

Wang Shu and Lu Wenyu
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HBRA Architects

Public Space in the Age of Trump
Time to Hire a CFO?
What If They Had Built That?
The Three Louis Kahns

architectmagazine.com
The Journal of the American
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The Sacred & the Secular

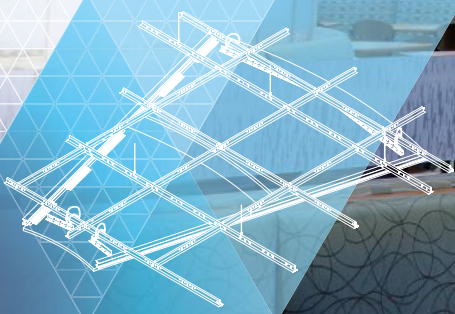
LEFT Architects designs a mosque
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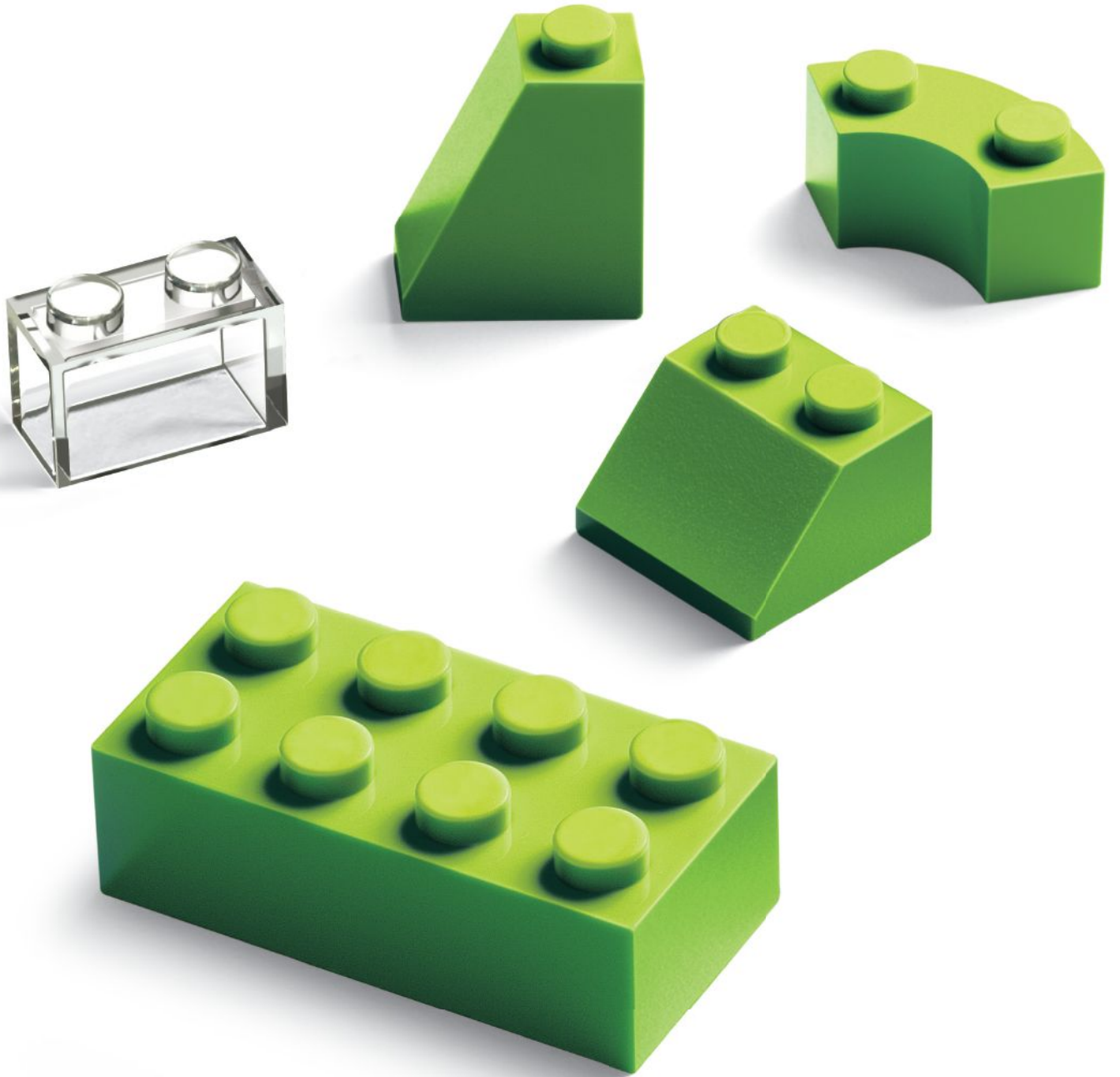
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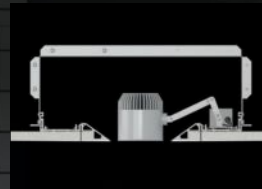
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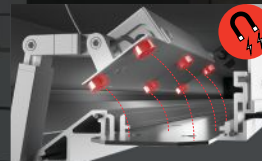
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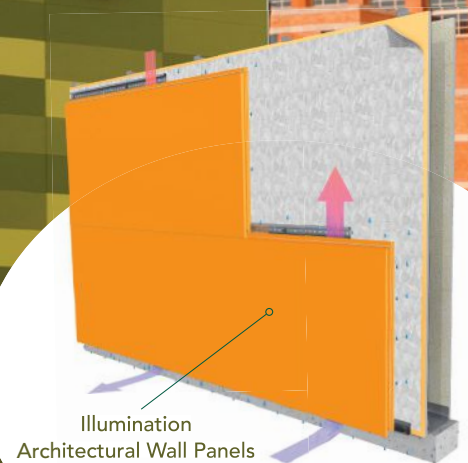
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Architect: Kohn Pedersen Fox
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Perfect Ten

With a multi-faceted curtain wall meticulously crafted of ultra-clear Pilkington Planar glass, **10 Hudson Yards** has become a beacon of new life on Manhattan's West Side. Designed by **Kohn Pedersen Fox**, it is the first of 16 towers to be completed within the Hudson Yards Redevelopment Project—where collaboration between New York's design and construction leaders is adding a new dimension to the city skyline. Read more about it in **Metals in Construction** online.

