (NZEB) Roadmap prepared for NASA by the National Renewable Energy Laboratory, which provides guidance on the strategic, organizational, and tactical aspects of complying with the time-phased NZEBs requirement for new federal buildings that started in 2020. Referring to the Roadmap and also to the ASHRAE 90.1 efficiency standard, Labs21 Environmental Performance Criteria (a rating system specific to the laboratory building type), and LEED, the design team optimized the building envelope and other systems by targeting what Ross Barney principal Ryan Giblin calls "sweet spots between costs and sustainability."

For example, the payback on R-70 roof insulation didn't justify the surcharge over R-30. But the ceramic frit on east and west glazing and argon-filled, low-E glass and shading devices on the south proved out, allowing the mechanical system to be downsized. Ground-source heat pumps and chilled beams and radiant panels provide energy-efficient heating and cooling, as well as a low-dust environment for sensitive experiments, while a boiler for occasional supplemental heating and cooling (expected to be used about 5 percent of the time) obviated the need to oversize the geothermal system to cover those rare loads. Ample daylighting enabled a lighting design that is 67 percent more efficient than the ASHRAE 90.1-2013 benchmark.

Together, the selected "sweet spots" achieve an Energy Use Intensity (EUI) of about 59, which compares well with an EUI of about 90 for the ASHRAE 90.1 baseline building and about 84 for the projected result of the NZEB Roadmap.

Although the facility is designed to be able to meet its energy needs with on-site renewables, a net zero feasibility study found that, even over a 30-year time frame, photovoltaics would fall millions of dollars short of repaying their capital cost. This is because the NASA Glenn campus, a heavy user of power, has negotiated an exceptionally low rate with the utility. Unless that rate changes, instead of making an unrecoverable investment in generating its own energy, the facility will offset its power demands by purchasing renewable-energy certificates.

The Aerospace Communications Facility's achievements—



functional, environmental, and aesthetic—derive from, and express, a careful analysis of programmatic parameters, according to the architects. "One of the things that's exciting about architecture is finding real beauty in everyday, run-of-the-mill, back-of-house functions," says Ross Barney. "It takes a long time to distill all of these different facts and needs, but when you work on a design that way, the rewards are immense." ■

Credits

ARCHITECT: Ross Barney Architects — Carol Ross Barney, design principal; Ryan Giblin, principal in charge; Mordecai Scheckter, project manager; Shinya Uehara, director of design; Ryan Docken, Itzi Velazquez-Becerril, Youngjae Lee, Ross Barney, designers; Misa Inoue, landscape architect

CONSULTANTS: Thornton Tomasetti (structural), Environmental Design Group (civil, environmental), dbHMS (m/e/p, fire), Threshold Acoustics (acoustical), HERA Laboratory Planners (lab planning)

GENERAL CONTRACTOR: The Austin Company

CLIENT: National Aeronautics and Space Administration

SIZE: 54,000 square feet

COST: $40.5 million

COMPLETION DATE: November 2023

Sources

METAL PANELS: Centria

CURTAIN WALL: Kawneer

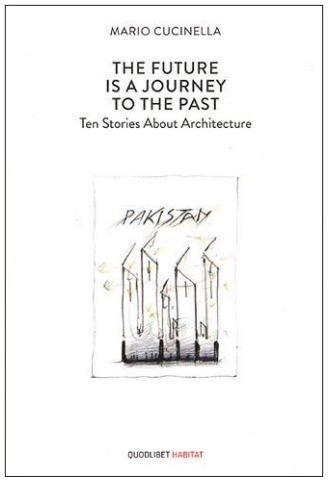
RAINSCREEN: Knight Wall Systems, Hunter Panels

ROOFING: Elevate EPDM

PRECAST CONCRETE: High Concrete Group, Omni-Threat Structures, Graphic Concrete

GLASS: Viracon, TGP

Looking Back, Mario Cucinella Interrogates the World Around Us



The Future is a Journey to the Past, *by Mario Cucinella. Quodlibet, 128 pages, $15.*

Mario Cucinella is founder of Milan- and Bologna-based Mario Cucinella Architects (MCA), as well as the SOS School of Sustainability. In his most recent book, the Italian designer has compiled an architectural autobiography of 10 travel stories, spanning from Iran and China to Ireland and the Maghreb, that offer lessons on how architecture can learn from the natural world. "They are not nostalgic tales," he says, "but the discovery of a past in which to seek lots of information that can help us in our journey to the future." Following is an excerpt from the preface.

FOR THOUSANDS of years, we have found a way to adapt to places, going from a nomadic period, when houses could be transported in a sort of prelude to prefabrication, to permanent homes, with all that this has meant for the social organization of civilization.

We decided we wanted to live together, perhaps for the sake of convenience. Those more fortunate were able to build a house for themselves, then many of them together created a village, and after that many villages breathed life into a city. But these cities, these places where people resided, were all different, made with different materials, which did not mean they were less beautiful or spectacular. What made all these cities so different?

They were built in places that were the most unthinkable, the most insidious, in the most extreme climate situations. Nonetheless, cities had never been extraneous to a relationship with the countryside and with the landscape—primordial resources—and indeed this relationship was an indispensable part of their very essence.

This extraordinary idea of living together can have many reasons, the most credible one being related to sociality. From the city, politics were born—from the Greek *politiké*, where the *polis* is the "city," the "society," and *téchne* refers to the government. Thus were born a life in common and an ancestral relationship with nature, which we both need and fear. The Italian word *comune* itself derives from the concept of the community, of living together, and it was assumed that the territory's resources were also in common.

I am increasingly intrigued by the world of plants, which are in the majority on this planet. Permanently located by nature, over the course of millennia they have

TECLA—a portmanteau of the words *technology* and *clay*—is a 3D-printed housing prototype (left). The dwelling unit, developed by MCA in collaboration with the World's Advanced Saving Project, can be erected in 72 hours by extruding and layering mud in sinusoidal forms.

Designed by MCA to house the administrative offices and research laboratories of the Regional Agency for the Environment and Energy, in Ferrara, Italy, the ARPAE building (above) is capped by a matrix of 112 chimney-like wood volumes. These serve two purposes—mediating daylight and improving airflow.

PHOTOGRAPHY: © IAGO CORAZZO (OPPOSITE); MORENO MAGGI (TOP); COURTESY MARIO CUCINELLA ARCHITECTS

had to adapt, be transformed, build up defenses, reproduce, fight, be joyful, and exploit the surrounding environment. They underlie the planet's ecosystem. As a result, there are plants at every latitude, even in the most extreme places, such as deserts or ice caps.

This story about plants and architecture is much more than a journey. This story is a rediscovery of the deep reasons for the lost relationship between humans and the planet (along with its climates) and the planet's ability to adapt and construct.

The amazing tales that [Stefano] Mancuso describes in the [2014] book *Uomini che amano le piante* [*Men Who Love Plants*] tell of a different intelligence from ours, but one that is present, capable of reacting to what is around us and of finding solutions for adaptation. If you think of it, as Professor Mancuso tells us, humans are infinitely younger than plants: they did not appear until 470 million years later. Humans have had to learn to adapt, to use the available resources, to build communities, villages, cities in harmony with the environment.

But what can we still learn today from the plant world?

Is it possible that we still haven't learned the deep secret of the world around us?

Somehow we discover that we don't really know profoundly enough what we have—the land we live on. And yet we could learn many things rather than invent useless and costly stratagems.

Architecture has abandoned this path of empathy with the planet for some time now, with impressive and dramatic results. Instead of reacting to places in an intelligent way, it has decided, thanks to its boundless faith in technology, not to consider and not to use the energy that is available. We could discuss this at length, but we are anxious to set off on our journey.

