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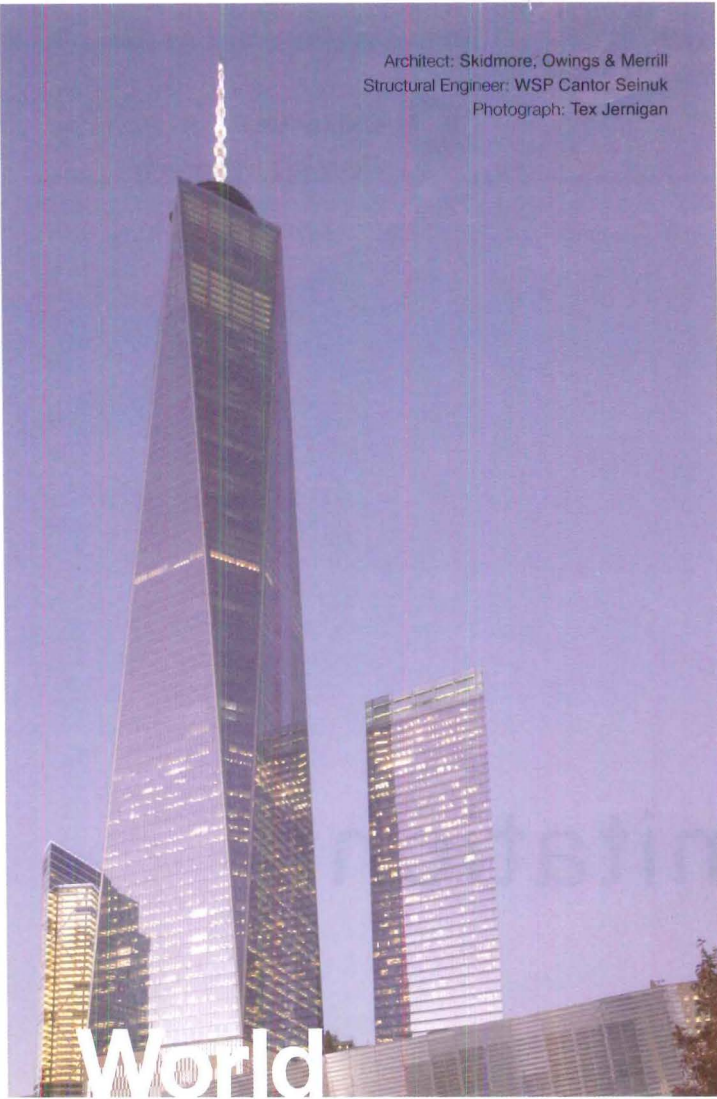
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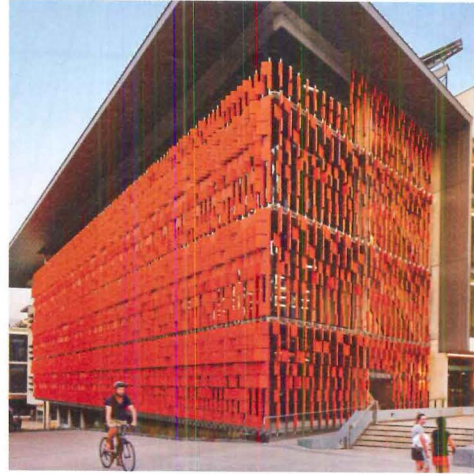
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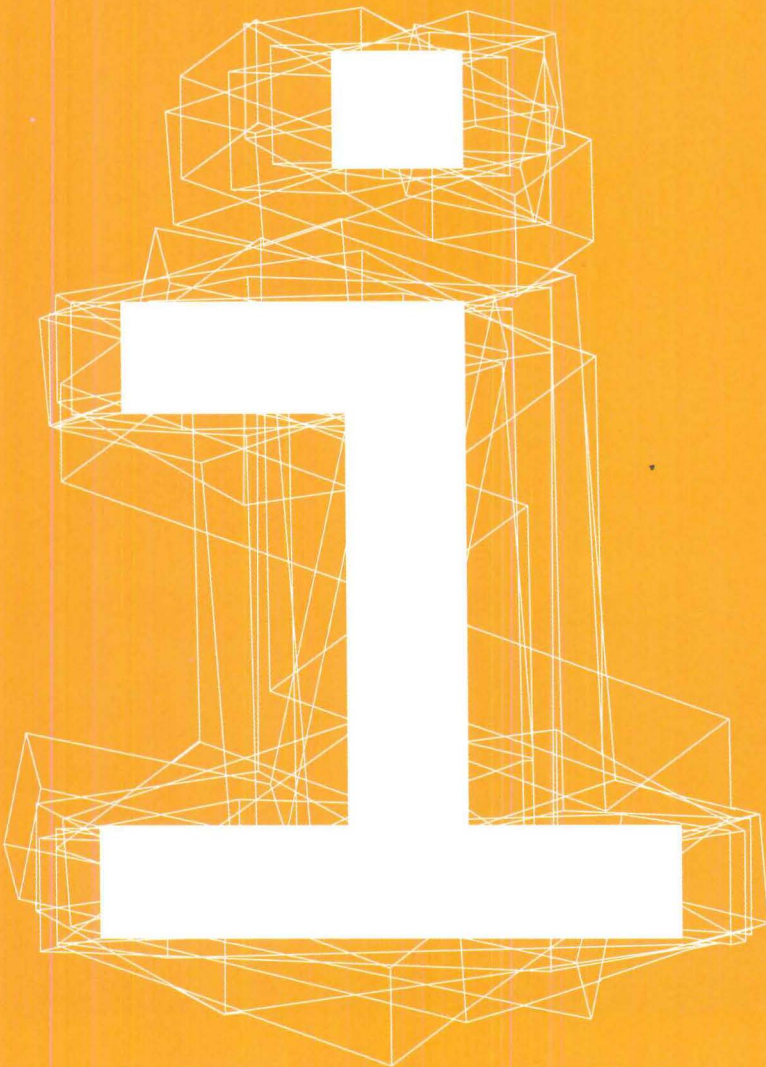


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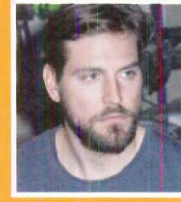
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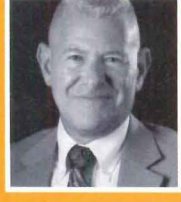
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Innovative architecture requires expanding the boundaries of the discipline by spurring creativity through design and technology. At this year's conference, Architectural Record brings together key figures who have generated a range of imaginative solutions for the built world today and for the future. From architects practicing outside the discipline to principals of large firms to materials experts and graphic designers, the event's participants represent different approaches to original problem solving in a rapidly changing world.

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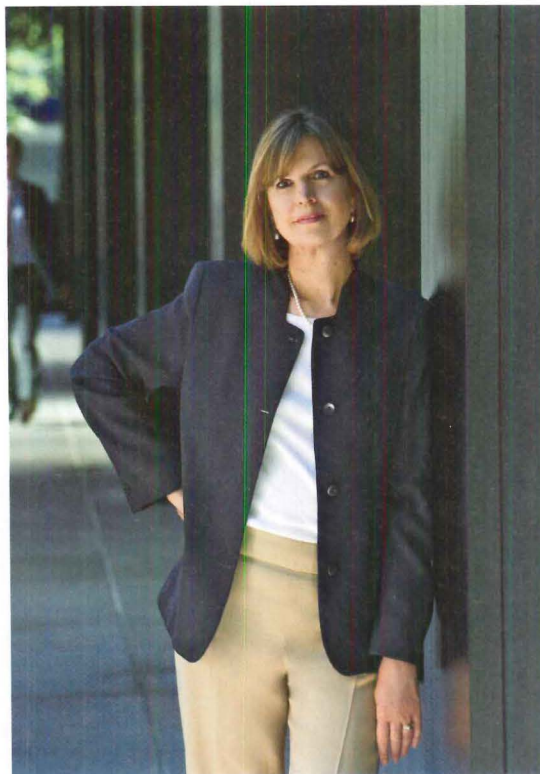
In Finland, good architecture extends from a glass you hold to the city you live in.

THERE ARE few countries whose modern identity is more closely linked to a rich culture of design and architecture than Finland. Its great exponent, of course, was Alvar Aalto (1898–1976), whose career exemplified the notion of *Gesamtkunstwerk*—or total work of art—meaning that his hand touched everything from master plans to glassware. Eliel Saarinen, half a generation his senior, held a similar position. Recalled Eero Saarinen, “My father used to say that, from an ashtray to a city plan, everything is architecture.”

Last month, I went to Finland for the 13th International Alvar Aalto Symposium, held every three years. Though Aalto died nearly 40 years ago, his influence, and that of other early Finnish modernists, can still be seen in Finland’s contemporary planning, architecture, and design. The appreciation of design seems embedded in the country’s DNA. Touring an exemplary new public elementary and middle school, designed by Verstas Architects for a Helsinki suburb, I saw well-appointed workshops where all children learn crafts such as weaving and wood-working, as part of the national, gender-neutral curriculum.

Today, work by contemporary Finnish architects still draws international attention—for example, the award-winning Museum of the History of Polish Jews in Warsaw, by Lahdelma & Mahlamäki Architects (RECORD, December 2013, page 66) and a notable addition to an Aalto library in Seinäjoki by JKMM (RECORD, October 2013, page 84). But many more fine architects, not well-known outside Finland, are contributing to the country’s extensive program of public architecture, commissions often won through open competitions. They are designing not only schools but libraries, daycare centers, churches (which function as community centers), and multifamily housing, such as an innovative project by the firm OOPEAA in the city of Jyväskylä, a wood structure with modular components.

In Helsinki, government-planned developments are sprouting along the waterfront. In a former industrial port on a peninsula jutting into the harbor, the design and construction of a new neighborhood for 17,000 people is under way. Already, 3,000 residents have moved into the area, which will offer a variety of dwelling types, from upscale townhouses near the shore to middle-class apartments for sale at affordable prices, to low-cost rentals. (Among the amenities are a vacuum waste-collection system that whisks away garbage underground, making smelly dumpsters and rumbling sanitation trucks obsolete.) One model development of cohousing is now occupied by “students, pensioners, and aging rock musicians,” says Helsinki’s new deputy mayor for planning, Anni Sinnemäki. As she describes it, the city’s general plan encourages greater density, access to public transportation and bike paths—55 percent of Helsinki’s households do not own cars—and introduces “boulevardization” to five motorways that cut into the urban realm.



But it is for Aalto’s buildings and his legacy that most global architects flock to Finland. That was clearly a big lure for the international designers who joined the Aalto Symposium this year. Despite the focus on making architecture—the theme of the symposium was “Do!”—what emerged most strongly in the presentations was the power of social impact. From Rahul Mehrotra’s design for a community toilet for the informal settlements of Mumbai (where there is one latrine per 1,000 people) to Raul Pantaleo’s projects—with his Italian firm TAMassociati—for sheltering refugees, to Carin Smuts’s community cultural centers in South African townships to Liu Xiaodu and his firm URBANUS’s schemes to improve housing for the exploding population of Shenzhen, it was impossible to appreciate and discuss materials, structure, digital technology or architectural aesthetics separately from the vast numbers of people that good architecture could and should serve. “Design with a divided mind,” is how Mehrotra described the reality for architects working globally today.

Finland, with its vast countryside of picturesque lakes, immense forests of birch and fir trees, has only 5.4 million people. Yes, it has economic struggles—unemployment stands at nearly 10 percent—but it doesn’t face the complexity of problems of much larger nations. Yet while the design culture may seem steeped in the romance of Aalto and the fetishization of the object—the perfect chair! the elegantly crafted textile!—the country provides an impressive lesson, as well, in the power of good architecture brought to a wide public realm. ■

Cathleen McGuigan

Cathleen McGuigan, Editor in Chief

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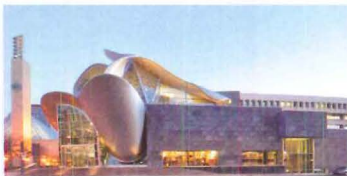
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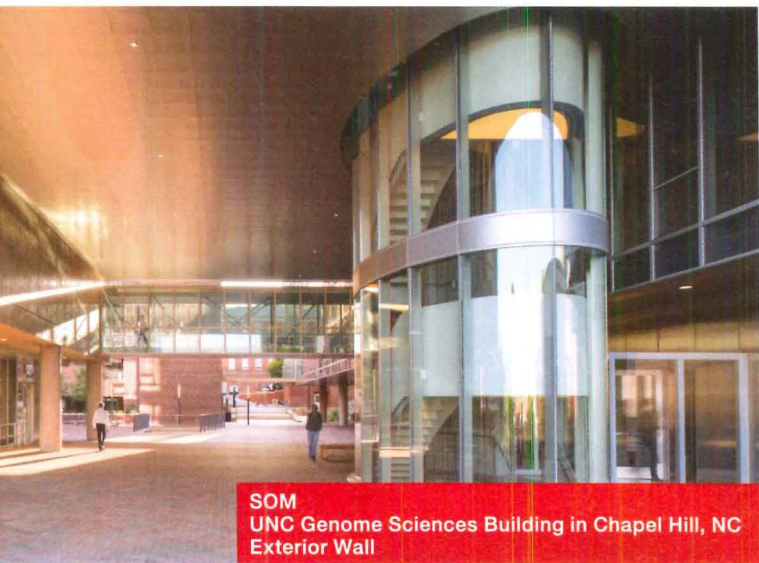
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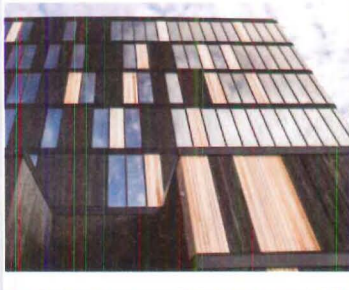
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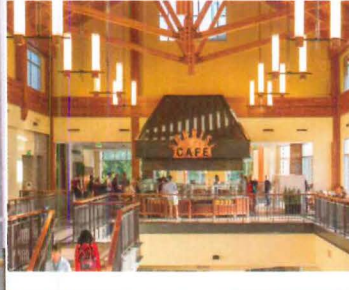
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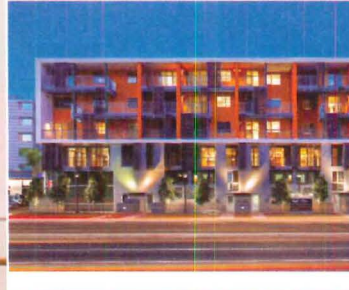
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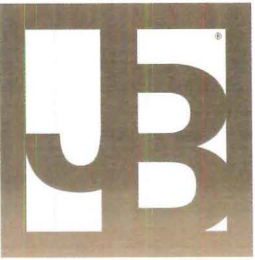
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perspective

I am . . . astonished at your statements about the Chinese copy of the sculpture Cloud Gate as that of an act of flattery . . . Chicago will lose from this thievery.

—British artist **Anish Kapoor** in an open letter to Chicago mayor Rahm Emanuel regarding a knock-off version of Chicago's iconic "bean" that materialized in a Chinese city.

Gehry Partners Reveals Designs for Sunset Boulevard Development

BY ANNA FIXSEN



A rendering of 8150 Sunset Boulevard, a new mixed-use development designed by Frank Gehry.

FRANK GEHRY has been around Los Angeles long enough to remember when the legendary Garden of Allah hotel sat at the corner of Sunset Boulevard and Crescent Heights Boulevard, from before there was a strip mall and a McDonald's. Its Spanish Mediterranean bungalows lodged icons such as Greta Garbo, F. Scott Fitzgerald, and Humphrey Bogart.

"It was all white, the Garden of Allah. It was low rise, a lot of incense burning, and people in flowing gowns," Gehry recalls.

He never set foot inside ("I was 17 or 18 years old!" he says), but the Pritzker Prize-winning architect is embarking on a new phase in the site's history, with two young developers. They plan to create 8150 Sunset Boulevard, a proposed mixed-use development that will urbanistically anchor the east end of Sunset Strip.

"We're hoping to create a sustainable, livable, walkable community," says developer Tyler Siegel, cofounder of Townscape Partners.

Siegel and business partner John Irwin, along with investment advisor Angelo,

Gordon & Co., acquired the property in 2012 after leaving the Related Companies to establish their own firm. They considered revamping the existing strip mall, but it became clear, given discussions with local stakeholders and the site's storied past, that they needed to build something unique—both programmatically and architecturally.

"Not only does it form the border between Los Angeles proper and West Hollywood, but it forms the eastern gateway to the famous Sunset Strip," says Siegel. "It's also the first property you see when traveling from the valley of the Santa Monica Mountains to the L.A. basin." It was no surprise, then, that Townscape tapped local firm Gehry Partners in March to take on the design.

Initial renderings of the \$300 million development depict a cluster of five architecturally distinct buildings distributed across the 2.6-acre site around a central plaza. In total, the project will comprise 333,600 square feet, and have 249 residential units. One of the archi-

itects' primary goals was to make the site as approachable as possible to invite the surrounding community in to shop, dine, or simply relax in the plaza.

"We broke down the forms to fit the scale of the street," says firm partner Anand Devarajan. "The orientation of the buildings provides transparency to make the site feel porous."

Gehry adds, "The design, which is not finished, has a sculptural quality that will make it an interesting place to come to."

Strolling down Sunset Boulevard, Angelenos will pass two three-story buildings made from glass with cross-laminated timber mullions. These buildings will house a mix of flagship stores, cafés, restaurants, and rooftop terraces. Retail, totaling 65,700 square feet, will be distributed throughout the bases of the buildings.

Two concrete-framed residential volumes—an 11-story tower on the east edge and a 15-story tower on the west—will bookend the

site. The taller building, to contain condominiums, is the more flamboyant of the pair, featuring a sculptural top of billowing glass with views to the iconic Château Marmont across the boulevard. “The glass portion for the expensive condominiums needed to have an identity,” Gehry explains, “but you don’t want to make one section look like the poor brother or something, so we integrated the forms.” They hope to accomplish this by using similar architectural tropes throughout—large punched windows, cascading terraces, and white materials.

The site’s central volume will contain two three-story penthouses and is the most unique, with a white, tubular facade (the developers are thinking cut limestone) that is evocative of a sea anemone.

“When you are in a building—whether as an owner, a renter, or shopping—you look around and see different architectural elements,” says Siegel. “It’s almost eye-candy overload.”

The plan will be submitted for Environmental Impact Review this month, and, if all goes well, the developers hope to break ground late next year, or early 2017.



The development will include five separate buildings oriented around a central plaza and will include a mix of residential and retail space. As shown in this architectural model, two towers, on the east and west ends of the site, will contain apartments and condominiums, while two buildings facing Sunset Boulevard will contain restaurants, cafés, and stores.

“We are excited to work with this young team, and it fits with our young team here,” says Gehry. “That’s nice to see, and it bodes well for the future of this office after I’ve decided to quit.”

He won’t be quitting any time soon: in August, the *Los Angeles Times* reported that

Gehry is working pro bono with the nonprofit L.A. River Revitalization Corp. to create a master plan for the waterway. The architect is also working with the Related Companies to develop Grand Avenue in downtown L.A., and he will be the subject of an expansive traveling retrospective opening at Los Angeles County Museum of Art this month, in which the design for 2150 Sunset Boulevard will be included.

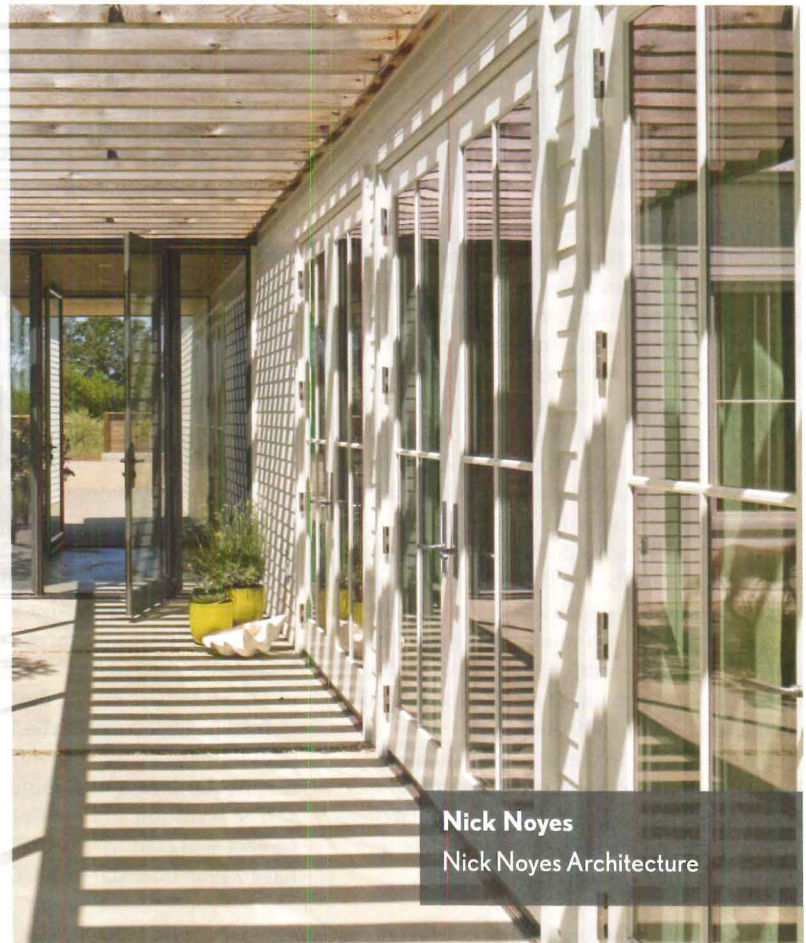
For Gehry, the success of the latter project will not be gauged by creating a millennial version of the Garden of Allah, or by

crafting a new architectural icon—it will be measured by how future visitors and residents experience the place. “They should feel that they are part of L.A.,” Gehry says—“a part of L.A. that has a culture that comes with it.” ■




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Nick Noyes
Nick Noyes Architecture

Marriott at LA Live - Los Angeles, CA
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NYC Airports to Receive Major Improvements

BY FRED A. BERNSTEIN

NEW YORK will see a slew of airport improvements in the next few years and, surprisingly, the only one not causing controversy is a \$48 million terminal for animals known as the Ark. The same can't be said for the other two projects—a \$4 billion reconstruction of LaGuardia Airport and the incorporation of Eero Saarinen's iconic TWA Flight Center into a hotel at John F. Kennedy International Airport.

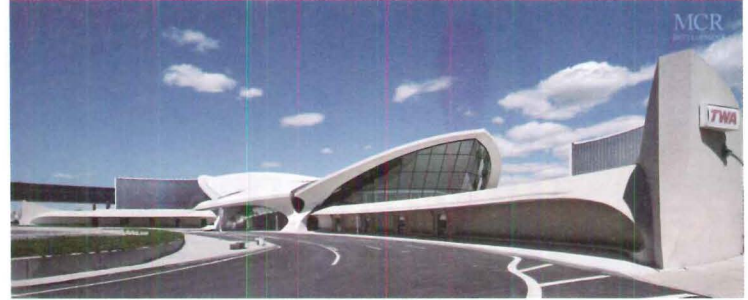
The bigger project by far is the redevelopment of LaGuardia airport, announced July 27 by New York Governor Andrew Cuomo and Vice President Joe Biden, who slammed the airport last year, comparing it to a third-world facility. The plan calls for a new HOK-designed terminal to replace virtually all of the existing airport buildings.

Yet for many critics, the plan is not ambitious enough. LaGuardia has unusually short runways, which the Cuomo plan won't replace, making the overhaul largely cosmetic, according to some. James Venturi, principal

of the organization ReThinkNYC, calls for a vast expansion, with additional terminals in the Bronx and the conversion of Rikers Island—the site of New York's notorious jail complex—into runways to address the threat of rising sea levels.

Preservationists, meanwhile, are keeping an eye on JFK. Plans are proceeding to convert Eero Saarinen's 1962 TWA terminal into the lobby, meeting, and restaurant wing of a \$250 million 505-room hotel, a project of MCR Development with JetBlue and the Port Authority. The sole rendering released shows very little of the proposed six-story hotel, but, as reporter David Dunlap noted in *The New York Times*, there will probably be opposition.

About half a mile from TWA, a cargo building will be converted to the animal



The only rendering of the proposed TWA Flight Center Hotel, designed by Beyer Blinder Belle, shows very little of the future structure except two six-story volumes behind Saarinen's winglike forms.

terminal, complete with veterinary and kenneling services and a canine spa. The project is being built with private money and involves no historic buildings. Its architect, Cliff Bollmann, a senior associate at Gensler, has designed two JetBlue terminals at JFK and a new roof deck on another terminal. Designing for two-legged or four-legged travelers is similar, he says. True, horses require wide corridors, but, like humans, need “clear wayfinding and familiar surroundings,” he says. To provide those surroundings, Bollmann will install barns inside the airport building. ■



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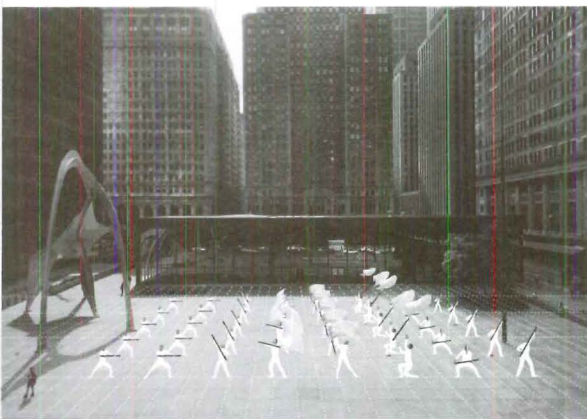
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Chicago Architecture Biennial Preview

BY ZACH MORTICE

WITH MORE than 100 projects from every inhabitable continent descending on Chicago for the city's first architecture biennial, the work on display might seem to be grounded in a placeless globalist ether rather than the dozen represented countries. At least nine of the participating practices are located in two or more places at once, with one partner splitting time in two locations, or two partners based thousands of miles apart. Yet the assembled roster's work remains committed to using local context to engage with issues just outside architecture's borders: ecology, inequality, resilience, and more. This tension between the global and the local is one of the consistent themes in the run-up to the biennial.

"It exemplifies the different ways people are working, and the plurality of positions and voices," says Sarah Herda, biennial co-artistic director. "This selection of people does not represent a single ideological position, and we think that reflects what's happening in architecture today."



Past Venice Architecture Biennales have had a more established group of participants, but the majority of the Chicago group—with the exception of recent additions including Frank Gehry and David Adjaye—is relatively new to the international scene, still often operating at the scale of installations and pavilions.

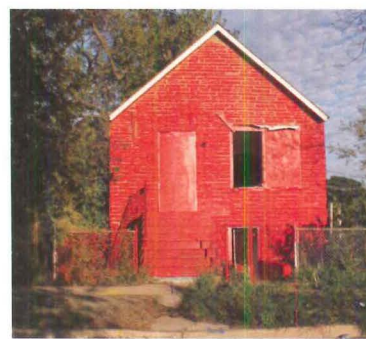
The biennial, slated to be the largest architecture exposition in North American history, will be mainly held in the Chicago Cultural Center, where three architecture firms (Mexico-based Tatiana Bilbao, U.S.-based MOS, Vietnam-based VTN) will build three full-scale houses. The Cultural Center will also stage a site-specific installation from New York firm SO-IL that will remake the quirky ramps that

stitch the two halves of the Beaux-Arts building together, and a Chicago-centric exhibit featuring local designers' prescriptions for the city.

Just across Michigan Avenue in Millennium Park, there will be kiosks designed by a competition winner, Ultramoderne from Rhode Island, as well as students from Chicago's architecture schools. The Graham Foundation (which Herda leads) will feature the abstract art and photography of Chicago artist Barbara Kasten, and on the city's South Side, artist Theaster Gates will unveil his Stony Island Arts Bank, a community art space adorned with site-specific art installations by Barcelona-based Carlos Bunga and Mexican architect Frida Escobedo.

There will also be a half-dozen performance installations throughout the city, including one by Bryony Roberts, who, being based in Los Angeles and Oslo, exemplifies the global/local dynamic of her contemporaries. Roberts's work focuses on the intersection of art, architecture, and preservation, often engaging with local politics. "I float around, but when I land, it's really intense," she says of her practice. Her biennial project brings racially diverse members of the South Shore Drill Team to perform at Mies van der Rohe's austere Federal Center in the Loop, as new "authors to remake that space. They're people who are not normally made to feel comfortable in spaces like that, or given the agency to change the architecture."

Chicago-based architect and artist Amanda Williams's work deals with some of the same issues of race and inequality. Her *Color(ed) Theory* series of abandoned houses painted bright colors iconic to African-American South Siders (like "Harold's Chicken Shack red") will be on display. Though her architecture-centric work is located in the very specific cultural and geographic milieu of the South Side, she says the worldly nature of her biennial colleagues



Chicago's Architecture Biennial, kicking off October 3, will showcase a broad range of work. Ultramoderne designed a cross-laminated timber pavilion to house a food stall along Lake Michigan (above), while artist and architect Amanda Williams (middle), has painted abandoned structures in bold colors to highlight their dereliction. Artist Bryony Roberts will enlist a drill team to perform at Mies van der Rohe's Federal Center (bottom).

can help them dig deeper into the local conditions they choose to work in. "When you've been all over, then there's an ability to have a deep reading of your own city, because you realize its currency," she says.

With one partner in London and the other in Harare, Zimbabwe, Studio [D] Tale has a variety of local contexts to draw from. Their work offers physical and virtual ways for people to plug into informal communities and the "shadow economy" that is still mostly untouched by architects and designers, says Zimbabwe-based partner Maxwell Mutanda. "We can't all be chasing after a few high-profile projects."

This level of social engagement is relatively new territory for architecture biennials, though the next Venice iteration is already signaling it will focus on a socially progressive agenda next year. Roberts says that reveling in aesthetics and embracing a progressive social mandate isn't a binary choice.

Williams hopes this level of wider engagement can attract new audiences. An African-American who grew up near where her *Color(ed) Theory* houses stand, Williams wants to bring people to the biennial who don't normally see their neighborhoods represented as architecture worth celebrating—for whom "architecture is downtown, but not my block," she says. With *Color(ed) Theory*, among other works, it will be. "I'm excited to make that connection for someone." ■

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Michael Berkowitz

BY MIRIAM SITZ

IN 2013, the Rockefeller Foundation committed \$164 million toward building urban resilience worldwide through its 100 Resilient Cities program (100RC). To date, 100RC has selected 67 cities from Accra, Ghana, to Chicago, funding their efforts to become more resilient. The third application cycle is under way now through November 24, while cities from the first two tranches continue to develop their strategies. New Orleans, one of the first cities selected, will unveil its resiliency plan on the 10-year anniversary of Hurricane Katrina.

Michael Berkowitz, 100RC's president, spoke to RECORD about how the initiative hopes to promote resiliency in cities around the world.

How do you define a resilient city?

By "urban resilience," we mean the ability of a city to survive disaster—and not just sudden disasters like earthquakes, terrorism, or hazardous-materials accidents, but also chronic, slow-burn issues like fatigued transportation systems, high unemployment, or violence.

Cities are complex ecosystems with lots of different stakeholders, which makes it hard to organize themselves around challenges and opportunities. And, too often, cities don't take advantage of solutions that are out there—best practices, funding, new technologies, and so on. They reinvent those solutions and do that at a high cost.

We provide the 100RC cities with four types of support to address challenges: a chief resilience officer (CRO), who is a single point of contact to connect the dots; technical assistance to complete a resilience strategy by looking at the city's risks, capacity, and current efforts, and then setting goals; a platform of resources and partners; and a peer-to-peer network.

Tell me more about the responsibilities of chief resilience officers. What makes them effective?

On one side, the chief resilience officer's job is to be a connector. Someone who's political with a small P, who knows their way around both municipal government and key stakeholders in the city, to leverage all the work that's going on. But that person can't just be a connector—he or she has to have some techni-

cal chops so they can talk seriously to technicians as well. We want to revolutionize the way cities govern themselves, so that eventually you wouldn't run a city without a chief resilience officer any more than you would without a chief of police.

What's an example of a successful resiliency project?

Norfolk, Virginia, which is a midsize city on the mid-Atlantic coast and one of the most at-risk cities for sea-level rise, wanted to better understand its risk profile and its opportunities for economic development. They brought in one of our partners called Palantir, a big data-analytics firm, to help them look at building-code violations, flood damage, and owner and operator information. It gave them a much clearer picture of where the most at-risk properties were and which owners were most delinquent in addressing those risks. It's a good example of how cities are beginning to look cross-sectionally in a way that's meaningful.

The American Institute of Architects (AIA) is one of your partner organizations. How does it work with cities?

The built environment is clearly an important aspect of resilience. Buildings that are built strong don't fall down during flooding or earthquakes. Buildings that are built efficiently use less energy, create less air pollution, and so on. Many of our cities want to improve the built environment. The AIA provides access to their network of architects, and to model building codes and best practices around the built environment, so that when cities identify what they need in that area, we can bring the AIA in.

The first round of funding chose 32 cities, and the second 35. Will this third round that's closing in November be the last?

This will be the last big round. We have 67 in the network now, and we may finish out with the last 33 or save a few for one-off announcements.

There will be 100 cities in our network, but there are 10,000 cities in the world. Whether or not there will be more funding remains to be seen, but we're hoping that it doesn't just stop at 100. We're trying to inspire change in all 10,000 of those cities, to catalyze a movement of how cities govern themselves and account for a changing world's uncertainties. What we're hoping is that each city will see itself in one of the 100 and understand what it takes to change. ■

**Shigeru Ban Reveals Shelter Design for Nepal**

Shigeru Ban Architects has announced its design for a simple shelter to house people displaced by the earthquake that struck Nepal in May. The system is made from modular wooden frames that are filled with brick rubble to form walls, and a paper-tube-truss roof.

Scorsese, DiCaprio Team up for *Devil in the White City* Film

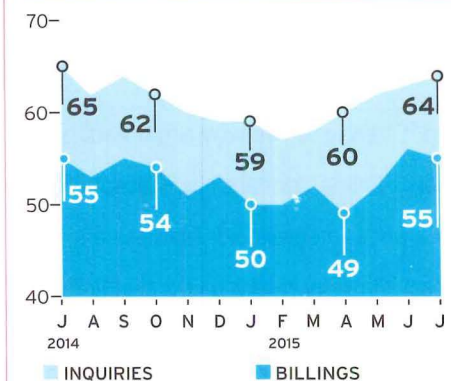
Paramount Pictures struck a deal to acquire Erik Larson's *The Devil in the White City*, a book that weaves together the stories of serial killer H.H. Holmes and Daniel Burnham's plan for Chicago's 1893 World's Fair. Leonardo DiCaprio will star as Holmes, and Martin Scorsese will direct the film.

L.A. Dumps Millions of Plastic Balls into Reservoir to Conserve Water

The City of Los Angeles has dropped nearly 96 million black plastic balls into its reservoir to reduce water evaporation in an unprecedented period of drought. The "shade balls" are coated with a chemical to block ultraviolet rays. The city claims the strategy will save 300 million gallons a year.

Art Institute of Chicago Opens First David Adjaye Retrospective

The first comprehensive museum survey of London-based architect David Adjaye will open at the Art Institute of Chicago September 19. The mid-career retrospective will examine Adjaye's designs for housing and furniture, and his master plans, through architectural sketches, models, and drawings.

**July ABI Demonstrates Consistent Growth**

The American Institute of Architects (AIA) reported a July Architecture Billings Index (ABI) score of 54.7. While this mark fell 1 point from June, any score above 50 reflects an increase in billings. AIA economist Kermit Baker says this "bodes well for business conditions in the months ahead."



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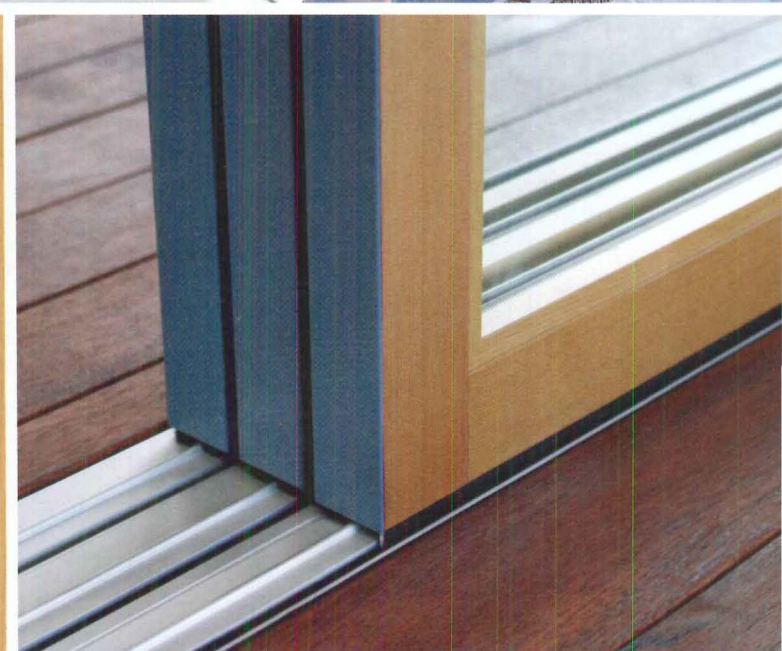
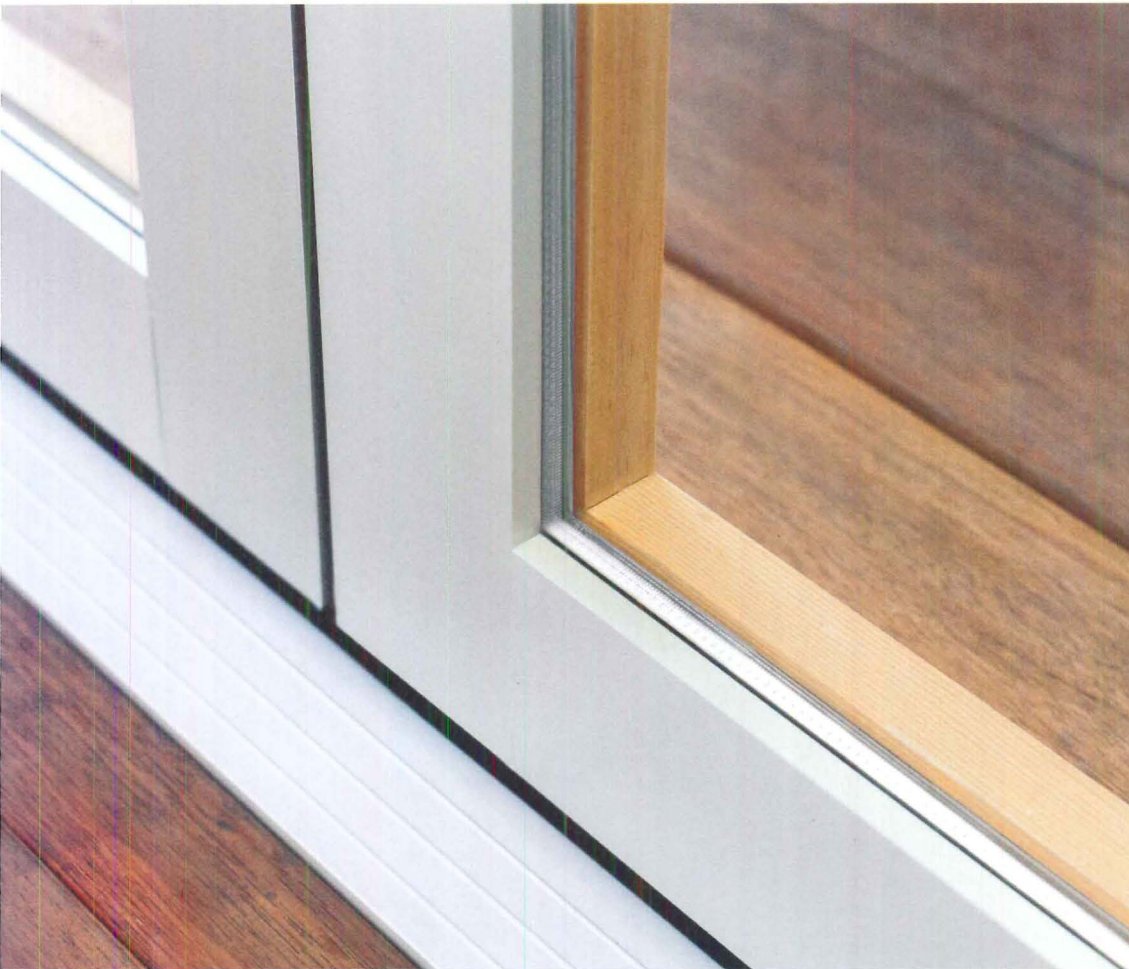
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BY SUZANNE STEPHENS



REGIONAL VARIATIONS on International Style architecture helped evolve a subtly rich Midcentury Modernism in the United States. From William Wurster in San Francisco to Paul Rudolph in Sarasota, Florida, young postwar architects inventively adapted residential designs to particular climates and materials.

Jacob Brillhart, an architect and teacher, and his wife, Melissa, a trained architect, continue to improve on that legacy in Miami. The energy-efficient, one-story, 1,500-square-foot house that they built for themselves in the city's downtown sits on a narrow lot amid towering oak and palm trees. Because the property is close to the Miami River, the firm, Brillhart Architecture, elevated the single story 5 feet off the ground to meet flood regulations.

The most distinctive feature of the simple, pristine house is the front porch, where folding louvered shutters screen a 50-foot-long glass wall (repeated on the back, but without the shutters). The steel and glass structure incorporates a robust variety of woods: ipé for the exterior siding, fascia, and columns; red cedar for the shutters; and white oak and cypress for floors and decking—plus dimensional lumber for short structural spans.

Instead of resorting to reinforced concrete, as is popular in hurricane-prone South Florida, the couple decided to address building-code requirements and climate concerns in other ways. For example, they specified 1/16-inch ther-

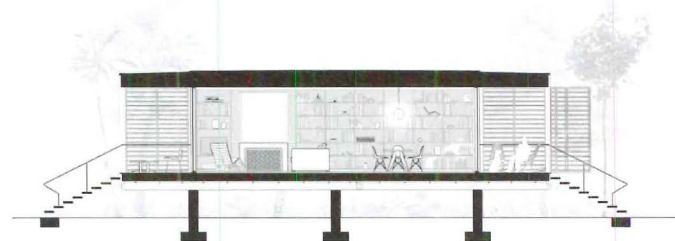


Red cedar folding shutters extend across the house's front facade (top). The screen masks a 50-foot-long porch (above, left) that repeats along the rear. Inside, the open-plan interior (above, right) has expansive views of the jungle-like setting.



mal glass, much safer in high winds than the typical 1/16-inch glass used back in the heyday of Miesian pavilions. Icynene spray foam and rigid insulation prevent moisture buildup in the walls and the roof: even the elevated floor is formed of plywood, insulation, and plywood deck on top of 2-by-8-inch wood joists and steel beams.