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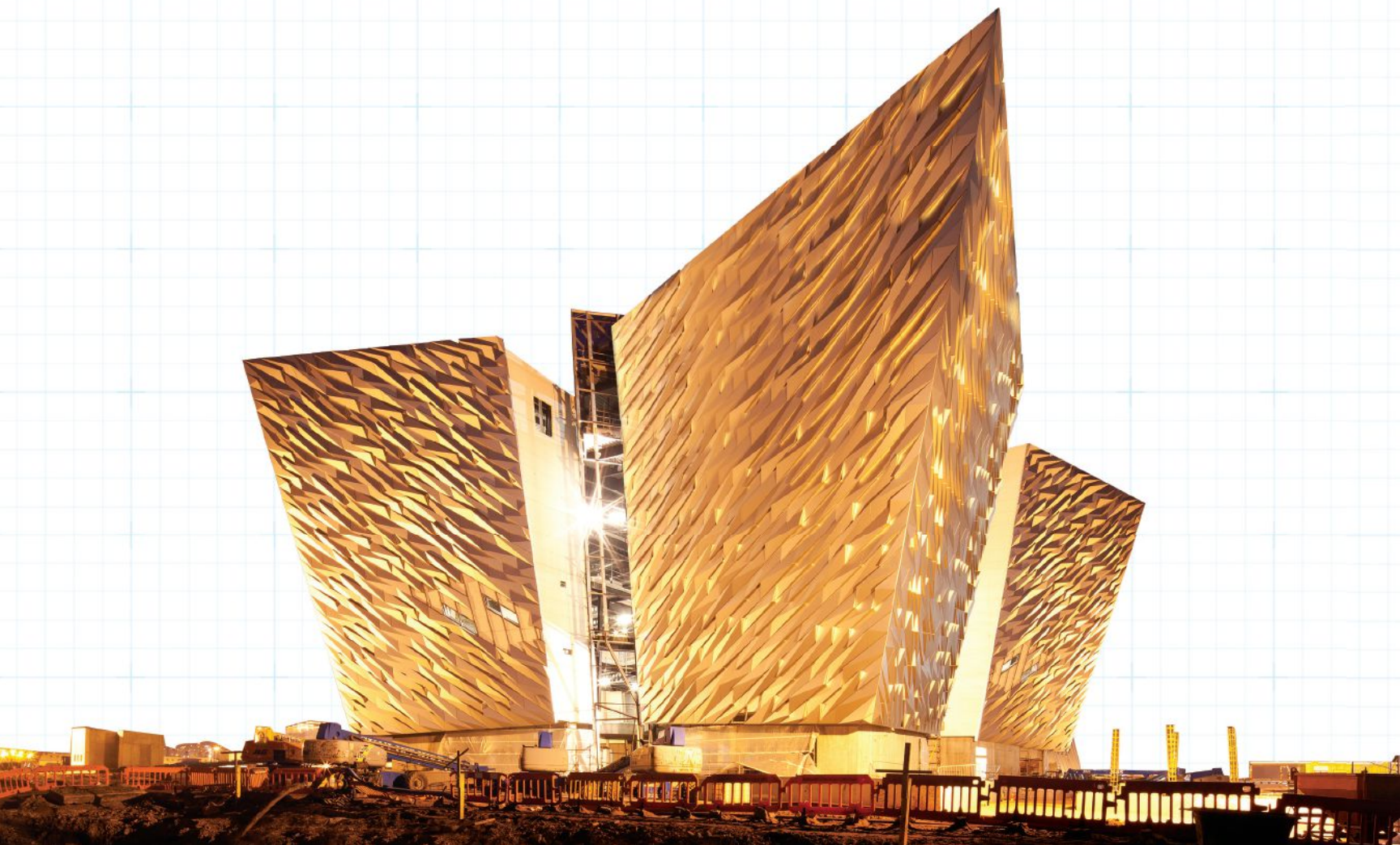
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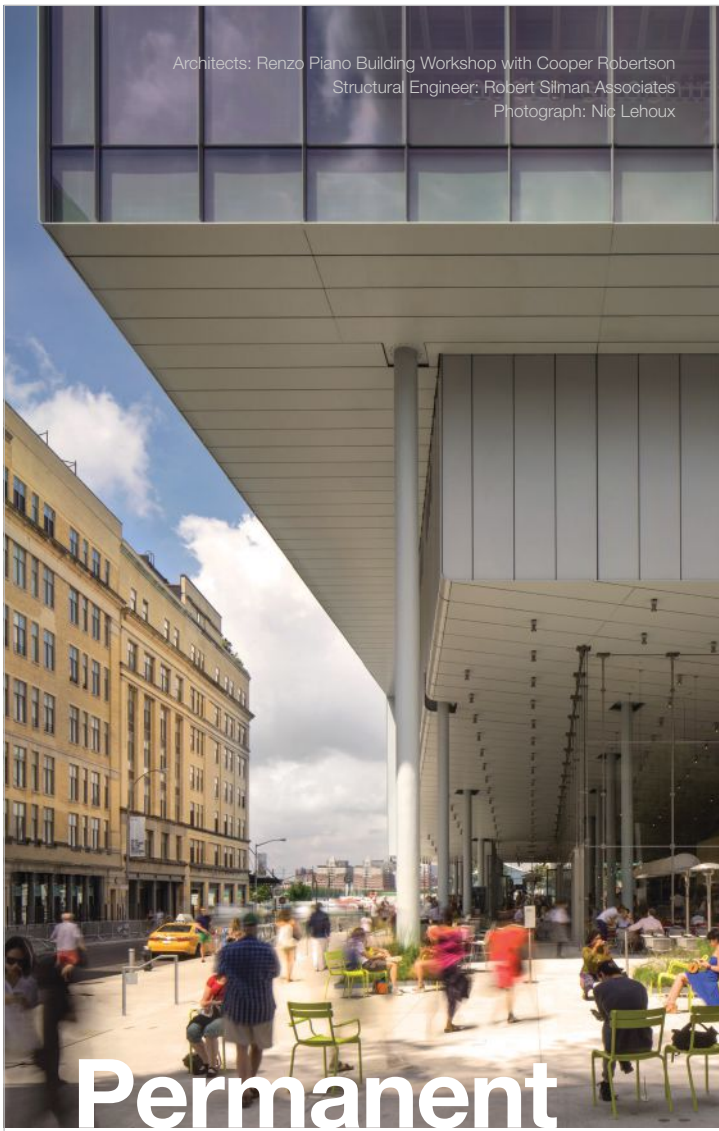
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Architects: Renzo Piano Building Workshop with Cooper Robertson
Structural Engineer: Robert Silman Associates
Photograph: Nic Lehoux



Permanent Connection

Elevated above Gansevoort Street in Manhattan's Meatpacking District, the **Whitney Museum of American Art's** new home by **Renzo Piano Building Workshop** and **Cooper Robertson** creates a lasting connection with the city around it. Its steel structure taps into the High Line's energy on one side, while column-free galleries frame Hudson River views on another—ensuring that, whichever way they look, visitors get the big picture. Read more about it in **Metals in Construction** online.

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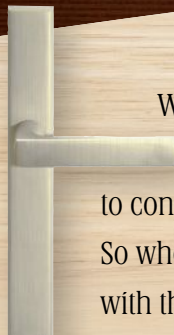
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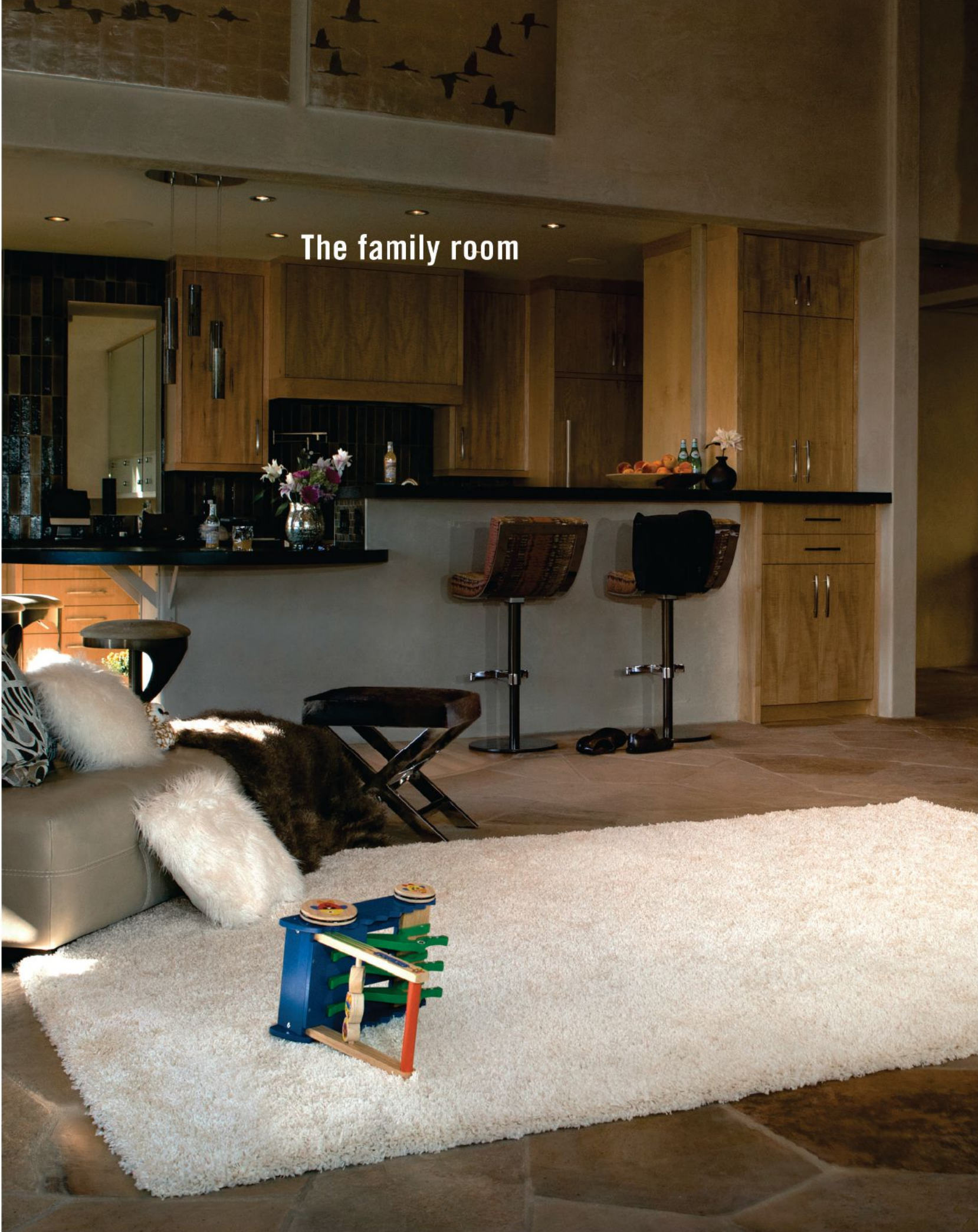
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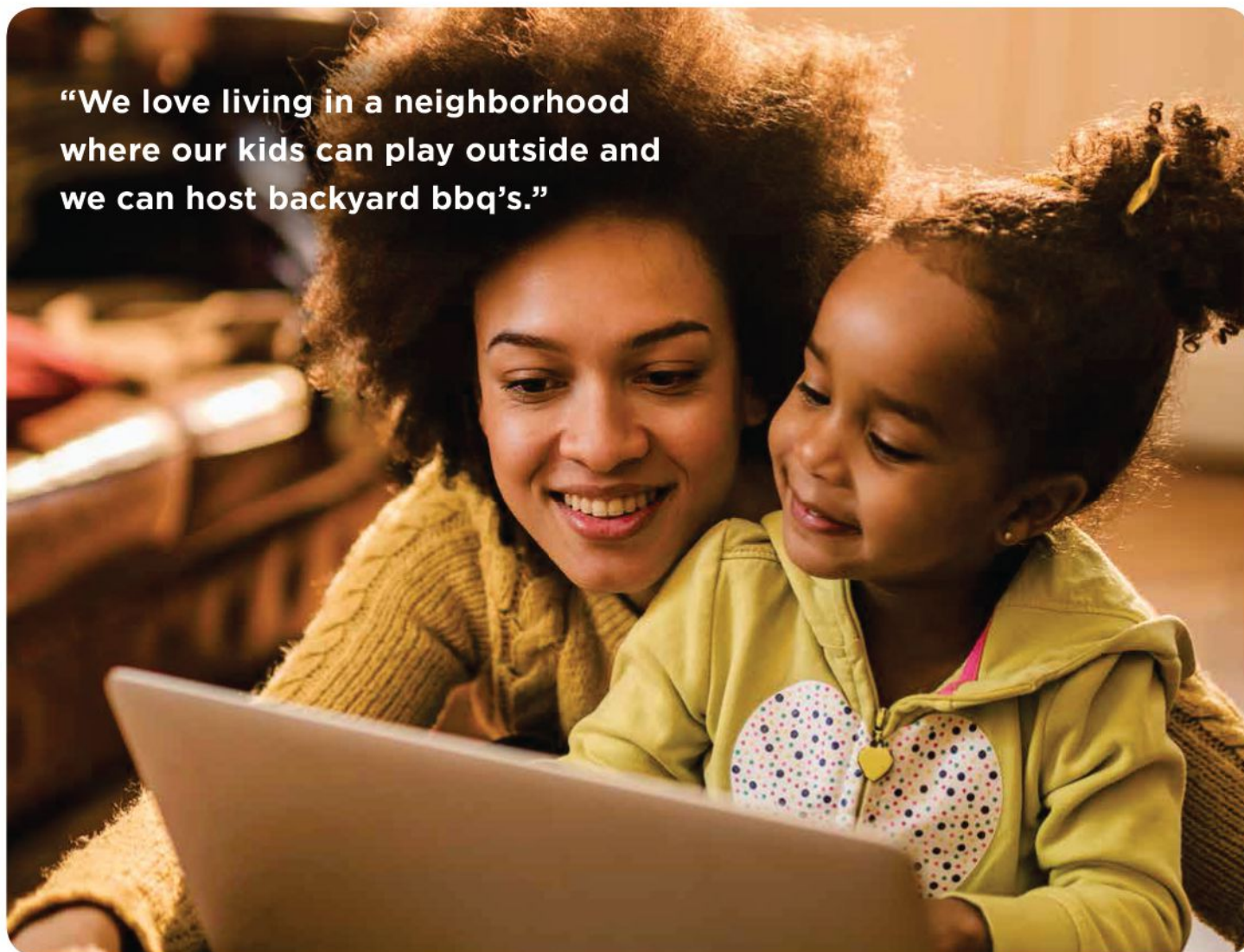
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Otto-Inspired and Now Permanent