Naturally, buildings are not as intelligent as plants, but in this case we can contribute to making them intelligent by designing them more carefully. And perhaps tomorrow we will also be able to think about an evolutionary form for the building as an organism capable of reacting to outside conditions, for instance, by using intelligent materials.

How does a cactus thrive in the desert? Where does its ability to adapt to the climate lie? Just like us, plants build communities, but how do they know how to do that? No doubt the reader can find out if they examine the topic more closely through the research conducted by Mancuso, an expert on plant neurobiology.

For my part, I view with great interest the telling the tale of these 10 cities, which do not want to be solely a tale of technical aspects, or aesthetics, but rather an indication of a future where we will have to find the key to open the door to our friendship with the planet.

Architecture leaves traces. It is the heritage of the millennia that over the past century we have treated as though it were archaeology, often reserved for specialists. This is why the journey is so important. Many places are known, others less so, and many others only exist in the tales of the writers. All the same, they are there to tell us that all we need to do is look carefully behind the curtains of the story to find the solutions for our future. ■

Quarriers Adopt Back-to-Nature Strategies

BY MATTHEW MARANI

AT FIRST GLANCE, stone quarrying appears to be a messy business. Great mounds of earth are excavated and massive blocks of limestone, marble, sandstone, and nearly every other type of stone under the sun are carved and carted off for dressing and further finishing. But, once all that dust settles, the harvest and use of natural stone is an environmentally low-impact proposition when compared to manufacturing building materials like concrete and steel, among others, owing to fewer steps in transportation and production. Quarriers and fabricators, both stateside and around the world, are implementing additional practices and strategies to reduce their environmental impact even more.

The Natural Stone Institute's Sustainability Standard (ANSI/NSI 373), released in 2014 but strengthened by four significant updates in the succeeding years, has emerged as the industry benchmark for environmentally sound stone quarrying and production processes in the United States. The multi-attribute standard considers numerous factors, ranging from environmental responsibility and adaptive reuse of spent quarries to the management of excess materials and waste, including recycled water from the cutting process. "In most cases, the sustainable choice is also the most efficient, ultimately leading to cost savings," notes Natural Stone Institute marketing director Sarah Gregg. "Our biggest hurdle is awareness among the design community. If more specifiers required stone to be sourced from certified-sustainable quarries it would impel more quarriers to apply to have the ANSI/NSI 373 standard."

Coldspring, a 125-year-old quarrier with 30 sites and several production facilities across North America, has long practiced sustainably, having been a driving force in the development of the Natural Stone Institute industry standards. On the ground, such policies work on numerous fronts. According to Reid Kubesh, Coldspring vice president of sales for stone products, stone producers can start by investing in more efficient saws and wedging units, which reduces processing times and, in turn, emissions and material waste. Another of Coldspring's strategies involves reusing its leftover grout and debris for other purposes: crushed for use in decorative landscaping or roadbeds, as riprap in jetties or shoreline-restoration projects, and as railroad ballast.

When a quarry is exhausted—a process that can take decades, if not centuries—it is often abandoned, with industrial detritus and material waste left to litter the pit lakes that later form in them. But pressure is mounting for quarries to adopt more responsible approaches, as formal-

ized by the ANSI/NSI 373 guidelines, including adaptive reuse and renaturalization.

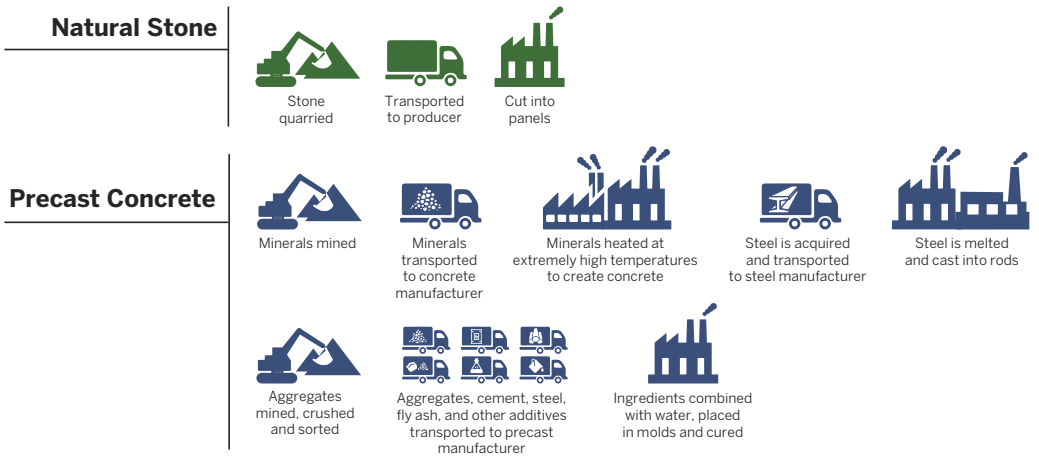
In Minnesota, Coldspring played an integral role in the creation of the Quarry Park and Nature Preserve, a 684-acre public park that reimagines spent quarries as rock-climbing walls and swimming holes surrounded by hiking trails and mountain bike paths. Farther afield, in Germany, 50-year-old quarrier Franken-Schotter also leads in this area. The company has re-naturalized the 30-acre decommissioned Möhren Quarry and a 65-acre section of the active Deitfurt Quarry, both in Bavaria, in collaboration with local authorities. "We have a responsibility to people who live in proximity to our quarries," says Franken-Schotter architectural consultant Jonah Wurzer-Kinsler. "It has been incredible to see the return of biodiversity to such sites, including Eurasian eagle-owls, which were thought to be extinct in the region," he adds.

Vermont Quarries, a subsidiary of the Italian conglomerate RED Graniti, operates the largest underground marble quarry in the world, in Dorset Mountain, within the Taconic Range, approximately one-and-a-half miles below-ground. Their production facility, also located within the mountain, can produce up to 4,000 square feet of marble slabs daily. According to quarry manager Keith Millard, approximately 1,500 gallons of water are consumed each minute to cool and remove slurry from their various cutting machines.

The company, instead of relying on local water mains, utilizes the approximately 10 million gallons of water that naturally collect at the bottom of the quarry, siphoning it to the facility above. After use, the wastewater is transferred to four settlement ponds, where, over time, its lime-based sediment filters down, and the water slowly returns to the bottom of the quarry. When dry, the lime is extracted and applied as fertilizer to the surrounding hillsides. Scrap or crushed marble is also used to line stone ditches and build roads, and to tip marble blocks.

In another step toward heightened sustainability, quarries and production facilities are increasingly deploying renewable energy to power their operations. For example, Spanish quarrier and sintered-stone fabricator Cosentino, as of 2022, has operated a 120-acre solar farm at their Almeria headquarters that, coupled with rooftop installations, supplies some 30 percent of the plant's total energy demand—comprising the country's largest photovoltaic array harnessed for self-consumption.