Working with the technically improved materials for the one-story cottage, the couple not only stayed true to the nature of materials and vernacular architecture but also advanced the cause of Regional Modernism. And living in the jungle-like growth appeals to the couple. "It just gets better and better," says Melissa. ■



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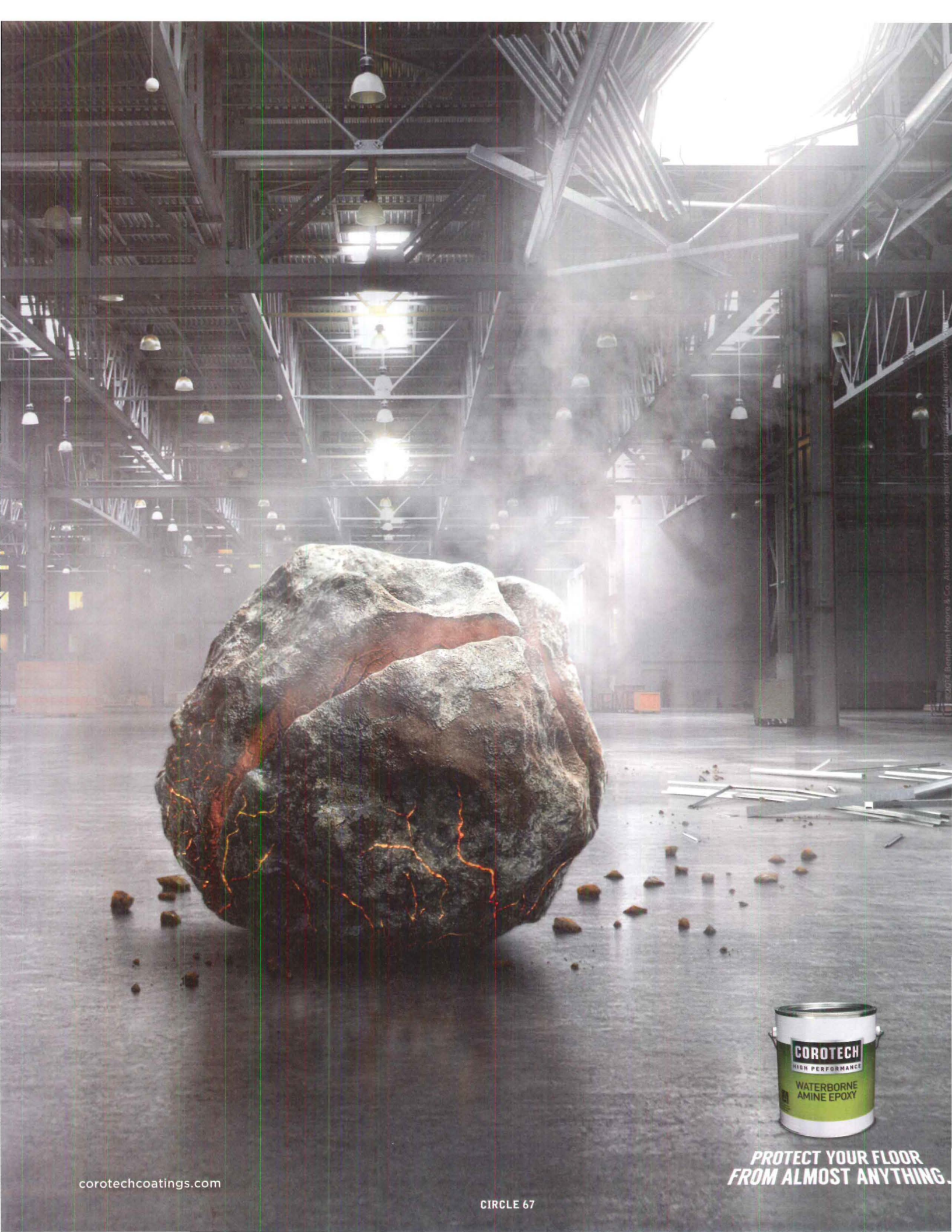


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Sir John Soane at Home

The restoration of private rooms in the London house museum of the innovative early 19th-century architect allows a broader look into his domestic life.

BY CHRIS FOGES

JOHN SOANE'S private apartment, on the third floor of his extraordinary London house at 13 Lincoln's Inn Fields, was a refuge for the architect and his wife, Eliza, within a building that was also his office, salon, and showcase for a vast collection of art and antiquities. But while the house, completed in 1812, has been a site of pilgrimage for generations of architects since its conversion to a museum after Soane's death in 1837, the apartment has been closed to the public for over 160 years. Its recent reopening, following a comprehensive restoration by Julian Harrap Architects (JHA), is a major milestone in a larger 20-year project to refurbish and improve the museum, and offers visitors an intimate experience of the most personal work by an architect of enduring influence.

The mazelike suite originally comprised two bedrooms, his bathroom and her dressing room, and several idiosyncratic adjoining spaces. After Eliza's death, Soane left her bedroom untouched for 20 years but, having resolved to bequeath his masterpiece to the

museum, converted it into the Model Room, where maquettes of his own works mingled with models of classical temples for the edification of architecture students.

After Soane's death, however, the apartment was adopted by a resident curator, and heavy-handed reorganization and its later use as an office erased its spatial intricacy. Representing such layered history often complicates conservation projects, but here JHA had a ready answer: Soane's bequest entailed a parliamentary decree that the house should remain as found at his death. The painstaking restoration draws on the evidence of surviving fabric and Soane's copious documentation, but some mysteries remain. One presents itself as the visitor ascends the winding stone staircase from the celebrated Library and Breakfast Room toward the third floor—the restored Oratory, a narrow antechamber to Soane's bedroom whose intended purpose is uncertain. Internal stained-glass windows give glimpses into it. The dextrous



Sir John Soane's Museum in London, at 13 Lincoln's Inn Fields, includes the main house (above, in the center), flanked by numbers 12 and 14. Recently, the museum restored the private apartment of the architect and his wife, Eliza, as well as the Model Room (below), which Soane converted from his wife's bedroom after her death. There a three-tiered stand displays his collection of historical models.





On the third floor of Number 13 Lincoln's Inn Fields, the restoration of the private quarters features an oratory—a small chapel-like space for memorabilia, with an internal window showing the stair (above). Also reinstated is Eliza's Morning Room (right), where she would attend to her daily affairs.

manipulation of light and views is characteristic, however, and gives a foretaste of the apartment interior, itself a concentrated display of the three-dimensional ingenuity that continues to draw contemporary architects to Soane's work.

From the entrance, barred by heavy iron gates like a medieval strong room, visitors are led via a dark-wood-paneled lobby into Eliza's Morning Room, densely hung with paintings and made somewhat strange by the interplay of flat and convex mirrors. A second door leads to the Model Room that replaced her bedroom, whose center is dominated by a large three-tiered display stand.

Each space interconnects with at least two others, and the Model Room opens into the restored Book Passage, a double-height micro-library in the middle of the plan, and into Soane's bathroom, where a battery of experts has guided faithful recreations of glass, hand-printed wallpaper, and bronze-infused paint. Original materials that had migrated elsewhere in the building were reinstated after JHA's careful detective work. Detailed illustrations of each room were a useful "double-check," says JHA partner Iyall Thow, "but you also have to listen to what the fabric is telling you."

A slender new screen of wood and glass frames the threshold between the bathroom



and Soane's bedroom, which required significant reconstruction. Visitors are oblivious of the extensive structural work that has restored walls and windows to their proper positions, but the restoration architects' exactitude has allowed Soane's possessions, such as a large clock on a deep sill facing the bed, to return neatly to the niches he designed for them. Much of his Regency-period furniture survives and has been restored, although the four-poster bed is a substitute, on loan from his rural retreat, and will be replaced by a replica.

From there, yet more doors lead back to the Book Passage and Oratory. These interstitial spaces form a buffer around his most

private sanctuary, lending a sense of seclusion without isolation.

Tucked into a corner of the Oratory is a collection of Eliza's possessions, including paintings and a vase decorated by her—a small shrine in the midst of a much larger monument to the architect's singular sensibilities. But although Soane belatedly overwrote the main evidence of his wife's presence, the care manifested in his design of spaces that provide both privacy and proximity adds new texture to visitors' understanding of his work, and of the couple's lives. ■


Chris Foges is the editor of the London-based journal Architecture Today.



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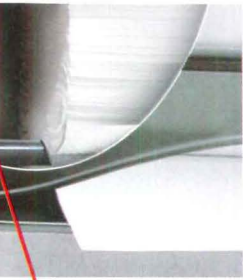


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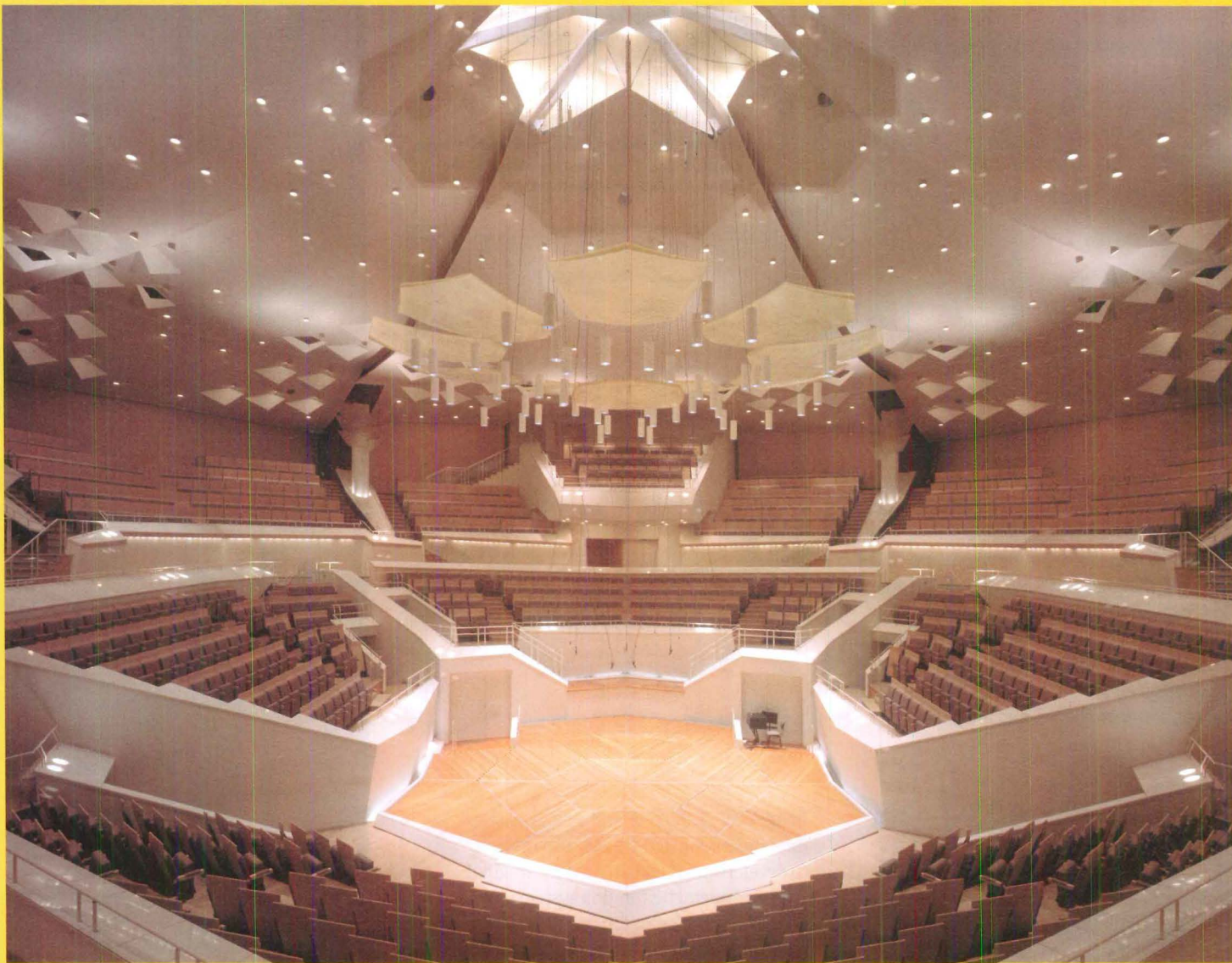
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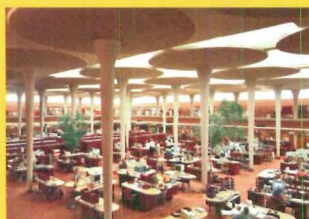
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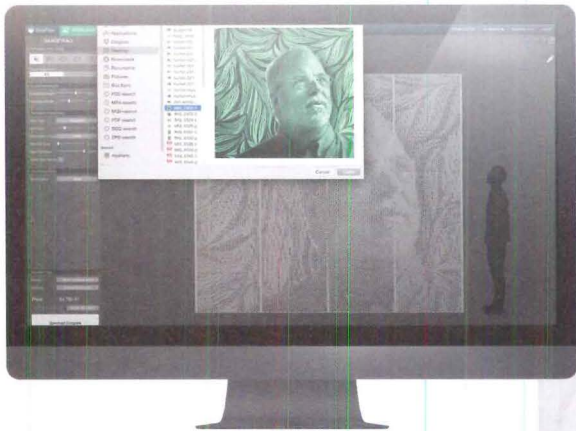
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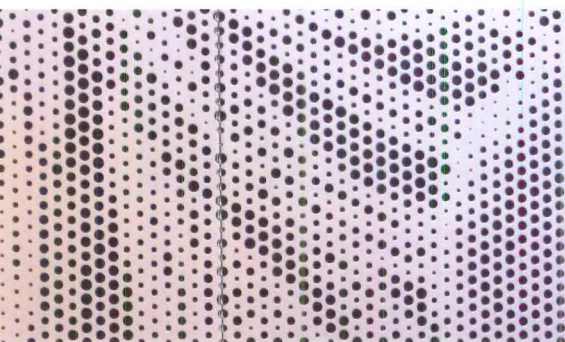
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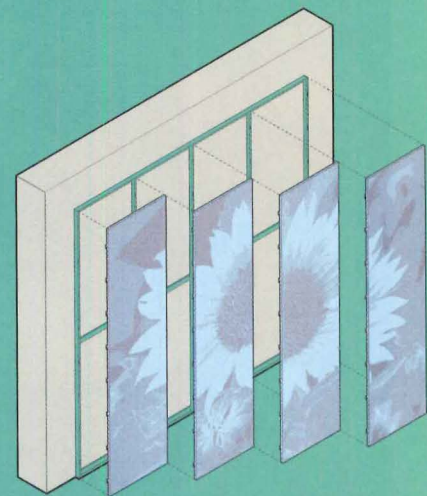
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* Zahner Patent No. 7,212,688 B2, Transferring an image to a building using a plurality of metal panels.



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CIRCLE 51

A Man in Full

Building Art: The Life and Work of Frank Gehry, by Paul Goldberger. Knopf, September 2015, 528 pages, \$35.

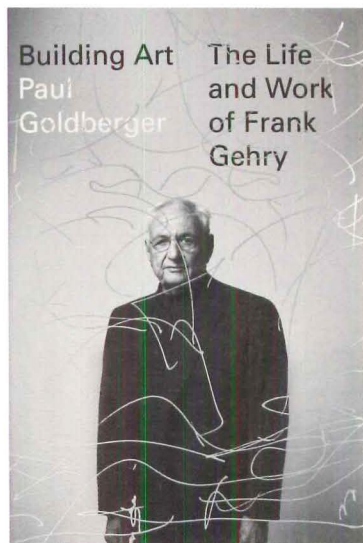
Reviewed by Hugh Pearman

"I WISH I could enjoy it like you're supposed to. I wish I could be that guy—at least for an hour. I wish I could live in the place people are making for me. I want to be popular, but I don't trust it." That is Frank Gehry, speaking late at night and late in life, among friends, while being feted at the opening of his Fondation Louis Vuitton in Paris in October 2014. He lunched with the president of France. He had a huge career retrospective at the Centre Pompidou. The opening exhibition at his remarkable new building was devoted to him. Gehry, 86, a man of several careers like that other Frank—Lloyd Wright—had been a world star since the opening of his Bilbao Guggenheim in 1997. If anyone had cause to feel satisfied with his career, it was Gehry. Yet he worried. He had always worried. Paul Goldberger's excellent new biography is a history of an anxiety-driven, needy, thin-skinned genius—one quite capable of giving critical questioners the finger, as he famously did at a different event shortly after the Paris museum opened.

This is a proper biography, being as much about the personal life of Gehry as it is about his buildings. It reads well, mostly avoiding archi-speak and technicalities, preferring the clarity of plain English, as you would hope from a critic of Goldberger's standing. He is plainly on Frank's side—he has known him so long, and voices little personal critical dissent. But he does not avoid the turkeys, and when a building is critically panned—the

Experience Music Project in Seattle, say, or the Fondation Louis Vuitton, which set off a revolt by several English critics (though not this one)—he reports it. This is an authorized biography, done with Gehry's full cooperation but without his editorial control. And I believe it, because this is no hagiography. The flaws of Gehry the person are laid bare.

We get the therapy sessions, the determined gathering of



famous friends (Gehry is nothing if not starstruck, from his earliest years hanging around Los Angeles artists to his later liaisons with Bono and Brad Pitt), the dope smoking, the sex. Gehry walked away from his first, somewhat oppressive marriage and family nicely in time for the West Coast hippie era. Goldberger recounts how Gehry was pulled onto a bed by the wife of a client ("What do you do?" shrugs Frank; "He's going to be coming home in about 30 minutes, and here I am wrestling with his wife"), which in the end looks suspiciously as if it was in lieu of fees. Balancing this is the

touching reunion of both Gehry families at the deathbed of his daughter Leslie by his first marriage, who died of cancer at age 54 in 2008. For the last six months of her life, Gehry was there for her, and acknowledged his prior neglect. "I did what a father does, and realized that I should have done that long before."

His second marriage lasts to this day. But the work has always come first; he acknowledges he is

signs of denial about it.

According to Goldberger, Gehry has found a path that rejects both puritanical modernism and effusive postmodernism: his buildings rediscover the art of ornament without recourse to history. His instinctive manner of designing is like the "action painting" of Jackson Pollock, says Goldberger. But the writer does not "crit" individual buildings, preferring to quote others such as Philip Johnson, who

Goldberger lays bare the flaws of Gehry the person. We get the therapy sessions, the determined gathering of famous friends, the dope smoking, the sex.

a workaholic, and that this is not always a good thing. Goldberger shows how Gehry can be suspicious. He has to be in control. He often walks away from projects, or threatens to in order to reassert his authority. Thus he regained control of L.A.'s Walt Disney Concert Hall when he was being sidelined. One after the other, trusted long-term lieutenants and even personal friends are dropped, sometimes to their surprise, and seldom face-to-face. It does not do to think for the boss, or to develop separate relationships with clients. Lately, Gehry has retreated from the shop floor to a more private raised command post in his office. Goldberger recounts how he has rejected proposals to sell the practice or even put in place a succession plan for his partners. The fate of his huge archive is still unclear. While acknowledging his mortality, Gehry is showing clear

declared the Bilbao Guggenheim "the greatest building of our time." There are exceptions. In a casual aside he says of Disney Hall, for instance, "It was, of course, an architectural tour de force," and moves on, as if that was just a universally accepted fact. Not so: some of us have reservations about that building.

But not about his overall achievement. In the end, there is the work. Gehry struggled to get where he is, took huge risks, fought for his art. He still feels the outsider, yet he is, without question, up there in the pantheon of great architects. Goldberger's biography shows us this—and also the collateral damage incurred along the way. ■

Hugh Pearman is the architecture critic of The Sunday Times, London, and editor of the Journal of the Royal Institute of British Architects.

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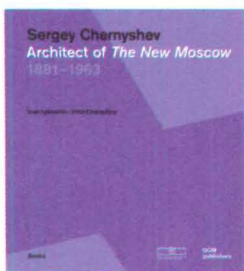
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Sergey Chernyshev: Architect of the New Moscow, by Ivan Lykoshin and Irina Cheredina. DOM Publishers, March 2015, 264 pages, \$40 (paper).

Reviewed by Craig Whitaker

IT IS always fun to begin a book, decide after 10 or 11 pages that it is a real clunker, and then while lumbering forward discover something truly wonderful.

Such was my experience with *Sergey Chernyshev: Architect of The New Moscow*, by Ivan Lykoshin and Irina Cheredina. The left-hand column on every page is in Russian, while the English translation is in the right column and is rocky at best. There are also too many photographs of Chernyshev, his family, and the piano he gave his wife, as well as certificates attesting to his employment. Dozens of names appear once, never to show up again. But the book's discussion of the archi-



tect's masterful plan for Moscow more than makes up for these difficulties.

Chernyshev, born in 1881, was an accomplished architect who lived through two world wars, a civil war, and radical changes in Russian political philosophy. He directed reconstruction efforts in cities like Kiev and Leningrad after World War II, but is best remembered for overseeing the layout of the Moscow General Plan of 1935. The plan itself is illustrated on just one page; since the book is only 8.5-by-9 inches, you may need to use a magnifying glass. It

is well worth the effort when you do. My first thought was how much joy musicologists must get from looking at an original score by Mozart.

Chernyshev began with a nearly blank canvas. In the 1930s, Moscow's iconic core—the spires, domes, and *(continued on page 55)*



Chernyshev worked on the Moscow General Plan of 1935, which surrounded the city's historic core with a series of winding, idiosyncratic ring roads.

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CIRCLE 59

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(continued from page 53)
walls of the Kremlin—
was surrounded for the
most part by wooden
houses, horse-drawn
carts, and former serfs
digging in the dirt with
picks and shovels. Le
Corbusier on a visit
thought the city should
be torn down in its en-
tirety. He was right, but



then we remember he also wanted
to tear down all of central Paris.

The Kremlin is at the center of
Chernyshev's plan—as all czars
would have directed it to be—sur-
rounded by a series of ring roads.
“Ring roads,” however, is an im-
precise term. These are not the
perfect circles one finds at Del
Webb's Sun City, Arizona, or the
grand plan of Karlsruhe,



Chernyshev (left)
designed the
Moscow Automobile
and Roadways
Institute (above) in a
neoclassical style
that went out of
favor in the 1950s.

Germany, or the curves of John
Nash's Regent Street in London.
They bend toward parks, pass
through parks, and cross the
Moskva River, only to cross it
again. Chernyshev also considered
water transport, the railroads,
and a subway system. They all are
keys to enjoying the plan. One
must follow them through the
city because only by traveling
over time does the richness and
variety of the plan reveal itself. I
kept going back, tracing a new
route each time with my finger.

The plan is also studded with a
dozen large wedges of park, like
pieces of fruit in a giant torte, each
one different. Some meander along
the river, others seem to be perfect
venues for large gatherings—places
to celebrate a historic victory. I
intend to put the book on my shelf
next to Hegemann and Peets's *Civic
Art* and Camillo Sitte's *City Planning
According to Artistic Principles*, since
each volume shows that memorable
places are as much a product of the
plans undergirding the buildings
as the buildings themselves.

The Moscow General Plan
makes the reader wish Lykoshin
and Cheredina had provided a
more detailed description of the
plan's parts and pieces. How wide
were the streets? Were there
alleys? Could the plan accommo-
date buildings that fit the angled

streets, as Haussmann's did in
Paris? How much of the plan
actually came to pass?

At the back of the book are
short biographies of architects and
thinkers who presumably influ-
enced Chernyshev. Eighteen are
Russian, but Ebenezer Howard,
Walter Gropius, and Le Corbusier
also appear. Hitler's architect,
Albert Speer is also present. That
Speer is included indicates
Chernyshev's respect for the mon-
umental classicism of his unbuilt
designs for Hitler's postwar Berlin.

Chernyshev designed two
major projects in postwar Moscow
in a neoclassical style—the
Moscow State University complex
on the Lenin Hills and the
Moscow Automobile and
Roadways Institute. He worked on
many other projects as part of a
“collective.” But the dreariness of
the present-day city comes both
from a need after World War II for
quickly produced factories and
apartments and from a growing
distaste in a socialist culture for
the classical dreams of architects
like Chernyshev. The architect
soon “retired into honorable
shadows,” as one observer de-
scribed it, and died in 1963. ■

*Craig Whitaker, a New York-based
architect and urban designer, is the
author of Architecture and the
American Dream.*

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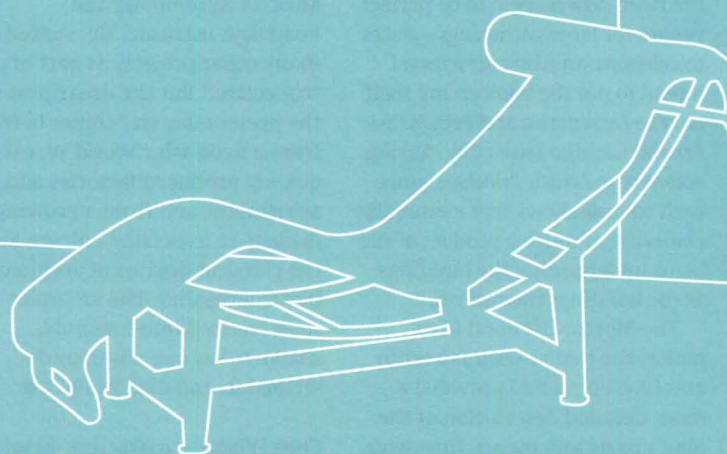
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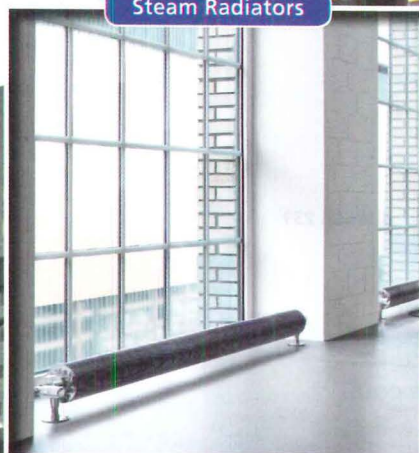
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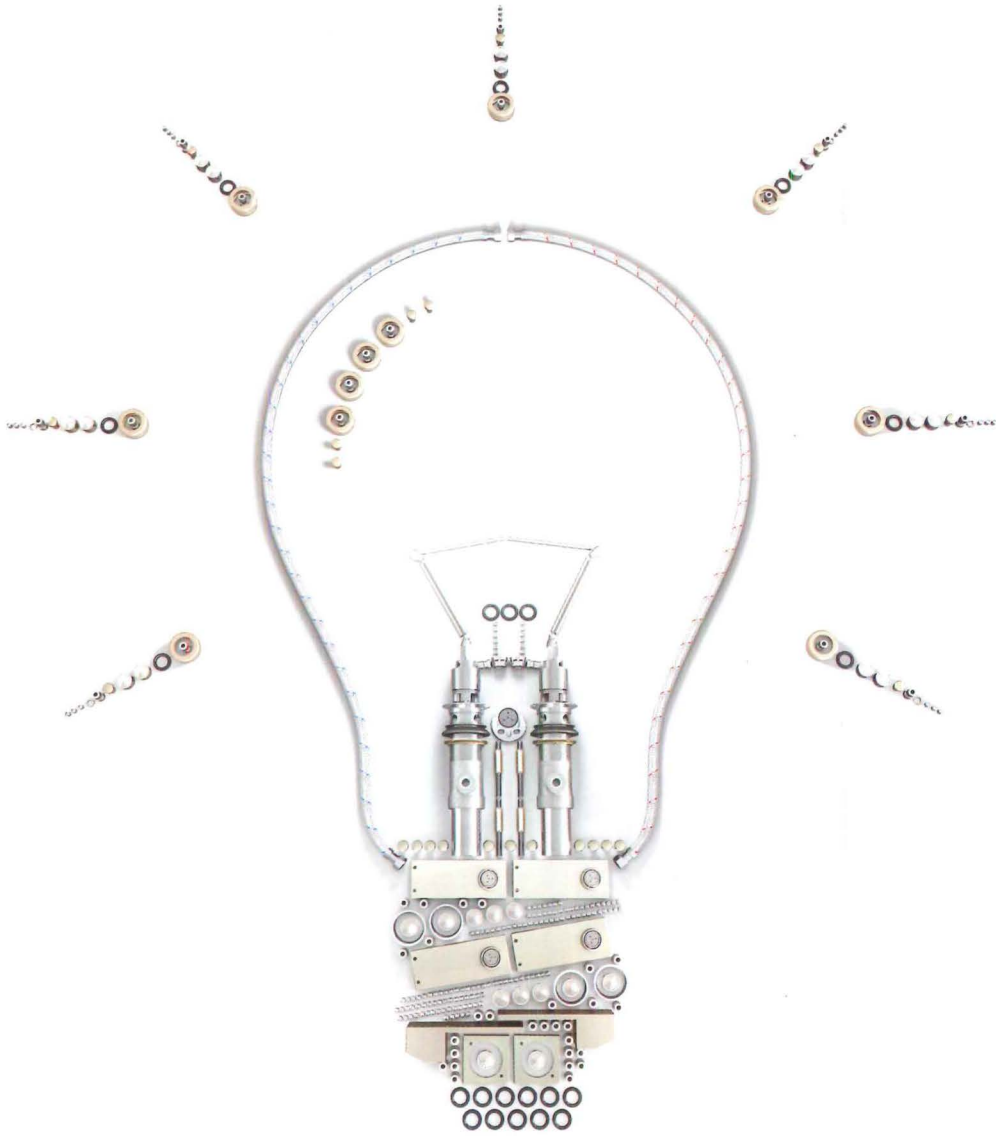


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Axor LampShower by Nendo

Originally developed as a prototype, this award-winning lamp/showerhead hybrid from Hansgrohe was designed by the Japanese studio Nendo. The UL-listed, 2.5 GPM rainshower is available in a ceiling-mounted and a wall-mounted version with 120 no-clog channels on a chrome-plated spray disc that can be removed for easy cleaning. The low-voltage LED light module includes a brass shower arm, power supply, and 23' connection cable.

hansgrohe-usa.com

CIRCLE 170



Generation Now

The latest kitchen and bath products provide options that either look to the past for inspiration or bring us closer to the future.

By Rita Catinella Orrell



Industrial Collection

Stone Forest has made several additions to its cast-iron Industrial Collection, including two new finishes for the Ore vessel-style sink and coordinating accessories including a towel bar, toilet paper holder, shelf, robe hook, mirror mounts, and a cast-aluminum soap dish. Based on an antique steel pipe cap, the new finishes retain the raw texture of the sand casting process on the vessel's outer surface. Available in white bronze or golden bronze and measuring 15" in diameter x 6.5" high, the basin can also be used with the company's Industrial Pedestal or Console, as well as other countertop options.

stoneforest.com

CIRCLE 172



The Markham

Handcrafted at the Humphrey Munson workshop in Felsted, England, the Markham kitchen features rectangular polished nickel handles, traditional joinery, and solid oak cupboard doors with a striking slat design. Paired with an engineered-stone counter top and backsplash, it creates a contemporary setting. The Markham island offers a generous prep surface and an overhang to accommodate seating.

humphreymunson.co.uk

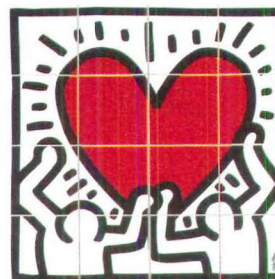
CIRCLE 171

CL.1

Dornbracht's CL.1 bathroom series includes a range of fittings and accessories for the sink, shower, tub, and bidet. The faucets feature flat, elongated spouts in a variety of heights in both deck-mounted and wall-mounted versions—with a spray face comprising 40 individual streams of water that flow at a rate of only 1.069 gallons per minute. Designed to be installed with other Dornbracht products, CL.1 faucets are available in polished chrome and platinum matte finishes, and four handle options, including two with textural surfaces.

dornbracht.com

CIRCLE 173



Game of Fifteen

Ascot Ceramiche's Game of Fifteen ceramic wall and floor tiles is a new collection dedicated to contemporary art. Kicking off with patterns honoring the iconic designs of pop artist Keith Haring, the playful series made its debut earlier this year at the Kips Bay Show House in a powder room designed by New York-based Gail Green. The tiles are available in 8" x 8" and 8" x 20" sizes exclusively through Hastings Tile & Bath.

hastingstilebath.com

CIRCLE 174



DuPont Corian Charging Surface

This innovative solid surfacing material is manufactured using a new technology that wirelessly charges mobile devices on counters or desktops in both residential and commercial applications. A transmitter hidden just below the surface transfers energy to a receiver within or attached to a smart device, such as a mobile phone or tablet. Nearly all smart devices can be charged with an optional charging ring from Duracell Powermat, but charging cases also are available.

Corian.com/PowerUp

CIRCLE 176

Solna Kitchen Faucet

This single-handle, articulating-arm kitchen faucet by Brizo is reminiscent of the classic Luxo task light with a flexible pull-down design. When the two-function spray wand is undocked, the user can freely move the wand to aim water in any direction in and around the sink. When docked, the wand stays securely in place with the manufacturer's patented MagneDock Technology system. Solna is available in polished chrome, matte black, and stainless steel (with a Brilliance PVD finish).

brizo.com

CIRCLE 175



Bosch 24" Glass Door Refrigerator

Bosch has extended its portfolio of kitchen appliances to respond to the growing trend toward small kitchens in homes across the country as well as the creative installation of appliances in ancillary spaces such as basements or media rooms. The manufacturer's new 24" Glass Door refrigerator is the only compact model available for the mid- to high-end market that features a glass door. Available in black, white, and clear tempered glass on stainless steel, the fridge is joined by a 24" Wall Oven with 10 cooking modes and a 24" Electric Cooktop and 24" Gas Cooktop for small spaces.

bosch-home.com/us

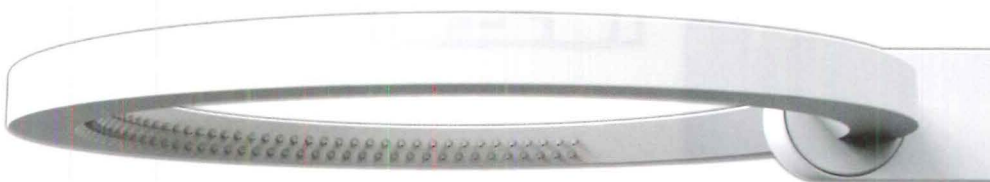
CIRCLE 178

Urban Collection

Urban is a new "city lifestyle-inspired" collection of kitchen furnishings from SieMatic. The freestanding SieMatic 29 kitchen sideboard, the collection's signature piece, is a tribute to the company's founding in 1929 and its early success with kitchen sideboards. SieMatic 29 has gently curved side panels and a black matte finish on its metal legs, railings, and power outlets. The freestanding units offer a range of color and material selections and can accommodate stovetops or sinks, while coordinating cabinets can be fitted with ovens, dishwashers, or refrigerators. Urban also includes tall, freestanding cabinets and base cabinets with open shelves, as well as a granite herb garden for kitchen islands.

siematic.com

CIRCLE 177



Ametis Ring

Created by designer Davide Oppizzi, Graff's Ametis Ring is a dual function showerhead that allows users to seamlessly switch between gentle flowing rain and waterfall settings. Ametis also integrates indirect lighting with a sixcolor spectrum using RGB LEDs within the shower ring, adding a new dimension. A special controller allows the user to select different moods or "chroma," depending on their inclination. The stainless steel fixture is available in chrome, black, and white.

graфф-faucets.com

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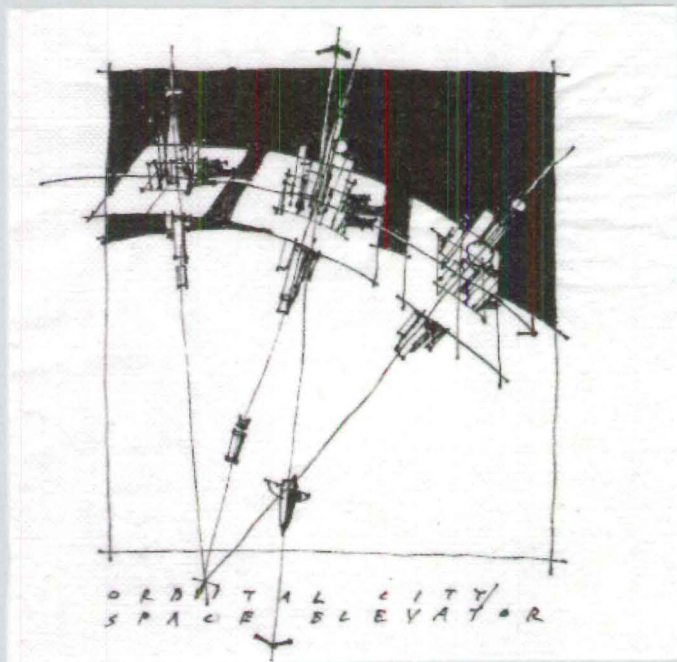
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ARCHITECTURAL RECORD Announces the Winners and the Runners-up of the

2015 COCKTAIL NAPKIN SKETCH CONTEST

The numerous entries to RECORD's Cocktail Napkin Sketch Contest, now in its sixth year, demonstrate the skill and passion of architects and related professionals. From students and interns to founders and presidents of firms, a diversity of participants submitted a plethora of cocktail napkins to the 2015 contest. After a thorough judging process, RECORD recognizes nine winners, including one firm.

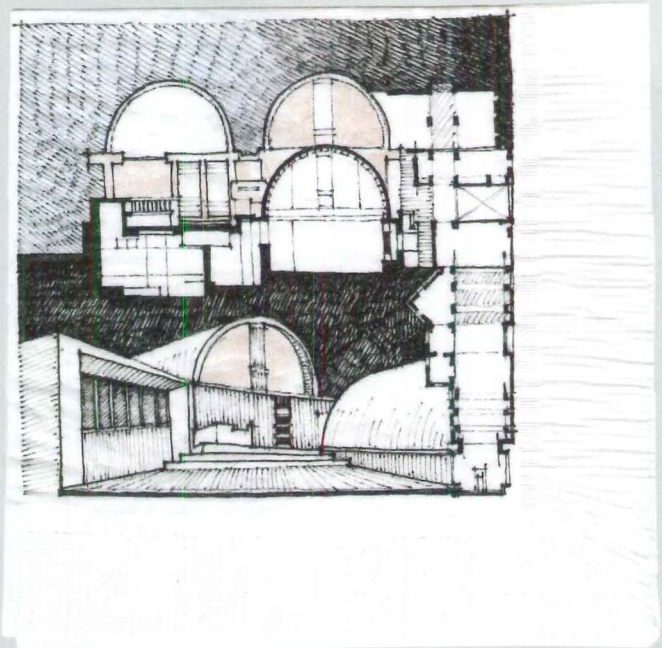
WINNER, REGISTERED ARCHITECT



SAMUEL RINGMAN, ARCHITECT AND ILLUSTRATOR, RINGMAN DESIGN + ILLUSTRATION, DALLAS, TX **ORBITAL CITY/SPACE ELEVATOR**

Samuel Ringman's sketch is just one of many the Dallas-based architect produces almost continuously. "I have stacks and stacks of sketchbooks and cocktail napkins with conceptual ideas like this one," he says. Ringman earned his master's in architecture at Texas A&M, working at HOK in Dallas before establishing his own firm dedicated to design and illustration. Some of his quick sketches—like "a tourist center at the edge of the known universe"—he goes on to develop into proper drawings, while many remain on a napkin. Even so, he says, "it's fun to constantly record ideas."

WINNER, NON-REGISTERED ARCHITECT



SUBHOJIT SINHA, SENIOR DESIGNER, CALLISON RTKL, DALLAS, TX **SANGATH, AHMEDABAD, INDIA**

Subhojit Sinha's sketch of Sangath, the work—and offices—of architect B.V. Doshi, stemmed from his appreciation for "Indian vernacular architecture in a more contemporary form." The Dallas-based RTKL senior designer visited the building, located in the state of Gujarat's largest city, Ahmedabad, during his undergraduate internship in India. "I really liked the building, and I had read about it a lot, but I wanted to experience it," he says. In Sinha's own practice, he says he's "inclined toward hand sketches—that's where I get a lot of my ideas. It's always my first step."



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RUNNERS-UP, REGISTERED

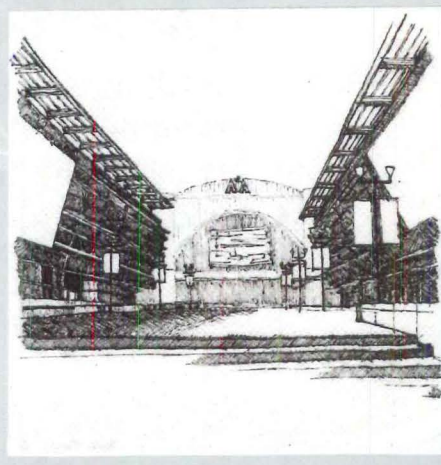


PETER C SUGAR, ARCHITECT, PETER C SUGAR ARCHITECT, LINCOLN, MA **RAVELLO**



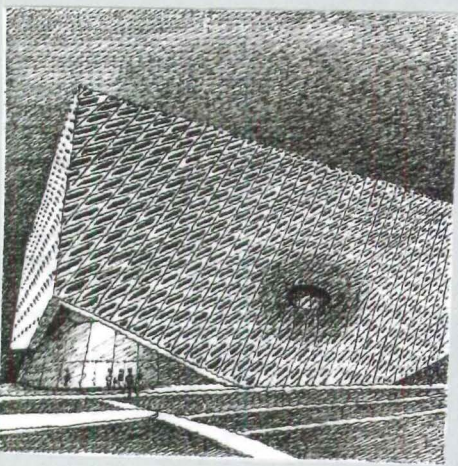
TREVOR JAMES LORD, SENIOR TECHNICAL DESIGNER/ SENIOR JOB CAPTAIN, HOFFMAN PLANNING, DESIGN & CONSTRUCTION, APPLETON, WI **LORD GOLDBERG**

BEST FIRM: GENSLER

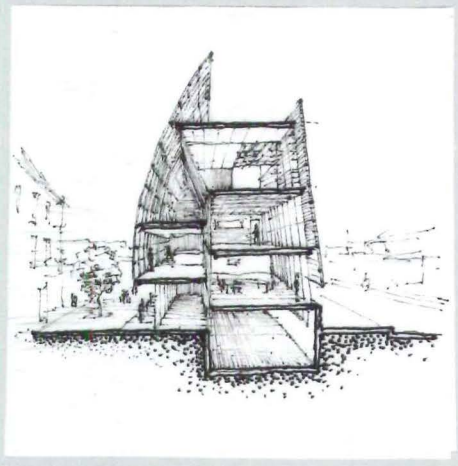


HOWIE CHIN, TECHNICAL DESIGNER, GENSLER, HOUSTON **VICTORY PARK**

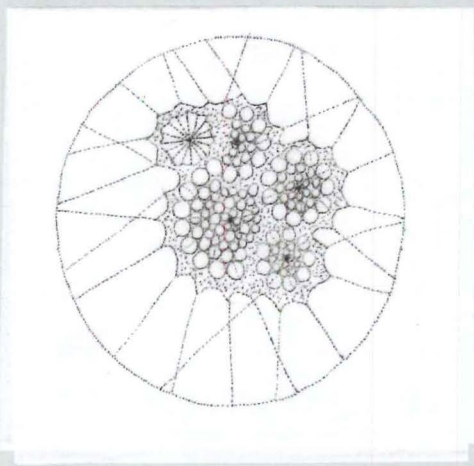
RUNNERS-UP, NON-REGISTERED



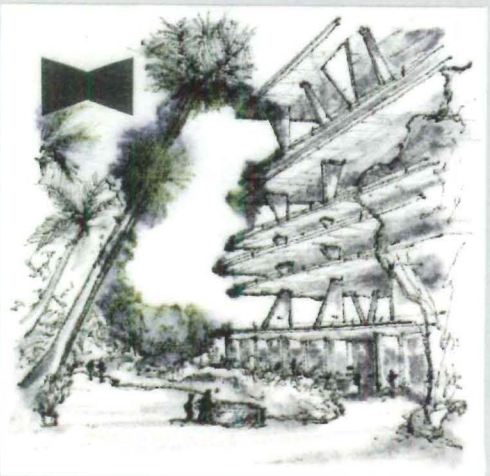
DANIEL SAUERBREY, ASSOCIATE VICE PRESIDENT, CALLISON RTKL, LOS ANGELES **THE BROAD VEIL ON GRAND**



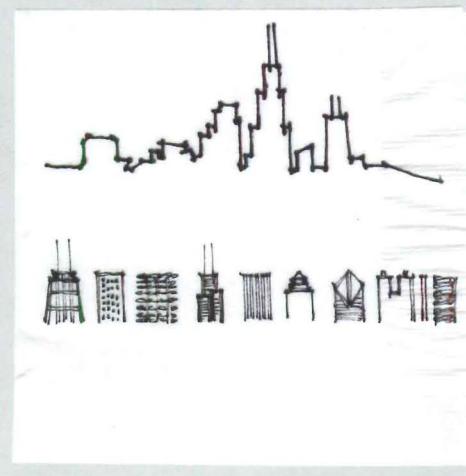
ENRIQUE RAMIREZ, ARCHITECTURAL INTERN, PARKHILL, SMITH & COOPER, MIDLAND, TX **STEPPED SECTION**



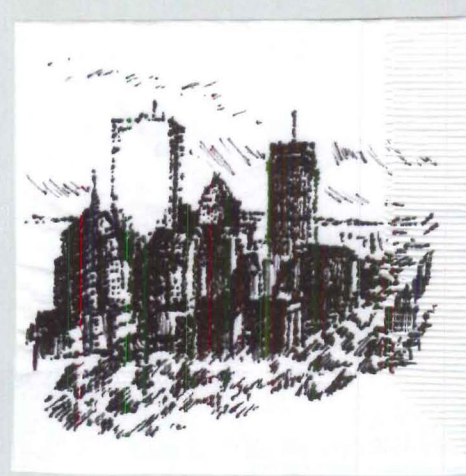
VINETA CLEGG, ARCHITECT, GENSLER, AUSTIN, TX **SPINNING A PLAN**



ALEC YUZHABENKO, ARCHITECTURAL INTERN, CLARK NEXSEN, VIRGINIA BEACH, VA **MIAMI CAR PARK**



LULU YANG, DESIGNER, FOSTER AND PARTNERS, CUPERTINO, CA **RECOMPOSITION**



KEITH LORANGER, ARCHITECT, GENSLER, BOSTON **SKYLINE FROM ONE BEACON**

L.A. Screenplay

An art museum lifts its perforated veil, revealing the repository for its vast holdings.