Suspended in the atrium of the Orange County Convention Center—the host of this year's AIA Conference on Architecture—the new permanent installation *Under Magnitude*, created by New York-based studio Marc Fornes/Theverymany, disrupts the space with its aluminum yet seemingly organic form. Inspired by late German architect Frei Otto's membrane-like structures, the firm utilized its own "intensive curvature" technique for the porous all-white structure, a method that aims to maintain the maximum radii of an object while creating tighter curves in multiple directions. —SELIN ASHABOGLU

> To learn more about the design of *Under Magnitude*, visit bit.ly/UnderMagnitude.

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7/8-in. perforated corrugated panels overlay the graphic

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Setting the Scene

Inspired by Italian architect Aldo Rossi's 1978 *Teatrino Scientifico* (Little Scientific Theater, above) model, a new exhibition at the Graham Foundation explores the connection between architectural collage and theatrical scenery. Ruth Estévez and Wonne Ickx, the curators for "Spaces Without Drama or Surface Is an Illusion, But So Is Depth" with Mexico City-based initiative LIGA, feature 23 exhibitors, including firms such as Johnston Marklee and MOS Architects, that present works of photography, drawing, painting, 3D modeling, and collage examining this relationship. The show runs through July 1. —KATHARINE KEANE

> Read more about the exhibition at bit.ly/SpacesWithoutDrama.

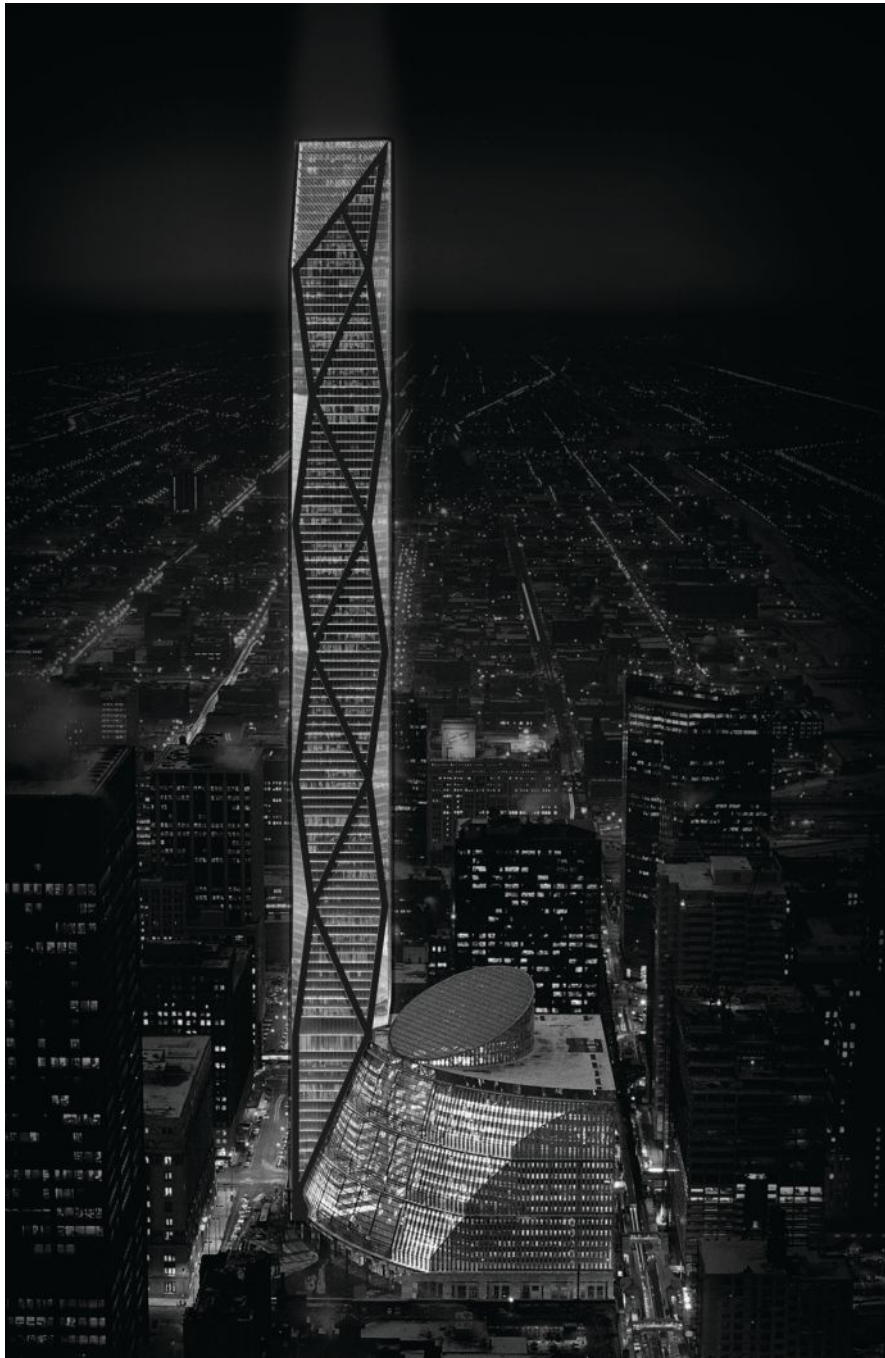


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Jahn's Proposal to Save His Thompson Center

After Illinois proposed a sale and demolition of the state-owned James R. Thompson Center in Chicago, the building's original architect, Helmut Jahn, FAIA, responded with a proposal to save it. Adrian Smith + Gordon Gill Architecture had proposed a few ideas to the state, one of which includes replacing the 1984 structure with a tower that would surpass the city's tallest building, the Willis Tower. Conversely, Jahn's plan calls for upgrading the building and adding a more modestly scaled 110-story residential and hospitality tower. With the state budget still in the works, multiple options are being considered. —VICTORIA CARODINE

> Read more about Jahn's Thompson Center proposal at bit.ly/JahnThompsonPlan.

