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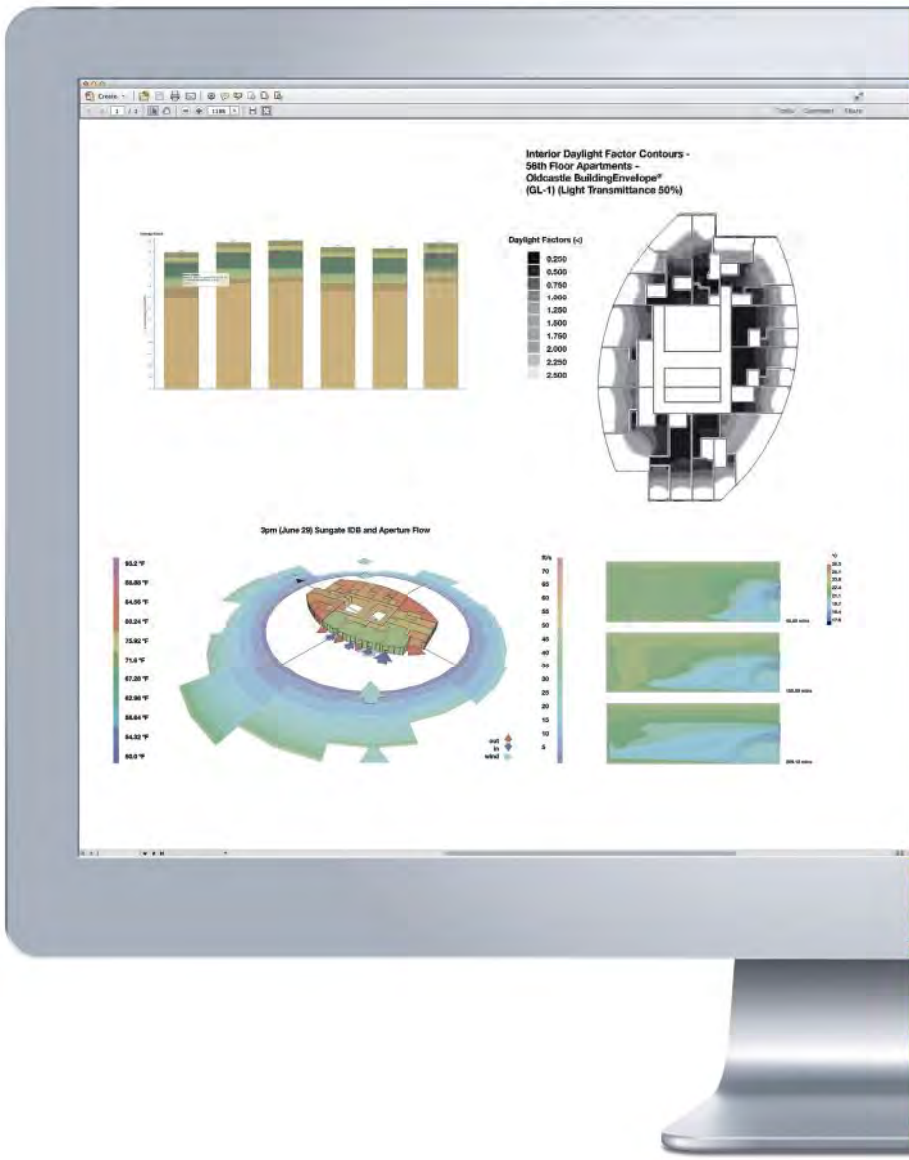
Left brain.



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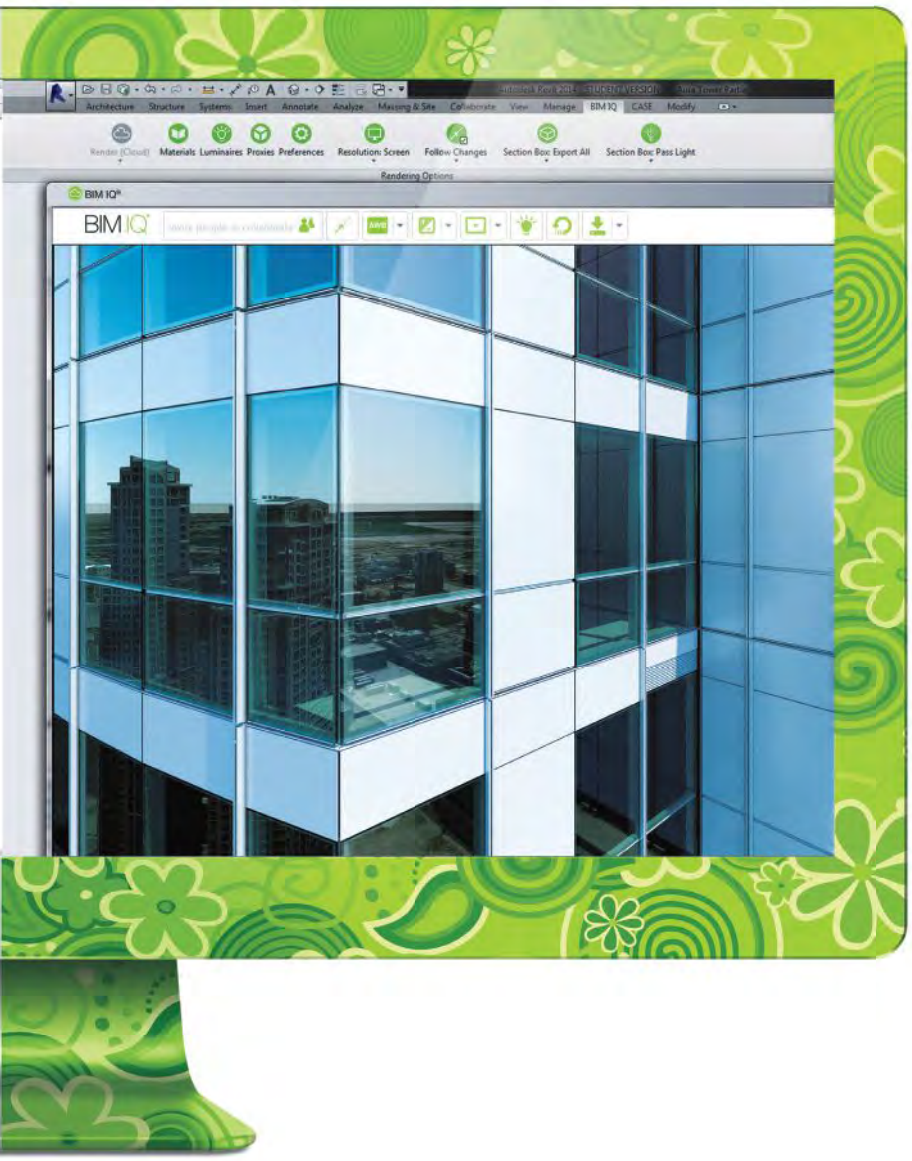

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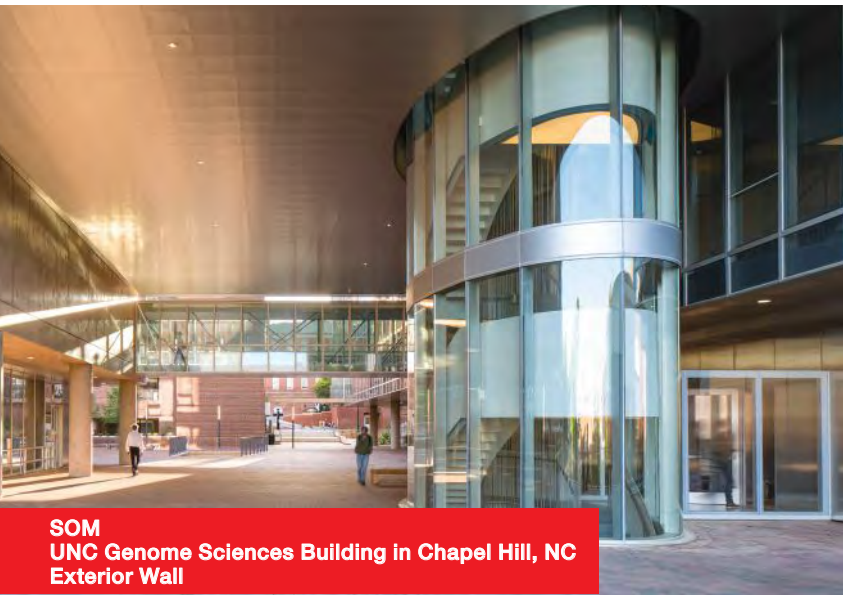
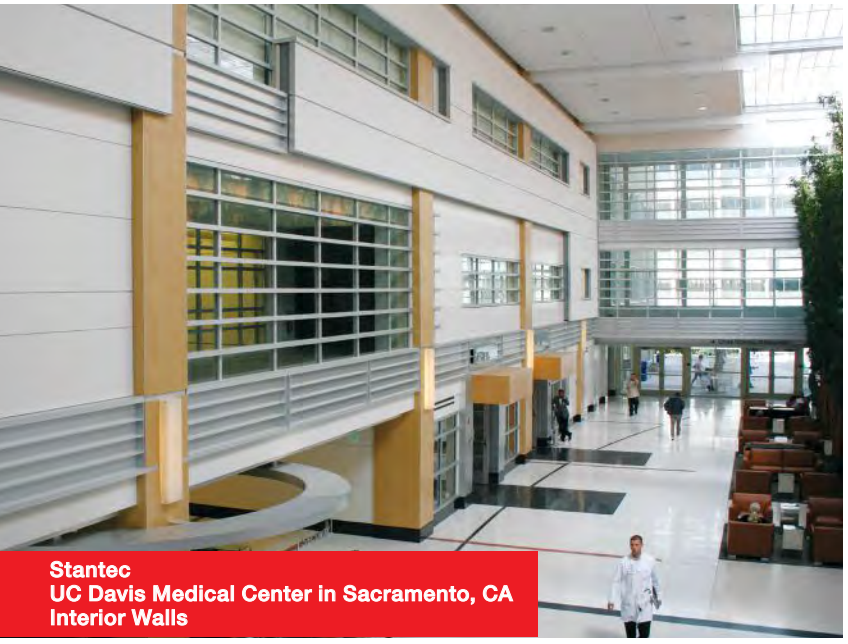


SOM
UNC Genome Sciences Building in Chapel Hill, NC
Exterior Wall



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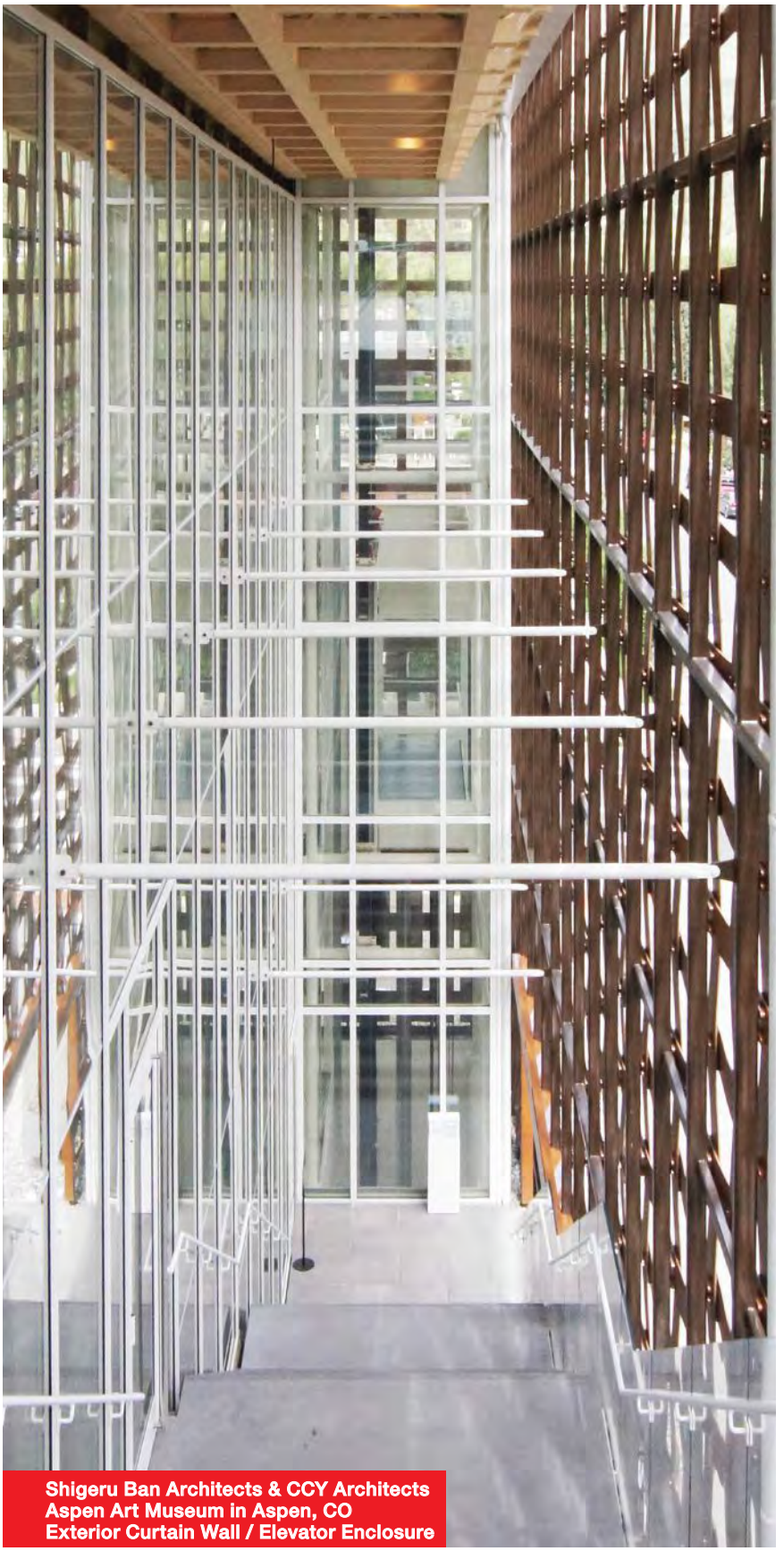

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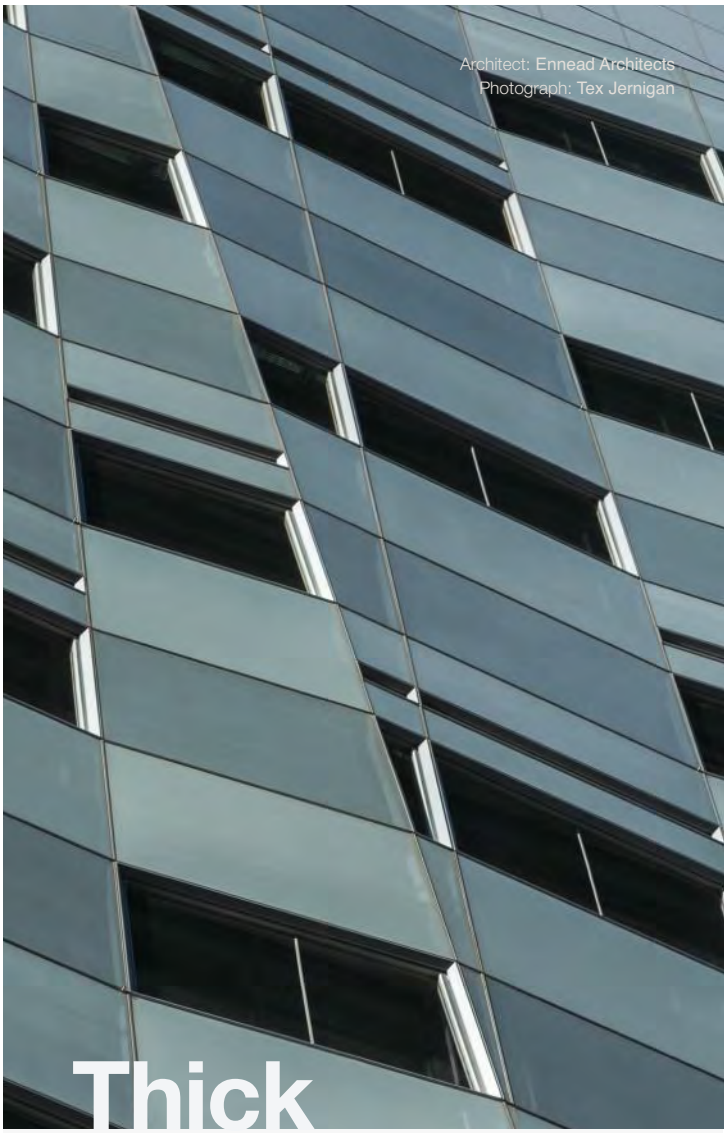

Architect: Ennead Architects
Photograph: Tex Jernigan

Thick Skinned

Weill Cornell Medical College wants its buildings to last a century, but not feel like they were built last century. So **Ennead Architects** enclosed the **Belfer Research Building** with a double-skin curtain wall to better regulate lab environments—increasing their efficiency and the school's prestige within the research community. Read more about it in **Metals in Construction** online.

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Thousands of San Francisco building owners are now required by law to seismically retrofit multi-unit (at least five) soft-story, wood-frame residential structures that have two or more stories over a “soft” or “weak” story.

These buildings typically have parking or commercial space on the ground floor with two or more stories above. As a result, the first floor has far more open areas of the wall than it actually has sheathed areas, making it particularly vulnerable to collapse in an earthquake.

That was the case in both the Loma Prieta and Northridge earthquakes, which is why cities in California, including Berkeley and Oakland, have recently passed similar legislation and many others, including Los Angeles, are now considering it. San Francisco’s ordinance affects buildings permitted for construction before January 1, 1978.

One solution to strengthen such buildings is the Simpson Strong-Tie® Strong Frame® special moment frame. Its patented Yield-Link™ structural fuses are designed to bear the brunt of lateral forces during an earthquake, isolating damage within the frame and keeping the structural integrity of the beams and columns intact.

“The structural fuses connect the beams to the columns. These fuses are designed to stretch and yield when the beam twists against the column, rather than the beam itself, and because of this the beams can be designed without bracing. This allows the Strong Frame to become a part of the wood building and perform in the way it’s supposed to,” said Steve Pryor, S.E., International Director of Building Systems at Simpson Strong-Tie. “It’s also the only commercially-available frame that bolts together and has the type of ductile capacity that can work inside of a wood-frame building.”

Another key advantage of the Simpson Strong-Tie special moment frame is no field welding is required, which eliminates the risk of fire in San Francisco’s older wood-framed buildings.“Field welding is not a good thing, particularly in an existing building because the chance of fire is just too great. A bolted solution is much safer.”

The special moment frame has been recognized in the construction industry for its innovation. It was one of only 16 products selected to win a 2014 Parade of Products@PCBC award, given by the California Building Association.

Soft-story retrofit using Strong Frame® special moment frame

For more information about the Strong Frame special moment frame, visit the website at **strongtie.com/strongframe.**

Watch a video about San Francisco’s retrofit ordinance at **strongtie.com/softstory.**

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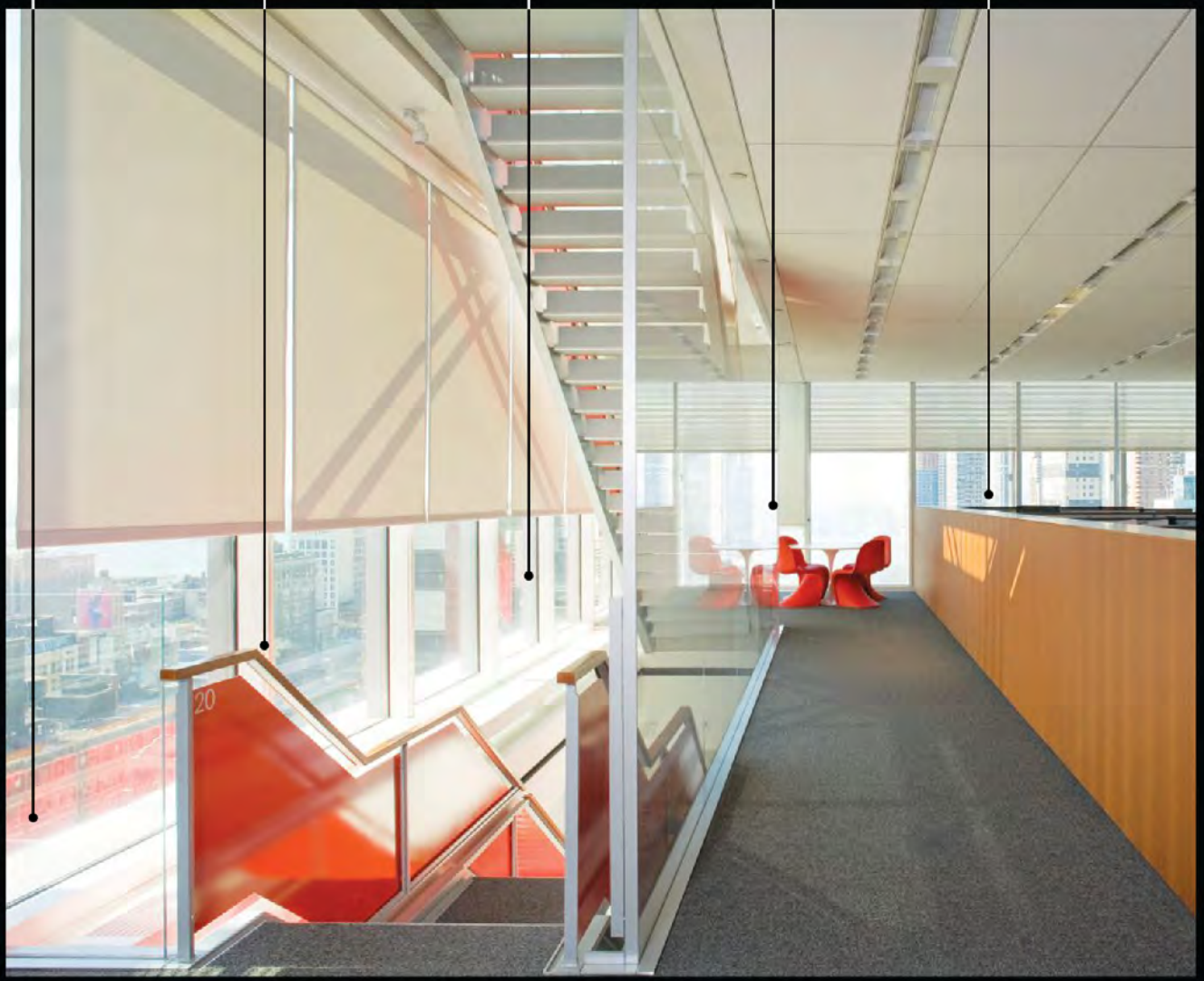

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A Winner for Adidas

Danish firm COBE has won a competition to design Adidas Meet & Eat, a gathering place for visitors and employees on the athletic gear company's World of Sports campus in Herzogenaurach, Germany. At 118,400 square feet, the facility will incorporate meeting rooms, a restaurant, and a showroom. The roof, with its upright concrete fins, is modeled after the brand's iconic striped logo. Skylights and collapsible floor-to-ceiling windows will allow for natural light and cross-ventilation. COBE beat out 29 other teams, including REX, Sauerbruch Hutton, and Zaha Hadid Architects. Completion is anticipated in 2018. —LEAH DEMIRJIAN

> *More images of the COBE design for the Adidas Meet & Eat are available at bit.ly/COBEAdidas.*

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TIM HURSLEY

Winners, in Lots of Ways

The AIA has announced its 2015 awards. The Rural Studio (the program's 2000 chapel in Mason's Bend, Ala., is shown above) won the Whitney M. Young Jr. Award. Also on the dais are Moshe Safdie, FAIA, for the Gold Medal; Ehrlich Architects for the Firm Award; Peter Eisenman, FAIA, for the Topaz Medallion; and Edward Mazria, FAIA, for the Edward C. Kemper Award. Skidmore, Owings & Merrill's Broadgate Exchange House in London got the Twenty-Five Year Award, and 23 projects took honors in architecture, interiors, and regional and urban design, including Thomas Phifer, AIA's Salt Lake City U.S. Courthouse (page 142). —GREIG O'BRIEN

> *For full coverage of all of the winners of the 2015 AIA Honor Awards, visit architectmagazine.com/awards/aia-honor-awards.*

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The Everyday Wonder of Plastic Spoons

Design legend Chee Pearlman celebrates the ubiquitous in her exhibit "Plastic Spoons," at the Mmuseumm in New York. Displayed inside a retired, ground-level elevator shaft in TriBeCa, Pearlman's collection is one of 20 exhibits highlighting curious but mundane objects. Other examples include pool-toy packaging censored by Saudi Arabian authorities and dolls designed for children with Down's Syndrome. Pearlman, a 2011 Loeb Fellow and founder of the Chrysler Design Awards, says she collects plastic spoons for their seemingly infinite variety, all intended for one purpose: comfortably delivering food into our mouths. —CHELSEA BLAHUT

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> *The "Plastic Spoons" exhibit runs until Feb. 15; to see more works on view, visit mmuseumm.com.*

native colors & fluid curves

The Cherokee Nation's new Casino Ramona stands in the Oklahoma town where the first commercial oil well was drilled in 1897. "The curved building form relates to the fluidity of oil, while breaking down the general rectangular floor plan to create a more appealing look from the highway."

- Selser Schaefer Architects

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Cherokee Casino Ramona in Ramona, OK
Owner: Cherokee Nation Entertainment; Architect: Selser Schaefer Architects; Contractor: RMZ Builders
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The World's Largest Energy-Use Monitor

As Elizabeth Evitts Dickinson notes in her essay for this issue (page 101), architects need to promote public awareness of buildings' energy consumption. Paris-based 1024 Architecture is doing just that with VORTEX, an installation at the Darwin Ecosystem Project, a green business incubator in Bordeaux, France. Wrapped around a footbridge between two buildings, the structure's intersecting wood beams are strewn with 12 LED strands: The brighter the lights, the higher the energy usage. The lights can also be manually controlled with a joystick and synchronized with sound, since the complex is also used for music festivals. —CHELSEA BLAHUT

> *Watch a video of VORTEX in action at bit.ly/1024VORTEX.*

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BIG for Battersea, and Kuala Lumpur

Last month, the Bjarke Ingels Group (BIG) released renderings for their bit of London's art deco Battersea Power Station. The entire redevelopment, led by Rafael Viñoly, FAIA, is estimated to cost approximately $9.9 billion, with BIG's public space (above) linking the south entrance of the Giles Gilbert Scott–designed landmark to a proposed high street, Electric Boulevard, by Foster + Partners and Gehry Partners. As a tribute to the Malaysian developer, S P Setia, the BIG project is titled "Malaysia Square;" a hibiscus-shaped fountain in the center of the plaza refers to the country's national flower. —CHELSEA BLAHUT

> *For other recent work by BIG, visit our online Project Gallery at architectmagazine.com/project-gallery.*

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A Paris Souk

Design principals Tarik Oualalou and Linna Choi of architecture firm Kilo planted a Moroccan tent in front of Jean Nouvel, Hon. FAIA's Institut du Monde Arabe in Paris. The firm—based in Paris and Casablanca, Morocco—designed the 5,382-square-foot temporary installation as a dune-like structure, whose organic texture and curvy shape contrasts with Nouvel's iconic glass façade. The tent, made of long strips of camel hair and goat wool woven by a women's cooperative in the Sahara Desert, is being used as a performance space, café, and marketplace for artisans to sell their products, until Jan. 25. —CAROLINE MASSIE

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SEAN HEMMERLE

A Second Chance in Goshen

The future of Paul Rudolph's 1967 Government Center in Goshen, N.Y., looked uncertain after 2011 storms damaged the structure. Threats of possible demolition galvanized the architectural and preservation communities. Last month, Gene Kaufman, AIA, principal of Gwathmey Siegel Kaufman Architects, submitted a proposal to purchase the shuttered Orange County building and turn it into a community arts center, in response to an RFP issued by Orange County Executive Steven M. Neuhaus on Oct. 31. The firm restored Rudolph's 1963 Art & Architecture Building at Yale (now Rudolph Hall) in 2008. —LEAH DEMIRJIAN

> *Read the full story about Gwathmey Siegel & Associates' renovation of the Art & Architecture Building at bit.ly/AandArenovation.*


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The Chair-Free Office

Au courant office managers and furniture manufacturers are promoting open, flexible workplaces. Experimental Dutch studio Rietveld Architecture-Art-Affordances (RAAAF) and visual artist Barbara Visser took this idea a step further with a conceptual office design that replaces seats and desks with geometric planes at various angles. Presented late last year at the Looiersgracht 60 art space in Amsterdam (above), the pair's proposal, "The End of Sitting," is being used by researchers at the University of Groningen, in the Netherlands, to determine how position impacts movement and productivity. —HALLIE BUSTA

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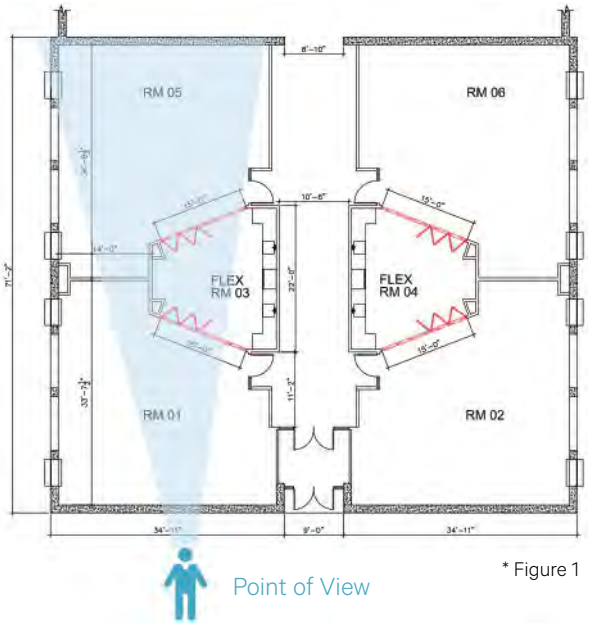

* Figure 1

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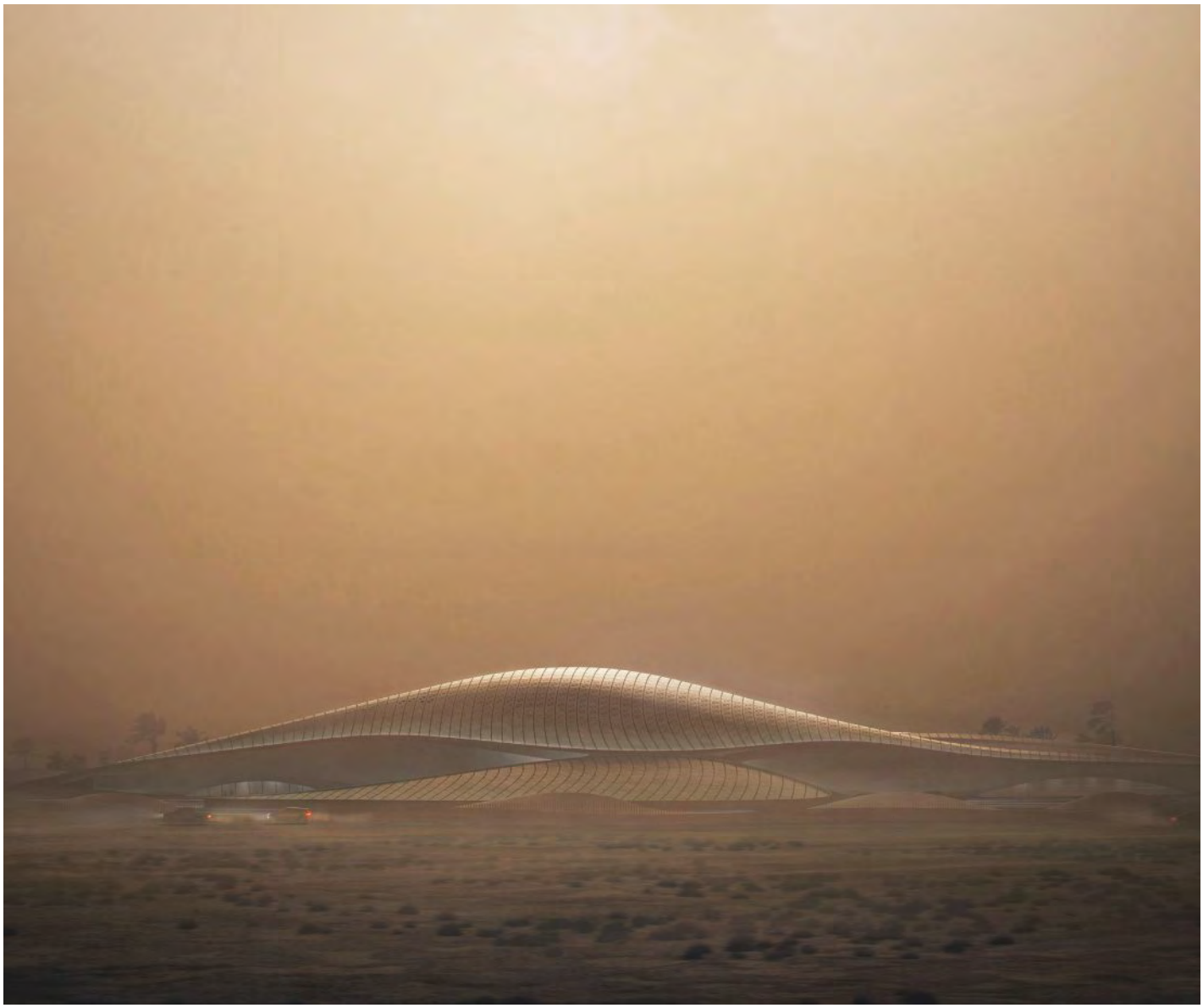

Zaha Hadid in the Desert

Bee'ah, a waste management company, has commissioned Zaha Hadid Architects to design its new headquarters in Sharjah, United Arab Emirates. The 75,300-square-foot headquarters, co-developed with London-based environmental consultants Atelier Ten and engineering firm Buro Happold, will be planned to LEED Platinum standards. Hadid is using the surrounding desert landscape as a conceptual driver, and has settled upon the notion of two intersecting "dunes." A central courtyard will be oriented according to prevailing winds. The construction timetable has not been set. —LEAH DEMIRJIAN