BY SARAH AMELAR

PHOTOGRAPHY BY IWAN BAAN

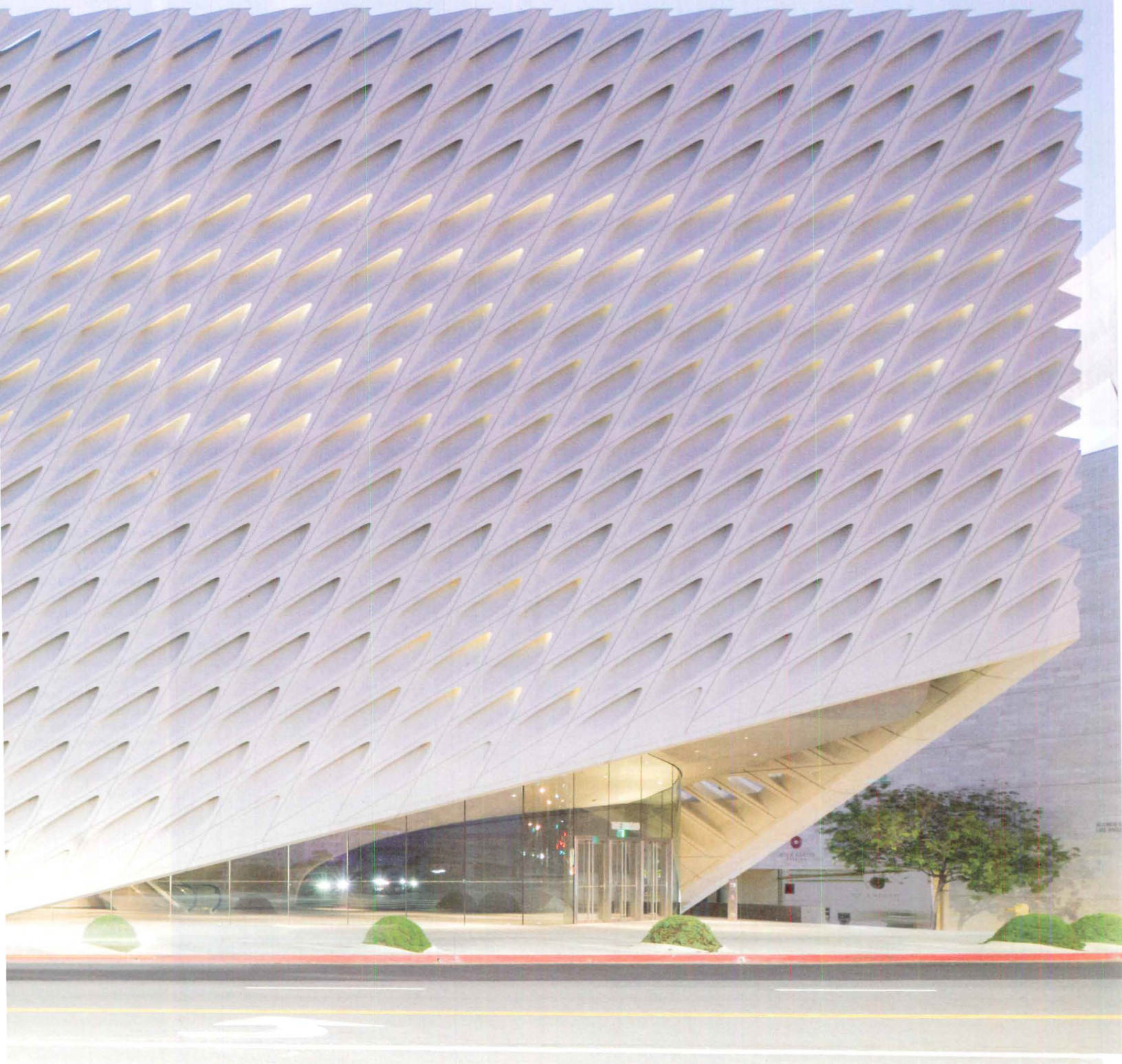
LOS ANGELES has a reputation for unabashed architectural eclecticism, and The Broad Museum, by Diller Scofidio + Renfro (DSR), next-door to Gehry's Disney Hall, is a radical example of such contrasts. While the iconic concert hall is sculpturally exuberant, metallic, and reflective, the museum is boxy, with a deeply perforated cementitious wrapper, almost a honeycomb, lifted at two corners for its entrances.

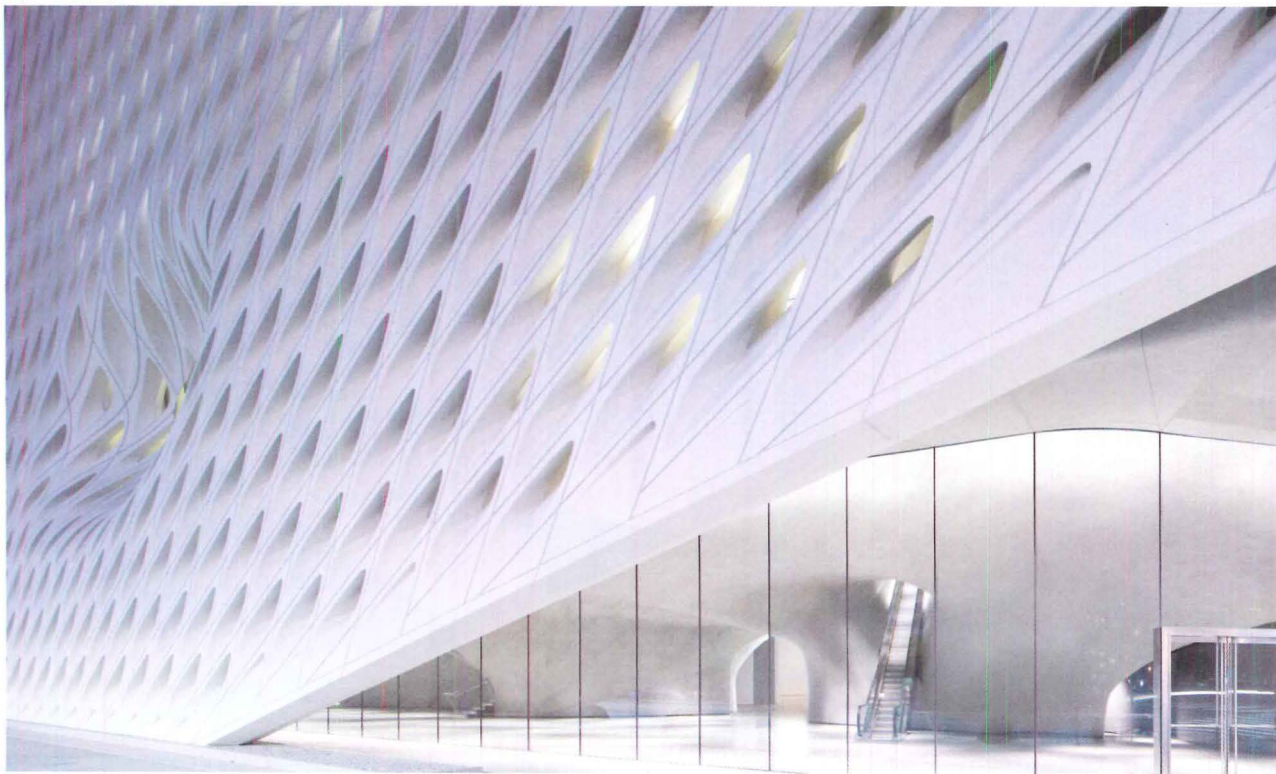
Inside, The Broad lobby is equally unexpected: dimly lit, gray—sculpted like massive rock formations. Though the facade forms a porous screen between streetscape and lobby, the space feels like a crypt or subterranean cavern.



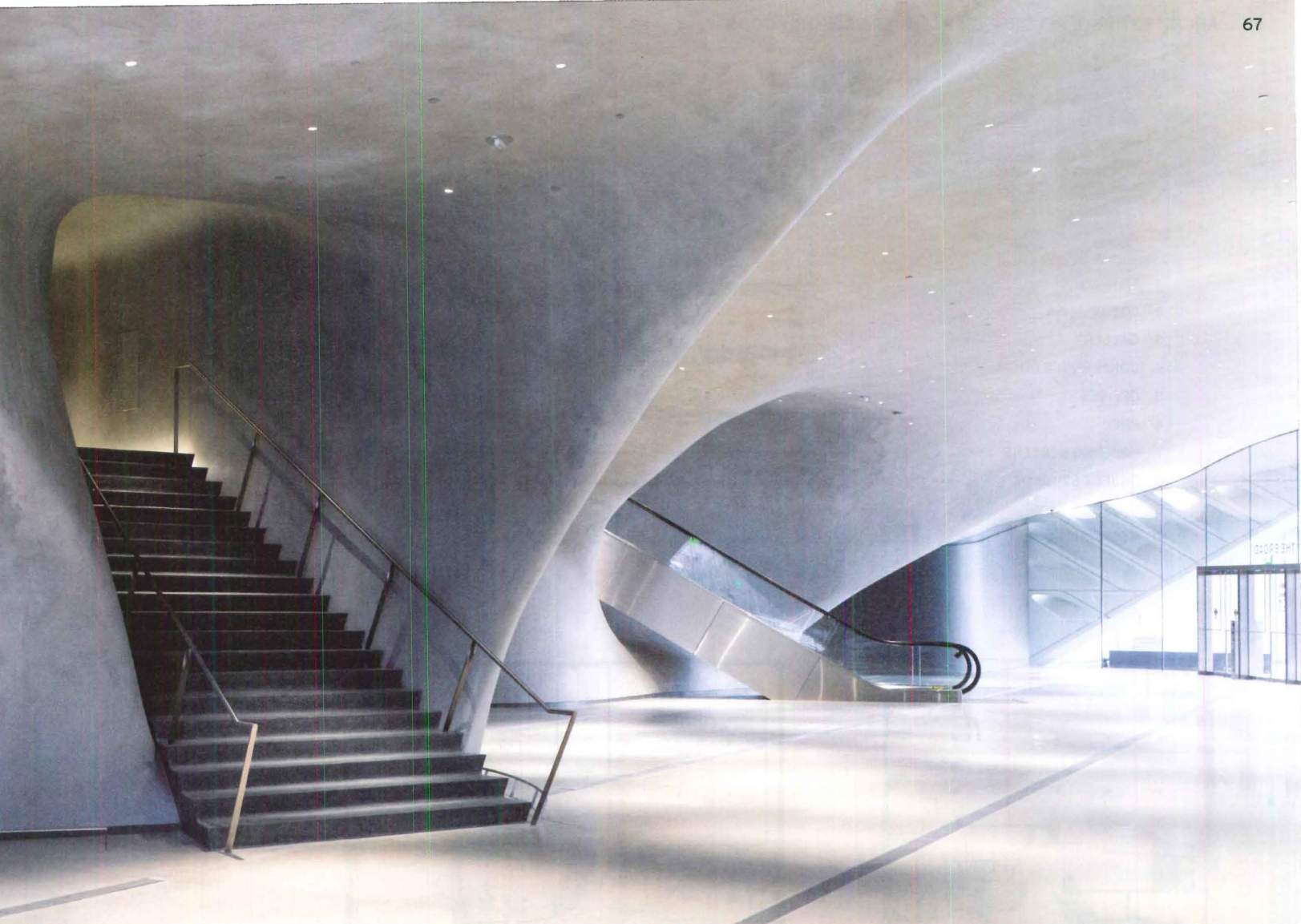
From the lobby, you board an extreme—105-foot-long—escalator that threads through a narrow sloped tunnel, resembling a shaft bored into boulders by the elements. Exciting yet incongruous, this straight shot up to the third-floor galleries recalls such improbable juxtapositions as the escalator in Perugia, Italy, rising to the city's upper precinct through archeological ruins, or the belief-suspending exhilaration of a theme-park ride. With decidedly greater ambition, The Broad is also built on narrative—and the ultimate expression of its metaphors embodies both its strengths and its shortcomings.

At the new Broad museum, a GFRC "veil" loosely wraps the "vault," an art archive at the building's core—playing porous against solid and an accessible public realm against a more private and impenetrable one.





Though the veil is entirely porous in front, its sides are only partially so (top, left), and its back is merely embossed. The outer screen's raised corners along Grand Avenue provide for entry into the sculptural—and dark—lobby (left). A stair and a 105-foot-long escalator (top, right) through the building's muscular “rock” (actually gray plaster) deliver visitors to the top level—tunneling through the vault, without actually entering it.



DSR won The Broad commission in 2010 with a compelling scheme. (It overtook OMA and Herzog & de Meuron, among others, in a private competition that left the final selection to client Eli Broad, the billionaire who'd already spent years developing designs, with star architects, for his museum's multiple potential sites.) For the coveted downtown parcel on Grand Avenue beside Disney Hall, DSR devised its vault-and-veil concept, envisioning the "vault" as a repository for the contemporary-art collection of Broad and his wife, Edythe—2,000 works, from Warhol to Murakami, that constitute a "lending library" to arts institutions. The "veil" would be a light-filtering exoskeleton, loosely wrapping the opaque vault, with public areas in between—including, atop the archive, a vast skylit gallery displaying selected works. "At first," Liz Diller recalls, "we found the brief paradoxical, with its unusually high storage-to-exhibition ratio and its great urban aspirations for a prominent site, paired with enormous emphasis on warehouse functions. Then we realized we could make the storage a visible asset at the building's core." It was a very clear diagram.

Visitors would experience the vault's sculptural and symbolic heft without actually entering it. And the exoskeleton allowed for a luminous, column-free, 35,000-square-foot gallery that, says Diller, "we envisioned as sublime."

But then came the challenge of translating the "honeymoon" concept, as she calls it, into reality—with seismic codes, engineering conundrums, soaring costs (ultimately reaching \$140 million for the 120,000-square-foot building), and a 15-month delay.

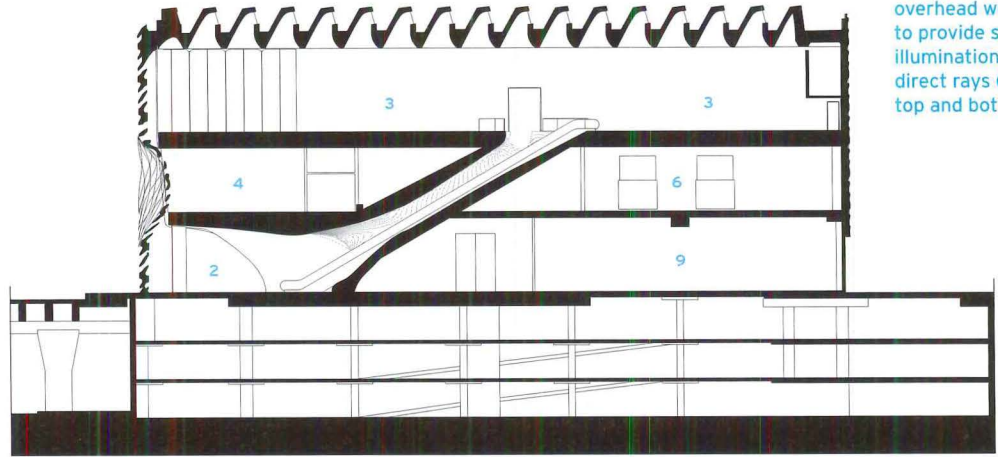
Finally, The Broad is opening on September 20. And whether you ascend by escalator or the Jetson-like cylindrical glass elevator that rises like a rocket in its silo, you land at nearly the same spot: in the midst of the crowning floor. And emerging from the darkened, tightly choreographed sequence—as you arrive beneath the daylight diagrid—is sublime.

"The journey focuses you," says Broad director Joanne Heyler, "preparing you to look at art." Yet the strong overhead diagonals—glazed 9-foot-deep light scoops, skewed 45 degrees and contoured for even, indirect illumination—are both dramatic and slightly distracting (complicated by track lights for nighttime viewing). And the vast "plaza" beneath a celestial ceiling seems eclipsed by partitions, the inevitable concession for hanging two-dimensional art.

Last February, when The Broad invited the public for previews, many found the veil, particularly its exterior, disappointing, nicknaming it "the cheese grater." Even with the understanding that buildings need to develop beyond seamless, glowing renderings, this critical element seemed

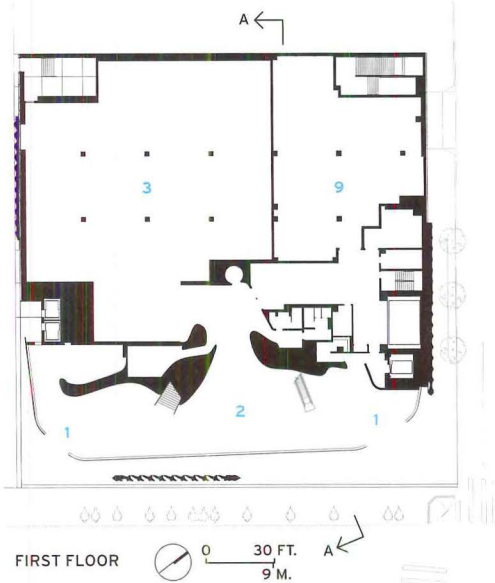
For the top-floor gallery, the contours of the 9-foot-deep light scoops overhead were devised to provide soft, even illumination, without direct rays (opposite, top and bottom).

- 1 ENTRANCE
- 2 LOBBY
- 3 GALLERY
- 4 CONFERENCE ROOM
- 5 OFFICES
- 6 PREP
- 7 PAINTING SCREENS
- 8 OBJECT STORAGE
- 9 STORAGE
- 10 MECHANICAL



SECTION A - A

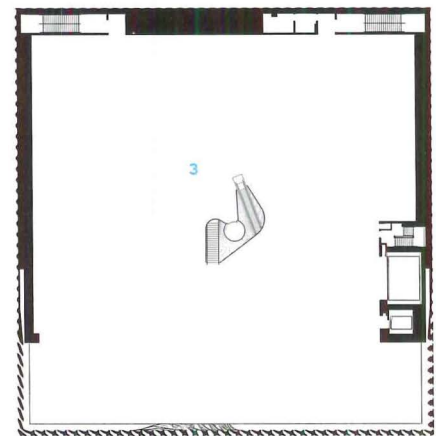
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9 M.



FIRST FLOOR



SECOND FLOOR



THIRD FLOOR

more rigid, repetitive, enclosed, and boxy than expected. With its rear facade embossed rather than perforated, and its sides only partially porous, it appeared value-engineered into submission.

In realizing the veil, DSR explored two options: cast concrete and concrete-clad steel. Early on, the team pursued cast concrete, but, Diller explains, meeting seismic code demanded “structural gymnastics,” with far more beefiness and steel than anticipated. And that option’s price tag was soaring, Heyler recalls. Worked on by multiple engineering firms and fabricators (with a lawsuit still pending for the delays), the veil ended up as a tubular steel web encased in hollow glass-fiber-reinforced-concrete (GFRC) panels. It also acquired a dominant joint grid that accentuates the cladding modules, detracting from the sculptural qualities and, arguably, cheapening the appearance. (Compare DMJM’s deft joints in Los Angeles’s 1964 American Concrete Building.)

A welcome deflection is the monumental dimple, midway up The Broad’s front facade, marking the only publicly accessible second-floor space (in a vault otherwise dedicated to storage and administration). This palpable intrusion into a lecture hall is a powerful scale play (but

also another stage set: a hollow fiberglass bulge against the glazing, masquerading as exterior veil penetrating from outside).

A slow, orchestrated, dimly lit descent winds from the top floor to the lobby, with access to the lecture hall and, finally, token glimpses into the illuminated vault. It’s a remarkable, if idiosyncratic, trove—and The Broad’s position directly across the street from MOCA brings together a phenomenal concentration of art within a short stretch.

The competition brief called for strong connections to that streetscape, and The Broad—with its lobby at grade and no admission fee—conceptually extends the sidewalk inside. Yet the museum seems oddly introverted, its skin less than convincing as an inviting, permeable screen. Veils can be contradictory—open and closed, revealing yet enveloping—and here, it seems more barrier than filter.

Once you exit, there’s a feeling akin to stepping out of a cinema at midday. Of course—as with movies—you’ve just passed from near-darkness into a luminous place of escapism and back, transported by narrative devices, however illusory, before re-emerging into the light of day. ■



credits

ARCHITECT: Diller Scofidio + Renfro – Elizabeth Diller, principal in charge; Ricardo Scofidio, Charles Renfro, principal designers; Kevin Rice, project director; Andrea Schelly, project manager; Matthew Ostrow, project designer; Michael Hundsnurscher, project architect; Robert Donnelly, competition project manager; Zoe Small, plaza project manager; Zachary Cooley, interiors project designer

EXECUTIVE ARCHITECT: Gensler

CONSULTANTS: Nabih Youssef and Associates, Leslie E. Robertson Associates (structural engineers); Hood Design (landscape)

SIZE: 116,000 square feet

COST: \$140 million

COMPLETION DATE: September 2015

SOURCES

GFRC CLADDING: Seele/Willis Construction

METAL PANELS: Pohl

METAL/GLASS CURTAIN WALL:

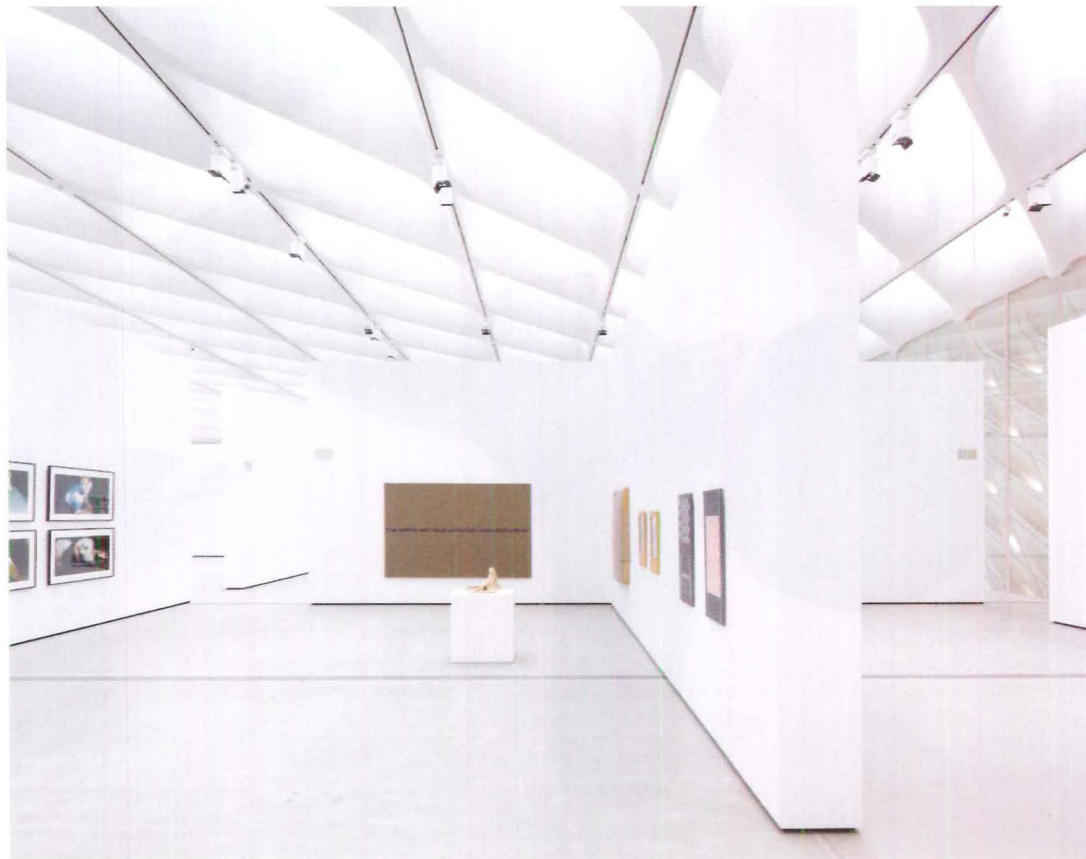
Seele, Walters & Wolf

MOISTURE BARRIER: Grace

EXTERIOR PLASTER: Parex

BUILT-UP ROOFING: Sarnafil

ESCALATORS/ELEVATORS: Mitsubishi/Kone



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CITADEL OF STYLE

The New York Edition hotel revitalizes an historic skyscraper with an interior that glamorously fuses past and present.

BY SUZANNE STEPHENS

PHOTOGRAPHY BY NIKOLAS KOENIG

Since entrepreneur Ian Schrager opened the minimal-modern boutique hotel Morgans, in New York, in 1984, his slightly eccentric caravanseries have proved successful with a cosmopolitan crowd who spurn the conventional accommodations of U.S. hotel chains. So it was quite surprising when in 2007 Schrager began a partnership with the chain of chains Marriott International to create a global cluster of “modern luxury” Edition hotels. The first opened in Waikiki, Hawaii, in 2010, and then came more Editions in Istanbul, London, and Miami Beach before arriving this spring in New York. Aiming for an “understated timeless aesthetic,” Ian Schrager Company enlisted the Rockwell Group to help with the interior design of the first Edition in Manhattan.

The gimlet-eyed among us might remark that Marriott is to “luxury” what David Rockwell is to “understated”: the Rockwell Group is known for colorful, jazzy environments such as New York’s Tao Downtown restaurant, not to mention the steam-punkish stage set for the Broadway musical *Kinky Boots* and the bodacious backdrop for *Hair Spray*. Rockwell affably responds that he has designed a number of

SOOTHINGLY SEDUCTIVE

In the hotel lounge, soft colors with a blackened-steel recessed fireplace wall framed by white oak dramatize the rear sitting area. Alvar Aalto chairs and a Corbusian spiral stair evoke classic modern roots. The bar area (opposite) features a deep-gold backlit vitrine.





SPLIT-LEVEL
The main hotel entrance off 24th Street (right) occurs on the same level as the original elevator core, and is clad in creamy cast concrete with off-white beams of glass-fiber-reinforced concrete. Like the reception area, the lounge (left) is elevated by a few steps and has a more residential identity.

muted interiors. Hmm. Yes, there is the natural-wood-and-white Yotel near Times Square. For his part, Schragger says he likes the architect not only because of his professionalism, but “because he can voice an opinion on the right color.” Even if the colors veer wildly from crème to caramel.

For this particular venture into the high end, Marriott took over one of the lesser-known architectural treasures of New York, the old Metropolitan Life Insurance Company Tower (now known as the Clocktower) on the east side of Madison Square Park, at Madison Avenue and 24th Street. The 700-foot-high skyscraper, completed in 1909 by Napoleon Le Brun & Sons, was the tallest in the city until the 792-foot-high Woolworth Building came along in 1913. It was the grandest addition to the Metropolitan Life complex, which the architects had begun in 1893, filling out a city

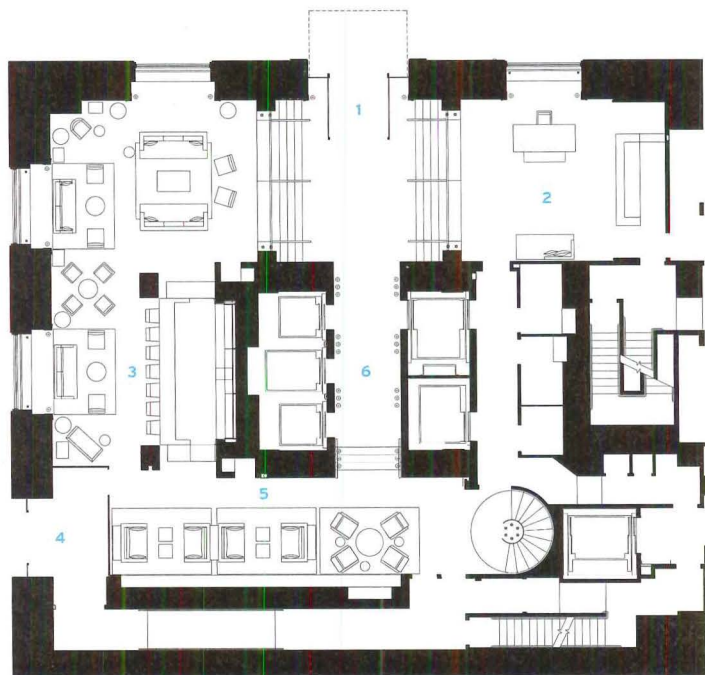
block for the insurance company. The steel-framed campanile evokes the famous bell tower for St. Mark’s Basilica in Venice, but bearing large clocks on its four sides. Meanwhile, the neighborhood, once dominated by office buildings, banks, and a state court house, is now pulsing with restaurants, new apartment houses, and upgraded hotels for the young-money set.

In order for Schragger and Rockwell to successfully turn the 41-story structure into a hotel, they had to insert the requisite public spaces—lobby, reception, restaurant, and bar, plus health club and spa—into the small base, 75 by 85 feet, with a thick elevator core. As Schragger puts it, “It was like dealing with a Rubik’s Cube but at a greater scale.”

On top of that, it seemed a better fit for the the main entrance to be placed on 24th Street rather than Madison Avenue, even though







GROUND FLOOR LOBBY

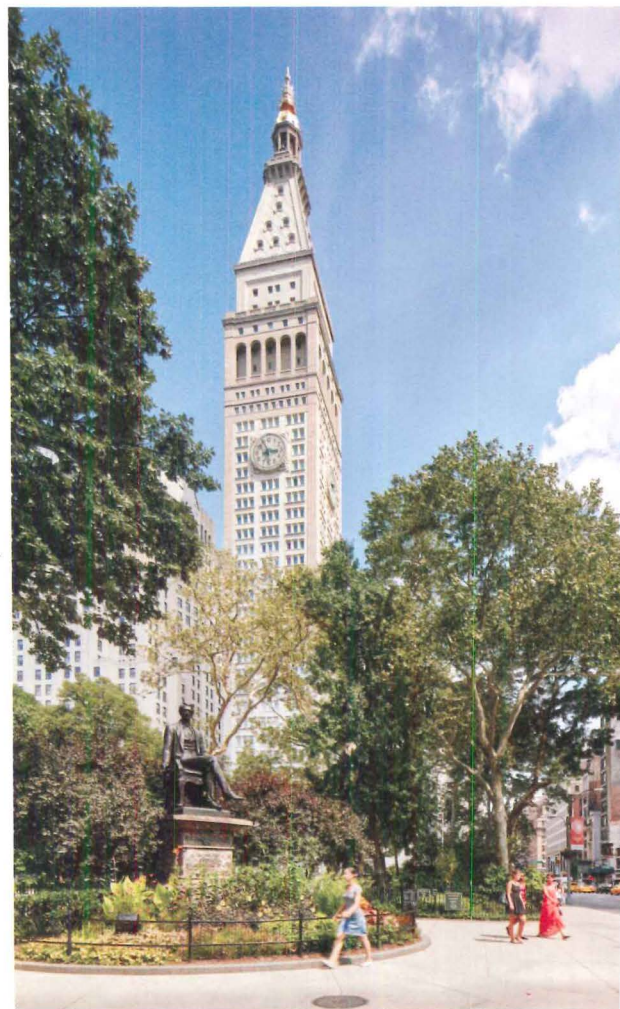


- | | | |
|----------------------------------|--------------------------|------------------|
| 1 HOTEL ENTRANCE | 3 BAR/LOUNGE | 5 GALLERY/LOUNGE |
| 2 LOBBY (CHECK-IN/
CONCIERGE) | 4 RESTAURANT
ENTRANCE | 6 ELEVATOR LOBBY |



TYPICAL FLOOR PLAN

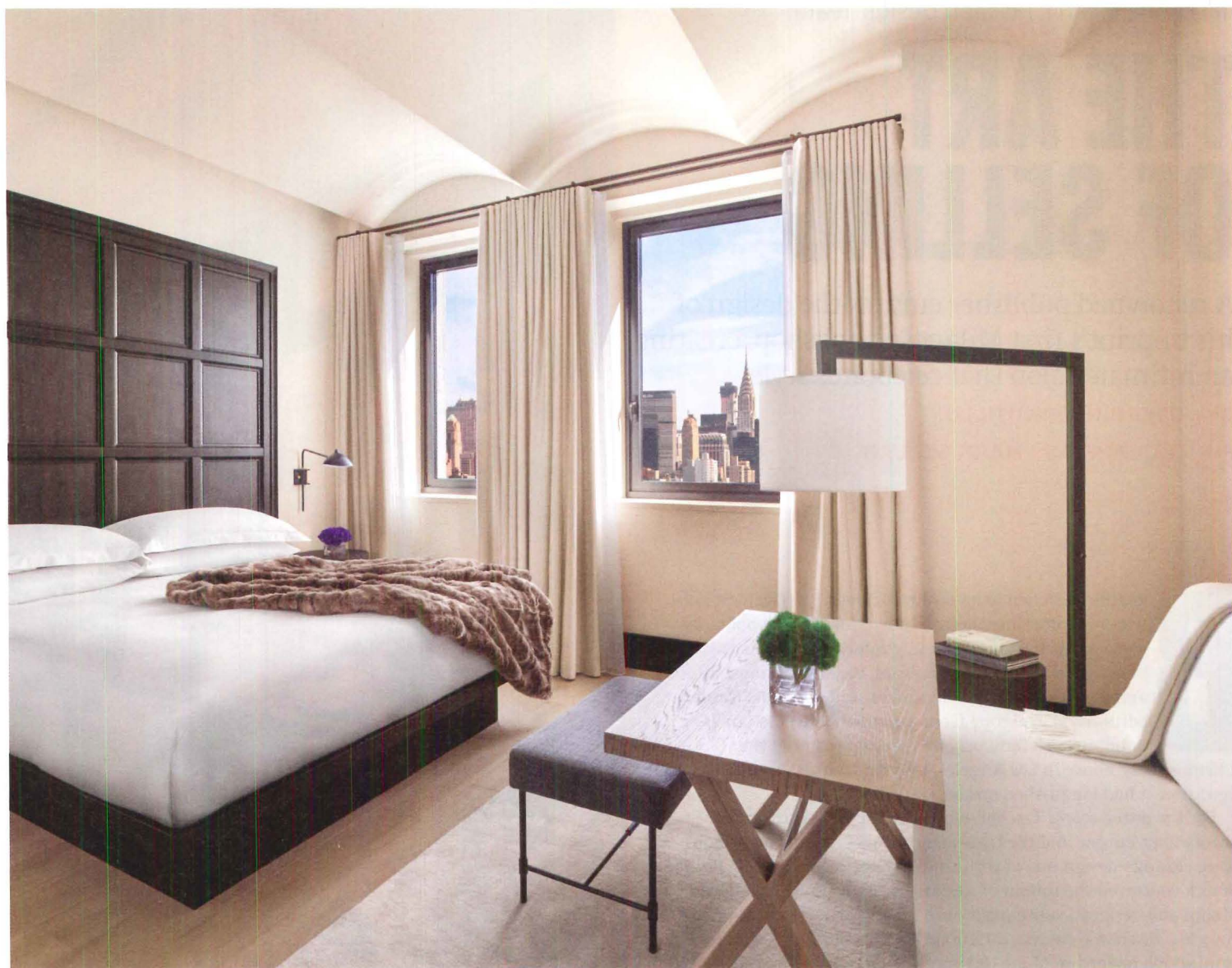
- | |
|------------------|
| 1 STANDARD KING |
| 2 LOFT SUITE |
| 3 ELEVATOR LOBBY |



CITY CAMPANILE The Clocktower (above) housing the Edition was designed by Napoleon Le Brun & Sons in 1909 as the Metropolitan Life Insurance Company Tower, facing Madison Square Park. Guest rooms (opposite) combine a traditional and modern aesthetic using dark walnut headboards and plastered barrel vaults balanced by clean lines and shades of white.

access at grade is flanked by existing elevated lobby areas. As you enter, you ascend several steps to the reception desk on the east or the lounge on the west, or walk straight ahead (no steps) to the elevator bank. The look of the lobby, lounge, and reception is 1930s–40s art moderne, with the tall silk draperies and smoothly shaped tables and lamps designed by the Parisian designer Christian Liaigre, and with chairs by Alvar Aalto and other pieces inspired by Jean Michel Frank. The serene color scheme varies from silver, bronze, taupe, and charcoal, to vivid gold (for the backlit vitrine behind the bar). The streamlined style is given a Corbusian twist with a spiraling ivory-hued steel-plate stair in one end of the rear lobby. Here you also find a 30-foot-long recessed blackened-steel fireplace wall edging the sitting area.

Since the ground floor had been extensively remodeled in the 1960s, there was little to restore. The Rockwell Group tried to keep a sense of the shell by



installing sand-colored cast-concrete floor tile and window moldings within the 14-foot-high spaces where ceilings are articulated by off-white beams of glass-fiber-reinforced concrete. These, along with cream-colored Venetian plaster walls infuse the setting with an assured sense of swank.

The Clocktower restaurant and its three dining rooms, a bar, and a billiard room, with outside access on Madison Avenue, occupy the second floor in the former executive offices. Here landmarked rooms, replete with restored mahogany wainscoting, oak floors, and deeply molded plaster ceilings provide dark, clubby spaces for the soigné clientele.

The guest rooms, 273 in all, with a color scheme based on shades of white, have new oak-paneled foyers and floors and dark walnut headboards. They impart a sense of the old (including existing shallow barrel-vaulted ceilings now painted and plastered), and the new that Schrager and Rockwell meant to—and did—achieve. The ambience that results, to quote Baudelaire in describing a place a traveler hopes to find, appears to be one of *luxe, calme, and volupté*. ■

credits

INTERIOR DESIGNER: Rockwell Group – David Rockwell, president; Shawn Sullivan, partner; Jae Chang, project manager; Saerom Moon, interior designer; Ashley Yoon, designer.
Ian Schrager Company – Ian Schrager, president; Michael Overington, partner; Paul Haslhofer and Kirstin Bailey, design directors; Robert Ashton, managing director

ARCHITECT OF RECORD: AAI Architects
ENGINEER: DeSimone Consulting Engineers (structural); ADS Engineers (m/e/p)

CONSULTANTS: Isometrix Lighting Design (lighting); Fisher Marantz Stone (exterior lighting); WALD Studio (lighting); CTS Group Architecture/Planning (restoration, second floor)

SOURCES

CONCRETE FLOOR TILES: ConcreteWorks East

STEEL SPIRAL STAIR/GLASS WINDOWS DOORS, FIREPLACE WALL: Empire Architectural Metal & Glass Corp.

FIREPLACE INSERT: Hearth Cabinet

LOBBY FURNISHINGS: Christian Liaigre (concierge desk, floor lamps, silk draperies); Artek (Alvar Aalto chairs)

Taschen | Milan | Taschen Design Team

THE ART OF SELLING

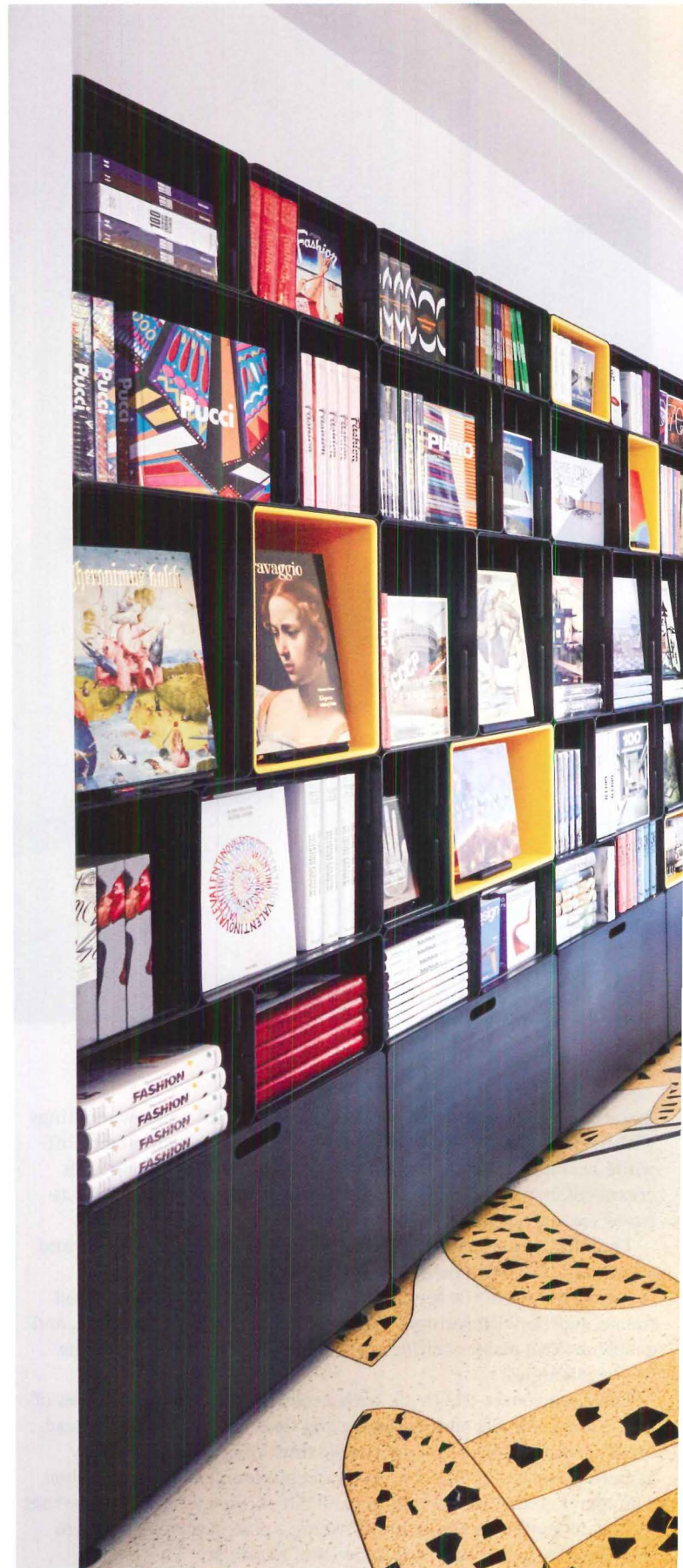
A renowned publisher curates the design of his imprint's first Milanese bookshop, creating an intimate salon that celebrates style.