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An Awkward Moment at Platz der Pope, Freedomland
 after a Plan of Vliet, circa 1890
 John George Vliet



Platz der Pope
 SE 1/4 SW 1/4 Section 4

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 40 Full Bathrooms
 20 Half Bathrooms

Public House, Masset, 5641 sq. ft., Brian



89

A New Land of the Free

Featuring more than 200 drawings across 272 pages, *Atlas of Another America* by Keith Krumwiede (Park Books, 2017) outlines a plan for Freedomland, “a 21st-century settlement scheme for the American nation.” In his detailed work of fiction, the author explores the future of the American single-family house amidst “the remains of the suburban metropolis,” and includes drawings of the settlement’s grid and 128 clusters of duplicated house plans he calls “neighborhood farm estates.” Platz der Pope (above), for example, includes 20 houses with a combined total of 72,820 square feet. —SARA JOHNSON

> See more plans for Freedomland at bit.ly/AtlasofAnotherAmerica.

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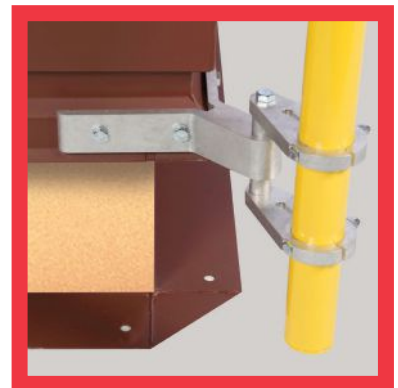
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Best Practices: When to Hire a Chief Financial Officer

TEXT BY NATE BERG

In the architecture and design profession, a chief financial officer (CFO) can seem like a outsider—a stiff, striped suit among a closet of black sweaters. But a CFO can be as important to a firm as its design principals. Financial advisers who work regularly with architecture and engineering firms say that a CFO can help a growing firm to succeed, and a successful firm to stay on top. Here's how to know when and why your firm needs one.

What a CFO Does

By studying the firm's finances, the CFO engages in the short- and long-term planning of everything from capital expenditure to market opportunities and building out strategic goal forecasts. The CFO knows where all the money is and, as both a financial adviser and business partner, decides how best to use it.

"A CFO is responsible for the financial reporting and the financial soundness of the firm," says Mark Goodale, principal of the Boston-based management consulting firm Morrissey Goodale.

Deciding When to Hire

There's no precise moment when a firm will absolutely need a CFO, but the decision often correlates with either the size of the firm or its revenue. Most small firms can probably get by with a bookkeeper, but as a firm grows in personnel and project and business volume, it will likely need a proper in-house accountant to handle the

payroll and billing. When financial needs expand to the point of requiring a whole staff, a CFO can be the leader needed to both manage your firm's money and think strategically about it.

Estimates range, but generally once a firm gets to be about 75 or 100 people, or brings in around \$25 million of revenue, a CFO would be beneficial. According to John Doehring, executive leader of advisory services and training at the financial firm PSMJ, in Newton, Mass., this is the threshold where firms should consider introducing someone "who can sit at the principal-level table, and not only help with the books, but also with strategy on building forecasts and growth."

Professional Experience

A good CFO can focus on the minutiae of financial reporting as well as on business growth and strategic development in the distant horizon. Most will be a certified public accountant, have an MBA, or both. But neither is necessary so long as the person has enough experience, according to Mary Anne McKernie, a financial staff recruiter at the management advisory firm Strogoff Consulting, in Mill Valley, Calif.

And while experience is important, McKernie suggests that architecture firms look for CFOs with specific experience in the professional services. "They don't have to be familiar with architecture, but they should understand how professional service firms work," she says.

Qualities to Look For

Architecture firms should try to find a CFO who understands that designers are typically more interested in design than in running a business. "You've got to find somebody with the financial and business acumen and the diplomacy and personality that's going to mesh and create value for the firm, and not [create] daily battles," Goodale says.

Because it's a C-level position, the CFO should be someone the firm can trust to guide the business—and keep

"Find somebody with the financial and business acumen and the ... diplomacy and personality that's going to mesh."

—Mark Goodale, principal, Morrissey Goodale

it safe. "It's one of the few jobs in a corporation where somebody can steal the money," Doehring says.

After operating for more than 50 years, Charleston, S.C.-based architecture firm LS3P hired its first CFO in July 2016. President and CEO Thompson Penney, FAIA, credits the new CFO with taking a wider view of the firm's potential for growth and new business opportunities. "We weren't leveraging our capital as well as we should have," Penney says. "He's trying to figure out how we can do things better."



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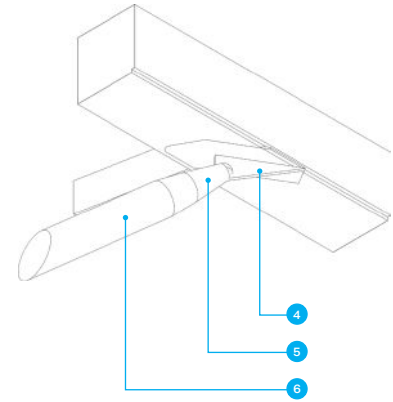
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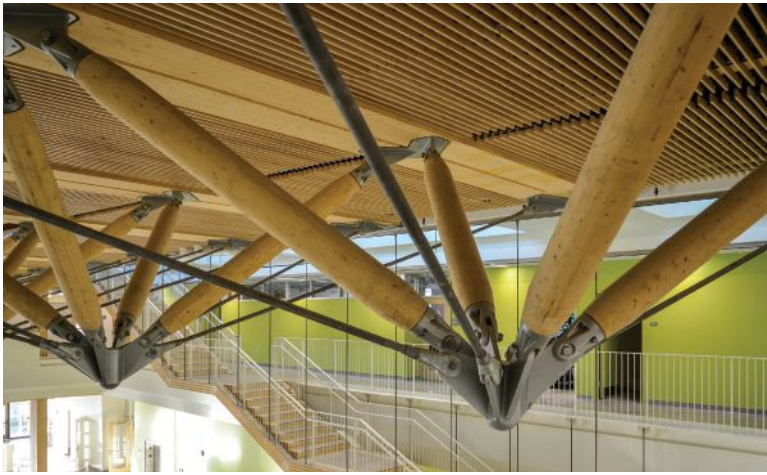
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Detail: UMass Amherst Zipper Truss



TEXT BY TIMOTHY A. SCHULER



"From the beginning, we knew that the Design Building would be a teaching tool," says Andrea Leers, FAIA, a principal at Leers Weinzapfel Associates (LWA). What Leers did not know was that the 87,000-square-foot facility, which brings together the architecture, landscape architecture, and building and construction technology programs at the University of Massachusetts Amherst, would evolve into the first mass-timber

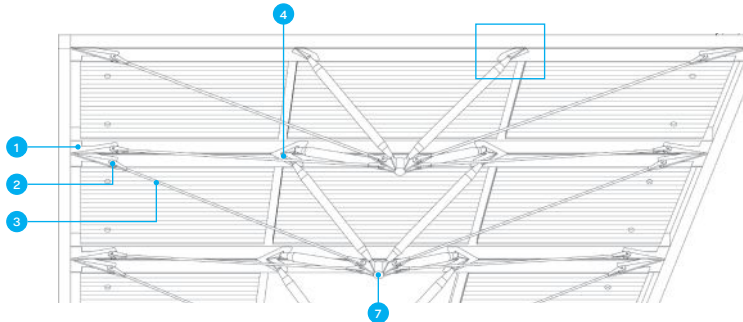
structure on the East Coast, and become the first project to use several cutting-edge building technologies, including a "zipper truss" developed by the school's faculty.

The building's physical and spiritual heart is the commons, an 84-foot-long day-lit atrium that is 56 feet wide at its west end and 33 feet wide at its east. On top of that, literally, the building supports skylights and an

inhabitable rooftop garden. "This was a real structural challenge," Leers says. The custom steel-and-glulam zipper trusses, named for the way they converge multiple structural members to a single point, resolved the issue with the "best combination of a dynamic form, architectural consistency, structural efficiency, and cost," says LWA principal Tom Chung, AIA.