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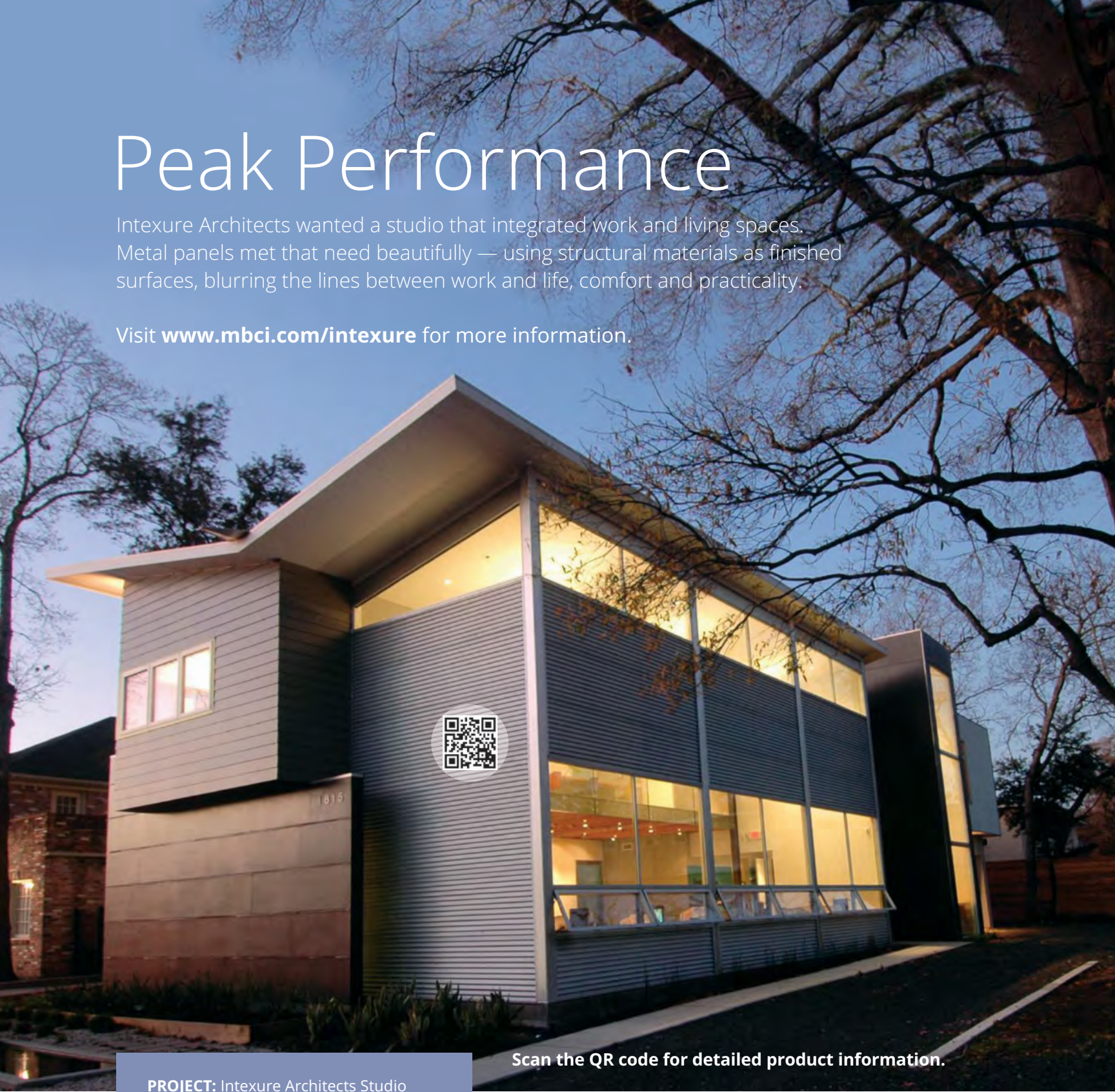

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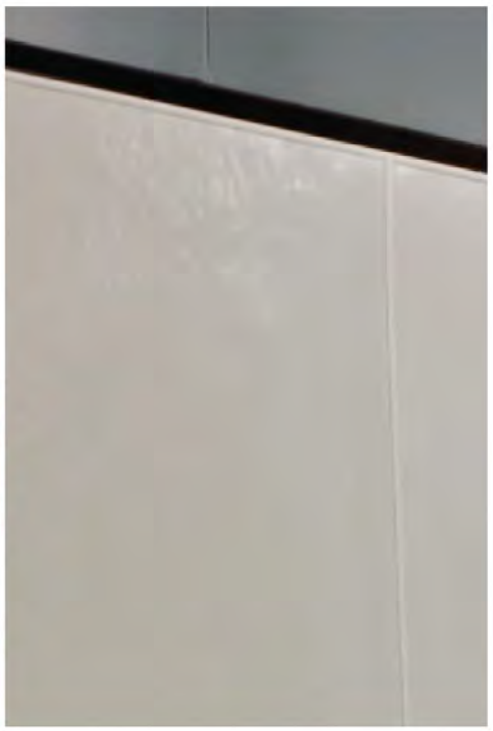
BRUCE DAMONTE

Bye Bye Berkeley

The University of California Berkeley Art Museum and Pacific Film Archive held a final hurrah for its 1970 building, designed by local architect Mario Ciampi, with Richard L. Jorasch and Ronald E. Wagner. *San Francisco Chronicle* critic John King has called it "the Bay Area's most emphatic example of Brutalism." In 2016, the museum will reopen in downtown Berkeley, in a building by Diller Scofidio + Renfro. Photographer Bruce Damonte documented the last day, which featured performances by dance group TURFinc (above). At press time, the university did not have plans for the Ciampi building's future use. —SARA JOHNSON

> *See a photo essay by Damonte of the last day of the Berkeley Art Museum and Pacific Film Archive at bit.ly/BerkeleyBrutalistCloses.*



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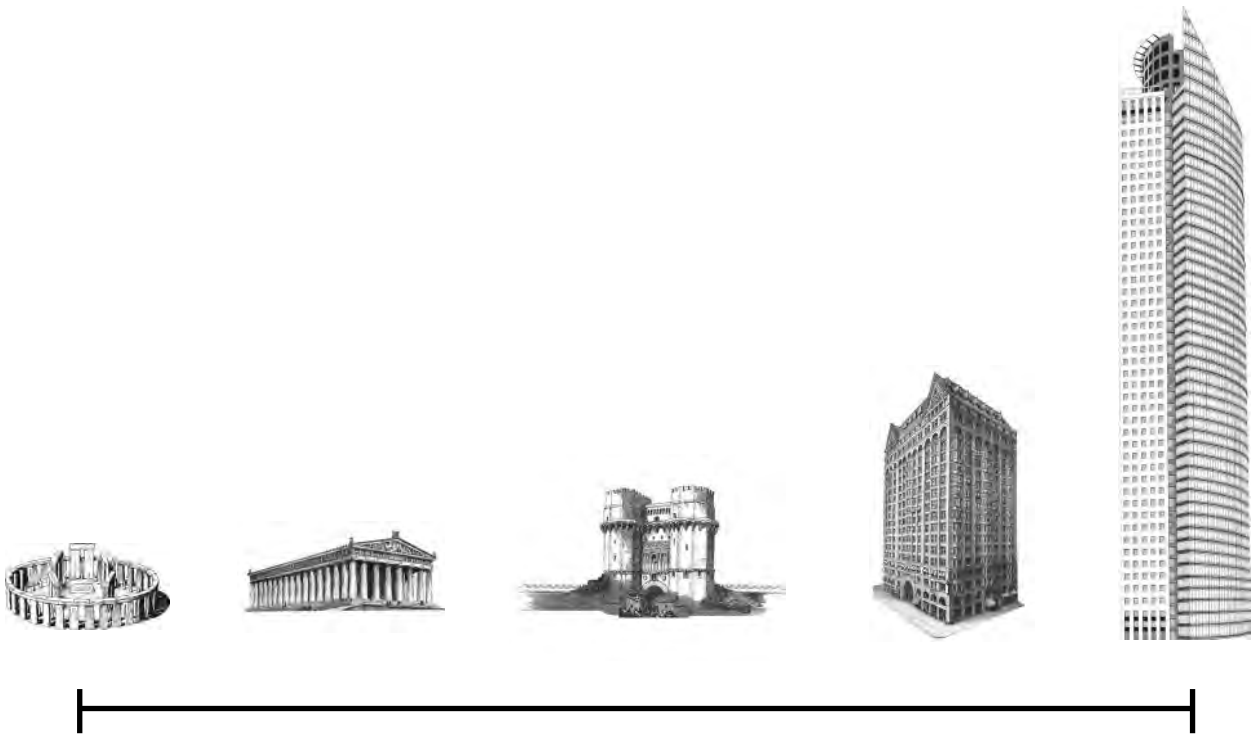

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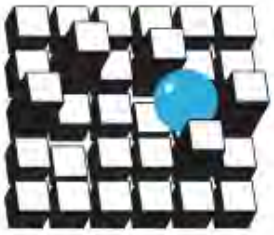
Material Science: Five Technologies to Watch in 2015

BY BLAINE BROWNELL, AIA

In 1988, the author Tom Forester claimed in *The Materials Revolution: Superconductors, New Materials, and the Japanese Challenge* (The MIT Press, 1988) that three mega-technologies would one day dominate global industrial activity: information technology, biotechnology, and new materials. As we witness massive achievements in each of those areas, it's hard to find fault in Forester's claim. Even more significant, though, are the connections that are developing among them, which continue to increase in quantity and scope. The most intriguing new materials, for example, are often linked to developments in information technology or biotechnology—and oftentimes both.

The following five material typologies are poised to enhance their integral connections in 2015 through innovations in areas such as interactive surfaces, soft machines, and self-healing capabilities.

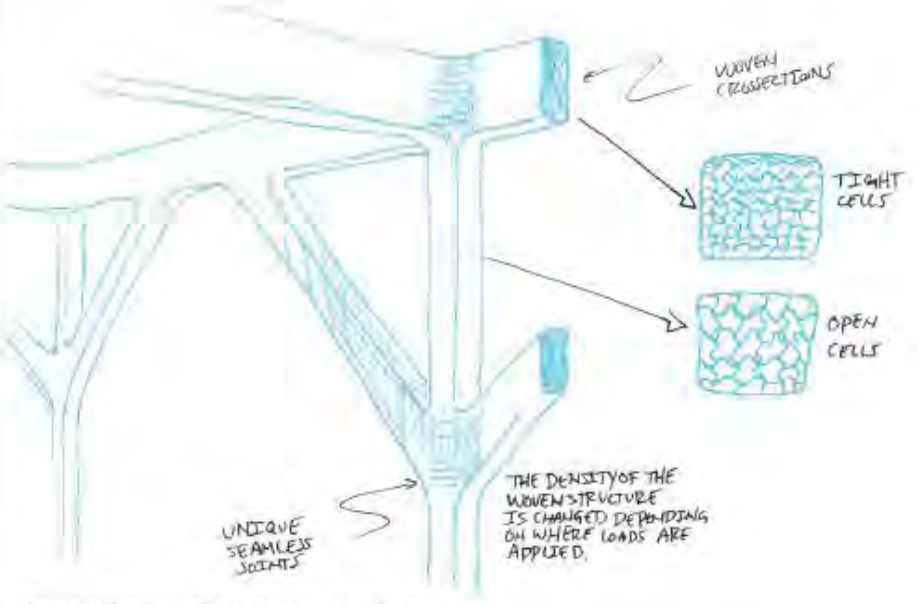


1. Digital-Physical Interfaces

An outcome of merging information and materiality, digital-physical interfaces represent the immediacy of real-time interaction in the physical world. One example of such an interface comes from the MIT Media Lab's Tangible Media Group. Transform is a tabletop installation made up of three interactive zones of dynamic blocks, which instantly swell as a pixilated wave when triggered by motion. Other mediums that offer novel corporeal connections to the digital take the form of touch-sensitive electronic textiles, kinetic walls, and projected multisensory displays.

2. Three-Dimensional Textiles

The next phase of woven fabrics offers mechanical capabilities similar to those of high-performance composites. London-based designer Oluwaseyi Sosanya uses his 15.75-inch-wide by 19.7-inch-tall 3D Weaver loom to craft such textiles out of solo strains of organic material including paper, wool, and cotton, as well as carbon fiber and metal cable. The resulting multidimensional weaves—honeycomb, zero-to-90 degree, and zigzag—each respond to impact differently, and their applications range from shoe soles to medical implants. The development shows how soft composites can be made from biocompatible materials, replacing traditional petroleum-derived rigid alternatives.

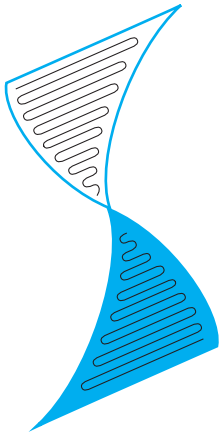


Oluwaseyi Sosanya's sketch of a 3D-woven structure

Material Science: Five Technologies to Watch in 2015

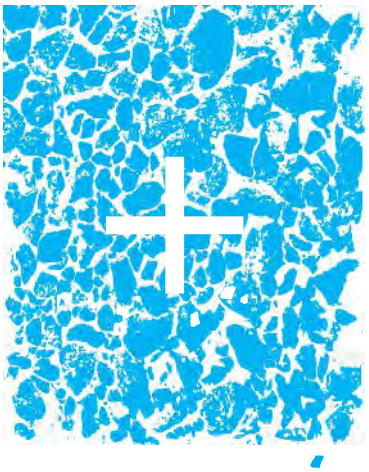
3. Biocomposites

Joining woven textiles, biocomposites are now made using a variety of methods and materials, including fungus and agricultural waste. And increasingly, designers are employing this organic matter in the fabrication of products like furniture and building modules. The Artichair, by Edinburgh, Scotland–based designer Spyros Kizis, features a molded seat made of discarded parts of the cardoon—an edible plant native to the Mediterranean region, also known as the artichoke thistle. Like the 3D Weaver, Kizis' work suggests a future for consumer products made of organic materials that safely biodegrade at the end of their usable lives.



4. Soft Machines

An alternative to conventionally rigid electronics, flexible processors called soft machines spell the future for powering sensing skins and wearable technology. Earlier this year, mechanical-engineering researchers at Purdue University found a way to fabricate these processors at the micro scale. Their process involved creating a sensor network, or a pattern of lines, using a liquid-gallium alloy embedded in a silicon elastomer. The gallium oxidizes to form a thick skin that affords structural stability, allowing the printed structures to be oriented in any direction—a step toward one day powering large and flexible, sensing skins.



5. Self-Healing Materials

By emulating the restorative capacity of human skin, self-healing materials offer a novel method for resilience in the built environment. Most self-repairing materials are polymer-based, yet such technology may now be found in concrete and mineral-based composites. The Delft University of Technology in the Netherlands has developed self-healing asphalt for resilient roadways. The induction-based product includes electrically conductive fillers connected in closed-loop circuits. When a micro-fissure appears in the road surface, the conductive materials automatically generate eddy currents that melt the surrounding bitumen, sealing the crack against further propagation. For those who face the ubiquitous potholes, cracks, and other forms of roadbed degradation, the benefits of a more robust asphalt option are obvious: a longer life and lower costs, a diminished carbon footprint, and easier passage.

3

The Artichair's seat is made of artichoke thistle

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Best Practices: Energy Performance–Based Contracts

BY JENNY JONES

Energy efficiency is a factor in nearly every building project these days, but most contracts still focus largely on budgets and deadlines. That may change, however, as more clients are expected to pursue performance-based contracts that make energy efficiency a priority and offer financial incentives to teams that achieve predetermined energy use outcomes. While the exact terms can vary and may include financing and operating components, one thing is certain—navigating the intricacies of this emerging contracting method requires a new way of thinking.

Understand the Client

Annika Moman, Arlington, Va.–based associate vice president of energy at AECOM, says that firms must meet with clients and other project stakeholders to understand their energy use goals, hash out concerns, and develop a plan that aligns the client's logistical needs with its energy use targets. "The most common pitfall is not investing the time upfront to establish the relationship with the client and ... the stakeholders so that everybody is invested as [the project] goes forward," says Moman, whose firm has completed numerous performance-based contracts. "If you don't do that, there's a lot of finger pointing during and after construction, if something doesn't work out right."

Establish the Ground Rules

Once architects understand the client's goals, they must work with the client and building operator to catalog the project specifications. Todd Stine, AIA, a partner in the Seattle office of ZGF Architects, says that performance-based contracts should state not only the energy use target but also factors that could impact efficiency, such as how many people will use the building, how many hours the building will operate every day, and extreme weather events. "You need to come to agreement on what is going to be measured, how it's going to be measured, and what pieces are beyond the design team's or contractor's control," Stine says.

Negotiate Incentives

Performance-based contracts motivate project teams to achieve or exceed the predetermined energy use criteria through bonuses, delayed profits, or even penalties that teams must pay if criteria aren't met. The award or penalty follows verification of the building's performance, typically a year or two after completion. Sometimes the client dictates the terms, but project teams can also negotiate the financial incentive with the client. Stine says that his firm requests a bonus whenever possible. "It's great having that feeling that if the building performs over and above what we said it was going to do, then we're going to get additional acknowledgment," Stine says.

Maintain Communication

Performance-based contracts often use design/build teams because members must collaborate closely throughout the entire project to achieve the energy use goals. Rives Taylor, FAIA, principal and regional sustainability leader in Gensler's Houston office, says that architects are particularly well positioned to facilitate communication between the project team and the client. "If there is a contractual component for success, [we can promote communication] ... because we often have a long-term relationship with the client," says Taylor, whose firm has engaged in performance-based contracts with several federal government agencies.

> "It's great having that feeling that if the building performs over and above what we said it was going to do, then we're going to get additional acknowledgment."
>
> —Todd Stine, partner, ZGF Architects

Know the Market

The public sector issues most of the nation's performance-based contracts, mostly for building retrofits but also, to a limited extent, for new construction. The majority of private owners continue to pursue other paths to energy efficiency. "Private-sector customers use certification programs like Energy Star and LEED certification to demonstrate their efforts toward energy conservation," says Brian Floyd, vice president of business development at Seattle-based full-service firm McKinstry.

> *Read the 2011 White House memo on energy performance–based contracts: 1.usa.gov/1BBgQcq*


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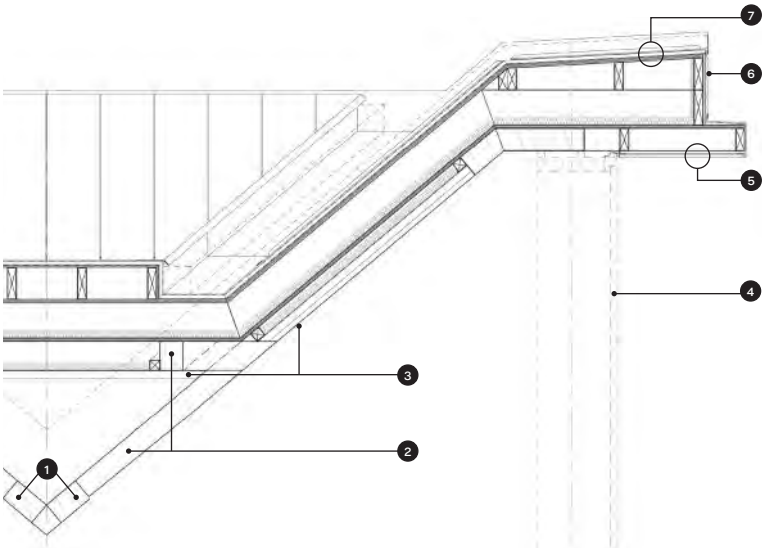
Detail: Auditorium Ceiling

BY EMILY HOOPER

At the Brisbane, Australia, campus of Queensland University, 237,000 square feet, designed collaboratively by local firms Hassell and Richard Kirk Architect, has been added to the Advanced Engineering Building. Within this new construction is a three-story, 500-seat auditorium, enclosed in glass on two sides and finished in local timber to provide visual warmth and transmit sound without amplification.

Supporting the 3,000-metric-ton (6.6-million-pound) roof are trusses constructed from local species of hardwood formed into glulam, manufactured by Hyne Timber 160 miles up Australia's eastern coast in the city of Maryborough. The trusses run to lengths of 82 feet and measure between 13 and 16 feet tall, depending on the location of each along the accordion-style roof. Chord members measure 2½ to 3⅓ inches wide. The beams are laminated together and fastened with slotted steel plates and exposed steel bolts. To reduce acoustic echoing, a series of 1½- by ¾-inch wood strips planed on all sides bridge the space between trusses.

The size and weight of the roofing system required special considerations for installation. The trusses were transported to the university on 18-wheelers, and then reassembled at ground height with 1-inch galvanized steel bolts grouped with 16mm steel plate cleats and boxes, and 5mm-thick washers. The completed structure was hoisted up over two concrete walls by two large cranes.



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WOOD: SAFE, SMART, AND SUSTAINABLE

Solaire Wheaton is a six-story, 232-unit Class A luxury apartment community in Wheaton, MD that serves as the centerpiece to an ambitious new eight-acre transit-oriented urban environment minutes from Washington, D.C.

Solaire Wheaton is a 361,000 square foot Type IIIA five-story wood-frame construction structure over a cast-in-place concrete podium with two levels of sub-grade parking. Residents enjoy dedicated access to many amenities, including a private resort-style swimming pool, landscaped courtyard, a fitness center, Wi-Fi café, demonstration kitchen, and easily-walkable proximity to a Metro (subway) station and new Safeway and Costco stores.

CODE COMPLIANCE

Building codes require all building systems to perform to the same level of safety, regardless of material used. Wood-frame construction has a proven safety and performance record for fire protection, and the addition of sprinkler systems, fire-resistance-rated wall and floor/ceiling assemblies, and open spaces around the building can be used to increase the allowable size of wood-frame structures.

The building conforms to all applicable building codes and housing standards including the IBC, Uniform Fire Code, International Energy Conservation Code, Fair Housing Act, National Fire Alarm Code, Code of Maryland, ADA, and various city and county ordinances.

Building with wood reduced the total project cost per square foot to $87.18, placing it at the low-end of a national average of $85 to $125 for most commercial or multiple unit projects.

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	Type IIIA	Type IIIB	Type VA	Type VB
Maximum stories	5	5	4	3
Maximum building height (ft)	85	75	70	60
Total building area (at maximum permitted stories) (ft²)	270,000	180,000	135,000	78,750
Single floor area (ft²)	90,000	60,000	45,000	26,250
Total building area (ft²), single-story building	114,000	76,000	57,000	33,250
Total building area (ft²), two-story building	180,000	120,000	90,000	52,500

2015 IBC allowable heights and areas for residential wood construction
Source: American Wood Council

WHY WOOD?

Wood is safe. The property represents best practice in active and passive fire prevention and suppression. As outlined in Section 602.3 of the IBC, Solaire Wheaton utilizes fire-retardant treated wood at all exterior walls that are rated at two hours or less.

Wood costs less. Wood supports the economics of an urban multi-family project. The architect estimates wood framing is just 80 percent of the cost of metal framing at the same unit density. Building with wood reduced the total project cost per square foot to $87.18, placing it at the low-end of a national average of $85 to $125 for most commercial or multiple unit projects. Today, podium construction is an increasingly popular choice in the Washington D.C. metro area because of affordability, speed-to-market, design flexibility, and investment return.

Wood is versatile. Solaire Wheaton is designed wedge-shaped with a flat, sun-reflecting thermoplastic polyolefin membrane roof to minimize building heat. The design aesthetic echoes the look of New York's famous Flatiron Building, contributing to the classic, upscale urban aesthetic.

DENSITY

Solaire Wheaton is built on a tight (1.76 acre) site. With 232 alcove studios, one- and two-bedroom units, the owner achieved 131.82 dwelling units per acre.

SUSTAINABILITY

The project is LEED Silver-certified by the U.S. Green Building Council. Prior to construction, materials from the demolition of the previous structure were largely recycled and diverted from landfills.

AMENITIES

The five floors of wood-framed apartments incorporate a wide range of luxury features including granite countertops, stainless steel appliances, wood flooring, large windows, and private balconies. The apartment community is surrounded by a diverse assortment of restaurants, a wide variety of shopping options, many nightlife venues, and rapid access to Washington D.C. by public transportation and on-site Zipcars.

Architect & Landscape Architect: The Preston Partnership

Owner: The Washington Property Company

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Structural Engineer: Cates Structural Engineers, Ltd.

MEP Engineers: Summit Engineers, Inc.

Civil Engineer: Macris, Hendricks, & Glascock, P.A.

Photography: John Cole

Next Progressives: Matter Design

AS TOLD TO DANIELLE RAGO
PORTRAIT BY HAROLD DANIELS

For Brandon Clifford and Wes McGee, architecture has always been about the connection between drawing and making things, and the interplay between history and technology. Pursuing different degrees at Georgia Tech—Clifford in architecture and McGee in engineering and industrial design—the two met in the middle when they founded Matter Design in 2008. Clifford is based in Boston and teaches at MIT. McGee lives in Ann Arbor, Mich., where he is director of the FABLab at the University of Michigan. As the designers explain below, their firm has produced a range of research-driven projects at a variety of scales from product design to habitable structures.

On Their Design Approach

We would probably say we are designers more than architects, but we're constantly negotiating architectural terms and theory; we see our projects Round Room, Helix, and La Voûte de LeFevre as being architecture. At different levels, all of our projects are connected to architectural research. Drawn Dress might be considered product design, but in fact we were questioning some of the typical sartorial references that are used in architecture. The "Skin + Bones" exhibition at MoCA in Los Angeles was happening around the same time, and there were a lot of references in architecture to pleating, draping, and folding. We were asking what it would mean if we employed our architectural tools to construct a dress.

On Digital Fabrication

We've always looked at how the translation from representation to making has occurred traditionally, and how that has changed with digital technologies—especially CNC and robotics—becoming more prevalent. As a rule, we have been building everything that we design. One assumption that we have always worked under is that we are a digital practice; 10 years ago the idea of being a digital practice meant you were producing renderings of impractical works, so that period was very much living in a speculative realm, almost like the work of the 1960s and Archigram.

When you get into the physical world, there are examples of very complex processes of the past that we can learn about—things like stereotomy from Philibert de l'Orme—and translate into digital processes. The work that we do is certainly digital, but it also has a feeling of being very ancient at the same time because we're pulling references from times before the digital era. We've recently been collaborating with commercial and professional fabricators to develop novel processes, or re-appropriate existing manufacturing processes that occur in other industries and reapply them at different scales to our practice.

On Historical Precedent

The history of architecture has been carved in stone, literally, and we have so much available to us—but contemporary practice isn't carving volumetric stone. We've been trying to find ways to get back into mining some of the knowledge from those processes, moving incrementally from very light materials—like EFS foam for our project Periscope—to very heavy materials.

Round Room is a continuation of Le Voûte, and the closest to stone that we've achieved. Just after the completion of Le Voûte, we went down to Peru and found these zero-tolerance, voluptuous stone architectures in Incan ruins. For Round Room, we applied the Incan wedge methods and translated them into contemporary production to build a complex geometry out of aerated concrete.

Wes McGee (left) and Brandon Clifford

What's Next

For us, working together is not as interesting if it's only pure applied research. It needs to be materialized into a design project. So we're looking at the new toolkit we're working with and how it can inform something new.

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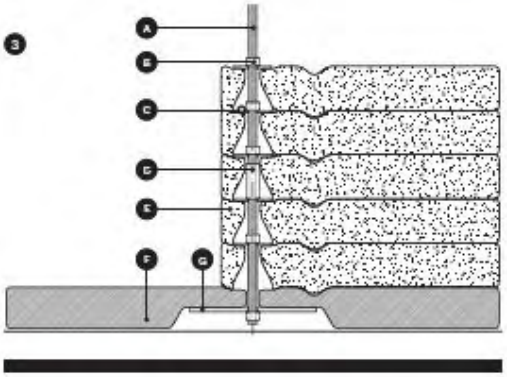
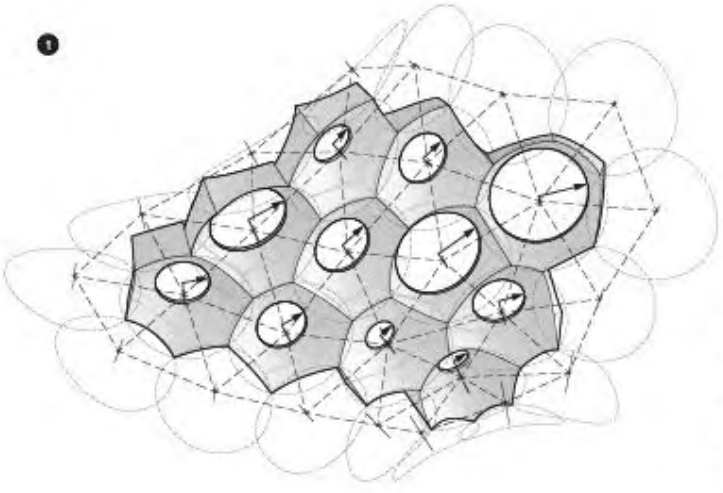
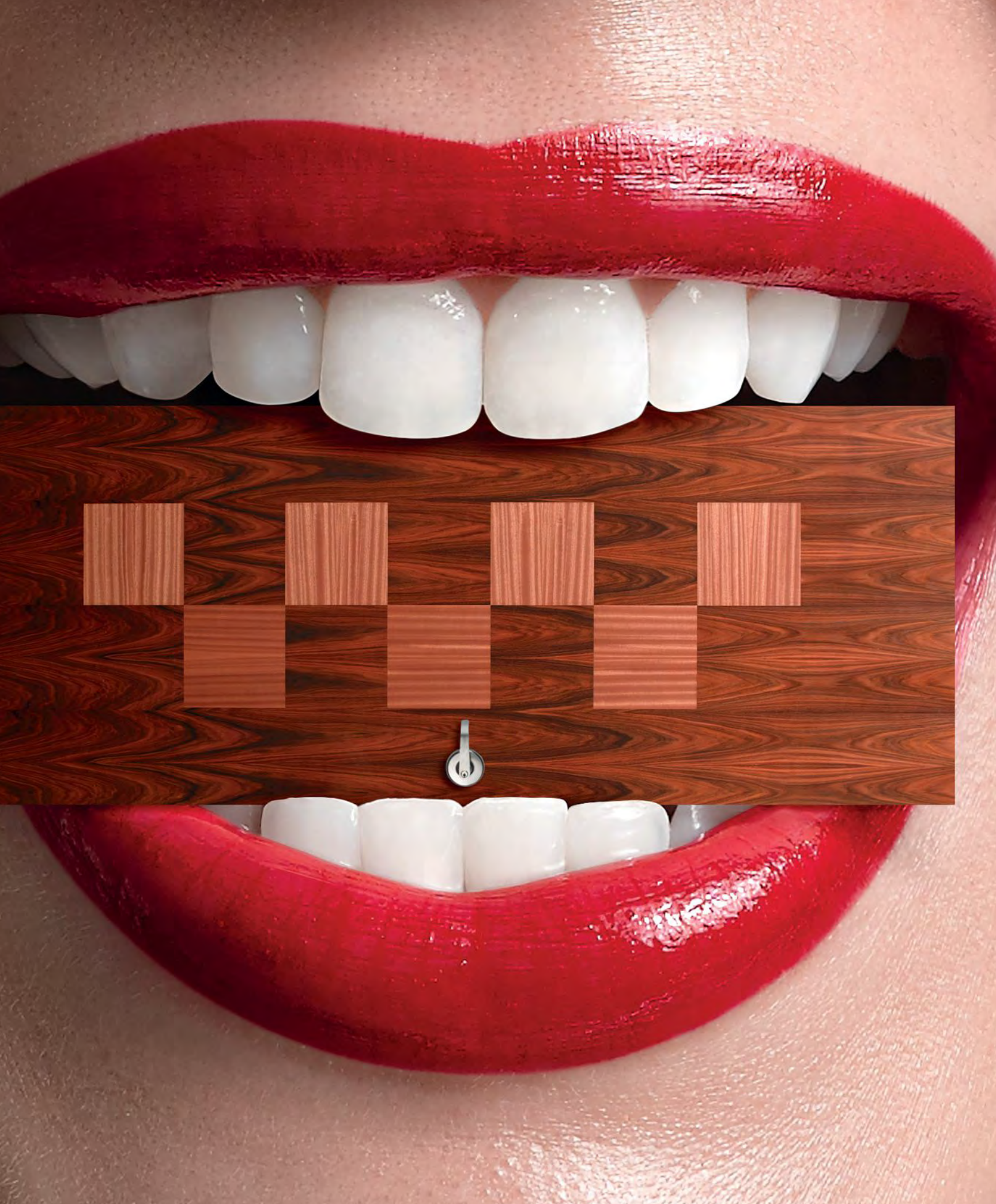
Doug Clausen
President/CEO
VT Industries, Inc.



A. ¾" threaded rod
B. Hex nut
C. 3" metal washer
D. Coupling nut
E. Precast conrecte tread
F. Wooden base
G. 8" metal washer



1. Funded through the Howard E. LeFevre '29 Emerging Practitioner Fellowship at Ohio State University's Knowlton School of Architecture, Le Voûte de LeFevre is a pure-compression structure designed with custom simulation software to determine aperture sizing. **2.** Periscope: Foam Tower was the winning entry in Modern Atlanta's 10up! competition, and it comprised robotically cut, expanded polystyrene foam stacked into a 60-foot tower. **3.** Helix, a half-scale spiral stair, nests zero-tolerance cast concrete treads around a hanging threaded rod, and serves as a study model as Matter Design explores working with stone. **4.** For the Pongo Coatrack, Brandon Clifford and Wes McGee CNC-milled wooden sticks that wrap around each other for ease of assembly into its final tripod form.



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Up + Running: The Potential of Partnerships

BY NATE BERG

Most design firms face a common challenge in their early days: their portfolios aren't extensive enough to readily get work. Without experience, it can be tough to convince clients that a young firm is right for the job. This catch-22 situation doesn't necessarily spin on forever, but it can be a frustrating trap to escape.

One way to shake the stigma is to create strategic partnerships. Whether it's with another, more established firm, with a university on a research project, or with a nonprofit on pro bono work, the right partner can help a rookie firm get that first bit of professional momentum.

It's an approach that helped partners Brandon Marshall, AIA, and Tiffany Redding, AIA, get the first job for their new El Cerrito, Calif.–based firm, FOG Studio. Shortly after launching in 2013, they collaborated with San Francisco firm Mark Davis Design to bid for a library renovation project—the type of educational and institutional work both Marshall and Redding had done before setting out on their own. And though most of Mark Davis's work up to that point had been residential and commercial projects, his firm had the benefit of being established, with built projects under its belt. Davis, AIA "added some legitimacy to our team immediately," Marshall says.