BY JOSEPHINE MINUTILLO

PHOTOGRAPHY BY MARK SEELAN

Benedikt Taschen loves design. Though the German publisher is sometimes better known for “sexy” books—as some of his titles are cheekily referred to—he is the force behind scores of monographs on the world’s most famous architects and fashion designers, and gorgeous limited editions on everyone from artist Ai Weiwei to James Bond. He also famously bought and restored the Chemosphere house in Los Angeles, by John Lautner, nearly 20 years ago, after it had languished on the market.

For the dozen stores Taschen built over the last two decades throughout Europe and the U.S.—at a time when many bookshops were closing—design was of the utmost importance. In 2000, Philippe Starck conceived the rollout of several Taschen stores from Berlin to Miami and designed subsequent outposts in Paris, New York, and Los Angeles. Taschen went in a different direction for the newest location, which opened in Milan during the city’s annual furniture fair and design week in April. “My father is a big fan and collector of Italian midcentury design, especially the work of Gio Ponti,” explains





DESIGN HUB

Located in a historic building, Taschen Milan (opposite) is as much a gallery as a bookshop (this page), outfitted with custom furnishings and architectural details, as well as vintage pieces from publisher Benedikt Taschen's collection.



Marlene Taschen, director of business development, who, together with Benedikt, took a creative lead in building out the new store in the heart of Italy's design capital.

Benedikt had wanted to open a store in Milan for some time. Finding the right spot, however, proved difficult, until they came upon a space once occupied by a cosmetics store in the Cinque Vie district—the oldest part of Milan. “It is a fantastic location,” says Marlene. “It is a real neighborhood, inhabited by locals and venerable establishments.”

Working with the company's Dresden-based architect, Andreas Spiess, the Taschens spread the shop over the first two levels of the historic building. The 1,290-square-foot space celebrates the work of several designers, resulting in what Marlene describes as “a nice mix of influences, with a special homage to the genius of Italian design.”

That mix is immediately apparent upon entering, and blends in a strikingly harmonious way. Australian designer Marc Newson created a custom modular steel shelving system with bright yellow resin inlays that lines

LITERARY STYLE

A large Gio Ponti ceiling fixture hovers above an Angelo Mangiarotti table, custom case goods by Marc Newson, and a bold terrazzo floor by Jonas Wood on the ground floor (opposite, left). A comfortably appointed reading nook engages patrons at the back of the shop (opposite, right), where there is a Ponti-inspired stair, designed by Salvatore Licitra, to a second floor gallery.





the walls and lends an industrial aesthetic, while a vibrant floral design by California artist Jonas Wood for the terrazzo flooring throughout the store provides an immersive tropical undercurrent. "The shelves are a flexible and practical way of displaying books that can be adapted to other stores and assembled in different ways," says Spiess, internal architect of the Taschen stores since 2003. He was responsible for the overall layout, which includes storage and offices in the basement, and preservation of the landmarked facade.

The terrazzo floor, on the other hand, relied on traditional craftsmanship and age-old techniques. Wood sent sketches to an artisan in Rome who prepared the full-scale pieces in his workshop and then laid them out on-site using a styrofoam grid. The floor is finished off with polished brass borders to separate the foliage elements.

The centerpiece of the long, narrow ground-floor space is a large, round chandelier designed by Gio Ponti in the 1950s for the Hotel Parco dei Principi on Italy's Amalfi Coast. Below it, a long table by Angelo



Mangiarotti divides the space and offers an array of additional books for display. Ponti's grandson, Salvatore Licitra, who, along with Alberto Stampanoni Bassi, has maintained Ponti's archives, designed the multi-colored Venetian terrazzo staircase, including a Ponti-style brass banister, and wood furniture on the ground floor.

An elegantly appointed alcove, intended as a quiet reading area, is tucked discreetly at the back of the ground floor. A sinuous wall drawing, by the London-based design consultancy Graphic Thought Facility, begins here and spirals along Licitra's stair toward the upper level, where a collectors' lounge, showcasing special editions, and a gallery for temporary exhibits are located. (The inaugural exhibit features the architectural photography of Julius Shulman.)

Wood continues the floral motif for the terrazzo on the second level, though its black background offers a stark juxtaposition with the light-colored floor below. Newson, with whom Taschen first collaborated on a limited-edition monograph in 2012, designed large glass-top

cabinets for this level to showcase the publisher's extra-large collector's editions. Pieces from Benedikt Taschen's personal collection, including Gio Ponti's cowhide Dezza chairs and a colorful 1954 lamp by Flavio Poli, furnish and illuminate the space.

Taschen has a unique ability to look back as much as he can look forward, in both his business and personal choices, seeing opportunities where others do not. The new store is equally a celebration of the past greatness of Italian design, forever linked to the city of Milan, and a joyful embrace of the global influences that shape the world of design today. ■

credits

DESIGN TEAM: Taschen – Andreas Spiess, project architect

LOCAL ARCHITECTS: Salvatore Licitra; Alberto Stambanoni Bassi

CONSULTANTS: Marc Newson (modular shelving and display units); Jonas Wood (terrazzo flooring)

CLIENT: Taschen

SIZE: 1,300 square feet

COST: withheld

COMPLETION DATE: April 2015

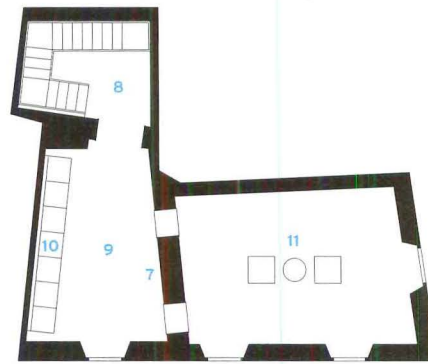
SOURCES

WALLCOVERING: Hare & Humphreys (manufacture); Graphic Thought Facility (design)

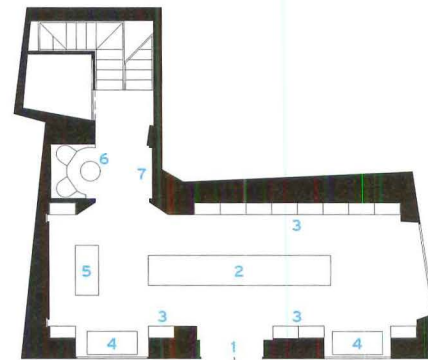
FLOORING: Officina Alviti (Jonas Wood terrazzo design)

GIO PONTI FURNITURE: Poltrona Frau (chairs); Molteni (small round table)

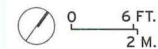
EXTERIOR PLANTERS: Borromeo & De Silva



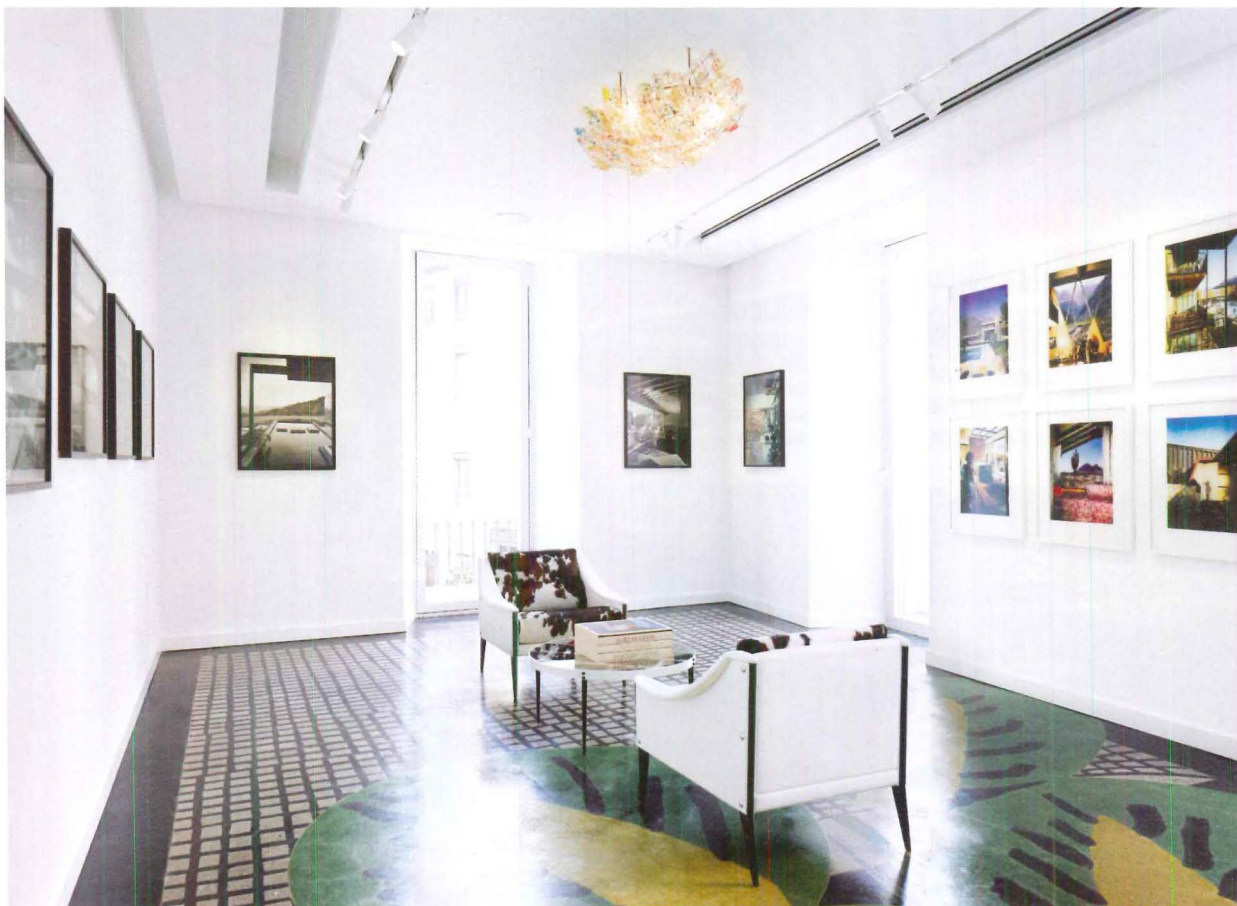
SECOND FLOOR



GROUND FLOOR



- 1 ENTRANCE
- 2 MANGIAROTTI TABLE
- 3 CUBE MODULES
- 4 TRADE TABLES WITH CASTERS
- 5 CASHIER
- 6 SEATING AREA
- 7 DISPLAY
- 8 SECOND LEVEL LOBBY
- 9 COLLECTORS' LOUNGE
- 10 COLLECTOR'S-EDITIONS TABLES
- 11 GALLERY



A VISUAL FEAST
Glass-topped storage/display units in the second-floor gallery showcase Taschen's collector's editions (opposite, left). Here, Wood's terrazzo floor turns dark, providing a rich tropical base from the collectors' lounge (opposite, right), into the gallery (left), furnished with seating by Ponti.

Bloomberg Tech Hub
San Francisco | IwamotoScott

MARKET DRIVEN

A financial powerhouse
employs architecture and craft
to dramatize its technology.

BY LYDIA LEE





In San Francisco, the latest tech office has the cultural prominence a lavish restaurant or fancy boutique would elsewhere. As the battle to entice technical talent continues, designers strive to outdo the competition with their imaginative environments. One of the latest entries is the Bloomberg Tech Hub, designed by the San Francisco-based firm IwamotoScott. The 20,000-square-foot space houses the financial-technology and media company's West Coast research-and-development and venture-capital groups, envisioned for a staff of 100. The design eschews the DIY hacker vibe that is common to many other tech offices for pure architectural drama, incorporating a faceted tank of stingrays and a sculpted wood screen, as well as refined details like door handles wrapped in black leather.

Bloomberg's in-house design group shared IwamotoScott's aesthetic sense, and the project is the result of a series of intense charettes and shared convictions. "We liked IwamotoScott because they are immersed in the digital technology world but also in the tactile qualities of materials and how things are assembled, which was equally important for us," says Emanuela Frattini Magnusson, global head of design for Bloomberg.



A DIFFERENT PERSPECTIVE

An overhead screen of diagonal beams creates a dynamic canopy within the stripped-down historic shell (opposite). The architects were inspired by the external chevron pattern visible through the windows (above), adding their own twist to the Art Deco embellishments of the landmark 1925 Pacific Telephone Building (left).



The architects had good bones to work with. The Bloomberg office occupies the 22nd and 23rd floors of one of the handsomest buildings in San Francisco, the Pacific Telephone Building, in the South of Market neighborhood. Built in 1925, the ornate Art Deco structure was designed by notable local architect Timothy Pflueger with an L-shaped floor plan that is optimized for daylighting and views rather than space.

It was an easy decision to expose the building's industrial shell of concrete and brick on the inside. The design team inserted materials with their own strong qualities—blackened steel, glass, and white oak—and was careful to hide infrastructure. “Our design is spatial rather than tectonic,” says principal Lisa Iwamoto, contrasting the firm’s approach to an architectural philosophy that calls for exposing all the nuts and bolts.





THINK TANK
Among the alternative workspaces is a quiet room with lounge seating (above). Visitors are greeted by a high-tech video projection over a faceted aquarium inhabited by stingrays (opposite). The aquarium, a signature element of Bloomberg offices, can be viewed from the upper level through an opening in the floor (opposite, top).

“We have a steel volume that is floating in the air,” she points out, referring to what the design team dubbed the Light Volume, a sculptural installation on the 22nd-floor ceiling comprising a hollow multifaceted structure that frames a 12-foot-wide opening between the two floors. The original plan called for an open stair in that spot between the two floors, but when the building’s existing stair was deemed sufficient, the architects created a volume lined with LCD screens that display dynamic lines of light in abstract patterns, reflecting real-time market activity. It is suspended above a diamond-shaped tank inhabited by two stingrays. Rising up on the floor above, the non-orthogonal form provides a railing-cum-counter, allowing people to work and peer down at Vladimir and Beyoncé swimming silently below.

Back on the 22nd floor, the blackened-steel-plate Light Volume is counterposed with fine-grained, rift-sawn white oak, used to create a dramatic ceiling screen that defines the café area and staff pantry. The architects wanted to

create a contemporary pattern that references the building’s elaborate ornamentation, the chevron lattice of glazed ceramic tile in particular, which partially screens the windows on that level. The wood ceiling screen’s precise angles clearly originated on a computer, each of its 42 beams custom-milled with a slightly different taper. The pantry below is outfitted with such custom features as an entire island devoted to the requisite industrial-quality espresso machine and illuminated drawers that showcase a vast array of snacks, such as organic peanut-butter cups and chia-seed bars, as prominently as if in a gourmet supermarket.

Bloomberg was an early champion of the open-plan office, and the Tech Hub is very au courant with its variety of work areas, including benching systems with adjustable-height desks, group tables, and acoustic-felt-lined booths. A large “quiet room” on the upper level has a distinctly residential ambience, with upholstered sofas and chairs. Decorated with molecular models and other scien-



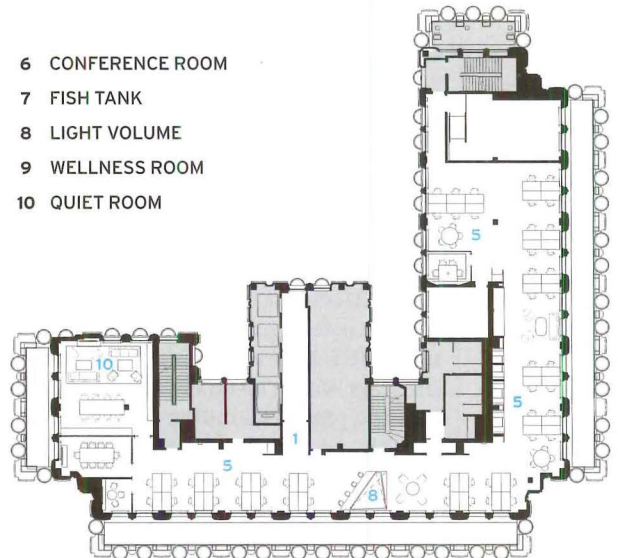
OPEN-DOOR POLICY
 Glass-walled conference rooms feature steel doorframes, wood doors, and overscale 6-foot handles wrapped in black leather (right). The data tray system overhead is nearly as imposing as the neighboring HVAC ductwork. Booths lined with layers of acoustic felt, overlapped like shiplap siding, have become popular places to work (opposite).

- 1 ENTRANCE
- 2 RECEPTION
- 3 LOUNGE
- 4 PANTRY
- 5 OPEN OFFICE

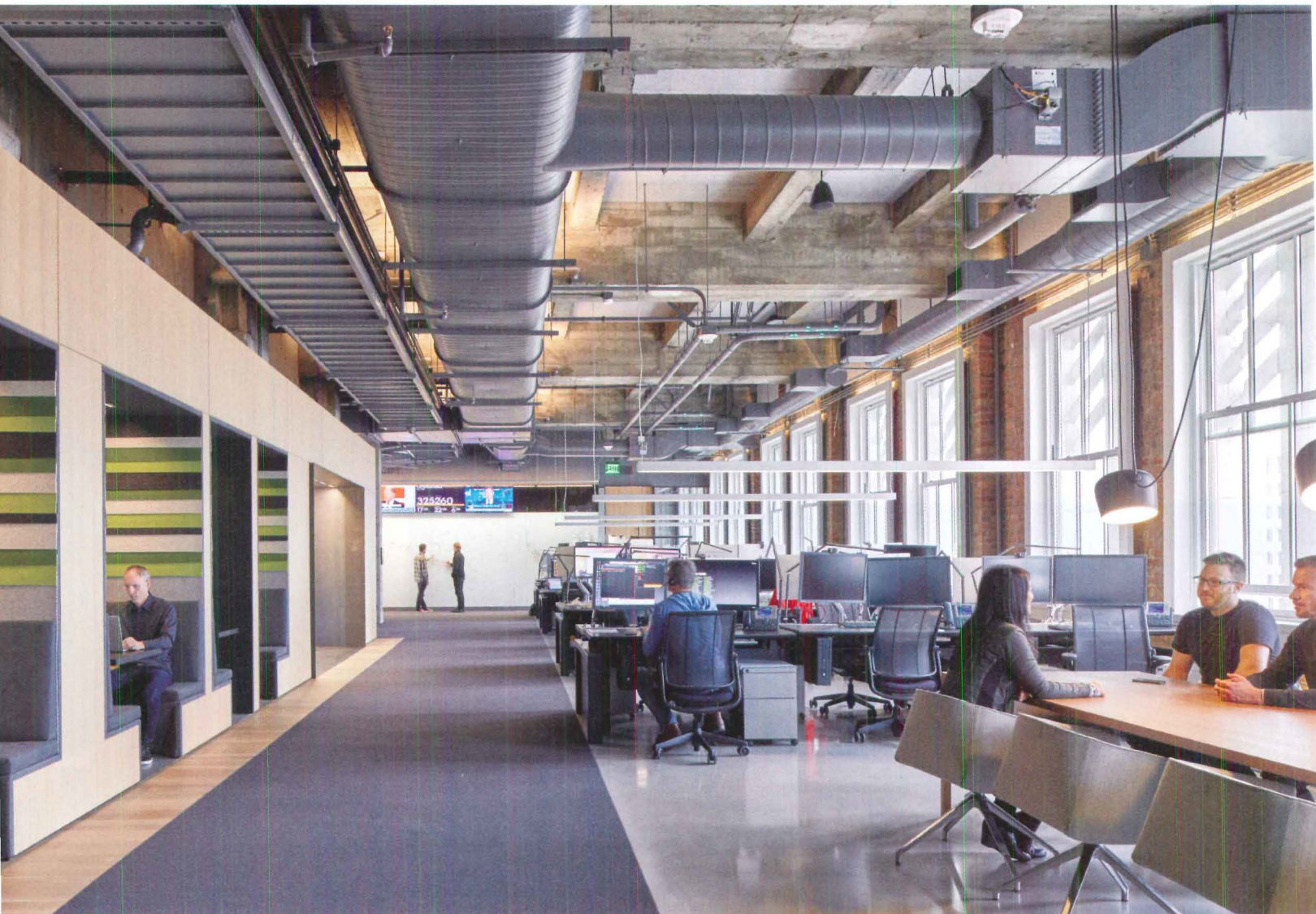


LEVEL ONE FLOOR PLAN

- 6 CONFERENCE ROOM
- 7 FISH TANK
- 8 LIGHT VOLUME
- 9 WELLNESS ROOM
- 10 QUIET ROOM



LEVEL TWO FLOOR PLAN



tific curiosities, this living room is about as close as this office gets to hipster chic.

The communal areas are supplemented with glassed-in conference rooms of different sizes. Their white millwork is a nod to Bloomberg's other offices, which emphasize sleek white finishes. Along one corridor, panels of glass back-painted white—the fancy version of whiteboards—are available for impromptu brainstorming. Interestingly, the circulation routes are carpeted, while work areas have a hard cementitious coating: the architects decided to do this because they wanted to minimize the clatter of people walking through the open office. The carefully considered lighting deserves a particular shout-out and includes such attention-grabbing fixtures as the Vibia Wireflow, Stickbulb Sky Bang, and a trio of Flos Aim pendants.

Unlike most tech offices—and other Bloomberg offices, for that matter—the San Francisco Tech Hub largely forgoes bright colors in favor of sober neutrals. Even sandy-hued Vladimir and Beyoncé don't deviate from this rigorous palette. "This is a sophisticated space for a sophisticated client," says Iwamoto. ■

credits

ARCHITECT: IwamotoScott Architecture – Lisa Iwamoto, Craig Scott, principals in charge; Pierre Barral, project manager; Sean Canty, John Tuthill, project designers; Brandon Sampson, Mathew Kendall, Troy Chen, Nha Tran Tran, Daniel Thompson, project team

ENGINEERS: Holmes Cully (structural); Amit Wadwha & Associates (mechanical)

CONSULTANTS: Architecture and Light (lighting); Obscura Digital (Light Volume LED media surface); Charles M. Salter Associates (acoustical)

GENERAL CONTRACTOR: Novo Construction

CLIENT: Bloomberg L.P.

SIZE: 20,000 square feet

COST: withheld

COMPLETION DATE: May 2015

SOURCES

CUSTOM STEEL WORK: Florian Industries (Light Volume and door frames)

MILLWORK: Plant Architectural Woodwork

SOLID SURFACING: DuPont Corian

WALLCOVERINGS: FilzFelt (booths)

CARPET: Tredford, Desso

LIGHTING: Fluxwerx, Stickbulb, Vibia, Oluce

FURNISHINGS: Humanscale, Innovant, Cassina, B&B Italia, Moroso

Werdendes Ruhrgebiet | Essen, Germany | Bernhard Denkinger

MINING THE PAST

An exhibition in an old coal-washing plant used modern technology to tell the story of an industrial region's heritage.

BY MARY PEPCHINSKI

PHOTOGRAPHY BY DEIMEL AND WITTMAR




PHOTOGRAPHY © THOMAS MAIER (EXTERIOR)

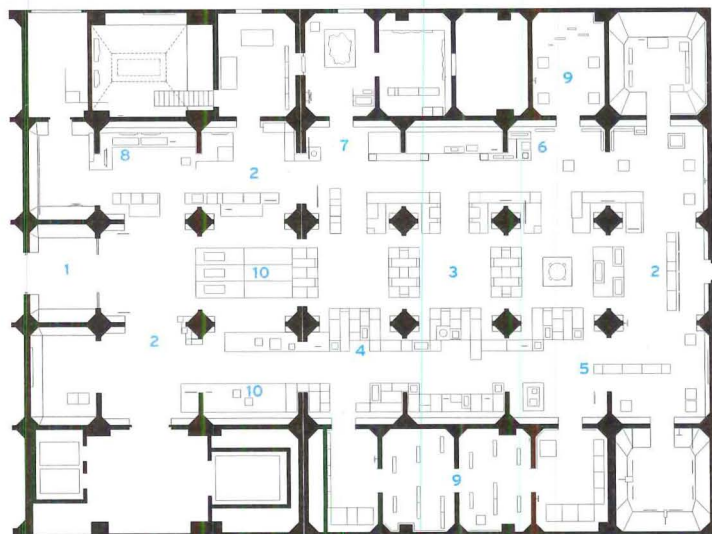
Once vilified for pollution and noise, the mines and factories of the Ruhr district (Ruhrgebiet), Germany's former coal and steel belt, have become proud symbols of the region's industrial past. One inactive coal mine, the Zeche Zollverein in Essen, is now a UNESCO World Heritage site and houses a cultural center, following a master plan by Rem Koolhaas and his firm, OMA. With architects Heinrich Böll and Hans Krabel, Koolhaas also repurposed the coal mine's *Kohlenwäsche* (coal-washing plant), transforming it into the Stiftung Ruhr Museum in 2006. Leaving the plant's machinery intact, the architects' bold interventions—including an escalator that transports visitors to the entrance, 80 feet above ground, where they then move downward through the plant, following the path coal once traveled—marked a new chapter in the building's history.

Within this museum, Vienna-based architect Bernhard Denkinger designed a recent exhibition entitled *Werdendes Ruhrgebiet* (*Beginnings of the Ruhr Region*—which was on view from March 27 to August 23) in a gallery retaining a grid of concrete coal-washing cells. Drawing upon literary associations, Denkinger engaged visitors with an arresting display of 800 rare artifacts—manuscripts, coins, weapons, jewelry, architectural fragments, glass and ceramic vessels—dating from the third to the 11th centuries CE.





DARK MATTER OMA with Böll and Krabel converted the old coal-washing plant into a museum in 2006, adding a new escalator that takes visitors to the entry, 80 feet above the ground (opposite). For a recent exhibition, Bernhard Denking designed a "lattice of light" with perforated platforms underlit by LEDs (this page).



EXHIBITION FLOOR PLAN



- | | |
|--|---------------------|
| 1 ENTRANCE | 6 BELIEFS |
| 2 EXHIBIT PATH | 7 DEVELOPMENT |
| 3 MANUSCRIPTS | 8 INTERPRETATION |
| 4 DAILY LIFE BETWEEN
RUHR AND THE RHINE | 9 CELL STRUCTURE |
| 5 CONFLICT | 10 LATTICE OF LIGHT |



According to Denkinger, the design had to organize the disparate artifacts and the cell structure into a narrative—because “exhibition designs are like short stories”—linking the Ruhr’s distant past with its post-industrial present. At the same time, it had to protect the building’s historic structure with a temporary architecture that could only be placed in position and clamped or hung from existing ceiling tracks.

Denkinger inserted a field of modular display units, measuring about 3 feet high and ranging from 18 to 25 inches wide, between the cells. Made out of MDF panels clad in steel sheets with a charcoal-gray powder coating, these units served as a base for both freestanding artifacts and others protected by vitrines made of safety glass.

Challenged by a floor that slopes from the entry to the rear, the architect inserted adjustable supports under the units to maintain an even datum line. Then he arranged the units to define a path around the gallery, linking the exhibit’s five sections—everyday life,

conflict, cultural development, beliefs, and the modern interpretation of this period. Along this path, ceramic vessels and weapons yielded to reliquaries, elaborate gravestones, and finally present-day paintings and sculptures that depict this history. These encircled a central arrangement of manuscripts—cloister inventories, musical notation, and illustrated prayer books—which occupied 24 vitrines set upon 10-inch-high bases. The path was straight and wide at the start, becoming narrower and more irregular at the end. There one felt disoriented, as if the past were easier to comprehend than the present.

Such rare and fragile objects necessitated extremely low light levels. To assist in orientation, Denkinger created a “lattice of light,” a series of perforated platforms underlit by LEDs, that marked the exhibition’s transitional zones—the gallery entrance, the introduction of the path, and the point where it segued to the manuscripts. Halogen luminaires on ceiling tracks accented exhibits. Integrated



SPECIAL EFFECTS Powder-coated chain-link curtains—recalling both medieval armor and 20th-century industrial production—separate some thematic sections (this page). Halogen luminaires, favored for their warm tone, light most artifacts, while LEDs in recessed vitrines are used for objects that require more light (opposite, top). A central arrangement of vitrines displays manuscripts (opposite bottom).

LEDs within both raised and recessed vitrines illuminated the manuscripts and other sensitive artifacts. Top-lit chain-link curtains glowed softly in front of the rear wall to mute the exit signage and signaled the beginning of the modern section.

As visitors moved through the museum's dusky interior, forms emerged from the darkness as luminous beams showcased gold-encrusted swords, ivory reliquaries, or pottery shards. Complementing its haptic appeal, the architecture of *Werdendes Ruhrgebiet* invited interpretation: the placement of the manuscripts at the center of the gallery established written knowledge at the heart of this region's culture, while elaborate gold crucifixes placed in high vitrines loomed over the section about beliefs, a nod to Christianity's rise and endurance. And, as it hugged the base of the coal-washing cells, the display proposed that the region's early development laid the basis for its industrial heyday. "It was difficult to show hierarchies in this exhibition," reflects Denkinger, because "all stories are equal." ■

credits

ARCHITECT: Bernhard Denkinger
Architect – Bernhard Denkinger, principal

GRAPHIC DESIGN: Karsten Moll/
Stiftung Ruhr Museum

CONSTRUCTION MANAGER: Frank
Kerner/Stiftung Ruhr Museum

CLIENT: Stiftung Ruhr Museum

SIZE: 10,225 square feet

PROJECT COST: \$560,000

CONSTRUCTION COST: \$168,000

COMPLETION DATE: March 2015

SOURCES

GLASS: Glas Stebani

**LASER-CUT PANELS AND
METALWORK:** Hiska Metalltechnik

CHAIN-LINK CURTAINS: Heinrich
Schäfers, Schmiede und Bauschlosserei

DOWNLIGHTS: ERCO



Gardner | Austin, Texas | Baldrige Architects

FROM STAMPS TO PICKLED RAMPS



SAVORY CONVERSION An oak-framed skylight suffuses Gardner's main dining room with daylight, injecting a subtle architectural flair to its purposefully subdued interiors scheme (left). The entry illustrates the design team's respectful adaptive reuse of the bygone neighborhood post office (below).



With unusual restraint, a 1960's post office is reimagined as a focal point for New Nordic cuisine.

BY STEPHEN SHARPE

PHOTOGRAPHY BY CASEY DUNN

Restaurateur Ben Edgerton recalls, "On paper, it didn't make any sense," describing the disparate elements that coalesced into Gardner, his latest venture with chef Andrew Wiseheart. Yet, in the end, the various components—smooth plaster walls are juxtaposed with custom-wrought steel fenestration and flaxen-colored brick opposite scorched cedar paneling—complement each other by mingling the clean lines of modernism with nature's sublime idiosyncrasies.

Edgerton and Wiseheart, a successful partnership in Austin's thriving casual-dining scene, drew inspiration for Gardner from a culinary movement currently tantalizing chefs around the globe: emanating from Copenhagen, the trend known as "new Nordic" represents a cultural shift in discriminating gastronomy, a return to basics, with emphasis on seasonal vegetables, coarse grains, and esoteric herbs.

Such an arcane approach to food service would necessitate an equally rarefied design strategy, the duo realized, particularly in laid-back Austin, where popular sensibility in restaurant decor toggles between the colorful kitsch of its Tex-Mex dives and the ostentatious trappings at the spectrum's other extreme.

To help create a space in harmony with their aspirations for Gardner, Wiseheart and Edgerton sought an architect who could materially express their unconventional concept. The goal was a design that would not stand out but, instead, would subtly sharpen an overall focus on the diner's personal experience, as Wiseheart phrases it.

Baldrige Architects wasn't even on their radar until late in the process, when an artisan friend recommended the young local firm; it had already built an enviable reputation with work, mostly residential, ad-

EARTHLY DELIGHTS

The linear orientation of the skylight and service islands draws diners' eyes toward the elongated opening to the kitchen (this page). Gardner's material palette reflects the Scandinavian influence of its preparation and presentation of seasonal fare (opposite).





FIRST FLOOR PLAN



- | | |
|------------------|---------------------------|
| 1 ENTRY/LOBBY | 5 KITCHEN |
| 2 MAIN DINING | 6 BAR |
| 3 PRIVATE DINING | 7 OUTDOOR LOUNGE |
| 4 RESTROOMS | 8 ADDITIONAL TENANT SPACE |

credits

ARCHITECT: Baldrige Architects
– Burton Baldrige, principal; Brian Bedrosian, project designer

ENGINEERS: AYS Engineering (m/e/p);
Duffy Engineering (structural)

CONSULTANTS: Anne Edgerton Interiors,
Charyl Coleman (interior decoration)

GENERAL CONTRACTOR: Franklin Alan

CLIENT: Edgewise

SIZE: 3,830 square feet

COST: withheld

COMPLETION DATE: November 2014

SOURCES

PAINT: Benjamin Moore

CUSTOM MILLWORK: TRC Carpentry

LIGHTING: Design Within Reach
(pendants); Cooper (downlights);
Tech Lighting (task)

FURNISHINGS: Michael Yates Design
(tables, chairs, and bar stools); Spruce
Upholstery

COUNTER: ChemTops (service island)



mired for being finely articulated and acutely responsive to surrounding nature. According to Edgerton, the firm's aesthetic was in harmony with the vision he and his partner Wisehart had for the restaurant.

The site, located on the city's rapidly developing near east side, had been a neighborhood post office. Newly subdivided, the single-story building had a loading dock at its east end. Principal Burton Baldrige and project designer Brian Bedrosian reimagined the utilitarian functionality of the rectangular 1960s building clad in government-issue golden hued brick. Interiors consultants Charyl Coleman and Anne Lowe Edgerton provided additional expertise.

Simplicity and operational efficiency drove all design decisions; everything, from architecture and furnishings to service and food, must work together. "We wanted the entire experience to be cohesive," explains Wiseheart, who named Gardner in honor of his father, an exuberant gourmet like his son.

That experience begins with patrons entering Gardner's minimalist foyer, a deliberately compressed, visually sequestered space. They are then guided either to an open-air lounge to the east or an adjoining steel-and-glass-enclosed bar to the northeast, both adaptations of the old loading dock, while they wait to be seated. To expand the bar space, Baldrige sourced matches for the period brick at the original foundry

nearby. The opposite wall features floor-to-ceiling horizontal planks of cedar, charred by hand in the Japanese shou-sugi-ban style.

These tactile qualities, though subdued, disappear in the dining area, where Baldrige opted to "turn down the volume" to avoid competition with the food. The ambience is distinctly muted, with earth tones and walls free of artwork. Instead, profuse daylight animates the large open space, streaming down from a linear skylight inconspicuous in its placement, high within a long, slim, wood-clad slot in the ceiling. This striking arrangement overhead, which discreetly masks an expansive mechanicals loft, lifts one's gaze toward a tall, narrow opening revealing the 1,000-square-foot kitchen. Reinforcing the optical choreography, two slender service islands run longitudinally in tandem through the room, an organizational scheme that also reduces time and effort for the wait staff in attending to Gardner's guests.

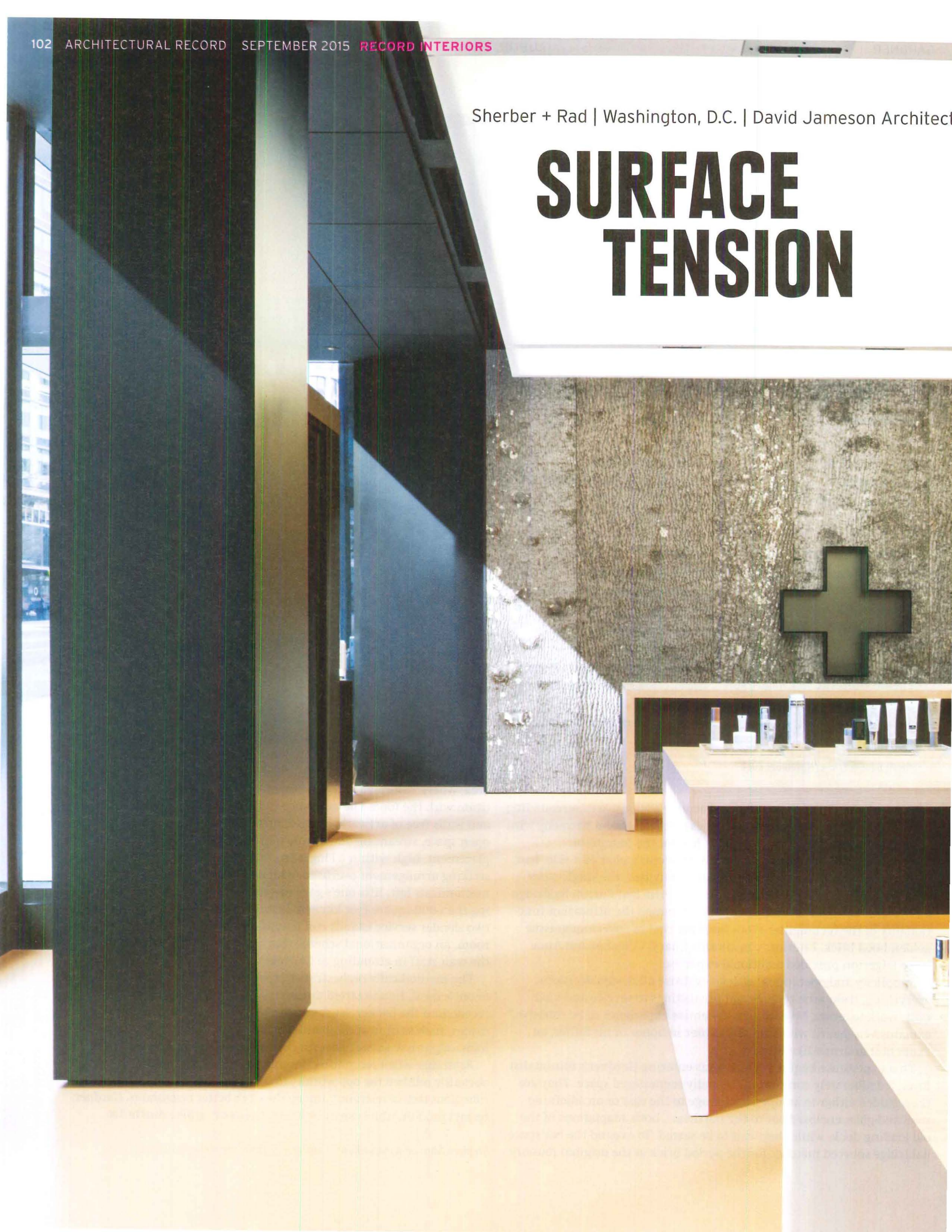
The methodically orchestrated experience climaxes with the arrival of one's meal. Hand-crafted dining tables, simply set with the basics, recede into the background, showcasing artfully presented seasonal dishes, such as okra accompanied by hazelnut, shishito, and serrano ham, or panisse garnished with field peas, peach, and pickled ramps.

Baldrige, when recounting the challenges and triumphs of the project, obviously relished the opportunity to counterbalance what he sees as "a ridiculous lack of restraint" among the city's better restaurants. Gardner, he says proudly, stands apart by being "decidedly unlike Austin." ■

Stephen Sharpe writes about architecture from his home in Austin, Texas.

Sherber + Rad | Washington, D.C. | David Jameson Architect

SURFACE TENSION



A progression of materials—from rough poplar bark to smooth bronze panels—takes clients through a storefront shop to the inner sanctum of a dermatologist and a plastic surgeon.

BY CLIFFORD A. PEARSON

PHOTOGRAPHY BY PAUL WARCHOL

Beauty may be skin-deep, but David Jameson's design for the offices of a dermatologist and a plastic surgeon reaches beneath the surface, peeling back layers of intrigue. Inspired by the structure of a tree—with its rough bark on the outside and smoother rings closer to the core—the Washington, D.C.-based architect organized the 3,770-square-foot facility as a progression of spaces wrapped in increasingly refined materials. The sequence evokes the dermatological procedure of removing dry skin to reveal the softer tissue below.

"The project is about layering—both spatially and in terms of textures and materials," says Jameson. Most visitors enter through a storefront retail space where they can buy skin-care products and speak with employees who can explain the items or set up appointments with either Dr. Noëlle Sherber, the dermatologist, or her husband, Dr. Ariel Rad, the plastic surgeon. Jameson lined the walls

here with the thick bark of 40 poplar trees, unrolled vertically to create the impression of a flattened forest. Variations in color, texture, and width show that nature is not uniform and enhance the visual appeal of the space. Some of the bark still has lichen attached or knots where branches had been. Because bark is an inert material, it does not have to be treated or sealed.

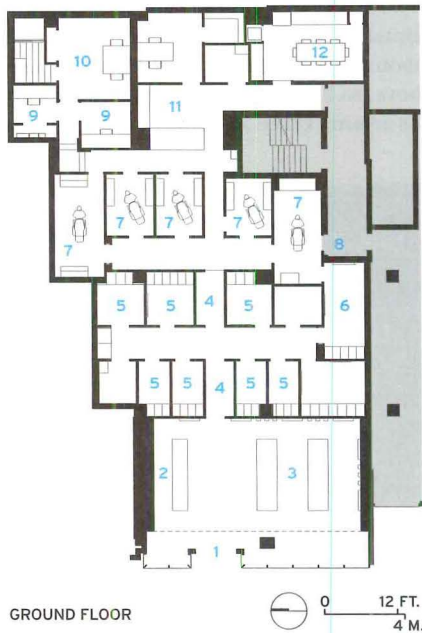
Bronze-colored glass shelves with mirror-glass backs are attached to two walls in a crisp pattern of horizontal bands and vertical stripes. "I like the tension between the precision of the glass shelves and the irregularity of the bark," says Jameson. On a third wall, a cross or plus sign composed of the same materials serves as a logo for Sherber + Rad and draws customers to a reception table. For flooring, Jameson used a synthetic epoxy often found on ships because it is seamless and resists germs and organic compounds. The ceiling is a stretched, translucent PVC fabric with LEDs above, so it creates an even glow across the entire room. Recessed LEDs around three sides of the ceiling make it



INSIDE JOB The retail space occupies a storefront in a Brutalist office building designed in the 1960s by the Weihe Partnership (left). Jameson wrapped existing columns with black-painted wood to create a transition zone between the street and the shop (opposite). A "curated" approach to merchandising minimizes products on display and reinforces the shop's modern aesthetic.

HALLS OF POWER

A corridor lined with bleached-cypress panels and doors (right) takes clients to individual waiting rooms or "cabanas." A parallel corridor wrapped with bronze-backed glass panels (far right) leads to treatment rooms. The precision of glass shelves in the store serves as a counterpoint to the irregularity of the bark wall treatment (opposite).



- 1 MAIN ENTRY
- 2 RECEPTION
- 3 RETAIL
- 4 GALLERY
- 5 CABANA
- 6 VIP CABANA
- 7 TREATMENT
- 8 VIP ENTRY
- 9 OFFICE
- 10 LOUNGE
- 11 TREATMENT PREP
- 12 KITCHENETTE/
CONFERENCE

appear to float, independent of the walls. Bleached-cypress tables—40 inches wide and 12 feet long—align with the shelves and maintain the geometric rhythm of the room.

To get to the medical area, visitors open a door in the back of the boutique—camouflaged because it's covered in bark, like the rest of the wall. Only a small bronze door handle reveals its function. "Washington is a city that emphasizes discretion," says Sherber, "so we wanted to create a place where a politician or a television personality could come, browse the merchandise, and no one would know he is getting treatment." For very special people, there's a private entry off the building lobby that leads directly to a VIP treatment suite.