Each of the seven trusses consists of four tubular glulam struts and four steel rods. The 12-foot-wide trusses range between 7 feet and 9 feet deep, while their lengths vary with the span of the commons. The glulam compression members transfer the roof's structural load to a central steel node that Chung calls the "bullet connector." The steel rods then work in tension to transfer the load to 18-inch-deep glulam beams, which span the atrium and are supported by columns.

The zipper truss system, Chung says, "allows for various span lengths while keeping the same form, and highlights the cost effectiveness of the digital fabrication process."



1. 18" glulam beam
2. Steel tension rod clevis connector
3. Ø1" to Ø2" steel tension rod
4. Connection plates
5. Cast end connection
6. Ø9" diagonal glulam strut
7. Solid steel bullet

> To read more about the planning and construction of the Design Building at UMass Amherst, visit bit.ly/ARUMassZip.

LEARN & EARN

Learn how mass timber products allow for innovative structures with longer spans that are often required for commercial, institutional and industrial construction.

DESIGN BUILDING

University of Massachusetts, Amherst
The Design Building, completed in 2016, is a demonstration of leading-edge timber engineering, and sustainable design practice. As a demonstration project it is supported by the Massachusetts State Legislature and, under the direction of the designer, was the first project to meet alternative code requirements for wood timber construction. The building's structure features exposed cross laminated timber (CLT), and was the first university building in the northeast United States to do so. Informed by the school's research in next generation wood technology the building features a glue-laminated wood frame, and floor slabs of exposed CLT-concrete composites.

Location:
Amherst, Massachusetts

Architect:
Leers Weinzapfel Associates
Architects of Boston

Photography:
Alex Schreyer, UMass Amherst

Mass Timber in North America



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Next Progressives: Tomecek Studio Architecture

TEXT BY KATHARINE KEANE

Location:

Denver

Founded:

2013

Leadership:

Brad Tomecek, AIA (founder and principal); Kevin Sietmann and Brian Martin (key staff)

Education:

B.Arch. and M.Arch., University of Florida

Experience:

Barrett Studio Architects, Studio H:T

Mission:

Tomecek Studio approaches design with the intention of crafting spaces that reflect the intimacy and poetics of "making," using light and material as guiding principles, instead of form. We think about human experience first and allow it to shape the project. To create successfully, we explore various scales, from objects to occupiable locations, with reference to the size of the human body.

Favorite object:

"Unfastened" is a piece we created for the Denver Art Museum's Design After Dark program. It is an exploration of nails as a material instead of as simple fasteners. The number of nails is based on the typical amount needed to frame an average American single-family home: about 3,900. The moments of

compression and tension between the nails speak to the co-dependent nature of a fastener.

Brad Tomecek



Favorite enclosure:

Sunset Pavilion, in Firestone, Colo., is a steel cantilevered structure, sheltering visitors from the harsh Colorado sun. Acting as a lens, the pavilion's details emphasize the phenomenal qualities of the sun's path throughout the day. A carefully diagrammed set of perforations along the overhead plane tracks the sun's movement during the autumnal and vernal equinoxes. A steel plate over the gabion wall suggests the immediate and distant view of the mountain range while simultaneously editing out the adjacent development in the foreground.

Favorite dwelling:

Our Shoshone Residence project examines the Denver site's unique urban setting and the ever-changing

lighting conditions. By carving a series of curved light channels that lead to skylights in the structure's interior, we direct and alter the intense daylight into the residence. Modulating space and focusing attention on the nature of day and night, the Shoshone Residence turns light into an instrument as well as an object among the client's artifacts.

Memorable learning experience:

I interned for Don Singer, a well-respected, modern Florida regionalist. He would constantly subtract and edit projects down to their true essence and enlightened me to the power of reduction.

Architecture hero:

Juhani Pallasmaa. Every word he speaks has profound wisdom collected over many years of focused observation. He constantly reminds us to feel architecture and space.

Special item in your studio space:

Physical process models.

Design tool of choice:

Woodless pencil.

When I am not working in architecture ...

I go camping in the summer and snowboarding in the winter with my wife and 10-year-old son.

Skills to master:

Saying no.

MEANING, MEMORY & HOPE ARE CAPTURED BY THIS BUILDING'S SIGNATURE EXTERIOR



The Smithsonian National Museum of African American History and Culture offers an architectural collage of meaning, memory, and hope as multifaceted as the shifting hues of its signature bronze exterior.

The *New York Times* hails the Smithsonian National Museum of African American History and Culture (NMAAHC) as "... the most impressive and ambitious public building to go up in Washington in a generation."

Central to that distinction is the bronze corona that dramatically frames the \$540 million, 400,000 square foot museum in three majestic cantilevered tiers.

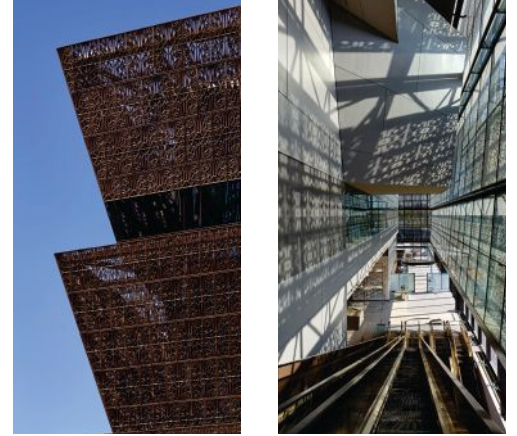
More than 3,600 latticework aluminum panels form the corona. A key challenge for the design team was the panels' final color. None fit the desired aesthetic better than bronze. But exactly what shade of bronze? What level of variegation? Luminosity? How many applications? Who would guarantee the bronze patina of 2017 would endure through 2037 and beyond?

"We went through countless iterations to achieve the finish you see today," says the NMAAHC senior project manager, Zena Howard, AIA, LEED AP, of Perkins+Will. As senior project manager, Howard directed the activities of three additional architectural firms and 29 consultants from the project's beginning eight years ago to today. The aluminum panel color selection proved to be a painstaking, multi-year process.

"Valspar was amazing to work with. They had the patience of Job," Howard explains. "They knew what we were facing. It's not like we had the specs and could say, 'Here it is.' I can't tell you how many samples they produced."

And the senior project manager's final verdict on the Valspar coating? "I'm tickled by the corona. I like how it picks up natural or artificial light, how it reacts to shadows, clouds, and the seasons. I like its unpredictability." Today the Museum's bronze finish helps paint a portrait of remembrance that will challenge and inspire Americans for generations to come.

To learn more, visit the project gallery at ValsparCoilExtrusion.com.



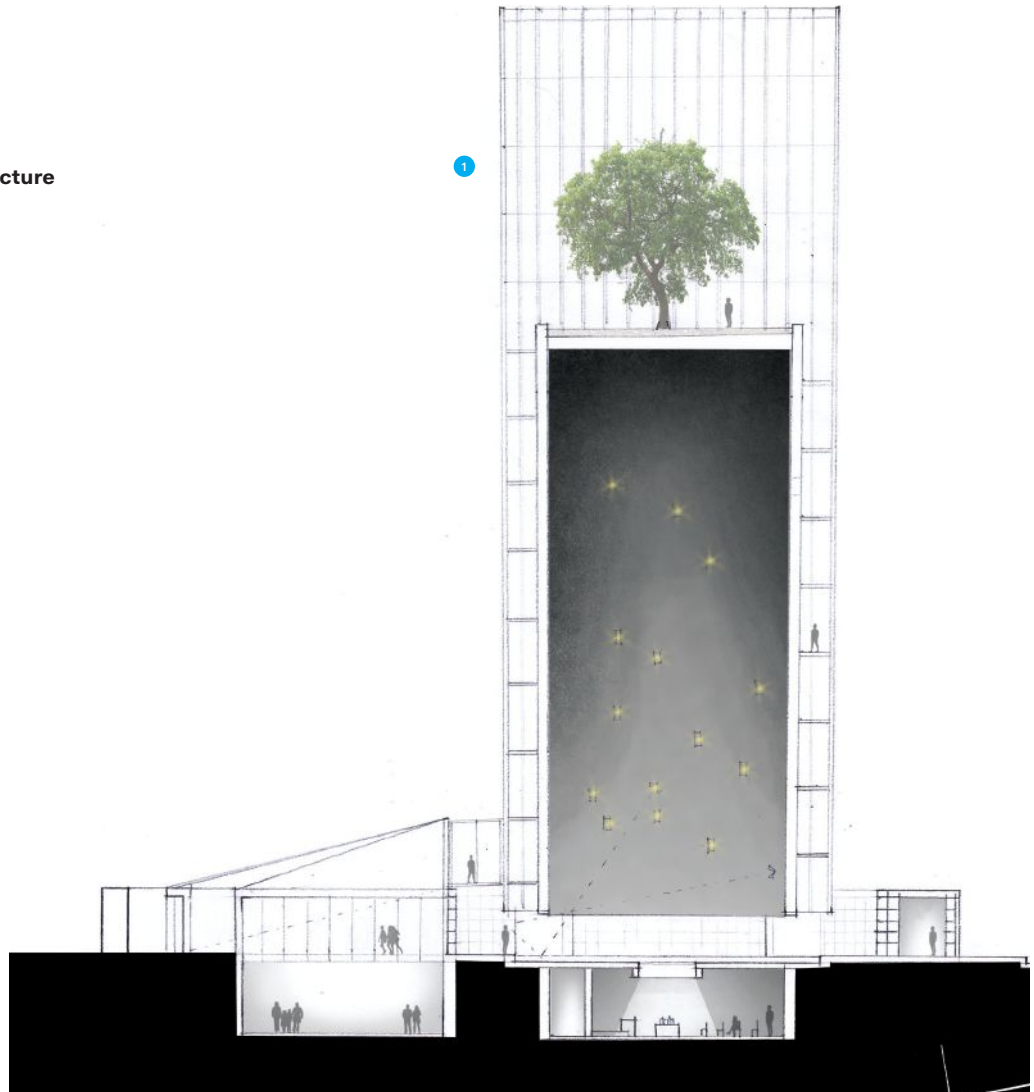
Architects (collaborative team):
 Freelon Adjaye Bond/SmithGroup
 The Freelon Group (a Perkins+Will company)
 Davis Brody Bond
 SmithGroup
 Adjaye Associates
 Photo Credit: Alan Karchmer