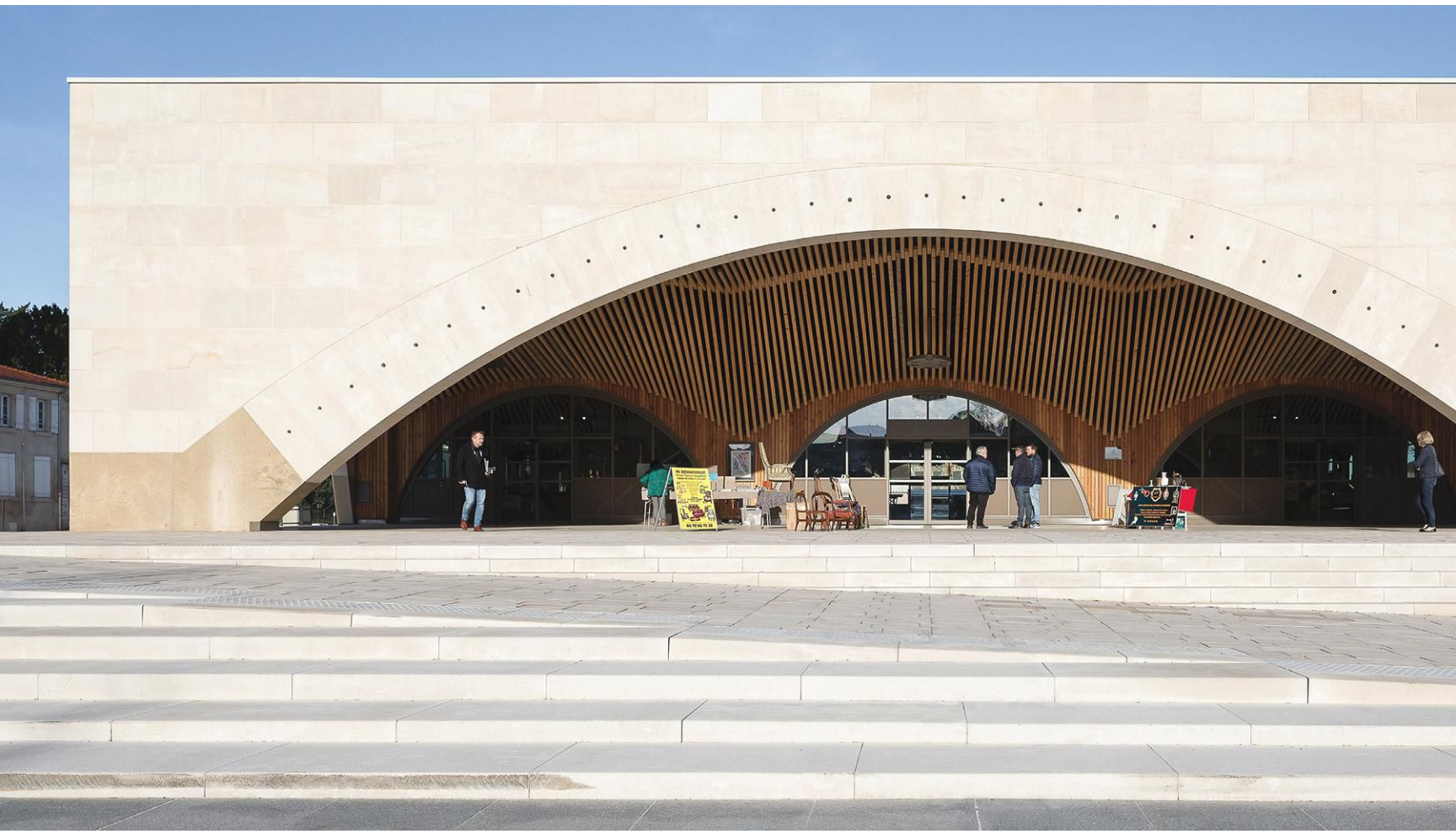
By implementing sustainable practices like these, quarriers and facility operators can earn a grade of certification, not unlike the LEED rating system, and that information can be used for environmental-product declarations. Architects eager to reduce the environmental footprint of their projects can, in turn, work with responsible quarriers and specify lower-impact materials. There isn't a panacea to reduce greenhouse-gas emissions and pollution within the building-materials industry, but growing adherence to sustainable norms by stone quarriers and producers could provide something of a road map going forward. ■



MANUFACTURING IMPACTS: NATURAL STONE VERSUS PRECAST CONCRETE

PHOTOGRAPHY: © FRANKEN-SCHOTTER (OPPOSITE); NATURAL STONE INSTITUTE (TOP); VERMONT QUARRIES (BOTTOM LEFT); COLDSPRING (BOTTOM RIGHT)

A renaturalized quarry (opposite). Vermont Quarries' underground operations (below). A Quarry Park swimming hole (below, right).



Structural Stone Makes a Comeback

BY MATTHEW MARANI

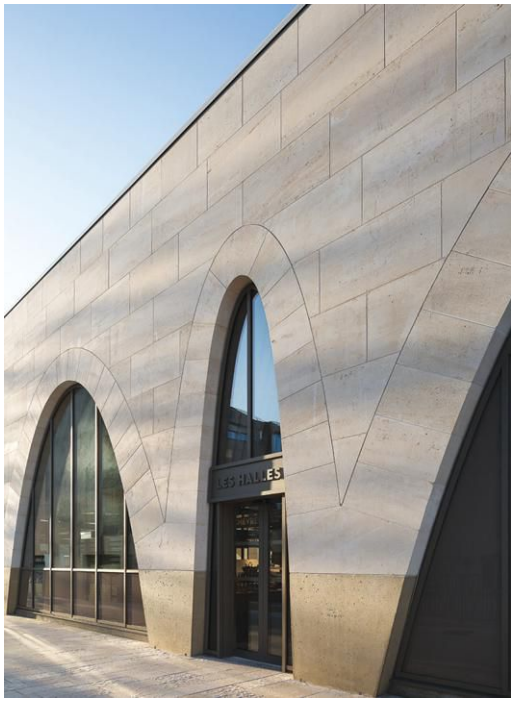
LOAD-BEARING masonry isn't exactly novel—stereotomic construction spans continents, cultures, and epochs. Despite stone's ubiquity—throughout history and as a resource—steel and reinforced concrete have supplanted it as go-to structural systems, largely relegating the natural material to the task of facade cladding. That shift has had severe environmental implications—the production of steel and concrete produce over 15 percent of global carbon dioxide emissions annually.

Stone comes in myriad types; some, more brittle, such as slate, are appropriate for roofing and siding; others with a sturdier composition, like sandstone, granite, limestone, and marble, have load-bearing applications. But they all have one principal structural limitation in common: poor tensile strength. Popular consensus claims that stone is prohibitively expensive and, on top of that, there is a dearth of skilled labor with experience working with the age-old material at a meaningful scale. However, with the help of contemporary construction techniques, a swelling movement seeks to take advantage of masonry's compressive capabilities and sustainability credentials.

For Pierre Bidaud, the creative director of The Stonemasonry Company, a London-based designer and stone fabricator, the AEC industry is simply looking at the material the wrong way. The industry does not have to reinvent itself, he says, but can relearn the language of the medium with lessons gleaned from prefabricated steel, concrete, and, in recent years, mass timber. "Stone is, in fact, a natural concrete," Bidaud says. "We aim to elevate stone to its full potential as a structural material, which has always been used as a sort of compressive architecture." The Stonemasonry Company is achieving those ends by routing post-tensioning cables through blocks of stone to create cohesive units that are suitable for both shear and compressive loads, and can be easily assembled, like precast concrete planks and beams.

Concrete, poured in place or precast, is versatile and often cost-effective, especially when compared to stone—or so conventional thinking goes. According to Steve Webb, director of London-based Webb Yates Engineers and frequent collaborator with The Stonemasonry Company, the perception of exorbitant cost associated with

The market hall uses locally sourced stone and timber (above and above, right). The arches are set in place with support frames (right and far right).