Off a short gallery displaying artworks made with encaustics is a pair of parallel corridors, the first one surfaced in bleached cypress and the second in glass panels backed with bronze. The cypress corridor takes patients to individual waiting rooms—or "cabanas"—each one outfitted with wood-clad walls and an Eero Saarinen womb chair, where they can relax during the 30 minutes it takes for numbing cream to prepare them for Botox or other procedures. Then they proceed to the treatment rooms behind the bronze-backed-glass doors. "The combination of organic and high-tech elements reflects our approach to our work," states Rad.

Set in a mid-1960s Brutalist concrete office building in a part of downtown Washington where many lobbyists work, Sherber + Rad is embedded in the city's peculiar culture of power and appearance. And with its sophisticated retail front and high design, it challenges the traditional model of a medical practice. Come in for a look at the fancy skin creams, and you might end up with a nip-and-tuck to tighten that beautiful-but-aging face of yours. ■

credits

ARCHITECT: David Jameson Architect – David Jameson, principal; Frank Curtis, project manager, Oscar Maradiaga, project architect

ENGINEER: Greenman-Pedersen (m/e/p)

LIGHTING DESIGNER: DKT Lighting

GENERAL CONTRACTOR: Madden CCI

SIZE: 3,770 square feet

COST: withheld

COMPLETION DATE: June 2015

SOURCES

BARK PANELS: Barkhouse

DOOR PULLS: Custom by Metal Specialties

SYNTHETIC EPOXY FLOORING: Bolidit

CUSTOM MILLWORK: Potomac Woodworking

GLASS SURFACING: Galaxy Glass

STRETCH CEILING: Barrisol



DOUBLE BEAT In a 1910 New York high-rise, Inaba did a pair of very different projects for the same client, Red Bull. The second commission (this page and opposite) created two floors of offices joined by a wide central stair—a sleek monolithic form rendered in GFRC. In contrast to the boldly hued first job's spaces downstairs, this is a subtle, predominantly white, daylit interior, animated by occasional sparks of color.



Red Bull Studios and Office
New York City | Inaba Williams

BUZZ GENERATOR

The Manhattan base for a global brand reflects its youthful vibe with a pair of dynamic environments animated by bursts of color and light.

BY SARAH AMELAR



The energy-drink company Red Bull (RB) tends to engage the public in unconventional ways. As it plunges into adventurous youth culture—extreme sports, high-risk aviation feats, edgy art and music—it’s never just paying to affix its logo to a Formula 1 racecar or a radical skydive. Rather, the company owns and runs the teams, as well as such endeavors as Red Bull Air Force—generating a following without ever mentioning the product per se. An analogy might be, instead of buying roadside billboard space, RB creates the road, setting the route and pulling in traffic.

A similar spirit inspired RB’s two New York venues, both in the same 1910 brick high-rise in Manhattan’s Chelsea neighborhood. The company enlisted Brooklyn firm Inaba (now Inaba Williams) for the initial project, completed in 2013, transforming the street and basement levels into a 21,400-square-foot duplex for Red Bull Music Academy (RBMA), a cutting-edge recording studio. That duplex, by design, had to serve the ambitious needs of an academy scheduled to last just a month—and then adapt to other creative uses.



LIGHT HUES Engaging the nuances of daylight, the architects used transparent and translucent materials—including the dichroic glass that encloses a conference room (this photo and below). In Inaba's earlier, temporary project on these upper floors, glazed "bedroom studios" (opposite) performed as think tanks for the Red Bull Music Academy (RBMA) in 2013.



On floors seven and eight, the architects created RBMA's temporary administrative and experimental spaces. Nearly a year later, RB brought Inaba back to convert those upper stories into offices for its eastern U.S. business hub.

Founded in 1998, RBMA offers immersive workshops in a different city each year—London, São Paulo, and Tokyo among them. Participants, competitively selected, attend without charge (flown in, fed, and put up by RB). These intense two-week summer sessions, with 30 students each, bring together talents including instrumentalists, DJs, songwriters, vocalists, and recording engineers, in genres spanning from jazz to hip-hop. The experience revolves around living room-sofa-style lectures by music legends (such as Brian Eno or Philip Glass) and "bedroom studios," where randomly mixed participants collaborate. "Like think tanks, they're containers for creativity," says RBMA cofounder Many Ameri. "Imagine a New Zealand drummer, an American jazz pianist, and a Czech techno producer connecting for the first time in one room."

RB also runs a music festival around each Academy—at venues as diverse as museums, street fairs, and nightclubs. So the duplex needed flexible space for tied-in parties and events.

Like RB's headquarters, in rural Austria, the understated Chelsea duplex has no exterior signage (and barely any interior branding). Inside its glass storefront, a long, midnight-blue reception desk curves at one end, leading to a similarly colored steel stairway that winds down to the lower level. Dramatic against white terrazzo floors, these dark sculptural forms appear in a 3,400-square-foot space with few other permanent elements besides a purple-lit broadcasting booth and a black bar, with clear acrylic tubes overhead, rimmed in rings of white light. Small glass-faced fridges, wall-inset like medicine cabinets, hold cans of Red Bull—the closest it gets to branding here.

A side door leads to a men's room bathed in red light, reminiscent of nightclubs, while the women's room next-door glows yellow. Downstairs, a dark-surfaced performance space sits below a ceiling inlaid with dash-like LED lighting.

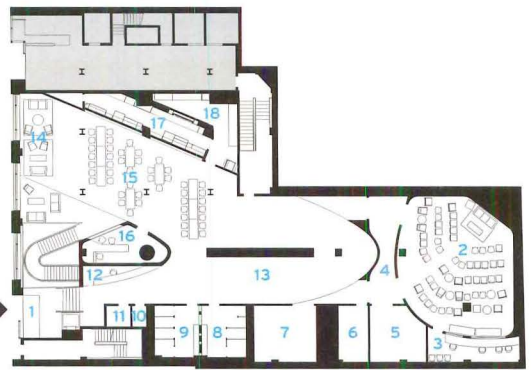


SEVENTH FLOOR OFFICE PLAN

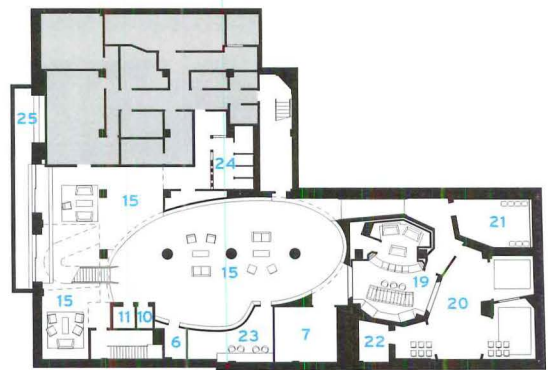


EIGHTH FLOOR OFFICE PLAN

- 1 ELEVATOR LOBBY
- 2 LOUNGE
- 3 OPEN OFFICE
- 4 SMALL MEETING ROOM
- 5 CONFERENCE
- 6 BAR
- 7 KITCHENETTE
- 8 SHOWER
- 9 STORAGE
- 10 ELECTRICAL CLOSET
- 11 HVAC
- 12 MEN'S W/C
- 13 WOMEN'S W/C
- 14 JANITOR CLOSET
- 15 TELECOM
- 16 MEDIA WALL

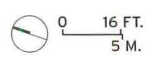


FIRST FLOOR STUDIO PLAN



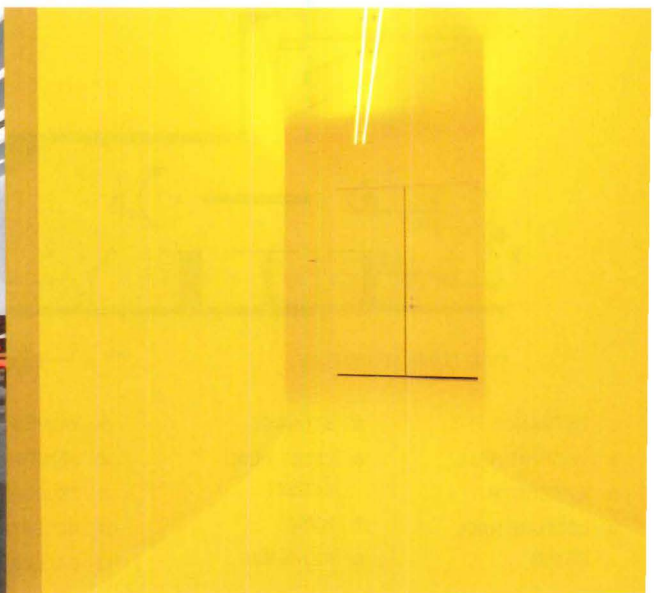
CELLAR STUDIO PLAN

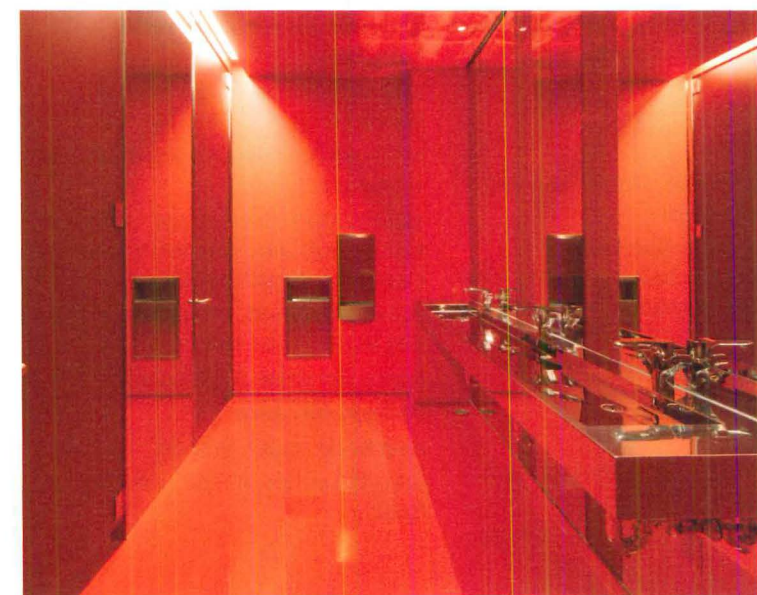
- 1 ENTRANCE
- 2 LECTURE HALL
- 3 A/V BOOTH
- 4 LECTURE HALL FOYER
- 5 STORAGE
- 6 ELECTRICAL CLOSET
- 7 HVAC
- 8 MEN'S W/C
- 9 WOMEN'S W/C
- 10 JANITOR CLOSET
- 11 TELECOM
- 12 RECEPTION
- 13 GALLERY
- 14 LOUNGE
- 15 PERFORMANCE/GALLERY/WORKSHOP
- 16 RADIO BROADCAST STUDIO
- 17 BAR
- 18 FOOD PREP
- 19 RECORDING STUDIO CONTROL ROOM
- 20 RECORDING STUDIO LIVE ROOM
- 21 SESSION ROOM
- 22 SERVER CLOSET
- 23 VIDEO EDIT SUITE
- 24 MIXED W/C
- 25 TERRACE





DYNAMIC VISION
 RBMA (now Red Bull Studios) features a saturated palette, with an intense and varied lighting scheme. The midnight-blue reception desk (above), set against white terrazzo floors, bends around to a stair to the lower level. The flexible ground-floor space, with a bar along one edge, hosts art installations and other events or a living room setup (opposite, top). The men's room glows red (opposite, bottom), and a neon-lit yellow buffer zone (right) forms a threshold between ground-floor galleries and a lecture room.





Since people work at the studios deep into the night on varied activities, says principal architect Jeffrey Inaba, “we created spaces—discrete volumes in a range of scales—with distinct qualities of light.” Hypersaturated wall colors intensify the effects of neon, fluorescent, LED, and other illumination types.

The first project’s success led to Inaba’s second RB commission, replacing the temporary Academy facilities upstairs with permanent offices. “If downstairs was about stark, dramatic color contrasts, artificial lighting, and a tech environment,” says Inaba, “the idea here was very different, far subtler in its tonal ranges, more about qualities of daylight.”

Unlike the original semi-underground duplex—now operating as Red Bull Studios, with event, art exhibition, and free recording spaces—the offices have windows on three sides and function mainly during business hours. Inaba’s strategy was to animate a daylight, predominantly white interior with sparks of color, favoring ambient or indirect illumination over visible fixtures or focal points of light, as he had done downstairs. Here, the sun’s rays filter through trans-



COOL PLAY An immersive performance space in the basement has dark walls that curve at the edges, melding with the floor and ceiling planes. Overhead are inlaid dashes of LED lighting.

lucent and dichroic glass, or reflect off such surfaces as a deftly placed mirror or a vitreous wall panel, casting gently modulated light and color into the interior.

Across the open offices, glassed-in meeting rooms provide acoustical buffers, performing simultaneously as dividers and transparent connectors.

Inaba joined the two floors with a wide central stair—a monolithic, glossy-white glass-fiber-reinforced-concrete (GFRC) form—giving the workspaces additional light and views. Half amphitheater, half regular steps, split down the middle, the stairway is slightly unnerving to descend, but also a novel twist on familiar stadium seating for in-office screenings.

Though this upstairs/downstairs duo presents two projects vastly different in program, public interface, light, and color, both encourage collaboration. (And, somehow, the bar, laid-back sofas, and Red Bull fridges show up in each of them.) Ameri recently articulated a key characteristic of the Academy that could as easily describe the new offices: “It’s about making space for conversation, places where ideas get shared and things get created.” ■

credits

ARCHITECT: INABA WILLIAMS – Jeffrey Inaba, principal; Ostap Rudakevych, project architect; Alan Kwan, Yoichiro Mizuno, Sean Connolly, Steven Tsai, Shuning Zhao, Allyn Hughes, Stephanie Lee, Richard Yoo, designers

ARCHITECT OF RECORD: SLAB Architecture

ENGINEERS: Buro Happold (structural); Kam Chiu Associates (m/e/p)

CONSULTANTS: Lisa Tilney (owner’s representative); Tillotson Design (studio lighting); Acousthink Grassot (acoustics); Wald Studio (office lighting)

GENERAL CONTRACTOR: Richter + Ratner

CLIENT: Red Bull North America

SIZE: Studio: 21,400; Office: 16,800 square feet

COST: withheld

COMPLETION DATE: Studios, April 2013; office, November 2014

SOURCES

GLASS: Competition Architectural Metals (studios); Mistral Architectural Metal + Glass (office)

GLASS FIBER REINFORCED GYPSUM: Moonlight Molds

MILLWORK: Bauerschmidt & Sons (studio); GER Architectural (office)

STUDIO LIGHTING: Bartco, Vario, Let There Be Neon (ambient); Litelab (downlights); AL Lighting (task); Lutron, Crestron (controls)

FURNISHINGS: Knoll, Furniture Masters, Geiger, Vitra, Blu Dot, Herman Miller

SOLID SURFACING: DuPont (Corian)

PAINT: Benjamin Moore

HARDWARE: Sargent, Orion, LCN

ACOUSTICAL CEILING: Studios: Newmat, Flatcut

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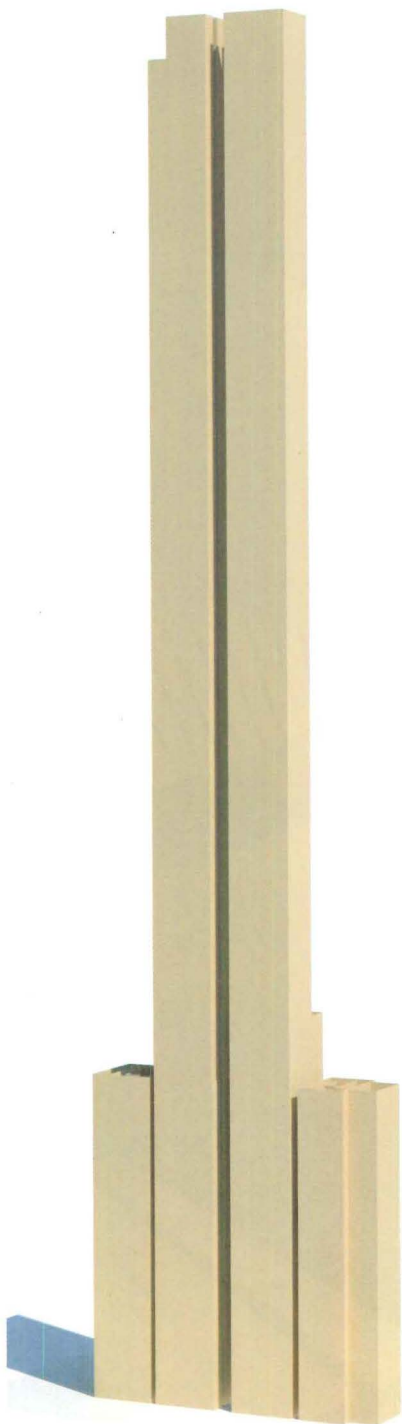
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Timber Grows Up

Architects and engineers, drawn to wood for its environmental attributes, push the material to new limits.

By Joann Gonchar, AIA



WHEN DESIGNING a skyscraper, one doesn't normally think of wood as the primary structural material—but that hasn't stopped Vancouver, British Columbia–based architect Michael Green from redesigning New York's famed 102-story Empire State Building as a timber tower. The hypothetical remake of Shreve Lamb & Harmon's 1931 landmark, the result of a collaboration with another Vancouver-based firm, Equilibrium Consulting, relies almost exclusively on structural elements made of laminated veneer lumber (LVL), a product manufactured from multiple wood plies whose fibers are oriented in one direction.

Green and Equilibrium insist that such a tower is technically feasible, yet even they do not believe timber buildings as tall as the Empire State will be rising anytime soon. "We all know we aren't going to build 100-story towers out of wood," says Eric Karsh, an Equilibrium principal. Instead, the point of the project, commissioned by Finnish forest products manufacturer Metsa Wood, "was to change people's perceptions about what wood can and can not do" he says. "It makes wood buildings of 30 or 40 stories seem quite possible," adds Asher deGroot, an associate at Michael Green Architecture (MGA).

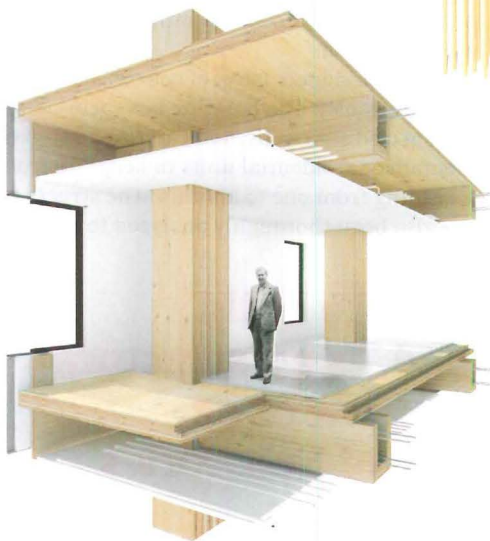
Although the design of the wood Empire State was a theoretical exercise, MGA and Equilibrium took it seriously. The timber tower has the same overall dimensions, floor-to-floor heights, and column spacing as the original. Its lateral load-resisting system consists of a series of box beams in the short direction and shear walls in the long direction. Its moment frames are created by running post-tensioned cables through the box beams and columns. The manufacturer maintains that the wood components would burn slowly, forming a layer of protective char, but the timber skyscraper would still have additional protection in the form of sprinklers, fire-stopping, and drywall. The wood elements could remain exposed in some strategic locations.

This is not the first time MGA and Equilibrium have tackled tall timber structures. In 2012 they published a detailed

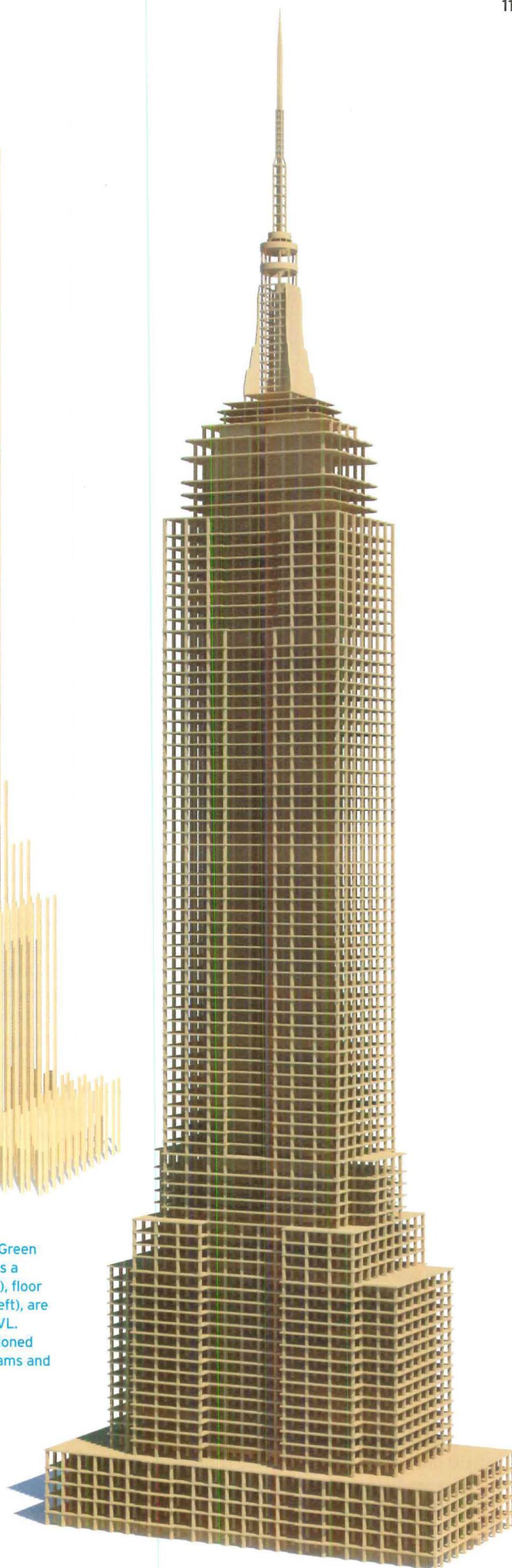
scheme for a wood tower as tall as 30 stories. Other firms have also explored wood's potential in tall buildings: in 2013 Skidmore, Owings & Merrill released its research for a 42-story tower that relies on timber for its main structural elements, with reinforced concrete at connecting joints.

One thing to keep in mind is that timber fans are not advocating towers built with conventional light-frame, wood-stud construction, which has limited structural capacity and low fire-resistance. Instead, they are pushing for more widespread use of "mass timber"—a term that can describe structures built of logs or large, solid sawn lumber but more typically refers to a system relying on engineered wood products. These include glue-laminated (glulam) beams and posts, cross-laminated timber (CLT), and laminated strand lumber (LSL), as well as LVL. In general, these are large elements made from small-dimension lumber or other types of wood fibers assembled under pressure and fixed with adhesives. Instead of old-growth lumber, engineered-wood components can be made of younger trees of a variety of species and varying grades. Still, their manufacturing methods yield consistent components with predictable structural characteristics and fire-resistive properties.

What's behind this campaign for more use of timber? The chief attraction is environmental: wood is a renewable material. And when responsibly grown and harvested, the forests from which it is obtained perform important ecological functions. They filter water and air, provide habitat for wildlife, and they have the ability to store atmospheric carbon. Trees retain this carbon even after they are cut down and transformed into building products.



PLYSCRAPER Canadian architect Michael Green has redesigned the Empire State Building as a timber structure (right). Its columns (above), floor slabs (opposite, right), and core (opposite, left), are all made of the engineered wood product LVL. Moment frames are created with post-tensioned cables that run through the tower's box beams and columns (left).





NORWEGIAN WOOD The Treet tower (left and below) in Bergen, Norway, is slated to be the tallest timber building when completed later this year. It consists of prefabricated CLT apartment units stacked within a structural frame of glulam trusses. The units sit on “power stories”—levels reinforced with precast concrete slabs that occur every fifth floor.



Only when the wood decays or burns is it released back into the atmosphere. As an example, the timber version of the Empire State would use more than 100,000 cubic yards of LVL, offsetting about 71,000 metric tons of carbon dioxide, according to deGroot. In contrast, the manufacturing processes for steel and concrete emit carbon dioxide.

There are other advantages. Joseph Mayo, a designer at Mahlum Architects in Seattle and author of the recently published *Solid Wood: Case Studies in Mass Timber, Architecture, Technology and Design*, points to benefits such as lighter structures, which in turn can allow smaller and less expensive foundations. He says that engineered wood elements are typically prefabricated and pre-cut, which can reduce waste, speed construction, and make for quieter building sites. There is also an argument for incorporating biophilic elements, or products of living systems, into architecture. When the wood structure is left exposed, “it brings a little bit of nature into the building,” he says.

Although genuinely tall wood buildings are still only conceptual, mid-rise timber structures are being constructed all over the world. The wood building that currently holds the

title of tallest in North America is MGA’s 100-foot-high Wood Innovation Design Centre in Prince George, British Columbia (RECORD, July 2014, page 132). Completed last year, the building is supported by a glulam and CLT structure. The worldwide record holder is the 105-foot-high Forté—a 23-unit residential building in Melbourne, completed at the end of 2012. Designed and developed by Lend Lease, the 10-story structure is built almost entirely of CLT above its cast-in-place concrete ground floor.

Forté will soon be surpassed by the 14-story Treet—an almost 163-foot-tall tower nearing completion in Bergen, Norway. Designed by local architect Artec, the 62-unit residential building’s primary load-carrying system consists of glulam trusses. “Power stories”—

reinforced levels carrying precast concrete slabs—occur every fifth floor. These serve as platforms for CLT apartment modules stacked within the frame. But their main purpose is to increase the mass of the building, explains Rune Abrahamsen, the project’s chief structural engineer with international engineering firm Sweco. Otherwise the relatively light wood structure would sway in the wind, he says, adding that the movement is actually an occupant-comfort concern rather than a safety problem.

Treet’s designers have, of course, also taken safety seriously. The building has sprinklers, pressurized stairwells, and carefully compartmentalized residential units to keep fire from spreading from one to another. The structure has also been thoroughly analyzed to make

“We all know we aren’t going to build 100-story towers out of wood,” says structural engineer Eric Karsh, a collaborator on a hypothetical wood remake of New York’s Empire State Building.



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sure that the building will remain standing in the highly unlikely event that one truss member fails.

To ensure the structure's long-term durability in Bergen's mild but wet climate (a particular concern when building in wood), the designers clad the building in glass and metal sheeting. They also opted to prefabricate the CLT apartment modules—complete with plumbing fixtures, appliances, and finishes—and lift them into place by crane. The decision to assemble the apartments in a controlled factory setting limits their exposure to the elements. But it also, together with choosing wood as the primary building material, has helped speed completion. According to Abrahamsen's estimates, the construction phase will be about three months shorter than the 18 months required had Treet been built with more conventional materials and methods. And Abrahamsen is quick to point out that Forté is a prototype. "Next time, we will be even faster," he says.

Sweco is already working on that next time. The firm is designing a timber tower for a town

just north of Oslo that will include a hotel, apartments, and offices. At 17 stories and 216 feet, it will be even taller than Treet. But that record could be eclipsed if any one of a number of proposals moves forward, including a plan for a 24-story mixed-use wood tower in Vienna.

All the discussion about height for height's sake misses the most important point, according to some wood proponents. "Tall makes good PR," says architect Andrew Waugh, director of London-based Waugh Thistleton. "But the real debate should be about density" and about housing more inhabitants in increasingly populous cities. Among the firm's timber projects is Murray Grove, a nine-story residential building in the borough of Hackney in London. Not so incidentally, it was the world's

tallest CLT structure when it was completed in 2009 (RECORD, April 2010, page 92). Now his firm is working on another project in Hackney, Dalston Lane, a 10-story mixed-use complex that will include 121 apartments and 37,000 square feet of commercial space. Dalston, which is already under construction, will use more than 5,000 cubic yards of CLT, making it, by volume of material, the largest such project in the world, according to Waugh. The statistic is somewhat misleading, however. The structure is in fact very efficient, using the equivalent of only 3.2 trees per occupant. "We can cut down three trees and give a person a home," he says.

Even smaller projects can reap the benefits of mass timber. Gray Organschi Architects is

“Tall makes good PR,” says architect Andrew Waugh, director of London-based Waugh Thistleton. “But the real debate should be about density.”

IN DISGUISE Although Waugh Thistleton's Dalston Lane project in London is to be clad in brick, its structure will consist of more than 5,000 cubic yards of CLT, making it the largest such project in the world.





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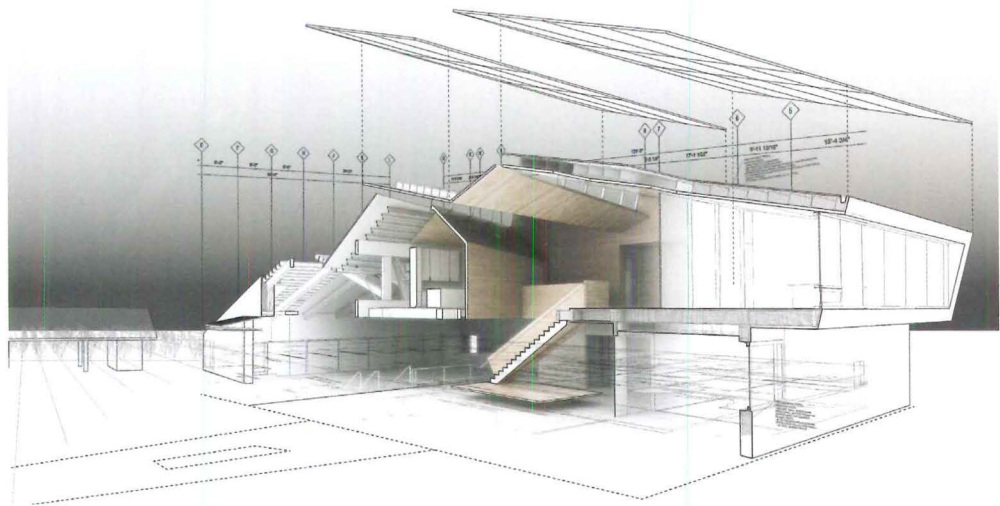
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Vitae Restaurant, New York, NY | Architect: Niels Guldager | Photographer: David Laudadio



using the construction method for a two-story arts and sciences building at Common Ground High School—a charter school with an environmental curriculum at the edge of a park in New Haven, Connecticut. The project, slated for completion in spring 2016, has a wood structure that will be exposed on the interior, with glulam trusses spanning a large multipurpose space. It relies on CLT for its bearing and shear walls and for its innovative stressed-skin roof system. This roof, which echoes the profile of the school's other barnlike buildings, incorporates skylights and dense cellulose batts to help create a tight super-insulated envelope.

The wood elements in Common Ground's building sequester 243 metric tons of carbon—enough to make the highly energy-efficient structure carbon-negative for the next decade.



These storage capabilities are, for Alan Organschi, firm principal, one of the main arguments for mass timber, particularly in urban settings. Historically, “we’ve used the least energy-intensive building product in the most land- and energy-intensive way,” he says, referring to light-frame construction and suburban sprawl. But if Organschi and other mass-timber advocates have their way, that situation could soon change, transforming our cities from sources of greenhouse gases into places that offset them. ■

THICK-SKINNED
Gray Organschi's arts and sciences building for the Common Ground High School (top), in New Haven, Connecticut, has glulam trusses spanning a large multipurpose space (above) and a stressed-skin roof system of CLT panels (middle) that allows for plenty of cellulose insulation.



Continuing Education

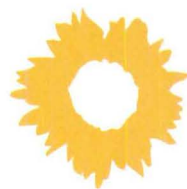
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Learning Objectives

- 1 Define the term “mass timber.”
- 2 Discuss the fire-resistive and structural properties of different types of wood construction.
- 3 Outline the environmental benefits of building with wood.
- 4 Describe the construction and structural strategies that some project teams are deploying in order to use wood in taller buildings.

AIA/CES Course #K1509A

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CIRCLE 220

Main Image: Four Seasons, Bridgewater, NJ; Secondary Images Left to Right: 1) Varenna Villetta, Santa Rosa, CA; 2) Merrill Gardens, San Jose, CA; 3) Wyndham Waterfront, New Orleans, LA.



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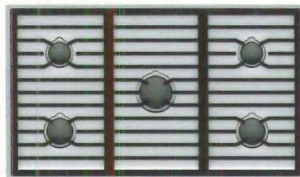
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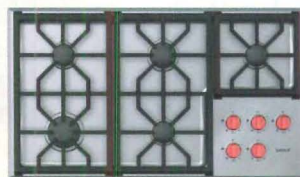
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CIRCLE 224



RECORD KITCHEN & BATH

- 126 TRIPARTITE HOUSE
- 128 NEVERN SQUARE APARTMENT
- 130 PORTAGE BAY RESIDENCE
- 134 UEHARA GARDENS APARTMENT

This small but select group of residential projects is distinguished by clever spatial solutions and thoughtful material choices. The result: functional, inviting spaces, each with a style of its own.

MODERN TWIST In the main kitchen (below) the architects employed Poggenpohl millwork and aluminum backsplash panels, along with engineered quartz counters to create an spare, warm-toned setting for cooking and dining. In the master bath (opposite), a sunken bathtub is embedded in the Pietra Forte Fiorentina stone floor.

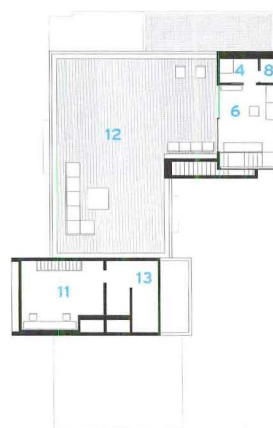


Tripartite House Houston, Texas Architect **Intexure Architects**

PRINCIPALS of 15-year-old Intexure Architects, the husband-and-wife team of Russell and Rame Hruska, had plenty of experience designing high-end residential projects for others. So when it came to building their own dream home, the couple knew exactly what they wanted.

Just over a decade ago, the Hruskas purchased two adjacent lots in the Museum Park neighborhood of central Houston. On one lot, they built an office for their firm. They lived there with their young sons, above the studio, until their 4,600-square-foot house next door was completed in 2014.

“With two kids, we had to think about storage needs and functional aspects, but we wanted it to look effortless,” Rame explains. “We created spaces that are elegant but also practical.” Nowhere is that more apparent than in the family kitchen. Located on the ground level—which the architects designed with large expanses of glass to be the home’s public area—the sleek Poggenpohl kitchen features aluminum backsplash panels that conceal a small-appliance garage for food processors, mixers, and blenders. “We love to cook and entertain,” Rame says, “so we want lots of things, but not clutter.”



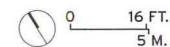
THIRD FLOOR



SECOND FLOOR



GROUND FLOOR



- | | |
|------------|--------------------|
| 1 ENTRANCE | 8 CLOSET |
| 2 KITCHEN | 9 GARAGE |
| 3 PANTRY | 10 MASTER BEDROOM |
| 4 BATHROOM | 11 STUDY |
| 5 DINING | 12 OUTDOOR TERRACE |
| 6 LIVING | 13 MECHANICAL |
| 7 BEDROOM | |

The same is true of the breakfast nook just opposite a long kitchen island. In one of the few cast-in-place concrete walls that serve as the building's main structure, a large window is carved out with a deep sill that serves as seating for the boys. A television for viewing from the nook or the island can be hidden within motorized upper cabinets when not in use.

The designers also installed a catering kitchen behind the main kitchen. They say that this has come in handy for large parties, such as a recent event for nearly 100 guests on the 1,000-square-foot roof deck, which is plumbed for a future outdoor kitchen.

The house's three levels contain six bathrooms all with a unified sense of

materiality. Colorful tile adds a playful touch to each of the kids' baths, and the master bath features a custom quartz sink, glass tile, and Duravit cabinets (which also serve as a credenza in the adjacent bedroom). Pietra Forte Fiorentina stone used to clad the floor and wall dividing the master bath from the bedroom was cut at the Cave del Vecchio in Italy. Floor-to-ceiling glass offers views to a small outdoor courtyard with a bamboo and rock garden that provide an open, spa-like feeling while maintaining privacy and restricting direct sight lines in the dense urban setting.

"I used to love to stay in nice hotels, for the luxurious bathrooms," Russell jokes. "Now we prefer to stay at home." *Josephine Minutillo*

credits

ARCHITECT: Intexure Architects – Russell Hruska and Rame Hruska, principals

ENGINEER: Gessner Engineering (structural)

GENERAL CONTRACTOR: Mod Fab

CLIENT: Russell and Rame Hruska

SIZE: 4,600 square feet

COST: withheld

COMPLETION DATE: October 2014

SOURCES

MILLWORK AND ALUMINUM BACKSPASH: Poggenpohl

COUNTERS: Caesarstone

PAINTS AND STAINS: Sherwin-Williams

PIETRA FORTE FIORENTINA STONE WALLS AND FLOORS: Il Casone

GLASS TILE: ModWalls Lush

ROLLERSHADES: Architectural Fabric Systems

FAUCETS: Hansgrohe

TUB AND TOILET: Duravit



Nevern Square Apartment London

Architect **Daniele Petteno Architecture Workshop**

IN REMODELING an apartment, the choice of material for a kitchen backsplash is usually a late-stage design decision. But in a compact London home for a young family, by Daniele Petteno Architecture Workshop, it was the key that unlocked the whole project. A large piece of fire-resistant glass set behind the sink and cooktop doubles as an internal window into the adjacent master bedroom, flooding the countertop with borrowed daylight and creating long views between rooms to enhance their apparent size.

The 760-square-foot apartment occupies the entrance level of a townhouse built in the 1880s and subdivided in the 1960s, when windowless kitchens were inserted in the middle of each floor. Petteno's reconfiguration is a contemporary interpretation of a typical 19th-century plan:

two large high-ceilinged rooms face front and back, with a small second bedroom and two bathrooms tucked behind.

The big rooms are defined by two L-shaped volumes—white closets in the bedroom and black cabinets in the open-plan kitchen and living room—whose short sides overlap to partition the space. High-level bedroom storage sits above 7-foot-tall kitchen units to form a deep reveal to the internal window. “By treating the volumes not as walls but as objects set into a room, we preserve the perception of a single space 35 feet long and 15 feet wide,” says Petteno.

With countertop space in short supply, the visible accumulation of culinary paraphernalia was averted by concealing a coffee machine, toaster, and kettle within an appliance cabinet to the left of the coun-

ter. The desire for an uncluttered appearance also informed the specification of German-made cabinets with handleless fronts in Lava Black laminate, with metal channels powder-coated to match, and black convection and microwave ovens.

Neat, unfussy detailing reinforces the sense of precision. The junction of walls and ceiling is articulated by LED-lined shadow gaps, and a hood sits flush with the soffit over the cooktop. For bedroom privacy, a Venetian blind over the window draws out of sight behind closet doors. In subtle counterpoint, the black quartz countertop has a textured finish like natural slate.

At the back of the counter, against the window, potted herbs grow in a shallow trough. From the bed, which is raised on a 2-foot-high storage podium for better sight-lines, this miniature kitchen garden blends with a prospect of trees through the living room windows.

Views inside the apartment, of the family itself, are equally important. "People like kitchen islands because it is pleasant to face somebody while you cook," says Petteno. Likewise, from a built-in desk in the bedroom, the parents can supervise their daughter playing in the kitchen. Operating in a confined space and with no choice but to place the counter against a wall, the architect has turned what might have been a dark corner into the open heart of the home. *Chris Foges*

credits

ARCHITECT: Daniele Petteno Architecture Workshop

ENGINEER: BTA Structural Design (structural)

CONSULTANT: Thames Building Control
(building inspector)

GENERAL CONTRACTOR: Longmarsh

SIZE: 65 square feet (kitchen); 760 square feet
(apartment)

COST: withheld

COMPLETION DATE: November 2014

SOURCES

METAL STUDS: British Gypsum

GLAZING/SPLASHBACK: Pilkington

ACOUSTIC PLASTER BOARD: Soundstop

KITCHEN UNIT: Schuller

BLACK "L" FURNITURE: Spacecucina

LIGHTING: Mr. Resistor (LED and downlights);
Bover (chandelier)



ALL-IN-ONE Black laminate surfaces the L-shaped kitchen unit that divides the living room (opposite) from a bedroom. The sleek long arm of the L morphs into a cabinet for the TV and bar (above). A piece of fire-resistant glass behind the sink and cooktop acts as an internal window to the bedroom beyond (top).

SHIPSHAPE

For a seafaring client, Heliotrope Architects designed the kitchen to be like the galley of a boat (this page). The refrigerator is tucked under the white engineered-quartz counter, and Western red-cedar panels sheathe the walls. Cedar is the material of choice for the bathroom's built-in sink as well (opposite).





Portage Bay Residence Seattle
Architect **Heliotrope Architects**

SECRECY AND PRIVACY. Hiding in plain sight. These are themes Mike Mora of Heliotrope Architects toyed with while drawing up the designs for this Portage Bay residence, a 2,500-square-foot home for a bachelor that replaced an existing structure. “The client is a very private person,” explains Mora, “and, because the house is tucked behind the prop-

erties running along the street, it’s not visible, except on the water side.”

Located in Seattle, the loftlike fortress sits absurdly close to Portage Bay—in fact, it’s so near the water’s edge, city codes would have prevented the residence from being built had there not previously been construction on the site. “The house could be mistaken for some

WATER VIEW

While soaking in the Japanese-style cedar *hinoki* bathtub, the client can gaze out to the bay. White marble clads the walls and floors of the ethereal space.



industrial marine building, the kind you find throughout the city's waterfronts," Mora says. "We wanted it to convey similar qualities, because our client has boats and planes—but they're work boats and work planes, not luxury machines."

From the cedar paneling, quartz countertops, Pennsylvania flagstone, concrete floors, and glass mosaic tile, this no-nonsense theme playfully runs through every architectural choice. "We made the street side of the house very introverted," Mora says. "There's only one narrow window next to the front door." Meanwhile, the primarily glass water exposure of the house is considerably opened up, allowing for gasp-inducing views of the water and landscape, and plenty of natural light.

The kitchen, living room, and office niche are all one room, clad in cedar on walls and ceiling. "There's only one bed," Mora says. "The home feels like a studio loft, with very little in the way of excess space." The kitchen exploits the idea of a boat's galley: streamlined and stripped down. "The owner has been a boater his entire life, so we liked the idea of a minimal kitchen," Mora explains. That boils down to an under-counter fridge, half a Fisher & Paykel dishwasher drawer, a 30-inch gas cooktop, a small sink, and a wine fridge. There are no upper cabinets, just a long blackened-steel shelf with integrated cooktop exhaust.

On the other hand, the house includes three different places to bathe: a glass-tiled underground spa, a luxurious master bath with a Japanese-style cedar *hinoki* tub (which overlooks the bay), and a simple outdoor shower.

The resident travels frequently and wanted to live somewhere that requires very little maintenance, so the exterior is constructed out of zinc and aluminum; there's a smattering of glass and concrete, but very little wood, which would require finishing. "The idea is that it reads as a modern house," Mora says. "Machinelike and industrial on the exterior but organic, warm, and cozy once you get inside."