> "In order for the profession to continue and to grow, we need to tap into the social sector."
>
> —Amy Ress, manager, Public Architecture's 1% Pro Bono Design Program

And while that legitimacy wasn't the only factor, it did help them win the bid. "It was about selling that idea that neither of us [alone] might be your choice, but collectively we're a pretty talented team," Marshall says.

To enrich its portfolio, FOG Studio has also been taking on pro bono work. They've partnered with Education for Change Public Schools, which operates charter schools in the Bay Area. FOG Studio worked with the group on a new middle school in Oakland, providing interior program design and visual branding.

"For us, it was no skin off of our back, other than devoting some time, which you have a lot of when you're starting your business," Marshall says. "Obviously, you're just trying to find ways to build." He acknowledges that it can be a challenge for a new firm to devote time and energy without any chance of remuneration, but says that this type of work can provide rewards in other, perhaps longer-term, ways.

"It's all going toward the same goal of developing your firm and creating more exposure, developing a relationship with somebody that has connections with an industry that maybe we're trying to get into or a market we're trying to get into," Marshall says.

FOG Studio partnered with Education for Change Public Schools through San Francisco–based advocacy group Public Architecture's 1% Pro Bono Design Program, an initiative to encourage architects to dedicate 1 percent of their billable hours to pro bono projects. The organization asks firms to pledge to donate some time—they estimate about 20 hours per person per year—and then helps connect them with community organizations or nonprofits in need of design services. Program manager Amy Ress says these kinds of partnerships are mutually beneficial.

"In order to not be seen by the public as only reserved for the most elite of our society, in order for the profession to continue and to grow, we need to tap into the social sector," Ress says. "It's an area that's not really explored by the profession in a deep way." She argues that partnering with organizations and doing pro bono work can be a great way for new architecture firms to provide their own legitimacy. "It can be really a good thing for a firm starting out, if they can do a pro bono project that gets built," Ress says. "It's a way to build a portfolio."

Donating services to a nonprofit can also help out with a new firm's marketing. Marshall says that FOG Studio's pro bono work has actually led to paying work, sometimes in unexpected ways. When a relative of an official at the middle school needed help with a home renovation, FOG got the job. "It was kind of marketing by proxy," he says. "To us, the priority started with doing what we wanted to do, but it ended up being good exposure."

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Architects' Choice: Insulated Wall Systems

TEXT BY BRIAN LIBBY

Walls are fundamental to a building's design—without them, inhabitants are unprotected. Today, design teams are enhancing wall systems and façades by incorporating breathable elements into otherwise-sealed envelopes and embracing high-performance materials. Here, four architects explain how they're refining their projects' walls.

Heath May, AIA
HKS Architects, Dallas

Dallas-based HKS Architects' in-house research team, the Laboratory for Intensive Exploration (LINE), collaborates with students at the University of Texas at Arlington's Digital Architecture Research Consortium to explore how novel materials can enhance wall systems' dimensionality.

"A skin can be more than just a barrier," says HKS vice president and LINE director Heath May. "It can be something that's thermally responsive and a conduit for energy, and [it can] even transmit sunlight." Fiber-reinforced polymers have gained traction in Europe as exterior cladding, he says. In the U.S., they've shown up in applications like the exterior paneling on Snøhetta's expansion to the San Francisco Museum of Modern Art. HKS has yet to use the polymers (prototype shown, right) in a wall system, but May believes the material is ideal for sports stadiums, which is a firm specialty, due to its ability to visually blur the lines among cladding, structural systems, and M/E/P components. "It's just so amorphous in terms of what it can do," he says.

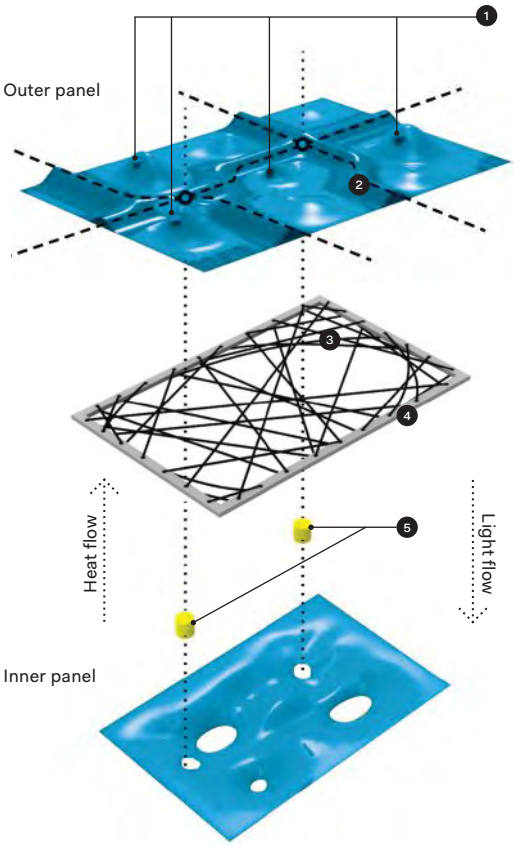
Jasen Bohlander, AIA
Leddy Maytum Stacy Architects, San Francisco

Completed in 2012, Leddy Maytum Stacy Architects' Firehouse No. 1 was the first new firehouse built in San Francisco since the 1970s. The 15,400-square-foot structure required a lightweight wall system that could withstand earthquakes, which the firm met with a souped-up rainscreen. To meet California's building code for exterior rigid insulation and to avoid thermal bridging via heat transfer from the metal stud framing, the team applied exterior R21 batt insulation continuously. "We pulled the structure, the steel columns, and the diagonal bracing inside the exterior wall, which is balloon-framed so the floor slabs don't interrupt the framing," says associate Jasen Bohlander, who notes that some insulation was also used inside.

Marlene Imirzian, FAIA
Marlene Imirzian & Associates Architects, Phoenix

Marlene Imirzian & Associates Architects' design for a series of new buildings at the Girl Scouts' 14.5-acre Camp Sombrero in Phoenix takes a common product, Trex's Transcend composite decking, and uses it uncommonly—as a rainscreen. About 38,600 linear feet of the product is used on the campus, mounted horizontally to vertical hat channels with flashing tape

HKS Architects



1. Apertures for air ventilation
2. Electrical conduit lines
3. Resin-coated carbon fiber
4. Threading medium for carbon fiber within the structural frame
5. Light canisters for project interior

> *See full section drawings for the projects named here at architectmagazine.com*

Architects' Choice: Insulated Wall Systems

over a vapor-permeable air barrier and rigid insulation, all affixed to the exterior sheathing and metal stud wall.

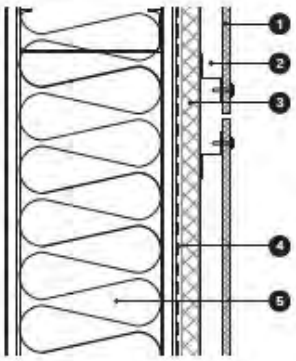
When considering Trex for decking, firm president Marlene Imirzian says she found it suitable as cladding due to its limited maintenance needs. "It's a material typically seen as being secondary, but it's highly durable and does very well in the desert heat."

Arjun Mande, AIA
Goody Clancy, Boston

At the Upstate Neuroscience Research Building, on the campus of the State University of New York's Upstate Medical University in Syracuse, N.Y., a 158,000-square-foot expansion clad in a rainscreen of aluminum composite panels contrasts with the original structure's brick façade. The challenge for Boston-based Goody Clancy was to design a consistent insulation package for both that could stand up to the region's harsh winters—"a true thermally broken system," says associate principal Arjun Mande.

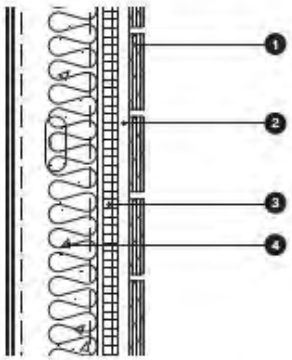
The architects designed a monolithic envelope that relies on a continuous air barrier of 3-inch-thick polyurethane foam to achieve an R23 insulating value. Initially, the foam hadn't been tested with the aluminum panels to the National Fire Protection Association's 285 standard for exterior non-load-bearing wall assemblies. The architects worked with the manufacturer, BASF, to pass the tests to ensure the system was viable. "It's a very promising material, and it makes for a high-performing curtainwall system," Mande says of the foam. "[But] the ... different materials, they all need to work together."

Leddy Maytum Stacy Architects

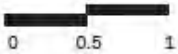


1. Cement-board panel
2. 1" ventilation gap
3. 1" exterior rigid insulation attached with horizontal Z furring
4. Weatherproof membrane over exterior sheathing
5. Interior batt insulation

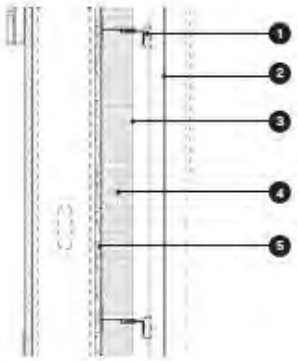
Marlene Imirzian & Associates Architects



1. Horizontally mounted synthetic-wood planking
2. Vapor-permeable air barrier
3. 1" 25-psi rigid insulation
4. 6" metal studs placed 24" on center



Goody Clancy



1. Aluminum composite panel anchor system
2. Aluminum composite panel
3. Fire-protective covering
4. Polyurethane foam insulation and air barrier
5. Steel studs with exterior gypsum sheathing

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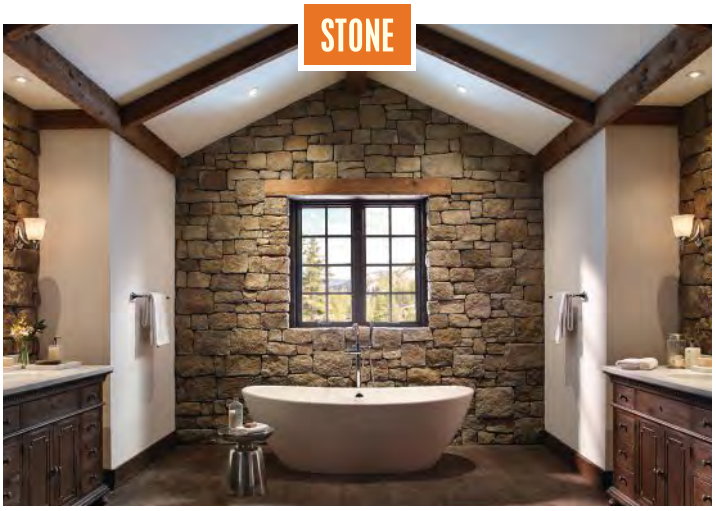

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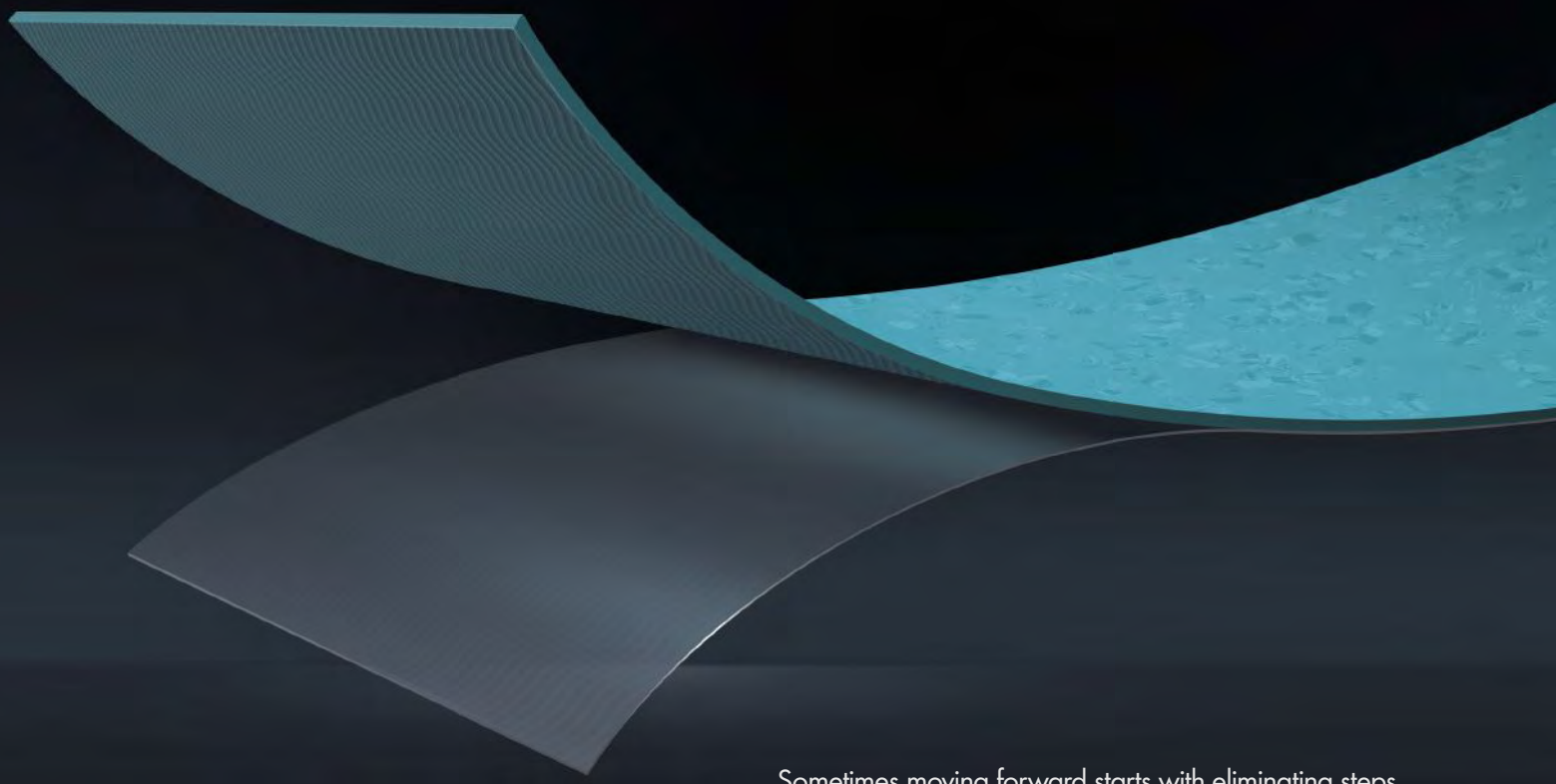

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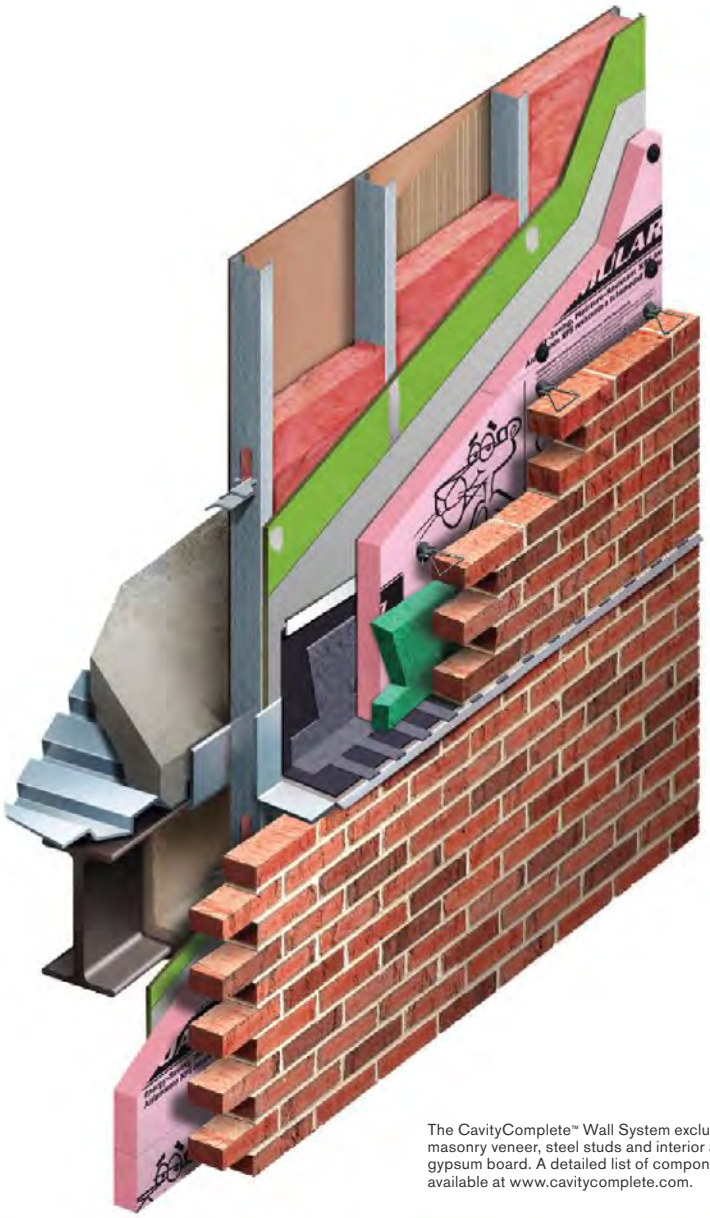

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PHOTO: CARL BOWER

AIAVOICES

IN THE PUBLIC INTEREST | AN EDITORIAL MISSION

Andrew Goodwin, AIA, is the editor-in-chief of Public, *a new magazine focused on public interest design. Goodwin is a San Luis Obispo, Calif.–based architect and co-founder of Conscious Build, which launched the magazine in 2014, and he is the 2015 president-elect of AIA California Council Central Coast Chapter. "Architects have the opportunity to create multiple stories of impact through just one created space," he says.*

IN *PUBLIC*, MY GOAL IS TO CREATE COMPELLING EDITORIAL features that center on what we call "impact design." It's design that's for people, by people. This movement is about catalyzing change, which requires us to step outside of our four walls and see other people's communities, economies, and environments. I was brought up to believe that sustainability is a three-legged stool: economic, environmental, and social responsibility. And this philosophy of sustainability has become foundational to almost every architecture firm out there in the last 20 years.

Of the three legs of the stool, social responsibility is starting to eclipse both the economic and the environmental arguments. Why? Because if people are first supported in terms of culture and community, then their economic well-being and environmental contributions will follow. The private sector maintains its realm as a self-sustaining system. But people in the private sector can still see the impact of good design on others.

We need to look for ways to market the impact of sustainable design so that it retains the spirit of a social movement while effectively and measurably increasing awareness and, ultimately, action. The hardest parts of the movement are the definitions we use for words. The more we can draw in real examples of so-called "humanitarian design," "public interest design," or "human-centered design," the sooner we can start to combine those terms under one larger, definitive principle.

There are a lot of what I call "slashers" coming out of school now—architects/designers—and I think impact design is area of expertise that is suited for them. You can be writers, designers, advocates, fundraisers, project managers, teachers, and architects all at the same time. What has helped me as an editor is my architecture training. Architecture is about analytical problem-solving. Looking at the challenge of launching a magazine, it's really no different than the challenge of launching any other creative and purpose-driven endeavor. *—As told to William Richards*

I AM AIA

Evelyn Lee, AIA
Member since 2003

"As an architect, I do not thrive as a designer of buildings, project manager, or construction administrator. I found my place as a design strategist. I get involved early in the process, when decisions are made about spending capital assets. I offer clients design thinking upstream rather than responses to preexisting conditions. Some may call this an alternative career. I call it architecture plus."

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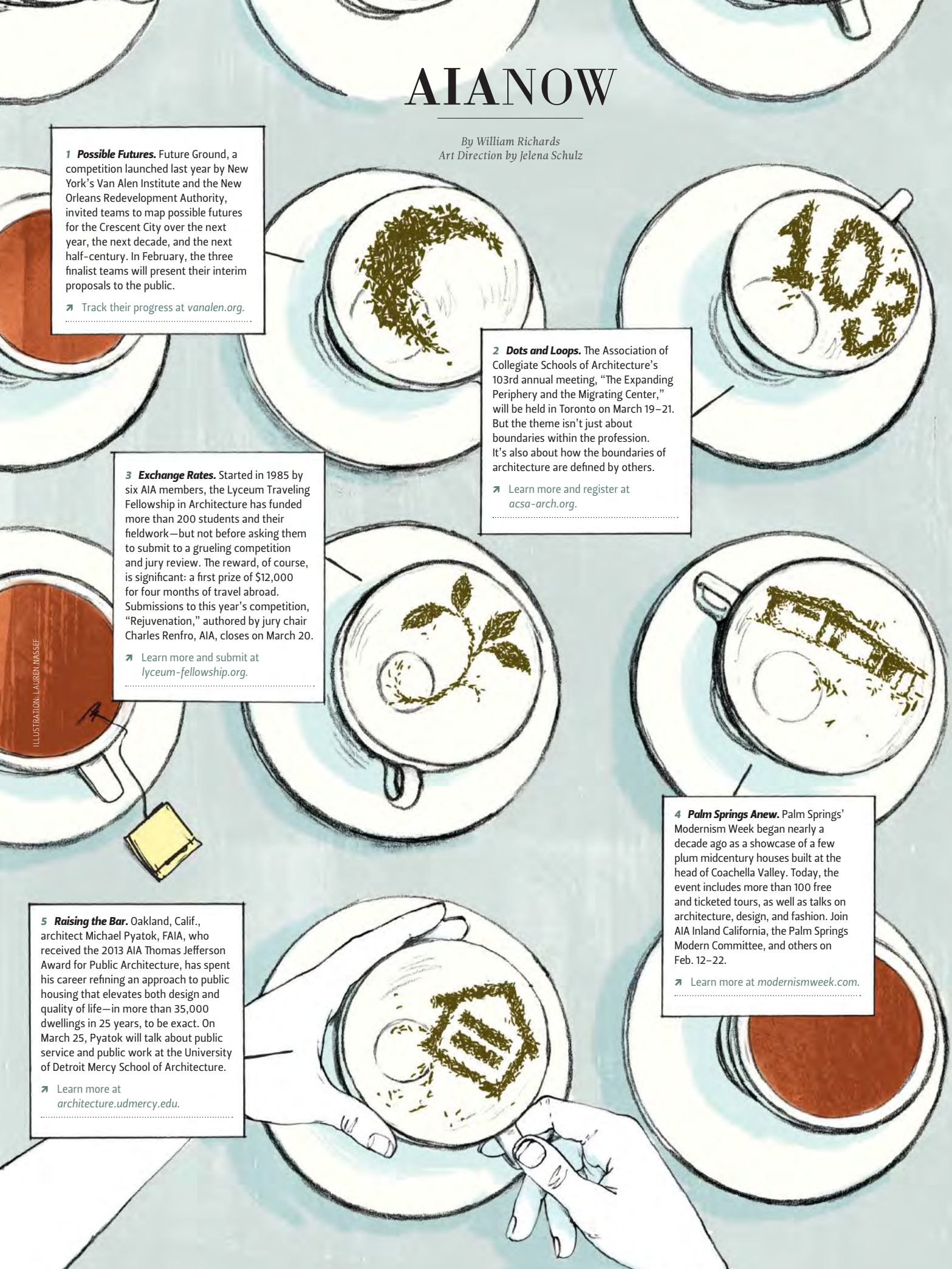
By William Richards
Art Direction by Jelena Schulz



1 *Possible Futures.* Future Ground, a competition launched last year by New York's Van Alen Institute and the New Orleans Redevelopment Authority, invited teams to map possible futures for the Crescent City over the next year, the next decade, and the next half-century. In February, the three finalist teams will present their interim proposals to the public.

↗ Track their progress at *vanalen.org.*

2 *Dots and Loops.* The Association of Collegiate Schools of Architecture's 103rd annual meeting, "The Expanding Periphery and the Migrating Center," will be held in Toronto on March 19–21. But the theme isn't just about boundaries within the profession. It's also about how the boundaries of architecture are defined by others.

↗ Learn more and register at *acsa-arch.org.*

3 *Exchange Rates.* Started in 1985 by six AIA members, the Lyceum Traveling Fellowship in Architecture has funded more than 200 students and their fieldwork—but not before asking them to submit to a grueling competition and jury review. The reward, of course, is significant: a first prize of $12,000 for four months of travel abroad. Submissions to this year's competition, "Rejuvenation," authored by jury chair Charles Renfro, AIA, closes on March 20.

↗ Learn more and submit at *lyceum-fellowship.org.*

4 *Palm Springs Anew.* Palm Springs' Modernism Week began nearly a decade ago as a showcase of a few plum midcentury houses built at the head of Coachella Valley. Today, the event includes more than 100 free and ticketed tours, as well as talks on architecture, design, and fashion. Join AIA Inland California, the Palm Springs Modern Committee, and others on Feb. 12–22.

↗ Learn more at *modernismweek.com.*

5 *Raising the Bar.* Oakland, Calif., architect Michael Pyatok, FAIA, who received the 2013 AIA Thomas Jefferson Award for Public Architecture, has spent his career refining an approach to public housing that elevates both design and quality of life—in more than 35,000 dwellings in 25 years, to be exact. On March 25, Pyatok will talk about public service and public work at the University of Detroit Mercy School of Architecture.

↗ Learn more at *architecture.udmercy.edu.*

ILLUSTRATION: LAUREN NASSEF

The Economy Is Doing Well

THREE POINTS TO HELP FIRMS DO WELL, TOO

U.S. ARCHITECTURE FIRMS HAVE BEEN WHIPSAWED BY A WEAK and volatile economy over the past several years. With architecture firms losing almost 30 percent of their payroll employees during the recession, many firms have also lost design specialties, technical staff, institutional history, and key marketing contacts.

As firms continue to rebuild their practices, they also need to reshape their strategies to adjust to the new realities that are defining the practice of architecture. In some respects, this entails rebuilding their project base and lost institutional capacity. Additionally, though, it consists of refocusing their project portfolio to reflect the changing construction opportunities, and reshaping their staff to reflect the evolving workforce.

Find the Work, Get the Work

The first task for most firms is rebuilding their shrunken project base. Architecture firm billings have fluctuated wildly over the last decade, peaking at $44.3 billion in 2008 before declining by more than 40 percent over the next three years (see *chart 1*). Architecture firm billings have since begun to rebound, according to the latest figures available from the 2014 AIA Firm Survey Report, and estimates for 2014 and 2015 firm billings indicate that they should continue to increase. When asked in late 2014, architecture firms anticipated that their billings would increase by 6.5 percent for the year and projected additional modest growth of 3.2 percent for 2015.

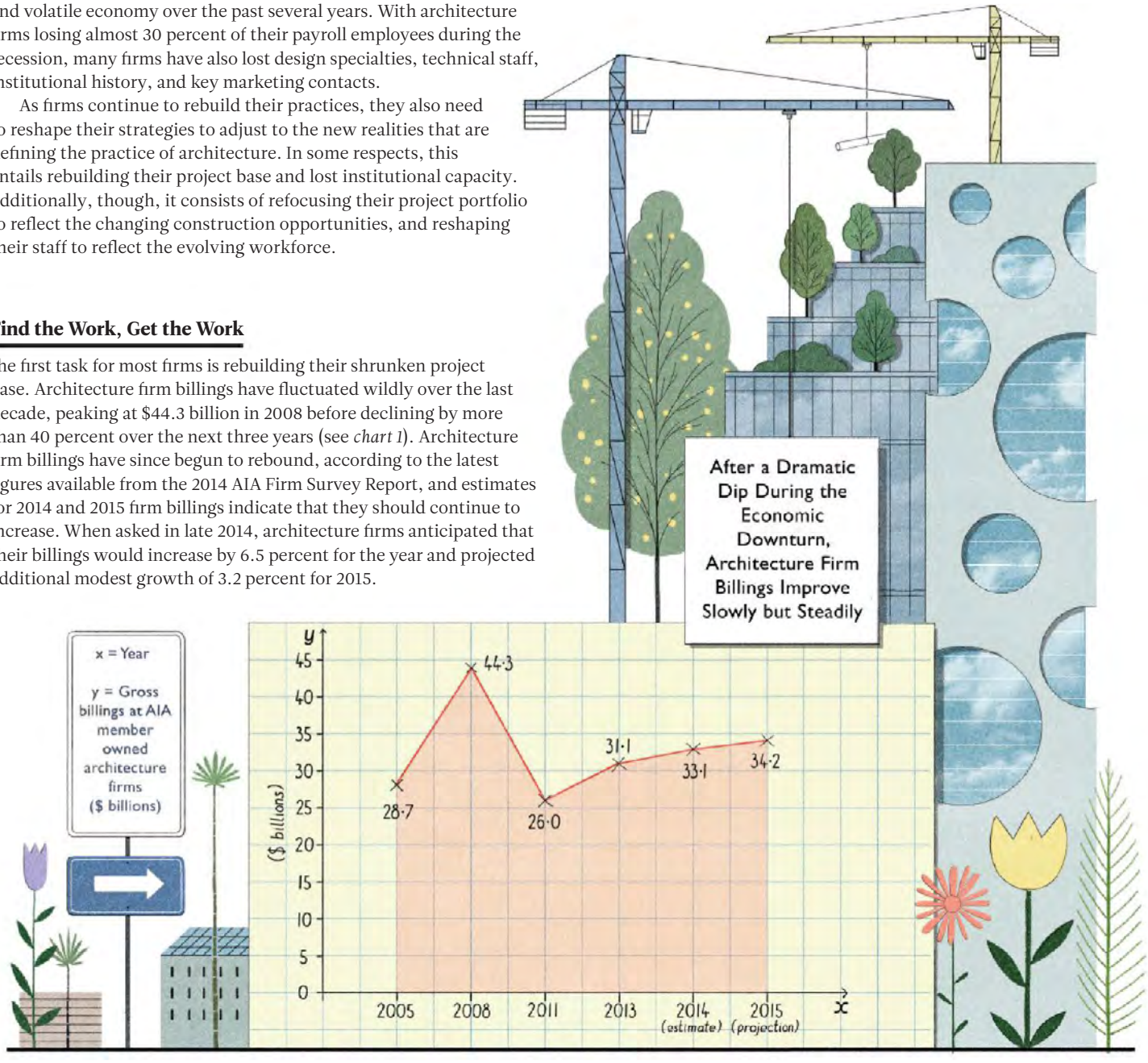


Chart 1

One factor that has contributed to the increase in net billings at firms in the years since the downturn is a decrease in pass-throughs—or an increase in the cost that a client pays because of an increase in the firm's cost. Pass-throughs accounted for more than a third of gross billings in 2008, compared to just a quarter in 2013. During the downturn, architecture firms kept more work in-house instead of using external consultants. However, as workloads continue to increase, firms may once again find themselves increasing their use of outside partners and specialists.

More Offshore

For many firms, a key source of new project activity will be international work. While the U.S. continues to have the world's largest economy, a disproportionate share of construction activity in coming years will be in more rapidly growing areas like China; East Asia and the Pacific region; the Middle East; Sub-Saharan Africa; and South America. Though the share of architecture firm billings from international work has declined since peaking in 2008, it is expected to rebound in coming years (see *chart 2*). International work generated $1.7 billion in revenue in 2013, but that amount is only slightly more than half of the $3 billion that was generated in 2008.

The economic downturn affected countries around the world, particularly countries like Greece and Spain that continue to feel the impact today. Even in the Middle East, which was expanding rapidly throughout the late 2000s, design and construction activity has slowed in recent years. However, as these economies rebound, and technology makes it easier for firms to expand into overseas work, competition for international projects will likely increase, as will firm revenue from these projects.

A Better Mix of Talent

Staff diversity at architecture firms will need to reflect the changing composition of the national workforce. About a quarter of our national population consists of racial or ethnic minorities. Additionally, women now comprise almost half of the U.S. labor force. But when you look at architecture firms, only 20 percent of architecture staff is composed of racial and ethnic minorities, and less than 30 percent of architecture practitioners are women. The size of architecture firms has fluctuated over the last five years, from an average of 10 total employees in 2008, down to nine in 2011, and then to back up to 11 in 2013. However, the composition of architecture staff at firms has changed little, aside from an increase in the share of firms that are sole practitioners and a modest increase in the share of architecture staff that is licensed. The share of architecture staff that is comprised of women and racial/ethnic minorities has gained some ground in the last decade but still accounts for a relatively small share overall. In 2013, women

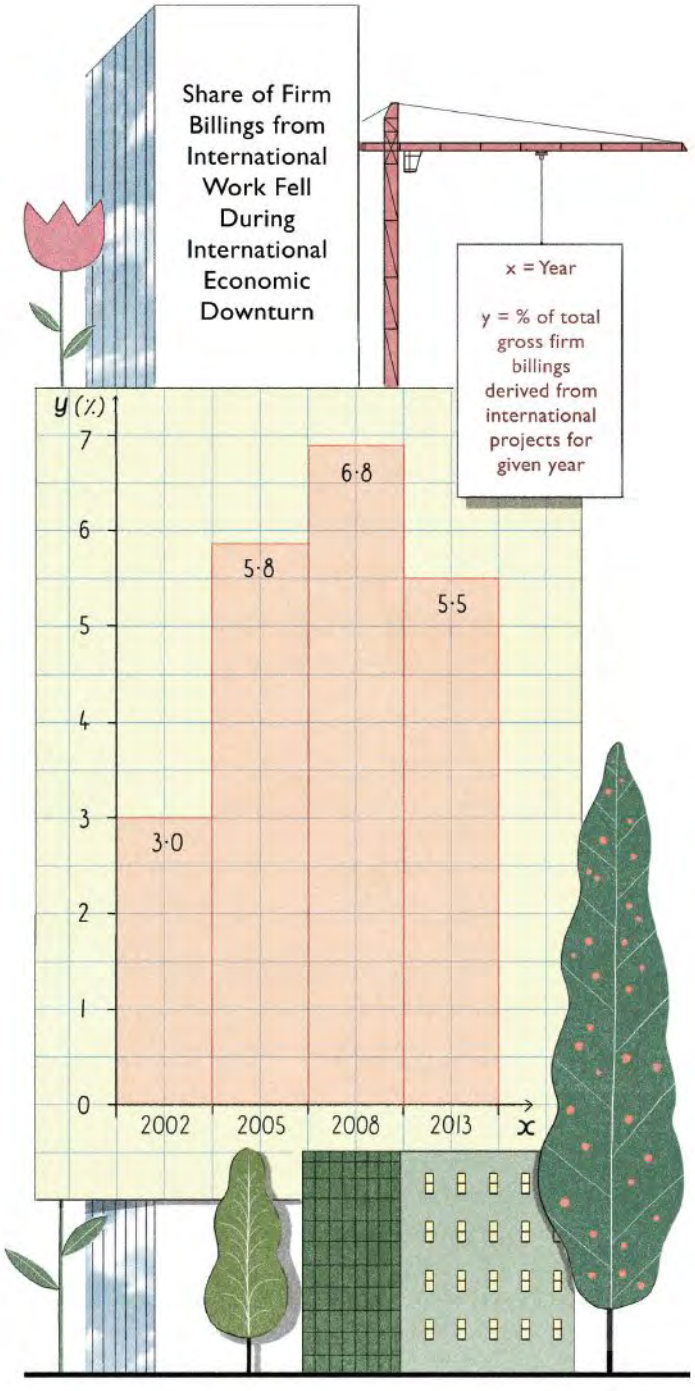


Chart 2

ILLUSTRATION: MICHAEL KIRKHAM

accounted for 28 percent of all architecture staff but only 17 percent of firm principals/partners (see *chart 3*). However, there are higher shares of women in the pipeline, as nearly four in 10 interns on the path to licensure at architecture firms are women.