PHOTOGRAPHY: © OLIVIER MATHIOTTE (3); SNBR (BOTTOM, RIGHT)

stone construction is because it is used primarily for cladding. "Huge amounts of what is quarried—around 80 percent—never reaches the market due to unpopular color or visual flaws, though it remains structurally viable," Webb explains. Those offcuts come cheap, at around the same cost as the cement and aggregate used for precast concrete, and without the need for formwork.

The Stonemasonry Company and Webb Yates Engineers are not alone in the endeavor to use such material structurally. A growing cadre of architects concentrated in France—with

abundant stone quarries and trade schools—are putting these ideas into practice. Studiolada, founded some 15 years ago in Nancy, in the northeast corner of the country, is one such firm. The office builds, sources materials, and hires labor within a two-hour radius of the regional capital. This commitment to hyper-localism primed the practice for an expertise in traditional timber framing that has, in more recent years, expanded to include masonry construction. Studiolada's recently completed market hall in Saint Dizier demonstrates those skills: load-bearing stone rises from a concrete foundation to form catenary arches of three different widths, the widest being over 75 feet. The exterior masonry, with the help of slender internal steel columns, supports steel trusses above, which allow for long spans and undulating timber vaulting within.

Farther south, near Lyon, in the village of Soleymieu, on-SITE architecture's Marie and Keith Zawistowski are using stone as a resource for design-build, community-focused initiatives. The two met in 2001 as students at Auburn University's Rural Studio and, equipped with the lessons from that socially conscious program, developed a similarly mission-driven initiative at Virginia Tech's architecture school called design/buildLAB. When the duo decamped to France in 2015, they brought the program with them. There, in a 5,000-square-foot research and fabrication space adjacent to a regional hub of the Grands Ateliers (France's national association to promote craftsmanship in many disciplines), the two collaborate with dozens of architecture students from nearby schools in Lyon and Grenoble to steadily roll out civic projects.

The cafeteria's stone was quarried nearby (above, left and above). The Quarry Crust (Waste Stone) Arch project (below).

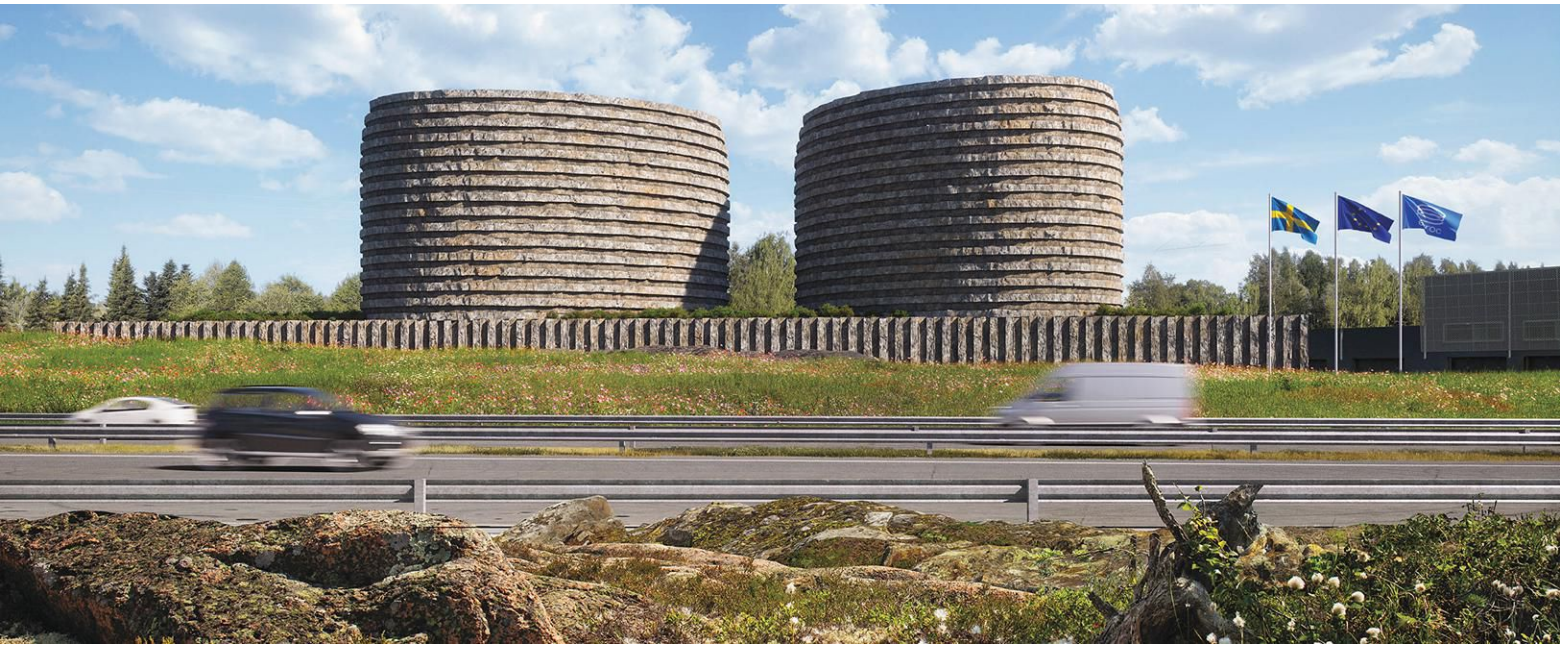
One example is a cafeteria for the École Jean Rostand, a primary school in the small city of Bourgoin-Jallieu. The L-shaped structure is built in a combination of rammed earth and locally sourced limestone in variegated yellows and grays, with a canopy of cross-laminated timber. Because this corner of France falls within a seismic zone, the cafeteria's stone blocks were cored and fitted with rods of reinforced concrete that run down to the foundation. Students at the design/buildLAB

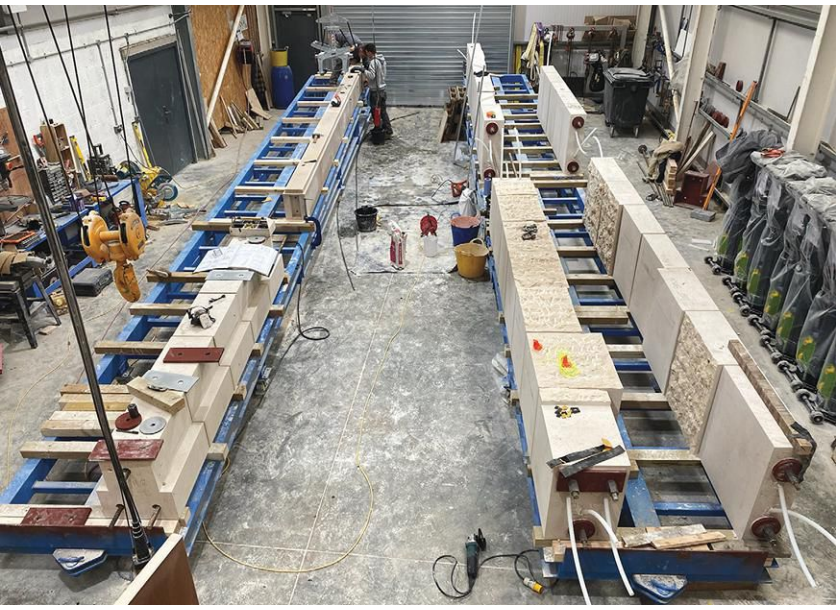
PHOTOGRAPHY: © L AURIANE LESPINASSE (TOP, LEFT); FRANCOIS CROISILLE (TOP, RIGHT); SALEM MOSTEFAOUI (BOTTOM); MAXIME VERRET (OPPOSITE, 2)

The use of multicolored stone kept costs down (above). The roof is built of cross-laminated timber (left).

have also been experimenting with different digital design techniques, including importing scans of load-bearing stones into 3D models and assembling them into complex geometric forms.