Derek de Koff

credits

ARCHITECT: Heliotrope Architects – Mike Mora, principal

ENGINEER: Swenson Say Faget (structural)

GENERAL CONTRACTOR: ESMB

SIZE: 2,800 square feet

COST: withheld

COMPLETION DATE: November 2014

SOURCES

DOORS: O.B. Williams Company (wood); Aluminex (metal); Fleetwood Windows & Doors (sliding); Distinctive Glass (glass interior)

KITCHEN COUNTER: Caesarstone

REFRIGERATOR: Perlick

PAINTS AND STAINS: Sherwin-Williams (paints); Sikkens (stains)

DIMMING SYSTEM: Lutron

MARBLE BATHROOM FLOOR AND WALL TILE: Ann Sacks

BATH FIXTURES AND FITTINGS: LaCava (sink); Hansgrohe, Jaclo

KITCHEN: Julien

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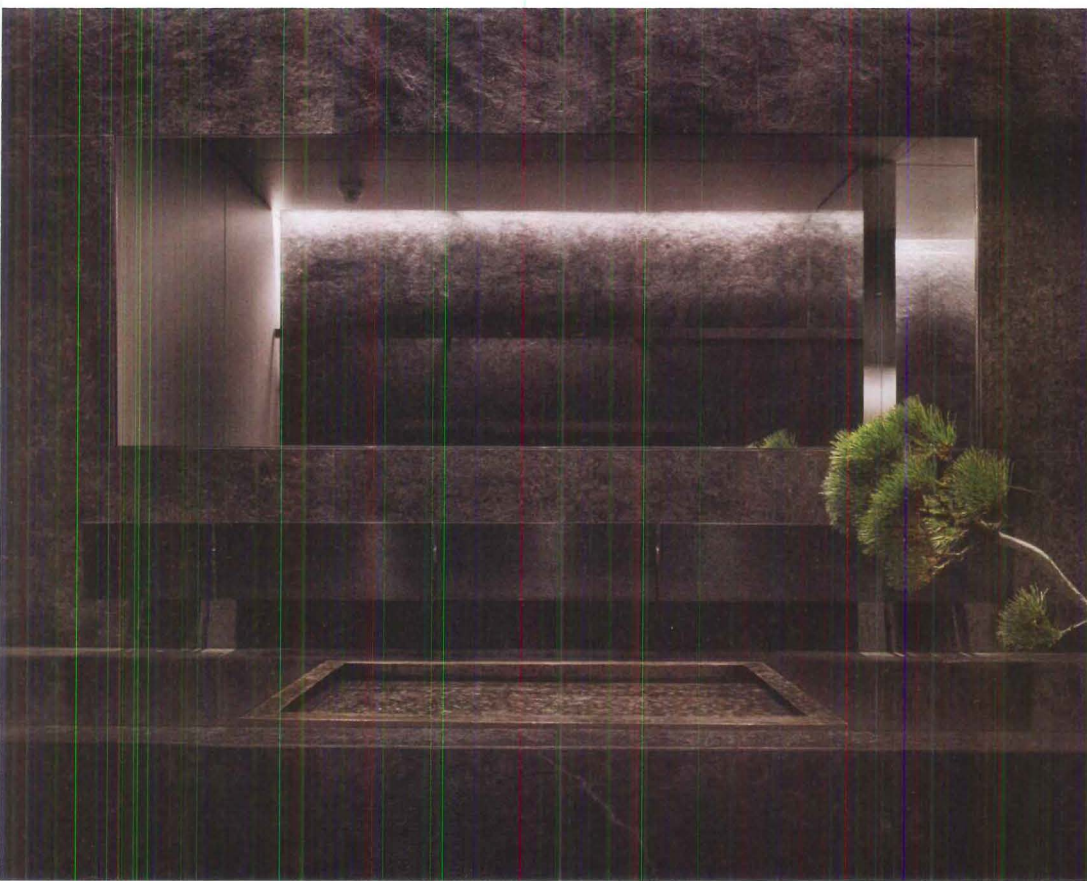
Uehara Gardens Apartment Tokyo

Architect **Curiosity**

IN JAPAN, a country that worships hot water, many people begin their day with a sip of green tea and end it with a soak in a deep tub. Designed by Curiosity, a Tokyo-based multidisciplinary design studio, this residence at Uehara Gardens, with its chef-ready kitchen and spa-like bath, caters to both appetites.

Located on the top floor of a “mansion” (as Western-style luxury apartment buildings are known in Japan), this recent renovation for a family of four features a sublimely spare interior intended for relaxation. “All your senses should calm down inside the home,” explains Curiosity president Gwenael Nicolas. Defined by muted gray walls, softly lit ceilings, and custom furniture created for comfort, the heart of the home is its expansive living/dining room. Tucked in back are three bedrooms, also surfaced in light colors. Against this backdrop, the kitchen and bathroom—both encased in distinctive Mongolian granite—seem like a matched pair.

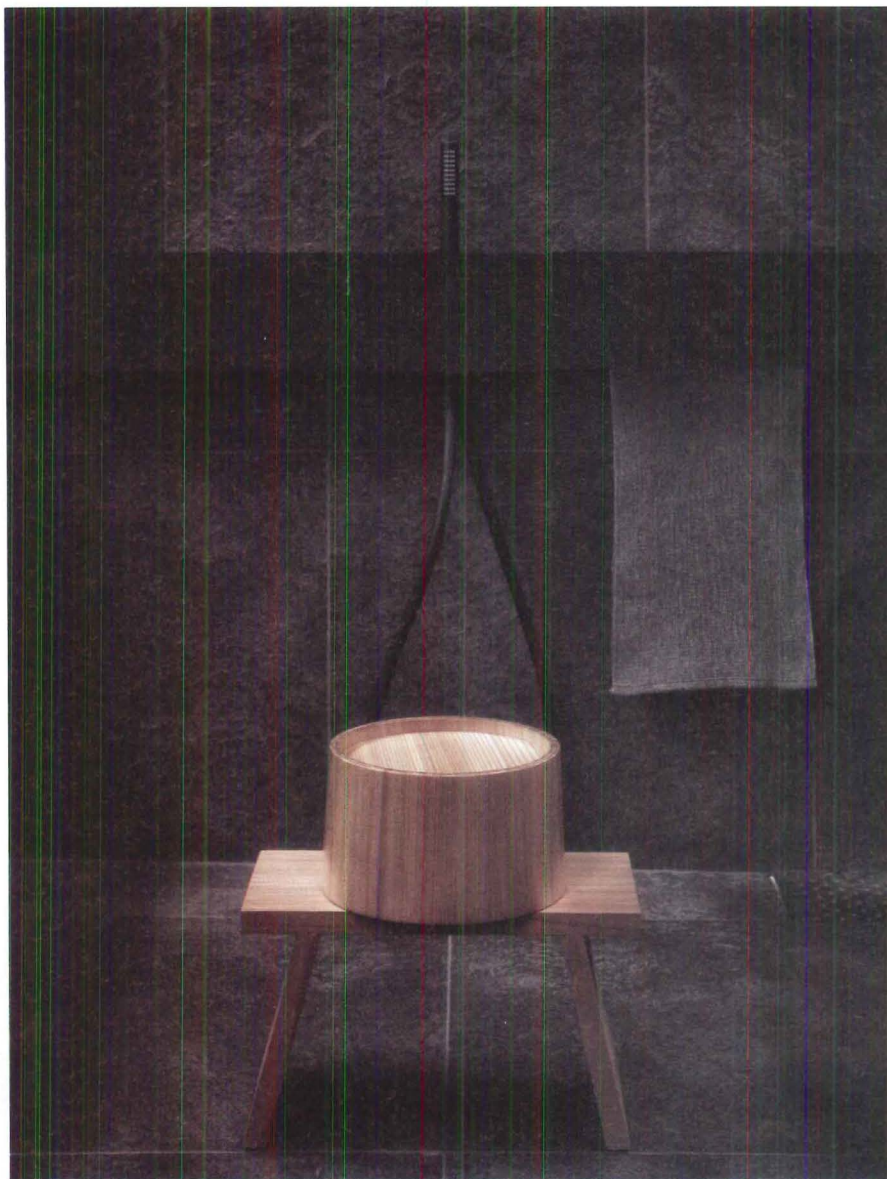
Reflected in a mirrored wall at the apartment’s entry, the kitchen appears as a huge block of dark stone, both inside and out. Integrated with its granite walls and lining the room’s interior are counters, cabinetry, and built-in appliances, with a circulation path down the middle. An open counter for eating and entertaining coupled with a large pass-through merge the kitchen with the surrounding space. To maintain the stone enclosure’s sleek lines and unbroken surface, Nicolas minimized details and carefully considered the color palette. “We chose materials



PHOTOGRAPHY © SATOSHI SHIGETA



DOUBLE VISION Intended to age well over time, a textured bronze tray divides the bathroom sink into two separate wash areas (opposite). While a mirrored door masks the entry foyer, flush-mounted cabinetry conceals storage on the kitchen's interior and exterior faces (above).



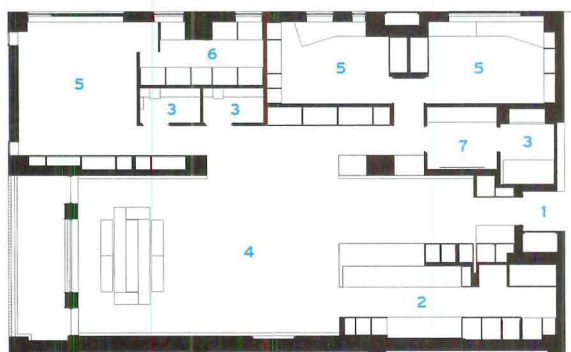
TRANQUIL MIX Incorporating a handheld shower, spigots, and storage for soap or shampoo, the bronze Sen shelf designed by Nicolas quietly melds with the Mongolian-granite walls and floor in the bathing area—the perfect backdrop for a traditional bucket and bench made of wood.

based on how they come together,” says the architect. Burned and waxed to bring out an almost leatherlike texture, the stone, the chocolaty-brown wood millwork, ceramic tile flooring, and plaster walls read as one, while the stone-fronted dishwasher, embedded oven, and cooktop blend effortlessly with their surroundings.

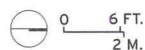
Echoing the kitchen, the bathroom has equally exquisite finishes that turn a function-oriented place into a sybaritic space. “In my country, the bathroom is for cleaning the body, but in Japan it is for clearing the mind,” observes the French-born Nicolas. In the Tokyo apartment, it consists of a sink-lined dressing area and, in keeping with the Japanese custom of washing before soaking, a bathing area with a separate shower and tub. Down the hall, two toilets occupy tiny rooms of their own.

Uniting the bathroom’s two parts, a single material—granite—forms the walls, sink, and tub. The architect complemented these fixtures with fittings from the Sen series that he designed for the Italian plumbing manufacturer Agape. Intended to make the hardware disappear, they incorporate spigots and shelving into a single strip of brass, a small touch that has a big impact on the bathing experience. Thanks to details like this, the bath evokes the spirit of a Japanese hot springs inn. “It is easy to forget that you are in the middle of Tokyo,” muses the architect. *Naomi R. Pollock, AIA*

- 1 ENTRANCE
- 2 KITCHEN
- 3 BATHROOM
- 4 LIVING/DINING ROOM
- 5 BEDROOM
- 6 CLOSET
- 7 DRESSING ROOM



FLOOR PLAN



credits

ARCHITECT: Curiosity – Shinya

Inobe, Kouhei Osako, design team

GENERAL CONTRACTOR:

Panasonic Eco Solutions
Condominiums & Apartments
Engineering

CLIENT: Gwenael Nicolas

SIZE: 2,000 square feet

COST: \$403,000

COMPLETION DATE:

December 2014

SOURCES

BATH FITTINGS & FIXTURES:

Agape

LIGHTING: Modulex (downlights);

Lutron (controls)

TILE: ABC Ceramics

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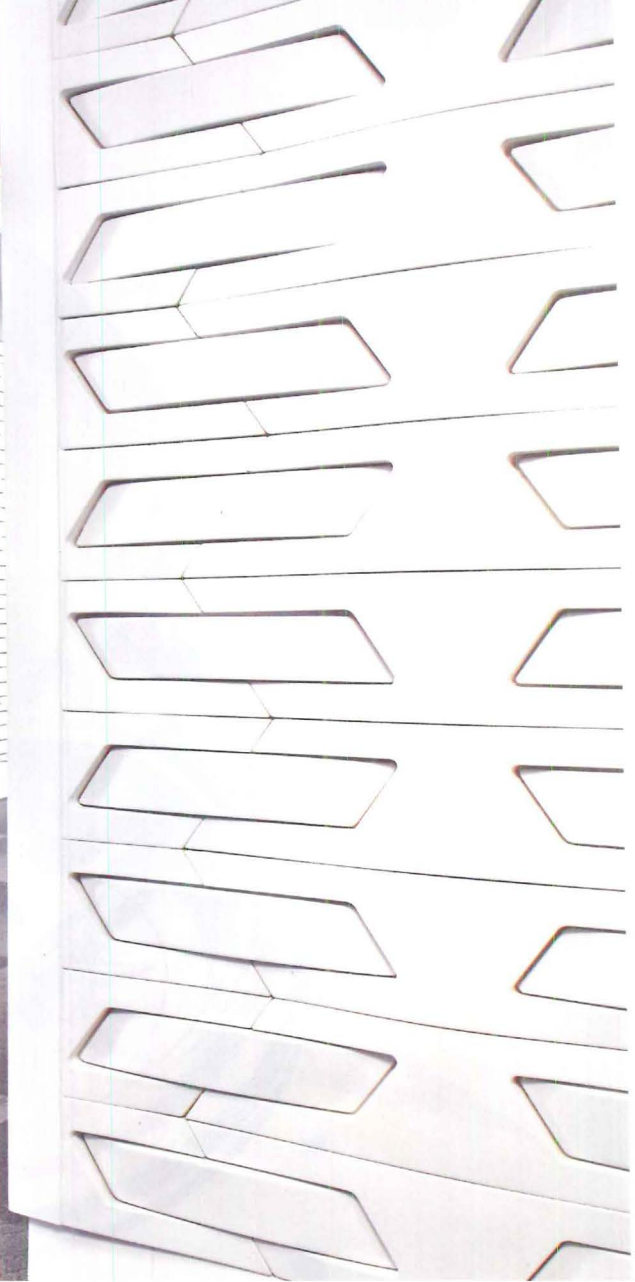
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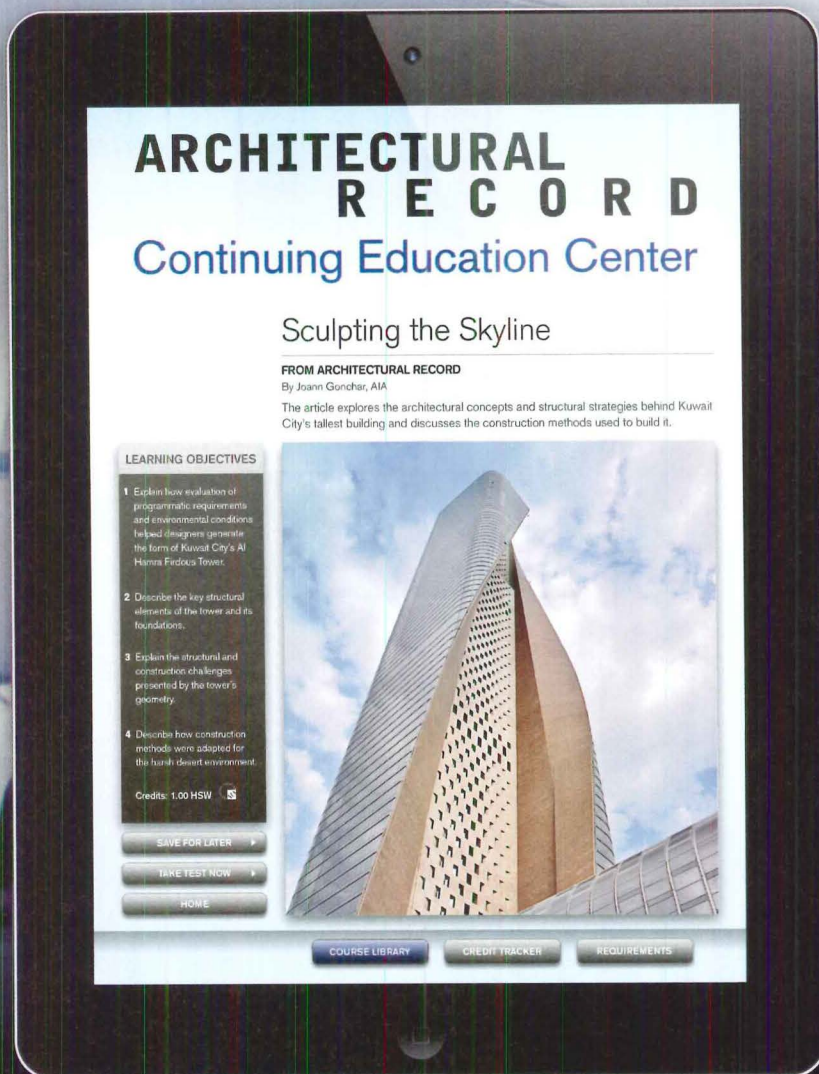
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Sculpting the Skyline

FROM ARCHITECTURAL RECORD
By Joann Gonchar, AIA

The article explores the architectural concepts and structural strategies behind Kuwait City's tallest building and discusses the construction methods used to build it.

LEARNING OBJECTIVES

- 1 Explain how evaluation of programmatic requirements and environmental conditions helped designers generate the form of Kuwait City's Al Hilwa Firdous Tower.
- 2 Describe the key structural elements of the tower and its foundations.
- 3 Explain the structural and construction challenges presented by the tower's geometry.
- 4 Describe how construction methods were adapted for the harsh desert environment.

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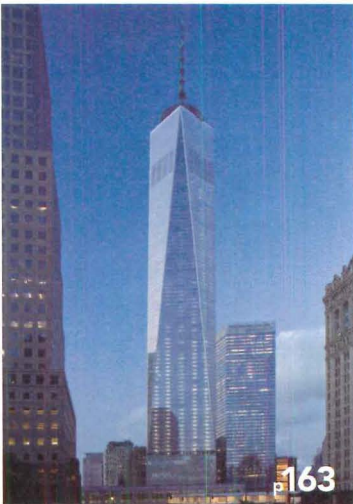


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IN PM SU CREDIT: 1 HSW

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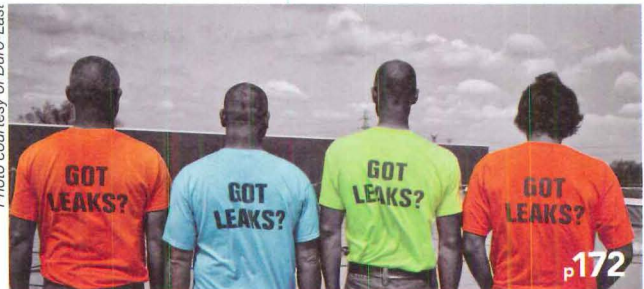


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As building facades and enclosures become more sophisticated and complex, they are called on to meet higher demands for both design and performance.



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FORWARD FACING: Innovations that are Moving Building Enclosure Design, Fabrication, Installation, and Performance in Bold New Directions

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

Building design continues to evolve as they are pushed by owner desires, code requirements, and computerized design capabilities. This is most evident in the building enclosure systems which include building facades, fenestration, and roofing systems. All of these have grown more and more complex and are typically less forgiving in order to meet demands for energy performance, occupant satisfaction, cost requirements, and durability

over time. Therefore, it is incumbent upon architects to stay up to date with emerging technologies, products, and systems that are available for optimizing performance while satisfying client and design needs.

BUILDING ENCLOSURE

Over the past decade, the growing significance of building enclosures has been evidenced by the increased attention being paid to this topic

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Learning Objectives

After reading this article, you should be able to:

1. Identify and recognize the significance of building enclosure and façade components in both the design and performance of buildings.
2. Assess the performance aspects of exterior wall and fenestration systems as they relate to code compliance, energy performance, durability, and sustainability.
3. Explain the importance of proper design and construction techniques to help assure that systems perform as intended.
4. Determine ways to incorporate the principles presented into specific building projects as shown in case studies.

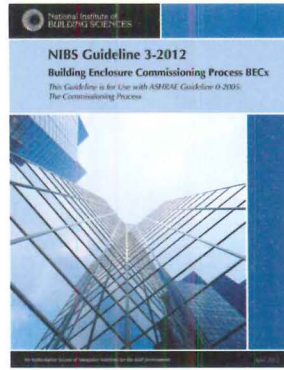
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by design professionals. Some of this is the result of a joint effort between the National Institute of Building Sciences (NIBS) Building Enclosure Technology and Environment Council (BETEC) and the American Institute of Architects (AIA) who signed an agreement in 2004 to establish the Building Enclosure Council (BEC) initiative. Currently, more than 3,000 affiliated architects, engineers, contractors, manufacturers, and others with an interest in building enclosures participate in Building Enclosure Councils (BECs) around the country in 26 chapters representing both cities and counties. These BECs promote the exchange of information and encourage discussion on matters concerning the products, systems, and science used to enclose buildings. Further, they address related topics such as training, education, technology transfer, weather conditions, and local issues. As a resource to this effort, NIBS, under guidance from the Federal Envelope Advisory Committee, has developed a comprehensive guide for exterior envelope design and construction for institutional and office buildings. Known as The Envelope Design Guide (EDG) it is continually being improved and updated through the BECs.

A recent development in the work of the BETEC is the creation of a NIBS Guideline for the Building Enclosure Commissioning Process (BECx). This effort recognizes that, just like other critical elements of a building, an independent review or commissioning process is an impartial way to see that the

Photo courtesy of NIBS



The National Institute of Building Sciences (NIBS) Guideline for the Building Enclosure Commissioning Process (BECx) is a free resource for anyone interested in better performing building enclosures.

design and construction of facades, fenestration, roofing, etc. are all carried out and tested appropriately to perform as intended. As stated in

the document, this “Guideline provides recommendations for navigating the enclosure commissioning process from its necessary inclusion in project planning to its continued emphasis throughout the life of a building. The Guideline is intended to be useable by all owners for all building types.” Regarding the process, it goes on to point out, “The Building Enclosure Commissioning (BECx) process is utilized to validate that the design and performance of materials, components, assemblies and systems achieve the objectives and requirements of the owner. The BECx process achieves this through experience, expertise, modeling, observation, testing, documenting and verifying materials, components, assemblies and systems to validate that both their use and installation meet the owner’s requirements.” Those interested in assuring proper building envelope performance will be well served by using this document and process.

In light of this trend for better performance while still meeting other client and user demands, we will look at eight items that can help architects create building enclosures that

perform better, look better, and remain within budget and schedule.

INSULATED METAL PANELS

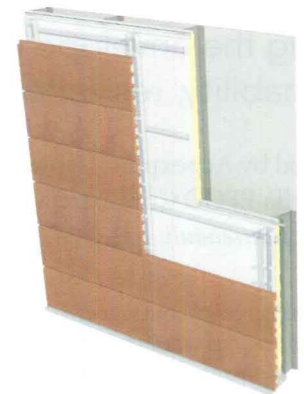
Insulated metal panels used in an exterior wall or facade can provide vast design opportunities while helping to meet sustainability performance goals. Indeed, they have been a common and popular choice by many architects in order to build more energy-efficient buildings while keeping within budget and material requirements. In practice, these systems are commonly provided by a single manufacturer to provide an insulated metal back-up panel that is also an air, water, thermal, and vapor barrier panel. Typically, this panel is installed in a horizontal orientation completely outside the structural supports. This way, there are no thermal bridges to reduce the energy efficiency of the wall. Then a final facade finish of choice can be installed as the exterior weathering skin. High-performance continuous insulation systems like this help commercial and industrial buildings meet energy codes and standards like ASHRAE 90.1. As a metal product, the commonly high level of recycled content makes it an environmentally friendly choice for architects, designers, builders, and contractors seeking a sustainable product.

It is common to think of insulated metal panels like this as only used with a metal skin, which is certainly a common option. However, they can also be used behind any type of facade cladding, including masonry or other materials. The benefit is that these manufactured wall panels have the potential to save time and money since they provide, in a single step, air, water, thermal, and vapor protection for a facade.

Craig Caudill, EVP of a construction



Images courtesy of Metl-Span



Insulated metal panels can provide continuous insulation behind a variety of cladding types including some metal skins that are fabricated to look like stone or terra cotta.



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company known as ProClad in Noblesville, Indiana notes, “Insulated metal panels are ideal for exterior wall systems. They provide not only easy installation and great cost savings over other types of system, they also have great efficiency in controlling temperatures due to their continuous insulation. And the installation of the panels involves only a single trade.”

THREE-DIMENSIONAL ALUMINUM COMPOSITE PANELS

Another popular cladding choice for commercial buildings, particularly in retail and office applications, is the use of aluminum composite panels. These exterior skins are more rigid and self-supporting than metal siding due to their multi-layer makeup of an inner and outer metal face separated by a very thin layer of rigid foam or other material. This composite construction means that the appearance and shape can be controlled with less likelihood of warping or “oil canning.” A smoother appearance makes them particularly well-suited for modular panels over an insulated underlayment to act as the weathering and appearance surface of a building facade.

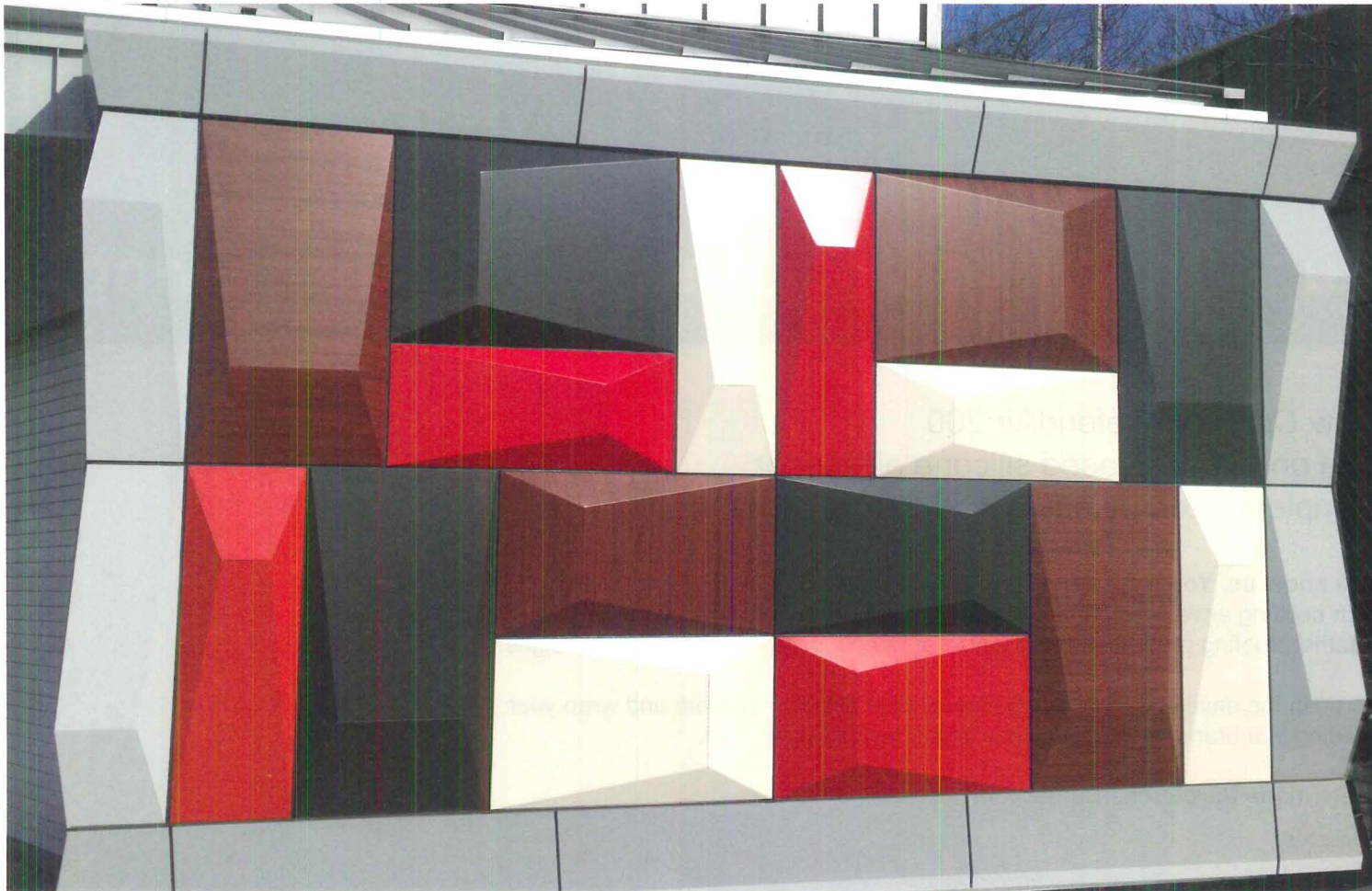
Recent innovations in the manufacture of aluminum composite panels has allowed for bold new looks to be realized. Rather than keeping the panels as flat surfaces, fully three-dimensional panels are now available that have either a convex or concave shape. The innovative 3D shape adds visual and textural interest to the facade of a building by creating a true and intentional depth to the panels. Further, the panels are available as part of an overall system that allows for installation either in new construction or on existing buildings.

As a complete system, care is taken not to produce any wasted material because of the size of the modular panels. There are a number of different sized modular panels available in both convex and concave configurations using the minimum waste approach. This engineered manufacturing process creates a systemized, unitized product that can be used as a kit of standard sized panels allowing designers to work with many different arrangements and layouts. Further, one of the benefits of aluminum is that color choices are numerous with new ones often available

regularly. It also means that accent bands or distinct colored areas can be designed easily within the modular arrangement. The net effect is a structurally rigid 3D panel system that provides for a colorful, undulating visual effect especially under dynamic lighting conditions.

Attaching the panels is typically achieved using standardized attachment systems. Some allow for simple snap-in-place possibilities while others are based on a removable design making it possible for subsequent changes to be made easily to the exterior facade. Either way, 3D aluminum composition panel systems have been tested using ASTM 330 “Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.” Under the procedures of this test, the 3D panels have performed impressively at over 135 psi. Manufacturers indicate that they are durable and offer a 20- to 30-year finish warranty. Henry Bilge, CEO of ACPEXpress notes, “Three-dimensional aluminum composition panels have been developed as a world-class product for exterior cladding.”

Photos courtesy of Acpeexpress



Three-dimensional aluminum composite panels are available in a wide variety of sizes, colors, and patterns to create a truly dynamic concave or convex facade.



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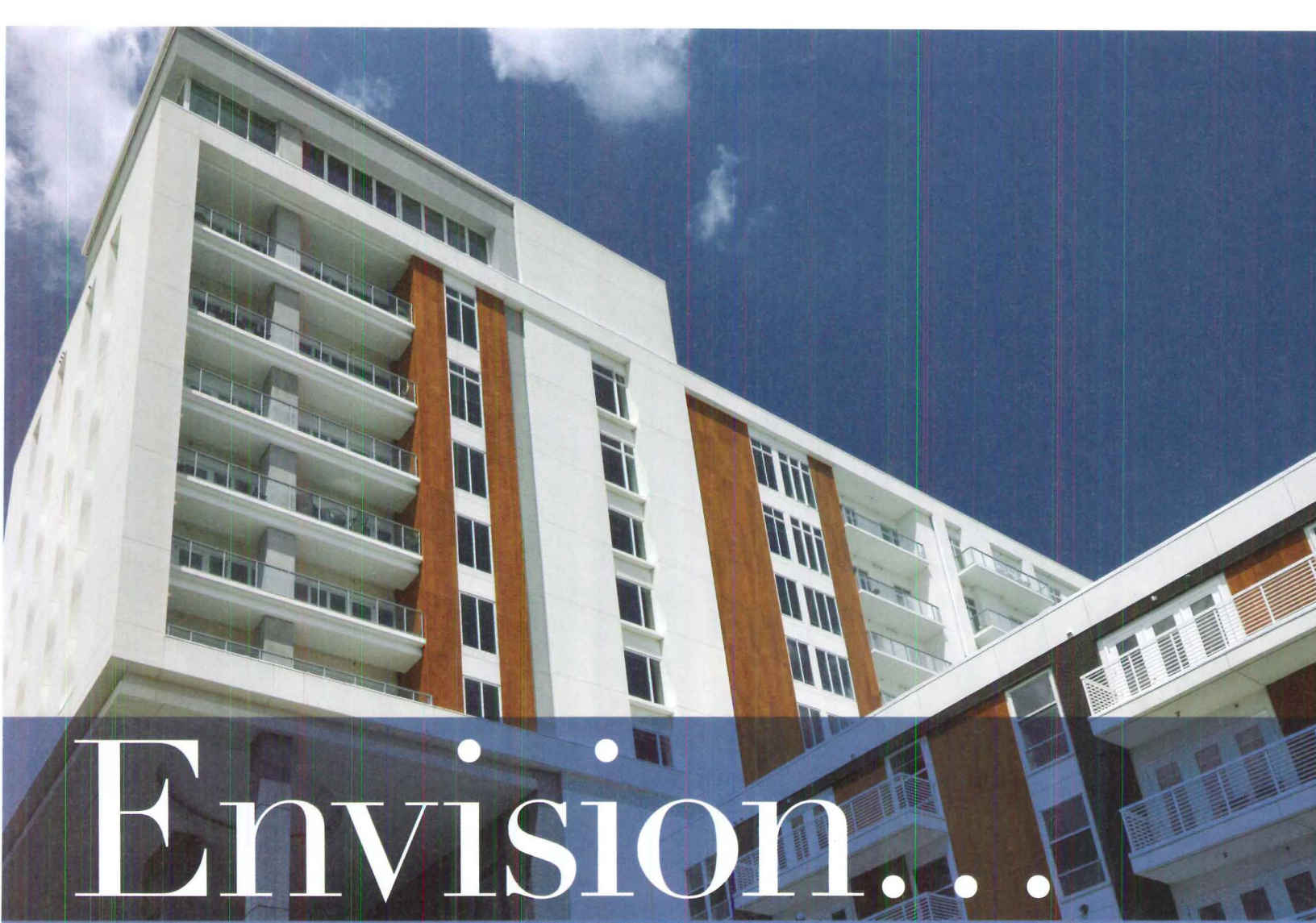
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well as new construction as a lightweight and cost-effective alternative to traditional cladding materials. They can be a minimally invasive way to cover large spans and dramatically change the overall appearance of a building, either as a continuous cover or in smaller modular panels—vertically, horizontally, or in 3D configurations. They can be installed in tensioned fixed frames or even be retractable. The flexible composite materials can easily achieve complex curvatures, making design possibilities virtually limitless. The material can be digitally printed for artistic or branding opportunities or images can be projected onto them. Integrating LED lighting can also dramatically transform the appearance, especially at night

Composite mesh can be specified in a broad spectrum of designer colors, to be UV stable, with anti-mold and anti-mildew treatments. It can also be flame retardant as well as non-combustible. A 10-year warranty is available with a 20- to 25- year life expectancy being common. At least one manufacturer ensures exceptional dimensional stability and flatness with no re-tensioning required with a smooth finish that requires very little upkeep.

EXTERIOR FINISH OPTIONS

By now, it is becoming clear that while facades are an integral part of the building enclosure and need to be treated properly from a performance standpoint, the aesthetic and finish options can be quite varied, even endless. This is true in terms of colors and textures, but it’s also in terms of how the finish maintains itself over time.

An emerging trend is to specify and use self-cleaning and heat-reflective finishes



The textile facade on the new FBI offices and parking garage in San Diego provides an intriguing and elegant appearance that blends in well with the surroundings while meeting the client needs for security.

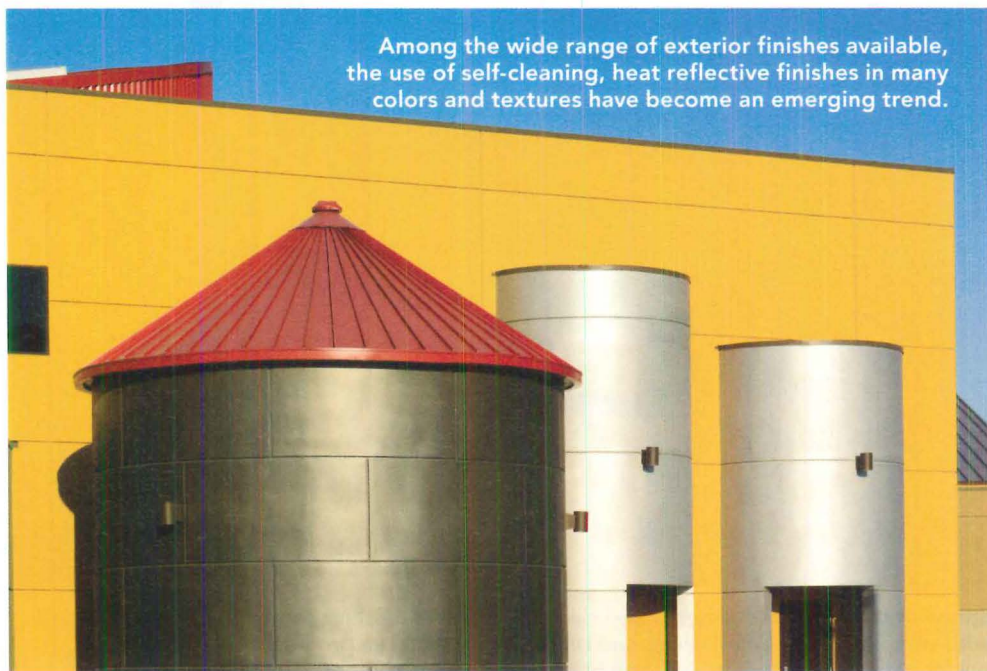
versatile, lightweight, flexible, printable, and 100 percent recyclable. As a shading device installed over windows, they can improve thermal comfort by reducing the heat load on the building. They also provide visual comfort by reducing glare without obstructing the view to the outside. With mesh openings on the order of 20 to 30 percent, they still allow natural ventilation to pass through while adding a degree of privacy and visual screening for windows.

Textile facades can be used on retrofits as

TEXTILE FACADES

An alternative to rigid metal or other materials used on facades is to take a different approach that relies on an open mesh material to create the visual outer appearance on a facade. Known as textile facades, they are a relatively new concept in the United States but have been used for some time elsewhere. To be clear, they are not usually a cloth textile, rather, they are made from a flexible composite material, but the term textile facade has become the generic way to refer to them. “While textile facade usage is common in other parts of the world, the United States is just now discovering the many benefits of its use,” says Jim Driggs, Serge Ferrari North America’s Business Development Manager.

There are a number of good reasons to consider using textile facades, not only for aesthetics, but also to improve the overall building performance. They are incredibly



Among the wide range of exterior finishes available, the use of self-cleaning, heat reflective finishes in many colors and textures have become an emerging trend.

Photo courtesy of Parex

on building facades. Such finishes help the building maintain its original look since they are formulated to be cleaned time and time again with rain water. As water hits the surface, it simply beads off the exterior and takes any dirt, grime, or soil in its path with it. Further, some of the same finishes use a mix of raw materials specifically chosen to reflect the sun's heat and ultraviolet (UV) rays, thus lowering surface temperatures, reducing heat island effects, and saving energy. When used over continuous insulation or an exterior insulation finish system (EIFS), the whole system is more effective at stopping thermal bridging and meeting current and anticipated energy codes.

The self-cleaning and heat-reflecting properties of exterior finishes can be an important means to help buildings look and perform better over time. They can also help owners effectively manage their buildings better since ongoing maintenance costs can be much less compared to traditional finishes. Environmentally, at least one manufacturer uses a photocatalytic technology that helps break down atmospheric pollutants in the air and on the surface. These same photocatalytic properties are what help keep the wall surface temperatures cool as it reflects heat from the sun. Ideal applications for this type of finish include new construction or refinish projects over EIFS, stucco, masonry, or concrete substrates.

Photo courtesy of Dow Corning



Spray- or roller-applied water-based silicone air barriers, which can be complemented with compatible silicone flashing and related materials, can provide a complete, high-performance air and water-resistive barrier that allows trapped moisture to escape.

SILICONE-BASED AIR BARRIERS

An important part of any exterior wall assembly, which is also mandated by building codes, is an air and water resistive barrier. There are numerous products on the market available to address this but one of the most effective, especially for larger buildings, is to use a spray- or roller-applied silicone coating over an appropriate substrate. One of the better known types is a one-part, liquid-applied elastomeric coating that cures to form a flexible, vapor-permeable membrane. This water-based silicone air barrier may be readily complemented by a fully compatible high-performance array of compatible products for addressing edges, seams, openings, and other common construction conditions.

A key characteristic of silicone air barriers is their ability to prevent air and water infiltration but retain the ability to “breathe” by allowing trapped moisture or water vapor to escape. This attribute mitigates concerns about potential corrosion and mold growth caused by moisture trapped inside wall assemblies. Of course, during construction, this same material needs to be able to handle exposure to the elements, particularly sunlight and potentially harmful ultraviolet (UV) radiation and products are available to meet that need. Similarly, the material needs to tolerate temperature differences during construction allowing applications in a range of conditions.

At least one such product has been tested and found to be capable of successful installation in temperatures as low as 20°F (-6°C).

In addition to the spray-on air barrier, the other products of a complete system typically include sealants and flashings to properly cover and seal the locations other than the flat surface of a substrate. This includes compatible and primer-less liquid silicone flashing at window and door openings, silicone sealant along joints or seams, and silicone transition strips for plane changes or corners. Together, this proven, coordinated system of compatible products provides long-term durability for the building enclosure while helping to improve the thermal and weathering performance of facades.

FENESTRATION SYSTEMS

Virtually all building facades incorporate some form of fenestration, and most architects spend a good deal of time sizing, arranging, researching, and specifying it—all for good reason, since there are many ongoing advances and trends in window fenestration systems. Improved energy efficiency in particular continues to be one of the strongest trends and one most likely to endure as driven by client needs and building codes. Manufacturers have responded by developing new fenestration products and installation methods. Architects are specifying improved thermal barriers in aluminum window, storefront and curtain wall systems, selecting more energy-efficient glass with many varieties of low-E coatings or triple glazing, incorporating many different types of glass on the same building, adding exterior sunshades and interior light shelves, and trying out self-shading electrochromic glass. One specific response to this energy performance trend is the availability of wood and aluminum-clad wood windows with triple glazing and optional krypton gas that achieve exceptional thermal performance with U-Factors as low as 0.16.

Window trends aren't limited to new construction. More and more existing buildings are being renovated in a way that respects their historic character while incorporating the latest fenestration technologies, including new materials, more energy-efficient glass, and new muntin options. Sometimes historic preservation mandates dictate that the existing windows be replaced with windows of the same material as the original windows; in other cases, the original windows are replaced with new materials and muntins. Either way, the goal is the same—preserve the original character of the building as expressed in the fenestration appearance, but update the performance to meet current needs.

The rigors of budget and schedule come to play regardless of building type or age. As a result, there is an increasing desire for



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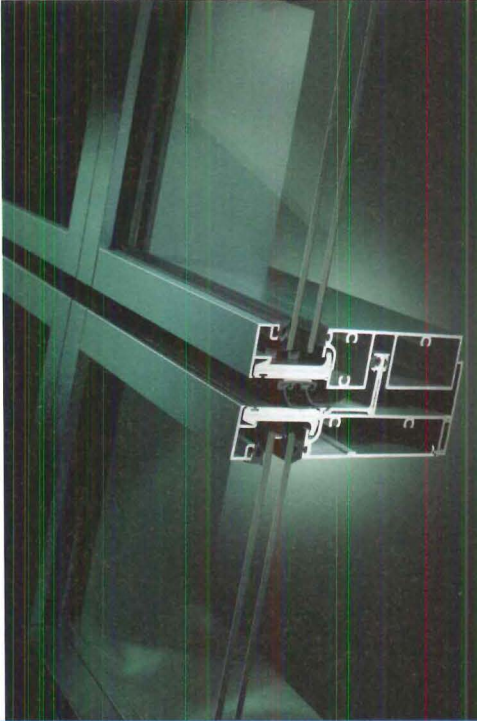
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THE REVOLUTION IN PANEL SYSTEMS

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fenestration systems that are factory-engineered and pre-glazed to expedite installation during the construction phase. Of course, there is also a desire to be more creative in building designs, resulting in increasingly complex facade systems with many plane changes, large expanses of glass, offsets, corners, tilts, glass types, spandrels, curved glass, etc. The key to a successful fenestration solution is to understand all of the options available and strive for an appropriate balance between design and performance.