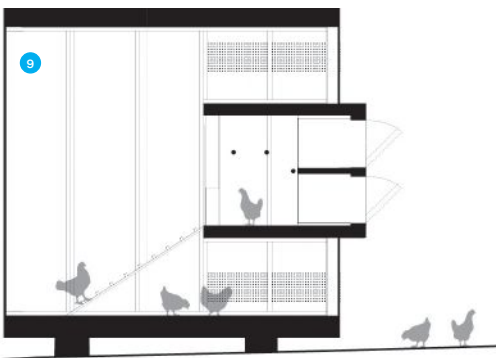
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**Next Progressives:
Tomecek Studio Architecture**





1. For Tomecek Studio Architecture's submission to the 2016 Tokyo Vertical Cemetery competition, the firm drew inspiration from Buddhist rituals in conceptualizing a wood tower with a translucent panel skin, which features a remembrance garden, urn walls, and gathering spaces for mourners on its top floor. 2. "Unfastened" aggregates approximately 3,900 nails on a 2-foot-by-4-foot stained wood base. 3, 4. Sunset Pavilion in Firestone, Colo., is constructed with a steel-plate overhang, a concrete bench, and gabion walls. 5. The cantilever of the Black Hills Homestead guesthouse extends over a tree-filled ravine below the South Dakota property. 6, 7, 8. Tomecek Studio employed modular design and prefabrication to expedite construction of the main residence of the Black Hills Homestead, which is connected to a barn via a vertical-grain cedar breezeway. 9. As part of the Black Hills Homestead, a modernist, translucent cube, serving as a chicken coop, is elevated off the ground to protect its occupants from wildlife and to promote airflow.

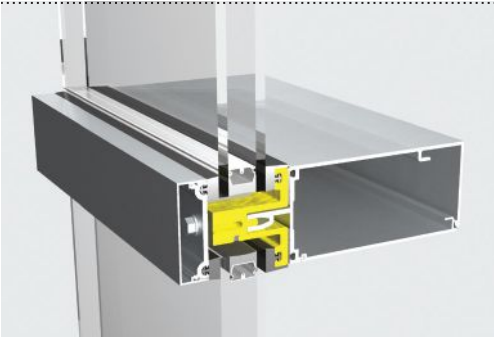
Architect's Choice: High-Performing Building Envelopes

TEXT BY SELIN ASHABOGLU



TerraClad Rain Screen, Boston Valley Terra Cotta

Combining both form and function, HOK's New York office incorporated Orchard Park, N.Y.-based manufacturer Boston Valley Terra Cotta's TerraClad Rain Screen into its design for the University of Buffalo's Jacobs School of Medicine and Biomedical Sciences in upstate New York. "Key to the design, the material was used in both the façade and the atrium details," says HOK design principal Kenneth Drucker, FAIA. "To ensure that the building would complement the city's existing architecture, we wanted a modular system [made] from an organic material. Since terra-cotta is commonly incorporated in many of the city's significant buildings dating back to the 1920s, it helps seamlessly bridge the old and the new." bostonvalley.com



RFF2500 Retro-Fit Fiberglass Façade, FreMarq Innovations

When it comes to renovations, architects often have to update existing building elements in order to meet current industry performance standards. Replacing curtainwalls can be costly and time-consuming due to demolition, but Brad Prestbo, AIA, a senior associate at Sasaki's Watertown, Mass., office recommends a new product by Wausau, Wis.-based FreMarq Innovations. "[RFF2500 Retro-Fit] leaves the existing curtainwall mullions in place by installing a fiberglass pultrusion that can slot over the existing mullion," he says. "The fiberglass provides a thermal break between the insulating glazing assembly and the highly conductive internal aluminum mullion. This solution reduces cost significantly by no longer requiring replacement of the entire wall." fremarqinnovations.com



Precast Concrete, Gate Precast

CannonDesign's St. Louis office partnered with Jacksonville, Fla.-based Gate Precast in order to create custom exterior wall molds for Mount Sinai Medical Center's Emergency Department Expansion and New Surgical Tower in Miami Beach, Fla. CannonDesign vice president Michael Zensen, AIA, says, "[We] used precast concrete to accommodate a curvilinear plan shape, the expressive and modulating wall configurations, hurricane resilience, and construction schedule." The custom precast forms gave the firm flexibility in design while limiting construction cost. "The fluid expressiveness of concrete with the economy of precast can be an unbeatable combination for creating beautiful, long-lasting forms that enhance the public realm," Zensen says. gateprecast.com

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Cortona at Forest Park, Humphreys & Partners Architects, LP, St. Louis, MO

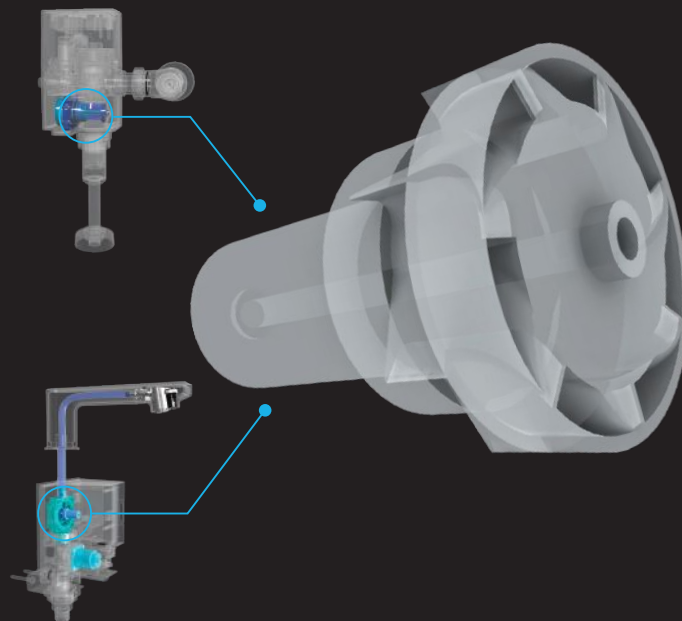
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MASS TIMBER IN NORTH AMERICA

EXPANDING THE POSSIBILITIES OF WOOD BUILDING DESIGN

Presented by:



LEARNING OBJECTIVES

Upon completion of this course the student will be able to:

1. Examine the trend toward mass timber buildings in the context of carbon footprint, construction efficiency, fire and life safety, occupant well-being, and other potential advantages.
2. Identify a range of mass timber products available to North American building designers.
3. Discuss research and resources related to the structural performance and fire/life safety of mass timber products.
4. Based on examples of mass timber buildings either built or under construction, describe how all-wood and hybrid systems are expanding the options for wood design.

CONTINUING EDUCATION

AIA CREDIT: 1.5 LU/HSW
GBCI CREDIT: 1.5 CE HOURS



AIA COURSE NUMBER: AR032017.2
GBCI COURSE NUMBER: 0920012088

Use the learning objectives above to focus your study as you read this article. To earn credit and obtain a certificate of completion, visit <http://go.hw.net/AR032017.2> and complete the quiz for free as you read this article. If you are new to Hanley Wood University, create a free learner account; returning users log in as usual.