Paris-based Carl Fredrik Svenstedt Architect offers a glimpse of more utilitarian applications of structural stone. The firm has completed a spate of wineries and residences across France using the material, but is now exploring its use at a larger scale, to house Swedish startup Evroc's network of data centers. The company pitches itself as a more sustainable cloud service, proposing data centers with proximity to sufficient renewable-energy sources and deploying energy-efficient





The data center proposed for Stockholm (above). Bidaud's team fabricating post-tensioned stone (left), and on display at *The New Stone Age* (below, left).

technologies. The use of load-bearing stone promises to reduce the embodied carbon of the structures.

"Instead of making a steel or concrete box on the side of the road, we are suggesting the use of granite blocks, which have up to five times the compressive strength of standard concrete," says firm founder Carl Fredrik Svenstedt. To that end, the practice has filed for a building permit in Stockholm for the first data center—though, owing to the project's novelty, the designers may have to opt for a hybrid structural system that also incorporates either concrete or steel.

Like mass timber in recent years, load-bearing masonry could go taller, or so Bidaud and Webb claim. Their traveling exhibition, *The New Stone Age* (curated in collaboration with London-based architect Amin Taha and last shown at ABC Stone's Brooklyn warehouse and exhibition space in the spring of 2023), examines not only the history of the construction technique but also its capacity to support towers, among other possibilities. "You could build a hundred-story building with post-tensioned stone and support long spans with mass timber or prefabricated stone planks," Webb muses, "all while reducing embodied carbon in construction, and in operations, owing to the material's thermal mass."

This new generation of load-bearing masonry still faces many hurdles before becoming commonplace. Stone, by its nature, is less uniform than concrete, steel, and cross-laminated timber or glulam, which makes it difficult to establish common industry standards that can inform building codes. But there is an expectation that growing demand will impel local governments and the masonry industry to develop a set of rules in the future. Contractors and developers lack familiarity with the material, and its use is met with a degree of skepticism, though its application as an easy-to-install prefabricated element could bridge that divide. The building industry may be in store for a tectonic shift in the years ahead. ■

PHOTOGRAPHY: © CARL FREDRIK SVENSTEDT ARCHITECT (TOP); PIERRE BIDAUD (MIDDLE); CHRIS JACKSON (BOTTOM)

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Photo courtesy of Versico Roofing Systems


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Focus on Health in Roof Specification

Sponsored by Versico Roofing Systems

1 AIA LU/HSW; 0.1 ICC CEU; 1 GBCI CE HOUR; 1 IIBEC CEH

BE PM SU

Photo: William Horne; courtesy of Excel Dryer


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The WELL Building Standard–Commercial Office Space

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Hybrid Propane Systems

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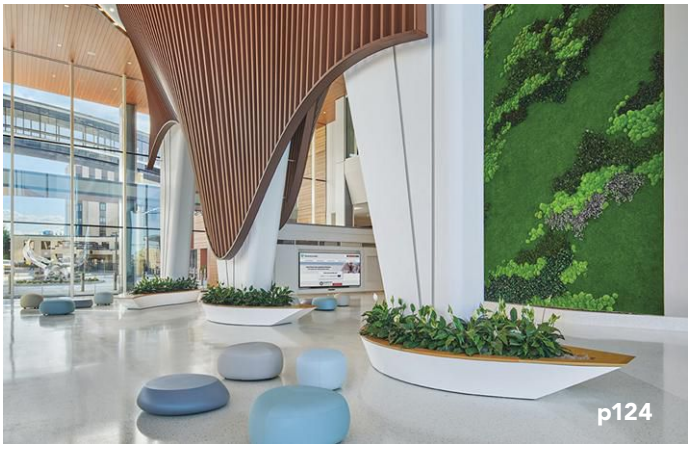
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Unveiling the Vital Role of Material Health in Preserved Gardens and Moss Walls: An Introductory Overview

Sponsored by Garden on the Wall

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

Photo courtesy of Versico Roofing Systems

Single-ply roofing remains the most popular choice for commercial buildings, however understanding the impact of VOCs and the health of the community should be of concern when specifying projects.

Focus on Health in Roof Specification

Enhancing sustainability and reducing VOCs

Sponsored by Versico Roofing Systems | *By Andrew A. Hunt*

Finding new and innovative ways to protect the health and well-being of occupants during renovations in commercial construction is a persistent concern for architects, builders, and building owners. Today innovations and new products in roofing materials help facilitate a more toxin-free jobsite for occupants, neighbors, and contractors, helping as well with the health and sustainability of the planet.

Of main concern in roofing materials are Volatile Organic Compounds (VOCs), a group of airborne chemicals often found in adhesives, sealants, and coatings. VOCs are of concern as both indoor air pollutants and outdoor air pollutants. However, the emphasis for problematic VOCs is particular to outdoor environments as opposed to indoors.

Indoor VOCs form in fumes from roof sealants and adhesives that can adversely impact the health of people who have been exposed. Prolonged exposure to VOCs can lead to respiratory problems, aggravate existing conditions such as asthma, and cause long-term lung damage.

Outside, VOCs contribute to localized air pollution forming ground-level ozone when they react with nitrogen. For this reason, the U.S. Environmental Protection Agency (EPA) regulates VOCs outdoors mainly because of their potential to lead to photochemical smog under certain conditions.

This article will provide an overview of common VOCs found in roofing materials and describe how these chemicals can negatively impact occupants, neighbors, and workers. It will also discuss how VOCs outside are differentiated by the EPA, how they are measured, and the negative impacts they can have on local air pollution and the environment. To help provide direction for architects and builders, the article will discuss low and no-VOC options in roofing materials and provide direction on jobsite management and scheduling to help reduce the risk of VOC exposure. Finally, the article

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Learning Objectives

After reading this article, you should be able to:

1. Explain how indoor and outdoor VOCs can negatively impact occupants, installers, and the environment.
2. List state and federal regulations that impact the allowed VOC content in roofing applications.
3. Discuss innovative options in single-ply roofing materials and installation techniques that offer low and no-VOCs.
4. Identify building owner benefits to installing a low- or no-VOC roofing system, including a healthier renovation project and potential green building credits.

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will provide alternatives to traditional single-ply roofing systems that can help promote sustainability, such as bio-based roofing materials that increase the health and welfare of occupants and installers and also qualify for green building certification programs.

THE BASICS OF IAQ

Health, safety, indoor air quality, sustainability–all these terms have been drawn into the spotlight for builders over the past decade. Commercial building owners looking to improve productivity and employee morale are asking to incorporate biophilia and natural daylighting into office designs. Developers trying to attract more environmentally savvy clients are including onsite renewable energy options and high-performance homes, and legitimate concerns about climate change and the impact the built environment is having on the Earth have also contributed to the demand for a change in the way we design, build, and maintain structures.

While many of the elements that define a healthy and sustainable project like energy efficiency, durability, storm resiliency, and basic ventilation have been codified, other factors that impact the health and well-being of occupants, and the planet, are yet to be regulated. Embodied and operational carbon, for example, has yet to be clearly quantified but is likely to be regulated at some level in the not-so-distant future. To develop a positive reputation builders must keep abreast of the demands of the consumer, the interests of the market, and the requirements of basic building code.