STOREFRONT AND CURTAIN WALL SYSTEMS

While we have looked at fenestration in general, let's look a little closer at two common commercial facade systems, namely storefront and curtain wall systems. Storefront systems take their name from retail settings, where they are commonly used for large, single-floor height openings of glass. These systems are intended for light commercial single-story retail viewing

and readily incorporate doors and entrances for quick access to interior product displays. They are also often used in other commercial, educational, and institutional settings as well. They typically span a floor-to-floor or floor-to-head condition without passing in front of any intermediate anchorage conditions. Most storefront designs utilize small, non-obstructive, aluminum framing shapes that can present a "flush glass appearance" where glass seems to disappear into the framing system. They are available in a range of standard component sizes and hardware options with glass thickness choices ranging from ¼-inch to a full 1-inch insulating glass.

From a performance standpoint, storefront systems can be looked at in terms of structural capabilities and thermal performance. As a light commercial system, storefront systems are typically limited to a maximum height of 12 feet due to the capacity of the framing and glazing system. Thermally, storefront systems can provide adequate performance. It is important

Fenestration trends, whether for new construction or existing buildings, include pre-engineered, factory-glazed systems that can provide design options while still meeting cost and scheduling needs.



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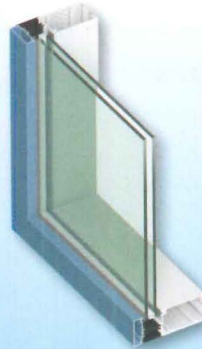
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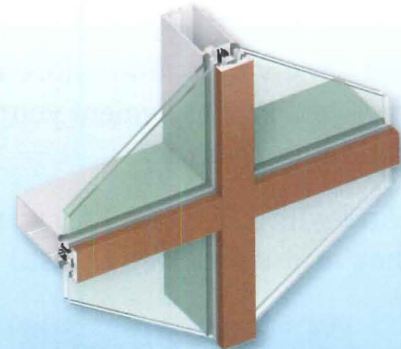
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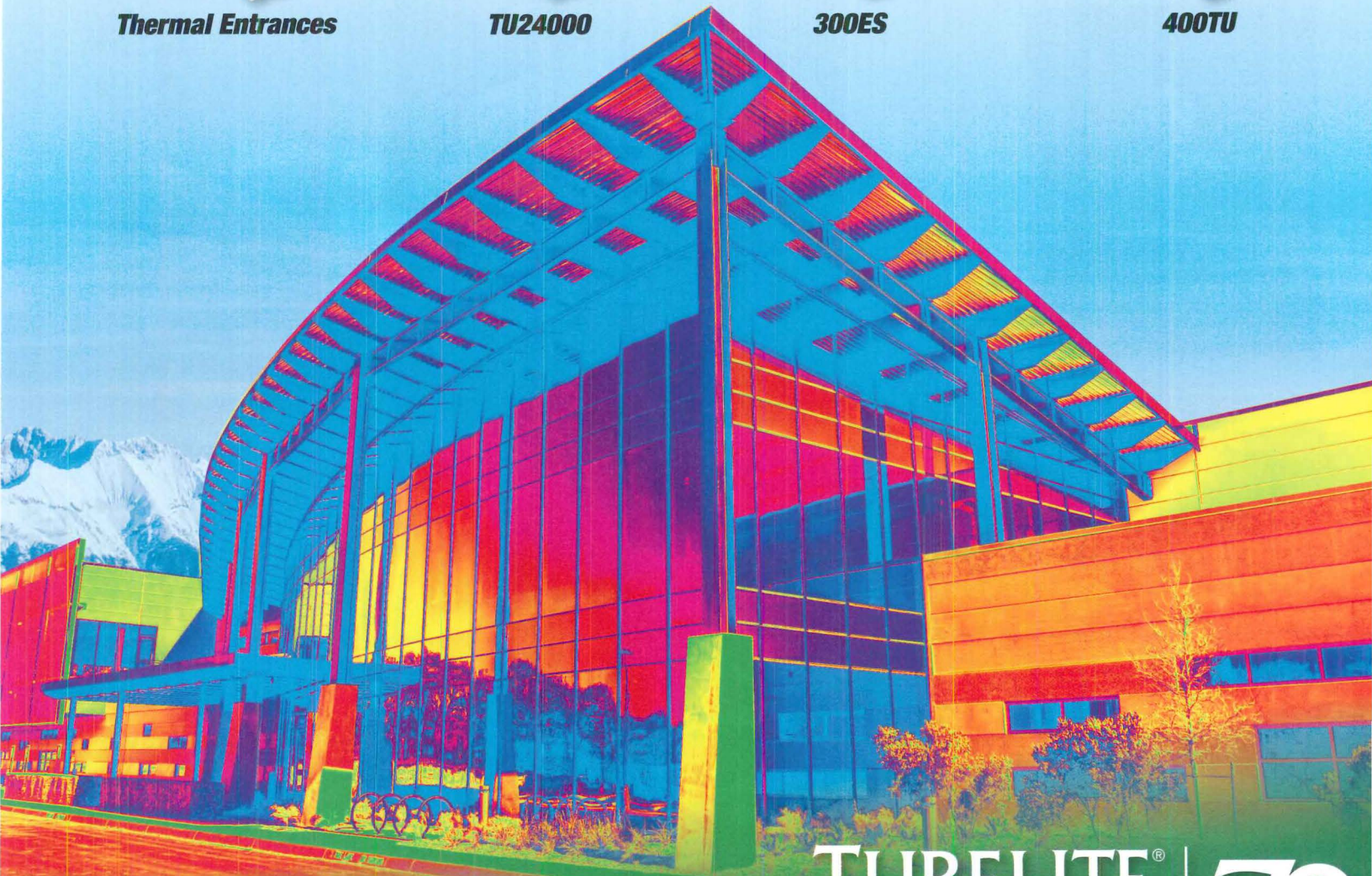
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when specifying materials or components for exterior facades to call for appropriate thermal breaks in the framing and glazing support systems. It is also necessary to select the highest-performing glass available that is appropriately coated and treated to meet the thermal needs of the building in its particular climate location. Fortunately, most storefront manufacturers now offer a full range of choices in this regard so performance targets can be incorporated and met.

Curtain wall systems are generally designed to meet higher performance standards than storefront systems since they are often exposed to harsher conditions. As a complete, multi-story exterior envelope facade system, they provide a non-structural, relatively lightweight, weather-tight covering on buildings. They impact the design appearance of the exterior of course, but it is their superior performance and carefully engineered assembly that often make them an attractive facade solution. In the case of small, low-rise projects, the system may be field fabricated or “stick built” and glazed using standard components similar to a storefront system. For larger, multi-story projects with repetitive and large-scale surfaces, pre-fabricated and factory glazed or “unitized” systems may be warranted to create a monolithic assembly. In either case, curtain wall systems are generally installed outside of the structural system of a building running past floor slabs and other structural elements. They are then attached via tiebacks directly to the building structure at floors, columns, and beams. This installation process means that all excess wind loads and dead loads imposed on the fenestration system are compartmentalized and transferred directly to the building structure. Hence the curtain wall system carries only its own weight and loading while the building structure absorbs all imposed loads.

Since the structural performance of curtain wall systems is based on transferring loads to the building structure, their size is virtually unlimited horizontally or vertically as long as the building is designed to carry the transferred loads. From a thermal performance standpoint, curtain wall systems are typically capable of superior thermal results based on meeting higher wind pressure ratings, tighter seals against weather and more attention to glazing options. The material of choice is aluminum with manufacturers offering anodized finishes ranging from clear to earth tones including tans and blacks. There are also numerous painted colors available with 10-year standard finish guarantees.

SINGLE-PLY MEMBRANE ROOFING

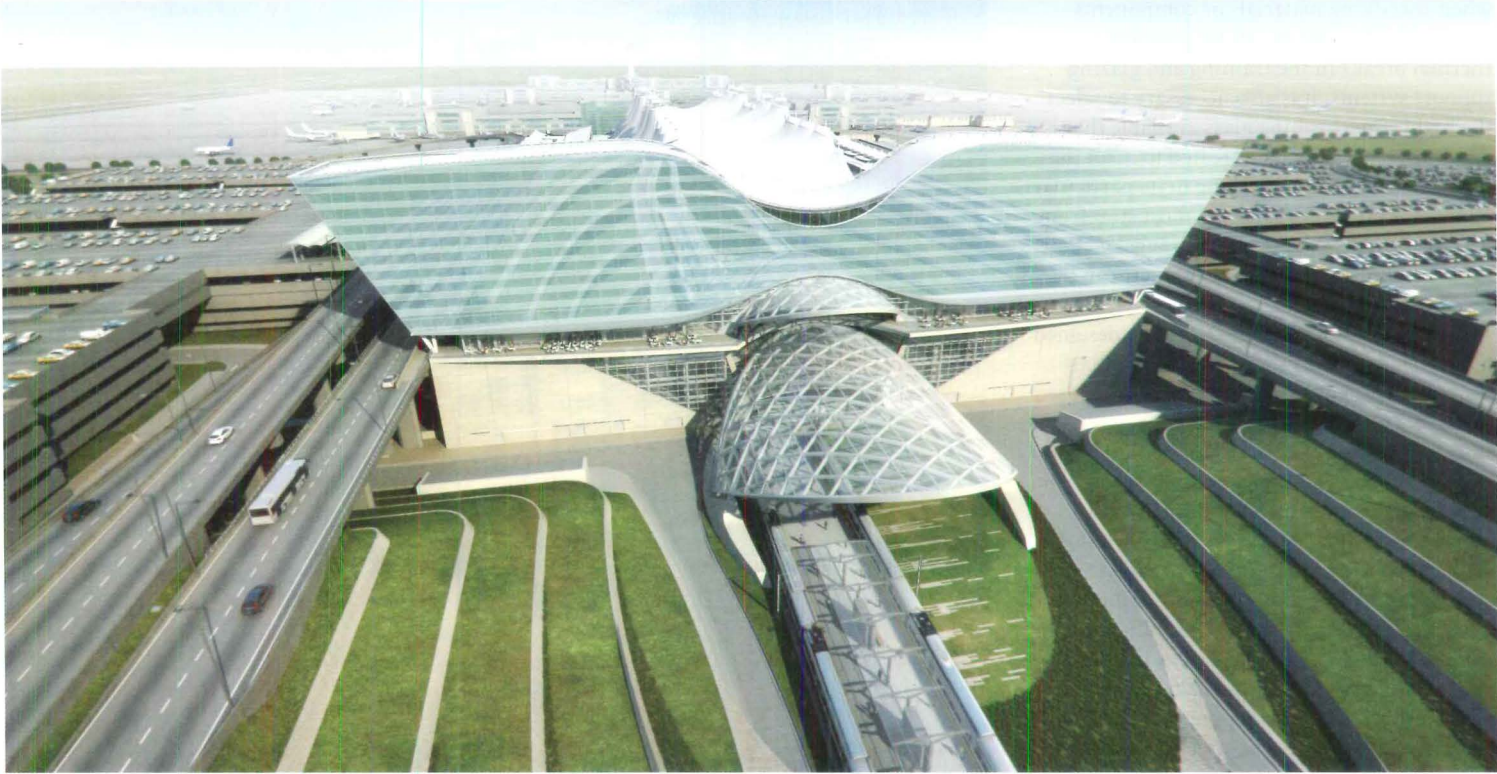
Building enclosures include all sides of a building including the roof. Of course, in some creatively shaped structures, it is sometimes

Photos courtesy of Tubelite and Wausau Window and Wall Systems/ Ryan Siemers



While storefront systems may be used in first floor settings, many options are available for high-performance curtain wall systems for both low-rise and high-rise buildings.

Photo courtesy of Fiber Tite Roofing Systems/Gensler



KEE single-ply membrane roofing can be incorporated into buildings with non-traditional shapes to create high-performance protection that can also contribute to green and sustainable building criteria.

hard to discern where the facade ends and the roofing begins from a design standpoint. In terms of performance, they should both provide equal protection and create the appropriate barriers for thermal, weather, and air infiltration. While there are many well-known roofing systems available, one is garnering some increased attention even though it has been around for more than 35 years with greater than 99 percent of the installations still performing quite well. It is based on a single-ply membrane made from Ketone Ethylene Ester or simply abbreviated as KEE.

KEE roofing membranes are appealing for several high-performance reasons. First, they are made from the roofing industry's heaviest base fabric offering superior puncture and tear resistance. Second, the KEE content allows the roofing membranes to maintain excellent flexibility, as well as chemical and UV resistance. Finally, their quality can be ascertained by meeting or exceeding the requirements of ASTM D6754-02 "Standard Specification for Ketone Ethylene Ester Based

Sheet Roofing." Beyond roofing, they are also well suited as a waterproofing membrane for below grade facade applications.

From a sustainability standpoint, KEE membranes have several other desirable attributes which may contribute to LEED points and credits. Available in white reflective colors, it allows the roof surface to reflect solar and ambient heat, which can significantly reduce air conditioning costs in the building where it is installed. It can also help prevent heat island effects often caused by dark-colored surfaces. As an environmentally friendly product, it contains no volatile organic compounds (VOCs) and works well with green roof systems. Since it is compatible with asphalt, it allows re-roofing over built-up roofing systems, thus eliminating the need to tear off and dispose of existing roofing materials. Finally, it possesses a long life cycle as a durable material with high resistance to chemicals, air conditioning coolants, jet fuels, restaurant grease, UV light, airborne bacteria, acid rain, and industrial pollutants.

CONCLUSION

The art and science of building enclosures, particularly in building facades and roofing, continues to evolve. Staying abreast of imposed requirements and demands as well as industry-wide developments in products and technologies allows architects to create new or renovated buildings that provide exceptional performance while still satisfying all other design criteria. Constructed and installed correctly, the high-performance solutions presented in this article can also help assure long term durability and satisfaction from the owners and occupants of those buildings.

► Continues at ce.architecturalrecord.com

Peter J. Arsenault, FAIA, NCARB, LEED AP is an architect and green building consultant who has authored more than 100 continuing education and technical publications as part of a nationwide practice. www.linkedin.com/in/pjaarch





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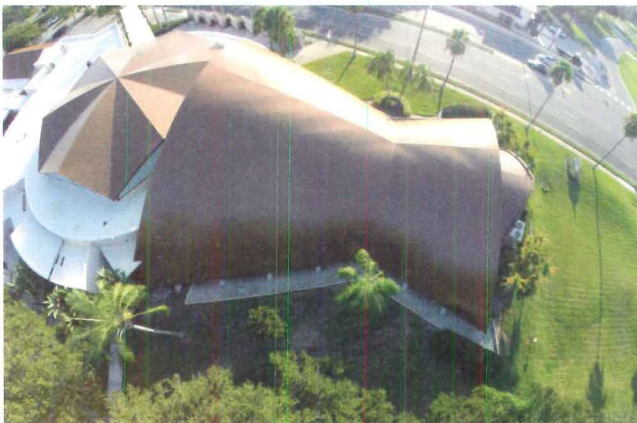
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The Dow Corning® Silicone Air Barrier System – which features Dow Corning® DefendAir 200 and new Dow Corning® 778 Silicone Liquid Flashing – helps extend building envelope protection and simplifies installation. The ABAA-evaluated system exceeds industry standards for airtight performance, and its all-silicone formulation minimizes sequencing and compatibility issues.

www.buildabetterbarrier.com

Circle 11

FiberTite Roofing Systems



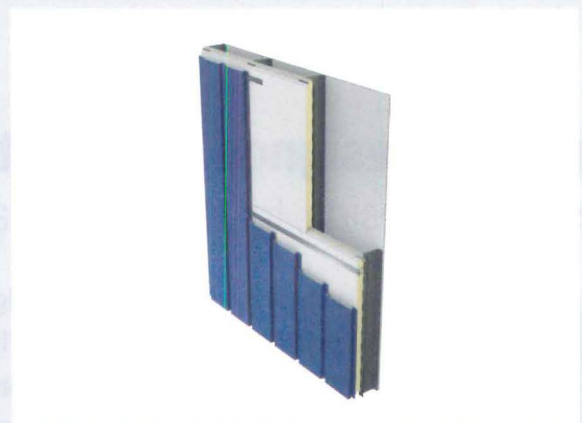
FiberTite® Brite™

FiberTite® Brite™, featuring custom colors and patterns, is a unique roofing membrane that allows architects to design a high-profile roof which will complement the overall building design. FiberTite® Brite™ is the combination of three proven technologies: FiberTite® roofing, Seaman Corporation's Architectural Fabric technology, and Kynar fluoropolymer top-finish.

www.fibertite.com

Circle 12

Metl-Span



HPCI Barrier™ Wall Panel

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www.metlspan.com

Circle 13

PRODUCT REVIEW

FORWARD FACING: Innovations that are Moving Building Enclosure Design, Fabrication, Installation, and Performance in Bold New Directions

Parex



AquaSol: Enhanced Acrylic Finish & Coating

It's time to envision the possibilities of AquaSol™ — a power-packed acrylic finish and coating with enhanced hydrophobic and photocatalytic technology. In addition to the impressive features found in standard acrylic finishes, AquaSol™ also repels water, reflects UV rays, and reduces pollution.

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Circle 14

Pella EFCO Commercial Solutions



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www.pellacommercial.com

Circle 15

Serge Ferrari



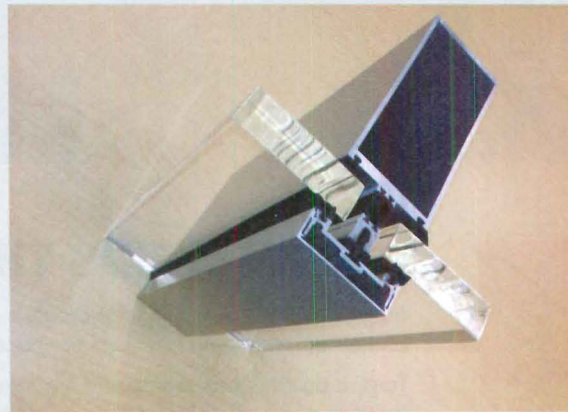
Bioclimatic Façades from Serge Ferrari

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Circle 16

Tubelite Inc.

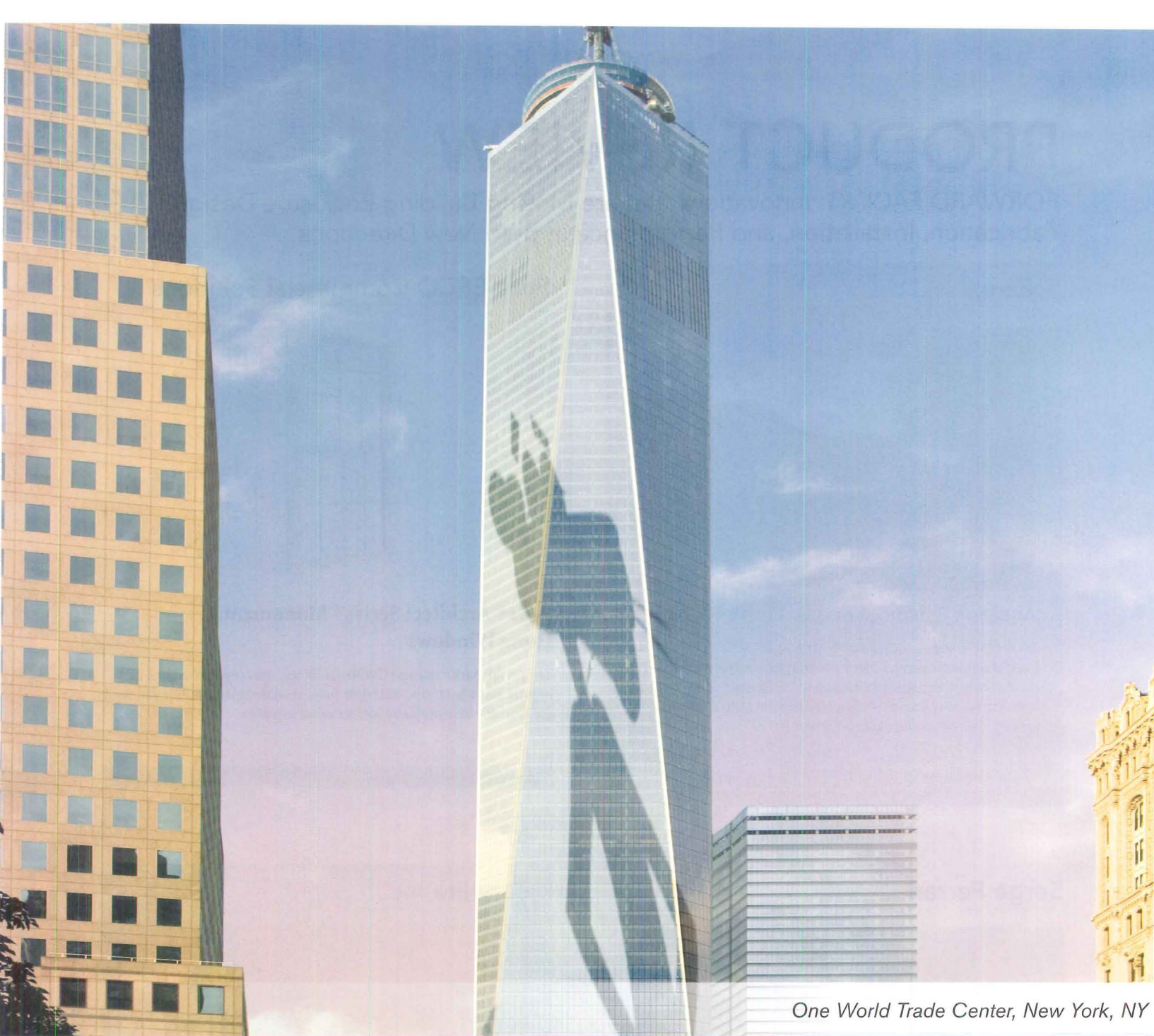


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Thermally broken curtain wall designed to meet or exceed today's stringent energy codes. The 400TU Series has a 2½" face, and offers screw-spline or shear clip assembly. The dual thermal strut decreases U-Factors and increases CRF significantly over many current thermal barrier systems.

www.tubeliteinc.com

Circle 17



One World Trade Center, New York, NY



GREAT MINDS THINK defensively.

It takes a lot of great minds to create a building as amazing as One World Trade Center. And one of their greatest concerns was fire containment.

To give building occupants and first responders more time to react in an emergency, commercial building products that defend against fire are critical. The great minds at Owens Corning had the answer: Owens Corning® Thermafiber® Mineral Wool Insulation.

Architects and contractors worked with the Owens Corning Thermafiber InSolutions® team to create custom solutions with products that work together to achieve outstanding fire control in curtain wall and perimeter fire containment systems, without compromising design. The collaboration resulted in a smart, beautiful, code-compliant building worthy of the One World Trade Center name, using Thermafiber® FireSpan® curtain wall insulation, Safing firestop insulation and the Impasse® insulation hanger system. That was some good thinking.

GREAT MINDS THINK PINK. | #BuildingGenius | OCBuildingSpec.com

The Architect's Challenge: Designing the Best Wall for the Project

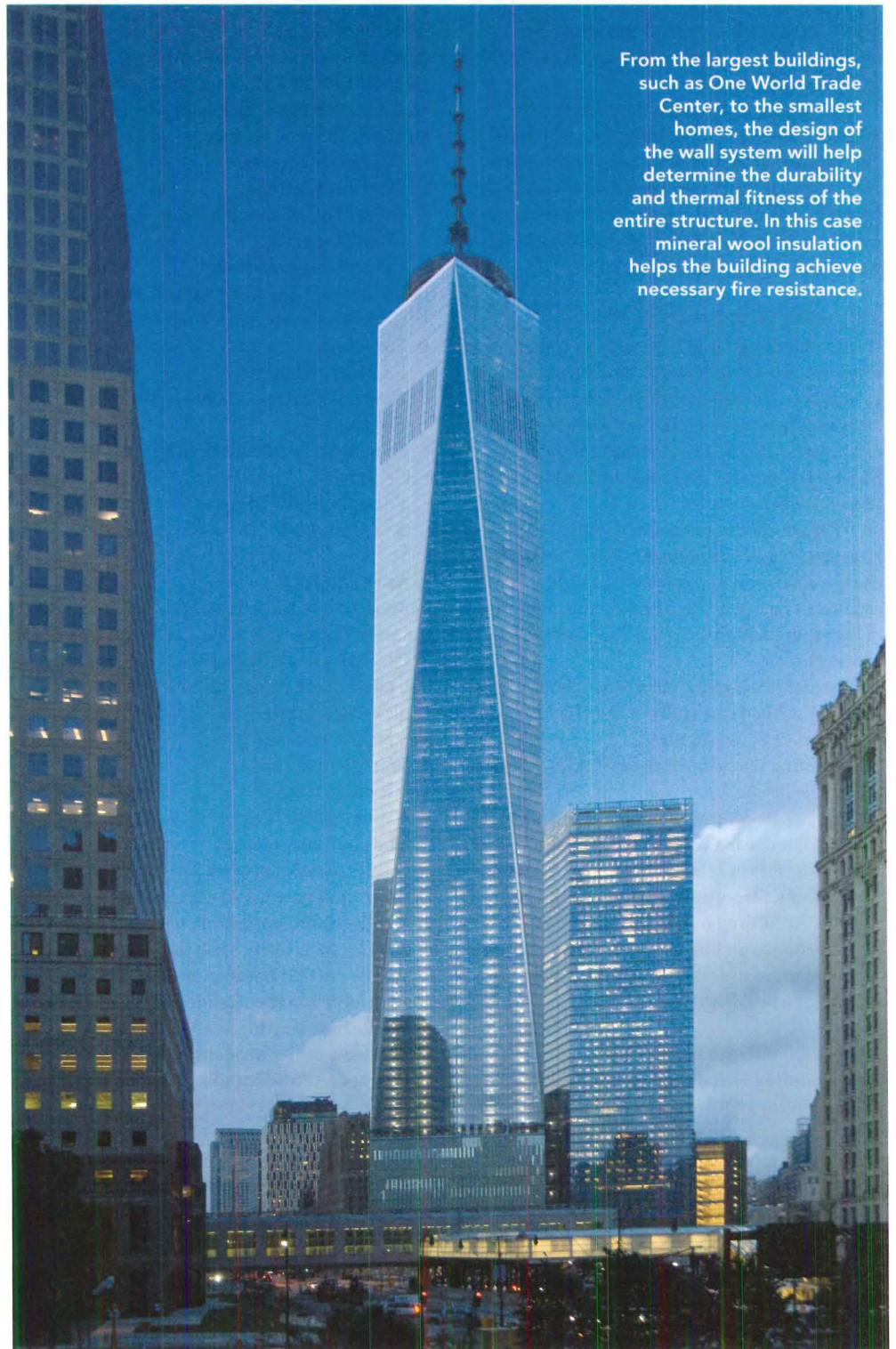
Moisture and thermal control layers for durable, energy-efficient and healthy buildings

Sponsored by Owens Corning and TamlynWrap | *By Kathy Price-Robinson*

Moisture flow doesn't care about buildings. Heat flow doesn't care about buildings. The immutable laws of nature drive both forces. And both could, if not controlled, compromise a building, sicken its occupants, and waste energy and resources. And the professionals who designed and/or constructed that building could learn more about lost reputations, liability, and lawsuits than they ever cared to know.

Wall design is a major key to controlling the forces of nature on a building. While poor thermal control brings discomfort and high operating costs, moisture-related construction defects are among the leading causes of building failures, callbacks, and construction litigation. While exact statistics are hard to come by, some industry experts estimate that up to 90 percent of litigation for construction defects is due to water and moisture problems. ASTM estimates that water-related defects cost Americans more than \$9 billion per year. These billions of dollars are spent each year repairing finish and structural damage due to water- and moisture-related issues. Damage from water leaks not only eats

From the largest buildings, such as One World Trade Center, to the smallest homes, the design of the wall system will help determine the durability and thermal fitness of the entire structure. In this case mineral wool insulation helps the building achieve necessary fire resistance.



CONTINUING EDUCATION



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LEARNING UNIT (LU)

Learning Objectives

After reading this article, you should be able to:

1. Identify the laws of nature and their effects on every building.
2. Describe design principles for a superior wall system.
3. Explain how drainable building wraps help achieve durability and health goals.
4. Describe three types of insulation—XPS, mineral wool, and fiberglass—and how to specify the right one for the desired performance.

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

AIA/CES K1509F

Photo courtesy of Owens Corning

into profits but also can diminish professional reputations, and even lead to structural failures and indoor air quality problems. Damage repair from water infiltration typically requires four to five trade contractors to perform the repairs, which requires significant resources to schedule and correct the damage not to mention inconveniencing the owners.

The challenge for architects is four-fold: to understand the forces of nature, to understand how those forces work on buildings, to learn how to efficiently control those forces on buildings, and to learn how to specify a wall that provides that control.

This article is about the importance of moisture and thermal controls in a wall design, and how the architect can design and specify the right wall system for the project. We'll also focus on several products that help achieve those performance goals, including drainable building wraps and three forms of insulation.

ARCHITECTS MUST TAKE THE LEAD

While wall design might seem to be the purview of others, from engineers to builders, there is no doubt in the mind of Achilles Karagiozis, a nationally regarded building science expert, exactly who should take the lead to make buildings more durable, safer, and energy and resource efficient.

"The architects' job is expanding," Karagiozis says, citing sustainability, extreme energy efficiency, and durability as the architect's concerns. "No one else has more of that responsibility. Everyone is looking to architects."

But architects must learn more about building science—the study of the effects of natural forces on structures.

"Building science," Karagiozis adds, "is key to durable design."

"It's lack of education," agrees Ian Daniels, who holds a master's degree in architecture and is a technical expert for a company that designs and manufacturers moisture management systems. According to Daniels and others, it would behoove architects to learn how the laws of nature move moisture and temperature into and out of a building.

THE BUILDING AS A SYSTEM

Understanding wall design means understanding nature. Here are the immutable laws:

- Moisture moves from wet to dry.
- Energy transfers from hot to cold.
- Pressure moves from high to low.
- Gravity pulls matter down.

Keeping a building dry and conditioned inside is not just one problem to be solved. Success means to balance all factors. If moisture does intrude, as it surely will, the building must

be designed so it can dry out. In other words, buildings must be designed for failure.

"Architects need to understand that if they are to be designing energy efficient structures," Karagiozis continues, "their walls are becoming more and more sensitive to moisture, more and more and more sensitive to air flow."

A building is, simply put, an environmental separator. Whereas primitive structures once separated occupants and their possessions from lightning strikes, downpours, mountain lions, bears, locust, and other threats, we now demand much more of our building envelopes. In order to function as a superior environmental separator today, the following attributes of a structure must be achieved:

- Control of heat flow
- Control of airflow
- Control of water vapor flow
- Control of rain
- Control of groundwater
- Control of light and solar radiation
- Control of noise and vibrations
- Control of contaminants, environmental hazards, and odors
- Control of insects, rodents, and vermin
- Control of fire
- Provide strength and rigidity
- Be durable
- Be aesthetically pleasing
- Be economical

Control Layers

For a structure to be durable, safe, and healthy, it must be protected by four control layers.

Water exists in all three phases (solid, liquid, and gas). These following control layers are deployed to control water (in all phases) and thermal movement:

- Water control layer
- Air control layer
- Vapor control layer
- Thermal control layer

While many configurations are possible in the ever-changing world of material innovation and budgets, the optimum configuration for the control layers is likely to be as shown in Figure 1.

While current building science indicates that control layers on the outside of the structure bring the best moisture and thermal bridging protections, cavity insulation should not be overlooked. According to Karagiozis, the stud cavity is "valuable real estate" that can be insulated to further the building program's energy efficiency goals.

The most important factor to consider when specifying external control layers is their continuity; they should be continuous around the entire perimeter of the building enclosure, including foundation, walls, and ceiling.

This emphasis on moisture and air control layers has shifted since the beginning of the

Image courtesy of Owens Corning

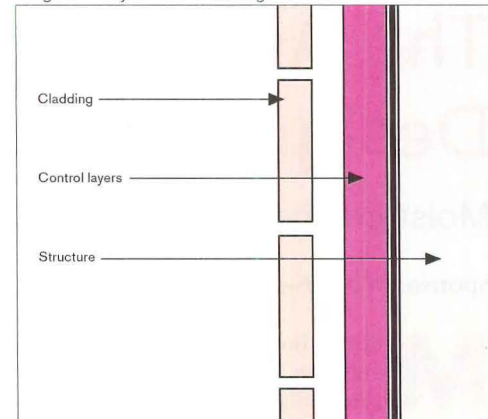


Figure 1: The best place for the control layers is on the outside of the structure.

green building movement, which followed the oil embargo of the 1970s, when most importance was put on thermal control. However, as buildings have become tighter and tighter, the science has shown that controlling the water, air, and vapor going into and out of a structure is actually more impactful for achieving a sustainably-minded architect's goal—designing a durable building. Only when the forces of moisture intrusion are handled, and controlled ventilation is provided, does the energy efficiency of a building matter. To complicate matters further, each construction material stores water—this specific property is called sorption. Some materials have high affinity to store water (wood), while others like extruded polystyrene (XPS) have very little when placed in the same relative humidity environment.

We'll take a look first at the role that water resistant barriers play in the specification of a superior wall. After that, we'll look at three types of insulation—extruded polystyrene, mineral wool, and fiberglass—and the applications in which each of them contributes to a superior wall design.

KEYS TO MOISTURE MANAGEMENT: UNDERSTANDING WATER RESISTANT BARRIERS

Exterior cladding systems are generally classified in two categories: barrier systems and rainscreen systems. Barrier systems are intended to prevent exterior liquid water from penetrating into a wall system. However, over time some components, like sealants, in a barrier system inevitably break down and create a leak. Rainscreen cladding materials like stone, brick, and stucco actually store water and are designed with weep holes to let water escape precisely because they are not intended to be watertight. Therefore, it is inevitable that all cladding systems leak and it's not a matter of if, but when. Most of the time, these weep holes allow the moist air in the air cavity between the cladding and the water

resistive barrier to ventilate to the outdoors. This mode of drying is an essential feature that an architect can include in their design for more durable wall performance.

Clients expect their buildings to not leak inside and to be durable, long lasting, healthy, and comfortable to occupy. Water infiltration can lead to mold and indoor air quality problems that can require expensive mitigation and cause disruption to the occupants.

Behind the cladding, the weather resistant barrier (WRB) works to stop the rainwater from getting into the wall system and allows it to drain, via the natural force of gravity, down and out of the wall system. But if the WRB and cladding are touching, the wall will not drain because of tension between the two surfaces. Under the influence of that force, the water sticks and stays and the structure suffers.

To mitigate that, innovative sheet WRB products effectively eliminate excess moisture and thus the damaging effects of mold and rot. Because of their design, these products remove at least 100 times more bulk water from a wall versus standard housewraps. This is achieved through the gap created by 1.5-millimeter spacers bonded to a high-performance housewrap. This gap design provides a true drainage space between the sheathing and cladding material.

Further, the innovative configuration of these spacers allows drainage of the plane in any direction—horizontal, vertical, slanted—which helps eliminate negative consequences from the common irregularities of field installation. In other words, if the drainable WRB is installed upside down or sideways, no harm, no foul. While furring strips have traditionally been employed to separate the cladding from the WRB to allow space to ease the hydrostatic pressure and to allow drainage to occur via gravity, this method of providing drainage by the very design of the WRB saves time and money over the older methods.

Liquid Water vs. Vapor

To understand how weather-resistant barriers work to impede water intrusion, it's important to distinguish between liquid water and vapor.

Moisture vapor, composed of water droplets in a vaporous form, is very small and invisible. Water molecules, in liquid form, have a stronger attraction to one another, making movement through space different than that of gases.



The key elements that create this weather resistant barrier's drainability are the 1.5-millimeter spacers that help separate the barrier from the cladding, thereby breaking the hydrostatic pressure that keeps water from draining down and out. This allows the natural force of gravity to move the water down and out, protecting the building components. Without hydrostatic pressure impeding drainage, nature can do its job.

WRBs are water resistant because the pores (spaces) in the sheet material are too small for liquid water to pass, but with pores that are large enough to allow moisture as a vapor to pass through. Thus they are said to "breathe." WRBs need to be breathable to allow interior moisture to escape and to allow for drying if the building assembly gets wet. The advantage of a wrap product over building paper is that it is more breathable, more durable, and the seams can be easily taped to create a continuous water and air barrier system.

Building codes require WRBs under all cladding systems to prevent water penetration into building assemblies. The type of WRB is not specified in the codes. WRBs can be as simple as building paper or as be as multifaceted as a high performance drainage wrap.

The function of a WRB or building wrap is to:

1. Create a weather barrier behind exterior cladding to protect the sheathing and aid in reducing water intrusion into the wall cavities.
2. Promote fast and efficient drainage of water out of the assembly.
3. Provide a vapor-permeable membrane that allows moisture trapped in sheathing to escape.

4. Provide a vapor-impermeable membrane that stops moisture ingress to sheathing.
5. Be an energy-efficient air barrier to stop air infiltration and exfiltration through walls.

Building Standards Require Water Tight Performance

Codes and building standards have progressively gotten stricter as a result of the increase in water-related damage in homes.

The 2009 & 2012 International Residential Codes (IRC) state:

R703.1.1 Water resistance.

The exterior wall envelope shall be designed and constructed in a manner that prevents the accumulation of water within the wall assembly by providing a water-resistant barrier behind the exterior veneer as required by Section R703.2 and a means of draining to the exterior water that enters the assembly. Protection against condensation in the exterior wall assembly shall be provided in accordance with Section R601.3

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Kathy Price-Robinson is a longtime building and design journalist and a multimedia education developer.

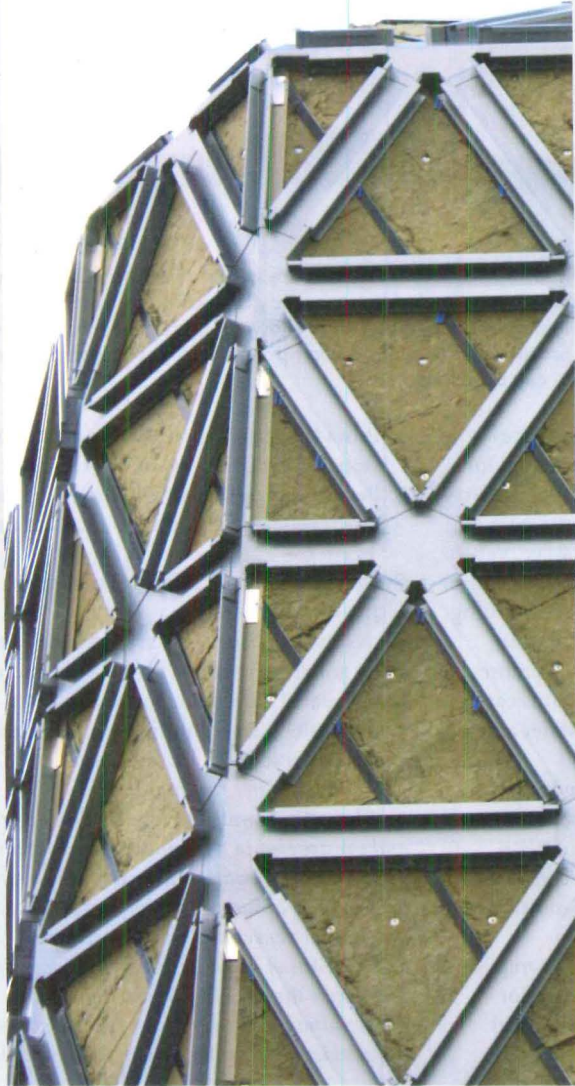


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PRODUCT REVIEW

The Architect's Challenge – Designing the Best Wall for the Project

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Circle 19



Project:
Lawrenceville High School
Location:
Lawrenceville, Georgia
Architect:
HOK Group

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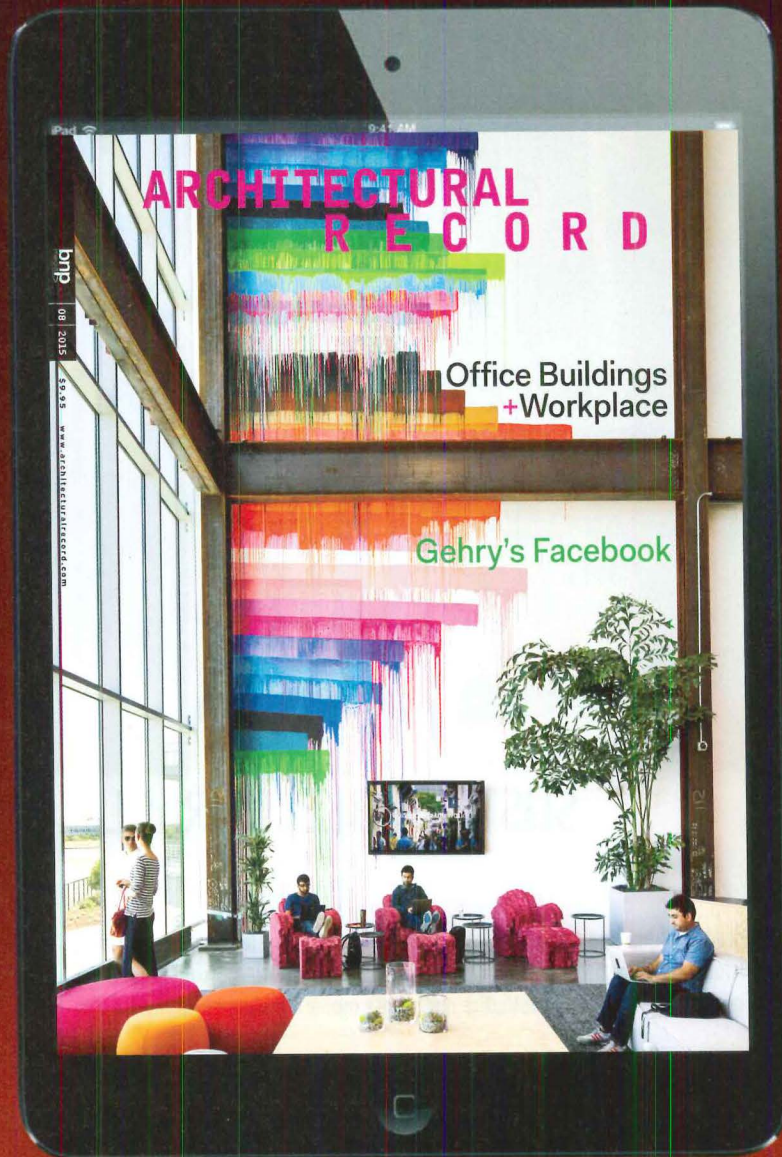


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Ceramic Tile: Solutions for Holistic Sustainability

Manufacturer transparency and holistic comparative material analysis among ceramic tile producers leads to modern, healthy, sustainable designs

Sponsored by Tile of Spain | By C.C. Sullivan

The word green has many definitions, but the term as applied to buildings that are beneficial to the environment has its roots in the chlorophyll hues that mark our natural world. Plants give green building its name, and their function in natural ecosystems is seen as emblematic of the most appropriate and holistic approach to sustainable design today. “Rather than seeing each building material or subsystem as a single-benefit addition to a project, leading architects value their contribution as a synergistic component of the total building system,” says Ryan Fasan, a consultant to the Coral Gables, Florida-based trade group, Tile of Spain. “The days of speaking about building products based on individual, single-attribute merits are long gone.”