Albina Yard
Location: Portland, Oregon
Architect: LEVER Architecture
Structural Engineer: KPFF Consulting Engineers
Developer: reworks

Photo courtesy of LEVER Architecture

It's been a while since a major category of building materials inspired the kind of widespread enthusiasm currently being shown for mass timber. Around the world, designers are leveraging the strength, stability, and design flexibility of products such as cross-laminated timber (CLT) to push beyond wood's perceived boundaries, achieving building heights and spans that would have once required concrete, steel, or masonry for structural support.

For many, it's the combination of aesthetics, structural performance, and opportunity for innovation that have proven irresistible. But mass timber also offers a host of other advantages:

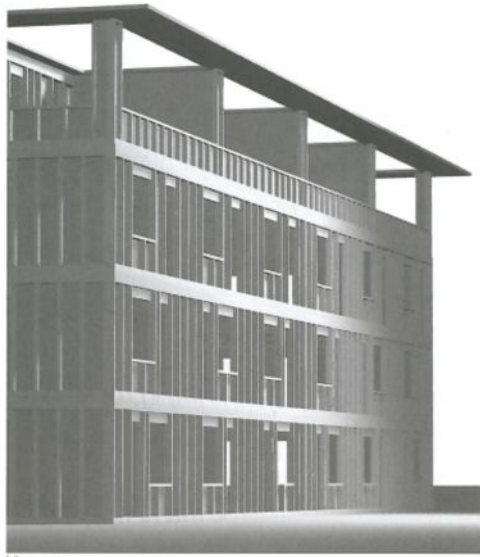
Lighter carbon footprint: Mass timber products allow the use of a renewable and sustainable resource as an alternative to more fossil fuel-intensive materials. Designers of 'tall wood' buildings have been especially focused on the reduced carbon footprint achieved by using wood, which aligns with the goals of Architecture 2030. Reducing carbon is also a priority for many public buildings and schools.

Construction efficiency: Mass timber construction is fast, and speed correlates to revenue, whether the project is an office, school, student residence, condominium, or hotel. Bernhard Gafner of structural engineering firm Fast + Epp, says that, in his

firm's experience, a mass timber project is approximately 25 percent faster to construct than a similar project in concrete. Noting the advantages for urban infill sites in particular, he says it also offers 90 percent less construction traffic (trucks delivering materials) and requires 75 percent fewer workers on the active deck, making for a much quieter job site.

The fact that mass timber weighs less than other materials also has a number of potential benefits, including smaller foundation requirements and lower forces for seismic resistance. Discussing the new Design Building at the University of Massachusetts, for example, structural engineer Robert Malczyk of

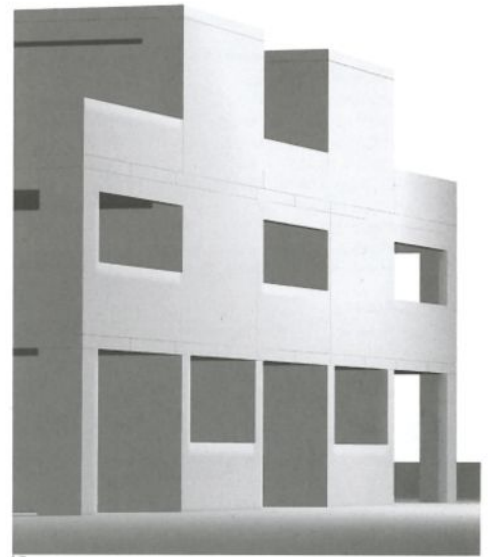
LIGHT WOOD-FRAME



POST + BEAM



MASS TIMBER



Mass timber systems are a complement to light wood-frame and post-and-beam construction. Image courtesy of Fast + Epp

Equilibrium Consulting, says, “The seismic force is proportionate to the weight of the building. If this building were designed in concrete, which was considered, the weight would be six times more than the mass timber design.”

Fire and life safety: Structurally, mass timber offers the kind of proven performance—including fire protection and seismic resistance—that allows its use in larger buildings. It also expands the options for exposed wood structure in smaller projects.

Occupant well-being: An increasing number of studies focused on wood’s biophilic aspects have linked the use of exposed wood in buildings with improved occupant health and well-being.^{1,2}

This course is intended for architects and engineers seeking current information on mass timber, including products, research related to structural performance and life safety, and available resources. It answers common questions regarding strength, fire protection, and durability, and highlights examples of mass timber buildings in different occupancy groups to illustrate both design trends and the extent to which mass timber has captured the imagination of North American building designers.

WHAT IS MASS TIMBER?

Mass timber is a category of framing styles typically characterized by the use of large solid wood panels for wall, floor, and roof

construction. It also includes innovative forms of sculptural buildings, and non-building structures formed from solid wood panel or framing systems of six feet or more in width or depth. Products in the mass timber family include:

Cross-Laminated Timber (CLT)

CLT consists of layers of dimension lumber (typically three, five, or seven) oriented at right angles to one another and then glued to form structural panels with exceptional strength, dimensional stability, and rigidity.

Panels are particularly cost effective for multistory and large building applications. Some designers view CLT as both a standalone system and product that can be used together with other wood products; it can also be used in hybrid and composite applications. CLT is well-suited to floors, walls, and roofs, and may be left exposed on the interior for aesthetics. Because of the cross-lamination, CLT also offers two-way span capabilities.

CLT can be manufactured in custom dimensions, with panel sizes varying by manufacturer. There are several CLT suppliers in North America, with more anticipated. The species of wood used depends on the manufacturing plant location.

The 2015 International Building Code (IBC) and 2015 International Residential Code recognize CLT products manufactured according to the ANSI/APA PRG-320: Standard for Performance

Rated Cross-Laminated Timber. Under the 2015 IBC, CLT at the required size is specifically stated for prescribed use in Type IV buildings. However, CLT can be used in all types of combustible construction—i.e., wherever combustible framing or heavy timber materials are allowed. The National Design Specification® (NDS®) for Wood Construction is referenced throughout the IBC as the standard for structural wood design, including CLT. The 2012 IBC does not explicitly recognize CLT, but the 2015 IBC provisions for CLT can be a basis for its use under alternative method provisions.

For more information on CLT, the U.S. CLT Handbook is available as a free download at www.rethinkwood.com.

Nail-Laminated Timber (NLT or Nail-lam)

NLT is created from individual dimension lumber members (2-by-4, 2-by-6, 2-by-8, etc.), stacked on edge, and fastened with nails or screws to create a larger structural element.

NLT is far from new—it’s been used for more than a century—but is undergoing a resurgence as part of the modern mass timber movement. Commonly used in floors, decks, and roofs, it offers the potential for a variety of textured appearances in exposed applications, and wood structural panels can be added to provide a structural diaphragm. NLT has also been used to create elevator and stair shafts in midrise wood-frame buildings.

NLT naturally lends itself to the creation of unique roof forms. Because panels are comprised of individual boards spanning in a single direction, both singly curved and freeform panels can be created by slightly offsetting and rotating each board relative to the others. This allows the complex geometry of curved roof and canopy structures to be realized with a simple system.

Advantages of NLT include the ability to use locally available wood species and the fact that specialized equipment generally isn't necessary. An NLT system can be created via good on-site carpentry, though some suppliers do offer prefabrication, and this can have benefits depending on the scale and complexity of the project. Prefabricated NLT panels typically come in sizes up to 10 feet wide and 60 feet long, with wood sheathing preinstalled. When detailing NLT systems, designers need to account for moisture movement.

The IBC recognizes NLT and provides guidance for structural and fire design. No product-specific ANSI standard is required, as the structural design of each element is covered by the NDS and applicable grading rules. NLT can be used in all types of combustible construction.

Glued-Laminated Timber (glulam)

Glulam is composed of individual wood laminations (dimension lumber), selected and positioned based on their performance characteristics, and then bonded together with durable, moisture-resistant adhesives. The grain of all laminations runs parallel with the length of the member.

Glulam has excellent strength and stiffness properties, and is available in a range of appearance grades for structural or architectural applications. While typically used as beams and columns, designers can use glulam in the plank orientation for floor or roof decking. With careful specification and design that considers the flatwise structural properties (see APA reference below), deep glulam sections can be placed flatwise as decking similar to NLT. With the flexibility of glulam manufacturing, glulam 'panels' can be used to create complex curvature and unique geometry. When used in such innovative floor and roof panel configurations, glulam is seen as an extension of the mass timber product family and sometimes referred to as GLT.