A persistent driver in healthier homes and a sustainable planet is air quality, both indoor and out of doors. Many consumers are well-informed on the dangers of poorly ventilated homes, offices, and schools. From this group of educated consumers, most are familiar with the oft-quoted message from the U.S. Environmental Protection Agency (EPA) that studies of human exposure to air pollutants indicate that indoor levels of pollutants may be two to five times–and occasionally more than 100 times–higher than outdoor levels, and that the main concern is that most people spend about 90 percent of their time indoors.[1]

The laundry list of indoor toxins can be lengthy and usually includes pet dander, mold, dust, pollen and other allergens, carbon monoxide, tobacco smoke, radon, and pesticides. The potential health risks of poor IAQ can be minor, such as simple sniffles or mild headaches. However, the EPA warns the impact could be more threatening in vulnerable populations, for instance, occupants with existing health issues like asthma, or the young and the old with the potential for severe respiratory diseases and long-term disability.

When addressing issues related to poor IAQ, a common culprit–and one that consumers are increasingly aware of–is volatile organic compounds, or VOCs.

VOCS–THE BIG PICTURE

Without getting too pedantic, let's break down the definition of VOCs, just to get a solid foundation on how they are defined, and why architects, builders, building owners, and occupants need to be aware of them.

The generally accepted scientific definition of what constitutes a material as a VOC is a chemical compound whose composition makes it possible for it to evaporate under normal indoor atmospheric conditions of temperature and pressure. When a material reaches the boiling point, it turns from liquid to gas, and all the molecules at the surface are released as vapor into the air. Water, for instance, has a boiling point at sea level of 212°F (100°C). The boiling point goes down as we climb in elevation due to less atmospheric pressure on the surface of the water. At 3,000 feet above sea level, water boils around 206°F; at 10,000 feet above sea level the boiling point is 194°F.

Water is inert and other than increasing the humidity in the room not likely to cause major harm to occupants as it evaporates. Formaldehyde, however, with a boiling point of -2.2°F (-19°C) is a known VOC and is often found in manufactured wood products like flooring and furniture, and is found in tobacco smoke. Exposure to formaldehyde can irritate the skin, throat, lungs, and eyes while repeated exposure can possibly lead to cancer. With a boiling point so low, formaldehyde will instantly begin to vaporize when exposed to air at room temperature. But boiling point is only part of the equation, the other factor that impacts the release of VOCs into the air is vapor pressure.

Photo courtesy of Versico Roofing Systems

Improving the sustainability aspects of a project can include everything from enhanced protection from the elements to rooftop gardens, however, the sealants and adhesives used should also be considered.

Chemical compounds are always in a state of evaporating (vaporizing) and condensing, even below the boiling point.
This is true for both solids and liquids. Solids that are comprised of additives that were liquid chemicals when manufactured off-gas those chemicals. To understand how quickly and with what velocity these materials evaporate, we measure the vapor pressure.

Continues at ce.architecturalrecord.com

Andrew A. Hunt *is Vice President of Confluence Communications and specializes in writing, design, and production of articles and presentations related to sustainable design in the built environment. In addition to instructional design, writing, and project management, Andrew is an accomplished musician and voice over actor, providing score and narration for in both the entertainment and education arena.* ***www.confluencec.com, https://www.linkedin.com/in/andrew-a-hunt-91b747/***

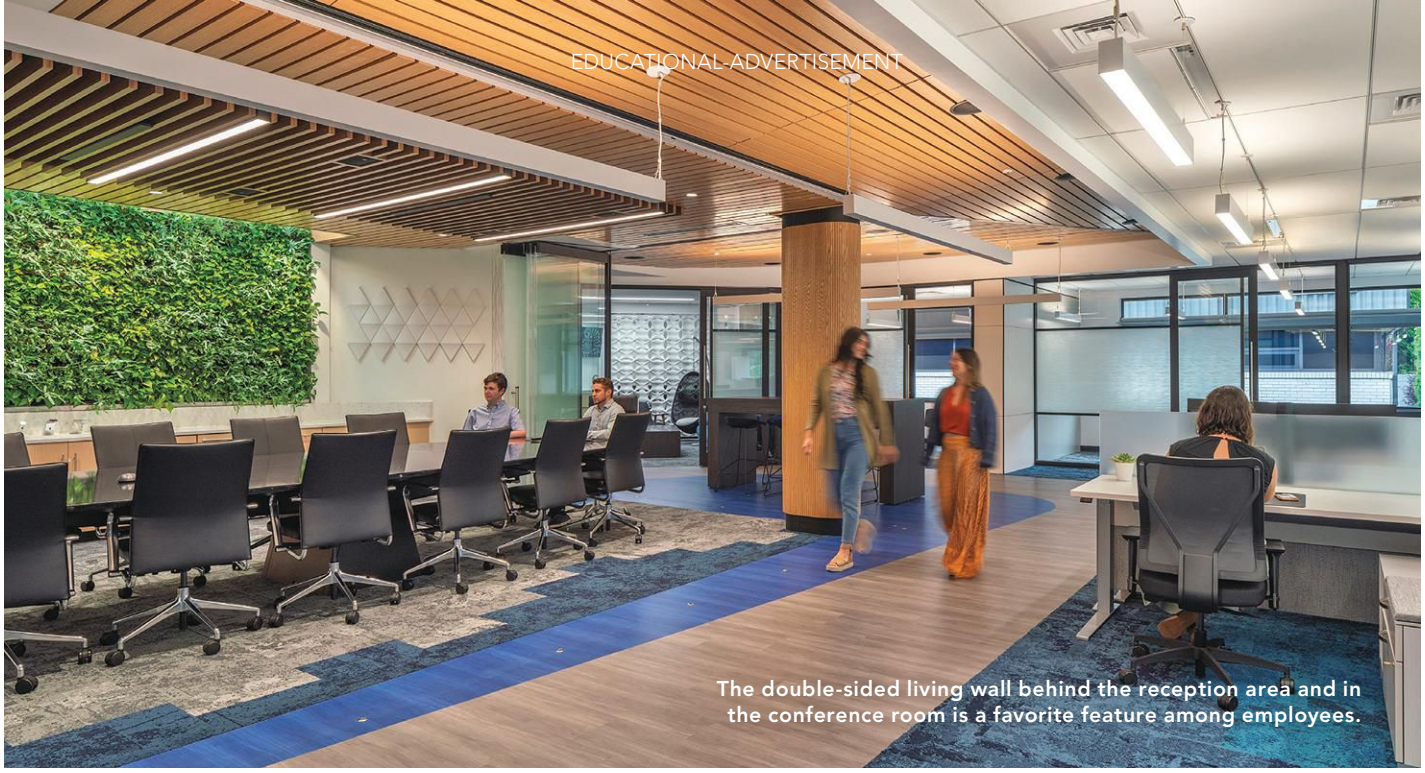

Photo: William Horne; courtesy of Excel Dryer

The double-sided living wall behind the reception area and in the conference room is a favorite feature among employees.

The WELL Building Standard–Commercial Office Space

A real-world project, certification, and products used

Sponsored by Excel Dryer | *By Kathy Price-Robinson*

COVID-19 changed the world as we know it, and how people live safely in it. This is especially true regarding the design priorities of commercial buildings and people's perception of them. During the pandemic, many people were tasked with learning how to work from home. As the pandemic ebbed, and people began to come back to commercial office spaces, the office conditions needed to be viewed from a different lens. These spaces needed to be seen as safe and healthy. So it's no mere coincidence that the WELL Building Standard, which focuses on human health and well-being in building spaces, has seen a meteoric rise in the past few years. This course focuses on cutting-edge, human health-centered design priorities for commercial buildings, from lighting to living walls and floor coverings to restrooms, and how pursuing certification in the WELL standard offers guidance and provides third-party verification. This course follows the renovation of a commercial space whose officers used WELL certification to create what one said was "the healthiest office in the country." A series of short videos highlight products and offer a tour of strategies the company used toward WELL certification.