As mentioned earlier, racial/ethnic minorities make up an even smaller share of architecture staff than women. However, that share has increased by 4 percentage points since 2005. In addition, more than 20 percent of interns on the path to licensure at architecture firms are racial/ethnic minorities, as are 16 percent of licensed architects and 11 percent of firm principals/partners. Firm diversity has increased dramatically over the last several decades, and although the pace of growth has slowed somewhat in recent years, the composition of architecture firm staff should increasingly mirror the demographics of the national population in the coming years.

As economic conditions improve, architecture firms will rebuild their staff and regain some of their lost project workloads. In addition, new firms will need to respond to evolving market forces—the shifting of construction activity to the developing world and the emerging market importance of women and racial and ethnic minorities domestically—if they are to retain their leadership position in the coming decades. *—Kermit Baker and Jennifer Riskus* AIA

Kermit Baker, Hon. AIA, is the AIA's chief economist. Jennifer Riskus is the AIA's economics research manager.

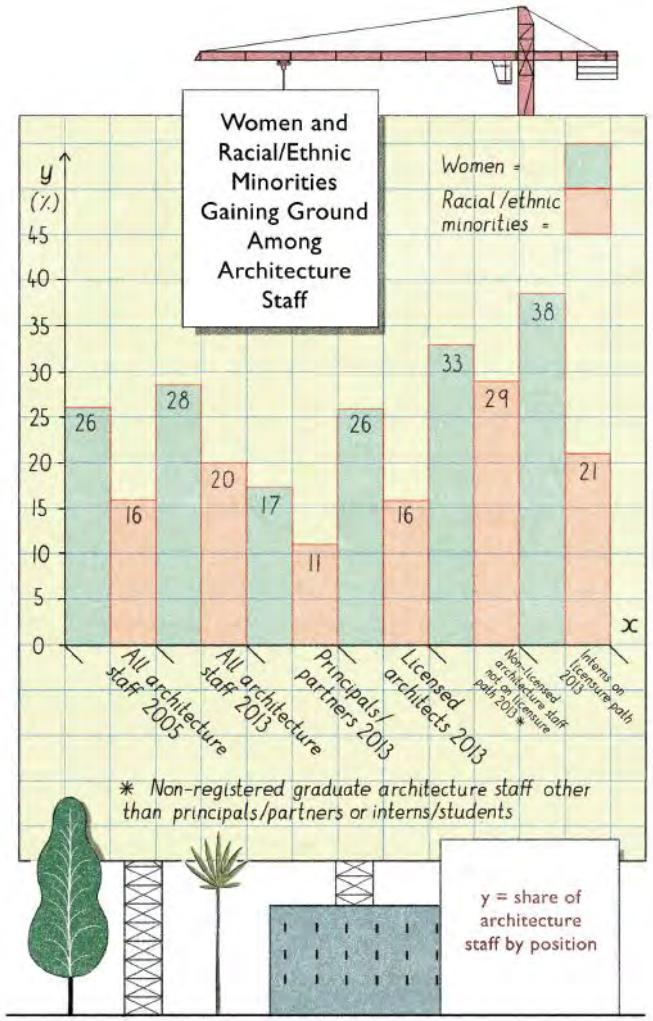


Chart 3

AIAFUTURE

THE 98 PERCENT LOOKING UP TO ARCHITECTS

Roy Spence is the CEO and co-founder of The Purpose Institute, based in Austin, Texas, as well as the creative force behind the AIA's national public awareness campaign, which the Institute launched on Dec. 12, to draw attention not only to architecture, but to why architects matter. "Architecture is creative. It's messy," Spence says. "But, what comes out of it—if it's effective—is meaningful and transformative."

MOST PEOPLE IN THE WORLD DO NOT WAKE UP AND SAY, "I WANT a cup of coffee and I wonder what architects are doing today." The fact is that only 2 percent of the people in this world will work with architects on a business level. Despite that fact, architects design as if the whole world is watching.

And that part of it *is* true: The whole world *is* watching.

Our Austin offices, which we call Idea City, were designed by STG Design's Jim Susman, AIA, and the building definitely inspired me and affected the way I view design. It has also affected how we've approached our work with the AIA. Sixteen years ago, my company decided to move downtown—which was dying at the time. The mayor of Austin offered us a piece of vacant property, so we sat down with our architects and I told them I wanted to create an environment where my team is inspired to have fresh ideas. I wanted a place where average people could walk in off the street and ask, "What do y'all do there?" And guess what? They do that all the time, attracted purely by the design of the building.

The public awareness campaign that we're helping the AIA to coordinate is significant because we're not going to focus on what an architect does, or how they do it. We're going to shine a light on *why* architects do what they do. It's about purpose.

Aristotle said it the best when he said that where your talent and the needs of the world meet, therein lies your vocation. Architects use their talent to serve the needs of the world. Think about it for a minute: What would the world look like if 80 percent of what's being designed and built is sustainable? You can't answer that question without architects. When architects are at their best, they are wired to care and to listen and to create things that have never existed. *—As told to William Richards* AIA

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DO ALGORITHMS MAKE ARCHITECTURE? | DESIGN IN THIS PERFORMATIVE AGE

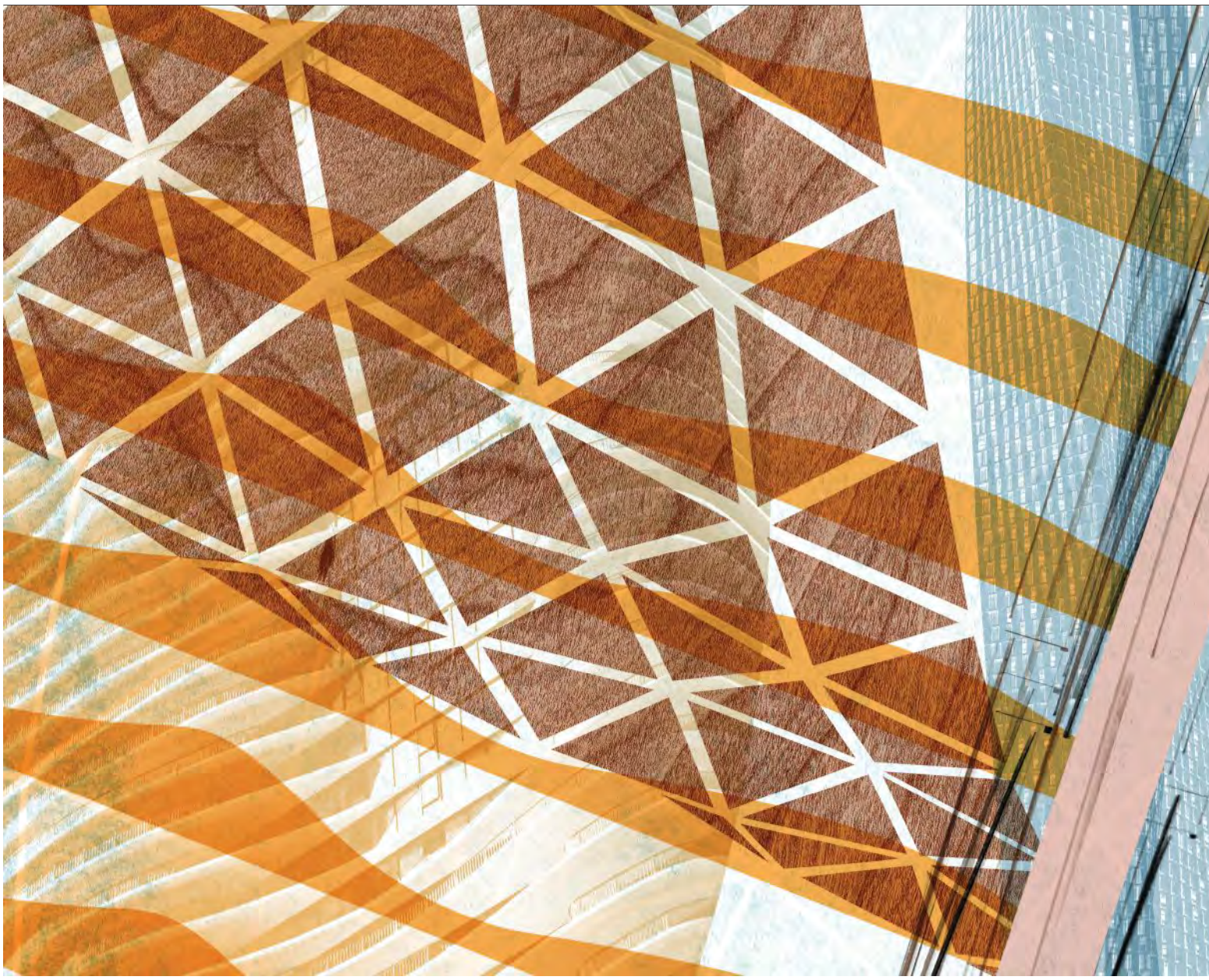
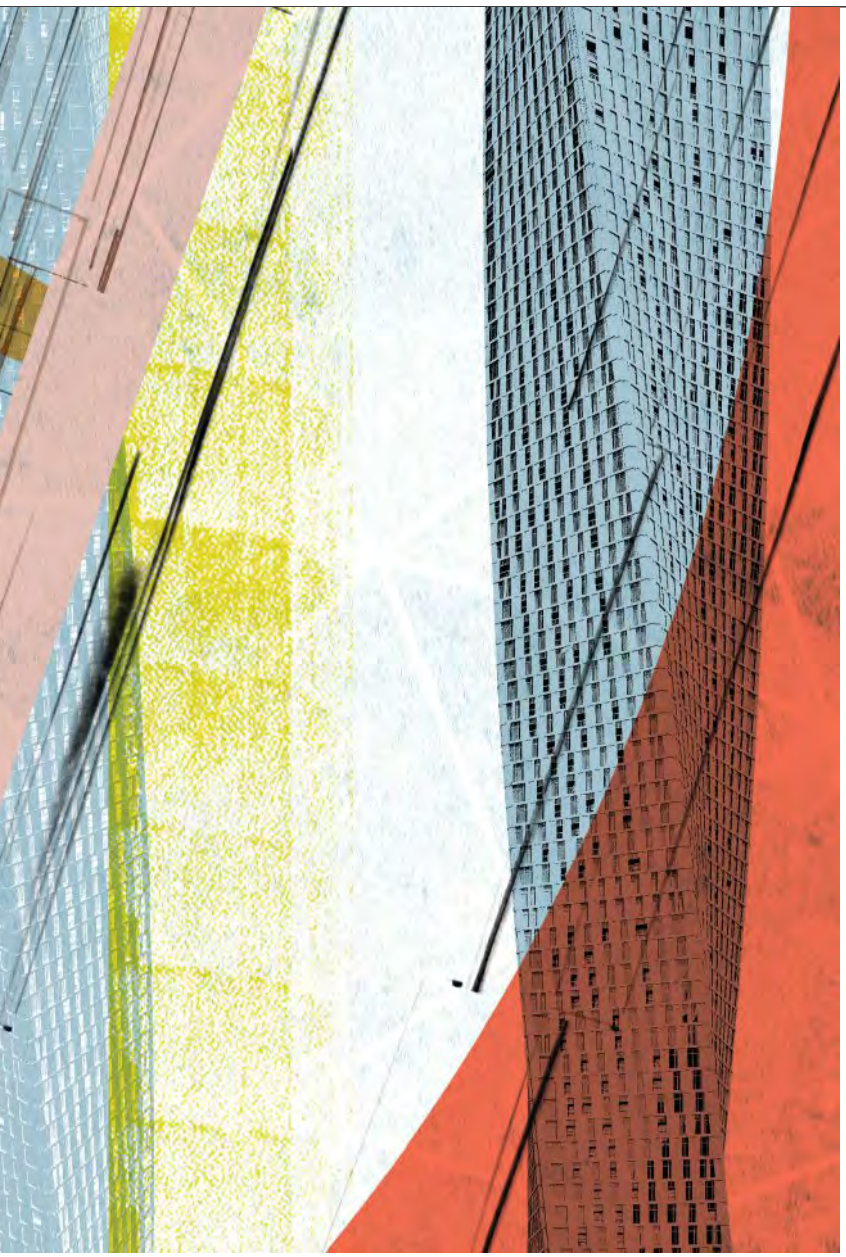


ILLUSTRATION: EDA AKALTUN

A SLEEK, STAR-KISSING BUILDING IS NO LONGER ENOUGH TO DAZZLE clients and public officials. Towers in the 21st century are redefining themselves as high-performance machines, harvesting energy rather than guzzling it. Sustainability is big business, and some observers point to this as the Performative Age, in which big data and big software can track and analyze how well each square inch of a building pushes environmental, structural, and material standards of excellence to new heights. Literally.

The reason tall buildings look the way they do these days (think more Aqua and less Seagram) is because—to reverse Louis Sullivan's dictum—function follows form, or, a building must be designed well first to function efficiently later. Building operations aside, what we're left with is a form that's shapely, often biomorphic, and unlike anything else around them. "Algorithms can optimize performance criteria while presenting a dizzying array of visual forms and patterns," wrote Johnson Fain principal Scott Johnson, FAIA, author of *Performative Skyscraper: Tall Building Design Now* (Balcony Press, 2014) in a July *Design Bureau* article. And, it raises the question: Algorithms make buildings, certainly, but do they make architecture?

In *Performative Skyscraper*, Johnson argues that the architecture profession is on a continuous path of performative development in buildings, given the ongoing technological advancements feeding a high-velocity iterative design process. The Austrian firm Architekten Hermann Kaufmann, for example, is moving forward with an experimental 20-story hybrid timber-concrete structure in Vienna. Johnson explains that parametric design and rapid prototyping via 3D printing are redefining the architectural process, allowing for optimization of such criteria as environmental comfort, energy consumption, and structural efficiency or constructability. Early analysis of environmental performance based on simulating physical



conditions is at the heart of high-performance design strategies.

"Buildings are becoming visually complex and 'soft,' taking forms that were never imagined with a T-square and a triangle," notes Johnson. With its curved, bent, and torqued responsive façade systems, high-performance design has become central to the conversations about the next decade of practice with remarkable speed, and talk of net-zero towers is increasingly common.

In a few short years, with the 75-story Cayan Tower in Dubai, Skidmore, Owings & Merrill has designed a helical tower with a full 90-degree twist from base to top, which helps confuse the wind to reduce vortex shedding. And one of the firm's latest projects, the Pearl River Tower in Guangzhou, China, goes one step farther: it *harvests* the wind. The sculpted south side of the building drives wind through four openings to accelerate the air and drive energy-producing vertical axis wind turbines. The building's geometry significantly enhances airflow through the wind turbines—up to 2.5 times the ambient wind speed—and, consequently, turbine performance, helping the LEED Platinum building achieve optimal efficiency. Stateside, curved, wind-defying needle-towers will soon redefine midtown Manhattan along West 57th Street. And Adrian Smith + Gordon Gill Architecture has plans for a 38-story, 1.2 million-square-foot net-zero torqued tower in the heart of Nashville, Tenn.

An innovative, integrated, and highly collaborative design process among architects, engineers, contractors, clients, and users is producing these supertowers, and architectural autonomy is arguably the largest paradigm shift.

"Architects may be piloting the ship but, for the architect to maintain creative autonomy in any realistic way, he or she must understand the performance issues, be facile with the digital platform, and locate strategic ways in which to generate meaningful form. A building may have affinities to sculpture but it is not only sculpture," Johnson says.

For Dana Robbins Schneider, senior vice president at JLL's Energy and Sustainability Services, and program manager for the energy-performance retrofit of New York's Empire State Building, a whole-systems integrative design approach not only takes into account the sculptural form, innovative energy systems, and building envelope, but also identifies specific measures for operational energy-use reductions and engages the building's occupants in crafting and achieving a high-performance building. The overhaul of the iconic Empire State Building, which received LEED Gold certification in 2011, resulted in a reduction in energy use by 38 percent during the first year of operation, which translated directly into an annual savings of $4.4 million.

"It was not just one key decision that led to our success," says Schneider. "Ongoing maintenance, continuous identification of additional energy efficiency measures, regular reviews with building tenants, and measurement of energy consumption have been fundamental to the cost savings, improvement, and continuity of our program."

Building owners and occupants ultimately will play a larger role in determining the long-term performance of the building.

"Going forward, embedded microprocessors throughout the environment will allow both people and machines [in the building] to intercommunicate and intuitively make adjustments for the benefit of comfort, efficiency, or the instant retrieval of data for given tasks," says Johnson. But, as Schneider explains, people must be invested in lower energy consumption.

Gary Haney, AIA, design partner at Skidmore, Owings & Merrill and editor of the e-book *Efficiency: An Analytical Approach to Tall Office Buildings* (Northeastern University, 2013), argues that understanding and agreeing on standards for measuring performance-driven design is one of the most pressing issues for creating useful tools moving forward. Due to the inherent site-specificity of the process and its outcomes, Haney says that local and regional standards and codes are, at present, more effective than federal regulatory bodies in advancing high-performing towers.

"As a profession, we need to speak the same language and define the metrics to create a meaningful baseline," Haney says. "We are not there yet." —*Catherine Gavin* AIA

AIAPERSPECTIVE

IN THE PUBLIC EYE | A NEW AIA CAMPAIGN TO CHANGE MINDS TAKES SHAPE

PHOTO: CARL BOWER

THE BEGINNING OF A NEW YEAR INVITES PREDICTIONS ABOUT what lies ahead. It's an invitation I'm eager to accept because major forces are well underway that will make the AIA a more nimble and more relevant organization before the year is out.

Take the matter of leadership. For as long as many of us can remember, architects as well as the public have asked for an AIA that is at the forefront in any discussion about sustainability, resiliency, health, productivity, and matters of social equity.

However, to be an organization that truly leads, we must be open to the diverse voices that today enrich our profession. And by "diverse," I mean more than demographics. It's about the AIA embracing the increasingly different ways those trained as architects are applying their experience, insights, and skills.

The AIA's new governance structure gives us the agility to lead because it's open to the varied perspectives of the gifted women and men transforming our profession. This is revolutionary.

There is something else to look forward to in the course of 2015 that has all the signs of being equally transformational. This month, the AIA launches a major public awareness campaign that responds to what members have identified as their highest priority—advancing a broader knowledge about the many ways that architecture and architects impact lives. We know the public likes architects, but few really know what we do. This has to change, and we have to pursue this opportunity.

In my own home state, Texas, I saw firsthand what's possible when we reach out to the public. They become intrigued; they want to learn more. Thanks to a generous grant from the AIA College of Fellows and the AIA, I had the seed money to launch a radio series, which I called *The Shape of Texas*. Broadcast through NPR affiliates across the state from 1999 to 2011, this series gave listeners an eye-opening glimpse of contemporary and historical architecture, and places that define Texas culture and heritage. It also provided a jumping-off point for informed community discussions that continue to this day.

I have no doubt the AIA's investment in a major public awareness campaign will have a similar and even greater impact nationwide. The public is eager for positive stories about ways to make their lives better. Our work does that. But to succeed in getting that message across will require each and every one of us to tell our story.

For some, stepping this far out of our comfort zone may not be easy. Yet it's essential. We have to take charge of our own destiny. We've already dared to change the AIA to be more agile, inclusive, and of greater service to the members, our clients, and society. Now it's time for us to engage the public. The AIA's campaign will provide the resources, but in the end, it will be up to us to make the case.

It's important to be proud of who we are. Through our profession and our life's work, each of us has shaped and reshaped the ever-changing physical narrative that is America, in both humble and spectacular ways.

This is our story, the story of America's architects. It's time to believe in, and prepare for, the success that can be ours in 2015—and beyond. AIA

Elizabeth Chu Richter, FAIA, 2015 President

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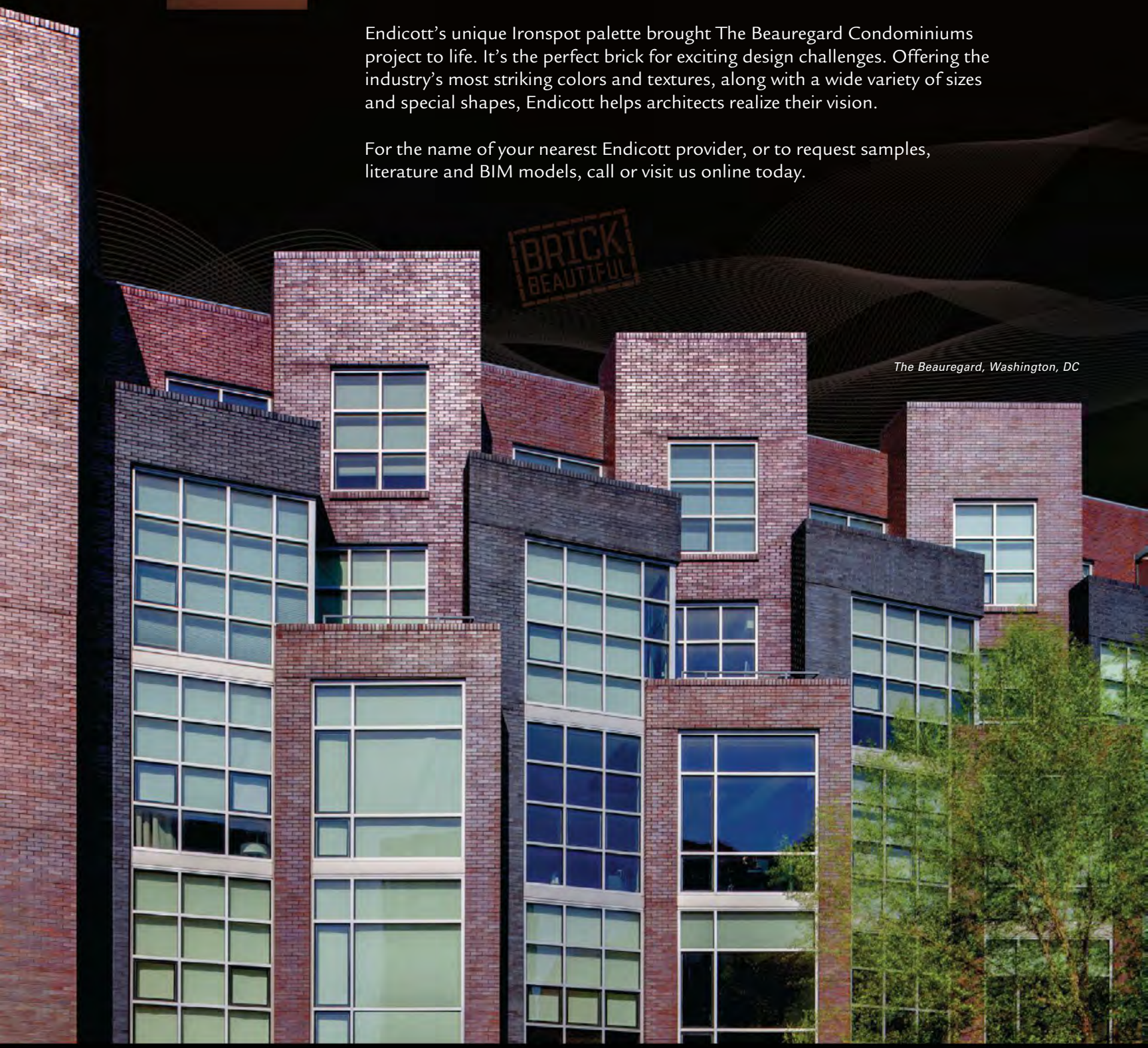

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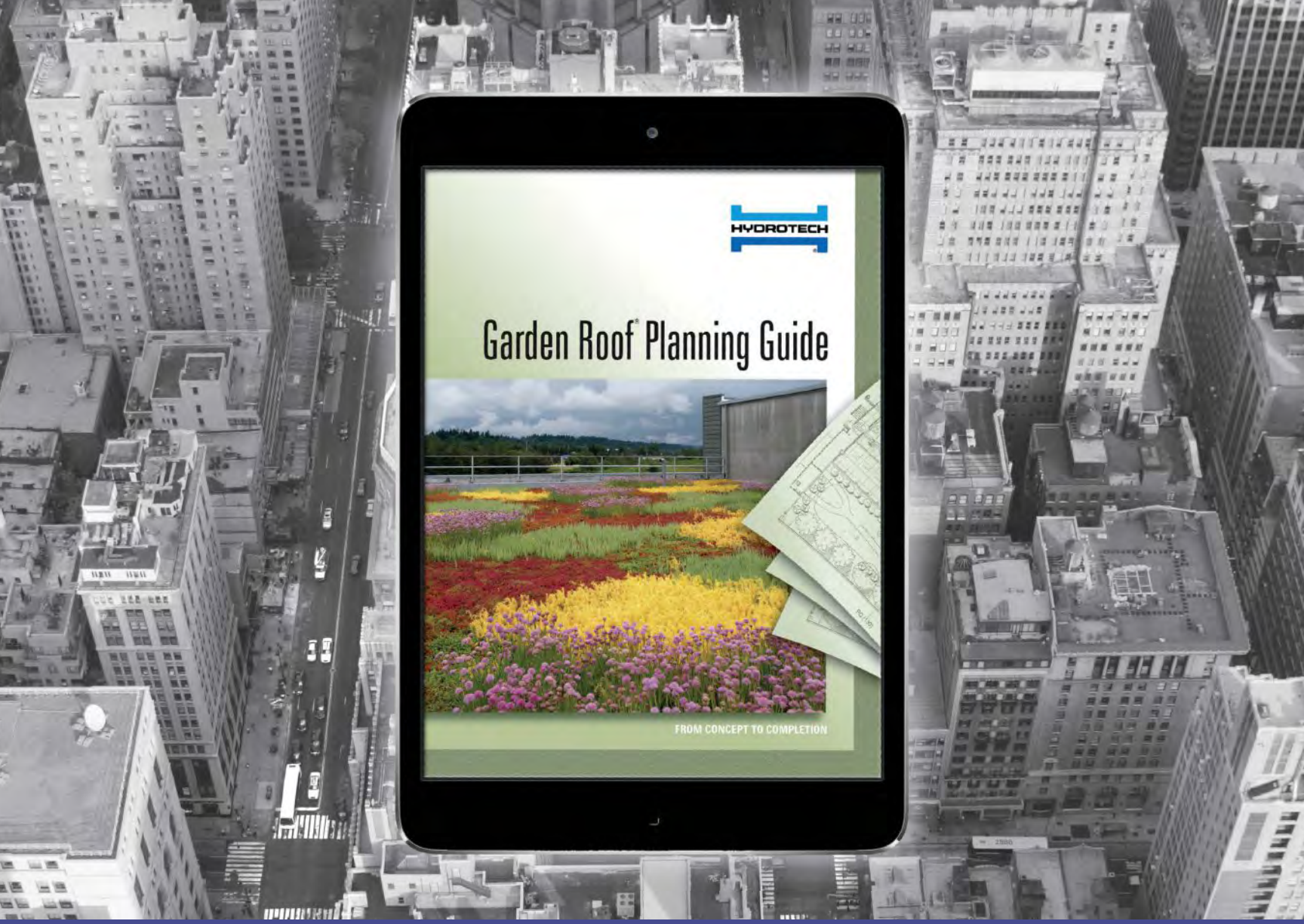

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"As flawed as it is, the Portland Building is a pure product of its moment. Despite that—or maybe because of that—it should be preserved."

PoMo Redux by Karrie Jacobs

At first glance, the day-long celebration of architect Michael Graves, FAIA, organized by The Architectural League of New York in November and subtitled "Past As Prologue," promised to be a re-examination of the postmodern era in architecture. After all, it was Graves' 1982 Portland Building that is, according to the movement's foremost evangelist, Charles Jencks, "the first major monument of Post-Modernism, just as the Bauhaus was of Modernism."

My own feelings about that building are largely positive. In the early 1980s, as an editor of a Seattle-based music magazine, I didn't care much about architecture. But when a group of my colleagues and I drove down to Portland for an event in early 1982, our local friends took us straightaway to see this new structure that looked like a "birthday present." I remember being thrilled by it. Having grown up with default modernism—my dispiriting high school, my poured-concrete college campus, every bank tower I'd ever seen—the Portland Building alerted me to the idea that architecture could be different, approachable, maybe even lovable. So, when I heard the news, early last year, that the city of Portland was considering demolishing its namesake building, I was shocked.

I thought that this development—which seemed to indicate a certain contempt, not just for the Portland Building, but for the aesthetic moment it embodies—would be a major focus of the Architectural League's symposium. But it wasn't. Instead, Syracuse University professor Francisco Sanin started things off with a historical survey of Graves' buildings, including the Portland. But Sanin didn't discuss his role in precipitating a major—and still controversial—movement. He noted that Graves' work helped "legitimize a relation to the past," but he didn't delve into the implications. If he uttered the word "postmodern," I missed it.

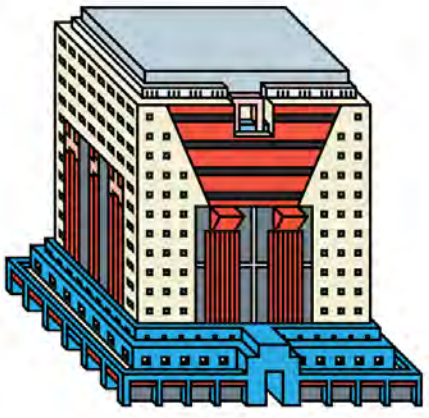
A panel discussion moderated by Paul Goldberger, Hon. AIA, and featuring Graves' old Princeton sidekick, Peter Eisenman, FAIA, focused more on the 1960s, when the two architects collaborated on a linear city called the Jersey Corridor Project, an extruded hive of commerce and housing running for miles across the state. The Jersey Corridor was, of course, never built, but it was given a splashy presentation in a 1965 issue of *Life* magazine. "That was a very heady time," Eisenman recalled. One could have come away from the discussion believing that Graves was a latter day utopian modernist, not the guy who brought back columns and acanthus leaves.

Finally, in a panel ostensibly dedicated to the subject of scale, Glenn Adamson, the director of New York's Museum of Arts and Design, uttered the word "Postmodernism." "Not everyone has always liked the architecture of Michael Graves," said Adamson. The Portland Building "has always been a lightning rod."

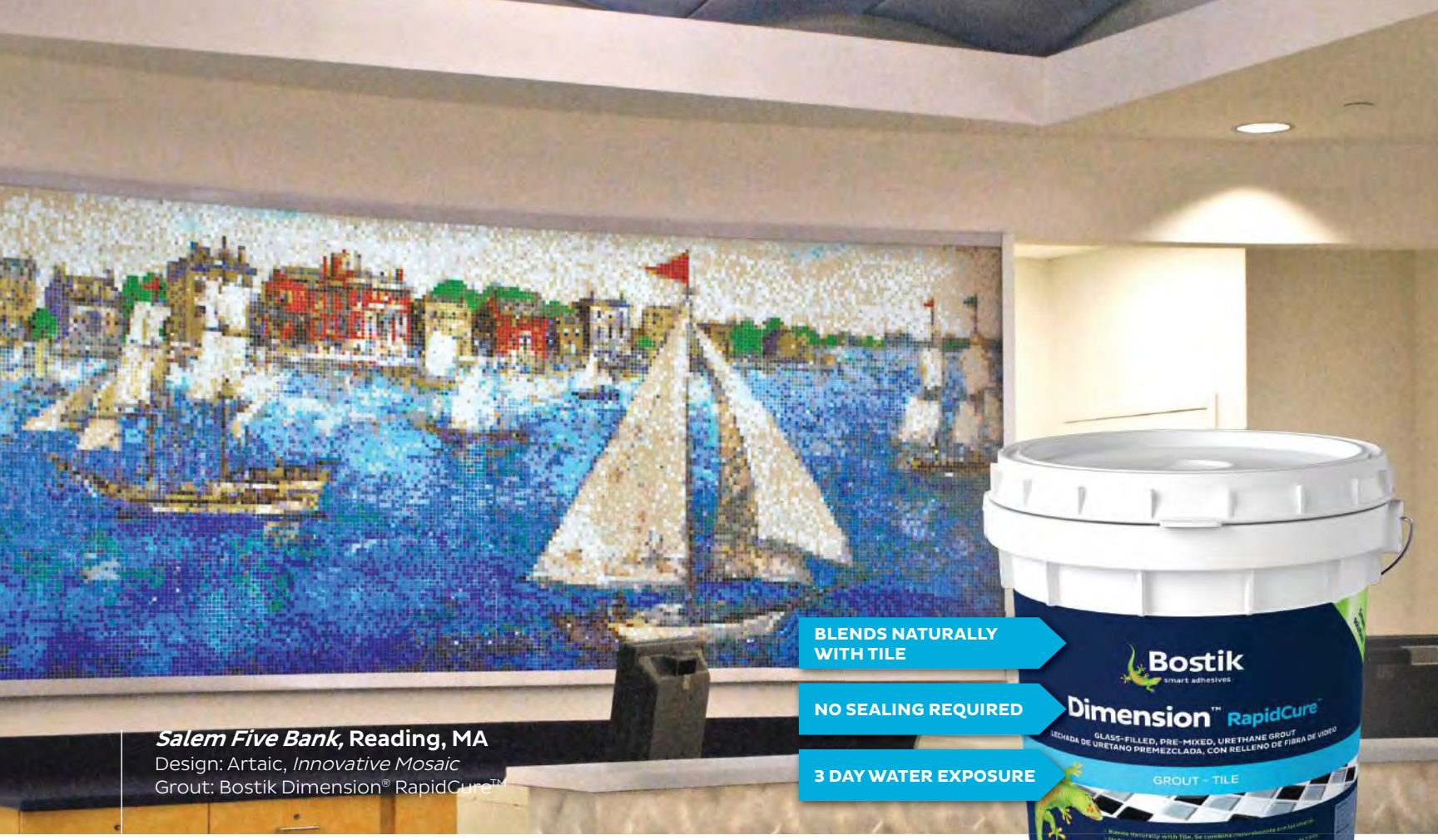
Adamson went on to give an engaging, needling talk in which he compared Graves' architecture in the 1980s to the work of artist Jeff Koons—who, Adamson argued, has proved "unsettling" in similar ways, appropriating and applying lowbrow icons to highbrow art. Adamson's most seductive assertion was that 1980s Postmodernism, with its colorful buildings that photographed well (architecture as image), "seems to be like an early warning system for our times."