In addition to their multi-attribute environmental benefits, green building products and systems are increasingly identified based on the comfort and succor they give to humans. This builds on the notion that humans are naturally attracted to living things, including plants—the term biophilia describes this effect—not only for shade, nutrition, and other ameliorative properties but also for pure sensory and visual appeal. In this way, green design has grown to encompass such values as occupant health and safety as well as cultural enrichment and individual happiness. Clearly, the plant kingdom does more than fix nutrients and resources (like oxygen) within their ecosystems. “Natural environments are not amenities, and they are not mere

CONTINUING EDUCATION



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Learning Objectives

After reading this article you should be able to:

1. Describe how human health, cultural benefits, and psychological wellbeing are considered part of sustainability.
2. List the general environmental and technical benefits of ceramic tile to be considered in a multi-attribute or holistic performance evaluation.
3. Review the requirements in various green building standards—including “blue design”—and describe how ceramic tile contributes to those needs.
4. Discuss ways to reduce resource consumption, chemical emissions including VOCs, and cleaning and maintenance needs based on the properties of ceramic tile.

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Ceramic tile—used on this house with a simulated steel finish—has been analyzed by Tile of Spain with an industry-wide, generic LCA to show its low long-term environmental impact.

‘resources’ or quaint luxuries,” according to Dr. Richard Jackson, a pediatrician and chair of Environmental Health Sciences at the University of California, Los Angeles. “They are essential to human mental, physical, and social wellbeing, most urgently for our children.”

From this idea has sprung an expanded definition of sustainability with a view to the best effects of any architecture: positive impacts on individual and societal wellbeing. The original focus of the green building movement remains; the core of the U.S. Green Building Council’s LEED certifications and other standards such as the Passive House standard

have always been energy and water conservation along with safer maintenance practices. The more recent and valuable discovery is that provably green buildings boost occupant health and productivity, leading to improved metrics of human function, such as better student test scores documented in cities from Seattle to Bloomington, Indiana.

Contributing to these benefits have been a number of factors, such as increased daylighting, ventilation, healthy materials, and reduced levels of volatile organic compounds (VOCs)—known neurotoxins capable of causing brain and nerve damage, according to Joachim D. Pleil, research

physical scientist with the U.S. Environmental Protection Agency (EPA). Unexpected variables, such as the increased use of hard, resilient surfaces like ceramic tile, have been shown to reduce cleaning needs, eliminate sources of mold and allergens, and provide a lasting and durable surface with good life-cycle properties.

These are among the lasting legacies of today’s sustainability standards. The recent evolution to LEED v4 from LEED 2009, for example, introduces a number of changes in how Materials & Resources are given credit. Perhaps the most critical is a trio of new credits for Building Product Disclosure & Optimization. One addresses the use of environmental product declarations (EPDs), which are third-party verified, internationally recognized disclosures of a product’s impact based on a life-cycle assessment (LCA). A second addresses the sourcing of raw materials, rewarding transparency in disclosure of land-use practices, extraction locations, labor practices, and the like. The third offers the same reward for material ingredient reporting, including the use of programs such as a Health Product Declaration.

“LEED v4 wasn’t designed to be easy. It is the next generation of green building,” says Rick Fedrizzi, CEO and founding chair of USGBC. “With LEED, we have a responsibility to set a high bar and we know that many leaders are capable of reaching it, presently or in the very near future.” LEED users may register projects under the LEED 2009 rating system until October 31, 2016, according to USGBC.

Yet with the impending changes, attention is shifting to a number of longstanding construction materials and finishes that can easily clear that “high bar,” including ceramic and porcelain tile. Made and employed in construction for hundreds of years, the green benefits of these tile products have been rediscovered as standards like LEED have evolved. Recent efforts by industry groups have shown how ceramic tile manufacturing has become increasingly sophisticated and efficient, continuing a decades-long move toward greater sustainability achievements.

Continues at ce.architecturalrecord.com

C.C. Sullivan is a marketing communications consultant specializing in architecture and construction.



Tile of Spain is the international brand representing 125 ceramic tile manufacturers belonging to the Spanish Ceramic Tile Manufacturers’ Association (ASCER). Its objective is to support and promote Spain’s tile manufacturers and industry worldwide. www.tileofspainusa.com

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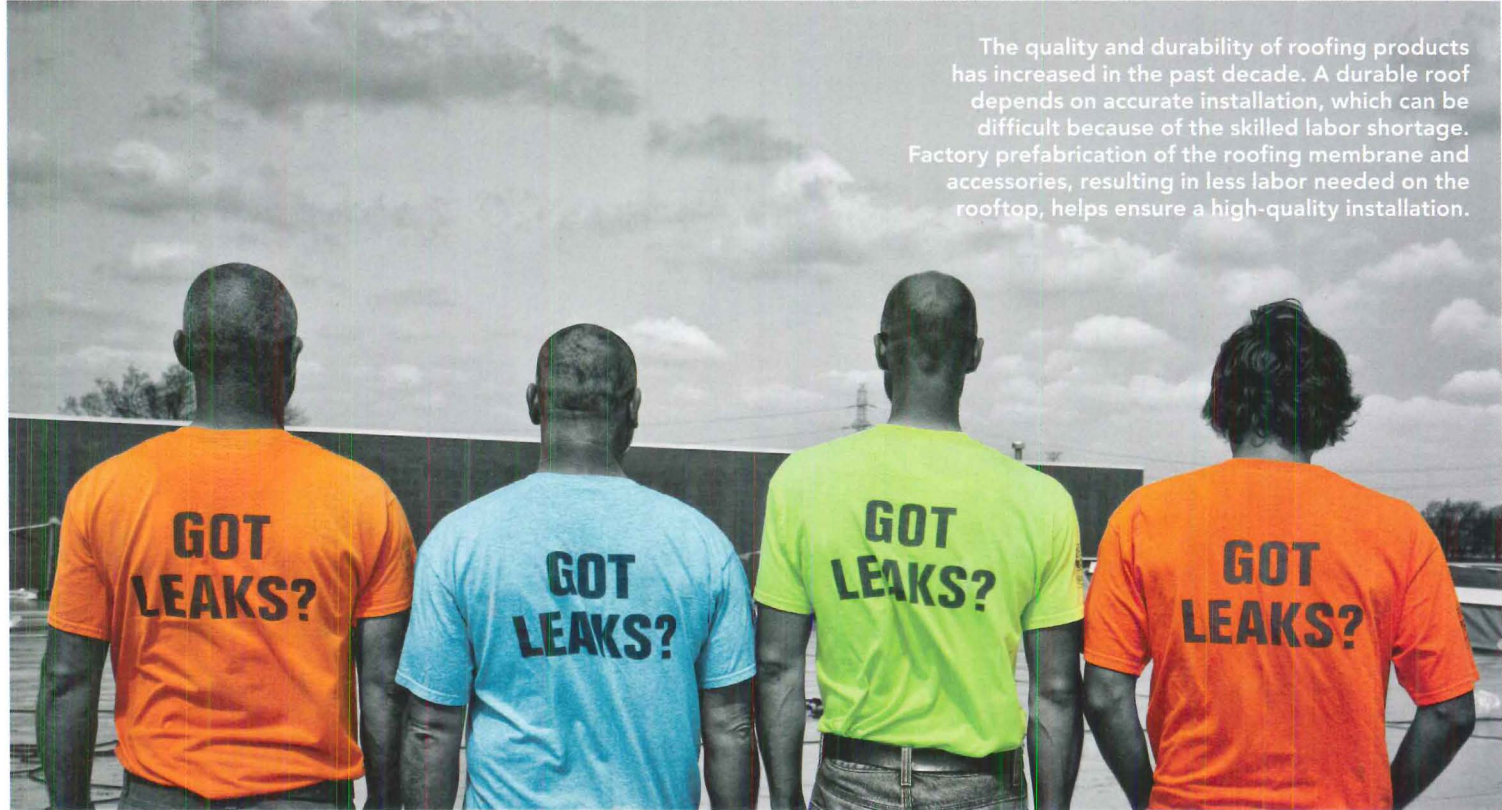
PRODUCTS IN MY AREA

GREEN PRODUCTS TO INVESTIGATE

GOOD ADVICE FOR NEXT PROJECT



All images courtesy of Duro-Last



The quality and durability of roofing products has increased in the past decade. A durable roof depends on accurate installation, which can be difficult because of the skilled labor shortage. Factory prefabrication of the roofing membrane and accessories, resulting in less labor needed on the rooftop, helps ensure a high-quality installation.

Labor Shortage Solution — Specifying a Factory-Made Roofing Membrane

Prefabricated membranes and custom prefabricated accessories increase a roof's quality and durability

Sponsored by Duro-Last | By Kathy Price-Robinson

In a perfect world, the architect designs a building and the contractor builds it, accurately and on time, with all the skilled labor necessary.

In the real world, the supply of skilled construction labor ebbs and flows. Today it has ebbed. The scarcity of skilled labor drives up costs and drives down quality as crews rush from project to project in a quickening market.

This article is about how skilled labor shortages are affecting construction timetables and quality, with a focus on the roofing industry, and how a solution that architects can specify—factory-controlled, prefabricated membrane roofing systems that install onsite

in a fraction of the time and with fewer workers—is helping to solve the problem.

THE DECLINE OF SKILLED BUILDING LABOR

While the construction labor shortage has been many years in the making, it has recently received wide attention.

- A recent headline in *The Atlantic* reads: “Where Have All the Construction Workers Gone?”
- A headline in *Engineering News Record* reads: “Contractors Turning Down Work Due to Labor Shortages.”
- Even back in 2013, a *Forbes.com* article

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Learning Objectives

After reading this article, you should be able to:

1. Discuss the decline of skilled building labor in the United States and its effect on building quality and durability.
2. Explain the history and benefits of a controlled factory setting for building components that decrease faulty onsite installation.
3. Discuss studies of roof failures that show that most moisture intrusion and uplift problems occur because of installation errors.
4. Describe how single-ply membrane roofing assemblies work for quality control and increased durability.
5. List case studies where prefabricated membrane roofing saved labor time onsite, decreased disruptions to building occupants, and increased durability of the roof and health and comfort for the occupants.

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AIA/CES K1506J

Many skilled workers left the building industry during the downturn and never came back.



rang the warning bell with the headline: “As Construction Begins Rebound, Looming Labor Shortages Raise Concerns.”

With the recent upturn in the construction industry, unemployment levels for construction trades are at their lowest level in a decade and a half.

“Expanding job opportunities throughout the economy make it increasingly difficult for contractors to find experienced construction workers,” Ken Simonson, the chief economist of the Associated General Contractors of America, notes in a press release.

“This scarcity shows up in record workweeks for craft workers and flattening of employment totals despite higher construction spending,” Simonson adds.

Recent Census Bureau data on construction spending indicates there is robust demand for new construction, particularly for apartments and private nonresidential projects.

However, Simonson warns, “Some projects may be delayed or put on hold without new measures to recruit and prepare future workers.”

The Ebb and Flow of Construction Labor

There are several reasons why construction labor decreased.

Fewer unions, fewer union apprentices. The percentage of workers belonging to a union in



A recent survey released by the Associated General Contractors of America revealed that 83 percent of construction firms struggle to fill positions for qualified craftworkers, carpenters, equipment operators, and laborers. Roofing labor shortages were a problem for 64 percent of firms surveyed.

the United States peaked in 1954 at almost 35 percent and the total number of union members peaked in 1979 at an estimated 21 million. Membership has declined since, with private sector union membership beginning a steady decline that continues into the 2010s, even while the membership of public sector unions grew steadily. Today, union membership is down to 11 percent overall. Traditionally, unions have operated training and apprenticeship programs, therefore with decreasing union power comes decreased worker training.

Dismantling of vocational and technical education. Decades ago, vocational and technical

education was a viable and popular path for high school students not headed to college. However, in efforts to send nearly every student to college, much of that vocational funding has been shifted to college-preparatory programs.

In economic downturn, workers left construction field. As the Forbes article noted, “Hundreds of thousands of workers left the field in the downturn, changing career paths or retiring altogether. Young adults haven’t clamored to enter the field and even for the ones that have, training programs have shrunk or evaporated altogether.”

Changes in immigration policy. According

to the Bureau of Labor Statistics, 53 percent of roofers today are Hispanic, with a large number of that population being immigrants. Legal immigration for people in jobs like roofing, which is a skilled trade but doesn't require higher education, is becoming increasingly difficult.

Roofing Industry Affected

In the roofing industry, labor shortages rank as a top concern for contractors. According to the most recent State of the Industry Report from *Roofing Contractor* magazine, business is good but labor shortages are tempering the growth.

"The past recession has put us in a tough spot. We lost a generation or more of trained workers in our industry," Kent Schwickert, senior vice president, national business unit - Tecta America Corp., tells the magazine.

"An extreme labor shortage is going to impact the entire country, in my opinion. This is going to drive up wages and make competition for experienced roofers fierce," says Scott Baxter, a commercial sales manager for Interstate Roofing Inc. in Portland, Oregon, in an interview with the magazine.

One solution noted in the report is factory-made roofing systems to minimize labor needed in the field.

Roofing Problems and Faulty Installation

The shortage of skilled roofing workers is particularly concerning when the impact of roofing failures is examined. We'll discuss later in the article how and why faulty roofing installations lead to massive and costly building failures. But suffice it to say that a failed roofing system has far greater implications than sloppy interior trim work, for instance, or sloppy drywall finishing. While those installation failures may well stem from a similarly debilitating shortage of skilled workers, the outcomes are not likely as consequential as those caused by a poorly executed roofing job.

Roof installation is unique in the construction industry because it is one of the only building components that is partially or fully constructed on the job site. This means that the performance of the roof—which is a building's defense against the elements—relies heavily on the workmanship used to complete the installation.

Many rooftop problems are caused by installation workmanship, not material failure. The most common installation errors include:

- *Improper Fastening.* Fasteners are installed at specified intervals, depending on the height of the roof and wind speeds, to reduce flutter and properly absorb the load. Not installing fasteners correctly can cause individual fasteners to fail, putting increased pressure on the remaining fasteners and eventually causing the entire roof to fail.
- *Flashings.* Precise workmanship is required at

all roof penetrations or transitions. These are the most critical areas of a rooftop and failure to properly seal these areas can lead to leaks and deterioration of the entire roof.

- *Perimeter Edges.* In addition to the membrane, proper installation of edge metal terminations is equally important. Recent statistics estimate that more than half of all roof warranty claims are attributed to metal edge failures.
- *Lack of Code Knowledge.* Another downfall of using unskilled laborers is that they often lack knowledge of local building codes, which vary greatly around the country and change depending on the building's location, height, and if it is located in a high wind zone.

LABOR SHORTAGE SOLUTIONS

Leaders in the construction industry have presented logical solutions to the skilled labor shortage. The AGC of America suggests several strategies in a report titled: "Preparing the Next Generation of Skilled Construction Workers: A Workforce Development Plan for the 21st Century." It suggests:

- Reform and reinvigorate the Carl D. Perkins Career & Technical Education Act, which is the primary federal funding vehicle for career and educational programs;
- Encourage private funding for craft training programs;
- Improve the Workforce Investment Act;
- Make it easier for veterans to get training and to be hired;
- Encourage partnerships between registered apprenticeship programs and community colleges;

- Expand federal apprenticeship resources and collect more comprehensive data on all apprenticeship programs;
- Enact immigration reform;
- Offer community college career and technical programs for high school students for free; and
- Make it easier to establish public schools focused on career and technical education.

FOR THE ROOFING INDUSTRY, FACTORY-FABRICATED SYSTEMS EMERGE AS A LABOR SHORTAGE SOLUTION

Certainly the ideas presented by the AGC, if enacted, would bring more trained construction workers into the industry. But the timeframe is long and the outcome uncertain.

However, innovation, as it often does, may provide a quicker solution. A case in point is the growing use of prefabricated, factory-made building systems that are brought to the site and installed in a fraction of the time of site-built systems.

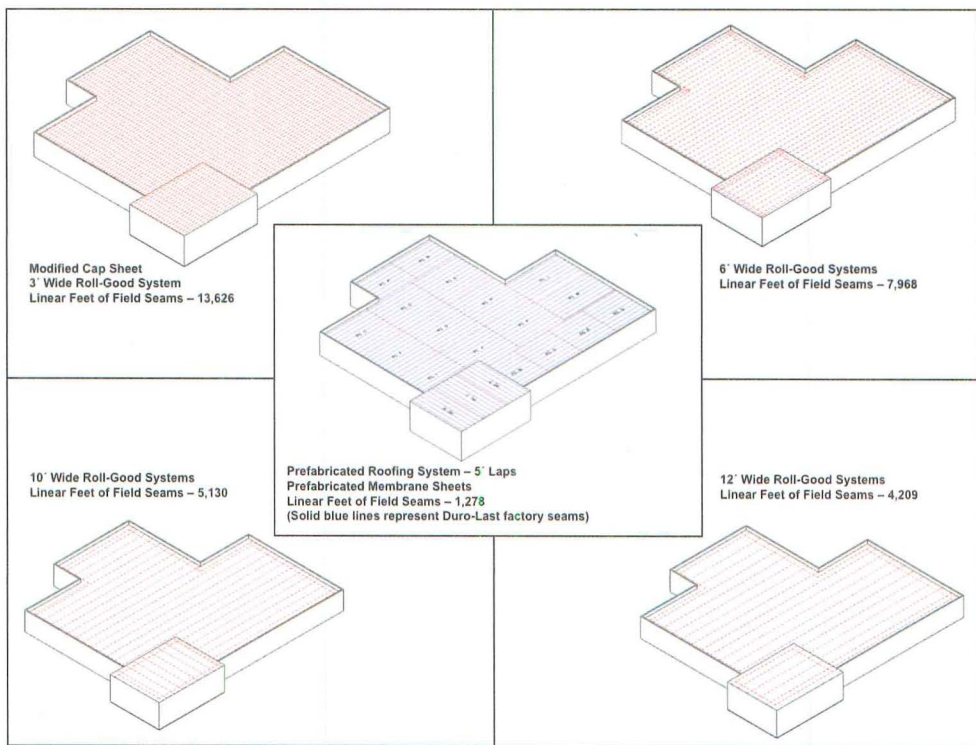
This solution includes prefabricated roofing membrane systems that not only install on-site with an 80 percent to 85 percent reduction in on-site seam welding, but that also solve the problem of faulty sealing around penetrations, which as we'll see later on cause the most problems in roofing failures.

Factory-Made Building Components: A Long History

While prefab has become a buzzword in the past decade, the practice of specifying and installing prefabricated systems in buildings has quite a long history.



Membranes up to 2,500 square feet can be prefabricated in a factory setting.



PREFABRICATED SYSTEM

A prefabricated system could include:

- A. An insulation system and/or cover boards.
- B. Roofing membranes that can be precision-fabricated to rooftop.
- C. Curb, stack, parapet, and other flashings — made of membrane material in a factory. — enable a watertight installation at critical roof transitions.
- D. Edge details for an aesthetic and secure termination around the edge of the building.

When the vast majority of the seaming for a prefabricated membrane is done in the factory, that leaves very little to do on the rooftop. When the entire roofing system is fabricated on the rooftop, the number of seams to weld on-site increases dramatically.

It is, however, an incredibly inefficient and error-prone process.

“It’s incredible that we’re still building stick by stick on-site,” says Bill Robinson, president of Train2Build and a moisture management expert based in New Orleans.

Recent decades have seen the prefab method of building rising once again. The oil embargo of the 1970s kick-started the movement to build energy-efficient homes, which brought about changes to construction methods and materials. Innovations by manufacturers brought further changes to “how things are done.”

However, keeping up with current materials and methods is increasingly difficult in the great morass of non-unionized world of skilled construction labor. This can be concerning for architects, contractors, and specifiers, particularly as roofing is concerned.

Roofing Failure Consequences

Studies of roof failures show that many problems occur because of installation errors, particularly at changes in the plane on the roof, such as projections, curbs, drains, perimeters, and abutting walls.

It is often during forensic investigation of roofing failures that installation or compatibility errors are discovered. For single-ply membrane roofing, the errors can include open laps from improper on-site heat welding, loose flashings from improper on-site fabrication and installation, loose flashings from sealant failure, compromised flashings that are made of unreinforced membrane material, etc.

Continues at ce.architecturalrecord.com

Kathy Price-Robinson is a longtime building and design journalist and a multimedia education developer.

While specifying window systems is now normal, at one time it was common for window frames to be made and glazed onsite. Carpenters measured and cut the framing and trim members, assembled them, added glazing, and installed them into the window opening.

Cabinets were also once made primarily on-site. Eventually, factory-made cabinets, with all the quality controls inherent in such a manufacturing setting, became the norm.

Entire prefabricated houses go back at least until the 1850s, when the Loren iron house was prefabricated in England and shipped to Melbourne, Australia. It was moved to its current site in 1968.

Prefabricated homes became prevalent in England following World War, when 3 million, or one quarter of the country’s homes, had been damaged or destroyed. The post-war years brought a great need for housing along with a shortage of skilled building labor. Plus, empty factories once engaged in the war effort were ready for new products. The homes prefabricated in these factories and then shipped to the sites were designed to last 10 to 15 years, but a few of them survive today.

Some methods of easing on-site labor needs were a hybrid of site-built and factory controls.

Kit homes popular in the early 20th Century were delivered to the site with each piece of lumber cut in a factory and numbered for quick assembly on the lot. This reduced labor and eliminated cutting mistakes.

Between 1908 and 1940, Sears, Roebuck and Co. sold and shipped more than 70,000 kit homes through its Modern Homes mail order program.

In 1927, for instance, The Sears, Roebuck and Co. kit house named the Vallonia bungalow cost from \$1,500 to \$2,500, depending on size. Delivered to the site were the pre-cut framing lumber, wood lath, millwork, doors, windows, roofing, siding, hardware, paint, etc. Plumbing, heating, wiring, and electrical were extra.

The prefabricated method of construction may have taken over the construction industry were it not for the Levitt Brothers, who transferred the genius of Henry Ford’s assembly line for automobiles into the mass production of site-built homes. With the vast need for homes for returning veterans following World War II, the incredible efficiency of moving materials and skilled labor from house-to-house covering great tracts of land changed the home building industry. The mass produced site-built method became king.



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Mastering FSC®-Certified Wood in Green Building

The evolution of LEED and new rules for FSC wood

Sponsored by Collins | *By C.C. Sullivan and Brad Kahn*

From energy performance to occupant health, every aspect of design and operations is evolving with a focus on better outcomes and greater environmental benefits. Nowhere is this more evident than in the forest products arena where products from responsibly managed forests are central pillars of green building.

Forests are critical to life on earth. They are complex ecosystems that support nearly 80 percent of the world's terrestrial species and the livelihoods of 1.6 billion people. Forests protect the earth's soils, provide much of our fresh water, and regulate and stabilize the climate. Today, forests comprise 31 percent of our land area, yet during the past 50 years almost half the world's original forest cover has been lost.

In the southeastern U.S. alone, forests are home to more than 3,000 species of plants, 504 birds, 158 mammals, and 187 reptiles, making the region a cornerstone of North American biodiversity.

Progress in the way we manage and conserve forests worldwide is coming from both ends of the marketplace. On the supply side, the acreage of forest land managed and certified to the environmental and social standards of the Forest Stewardship Council® (FSC) continues to grow, as does the number of companies committed to bringing certified wood to market. In the U.S. and Canada, 175 million acres and 5,000 companies are certified to FSC standards.

And on the demand side, leadership standards in green building—notably the U.S. Green Building Council's LEED rating systems—are evolving to address opportunities as well as challenges in the use of FSC-certified wood products.

Following several years of work by USGBC staff and LEED working groups, LEED v4 was ratified in the summer of 2013 with support from 86 percent of voting USGBC members. In the new LEED v4 standard the key credit addressing certified wood is the Raw Materials Credit, "Building Product Disclosure and

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Learning Objectives

After reading this article, you should be able to:

1. Explain why Forest Stewardship Council® (FSC)-certified wood is key to green building and why building professionals play an important role in promoting good forest management and conservation in North America and beyond.
2. Gain insight into the fundamentals of a leading forest certification system with benefits for LEED certification.
3. Master the new rules for how FSC-certified wood works in the LEED green building rating system, clarify the differences between LEED 2009 standards and LEED v4 as it relates to FSC, and understand how FSC is credited in other leadership green building programs in North America.
4. Understand the tools, strategies, and resources that green building professionals can use to encourage market transformation to sustainability of the forest products industry.

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Optimization: Sourcing of Raw Materials.” With the future of responsible forest management hanging in the balance, wood products have been the subject of much consideration for this credit.

In LEED v4, as in LEED 2009, products that are certified according to the policies and standards set by FSC are recognized along with products that meet other environmental criteria such as materials reuse and recycled content. LEED v4 represents a thorough overhaul of LEED 2009, and this includes the Materials and Resources section where there are now significant differences between LEED 2009’s Certified Wood Credit (Mrc7) and the new Raw Materials Credit. The changes occur both at the high level of credit language and structure, and in the details of calculating and documenting the use of FSC-certified wood contained in LEED Reference Guides.

LEED v4’s continued recognition of FSC and the updates to how FSC contributes value in LEED projects reflects a strong commitment in the green building community to driving progress in the forest products industry.

“There are many parallels between FSC and LEED,” says Corey Brinkema, president of the U.S. office of the Forest Stewardship Council (FSC U.S.). “Most significantly, LEED and FSC are both designed to transform their respective marketplaces to higher levels of environmental and social performance.”

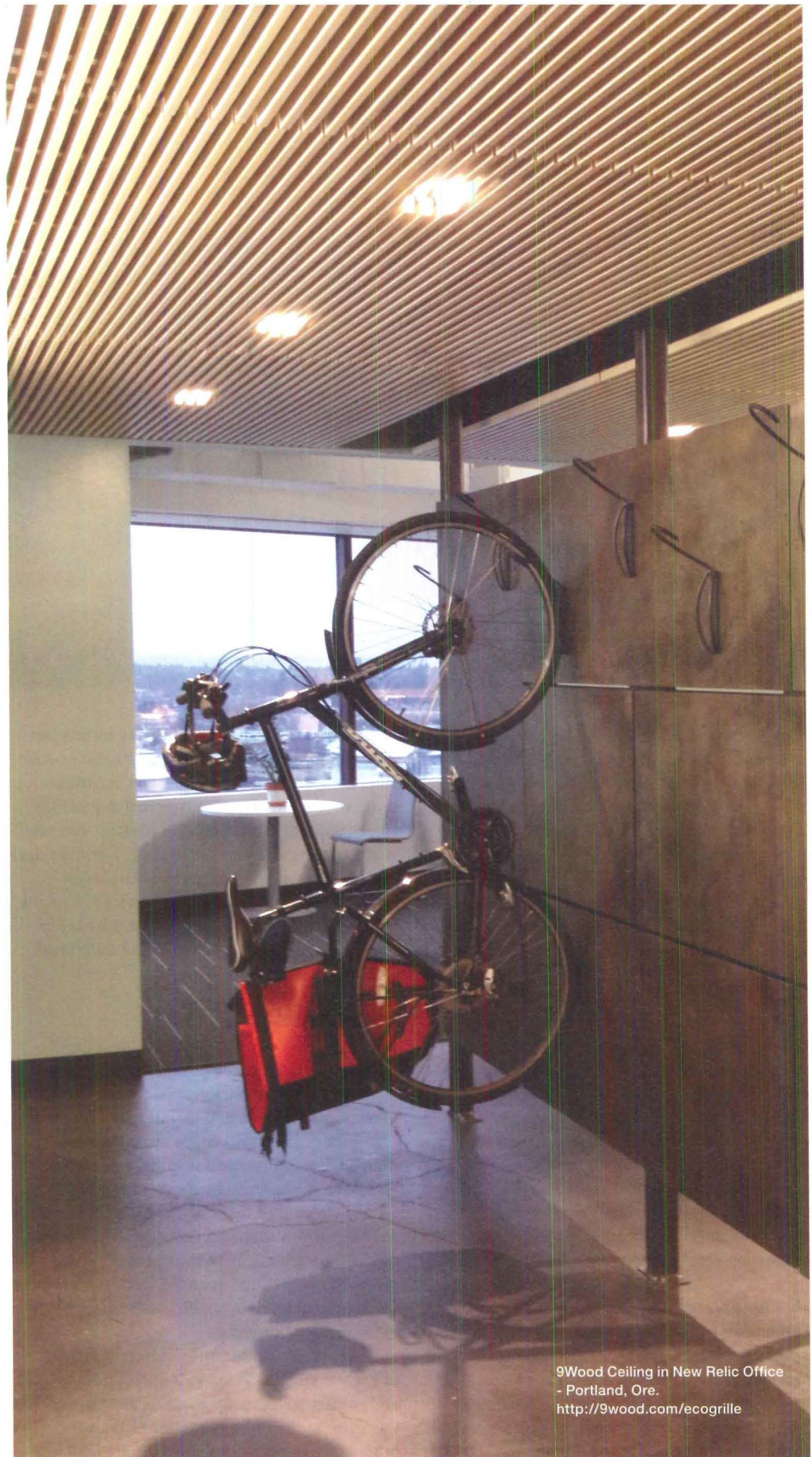
By specifying and using FSC-certified wood, green building professionals help protect forests, wildlife habitat, the health of global ecosystems, and support market transformation to sustainability in the forest products industry.

A KEY GREEN BUILDING MATERIAL

According to one of the world’s largest environmental organizations, the World Wildlife Fund (WWF), FSC-certified wood is a key component of green building. “Credible third-party forest certification is an important way to promote forest management that is environmentally and socially responsible. This, in turn, supports our overall goals of conserving nature and protecting biological diversity,” says Kerry Cesareo, WWF’s Senior Director, Forests. Along with other respected environmental groups like the Natural Resources Defense Council and Rainforest Alliance, WWF recommends products from FSC-certified, responsibly managed forests as a building material for reasons in addition to forest conservation:

■ Low Carbon Footprint

Wood products have a low carbon footprint relative to many other materials, and their use can help reduce carbon emissions. Throughout



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Mosquito Ridge in the Collins Almanor Forest in Chester, Calif. This area has been logged five times in 60 years. Of note, various species and ages of trees, no clear cuts.

their lives, trees remove carbon dioxide from the atmosphere and store it in wood (which is about 50 percent carbon). Therefore, wood building materials sequester carbon not only for the life of a tree but also for the life of a building. Not only does using wood products help remove carbon from the atmosphere, but also, using wood in place of other, more greenhouse gas (GHG)-intensive building materials, “can reduce GHG emissions of a typical house by up to 18 tons over its life.”¹ Some new research suggests that well-managed forests may store more carbon in soil and vegetation than do poorly managed ones. Finally, promoting responsible forest management is recognized as one of the keys to combating deforestation, which is the second-largest source of man-made GHG emissions outside of the energy sector—more than all forms of transportation combined, according to EPA and Meridian Institute.² In this way, developing markets for the products of responsible forest management is an important strategy for addressing the climate crisis.

■ **Renewable and Natural**

Unlike many products credited in green building, forest products are the only major material category that are renewable and can be produced on a sustained basis from natural ecosystems. The overall wood supply from managed forests is considerable, renewable, and sustainable over the

long term when responsible forestry techniques are employed. Well-managed forests also provide important ecosystem services such as carbon sequestration (in forest soils as well as growing trees), wildlife habitat, erosion control, watershed maintenance, and nutrient cycling. These services are “traditionally viewed as free benefits to society,” says the USDA Forest Service.³ “Lacking a formal market, these natural assets are often overlooked in public, corporate and individual decision-making.”

■ **Green Manufacturing**

FSC-certified manufacturers include some of the most innovative companies in the world. Along with addressing forest issues, many have taken steps to design and manufacture products that satisfy other concerns of the sustainable design community, including indoor air quality (IAQ), recycling, and chemicals of concern. On the Green Building Certification Institute website, current statistics show that 41 percent of LEED projects achieve the Certified Wood credit.⁴ These include many projects that earn an additional point by making exemplary use of FSC-certified products.

Once project teams understand the value of FSC-certified wood in sustainable design and construction, many go above and beyond the minimum requirements of LEED and other green building programs. A virtuous

circle has been developing whereby increased demand for FSC-certified wood encourages more landowners to become certified, more manufacturers to produce certified products, and more distributors and retailers to stock them. This improves availability and tends to reduce costs, which stimulates further demand and eventually leads to more acres of forest managed and certified to the standards of FSC. “FSC has changed the international dialogue around forest management and has led to improved management on hundreds of millions of acres in the U.S., Canada and worldwide,” according to Fran Price of The Nature Conservancy.

THE GROWTH OF FSC IN NORTH AMERICA

The supply of FSC-certified building products has increased dramatically in the last decade. As noted earlier, there are more than 175 million acres of FSC-certified forest land and at least 5,000 companies manufacturing and trading FSC-certified products in the U.S. and Canada. The growth in FSC-certified forest acreage in North America has tracked the growth of LEED, which has exploded in the last decade to cover more than 2 billion square feet of building area.

WHAT SETS FSC APART?

The Forest Stewardship Council is not the only forest certification system operating in North

Table 1

America, but it is unique among them. There are important differences between FSC and these other forest certification systems on a wide range of key environmental and social issues. These differences manifest in the ways real forests are managed, as well as the benefits they provide to society and the environment.

Table 1 highlights some key components of forest certification, why they matter, and how FSC delivers on-the-ground results.

HOW FSC WORKS

Forest Management Certification

Forest management standards and certification are at the core of the FSC system.

To monitor specific forestry operations, FSC accredits independent certification bodies that send teams of experts—foresters, ecologists and social scientists—who conduct annual on-site audits based on FSC standards. Forests and plantations with management that meets FSC standards provide the certified timber that is the raw material for FSC-certified products.

FSC’s forest management standards are global in scope. Because of the wide variety of ecosystems to which they are applied—for example, natural forests in tropical, temperate, and boreal regions as well as plantations—the standards are designed to be globally consistent while still allowing for regional applicability. This is achieved through Principles & Criteria that apply universally and provide the framework for detailed indicators that are developed and applied at a national or subnational level.

Around the world, FSC standards are designed to uphold the integrity of natural forest ecosystems, protect rare old-growth forests, preserve soil and water quality, maintain wildlife habitat, and prohibit highly hazardous chemicals. FSC also requires forest managers to engage local community members and protect the rights of indigenous people.

Continues at ce.architecturalrecord.com

Brad Kahn is the communications director for the Forest Stewardship Council U.S. He also leads communications for the Bullitt Center, a certified Living Building in Seattle.

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

Key Component	Why it Matters	How FSC and FSC Standards Work
1. FSC is governed democratically	Who makes decisions and how decisions are made shapes every aspect of a certification system.	Membership-based organization, open to all organizations and individuals. Members elect the board of directors at the national and international levels and decide on policy and governance motions at a triennial General Assembly. A minority of members on the U.S. board only may be appointed to balance expertise. High-level decisions, such as global policy motions or changes to the Principles & Criteria, are made by a vote of the membership. A majority vote of each chamber is required to pass a motion or major standard revision.
2. FSC prohibits deforestation	Conversion of natural forest to plantation or non-forest use, also called deforestation, can cause substantial harm to biodiversity, atmospheric carbon levels, water quality, ecosystem function, and the rights of people who depend on the forest.	Prohibits deforestation, including conversion of natural forest to plantations. Exceptions may be approved in limited cases where there is very clear and lasting environmental benefit, such as where conversion and sale of a very small part of a management unit leads to investment and protection of higher conservation values on the rest of the land.
3. FSC requires forest growth to meet or exceed harvest	If harvest exceeds growth, biodiversity and ecological values associated with older forests and more complex forest ecosystems are typically diminished over time.	Requires forest growth to meet or exceed harvest at the planning unit level over a rolling average of no more than 10 years to prevent cumulative depletion. There are exceptions allowed for small ownerships that harvest on a generational basis and for restoration purposes (e.g. on lands affected by a catastrophic fire or where poor past management has led to an ecologically problematic species mix).
4. FSC protects rare old growth and High Conservation Values	High Conservation Value Forests include rare old growth, large intact forests, and areas important to public health or traditional cultural identity.	Requires protection of ecological values associated with High Conservation Values (HCVs), including rare old growth. This includes a requirement to identify and protect the following: <ul style="list-style-type: none"> • Large intact forests and areas of concentrated biodiversity • Large forests with most or all species in natural patterns of abundance • Rare, threatened, or endangered ecosystems • Areas providing critical ecosystem services • Areas critical to basic needs, such as subsistence or public health • Areas important to traditional cultural identity of local communities Requires managers to map, maintain, and monitor defining attributes of HCVs, and to use the “precautionary approach” to prevent loss of defining attributes where there is uncertainty. Requires public consultation about HCVs and managers must provide a public summary of their HCV assessment and proposed management for conservation of identified HCVs.



Founded in 1855, Collins has a long history as a family-owned forest products company with more than 309,000 acres of FSC-certified forest lands in CA, OR and PA. Products include softwoods, hardwoods, TruWood Siding, Collins Pacific Albus, and Collins Pine FreeForm, which is the first FSC, NAF particleboard with a Declare Label. www.collinsco.com

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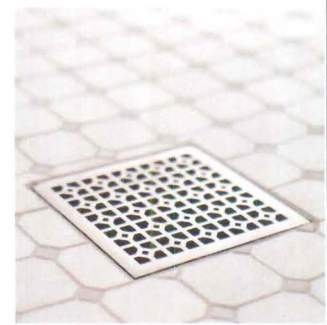
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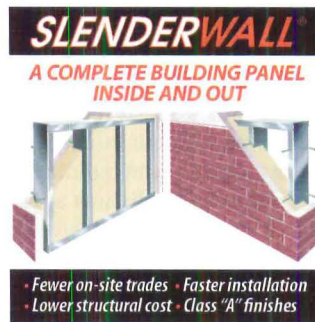
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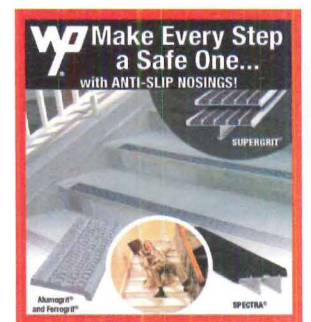
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Los Angeles

September 13, 2015–March 20, 2016

Frank Gehry's buildings have altered architecture's relationship to the city, both socially and aesthetically, and his pioneering work in digital technologies set in motion some practices employed by the construction industry today. This Los Angeles County Museum of Art exhibition is a comprehensive overview of Gehry's body of work. The show begins in the early 1960s—Gehry established his firm in Los Angeles in 1962—and runs to the present. Many of the 200 drawings have never been seen publicly, and 65 models illuminate the evolution of Gehry's thinking. For more information, visit lacma.org.

David Adjaye: Architecture for Social Change

Chicago

September 19, 2015–January 3, 2016

With more than 50 projects constructed across the world, David Adjaye is rapidly emerging as a major figure in architecture and design. This first-ever retrospective of his work, at the Art Institute of Chicago, spans from furniture and housing to public buildings and master plans; it features drawings, sketches, models, and building mock-ups. The exhibition also immerses viewers in Adjaye's distinct approach and visual language through a dynamic installation conceived by his eponymous studio. For more information, visit artic.edu.

Lectures, Conferences, and Symposia

2015: The Inaugural Chicago Architecture Biennial

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October 3, 2015–January 3, 2016

The Chicago Architecture Biennial provides a platform for groundbreaking architectural projects and spatial experiments that demonstrate how creativity and innovation can transform our lived experience. Through its constellation of exhibitions, full-scale installations, and program of events, it invites the public to engage with and think about architecture in new and unexpected ways, and to take part in a global discussion about the future of the field. At five different locations in Chicago. For more information, visit chicagoarchitecturebiennial.org.

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New York City

October 7, 2015

Innovative architecture requires expanding the boundaries of the discipline by spurring creativity through design and technology. At this year's conference, ARCHITECTURAL RECORD brings together key figures who have generated a range of imaginative solutions for the built world of today and tomorrow. From architects practicing outside the discipline to principals of large firms, materials experts, and graphic designers, the event's participants represent different approaches to original problem-solving in a rapidly changing world. At the Time-Life Building. For more information, visit construction.com/events/2015.



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Milan
October 31, 2015

During Expo Milano, the city of Milan will become a global showcase in which more than 140 participating countries will show the best of their technology offering concrete answers to a vital need: guaranteeing healthy, safe, and sufficient food for everyone while keeping the planet in equilibrium. In addition to the exhibitor nations, the Expo also involves international organizations; it expects to welcome more than 20 million visitors to its 12 million square feet of exhibition area. For more information, visit expo2015.org.

Competitions

Architecture at Zero

Submission deadline: September 25, 2015

Architecture at Zero seeks feasible, creative approaches to zero net energy (ZNE) building. By encouraging innovative design solutions to site-specific design challenges, the competition aims to broaden thinking about the technical and aesthetic possibilities of ZNE projects. Further, it seeks to raise the profile of ZNE among built-environment professionals, students, and the general public in California and beyond. For more information, visit architectureatzero.com.

Duravit Designer Dream Bath Competition

Submission deadline: September 25, 2015

Duravit USA is looking for innovative bathroom designs, built or still conceptual. For the third annual North American design competition, the Duravit Designer Dream Bath Competition has added a category for completed projects and, as in past years, invites architects and designers to draw up their ideal bath space from a range of Duravit’s 2015 launches (Cape Cod, ME, and L-Cube collections) for a chance to win the products with their design and professional photography of the completed work. For more information, visit duravit.us.

Better Philadelphia Challenge

Registration deadline: October 1, 2015

Founded in 2006 in memory of Philadelphia’s iconic 20th-century city planner Ed Bacon (1910–2005), this annual international competition challenges university-level students, as well as professionals, to address real-world urban-design issues in Philadelphia that will have applications there and in urban centers around the globe. The competition is open to undergraduate, graduate, and postgraduate students in any field of study. For more information, visit philadelphiacfa.org.

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



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CLASSIFIEDS

POSITION VACANT

Designer/Visualization

Page in Houston, Texas seeks Designer/ Visualization. Qualified applicants will possess a Master’s degree in Architecture or related field and one (1) year of experience in the job offered or one (1) year of experience in architectural and interiors experience with a variety of specialized project types. In lieu of the above, will accept a Bachelor’s degree in Architecture or related field and five (5) years of experience in the job offered or five (5) years of experience in architectural and interiors experience with a variety of specialized project types.

Qualified applicants should email resumes to:
resumes@pagethink.com
Must put job code DVHOU2014 on resume.

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PROJECT TEA HOUSE
LOCATION BEIJING
ARCHITECT KENGO KUMA

The photograph captures the interior of the Beijing Tea House, a space designed by Kengo Kuma. The room is characterized by its walls and ceiling, which are constructed from a complex, multi-layered lattice of white polyethylene blocks. This structure allows soft, diffused daylight to filter through, creating a futuristic glow. In the center of the room, a long, dark, polished wooden table is set with a traditional tea set. Surrounding the table are several large, round, woven stools. A large, vertical, framed artwork depicting a mountainous landscape is mounted on the wall behind the table. To the left, a small wooden table holds a vase with flowers and a teapot. The floor is covered with a patterned rug featuring traditional Chinese motifs in red and gold on a dark background.

STEEPED IN HISTORY, the Beijing Tea House is a tasteful blend of past and present. Located opposite the Forbidden City's East Gate, the invitation-only tea salon was designed by Tokyo-based architect Kengo Kuma. A connoisseur of construction materials, Kuma fashioned the 2,700-square-foot structure from four different types of polyethylene blocks—a contemporary take on traditional Beijing-style bricks—and assembled them in a classic Chinese lattice pattern. In addition to insulating against the city's bone-chilling winters, this translucent material admits soft daylight, recalling the papered windows of the old Siheyuan-style residences nearby while imparting a futuristic glow to the whole interior.

Naomi R. Pollock, AIA