HOW COVID TRANSFORMED COMMERCIAL BUILDING DESIGN PRIORITIES

The ascent and decline of the COVID-19 pandemic profoundly altered societal views toward hygiene. While scientists warned for years that a virus could cause a worldwide tragedy, it wasn't until COVID-19's emergence that the danger of pandemics—both current and future—became real. The measures taken to prevent the spread of the virus included avoiding crowds, working

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Learning Objectives

After reading this article, you should be able to:

1. Describe how COVID-19 transformed commercial building design priorities.
2. Discuss how the WELL Building Standard helps to create healthier buildings.
3. Identify specific features and products geared toward earning WELL Points.
4. Define the importance of hand hygiene and new product solutions that support it.
5. Apply lessons from a current project to support future commercial office design projects.

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Photo courtesy of Excel Dryer

The addition and renovation includes a living roof and photovoltaics.

from home, wearing masks, and increasing proper hand hygiene. While authorities suspended most such measures after the pandemic was declared over, the focus on hand hygiene emerged as a critical practice to continue.

According to the U.S. Centers for Disease Control and Prevention (CDC)[1], "Clean Hands Save Lives" and handwashing is one of the best ways to prevent the spread of disease, which includes proper washing with soap and thoroughly drying by using a hand dryer or drying with a clean towel. Drying hands is an essential part of the process. The transmission of bacteria is 1,000 times more likely to occur from wet skin than from dry skin; therefore, the proper drying of hands after washing should be an integral part of the hand hygiene process in health care.[2]

At the end of the pandemic, companies welcomed employees—who had been working from home for safety reasons—back into the office. But employees wondered: Are these spaces safe to be in? Are they healthy? Is the air clean? Is it sanitary? Will being at work make me sick, or will it make me healthy?

One Company That Prioritized Employee Health and Wellness in its Office Expansion: The issues of workplace safety and employee well-being were paramount for a global manufacturing company in western Massachusetts working on a major addition and renovation to its existing headquarters' office space. "Creating a space post-pandemic, we definitely wanted to focus on the health and wellness of our employees," said William J. Gagnon, Executive Vice President and Chief Operating Officer of Excel Dryer, a family-owned company.

Excel Dryer was already in tune with hand hygiene and other safety strategies as a leading manufacturer of high-speed, high-efficiency hand dryers. Expanding that care to all parts of the project was a natural progression. "My goals were simple," Gagnon said, "to create the most beautiful, sustainable, and healthy workspace possible. It is easy to say, but not easy to accomplish. So I really challenged the architects and designers to focus on innovation and leading-edge technologies in all areas."

> Touchless technologies have emerged as further effective ways to prevent the spread of disease, including touchless faucets, touchless soap dispensers, and touchless hand dryers.

Toward the goal of a healthy office space, Gagnon began working with architect Katherine Brekka, AIA, LEED AP, WELL AP, Senior Associate with Fennick McCredie Architecture in Boston. "Our major priority on this project," Brekka explained, "was to ensure we were employing design strategies to promote the health and wellness of the occupants as much as possible."

She said, "We want people to be excited to come to work." From the beginning, Gagnon targeted WELL certification. His goal was for the design to reach the latest international standards for health and wellness, which led the team to the International WELL Building Institute (IWBI) and the WELL Building Standard.

HOW THE WELL BUILDING STANDARD HELPS CREATE HEALTHIER BUILDINGS

The WELL Building Standard focuses on the health and well-being of occupants. While WELL is newer and less known than the LEED, Energy Star, and BREEAM rating systems, it is growing exponentially. Today, the WELL building standard is being applied in more than 40,000 buildings in some 124 countries and encompassing more than 4.7 billion square feet of real estate around the globe.

According to the WELL website: "We're leading a global movement to transform health and well-being with our people-first approach to buildings, organizations and communities. We do this using our WELL Building Standard (WELL), a roadmap for creating and certifying spaces that advance human health and well-being.

Continues at ce.architecturalrecord.com

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

Photo courtesy of Propane Education & Research Council

Propane is a readily available and commonly used fuel source that can be combined with electrical systems of different types to create efficient and environmentally friendly energy solutions for buildings.

Hybrid Propane Systems

Strengthening residential HVAC systems through hybridization

Sponsored by Propane Education & Research Council

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

A significant concern in the design or renovation of any building is how best to address the energy needs of the building operations. Architects have been successfully tackling this question through better building envelope design, specifying higher efficiency equipment, and tapping into renewable energy sources when possible. In the end, the building still needs energy, albeit at a hopefully reduced amount. The design professional is then faced with the question of what source of energy is best. Electricity is needed to power lights, outlets, and other appliances and equipment including air conditioning. Since the need for electricity is a given, there is a growing trend to extend electricity to all energy needs in the building, thus eliminating the need for any fossil fuel-powered equipment in the building. The intention behind this trend is to reduce the carbon footprint of the building significantly. There are two assumptions in that scenario; first that the electric grid that the building is connected to can meet the growing electrical demand of all electric buildings; second that the source of the electricity is "clean," meaning that there is little or no environmental impact from its generation or transmission. There is also the implied desire for on-site energy to be generated through renewable sources. This course looks at these assumptions and investigates a hybrid option that combines grid-supplied energy with on-site energy from propane systems. The result can actually be cleaner than an all-electric design and, in the short term, can allow the electric grid to catch up to the ideal of fully renewable, clean energy.

ELECTRICAL GRID STATUS

The U.S. electrical grid is easy to take for granted when connecting to any building. The assumption is that the local utility company is willing and ready to simply connect any building to its power distribution system. The reality is that all public electric utilities use a complex system of components

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Learning Objectives

After reading this article, you should be able to:

1. Identify and recognize the current state of the U.S. electrical grid for providing electricity compared to on-site energy alternatives.
2. Investigate the potential opportunities to incorporate propane as a viable and environmentally friendly alternative for residential and light commercial buildings.
3. Assess the options of using hybrid propane and electric systems for heating, hot water, electrical generation and combined heat and power solutions.
4. Evaluate the use of propane hybrid systems as shown in case study applications and examples.

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to distribute electricity through decentralized units, substations, transformers, transmission lines, and distribution lines. The electricity itself is generated from centralized power plants that may or may not be owned by the electric utility. Building owners and consumers often have the choice of which source of electrical generation supplies their energy. That only works because the distribution system can connect to these different generation sources and track the amount of energy purchased from each. Collectively, we will refer to this whole, interconnected system in the United States simply as the electric grid.

The grid has been providing electricity since the early 1900's with some major expansions and upgrades in the 1960s and 1970s. Across the country, the grid is divided into three main regions, namely, the Eastern (East Coast to the Rocky Mountains), Western (West Coast to the Rocky Mountains), and the Texas interconnections (State of Texas). Each one works within its region to provide power as needed to electrical customers, however connecting between them can be more problematic. This has been evidenced during recent storms and weather-related events where electricity could not be adequately provided because of the limits of the three regional systems. In addition, the electric grid has been criticized in recent years for its age and poor performance, particularly during heat-related blackouts and storms. There appears to be a need to upgrade older transformers, circuit breakers, and power lines, but doing so seems to be slow. In all, the availability of continuous, reliable electricity varies considerably across the USA in terms of capacity, interconnectivity, and controllability.