I was hungry for further discussion of Adamson's ideas, but panel moderator Karen Stein then steered the conversation that followed away from PoMo and towards product design. My sense, as an onlooker, was that Adamson had let slip a forbidden word.

All involved with the symposium, including Anne Rieselbach, program director of the Architectural League, denied that PoMo was subject non grata. When I asked Adamson why he was the only one to broach the topic, he said that he had a good idea. As the co-curator of the 2011 Victoria & Albert exhibition, "Post-Modernism: Style and Subversion 1970–1990," he learned a few things about how the architects generally considered to be the movement's leaders—including Graves, James Stirling, and Ettore Sottsass—regard the term. "If you leave architects and their adherents to their own devices, they're not going to bring it up," Adamson told me. "Because there's a lot of exhaustion and frustration around the topic, and many didn't accept that it was a valid way of looking at the state of affairs in the first place." With the V&A show, he says, "hardly anybody that we talked to was happy to be put in a show about Postmodernism. They were happy to



PETER JUDSON



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be in a show at the V&A, but they would say, 'Do you really have to call it that? Isn't there a better way of assessing those years?' "

Indeed, Postmodernism was troublesome from the start, when the reintroduction of architectural ornament riled the Modernists who still held sway. Jencks wrote that PoMo relied on "double coding," which he defined as "the combination of Modern techniques with something else (usually traditional building) in order for architecture to communicate with the public and a concerned minority, usually other architects." But the real motivation might have been the reintroduction of human qualities, like sensuality, warmth, and color, that had been long banished. By the late 1980s, even dyed-in-the-wool Modernists like Kevin Roche, FAIA, had come on board. A 1987 Goldberger review in *The New York Times* of Roche's 3 United Nations Plaza mentioned columns that were "witty, almost cartoonlike."

Today, after a modernist resurgence that began in the 1990s—arguably a backlash against too many "cartoonlike" columns—followed by, or intermingled with, our parametric age, in which buildings can effortlessly mutate into an endless range of asymmetrical forms, Postmodernism is regarded as a mortification, a humiliating phase we went through, like adolescence. After a field trip to Philip Johnson's Glass House, my students at the School of Visual Arts graduate program in Design Research, Writing, and Criticism told me they loved the house itself. But why, they wanted to know, did Johnson feel compelled to reference classical architecture with his outsized, vaguely Egyptian driveway gate? Why did the entrance to his underground painting gallery have to pay homage to an ancient Greek tomb? I talked about Johnson's role in Postmodernism and tried to explain, without great success, that there was a period some 35 years ago, when it seemed essential to rebel against Modernism, when the language of modern design was so played out that it was beyond redemption.

> "PoMo is the embarrassing uncle who won't shut up about the first time he saw Depeche Mode."
>
> — John King, architecture critic of the *San Francisco Chronicle*

It isn't just my students who don't get PoMo. Or the good people of Portland. John King, the architecture critic of the *San Francisco Chronicle,* wrote last year of a goofy downtown San Francisco clock tower, circa 1989, that was about to be lopped off from its perch on a former savings and loan headquarters. When built, it was the sort of faux historical flourish that city planners believed enhanced the character of historic neighborhoods. "PoMo," King wrote, is the embarrassing uncle who won't shut up about the first time he saw Depeche Mode."

Rehabbing the Portland Building

Except that Postmodernism might still have some life in it. For one thing, the threats to landmarks from the 1970s and 1980s, like the Portland Building, have reawakened interest in the period for a younger generation. Even Graves, though he didn't broach PoMo at his symposium, has spoken a great deal about the project. Most recently, at a public discussion held in October as part of Portland's Design Week, Graves defended the building against the threat of demolition: "The whole idea of tearing the building down, it's like killing a child. I don't know how to react to that."

And he gave two lengthy lectures on the building—one just after it was completed in 1982, and one some 25 years later. In both, he told roughly the same story. That the building's problems, chronic structural maladies, and dreary interiors are a direct outgrowth of a budget cap that was stipulated by the design competition that he won. And that he triumphed in the competition not just because the jury was headed by Philip Johnson, who was his champion at the time, but also because, working closely with builder George Pavarini (it was a design/build competition), he submitted a bid that was right on budget. The 15-story building had to be erected for $24 million, "to the penny." Or $61 a square foot. Except that $2 million of the budget represented the contractors' profits, so it was actually more like $56 a square foot. In his 2008 talk, Graves called the budget "just ungodly."

Graves had initially envisioned a building with its façade covered in colorful tile. But it was the tile, in the end, that brought the budget $2 million over. In the weeks before the final presentations, Pavarini alerted Graves to the problem. "It was a real crisis to get that much money out of the budget," Graves explained in his 1982 talk. "I said, 'I don't care if it's made of oatmeal. It's going to be on budget.' "

So it wasn't all that surprising that the building had structural issues during construction—improperly installed beams. More problems (leaks, saggy floors, seismic issues) have cropped up since. It's estimated to need $95 million in repairs. And the windows, 4 feet square, considered energy efficient at the time, make the building exceptionally gloomy now.

What's interesting is that the most commonly criticized aspect of the structure is that its ornament, columns, and wreaths, are two-dimensional, decorative

SUCCESS STORY:
THE HOTEL WILSHIRE, LOS ANGELES

In 2011, in the heart of Los Angeles' Miracle Mile, something truly amazing was born. Amidst the densely populated streets of Hollywood and Beverly Hills stood a relic. An old 1950s medical building destined to be turned into a pile of rubble. What happened next was nothing short of magical.

When real estate developers Michael Orwitz, Spence Mitchum and Justin Khorvash went looking for a location to create their Four Diamond boutique hotel, The Hotel Wilshire, even they couldn't have imagined the hidden gem they would find in this dilapidated six-story medical building. But, after assembling some of the best professionals in the hospitality business, it was clear that their endeavor was about to become a reality.

After finding a design team that shared their views on the importance of sustainability, they set their sights on making The Hotel Wilshire LEED Silver Certified. Which meant air quality, as well as occupant comfort, would be important factors.

Enter Mitsubishi Electric's VRF zoning systems. Mitchum had experience using the VRF zoning system with a previous boutique hotel. He knew the system's flexibility, performance and efficiency would play an important role in obtaining LEED certification for this 74-room boutique hotel.

The Mitsubishi Electric VRF zoning system proved to be a perfect fit. Twelve months after its opening, The Hotel Wilshire boasted a LEED Silver certification, 17 percent less energy use, and one of the best views in L.A. from its chic rooftop pool. Just the type of epic performance you'd expect from a star in the hospitality industry.

PROJECT SUMMARY

Dilapidated six-story building remodel:

- 55 Guest Rooms
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appliqué, the sort of "graphic design" approach to architecture for which PoMo was often lambasted. But Graves says that he wasn't allowed to make functional columns—no budget—and couldn't include the three-dimensional garlands that he had designed because he was told that they'd interfere with the window washing rig; they had to be shaved flat. The ornament was "value engineered to the nth degree," says former *Oregonian* architecture critic Randy Gragg.

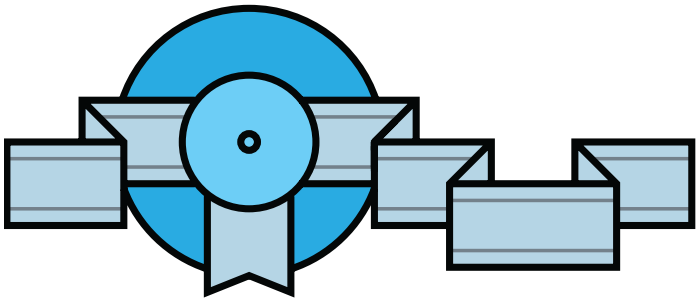
Everything that's wrong with the building functionally and structurally and everything that's right with it—its weird audacity and a palette that brings much needed color to a rainy Northwestern city—are the product of a youngish architect with big ideas trying desperately to get something built. As flawed as it is, the Portland Building is a pure product of its moment. "It's just laughable in a way, when you understand all the drivers that shaped it," Gragg says. Despite that—or maybe because of that—it should be respected and preserved.

After the November symposium, word came that the Portland Building *would* be preserved. The *Architect's Newspaper* quoted Graves: "They said they are saving the building and … we want you to sit on a committee for the redesign." When I spoke with the city's chief administrative officer, Fred Miller, he denied that the city had actually intended to demolish the structure. Maybe some city commissioner mouthed off about that idea, Miller says, but he insists it was never a "serious proposal." Instead, the city has been working assiduously on a plan to revamp the building, to maintain the landmark exterior while giving it a seismic upgrade, plugging the leaks, and installing a new HVAC system—making it, says Miller, "a 75- or 100-year building." It's not clear that the committee Graves references exists, but Miller says that the intention is to put the architect on retainer as a project consultant. Miller, whose office is in the Portland Building, is amazed at the emotions it inspires. When asked how he feels about it, he demurs. "I'm the wrong one to ask. It's a building. I go to work in it. I'm fine."

The Purity Backlash

Meanwhile, a second wave of PoMo might be on the way. For one thing, there are new buildings that deploy ornament in a way that is oddly redolent of the 1980s. Most ostentatiously, the Rotterdam Market Hall by the Dutch firm MVRDV opened in October and features colorful tile that Graves would have killed for back in 1982. The interior of the market's massive arch is a mega-mural of giant fruits and vegetables, digitally printed on tile. It was inspired by the Sistine Chapel; it is referential, but not obviously so. "I think many architects are aiming for sublimity," MVRDV partner Winy Maas told me. "Purity is very reductive."

Indeed it is. And purity, whether it's derived from Modernism or generated by computers, may not be so appealing to an emerging generation of architects. On a recent trip to Los Angeles, I met a 32-year-old architect named Elizabeth Timme, who runs a nonprofit design lab called Más. She's the daughter



of a "devout" postmodernist, the late Robert Timme, founder of Houston's Taft Architects.

Elizabeth Timme feels particularly constrained by the software that's come to dominate the profession. "Parametrics. Parametrics. Parametrics," she complains. "It's really similar to the dictum of Modernism that my father grew up with in the late 1960s." Maybe predictably, the soullessness associated with the current mania for buildings designed by machine and modeled by 3D printers is driving Timme to rebel.

What's missing in all the parametric swoopyness is joie de vivre, what Vitruvius thought of as delight. While her father looked to Graves and other members of the New York Five, Timme is currently inspired by Venice, Calif.–based "place maker" Jon Jerde, FAIA, and the late graphic designer Deborah Sussman, in particular the work the two did together for the 1984 Olympics. "It was this exuberant model for creating a pedestrian-centered, temporary Los Angeles," explains Timme. "Playful and fun and cheap."

"Playful" is the operative word. It's the quality that Timme thinks is missing in much of what is now coming out of places like SCI-Arc. Playful was also the exact thing that was absent from Modernism circa 1970. Timme shows me some jumbo letters, brightly colored, leaning against the wall of the warehouse where she works, signage left over from a recent neighborhood artwalk. The letters are Timme's homage to Sussman's Olympics. Like Winy Maas, Timme is veering in a new direction. Call it Maximalism. Or maybe it's a revival of an old direction. She tells me, without a hint of sarcasm or irony: "We're so into Postmodernism."

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“Aptly, the platform to revive the manifesto is a biennial—both born around the turn of the century with a parallel urge to assert leadership in a fast-modernizing and globalizing world.”

On the Istanbul Design Biennial by Cathy Lang Ho

In the world of architecture and design, manifestos have a pedigreed tradition, linking Futurists, Surrealists, the Bauhaus, Le Corbusier, CIAM, and Team X, not to mention Victor Papnek, Robert Venturi, FAIA, Rem Koolhaas, Hon. FAIA, and Bruce Mau. Zoë Ryan, director of the second Istanbul Design Biennial, has cleverly resurrected the manifesto with "The Future Is Not What It Used To Be," a presentation of 53 projects culled from over 800 responses to an open call for ideas. The call asked for "manifestos (whether texts, actions, services, objects, or something else) that open up new attitudes and sensibilities, highlight underexplored or overlooked aspects of society, and prompt further investigation and exchange about our designed and constructed age."

Aptly, the platform to revive the manifesto is a biennial—both born around the turn of the century with a parallel urge to assert leadership in a fast-modernizing and globalizing world. Venice was the first, launched in 1895 to promote contemporary art, though like its kindred world's fairs and expos, it was as much about geopolitics, world trade, tourism, urban regeneration, spectacle, and propaganda as about cultural exchange and artistic progress.

This complicated mix of concerns and motivations persists among the 300-plus biennials, triennials, and similar episodic art extravaganzas around the world today. Unsurprisingly, the newer biennials have tended to crop up in emerging economies, in part motivated by a desire for cities to enhance their image or achieve some form of parity with their global counterparts. The organization behind the Istanbul Design Biennial, the Istanbul Foundation for Culture and Arts (IKSV), was sharp to add design to its festivals (which started in the early 1970s, and include music, cinema, art, theater). Design encompasses a wide range of disciplines—industrial design, fashion, communication, landscape, architecture—and can offer important perspective on Turkey's charged political situation, which has helped stall its until-recently-growing economy. The nation's unrest, played out dramatically last year in the Taksim Square protests, has conferred a heightened sense of responsibility to the nation's artists and cultural leaders.

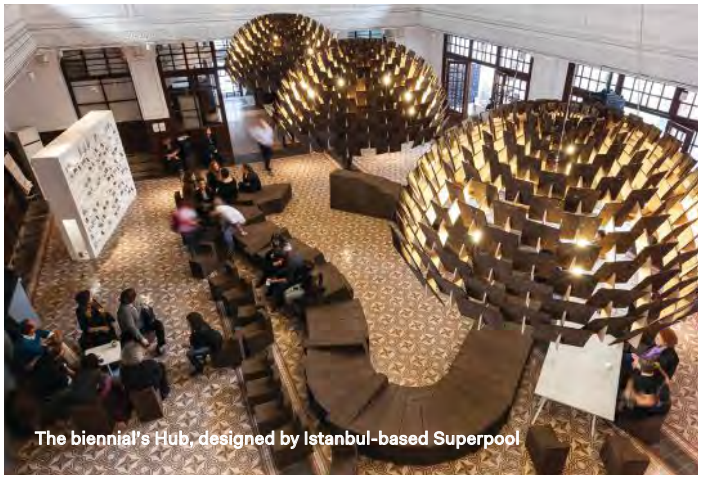
Redefining the Manifesto

Ryan, the John H. Bryan Chair and Curator of Architecture and Design at the Art Institute of Chicago, writes in the show's catalog, "[It] is a challenging time for designers, faced as they are with problems including climate change, the depletion of natural resources, work/life balance, economic instability, ethical conundrums raised by new forms of warfare, and social and political unrest." Her curatorial framework zeros in on the primary challenge felt by any conscientious architect or design curator, for that matter: to advance innovative practices that strive for "better" possible futures, while acknowledging the forces that have gotten us where we are.

"The Future Is Not What It Used To Be" is a manifesto in itself, proposing an overhaul of the very definition of the word. The projects represent a broad range of possible outcomes, from adding human rights to architects' codes of ethics to expanding waterfronts via small interventions to farming one's own food to repurposing surplus military accessories into everyday wear. Ryan and her co-curator, Meredith Carruthers, a Montreal-based artist and curator, worked with a majority of the selected teams to develop their concepts specifically for the biennial, sifting the miscellany into five "departments": Personal, Norms and Standards, Resource, Civic Relations, and Broadcast.

Istanbul architecture firm Superpool designed the exhibition, which took over the Galata Greek Primary School, a grand neoclassical building in the city's historic core. The designers cleaved the building vertically into two sections, using a simple fabric scrim to divide each floor and the double stairwell, directing traffic up on one half and down the other. This simple move helped eliminate some of the monotony that can come with circulating whole floors at once. But Superpool's most memorable gesture is the ground-floor Hub, an inviting space designed to host workshops, talks, and informal socializing. The centerpiece is a horseshoe-shaped block sculpted from dense cork, with careful cuts that define backs and seats. Three large dome-shaped chandeliers—cork tiles attached to plywood ribs—create a grand canopy over the seating, encouraging crowds to huddle.

The exhibition starts with the question of self,



The biennial's Hub, designed by Istanbul-based Superpool

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of personal identity and beliefs—inextricable from the idea of the manifesto, which demands personal commitment. In the Personal Department, British artist Kristina Cranfeld's Ownership of the Face stands out as a provocative collection of "speculative accessories," masks, and other peculiar devices that allow wearers to distort or conceal their facial features. In an age of ubiquitous surveillance and facial recognition technology—being developed by the U.S. Department of Homeland Security and Facebook alike—Cranfeld's project argues for our ability to maintain "authority over our basic tools of communication": our expressions. Might governments someday use protestors' face scans to build dossiers on political activists or suspected terrorists? Though Cranfeld's images may appear absurdist, her project suggests the need to guard against potential encroachments on privacy and civil liberties.

With a similar eye to the future, The New Survivalism exhibit, by Chicago industrial designers Jessica Charlesworth and Tim Parsons, presents five variations on the "bug-out bag," emergency kits that take into account "emotional and physical needs" while "imagining building blocks for a new society." Citing Ray Bradbury as an influence, Charlesworth and Parsons adopt his friendly sci-fi tone in their kit descriptions, digging into the notion of survivalism and disaster preparedness. The Re-Wilder kit is designed for those prepared to return to the hunter-gatherer lifestyle; the SETI Reserves Member is equipped with satellite instruments to contribute to the search for "cosmic companions"; while the Biophotovoltaics Hactivist has all the ingredients necessary to convert grass into energy. By couching the subject in droll storytelling, the designers remove practicality as a concern, urging questions such as: What does "crisis" or "worst-case scenario" mean to each of us? What should we protect, besides ourselves? Our culture? Our ability to make it into the next future?

One of Kristina Cranfeld's anti-surveillance masks

Indeed, self-sufficiency and ecology are central concerns of many of the show's manifestos. Chicago-based, Togo-born Mansour Ourasanah's Lepsis is a self-contained grasshopper-growing unit that would look lovely on any kitchen counter. Easy to grow and a good source of protein, grasshoppers could be a viable alternative to animal meat. The project, located in the Norms and Standards Department, underscores the feasibility of consumers producing their own food—consider the growing urban agriculture movement—and fits right in with the Slow Food and Farm-to-Table manifestos, which have made great inroads into mainstream food consciousness.

Repair Society's 11-point manifesto, in the Resource Department, is notable as one of the few projects that's actually in practice. Led by Oslo-based historian Gabriele Oropallo, Dutch curator Joanna van der Zanden, and Canadian designer Cynthia Hathaway, this initiative—which originated in 2009 at Platform21, an incubator for design ideas in Amsterdam—has been downloaded over 1 million times. The manifesto argues for mending things over ditching them, encouraging things to be designed so that they can be repaired, and urging everyone to see that mending as a creative challenge, a craft. Repair Society is one of the more design-conscious strains of the worldwide DIY/maker movement (the influence of Dutch readymade revivalists Droog is evident) and has hosted workshops and online competitions, gaining followers who agree that "the act of repair has cultural, social, economical effects and benefits. … Repairing is a way to go forward; it bridges old and new, past and future, and could therefore be seen as a sensitive way of thinking about future forms of society."

The Case for Craft and More Ethical Practices

A century after Adolf Loos declared ornament a crime and Le Corbusier pronounced the house a machine for living, many smart designers and architects today have found comfortable ways of combining rationalism with decoration and craft. Customization, upcycling, 3D printing, small-batch production of everything

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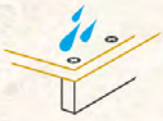

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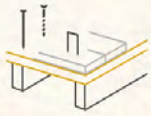

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from beer to clothing to building components—all signal a craft revolution. At the same time, in many parts of the world, traditional craft-based populations remain at risk of disappearing. Crafted in Istanbul, an initiative of Turkish industrial designers Baris Gumustas, Bilal Yilmaz, and Seda Erdural, documents and maps the city's craftspeople in order to boost their potential for collaboration with designers and industries. Ironically, the nation's growth and rising tourism are hurting these ateliers, pushing them out of the city's core in favor of shops stocked with kitsch souvenirs and cheap goods from China.

How do the exhibition's many good ideas—about sustainability and the impacts of globalism, social engagement, and design activism—scale up to the level of mega-architectural projects? Who Builds Your Architecture? intelligently analyzes the global supply chain of construction projects and campaigns for professional architecture associations to expand their codes of ethics and conduct to include human rights on job sites. Led by Kadambari Baxi, Mabel Wilson, Jordan Carver, and other faculty at Columbia University's Graduate School of Architecture, Planning and Preservation, this effort grew out of a 2012 conference in New York and now includes a broad coalition of architects, activists, and educators. The group installed a long worktable in the biennial's Civic Relations Department, with illustrations tracing the global movement of materials (like steel) and the parallel journey of humans (mostly from Southeast Asia) to construction sites. Amidst recent controversies over worker deaths and labor camp conditions in Qatar, Abu Dhabi, and other Persian Gulf cities, this is a manifesto that deserves to gain political traction.

The biennial's title borrows from a 1937 essay by French poet and philosopher Paul Valéry, in which he alludes to our diminishing capacity to perceive the future. He wrote, "We can no longer think of [the future] with any confidence in our inductions." Inductions is an awkward word in both French and English, but the word "induce"—to cause an event or process to happen—suggests an assumption about

Project: **The Frick Art & Historical Center, Orientation Center, Pittsburgh, PA** *Architect:* **Schwartz/Silver Architects, Inc.**

impact, results, or outcomes. His statement might be interpreted as deflating the manifesto, but it clearly doesn't stop people from speculating, and more importantly, hoping for results.

At the end of the exhibition, a large room is set up like an office for ABC Manifesto Writers & Consultants, a cheeky bit of performance that pokes fun at the features of the traditional manifesto—arrogance, loudness, perversity—and offers to help anyone write their own, with a step-by-step process that culminates in participants reading, recording, and then ripping up their new (mostly meaningless) manifestos. Ultimately, the value of this bit of agitprop is that it helps to drag manifestos out of people who might never consider making one.

In Ryan's introduction, she suggests that the new manifesto might be propositional rather than oppositional, discursive rather than commanding, grounded in everyday life rather than utopian visions, collective rather than exclusive. Her 53-point show certainly makes a sound case.

The ABC Manifesto Writers & Consultants exhibit

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What’s Next: The Performing Arts by Elizabeth Evitts Dickinson

The first thing that you notice about the San Francisco regional office for DPR Construction, a national builder known for highly technical and sustainable projects, is that from the outside, the building in no way resembles the typical headquarters of a construction firm. Located on a quiet street near the city's famed Embarcadero district, the glass façade frames an interior that looks like a boutique hotel married an Apple Store. Bikes hang from interior racks. An open floor plan reveals a well-stocked kitchen with a mosaic of plants climbing the wall. Look closely and you can just make out the lobby cocktail bar, a custom-designed length of reclaimed wood containing a garden of live succulents capped in glass. Not a bad place for an office happy hour. "People walking by wonder whether we are a bike shop or a café, because it doesn't scream construction," says director of sustainability Ted van der Linden.

The open façade purposefully emulates DPR's broader goal of transparency in building design and performance. Completed last May, the company's San Francisco digs could become the city's first net-zero office space (DPR is pursuing certification for the project with the International Living Future Institute). Designed by FME Architecture + Design, this is the third net-zero regional office that the company has completed—the others are in Phoenix and San Diego.

In the San Francisco office, sophisticated controls track, among other things, energy use. A Honeywell Enterprise Buildings Integrator, a cloud-based platform that automates facilities, harnesses data from the infrastructure. More than 42 points of connection are also fed into a Lucid Display operating system that translates these numbers for display on interactive dashboards. Mounted across from the reception desk, they look like oversized television screens.

For all of our advancements in building science, we seem to have forgotten a most valuable link to success: Marrying the ongoing maintenance of complex buildings with the even more complex psychology of human beings.

When I visited one morning last fall, I stood next to van der Linden and scrolled between charts and graphs showing kilowatt-hours used versus photovoltaic power generated. It's easy to understand how much energy the solar array has produced since the building opened, or how much electricity is being used right at the moment. On one screen, a bar chart analyzes the energy consumption of various devices in the building. One appliance in particular stood out because of a red bar indicating elevated energy use.

"Is that your ice-maker?" I asked.

"Yep," van der Linden said. "When you look at it in the context of the total energy consumption in the building, the ice machine is on par with all of the AV rack. Right now it's using more than three times the energy of our [ceiling] fans."

So why not just ditch the machine?

"People really love that ice," he replied.

Of all of the things that DPR considered in designing and building a net-zero interior, crushed ice didn't exactly top the list of potential energy drains.

When Energy Modeling Falls Short

DPR isn't alone in discovering surprising truths about how energy-efficient buildings perform once people move in. I asked architects, building owners and engineers, government and certification agencies, and others around the country about their experiences, and most pointed to unanticipated behaviors and unforeseen design glitches. "People move into a space and it does not always perform as expected," says Lance Davis, AIA, who specializes in sustainable design with the General Services Administration (GSA). The agency provides workspace for more than one million federal civilian workers and has some 480 historic buildings. Davis says post-occupancy data on the agency's buildings shows that investments such as geoexchange heating and cooling systems are worth it. "If we can afford to get it into the budget, this has been our most successful system to get energy use down," Davis says.

But, he adds, it's often the small, unexpected things that can add up. Data shows that most of GSA's renovated buildings perform better than their 2003 baseline, but in many cases, not as well as the design team's model. Davis points to his own office, the GSA headquarters in Washington, D.C. When the building was modernized recently, the designers put motion-sensor LED task lights at each desk. When you sit down at your cubicle, the light turns on. When you leave, it turns off. No more wasted energy from bulbs illuminating empty desks. At least, that's how it was supposed to work. "The problem is the motion sensors are too sensitive," Davis says, "so if you're the first one in, you walk through the office and hundreds of lights turn on. It's not what we meant to do."

Nearby, at the headquarters for the U.S. Green Building Council (USGBC), which oversees LEED, the problem was the garbage. The agency learned

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that its own LEED Platinum office space, located in a multitenant building, wasn't truly operating at that level once its staff moved in. "Our original Platinum score was 94," says Scot Horst, USGBC's chief product officer. But as the council monitored performance post-occupancy, "our score dropped down to 78," he says. After some investigation, it turned out that signs on the waste bins were partly to blame. "The staff was confused and putting their compost into the wrong bin," Horst says.

Getting Data to Inform Occupant Behavior

This year—as LEED turns 15—a stock of highly sustainable green buildings around the U.S. is starting to mature. Many were designed using cutting-edge building science principles and were touted for their energy-savings potential. But how are those structures actually performing? What have we learned from this first major boom in green building?

For starters, although we seem awash in data, post-occupancy numbers on the country's green commercial buildings aren't readily legible. Yes, private companies like DPR, government agencies like the GSA and the Department of Energy, and a handful of diligent architecture firms and academic researchers are gathering information. But ask: How are these green buildings doing? And one might counter: Compared to what? Roger Chang, the director of engineering for Westlake Reed Leskowsy, says, "Benchmark data in the U.S. is non-existent." Despite our advances in high performance infrastructure, data-driven insight is still the exception, Chang says.

Moreover, when we do have the data, there is disagreement about how to use it. The industry has not settled on baselines regarding success. If, for example, you base strong performance on energy use alone, then you could merely be rewarding the least occupied buildings, or the least energy-intensive industries.

There is one thing, though, that everyone agrees on. Perhaps the single most significant issue with the performance of green buildings in the U.S. is people. For all of our advancements in building science, we seem to have forgotten a most valuable link to success: Marrying the ongoing maintenance of complex buildings with the even more complex psychology of human beings. People, it turns out, have an incredible knack for offsetting energy modeling predictions and design strategies. Whether it's thermal comfort, noise, light, or crushed ice, human needs and desires—coupled with the myriad functions of different industry types occupying a building—often dictate whether a space functions at it was predicted and designed. Even the "smartest" buildings can't outsmart human beings who are cold or improperly oriented about how to use their new space.

Which is why the next phase of green building will be as much about people as technology. Success in sustainable design hinges on our ability to create the software and hardware needed to not only collect and parse building data, but also to communicate findings in such a way that informs occupant behavior. "You can have all the data in the world, but unless you can transform it into something that's meaningful, it doesn't really do much for you," says Debra Gondeck-Becker, AIA, the Americas Construction Industry Leader for Honeywell Building Solutions. The future of green building, she says, is about "taking the data and making it consumable by the building owner, operators, and occupants so that they can take action and optimize their facilities."

This shift has implications for all architects, not just those specializing in deep green buildings. Increasingly, commercial owners will be held accountable for energy use and outcomes. Consider the GSA. "By 2020, our buildings have to be designed for net-zero energy," Davis says. It will no longer be about getting a building to opening day; it will be about ongoing performance. Currently, Davis says that design teams are still largely flummoxed by this shift, and are surprised when they are told that a building is not performing as well as predicted. Architects are not yet accustomed to being held accountable for designed performance. "You have to start finding very talented architects and engineers, and really working with a great internal and external team, to make that [net-zero goal] happen," Davis says. "We've been figuring out what we need to do from a contracting perspective to achieve that." In fact, the GSA is currently exploring changes to its contracting process to ensure better building performance. In the Federal Center South Building in Seattle, Davis says, ZGF Architects was given a performance-based contract with a portion of the fee withheld until energy data was confirmed one year into occupancy. (Read more about these contracts in "Best Practices: Energy Performance–Based Contracts" on page 44.)

Meanwhile, more and more cities and districts, like New York and Washington, D.C., have instituted energy benchmarking goals for commercial buildings above a certain size. D.C.'s Clean and Affordable Energy Act, for example, requires all private buildings over 50,000 gross square feet to measure and disclose energy and water consumption. As this information becomes public, scrutiny over a building's performance will inevitably follow.

A lot has been made about the need for architects to embrace energy modeling and other best practices to help lessen the impact of the built environment on the planet. As we enter the next phase of the green building boom, there is another, much more pragmatic reason for firms to embrace this shift: their commissions may depend on it. Building performance may well become the key to a firm's bottom line.

LEED's Dynamic Plaque

For a glimpse into where things are headed, consider a July 2013 article in *The New Republic* about the LEED Platinum Bank of America Tower in New York, designed by CookFox Architects. The article, titled "Bank of America's Toxic Tower," examined energy data for commercial buildings released by the city of New York and found that the tower, which opened in 2010, produced more greenhouse gases and used more energy per square foot than similarly sized office buildings in Manhattan. "New York's 'greenest' skyscraper is actually its biggest energy hog," the story argued.

This was just the latest in a series of critiques on LEED's efficacy. In 2012, John Scofield, a professor of physics at Oberlin College, testified in front of the U.S. House of Representatives that his research on LEED certified buildings found they "consume about the same amount of primary energy as to comparable, non-LEED buildings. LEED buildings are statistically no better and no worse."

The LEED certification checklist knights a building as green before the doors so much as open, critics point out, but once occupied, actual performance doesn't always merit the status. LEED conducted its first post-occupancy study of certified buildings in 2008. That report, issued by the New Buildings Institute, came under serious scrutiny from professionals like Scofield for inaccurately suggesting that LEED buildings outperformed those without the certification. *The New Republic* article noted that the Bank of America Tower "uses more than twice as much energy per square foot as the 80-year-old Empire State Building."

The USGBC's Horst cried foul on the reporting in a letter to the editor. As he recently told me, "Right now, the whole debate centers on energy use intensity. What that means is that the least amount of energy used is the best performer." Because the Bank of America Tower houses trading floors that operate long hours and high-energy machines, Horst says, the energy use reflects that. "So what do you do here? Do you make the financial industry go away?"

Nonetheless, Horst takes the criticisms of LEED seriously. He has long advocated for a living building approach, where certified spaces must continue to track performance and get recertified. Currently, that isn't happening. There are 23,000 certified LEED projects. Only 55 have transitioned from the new construction rating system to the LEED for existing buildings system. It's too expensive and time consuming for most building owners to consider, and there is little incentive to recertify, according to Horst. "We have to change how people think about and connect with their buildings," he says.

This is why Horst created a new LEED product called the Dynamic Plaque. Designed with IDEO and a team of algorithm specialists and software engineers, the plaque attempts to monitor and visualize not only the infrastructure of a building, but also how occupants feel within the space. The software tracks five categories—energy, water, waste, transportation, and the human experience—with those last two categories informed, in part, by regular occupant surveys. The results are automatically tabulated when data is entered and the building gets an updated score based on a 12-month rolling average that is then compared against a database of about 1,000 LEED buildings. The idea is that you can see how other buildings, with similar square footage and occupancy, compare to your building. The score and the individual results in the five categories are then displayed through a circular plaque placed in a building's lobby. Beta phase prototypes of the plaque were built last year. As of December 2014, there were about 40 in different facilities, including the lobby of the DPR Construction office in San Francisco. The Dynamic Plaque version 1.0 is now available to anyone.

On a warm day this past fall, I visited Horst at the USGBC headquarters in D.C., to see the council's own prototype in action. Horst had mounted it in the lobby next to the reception desk. He explained that

There are 23,000 certified LEED projects. Only 55 have transitioned from the new construction rating system to the LEED for existing buildings system.

the looping colored bars show how the space ranks in the five measurable categories. It was by using the plaque, Horst says, that the USGBC realized its space was underperforming against its original Platinum score. Because the system also illuminates occupant behavior and feelings through those user surveys, Horst was able to troubleshoot problems and make

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changes, including the improved signs on the compost bins. "The idea with [the plaque] is to make it simple and beautiful, and to make it have a score so that people can immediately see how they are doing," Horst says. "We're making the invisible actionable." The goal, he says, "is bringing the score to life in such a way that doesn't punish bad performance, but incentivizes people to make changes."

Last fall, the USGBC announced a deal with Honeywell to simplify the capture of building data. If your building has a Honeywell system, it can feed facility information right into the plaque's software. "What I love about the LEED Dynamic Plaque," says Honeywell's Gondeck-Becker, "is that it's a real performance score and it engages people to take action and keep that performance score where the facility owners have set the bar."

Horst is now brokering similar deals with other companies that sell building management systems. "What's exciting," Horst says," is that the plaque could be the thing that aligns all of these different data systems."

The James Bond of Building Maintenance

LEED isn't the only entity trying to capture both data and occupant experience in order to improve building performance. Architecture firms like San Francisco's EHDD have worked with some clients to collect post-occupancy data for the buildings that they design. "We've tried over the years to do both energy monitoring and tracking, as well as occupant satisfaction surveys," says Scott Shell, FAIA, principal at EHDD. About 10 years ago, the firm began using the Center for the Built Environment (CBE) post-occupancy survey program. Located at the University of California at Berkeley, the CBE studies human physiology, indoor airflow, thermal performance of building systems, and occupant satisfaction, among other things. Participating buildings are placed into a database. "They have hundreds of buildings," Shell says, "so we're benchmarking ourselves against them."

EHDD designed the net-zero David and Lucile Packard Foundation headquarters (built by DPR Construction), and because of the stringent net-zero certification, they brokered a different kind of contract with the client. "We negotiated with the owner back in 2007 to be around during the first year in order to help diagnose what was going on," says Brad Jacobson, AIA, senior associate at EHDD.

In addition to rethinking the architect/client relationship, a performance-driven building also requires a rethinking of the maintenance staff. The Packard Foundation hired Juan Uribe to be the building's full-time building engineer. If there's a James Bond of building maintenance, Uribe fits the bill. He has built a career running the most complicated structures, from nuclear power plants to biotech facilities for companies like Genentech, where a slight change in interior temperature could compromise millions of dollars in research. Success with a deep green building like Packard, Uribe says, starts with realizing that you're dealing with a different breed. "This isn't just a regular office building," he says, "and you can't treat it as such."

Uribe fine-tuned the systems that EHDD put in, and over the years, he has adjusted everything in the automated system to work in harmony. He maintains that the only way for a green building to perform as expected is to place occupant comfort first. "I believed that if I could get the systems tuned so that I had reliability and satisfaction with the comfort level, that was the number one goal," Uribe says. "The energy efficiency would follow. And that's exactly what's occurred."

Ideally, Uribe says, the building engineer should be included in the design phase of a net-zero building. That didn't happen at Packard (Uribe was hired during construction), and he suspects that the first year could have gone more smoothly otherwise. "For this type of building you need big involvement from automation and controls specialists," Uribe says. "I replaced inaccurate instruments after we opened and adjusted things where I could. But being a part of the design decisions would have made a difference."

The foundation also did a good job of communicating with staff about the new building. "The owner was very good about having regular presentations all the way through the [design and construction] process," Jacobson says. "They were moving from a building built in the 1980s, so there was a lot of change management around workplace issues. It was essential to bring people along so that they were not dissatisfied and shocked when they moved to the new building. That training is important. Most people don't know how buildings work. They just come to the office and want to do their job."

The foundation set goals with occupants at the outset, for things like interior temperature. Once the building opened, Uribe met with staff on a regular basis to get feedback. "It starts by establishing what your policies are and then getting everyone involved in the building," Uribe says. "When it's OK to go to natural ventilation, for example, we put icons on the desktops so that people can see immediately that it's time to open the windows."

In buildings where performance is being monitored, such as net-zero certified spaces, owners

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are increasingly incentivizing tenants to take on the sustainability goals of the space. In Seattle, the six-story, 50,000-square-foot Bullitt Center is considered a first of its kind, a net-zero commercial office building with a range of different tenants. Unlike the Packard Foundation and DPR, which are owner-occupied, the Bullitt Center, designed by the Miller Hull Partnership, is a core and shell commercial building. Engaging the tenants in the building through things like an energy dashboard and post-occupancy surveys have been a pivotal part of the project. So, too, is rewarding good behavior. "Everyone, through their rental rates, is incentivized to perform well," says Brian Court, a partner at Miller Hull. "Tenants get an annual energy budget and if they meet that target, then they get money back." This creates a kind of self-regulation of the tenants who rent at the Bullitt. "We wouldn't put a coffee shop in the building, for example, because of the high energy demands," Court says.

But what happens when you can't control the tenants? The GSA, for instance, must accommodate a variety of different industries with varying energy demands. Roger Chang of Westlake Reed Leskosky worked with Lance Davis and the GSA on renovating the Wayne N. Aspinall Federal Building and U.S. Courthouse in Grand Junction, Colo., a 1918 landmark that was converted into one of the most sustainable historic buildings in the country. Since its completion in February 2013, Chang has maintained rigorous post-occupancy data on the building's performance. One thing he discovered was how much the machines inside affected energy predictions. The nighttime performance of equipment in "sleep" mode, for instance, was not nearly as good as manufacturer data suggested. Also, some of the Federal agencies in the building were required to use industry-specific machines that consumed a lot of energy.

The U.S. Marshals Service, for instance, had a 600-watt load from a single piece of equipment used to process prisoners. When Aspinall's building manager presented energy data at a tenant meeting, the manager of that agency was told that he had to do better. "But he had really tried and couldn't do anything about this equipment that he had no control over," Chang says, "and so he just stopped trying." Focusing only on energy use became a disincentive, Chang says, because you risk losing well-intentioned occupants from the higher goal: A livable, functioning, sustainable building where people thrive at their jobs.

The Rise of Nest And its Commercial Implications

The goal, then, is to create a system where users are given the information that they need to make informed

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From top to bottom and left to right: Sheridan College - Hazel McCallion Campus, Mississauga, ON, Canada; South Waterfront, Portland, OR; The French Laundry, Yountville, CA; Sunnylands, Rancho Mirage, CA; Museum Tower, Dallas, TX; Hotel Palomar, Philadelphia, PA; AIA North Carolina Headquarters, Raleigh, N.C. (photo courtesy of Tim Hursley); The Carneros Inn, Napa, CA

choices about behavior and performance outcomes. Architects who I spoke with in the commercial sector often mentioned the research and development happening in the residential world, where architecture more readily merges with clever product design. "The IT world is so sophisticated, and more and more it is taking interest in building information," says EHDD's Jacobson. "We may be on the cusp of something when companies like Google buy Nest."

Jacobson is referring to Google's $3.2 billion acquisition last year of Nest Labs, a startup known for its smart home thermostats and alarms. Along with Quirky's Wink, Apple's HomeKit, and Honeywell's Lyric, Nest is racing to create residential software platforms connecting users to Internet-driven devices, known as the Internet of Things. Here, homeowners can monitor and automate their homes. Nest's Learning Thermostat, for example, harvests data and uses it to adjust your home's temperature based on your habits. It can connect with your utility company and let you know, via a green leaf on your thermostat, if you're operating at an energy-efficient level.

Last year, Nest opened its operating platform to outside developers, allowing it to connect with other devices in the home. One of Nest's new partners is Whirlpool. Now, your clothes dryer and your Nest thermostat will be able to work in tandem to conserve energy. When the thermostat detects your utility's peak load times, it sends a signal to the dryer to run on a cooler, slower drying cycle, saving energy and money. Perhaps as a sign of things to come, the company has started moving into some commercial projects. "We have small hotels that are using our products because they are simple," says Maxime Veron, head of product management at Nest Labs.

In fact, Horst took a page from product designers like Nest when he created the Dynamic Plaque with an open application program interface, or API. Developers can access the API and plug their products and services into the plaque, allowing owners to customize a kit of tools for building management and performance review. As Horst talks about the future of the plaque, he starts to sound a lot like the developers at Nest. Indeed, the USGBC will soon release a version of the plaque that's not just for LEED, but for any commercial building. "We're working on a version of this where you can put it in your building and score yourself relative to your peers," Horst says.

When I met with van der Linden in San Francisco last fall, the DPR Construction office had been open for several months and was on track to meet its net-zero goals. If the company has learned anything from building three net-zero offices, van der Linden

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says, it's that a truly green space requires a new relationship between owners, architects, construction staff, engineers and more. "Integrated project delivery is where we're heading," van der Linden says. "We're asking architects to leave their offices and we're putting everyone in a big room—contractor, owner, engineer—to work together during a project."

Van der Linden says the complexity of designing green buildings cannot overshadow the ultimate goal. The most important relationship, in the end, is with the people who will ultimately occupy the space. The real-time data capture displayed in the DPR office, coupled with ongoing conversations with staff, allows DPR to make decisions for the benefit of both its energy goals and its employees. That's why the popular but energy-sucking ice machine can stay, for now anyway. "I've said this numerous times," van der Linden says. "We can build the greenest building on the planet, but if our employees don't want to be here, it's not a green building."

WHERE WE GET OUR ENERGY-USE DATA

The U.S. Energy Information Administration (EIA) calculates that in 2012, there were 5.6 million commercial buildings in the United States containing some 87.4 billion square feet of floor space. So what do we know collectively about the way those commercial buildings are actually performing? Turns out, not a whole lot. Here's a breakdown of some of the entities collecting post-occupancy data and how it gets used.

Commercial Buildings Energy Consumption Survey

Data from 6,720 out of the 5.6 million total buildings in the United States. That's what's being used to help create the Energy Star ratings. The EIA, an independent statistics and analysis agency within the Department of Energy, collects what is arguably the most influential data on our commercial building stock. Its Commercial Buildings Energy Consumption Survey (CBECS) is the backbone for Energy Star and influences how our government crafts public policy around buildings and energy use. CBECS began in 1979 as a national sample survey, and a total of 10 new surveys have been conducted since.

The most current CBECS, which surveys buildings from 2012, will be fully released this year—the first time CBECS has released new data on buildings since 2003. "We did a survey in 2007, but there were flaws in the way that the sample was designed," says Joelle Michaels, CBECS survey manager for the EIA.

For the 2012 survey, 250 interviewers gathered energy use data directly from building owners or from public utilities. The final sample size was 6,720 buildings. The preliminary findings were posted in June of last year, but by the end of 2015, EIA will post all of the detailed data.

Even still, it's difficult to finesse the full results. "Our tables are designed to do two-way cross tabulation," Michaels says. "You could go to the building size and then the building activity, for example. But the problem with having

only 6,000-plus buildings is that your sample size then gets really small and you can't extrapolate much from it."

LEED

In 2008, LEED commissioned its first post-occupancy study of certified buildings. Conducted by a third party, the National Buildings Institute, the study analyzed and measured energy performance for 121 LEED New Construction buildings and found them to have better energy performance as compared to other structures. The methodology behind the report, however, was later questioned by building scientists as being misleading. "The NBI study was the very first attempt to look at what was happening," the USGBC's Scot Horst says.

LEED now has information from the benchmarking happening in cities as well as data collected since the LEED 2009 rating, which asks for five years of energy and water usage from certified buildings. "But we still haven't had a good way to make sense of all of that data," Horst says. "No one to date, in my opinion, has a comprehensive understanding of how to define building performance." Horst hopes the LEED Dynamic Plaque will help change that.

gBUILD from the General Services Administration

With the American Recovery and Reinvestment Act of 2009, the GSA was charged with overhauling its building stock to be more energy efficient, which is why the agency created gBUILD (Green Building Upgrade Information Lifecycle Database), a collection of post-occupancy data. Projects are required to log modeling and design performance data, and then once the building is operational, the energy usage is benchmarked against the performance data.

The Center for the Built Environment

The nonprofit CBE, based in Berkeley, Calif., has as its mission "to improve the environmental quality and energy efficiency of buildings by providing timely, unbiased information." This includes information on building technologies, design, and operation techniques, as well as a Web-based post-occupancy survey that has been conducted in over 600 buildings. Architecture firms such as EHDD use the CBE database to help understand performance within their green buildings.

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4. Identify the green features of glass block that combine to provide a building material that plays a significant role in sustainable design and daylighting strategies.

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By Marissa Hovraluck

INTRODUCTION

As a proven natural building material, glass block can add beauty and inspiration to a project, while playing a significant role in sustainable design. Glass block is 100% recyclable, low- maintenance, and highly durable, yet its' dynamic relationship with light provides architects the opportunity to create both aesthetically pleasing and energy efficient spaces.

With low construction waste, glass block is considered an environmentally preferable product, made largely from sand, an abundant raw material, and limestone.

With a range of sizes, styles and patterns, building with glass block offers tremendous design versatility. Because of its versatility, it can be used in a wide variety of projects, and offers a universal appeal. Glass block walls, partitions and windows combine the beauty and light transmission of glass with the strength of glass block.

ENERGY EFFICIENCY

Energy efficient glass block panels let in the sun's light, but also keep out the heat. The blocks are aesthetically pleasing and functionally smart as they feature a low-emissivity coated glass panel sandwiched inside to help keep interiors warmer in the winter and cooler in the summer. It filters out about 70% of total solar energy while still allowing for superior day lighting. And with an insulating U-Value of 0.34, unframed, these panels can keep HVAC costs in line too. Panels framed by a 2-piece aluminum channel have a U-Value of 0.38. The lower U-value associated with unframed and framed panels indicate their high levels of insulation.

Glass block can provide more than double the thermal resistance, or R-Value, of a single-glaze 1/8" thick plate glass. Glass block also provides an R-value that is equivalent to a standard thermal pane window. Also, the louvering

effect of glass block's horizontal mortar joints helps to reduce the light transmission from the higher summer sun. The mortar used in between the blocks helps to create a shade from the high summer sun. However, during the winter, the rays from the lower sun will shine through the glass and help with solar heating. It is important to note that the size and orientation of the blocks can greatly affect the amount of shading that can occur.

SAFETY

Glass block windows permit plenty of visible light, but can also feature patterns and designs that obscure the view of home occupants. Glass block is inherently stronger than a conventional glass window. This is because of the thickness of the faces and the mortar that binds the blocks together. As a result, the glass blocks are more difficult to break and therefore provide resistance and are a deterrent to forced entry. If safety is a concern, the individual blocks are more challenging to break through than a typical window, offering a higher security option. Even when vents are added to an exterior window installation, the security of the window is not compromised.

VISIBILITY/LIGHT TRANSMISSION

Glass block provides exceptional visibility in compliance with ADA guidelines for enclosed areas. It has a dynamic relationship with light, both natural and artificial, and transmits up to 80% of available light in both directions. As the light changes, so does the material's appearance and in turn the surrounding environment without any yellowing, clouding or weathering.

ADDITIONAL FEATURES

Glass blocks are available in a variety of patterns to fit the projects requirements.

Glass block is made largely of sand and limestone, and is 100 percent recyclable, low maintenance, and highly durable. It is an enduring material, lasting over 50 years, which helps reduce the need to replace and recycle building materials. However, when damage has occurred, usually only one or two glass blocks need to be replaced out of the entire installation.

Some common patterns of glass block include: clear, waves, diamond, iced, frosted, and ribbed.

By selecting a solid glass block, it creates a dense barrier to sounds, such as traffic, trains, crowds and machinery. Also, it is scratch resistant and graffiti resistant, and also very easy to clean.

HEALTH AND SAFETY

Designing with glass block helps contribute to the health and safety of the building's occupants. Glass block combines visibility with security, providing solutions to meet demanding security needs of the architectural and design community. Available in the market are glass block systems that provide resistance to hurricane, blast, intruder or ballistic threats. As well, certain glass block products may help avoid glare, improving visual comfort.

An important feature of glass block, critical to safe building design, is the product's inherent fire resistance property. By varying the face thickness of the product and conforming to installation specifications, manufacturers are able to offer a range of fire rated products approved and rated according to Underwriters Laboratories (UL®) standards. For window assemblies, glass block is available in 45–, 60–, and 90–minute ratings.

INSTALLATION CONSIDERATIONS

Glass block is non-load bearing; therefore, adequate provisions must be made for the support of construction materials above the glass blocks. Glass blocks are mortared at the sill with jamb and head details designed with soft joints to accommodate for building movement and lintel deflection. Local building codes should be considered for any limits on panel size or installation details. Glass block is available in a range of products including standard block, thick face block, and solid block.

TYPES OF BLOCK

Standard Block

Standard block offers the largest selection of patterns and sizes, ranging from 6 inch by 6 inch up to 12 inch by 12 inch blocks. The nominal face thickness is .25 inches, and the standard blocks offer a 45–minute fire rating as a window in mortar. When it is installed in mortar, it has an R-value of 1.96, and when it is installed in silicone, that R-value is 2.2. Depending upon the block pattern, standard block can have a visible light transmission ranging from 55 percent to 91 percent.

As stated earlier, glass block can help create a noise barrier. The Sound Transmission Class, or STC, of standard block is 35–39, depending upon the block size. An STC rating roughly reflects the decibel reduction in noise provided by a partition and the higher the number, the better the decibel reduction. In this range, normal speech could not be heard, and louder speech would be audible, but not intelligible.

Depending on the pattern of the standard block, the Solar Heat Gain Coefficient is between 0.66 and 0.68. Also, standard block offers a compressive strength of 400 to 600 psi. It should be installed using a mortar or channel/spacer system, and the panel size should be limited to 250 square feet for interior walls, and up to 144 square feet for exterior walls.

Thick Face Block

Depending on the type of thick face block selected, they are available to meet 45–, 60– or 90–minute fire rated window assemblies in mortared panels up to 100 square feet. The nominal face thickness ranges from .375" to .75". The Sound Transmission Class, or STC, is 50 in mortar, and 48 in silicone. In this STC range, loud speech would not be audible and other loud noises, such as musical instruments, would only be faintly heard.

Thick Face Block has an R-Value of 1.96 in mortar, and 2.22 in silicone. Depending on the pattern selected, the Visible Light Transmission would range between 49 and 70 percent, while the Solar Heat Gain Coefficient would range between 0.66 and 0.68. It offers a comprehensive strength of 2,500 psi, and is often used for hurricane and blast resistant windows.

Solid Glass Block

Solid Glass Block is also listed for use as 45–, 60– or 90–minute fire rated window assemblies in mortared panels up to 100 square feet. The actual face thickness is 3 inches, and it offers an R-value of 1.15 in mortar. Depending on the pattern, solid glass block offers a Visible Light Transmission between 83 and 90 percent. The Solar Heat Gain Coefficient ranges between

0.75–0.78, depending upon pattern. The STC, or Sound Transmission Class, is 53. At this rating, very loud noises are almost inaudible, and loud talking noises cannot be heard. These solid glass blocks offer a compressive strength of 80,000 psi and are able to resist penetration from high-impact ballistics. They have a UL 1, 2 and 6 ballistics rating.

Specialty Block

Glass block can be used as part of an overall strategy to earn points in several LEED categories.

Shaped blocks are used to turn corners or create curves. Finishing units are rounded on one or two sides and are used to complete open edges and corners. Be sure to note that shaped blocks and finishing units are not fire rated.

Glass Block and LEED

The U.S. Green Building Council, USGBC, is a non-profit organization composed of leaders from every sector of the building industry working to promote buildings and communities that are environmentally responsible, profitable and healthy places to live and work. USGBC developed the LEED, Leadership in Energy and Environmental Design, green building certification program, which is the nationally accepted benchmark for the design, construction, and operation of high performance green buildings.

LEED credit requirements cover the performance of materials in aggregate, not the performance of individual products or brands. Therefore, products that meet the LEED performance criteria can only contribute toward earning points needed for LEED certification; they cannot earn points individually toward LEED certification.

For detailed information about the council, their principles and programs, please visit www.usgbc.org.

Glass block can be part of an overall strategy to earn points in several LEED categories. This next section focuses on LEED 2009 and will break down each credit category and credit that glass block helps contribute to possible LEED points for a project.

ENERGY AND ATMOSPHERE

Energy and atmosphere credits promote better building energy performance through innovative strategies. Reducing energy use in buildings through improved energy performance and energy-saving strategies, like daylighting, helps reduce the impact buildings have on our atmosphere.

Prerequisite 2: Minimum Energy Performance

Glass block's daylighting properties can help achieve the required minimum energy performance for LEED certification.

Credit 1: Optimize Energy Performance

Glass block can support various strategies, including passive solar designs, to reduce a building's energy consumption. Furthermore, because this credit includes interior lighting energy demands, glass block can improve energy performance even more. Developments in glass block have significantly improved thermal performance. As a result, energy efficient glass block or glass block panels with Low-E glass, demonstrate up to a 43 percent improvement in U-value and up to a 52 percent improvement in Solar Heat Gain Coefficient when compared to the baseline performance ratings for glass block specified in ASHRAE/IESNA 90.1–2007.

MATERIALS AND RESOURCES

Materials and Resources credits encourage the use of sustainable building materials and reducing waste. The production and transport of building materials can impact our environment in many ways. Conserving resources, using local materials and reducing construction waste reduces that impact.

Credits 2.1 and 2.2: Construction Waste Management

Both glass block scrap and its packaging can be recycled, nearly eliminating waste.

Credits 3.1 and 3.2: Resource Reuse

Salvaged glass block can be reused in some jurisdictions, with careful consideration.

Credits 5.1 and 5.2: Regional Materials

Glass block manufactured in a facility within 500 miles of a project site can include that percent (by weight) of the raw materials that are also within 500 miles of the project site toward the calculation of the total regionally located content in all building materials.

INDOOR ENVIRONMENTAL QUALITY

Indoor environmental quality credits promote better indoor air quality and access to daylight and views. The U.S. EPA (Environmental Protection Agency) estimates that the average American spends over 80% of his/her time indoors. Therefore, it is important that our indoor spaces are healthy and comfortable.

Credit 4: Low Emitting Materials

Glass block meets the intent of eliminating VOCs from the indoor environment when used as interior walls or floors.

Credit 8: Daylight and Views

Glass block provides daylight and views without sacrificing sound control, security and privacy. For example, glass block wall tubes offer a unique and creative way to maximize natural light entering the building.

INNOVATION

Innovation credits address sustainable building expertise as well as design measures not covered under the five LEED credit categories.

Credit 1: Up to Three Points

Glass block can help earn points for good acoustics, use of durable materials, and good indoor environmental quality, meaning no VOC and no mold.

Regional Priority Credits

Regional priority credits address regional environmental priorities for buildings in different geographic regions. Most manufacturers will assist architects/designers with glass block solutions that can be used to help fulfill specific regional credits, for example, hurricane-resistant windows that meet the high wind- and large missile-impact requirements of Dade County, Florida.

GLASS BLOCK WINDOWS WITH LOW-E GLASS

Energy efficient glass block windows are aesthetically pleasing and functionally smart. Every block works like a traditional energy efficient window, and that's because each block features a low-emissivity coated glass panel sandwiched inside the block that filters out about 70% of total solar energy, while still allowing for superior daylighting.

With an insulating R-value of 2.63, these windows can keep HVAC costs in line. Not only are glass block windows with Low-E glass useful for daylighting strategies, but as the last section shows, they can contribute to LEED points.

Other features of glass block windows with Low-E glass:

- R-Value: all patterns 2.63
- Visible Light Transmission: 33%–76% depending upon pattern
- Solar Heat Gain Coefficient: 0.27

	U-Factor	SHGC
Glass Block default from ASHRAE 90.1	0.60	0.56
Typical Glass Block in Mortar	0.51	0.67
Low-E Glass Block in Mortar	0.45	0.32
% Improvement over ASHRAE 90.1	25%	43%
Low-E Glass Block Window	0.38	0.27
% Improvement over ASHRAE 90.1	37%	52%

Building with Low-E glass block can help optimize energy performance, as illustrated in this table that compares U-factor and SHGC of various window options.

Glass block windows with Low-E glass are available in a range of patterns. To significantly improve solar heat gain, thermal loss and UV radiation values, glass block windows with Low-E glass are installed in a variety of projects.

Daylighting is increasingly important in buildings today. Not only does daylighting have a positive effect on mood, atmosphere and productivity, but the more daylight that enters a room, the less energy is needed by electrical systems.

This article continues on http://go.hw.net/AR115Course1. Go online to read the rest of the article and complete the corresponding quiz for credit.

QUIZ

1. True or False: Glass block is inherently stronger than a conventional glass window.
   a. True b. False

2. Which of the following is not a type of block?
   a. Standard Block b. Thin Front Block
   c. Thick Face Block d. Solid Block

3. Which of the following LEED category can glass block earn points in?
   a. Energy and Atmosphere b. Materials and Resources
   c. Innovation d. All of the above

4. True or False: Glass block wall tubes are perfect for when you want to bring light into commercial buildings without compromising the masonry design.
   a. True b. False

5. With a solid glass block, detention and security windows are ballistic-resistant for UL Levels: (Select all that apply)
   a. 1 b. 2
   c. 4 d. 6

6. Tornado-resistant glass block windows are composed of:
   a. A steel frame and b. Grid assembly and
   c. Laminated glass blocks d. All of the above

7. True or False: Glass block is load bearing; therefore, adequate provisions do not have to be made for the support of construction materials above the glass blocks.

8. True or False: Glass block can provide more than double the thermal resistance, or R-Value, of a single-glaze 1/8" thick plate glass.
   a. True b. False

9. Glass block can help earn points in which of the following credits under the Materials and Resources category? (Select all that apply)
   a. Resource Reuse b. Daylight
   c. Construction Waste Management d. Energy Performance

10. True or False: Not only does daylighting have a positive effect on mood, atmosphere and productivity, but the more daylight that enters a room, the less energy is needed by electrical systems.
    a. True b. False

SPONSOR INFORMATION

PITTSBURGH CORNING®

Pittsburgh Corning manufactures premium glass block products and innovative architectural systems for commercial, institutional, government and residential building applications.Pittsburgh Corning glass block products offer versatile designs and provide daylighting without sacrificing sound control, security and privacy. High performance glass block products can also provide ballistic, blast, hurricane and tornado resistance. pittsburghcorning.com

Canadian Museum for Human Rights
Winnipeg, Manitoba
Antoine Predock Architect

TEXT BY THOMAS DE MONCHAUX
PHOTOS BY ALEX FRADKIN

"Aw, that was just showing off," says Antoine Predock, FAIA. He's talking about a stunt, made famous in a 1986 photograph he's sometimes used as a lecture slide, in which he slalomed down the snow-covered roof of a building he designed in Taos, N.M.—not far from Albuquerque, where his practice has been based for some 50 years. "I'm a skier," he explains, "and I spent a lot of decades of my life going off the marked trails." The photograph captures a paradox in Predock's work: On the one hand, the enthusiasm of this lifelong skier—and motorcyclist, and diver—for the kinetic, for technologically enhanced speed, and for perception in motion; and on the other hand, a deep feeling for geology, for the stillness of mountains and deserts. Most notably, perhaps, there's an enthusiasm for architecture that—with stony materiality and eremic geometry—registers as landscape. (Or at least as something that it would be great to ski on, weather permitting.) That off-piste trajectory also reflects the singularly trailblazing-but-backcountry path of this regionally rooted architect who—despite a 1960s stint in New York and studies at Columbia University (not to mention a 1985 Rome Prize, a 2006 AIA Gold Medal, and a 2007 Smithsonian Cooper Hewitt lifetime achievement award)—has largely escaped the categorizations and approbations found on the coasts.

And, these days, it matters that Predock knows his way around snow. His landmark new project in Winnipeg, Manitoba, the Canadian Museum for Human Rights, opened in September 2014, and is weathering its first sub-zero winter five years after the start of construction and nine years after Predock's selection in an international design competition. The 260,000-square-foot structure features 47,000 square feet of galleries within a cliff-like tower clad in local Tyndall limestone, alongside a 7,000-square-foot atrium winter garden partway up the structure, enclosed by a south-facing swoop of some 5,000 uniquely shaped glass panels. The whole is topped by a 100-meter-tall crystalline tower out of the dreams of Bruno Taut. And framing the entrance are four massive berms, three planted with prairie sweetgrass, one stepped into an amphitheater.

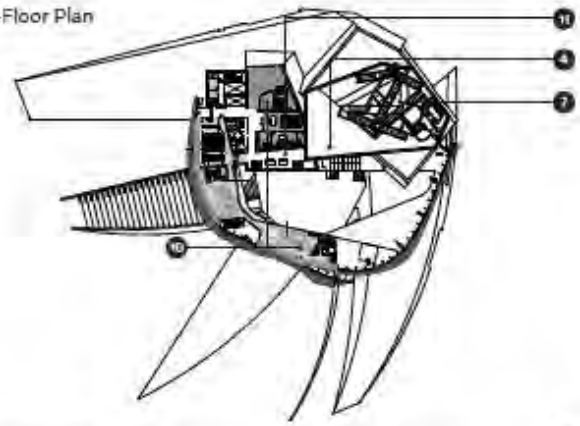
The museum's development faced hurdles: a Great Recession budget grown far past early projections to a reported $351 million Canadian; wrangling between its private foundations and public administrations; curatorial controversies about the museum's treatment of everything from the history of Canada's First Nations indigenous peoples (its site at the confluence of Winnipeg's Assiniboine and Red Rivers was an aboriginal trading and meeting place), to the relative status and scale of exhibits like those on the Armenian Genocide and the Ukranian Holomodor. Predock, designing his most substantial North American project outside of the Southwest, faced an icy reception from some. "At first," he says, "it was: 'What, you chose a guy from New Mexico?'" But, characteristically, he frames that as a matter of geology and ecology: "It's cold as hell here right now," he says of Albuquerque in January. "It's a high desert, the *altiplano*, and the land loses heat to the universe. When you make an event on that tall grass prairie [in Manitoba]," he says, "it's like a mountain down here in the desert."

There must still have been something of the so-called Bilbao Effect in the cold Manitoba air back in 2000, when the late Israel Asper, a Winnipeg-based Canadian media magnate, proposed and seeded the museum with a $22 million Canadian gift from his family foundation: The notion that a scrappy city on the global margin could—like Bilbao, Spain, with its photogenic branch of the Guggenheim designed by Frank Gehry, FAIA—seemingly acquire cultural capital with an architectural showstopper. Maybe even a memory of Jørn Utzon's Sydney Opera House, from a generation earlier. And, certainly, the Museum of Human Rights' uncanny form is a big deal on Winnipeg's boxy skyline and prairie horizon.

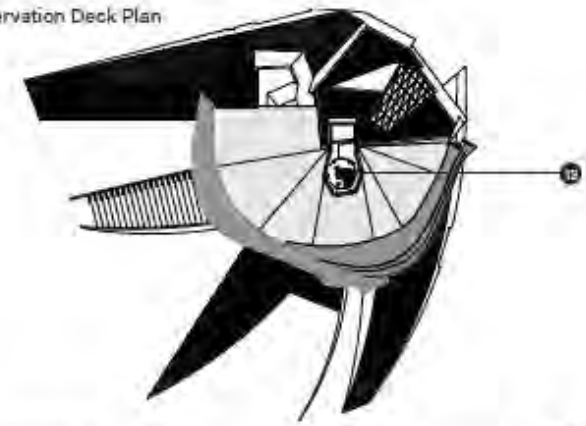
But in Winnipeg, the result is more interesting. Unlike that Spanish museum (whose overexposed sheen faded as its interiors underperformed for the display of art), the Museum of Human Rights appears to have been designed from the inside-out—driven less by photogenic form than by a cinematically and psychologically immersive experience over time. "It isn't a museum of objects," Predock says. "It's a museum about ideas. It's a process building. It's a procession building."