Electricity Generation

Turning to the generation of electricity, the U.S. Energy Information Administration (EIA) publicly reports annual data, with the latest numbers available from the year 2022 (October 2023 compilation). (see https://www.eia.gov/tools/faqs/faq.php?id=427&t=3) They identify three primary energy sources used by utility-scale electricity generation plants: 1) Fossil fuels, including natural gas, coal, and petroleum products, which still account for over 60 percent (2.5 trillion kilowatt hours) generated; 2) Nuclear power accounts for just over 18 percent (772 billion kilowatt hours) generated; and 3) Renewables, including wind, solar, hydropower, and biomass, which have grown to exceed nuclear power at over 21 percent (901 billion kilowatt hours) generated. In addition, the EIA estimates that an additional, much smaller amount of 61 billion kilowatt hours was produced from small-scale solar photovoltaic systems in 2022. While the slow but steady growth of renewable energy is welcome news in light of efforts to reduce harmful emissions, the reality is that the grid is still over 60 percent powered by fossil fuels. This production of electricity from fossil fuels still contributes to global warming/ climate change, acid rain, and air pollution.

Site vs. Source Energy

One of the biggest distinctions between utility-generated electricity and site-generated electricity is the overall efficiency of producing and delivering that energy. A number of energy and engineering organizations have made this distinction by using the terms site energy and source energy. Site energy is the amount of energy (typically electricity and other types) consumed by a building as metered and reflected in utility bills. Most building owners and designers look primarily at this site energy to understand how much energy an individual building is using at any given point in time or over the course of multiple months or years.

Source energy represents the total amount of energy contained before it ever hits the utility meter on a building. It takes into account the latent energy in the raw fuel, the efficiency (or lack thereof) in transforming that fuel into electricity, and subsequent energy losses that are experienced in the transmission and delivery of that electricity. Site energy use can be controlled by good design and the operation of the owner of the building. Source energy is subject to a host of variables including the fuel type, the age and efficiency of the generating plant, the make-up of the distribution system (i.e. the grid) and other factors. For typical fossil fuel-based electrical generation, from the site of production to use, the electricity generated is less than 30 percent efficient that means 70 percent, or more, is lost in the process and only 30 percent or less is effectively used in the building. Hence, generating energy on-site has become considered one way to take back control of the total energy picture and improve the overall efficiency of energy use. That effectively means that less source energy is used so less of an impact can be created from the generation, delivery, and use of that energy.

Photo courtesy of Propane Education & Research Council

The current status of the electrical grid in the United States has not yet reached the goal of providing environmentally friendly electricity in the most efficient and reliable manner possible.

Continues at ce.architecturalrecord.com

Peter J. Arsenault, FAIA, NCARB, LEED AP *is a nationally known architect and a prolific author advancing better use of energy and carbon reduction in buildings.* ***www.pjaarch.com, www.linkedin.com/in/pjaarch***

Photo courtesy of Halkin/Mason Photography, LLC

Bringing nature indoors through preserved gardens not only captures the benefits of biophilia but through smart material choices, can bolster indoor environmental quality and support performance benchmarks. Preserved garden installation at Essentia Health Hospital in Duluth, Minnesota.

Unveiling the Vital Role of Material Health in Preserved Gardens and Moss Walls: An Introductory Overview

Selecting installations with assurance using testing, credentials, and third-party, independent certification

Sponsored by Garden on the Wall | *By Amanda Voss, MPP*

The power of preserved gardens to bolster sustainability and the occupant experience is demonstrable. Preserved gardens are a part of the biophilic design revolution, which not only has aesthetic and energy benefits for a structure, it also positively engages the whole person of the occupant. However, even biophilic elements can fall short if their materials do not support their health claims.

To be certain of the quality of a selection, understanding third-party certifications that communicate product transparency, sustainable design, and safety is paramount. When addressing IEQ, knowing with certainty what is in each product becomes crucial. Selecting and specifying preserved gardens with necessary third-party testing is the beginning of a process that can improve the comfort, health, and safety of occupants, and the interaction of building systems.

The most successful preserved gardens should also adhere to the highest visual standards. Learning visual quality assessment techniques equips the designer to assess the quality of materials and verify quality control while also helping them to set the expectations for the longevity of installed gardens.

This course offers a thorough introduction to preserved gardens and their overall quality assessment as well as an analysis of the programs, organizations, and certifications that can assist in determining the right materials for the building, occupants, and activities.

Continues at ce.architecturalrecord.com

Amanda Voss, MPP *is an author, editor, and policy analyst. Writing for multiple publications, she has also served as the managing editor for Energy Design Update.*

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Learning Objectives

After viewing this multimedia presentation, you should be able to:

1. Explain how plants are preserved, used, and displayed in indoor installations to incorporate biophilic design.
2. Specify quality requirements to secure product transparency, sustainable design, longevity, and safety from preserved garden suppliers.
3. Analyze the importance of using third-party testing and new material declarations, such as the Common Materials Framework, to enhance design decision-making, with a particular emphasis on health and wellness goals.
4. Examine case studies that apply key certifications for preserved garden installations and discuss the benefits of these installations for occupant health in various settings.

To receive AIA credit, you are required to view the entire presentation and pass the quiz. Visit **ce.architecturalrecord.com** for the complete text and to take the quiz for free.

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Ongoing Exhibitions

Everlasting Plastics
Through August 11, 2024
Pittsburgh
Originally commissioned for the U.S. Pavilion at the 2023 Venice Architecture Biennale, this exhibition exploring our fraught and co-dependent relationship with plastics makes its North American debut at the Carnegie Museum of Art. Made up of site-specific commissions by five artists, architects, and designers from across the United States—Xavi L. Aguirre, Simon Anton, Ang Li, Norman Teague, and Lauren Yeager—*Everlasting Plastics* examines how these materials both shape and erode contemporary ecologies, economies, and the built environment. See carnegieart.org.

Tropical Modernism: Architecture and Independence
London
Through September 22, 2024
The architectural style of tropical modernism emerged in British West Africa under colonial rule in the 1940s, shaped by architects Jane Drew and Maxwell Fry. An exhibition at the V&A South Kensington traces its evolution in India and Ghana after independence, as leaders sought to use modern architecture and construction as emblems of a new progressive order, distinct from colonial culture. See vam.ac.uk.

Crafting Modernity: Design in Latin America, 1940–1980
New York
Through September 22, 2024
The Museum of Modern Art presents an exhibition exploring interior design from Argentina, Brazil, Chile, Colombia, Mexico, and Venezuela between 1940 and 1980. Including furniture, ceramics, textiles, paintings, prints, design objects, and photography, *Crafting Modernity* looks at the domestic environment as a site of experimentation and

DATES & Events

tension during a period marked by dramatic political, economic, and social changes. Featured architects and designers include Clara Porset, Lina Bo-Bardi, and Roberto Matta. See moma.org.

Events

Sustainability in Practice
Boston
April 17, 2024
This special half-day event, organized by RECORD in collaboration with the Massachusetts Institute of Technology, offers a "master class" in sustainable design and how to make it an integral part of a firm's DNA, led by architects who have been doing just that for decades. Featured speakers include Ted Flato and David Lake of Lake | Flato, Carol Ross Barney, and Mario Cucinella. See architecturalrecord.com.

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

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Ⓡ Regional Insert

At the Officine shoe store in Naples' affluent Chiaia district, local firm FADD mixed foreign and Italian influences in a Janus-like project that looks both forward and back. Exposed brick evokes northern Europe—a Petersen Tegl product from Denmark cladding the vault, and a local variety, painted white, behind the shelves—while the midnight-blue classicizing carpentry recalls both an English library and an old-school Neapolitan pharmacy. Meanwhile, a bespoke brushed-steel counter, integrated LED lighting, and a pale resin floor add a very contemporary touch. *Andrew Ayers*

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