The procession is choreographed and kinetic. Recalling the switchback canyon roads where he rides his motorcycles, Predock describes the path through the museum as a "back and forth duality of light and of dark. It's a big-picture duality, dark where you begin, light where you ascend." At the entrance, "you're in a chamber with fissures of light coming in under dark above," he says. Then "you ascend, like in a John Cage concert when he would just sit at the piano and not play." The ascent leads, "to a narrow space that starts out as a black void. It's lined in integrally colored black concrete, not paint or plaster," and spanned by ramped bridges clad in luminous alabaster. A full kilometer of shallow switchback ramps criss-cross that void, leading in and out of all the galleries ("black-box theaters," Predock calls them, with interactive screens and supergraphics by exhibition designer Ralph Applebaum). "It's episodic," Predock says. "Along the

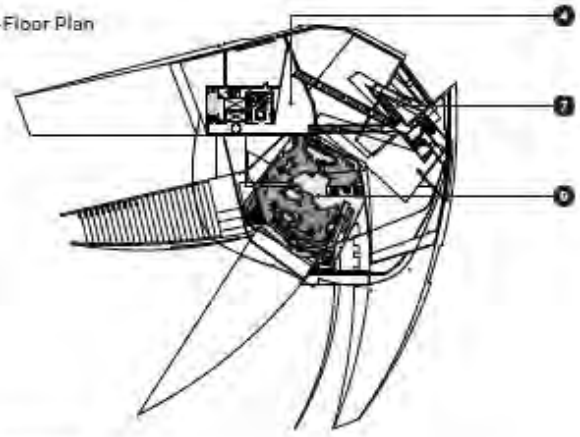
Sixth-Floor Plan



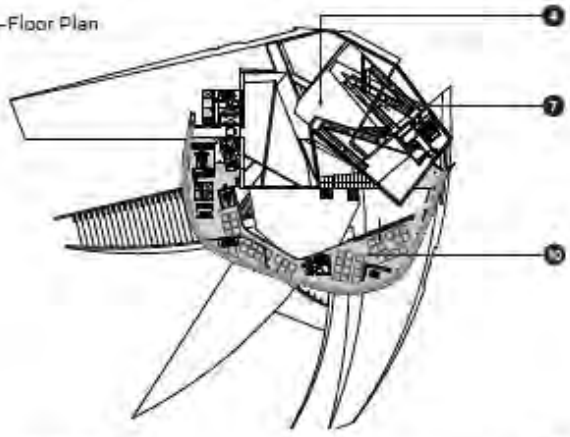
Observation Deck Plan



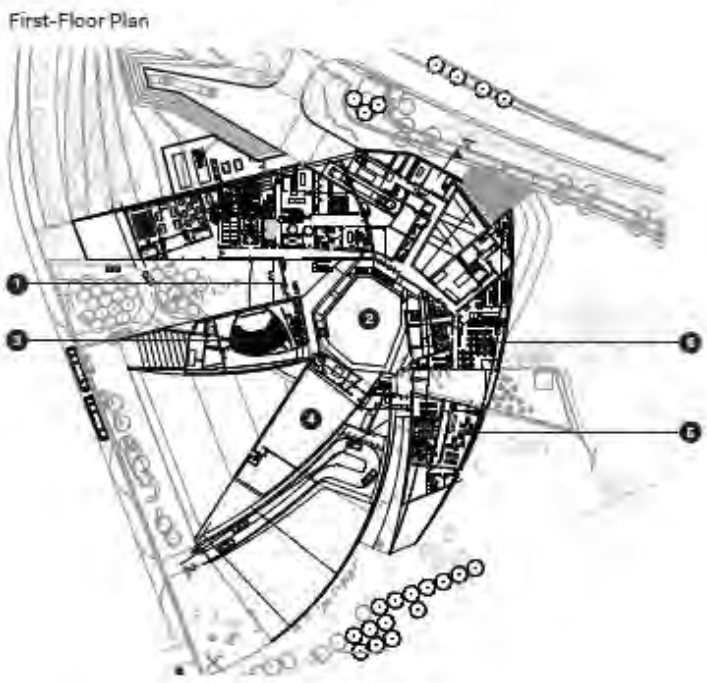
Third-Floor Plan



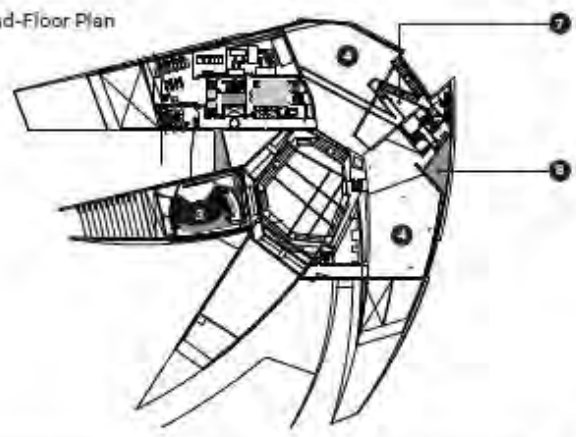
Fourth-Floor Plan



First-Floor Plan



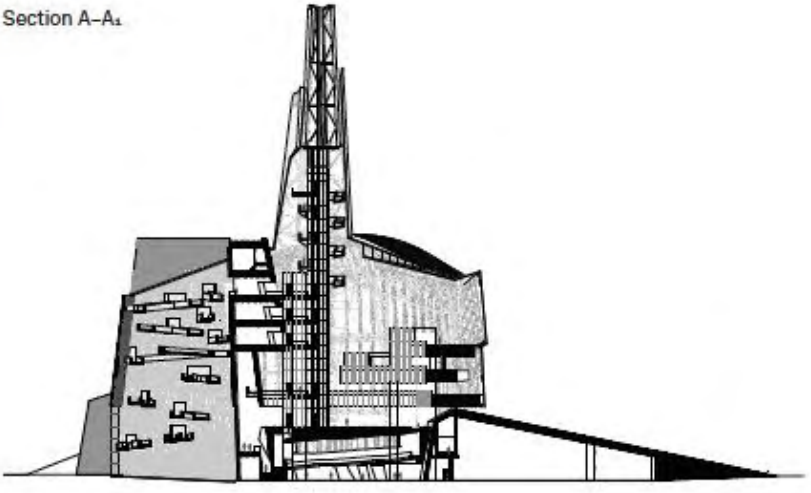
Second-Floor Plan



1. Entrance
2. Main lobby
3. Theater
4. Gallery
5. Book shop
6. Café
7. Circulation ramps
8. Terrace
9. Winter garden
10. Office
11. Reading room
12. Observation deck

0 50 100

Section A–A₁



This Page: View from the west

Opposite: Main entrance


Main Entrance Entrée principale

way, the bridges are way stations. When you get onto them, one after the next, you are in this safe zone, and you can look up at the sky and down to the earth. You think about what you've seen and get ready for the next gallery. There's a lot of bad stuff you learn about. But a lot of good stuff too. You look up and you think: 'Oh man, I've got a long way to go,' and 'I wonder if I'll make it to that tower.' "

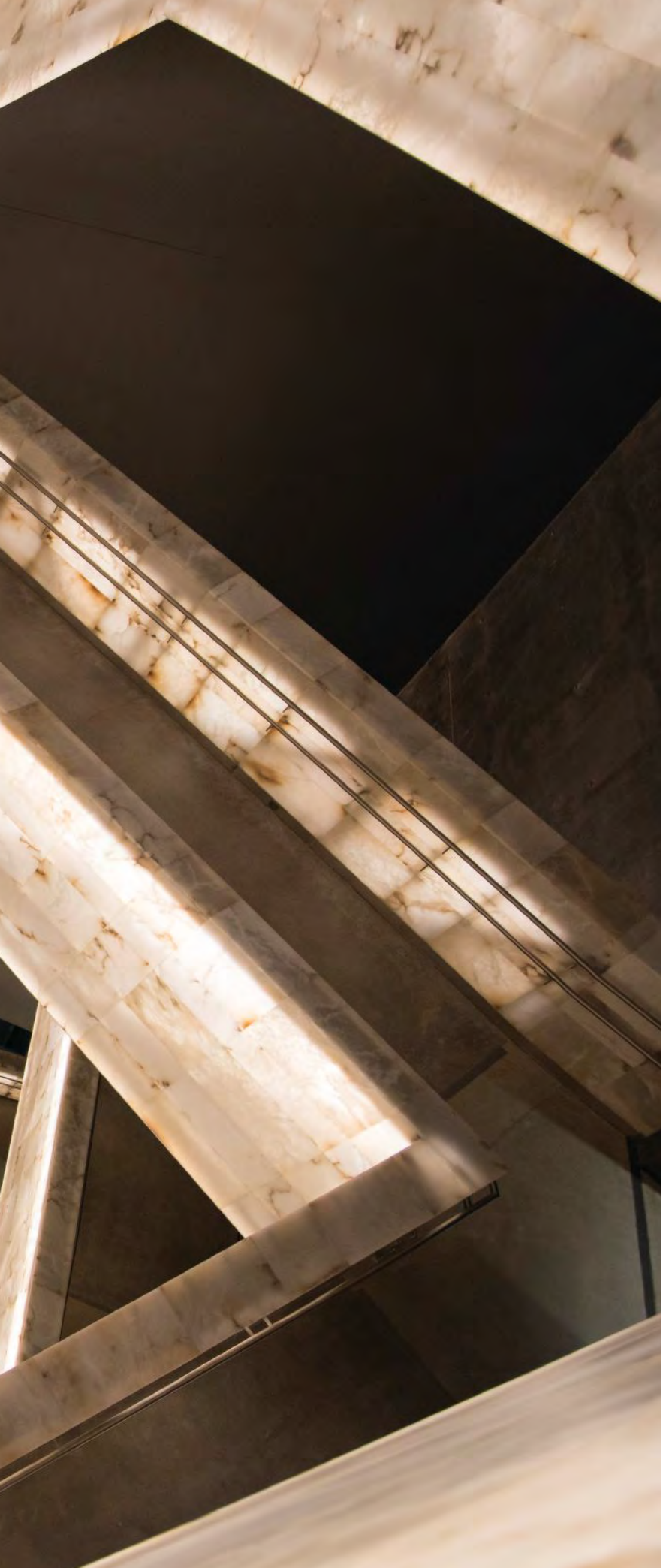
Gratifyingly, you can, and into a panoramic lookout by way of more ramps and a spiral staircase overlooking the atrium winter garden, which is paved by hexagons of Mongolian basalt buttressing reflection pools. The garden is also overlooked by foundation and administration offices, left open to view, "making what's normally the backstage totally visible," Predock says. "You see people hustling, working on human rights issues in real time. It's light and bright and the white steel all around is buoyant, and there's this animation that you're picking up on. It's about action."

This building is itself, perhaps, more about action than seamless completion—more open to personal experience and individual interpretation than the totalizingly hermetic self-reference to which many contemporary would-be monuments are prone. There is something of the deliberate awkwardness of a modern dancer who eschews the pretty gesture in order to tell you something else: Here, the seams show—massive nodes of raw structural steel push past the stone and glass to let you know that for all its volcanic and glacial geomancy, the building is the work of human industry and intention.

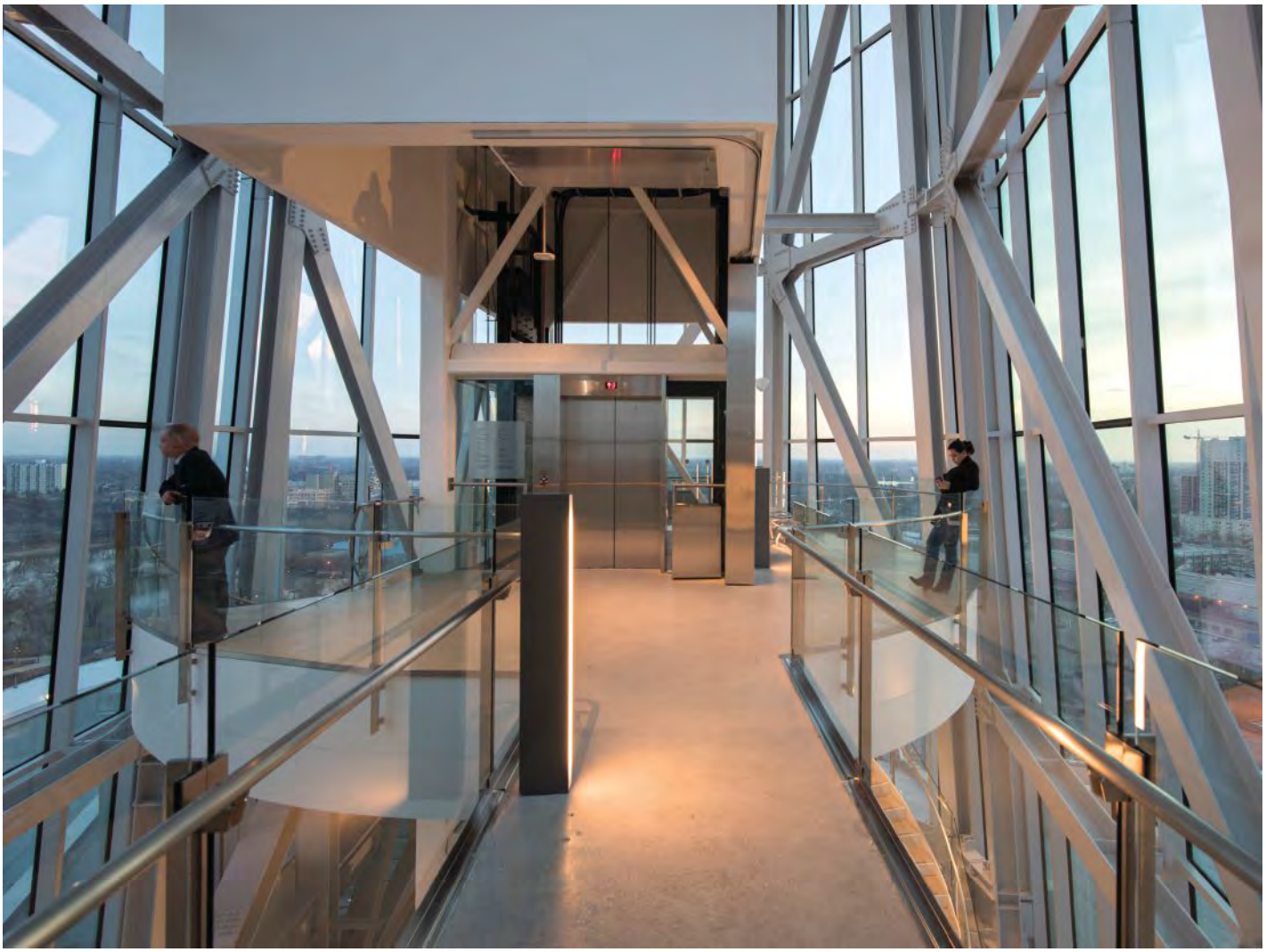
Like the high aspirations and human failings illustrated by the exhibitions, this building's finishes are a little rough and its transitions a little syncopated: An incongruous glimpse of alabaster is visible from the basalt interior landscape; light seeps into darkness and darkness into light. The design for the Sydney Opera House by Utzon—to whose work Predock's is heir in its primal encounters between land and sky—was said to have been rescued from the reject pile by Eero Saarinen, whose work shares with Predock's its uncategorizable mutability and its expressive sensibility. Utzon and Saarinen, and now perhaps Predock, have long served as an irritating conscience to an architectural profession that has, steadily and calculatedly, settled for less and less in the aspirational mission of the built environment. Something about Predock's Canadian Museum for Human Rights serves as a reminder that, even as you seek to live out humane values far from the follies and fortunes that architecture requires, sometimes—however secularly, however awkwardly, however ambitiously—you also need a cathedral.

Design Development Phase
Curtainwall Diagram
The curving glass curtainwall that encloses the atrium and offices of the Canadian Museum for Human Rights was developed to help deflect wind patterns and lighten the lateral load on the structural members. An outer layer of single-pane glazing—which is fritted in some areas to mitigate glare—is the primary barrier against moisture intrusion. An interior layer of glazing is formed from insulated glass units with low-E coatings; operable windows at each level allow for ventilation. Intake dampers are located at the points on the façade where the planes of the glass structure overlap, and allow for hot air to be exhausted from the cavity between the glazing layers, and for cool air to flow in, regulating temperature and insulating the structure.

This Page: Gallery, circulation ramp at left



Alabaster-clad bridges linking galleries



Above: Observation deck platform

Opposite: Winter garden atrium, with offices at right

Project Credits

Project: Canadian Museum for Human Rights, Winnipeg, Manitoba
Client: Canadian Museum for Human Rights
Design Architect: Antoine Predock Architect, Albuquerque, N.M. · Antoine Predock, FAIA, Jose Sanchez, AIA, Graham Hogan, AIA, Paul Fehlau, Karole Mazeika (project team)
Executive Architect: Architecture49 (formerly Smith Carter Architects & Engineers) · Jim Weselake, Scott Stirton, Grant Van Iderstine, Ron Martin (project team)
General Contractor: PCL Constructors Canada
Structural Consultants: Yolles, A CH2M Hill Co.; Crosier Kilgour & Associates
Mechanical Consultant: SMS Engineering; The Mitchell Partnership
Electrical Consultants: Mulvey & Banani International; MCW/AGE Power Consultants
Geotechnical Engineer: KGS Group
Interior Design: Antoine Predock Architect; Architecture49 (formerly Smith Carter Architects & Engineers)
Landscape Architect: Scatliff+Miller+Murray
Exhibit Design: Ralph Applebaum Associates
Museum Planning: Lord Cultural Resources
Size: 24,155 square meters (260,002 square feet)
Cost: $351 million Canadian ($296.9 million U.S.)

Sharon Fieldhouse
Clifton Forge, Va.
Design/BuildLab

TEXT BY JOHN CARY
PHOTOS BY JEFF GOLDBERG/ESTO

In 2008, nearly a decade after meeting as one-year Outreach Program students at the Rural Studio, Virginia Tech architecture graduate Keith Zawistowski, AIA, and his partner (and wife), Marie Zawistowski, returned to teach at his alma mater in Blacksburg, Va. There, the pair established their firm, OnSite, and started Design/BuildLab, a Rural Studio–inspired program for third-year architecture students.

From its earliest days, Design/BuildLab has focused its architectural energies on Clifton Forge, Va., an impoverished Appalachian rail town located about 70 miles northeast of campus. The town is one of several in Alleghany County where Marie, Keith, and their students have found a warm local reception, critical backing from a visionary community foundation, and substantial need for design services.

The resulting projects in Clifton Forge—a farmers market, an amphitheater, and a pedestrian bridge—grew from needs identified by the community. Each project is distinct—a new group of students design and build them every year. And while the professors are often credited with the award-winning work, "these are the students' projects," Keith says. "We just try to help our students do them as well as they can."

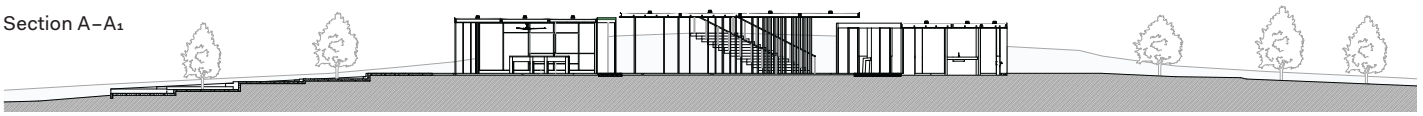
"This group of students was our first group of minimalists," says Marie of their 2013–2014 class, which begins to explain Design/BuildLab's latest project, an elegant fieldhouse for a little league baseball diamond.

Vertical, solid-steel studs, painted white, line the perimeter of the fieldhouse, while leaving it open to the air and to views of the adjacent baseball diamond. Three pavilions hold a concession kitchen, restrooms and storage for equipment, as well as a covered picnic area with tables designed by the students and crafted from leftover steel, respectively. A locally sawed white oak ceiling warms all three from within. "As clean and refined as everything is, it's all still handmade," Keith says. "The concrete work is wavy and imperfect, as are many of the welds."

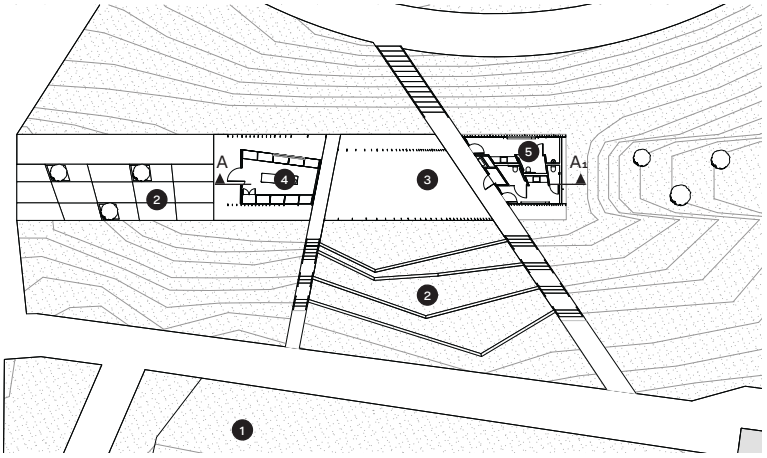
Student Forrest Bibeau—now in his fourth year of Virginia Tech's five-year B.Arch. program—recalls a solo trip that he made to the fieldhouse shortly after its grand opening last August, when a local resident relayed the resoundingly positive community response to the project. "That feedback reinforced for me that what we do matters beyond just us as a studio," he says.

"The real lesson for our students is that they have to pour themselves into these projects," Marie says. "But then, they give it to a group of people and walk away. It reinforces my belief that architecture is a selfless act."

Section A–A₁



Floor Plan



1. Baseball field
2. Terraced seating
3. Dining area
4. Concessions
5. Bathrooms

0 16 32 N

Concessions pavilion, at right, and central pavilion

Bathroom pavilion interior

View from the northwest

Project Credits
Project: Sharon Fieldhouse, Clifton Forge, Va.
Client: Clifton Forge Little League
Architect: Design/BuildLab, Virginia Tech School of Architecture + Design, Blacksburg, Va. · Marie Zawistowski, Keith Zawistowski, AIA (professors of practice); Landon Williams, Molly Vaughan, Mitchell August, Ryan Myers, Julia Vasquez, Xiao Fu, Ellie Burns, Forrest Bibeau, Mykayla Fernandes, Kellen McGinley, John Iaconis, Chanel Carter-Harris, Barbara Dior Kane, Nancy Redenius, Tom Powers (student team)
Structural Engineer: Setareh Structural Engineering
Steel Fabrication Instructors: Jeffrey Snider, Matthew Tolbert
Civil Engineering: Virginia Tech Land Development Design Initiative · Randy Dymond, Kevin Young (professors); Charles McKeever (student)
Surveying: Vess Surveying
Size: 2,000 square feet
Cost: $120,000

Materials and Sources
Airflow: Big Ass Fans
Ceilings: Union Church Millworks
Electrical: State Electric
Exterior Wall Systems: James Hardie; Huber
Glass: AGC Glass
Hardware: C.R. Laurence; Stafford Nut & Bolt; Simpson Strong-Tie; Sugatsune
Landscape: Lavery Sod Farm; Cooke's Gardens; Boxley Materials
Lighting: SuperBightLED
Paints and Coatings: Sherwin Williams; Waterlox
Plumbing and Water System: Zurn; Bradley; Blanco; Sloan; Dornbracht; Haws; Ferguson
Roofing: Hydro-Stop
Structural System: BMG Metals; ConRock & Amanda's Redimix; Weyerhaeuser
Windows, Curtainwalls, and Doors: Trimble; Marvin Windows & Doors

United States Courthouse
Salt Lake City
Thomas Phifer and Partners

INTERVIEW BY JOHN MORRIS DIXON, FAIA
PHOTOS BY SCOTT FRANCES / OTTO


United States Courthouse

Despite the fact that the Salt Lake City courthouse was just completed this past August, it was your first commission after starting your firm in New York in 1997. Why did this one take so long?

Thomas Phifer, AIA: We were invited to participate in a competition back in 1997, but not for the final site that we ended up with. The original program was an addition to the existing courts and it evolved into a new building. In the end, the site grew to include the entire city block behind the historic Moss courthouse.

It had to do, in part, with security after 9/11. But it also gave us more freedom in planning. And the delay was active waiting: It allowed us to learn from the other work that we were doing along the way. Being in practice is like being on a journey. The more we began to learn about light, and simplicity, and detail, the more this building began to develop. If we'd done it back in 1998, it would have been dramatically different.

The expanded site gave you far more to work with.

Salt Lake City has extremely large blocks and exceptionally broad streets. If you pair that with the 50-foot security setback, we were able to have our building in a public garden with trees and plantings.

You have talked about the expression of justice in our society through the purity of light. How do you explore that here?

We tried to express a sense of enlightenment: justice transparent, a spirit of openness and accessibility. We tried to achieve that through the building's skin, or veil.

And not veiled in the sense of hiding something, but veiled in the sense of diffusing light.

Diffusing the light, but also thin, to allow the building to participate in its context. We wanted the metaphor to be transparency to what's happening inside.

But if the light changes, the transparency changes.

The light and the transparency continually change. As the sun moves around the anodized aluminum louvers, the façade goes from white to silver, transparent to opaque. The building transforms itself.

It's interesting that this veil is an identifying characteristic of the building, and yet it varies not only with the direction, but also with what's behind it.

We wanted to take this cubic form, this noble, upright, monumental form that has little expression, and to honor the material. We looked at Donald Judd's aluminum boxes and the simplicity of the volume. It allows the light and the material to be used to its greatest effect. We also loved the screws that attached the plates together. There was a certain honesty in how this was made in a very minimal way. It inspired us to expose the tectonics of the building, to take this simple veil and attach it beautifully to the glass façade and show all of the bolts.

I can't think of any precedent for enveloping a volume of this size in an aluminum veil.

It took us quite some time to trust that it would work, because this was a very thin, very taut expression. We thought, "Why not let the veil speak in a language to allow you to understand how the building works and mediate between the justice system inside and the city?" So we began to vary the width of the louvers and build up a layered conversation that hopefully made the façade rich. There's no big architectural message through exuberant form, so the building turns out to be slightly mysterious in a way, for all its transparency.

The simple cube belies a highly complex configuration within, with three separate kinds of circulation: prisoners, judges, public.

The organization of the building came from a square plan with the public in the middle and the courtrooms in the corners to get daylight. That allowed for private spaces—holding cells, jury deliberation rooms, judges' elevators and corridors—between the courtrooms.

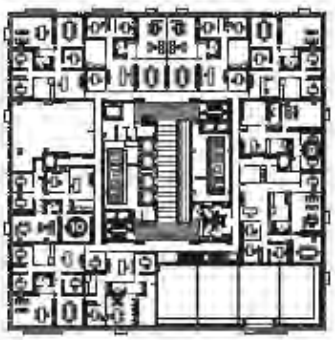
A person arriving from the street walks up the steps, and comes through the majesty of a three-story-high portal that seems even larger than it is because it is reflective, and into the lobby and then a skylit atrium in which James Carpenter did a spectacular installation that is about light coming down the middle of the building, where the elevator is. You go up, and you're in the public circulation, and finally you go to the wood-lined courtrooms. The sequence was important.

We had to separate the judges, the prisoners, and the public—three circulation systems without any hint of crossing. That difference is expressed in the veil. The wider louvers shield the most private places: the jury deliberation rooms, the judges' circulation, and the holding cells and prisoner circulation.

And yet, historically, a celebration of the justice system has been somewhat ostentatious. That's also been true of some of the current crop of courthouses.

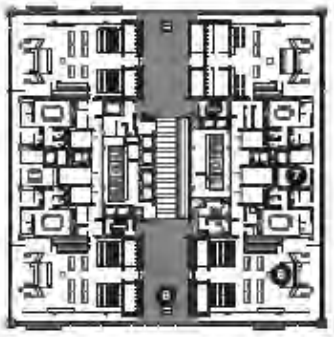
Well, for years, we borrowed from Thomas Jefferson and the columns of Monticello. We used that as a symbol of justice. We now have different values and a different understanding of justice. There's a wonderful voice that this building can speak with, this voice of luminosity, this voice of presence through light, and a spirit of using nothing more than what's needed.

Chambers Floor Plan

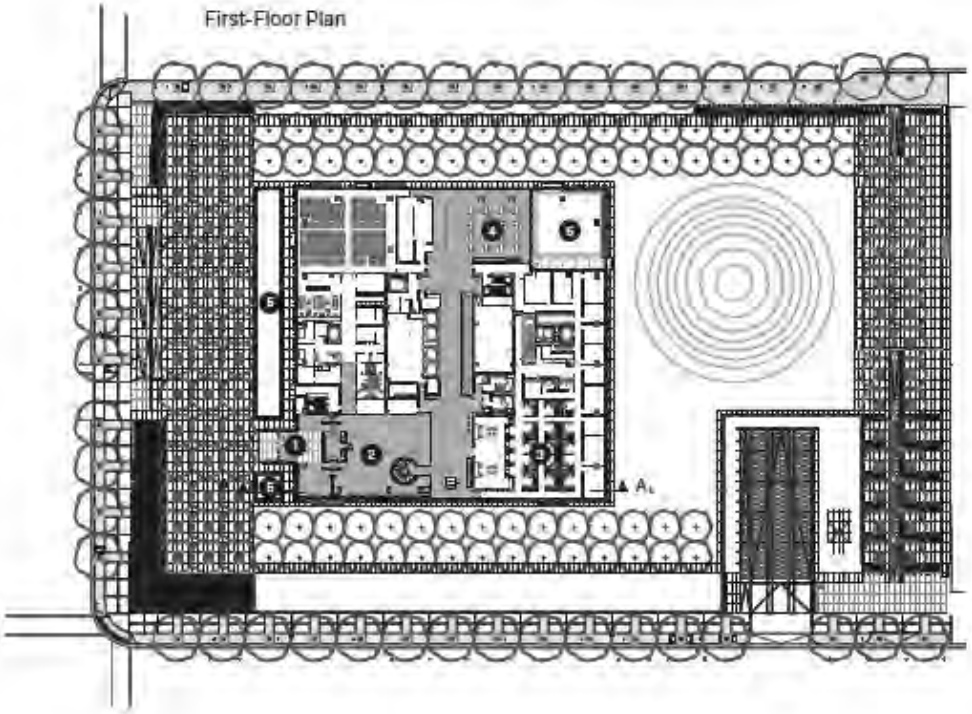


Section A–A$_1$

Typical Courtroom Floor Plan



First-Floor Plan



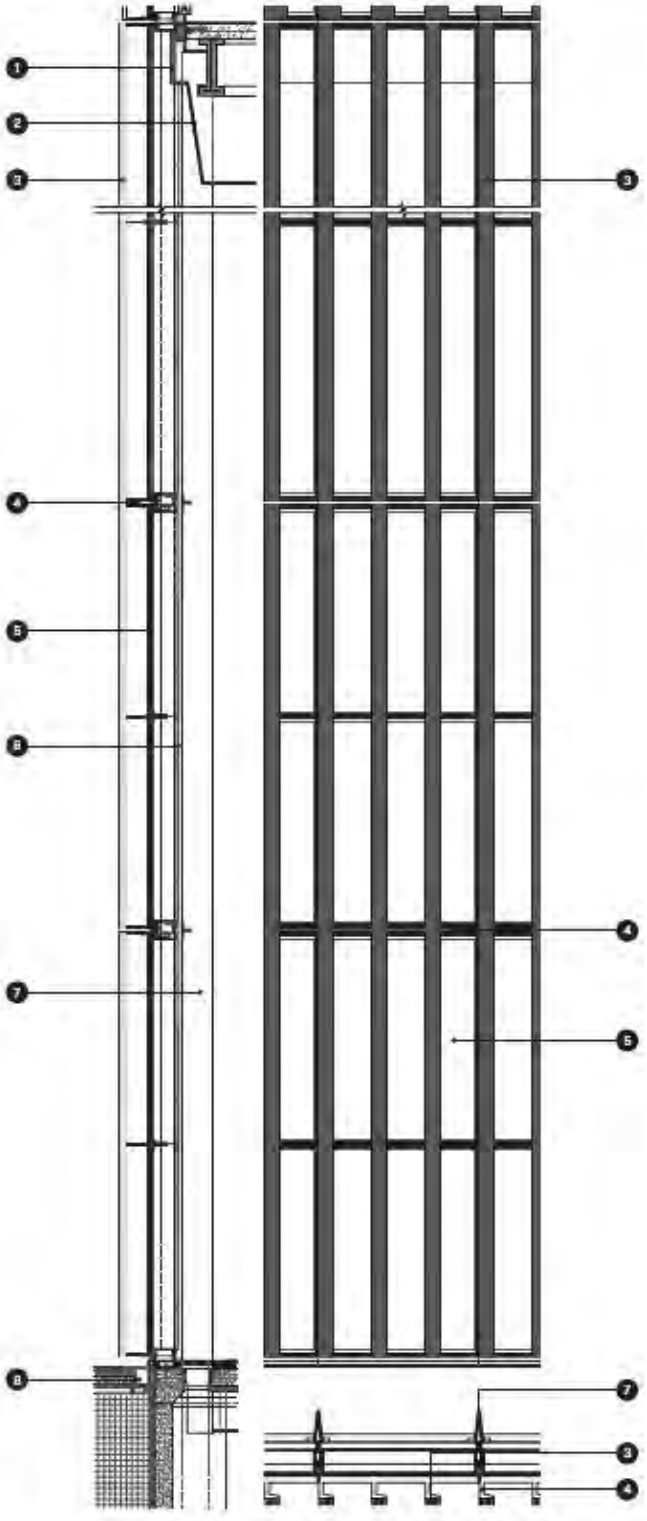
1. Public entrance
2. Lobby
3. Offices
4. Café
5. Reflecting pool
6. Courtroom
7. Meeting room
8. Waiting area
9. Chambers
10. Conference room

0 30 60

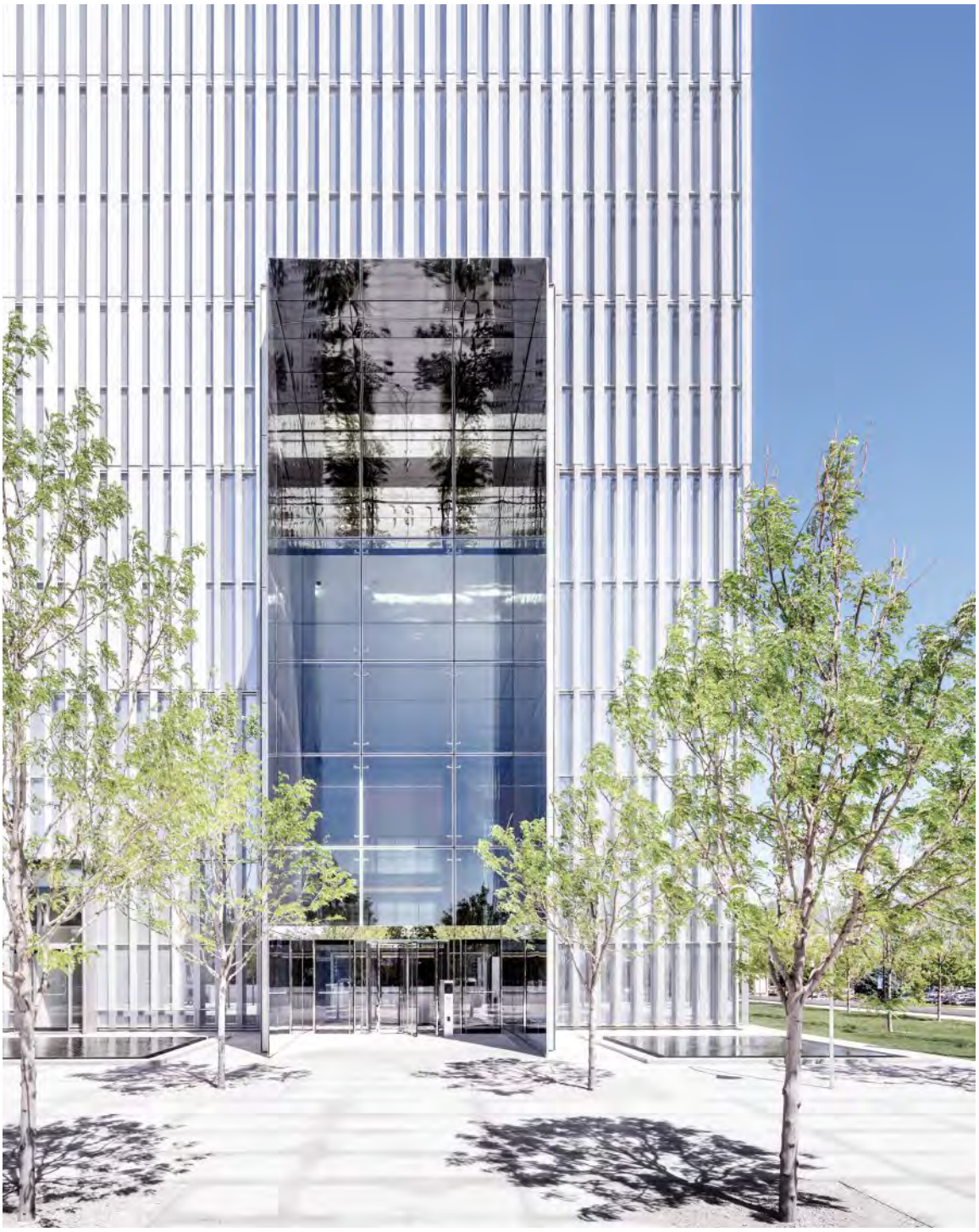
This view from the southeast shows the 1905 Frank E. Moss U.S. Courthouse in front of Phifer's new building. When determining the color for the aluminum louvers that sheath the new structure, the design team looked to the tone of the historic building for inspiration.

Opposite: A shallow reflecting pool at the southwest corner of the site sits next to the polished stainless steel canopy of the public entrance. Beyond, visitors get a close-up view of the custom extruded and perforated aluminum sunscreen louvers, which are set roughly 15 inches in front of the aluminum curtainwall for optimal shading and daylight penetration, and to accommodate window washing.

Façade Section, Elevation, and Plan



1. Extruded aluminum insulated fascia panel
2. Gypsum board fascia assembly
3. Extruded, perforated aluminum sunscreen
4. Custom aluminum support bracket
5. Insulating safety glass assembly
6. Aluminum curtainwall
7. Architecturally exposed structural steel curtainwall support structure
8. Custom stainless steel gutter assembly



Above: The public entrance at the southwest corner of the site is framed by projecting panels of polished stainless steel. Phifer used this treatment on all of the major openings in the building's aluminum veil. *Opposite:* A reflecting pool in the northwest corner of the building is located behind the glass and aluminum skin; a break in the façade opens the space to parkland beyond.

Opposite: The lobby is a triple-height, light-filled volume. A spiral staircase, clad in wooden slats, provides circulation for those who do not want to wait for the elevators at the core of the building. *Top:* In the public elevator lobby on a typical floor hangs an installation by James Carpenter (at left). *Above:* The wood-paneled courtrooms are positioned in the corners of the building.

Right: A roof terrace is sheltered behind the glass and aluminum curtainwall, but portals lined in polished stainless steel offer views of the distant mountains.

Project Credits
Project: United States Courthouse, Salt Lake City
Client: U.S. General Services Administration
Architect: Thomas Phifer and Partners, New York · Thomas Phifer, AIA (managing partner); Stephen Dayton, AIA (project partner); Mitch Crowder, Ina Ko, Katie Bennett, Robert Chan, Rebecca Garnett, Andrew Mazor, Jon Benner, Chien Ho Hsu (project team)
Executive Architect: Naylor Wentworth Lund Architects, Salt Lake City · Ross Wentworth AIA (principal); Sergey Akhpatelov, AIA (project partner); Steve Squires, Scott Smith, Erin Youngberg, Richard Judkins, Tyler Young, Barbara Fowler, Melissa van Schelt
Landscape Architect: E. A. Lyman Landscape Architects
Civil Engineer: McNeil Engineering
Mechanical Engineer: Van Boerum & Frank Associates
Structural Engineering: Reaveley Engineers + Associates
Blast Engineering: Weidlinger Associates
Electrical Engineering: BNA Consulting Engineers
Lighting Design: Fisher Marantz Stone
Building Enclosure/Artwork: James Carpenter Design Associates
Acoustics: Arup
Graphics: Piscatello Design Centre
LEED Consultant: CRSA Architecture
Elevators: Lerch Bates Associates
Pool Design: Water Design
Cost Estimating: Parametrix
General Contractor: Okland Construction
Size: 400,000 square feet
Cost: Withheld

Konzerthaus Blaibach
Blaibach, Germany
Peter Haimerl Architektur

TEXT BY KATIE GERFEN
PHOTOS BY EDWARD BEIERLE

Blaibach is a village in the German state of Bavaria, near the border with the Czech Republic. Like other communities in the region, it faces a declining population and an increasingly vacant town center as people leave the area for the lure of larger and more modern cities. Enter a government revitalization program, and Munich-based architect Peter Haimerl, who has remade Blaibach into a cultural magnet with a new concert hall that, at 200 seats, can hold fully one-tenth of the town's population.

But visitors looking for the concert hall might have to look twice: For fear of overwhelming the village square, Haimerl placed the bulk of the building below grade, save for a tilted, cubic granite block (which contains the upper rows of seats) that projects from the ground plane. To that end, "the concert hall itself is a sculpture," Haimerl says. The architect selected a specific cut of rough granite to clad the volume because "the old houses in Blaibach were all built from this material," he says.

A concrete staircase on the exposed underside of the tilted block leads to a subterranean lobby, which features a bar, coat check, and restrooms beneath a wood ceiling plane. But the main event is the concert hall itself: an entirely concrete space that is acoustically fine-tuned for classical music.

"Concrete is the best material for good acoustics," Haimerl says. "What you need is a very hard surface, and a few areas where you dampen the sound. People are using wood, but it is not the best material because it is not stiff." The concrete here is a lightweight mix with recycled glass aggregate that results in a rough textured surface—"like paper," the architect says.

Haimerl's team worked with acousticians to determine the ideal shape to best modulate sound, which resulted in a pleated ceiling and walls. Working with an automotive fabrication team to execute the delicate formwork, Haimerl oversaw the process to pour the concrete in place, with tubing for radiant heating, LED light fixtures, and other utilities embedded directly within. At their deepest point, Haimerl says, the walls measure 60 centimeters thick, and at the most delicate edges of the pleats, the concrete is as thin as 5 centimeters. Another set of tubes in the concrete help to modulate the bass tones, resulting in a balanced acoustic experience.

"I wanted to show that classical music doesn't have to be shown in a heavy, textile-filled environment," Haimerl says. And so far, the public seems to be responding enthusiastically to his alternative aesthetic. The architect has also designed a community center and renovated a farmhouse house in Blaibach, and the performances in the new concert hall have all sold out.

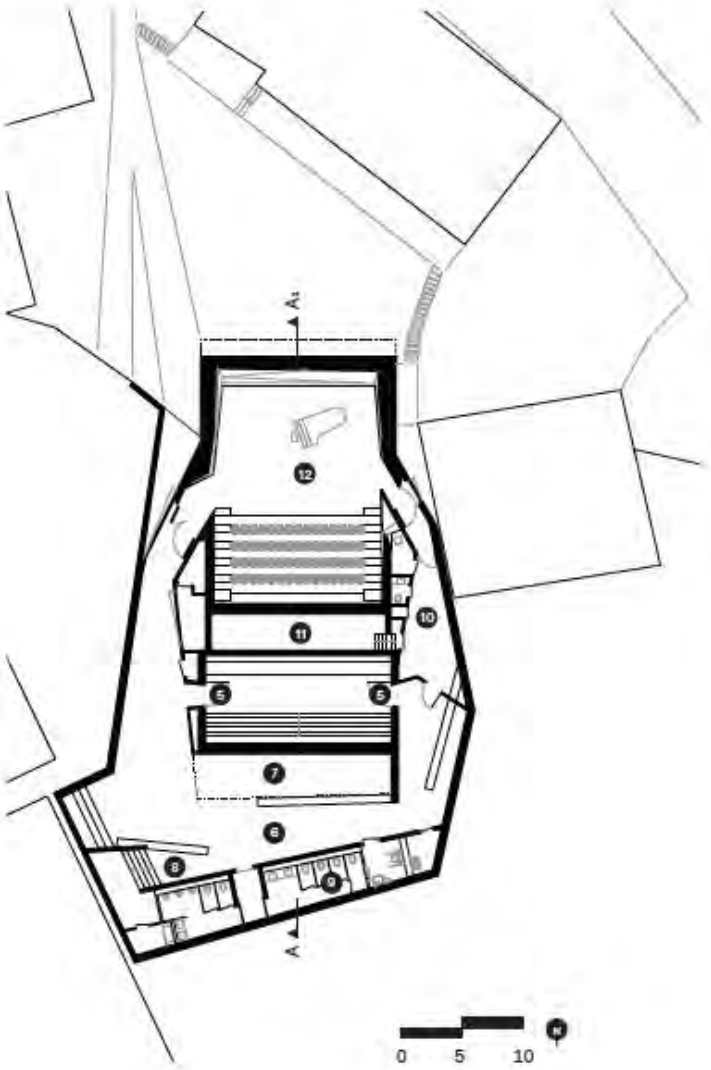
Site Plan

1. Community Center
2. Concert Hall
3. Waidlerhaus
4. Stadl Waidlerhaus

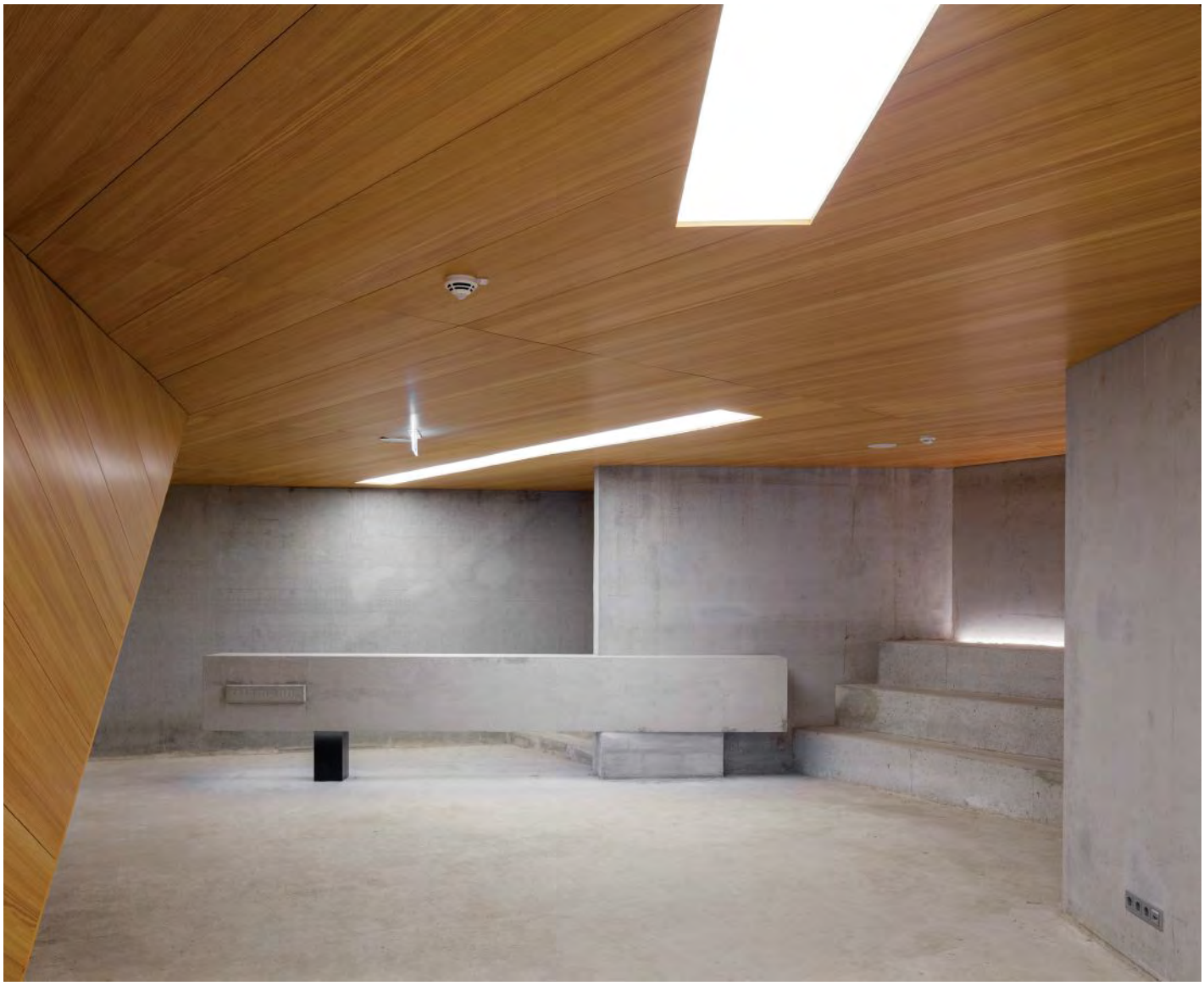
5. Entrance
6. Lobby
7. Coat check
8. Bar
9. Bathroom
10. Green room
11. Technical space
12. Theater

Section A-A1

Floor Plan



Concert hall auditorium



Above: Lobby bar

Opposite: Auditorium seating

Project Credits

Project: Konzerthaus Blaibach, Blaibach, Germany
Operator: Thomas Bauer, Uta Hielscher
Architect: Peter Haimerl Architektur, Munich, Germany · Peter Haimerl, Karl Landgraf, Ulrich Pape, Felicia Michael, Tomo Ichikawa, Jutta Görlich, Martin Kloos (project team)
Builder: Gemeinde Blaibach
Structural Engineer: A.K.A. Ingenieure · Thomas Beck
HVAC: Cirtec Michael Hopf
Electrical: Planungsbüro Stefan Schmid
Acoustical: Müller-BBM
Concrete and Concrete Formwork: Fleischmann & Zankl (façade); Gföllner, Fahrzeugbau und Containertechnik (interior)
Metal: Metallbau Gruber
Finance and Marketing: Euroboden Architekturkultur, Förderverein Konzerthaus Blaibach
Size: 560 square meters (6,027 square feet)
Cost: €1.6 million ($1.9 million)

Residential:
Marlboro Music: Five Cottages
Marlboro, Vt.
HGA

TEXT BY EDWARD KEEGAN, AIA
PHOTOS BY PAUL CROSBY

When *The New Yorker*'s music critic, Alex Ross, visited the Marlboro Music Festival in 2009, he wrote that it is "an enchanting place, but, in the end, there is nothing especially remarkable about it." He was writing, in part, about the environs—the modest farmhouses that comprise Marlboro College in southern Vermont. The annual festival has been held there since 1951 and has acquired a near-mythic status among classical musicians for fostering talent with a seven-week residency. With the addition of five cottages crafted by design principal Joan Soranno, FAIA, of Minneapolis-based HGA, the place itself is now worth noting.

Each summer, 80 musicians spend time here in the foothills of the Green Mountains, with shared meals in the college cafeteria and an eclectic set of living arrangements: Junior musicians live in the college dorms while more senior musicians live in cabins and cottages both on and off campus. The festival leases the entire complex—as well as off-campus homes—for the duration, and it's only with this new construction that the Philadelphia-based group owns facilities on site.

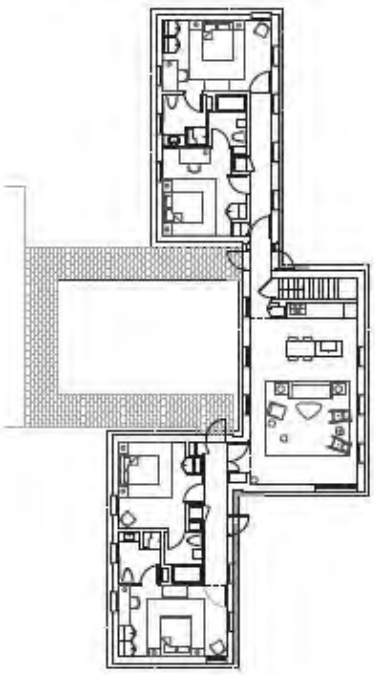
Rural zoning on the 15-acre property allowed for only five cottages. Soranno, along with project architect John Cook, FAIA, chose to tread lightly on the land, using an existing logging road through the property for access and organization. The landscape was designed with an eye toward sustaining native species.

The cottages play on the 400-year-old Cape Cod typology, which features low sidewalls (a mere 7 feet tall) and steeply raked roofs. "We decided to use those classic proportions," Soranno says, "but put a contemporary spin on the interiors and detailing." There are three distinct configurations at Marlboro: one 1,445-square-foot cottage with two bedrooms, three 1,620-square-foot with three bedrooms, and one 2,335-square-foot with four-bedrooms. The last is shared dormitory-style by several musicians while the others are for individual musicians and their families.

A simple palette of local materials—stained cedar cladding, white pine interior walls and ceilings, and slate floors—is rendered in natural finishes and with an almost compulsive lack of detail. Window and door casings—in fact, all trim—are verboten. And while the presences of chimneys is a nod to the vernacular, they don't connect to fireplaces—instead, they conceal plumbing vents and boiler stacks.

"There's a modest spirit about Marlboro," Soranno says. "Nothing is flashy or showy." Her team has met that standard with the cottages—a grace note that elevates, but doesn't distract from, the campus.

Four-Bedroom Floor Plan



Three-Bedroom Floor Plan

Two-Bedroom Floor Plan

0 5 10

The plans have no north arrow because the cottages' orientations vary around the site.

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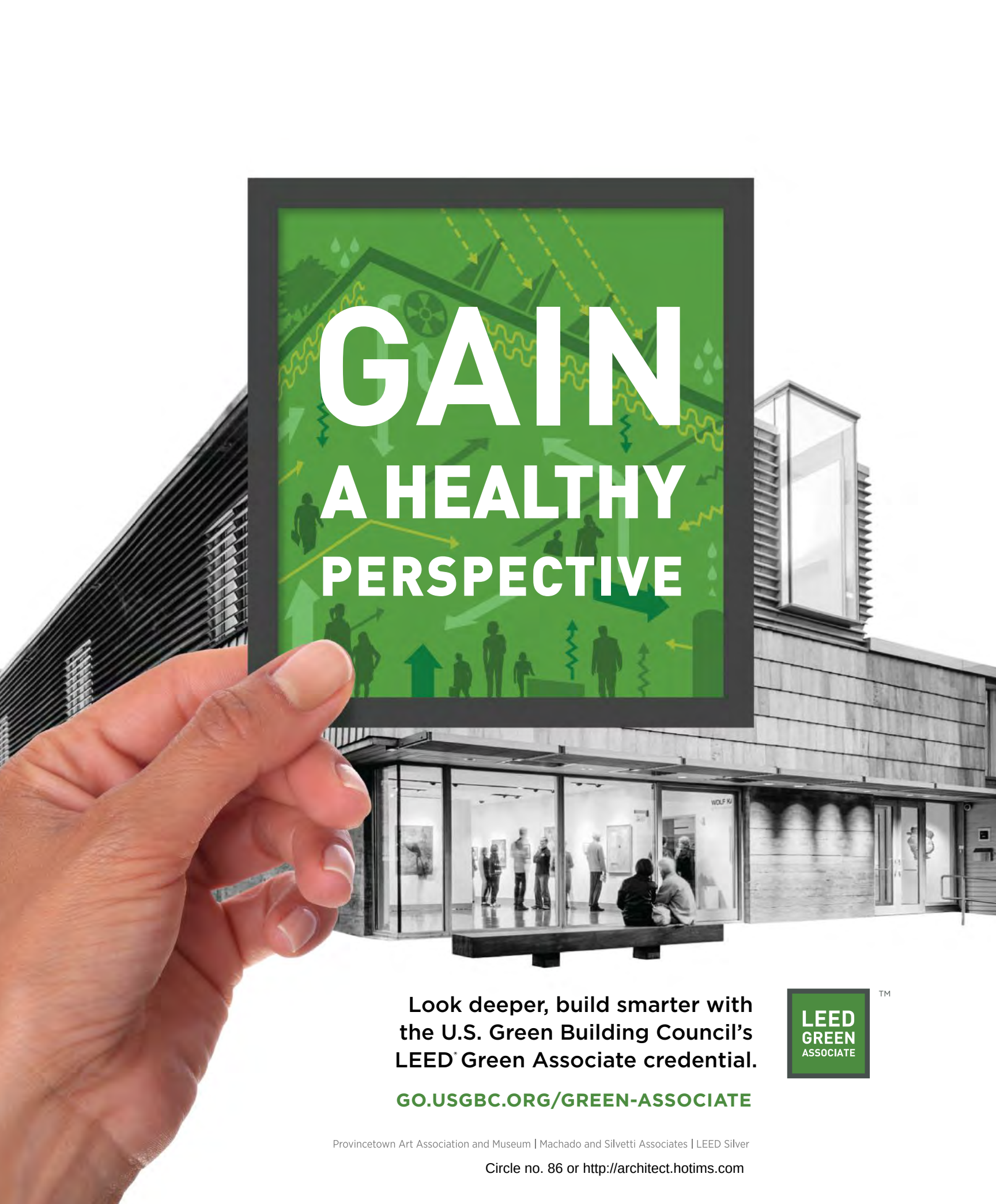
Above Left: Each cabin is clad in stained cedar siding, and topped with a pitched roof lined in shingles, in the Heathermoor colorway, from Vermont Structural Slate Co. The roofs end in a knife-edge zinc detail and feature copper snow cleats from Salvo Metalworks. *Above Right:* In the bedrooms, the forested site is visible through windows from Marvin Windows and Doors. The simple furnishings include beds from Design Within Reach and dressers from Arbet Design.

All of the cottages feature Vermont Structural Slate Co. floor tiles and local white pine paneling. Radiant subflooring from Warmboard offsets Vermont's harsh winter temperatures.



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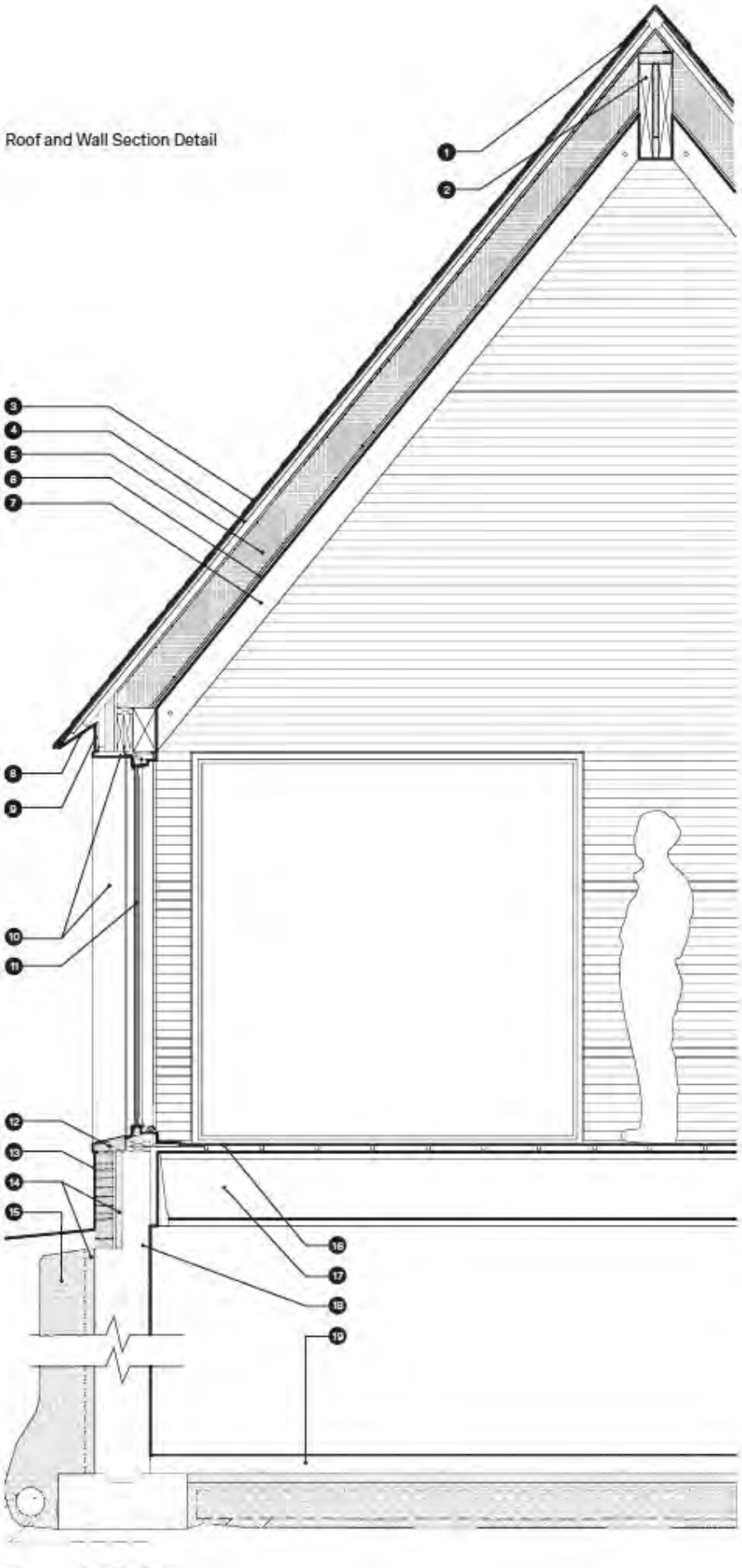
Roof and Wall Section Detail



Project Credits
Project: Marlboro Music: Five Cottages, Marlboro, Vt.
Client: Marlboro Music
Architect: HGA, Minneapolis - Dan Avchen, FAIA (principal-in-charge); Joan M. Soranno, FAIA (design principal); John Cook, FAIA (project manager/project architect); Doug Gerlach, AIA (project designer); Rich Bonnin, Ariane Laxo (interior designers)
Mechanical/Electrical/Structural Engineer/ Lighting Designer: HGA
Civil Engineer/Landscape Architect: CHA
General Contractor: Courtlan Construction
Size: 11,477 gross square feet (for all five cottages)
Cost: $3,026,301

Materials and Sources
Appliances: Sub-Zero; Kitchen Aid; Miele; Whirlpool
Bathroom Fixtures: Kohler; Hansgrohe
Flooring: Vermont Structural Slate Co.
HVAC: Warmboard Radiant Subfloor
Kitchen Fixtures: Hansgrohe; Mockett; Blanco
Lighting: Flos; Winona Lighting; Stonco; Bega; USAI; Haworth; Blu-Dot; Artemide; Tom Rossau
Metal: Rheinzink
Windows: Marvin Windows and Doors

1. Slate ridge vent cap
2. Heavy timber and steel flitch beam
3. Slate roof shingles
4. Wood sheathing
5. Structural insulated panel system
6. White pine interior sheathing
7. 3"-by-6" heavy timber rafter
8. Zinc sheet metal eave
9. Wood siding
10. Zinc sheet metal head and jambs
11. Casement window
12. Cut-stone cap
13. Split-faced stone veneer
14. Rigid insulation
15. Crushed aggregate
16. Slate flooring
17. Engineered joist
18. Cast-in-place concrete foundation wall
19. Cast-in-place concrete slab

0 1 2

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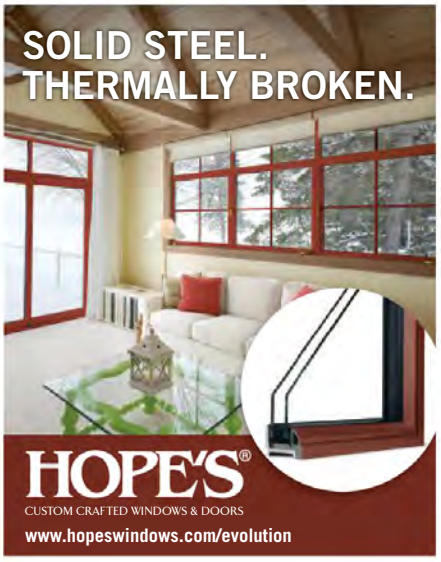

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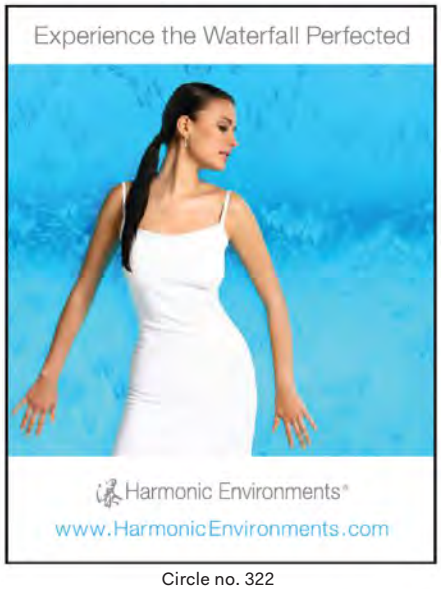

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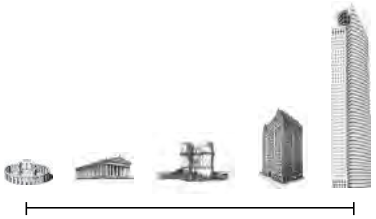

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Product submissions must include the following materials:

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2. Hardcopy printout of product information including product press releases and technical spec sheets that describe the product in detail. (Do not send full catalogs.)
3. If you are submitting in the 'Apps' category, please provide URL link to page in the iTunes® store.
4. Hardcopy color printout of the digital image(s) being included as part of the submission. Images can include the product image and/or the product in an installation/application setting. Include the submitter's name, address, phone number, and email address on all printouts.
5. CD or USB drive with all of the entry materials—product literature (text materials in PDF or Word format) and images in correct file format (see Artwork Submission Requirements below). Please note, if the entry materials are being sent electronically, please coordinate with the editor for file transfer instructions via Dropbox. Hardcopy of all materials must be sent, regardless.

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All artwork must be 300 dpi, and at least 4" x 6" or the closest approximation. Appropriate file types are JPEG, TIFF, EPS, or PSD. There should be no text on the images. Please label the digital image files using the following format: Manufacturer_Product Name.

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Editorial: The Once and Future Journal

It hardly seems right to call ARCHITECT a magazine anymore, given how dramatically the media landscape has shifted since our debut in 2006. With eyeballs migrating en masse from print to Web to mobile, our staff now spends so much time on digital production that the editorial rhythm is no longer measured in months, but in minutes. I'm proud to report that we've just won top honors for Best Overall Use of Social Media and Best Use of Twitter in 2014 from media-industry magazine *Folio*. And in keeping with the new media mantra, "disrupt or die," our website will soon relaunch with a smartphone-friendly design.

So much has changed, in fact, that we felt the need to reboot the ARCHITECT brand. The new look and feel of this January 2015 issue is one outcome. However, it seemed counterproductive for a print product to mimic Silicon Valley. Rather than amp things up, à la *Wired*, we determined to slow down and embrace the inherently static nature of ink on paper.

Our art director Robb Ogle, in consultation with designer Gillian Goodman, made it his goal to rid the page of optic interference, to let the text, drawings, and photos speak for themselves. The white space is plentiful, the grid system rigorous, and the typography self-effacing. (For my fellow font-geeks, the sans is Thomas Thiemich's suitably named Fakt, and the serif is František Štorm's revival of good old Baskerville.)

Building on feedback from focus groups, surveys, and informal conversations, the publication is now divided into four parts, each with its own purpose and identity. There's an entry sequence of design images, offered up like appetizers at the start of a fine meal; a meaty technology and business section, where peers share best practices; a group of long-format reports and essays to stimulate architectural discourse; and, for the finale, a collection of richly illustrated building features. As a bonus, there are the insights in AIArchitect, produced by our partners at 1735 New York Avenue.

The takeaway, we hope, is an ARCHITECT that excites and challenges you, that reminds you of why you became an architect in the first place, and that earns a lasting place in your hearts, minds, and libraries. Periodicals no longer make sense if they're intended as ephemera, tossed out after a quick once-over. We mean for every issue of ARCHITECT to have enduring value.

Highlighting the transformation, we no longer refer to ourselves as the "AIA Magazine." Now we are the "Journal of the American Institute of Architects."

This difference in taglines is more than semantic. The small print on our table of contents (page 4) labels this issue as "Volume 104, number 1." Since each volume represents a year, and ARCHITECT is less than a decade old, why "104"?

A few weeks before the launch, you may remember, our publisher Hanley Wood bought *Architecture* from a rival company. And if you trace the genealogy of ownership back through each and every title change, you'll wind up at the AIA headquarters, circa 1913. That's when this selfsame publication got its start—as the *Journal of the American Institute of Architects*. I can think of no better foundation upon which to build the future of architectural journalism.

STEPHEN VOSS

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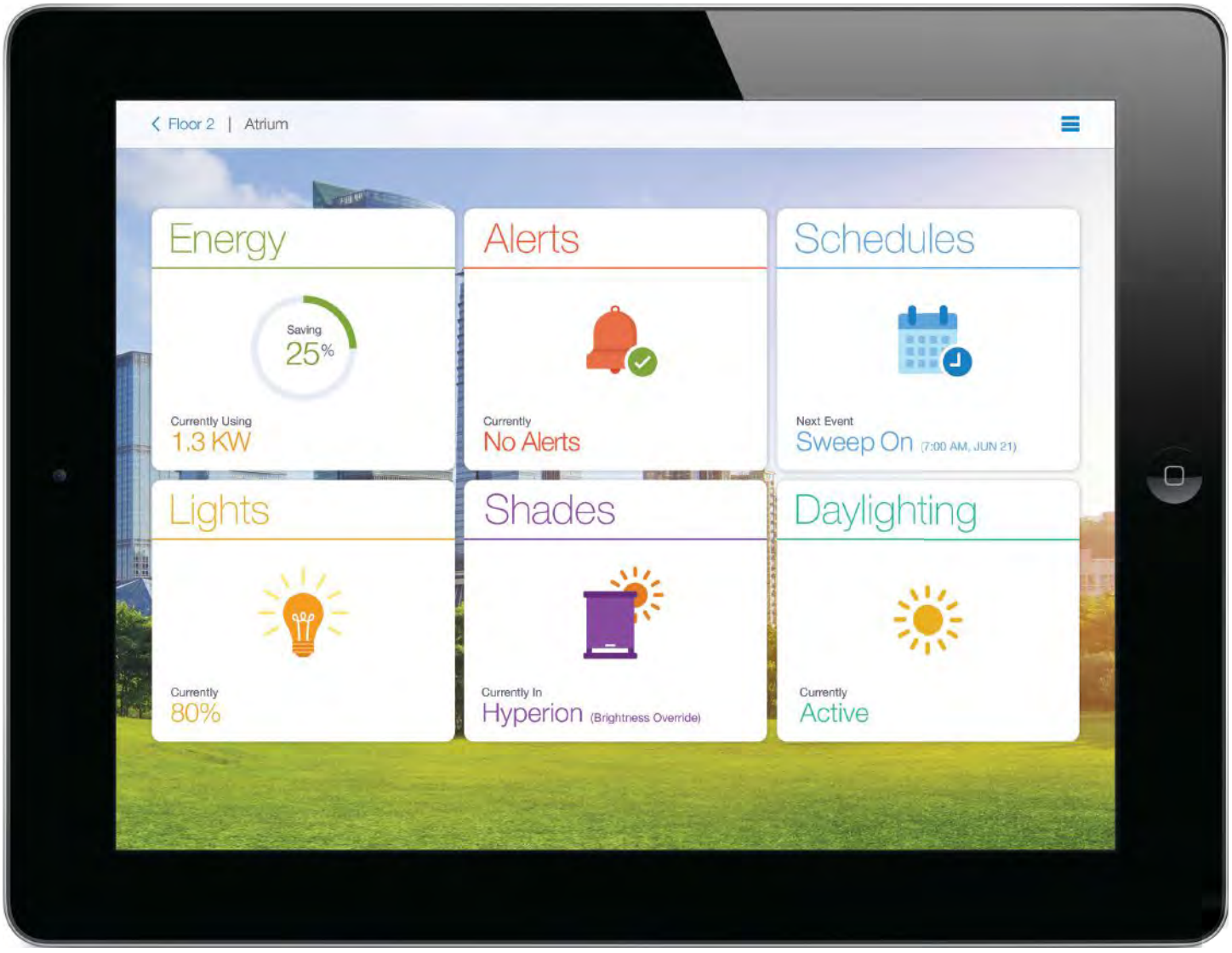

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