The IBC recognizes glulam products manufactured in conformance with ANSI Standard A190.1-2012: Standard for Wood

CASE STUDY #1 ALBINA YARD & FRAMEWORK



Location: Portland, Oregon

Architect: LEVER Architecture

Structural Engineer: KPFF Consulting Engineers

Design Assist + Build (Framework): StructureCraft

Developer (Albina Yard): reworks

The four-story, 16,000-square-foot Albina Yard is noteworthy for being the first commercial building in the United States to use domestically fabricated CLT as a structural element. A Type III project designed under the 2014 Oregon Structural Specialty Code, it is also interesting as a precursor to another LEVER-designed office project—Framework, the 12-story winner of the U.S. Tall Wood Building Prize Competition.

"We were very interested in exploring a mass timber/CLT project on a smaller scale prior to building the larger high-rise project, so it was a very fortunate coincidence," says Design Principal Thomas Robinson. Asked about lessons learned, he emphasized the need for early collaboration between architectural, structural, mechanical, and installation. "Each discipline had a role to play; input and problem solving needed to happen together. As the building was essentially prefabricated off-site, the coordination and problem solving that often occurs in the field needed to be accounted for beforehand. After we were off the ground-floor slab, Albina Yard was built to a 1/8 tolerance, and it went together perfectly."

Currently in design, Framework will consist of ground-floor retail, five levels of office space, five levels of housing, and a rooftop community space. It is expected to include CLT floor panels as well as a new system of post-tensioned rocking wall panels.

Developed for use in high seismic regions, rocking mass timber shear walls were tested by the Network for Earthquake Engineering (NEES) as part of its CLT Planning Project. Seismic activity was simulated by cyclic loading that pushed and pulled the top of a 16-by-4-foot CLT panel with an embedded vertical pre-tensioned rod into a rocking motion. The wall was able to reach 18 inches of displacement, while maintaining its ability to self-center back to a vertical position.

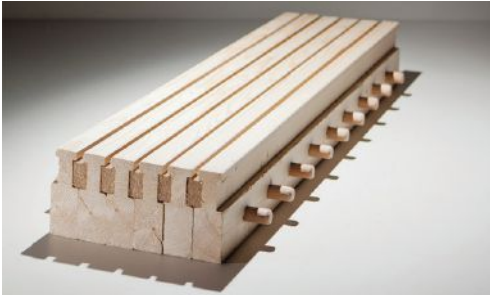
Framework, which is scheduled for completion in 2018, is expected to be the first application of a rocking mass timber shear wall system in the United States.

Products—Structural Glued Laminated Timber. For more information, consult the Glulam Product Guide available at www.apawood.org/glulam.

Dowel-Laminated Timber (DLT)

Dowel-laminated timber panels are a next-generation mass timber product commonly used in Europe. Panels are made from

softwood lumber boards (2-by-4, 2-by-6, 2-by-8, etc.) stacked like the boards of NLT and friction-fit together with dowels. Typically made from hardwood lumber, the dowels hold each board side-by-side, similar to how nails work in an NLT panel, and the friction fit lends some dimensional stability to the panel.



Pictured is a dowel-laminated timber panel with an acoustic profile integrated into the exposed surface. Photo courtesy of StructureCraft

There isn't a prescriptive code path for the use of DLT under the current IBC, and the NDS doesn't provide published design values or equations for calculating capacities of wood dowel joints. To calculate capacities, the Timber Framers Guild provides some information. However, because nothing is referenced in the code, the use of DLT would require approval by the Authority Having Jurisdiction on a case-by-case basis.


Among the advantages of DLT, acoustic strips can be integrated directly into the bottom surface of a panel. This can help a designer achieve acoustic objectives, while keeping the wood exposed and allowing for a wide variety of surface finishes.

With growing interest in DLT, continued product innovation is likely, along with increased availability to U.S. building designers.

Structural Composite Lumber (SCL)

SCL is a family of wood products created by layering dried and graded wood veneers, strands, or flakes with moisture-resistant adhesive into blocks of material, which are subsequently re-sawn into specified sizes. Two SCL products—laminated veneer lumber (LVL) and laminated strand lumber (LSL)—are relevant to the mass timber category, as they can be manufactured as panels in sizes up to 8 feet wide, with varying thicknesses and lengths, depending on the product and manufacturer. Parallel strand lumber (PSL) columns are also commonly used in conjunction with other mass timber products.

The manufacture of SCL is standardized. However, while SCL is included in the NDS, design values are provided by the manufacturers. International Code Council Evaluation Service (ICC-ES) evaluation reports and APA product reports are available to assist with structural design capacities and specifications.

 This article continues on <http://go.hw.net/AR032017.2>. Go online to read the rest of the article and complete the corresponding quiz for credit.

QUIZ

- Which of the following is NOT true of cross-laminated timber (CLT)?
 - CLT panels are particularly cost effective for multistory and large building applications.
 - CLT is well-suited to floors, walls, and roofs, and may be left exposed on the interior for aesthetics.
 - CLT offers two-way span capabilities.
 - CLT can only be purchased in Europe.
- Which building project is expected to be the first application of a rocking mass timber shear wall system in the United States?
 - Albina Yard
 - Framework
 - T3
 - Brock Commons Tallwood House
- Which of the following is an advantage of nail-laminated timber?
 - It naturally lends itself to the creation of complex roof forms.
 - It is sold in a wide range of colors.
 - It is connected with wood dowels.
 - It typically has three, five, or seven layers of cross-lamination.
- True or False: With careful specification and design that considers the flatwise structural properties, deep glulam sections can be placed flatwise as decking.
 - Speed of construction
 - Less construction traffic
 - Fewer workers on the active deck
 - Integration of services into prefabricated elements
 - All of the above
- Which statement is NOT true of the seven-story T3 building in Minneapolis, Minnesota?
 - The project has no exposed wood because of building code limitations.
 - It took an average of nine days to erect per 30,000-square-foot floor.
 - More than 100 truckloads of glulam and NLT panels arrived as they were needed on the job site, with steel connections preinstalled.
 - The project is an estimated 30 percent lighter than a comparable steel design and 60 percent lighter than post-tension concrete.
- True or False: Because of its strength and dimensional stability, mass timber offers a low-carbon alternative to steel, concrete, and masonry for many applications.
- Which of the following is cited as a reason to use mass timber in schools?
 - Lighter carbon footprint
 - Ability to construct an entire project over the summer while the students are off campus
 - Potential efficiencies of replicable modular designs
 - Positive impacts of exposed wood on student wellbeing
 - All of the above
- Wood buildings over ___ stories are not currently within the prescriptive height limits of the International Building Code, meaning that designers of taller projects must follow an alternative means process.
 - two
 - three
 - four
 - six
- Which test by the American Wood Council contributed to the recognition of CLT in the 2015 International Building Code?
 - Full-scale compartment test comparing the performance of light-gauge steel, light-frame wood, and CLT
 - Static and cyclical testing of self-tapping screws
 - ASTM E119 fire endurance test of a five-ply CLT wall system
 - Testing of CLT rocking walls

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GREEN QUALITIES OF SPRAY FOAM INSULATION



LEARNING OBJECTIVES

Upon completion of this course the student will be able to:

1. Discuss the importance of air barriers and insulation for reducing energy consumption and potential health and safety hazards in residential and commercial buildings.
2. Describe open-cell and closed-cell spray foams and explain applications of each.
3. Explain how spray foams work as a green and sustainable form of insulation.
4. Identify uses of spray foam insulation to reduce fuel consumption.
5. Discuss green features of spray foam insulation as opposed to traditional insulation materials and methods.

CONTINUING EDUCATION

AIA CREDIT: 1 LU/HSW
AIA COURSE NUMBER: AR032017.1



Use the learning objectives above to focus your study as you read this article. To earn credit and obtain a certificate of completion, visit <http://go.hw.net/AR032017.1> and complete the quiz for free as you read this article. If you are new to Hanley Wood University, create a free learner account; returning users log in as usual.

By Lisa Jo Rudy

Building insulation is a tool for keeping heat in or out of structures. Insulation makes it possible for buildings to stay warm in winter, cool in summer, and relatively moisture free year-round. Different types of insulation and air barriers have been used over the centuries with varying results.

Today, new materials and technologies make it possible to create and apply extremely effective insulation and air barriers. The result is buildings that can maintain a safe, comfortable temperature while using very little

energy for heating or cooling. This translates to greener buildings that create very low “carbon footprints” and meet LEED and other energy efficiency guidelines.

Spray foam is a newer material that combines the benefits of insulation and air barriers. Because of its unique formulation and application, it consistently out-performs older, more traditional forms of insulation. Recycled and environmentally-friendly products are available to make spray foam an exceptionally “green” choice.

HOW HEAT MOVES IN BUILDINGS

Heat is a form of energy which causes the molecules in gases or solids to move more rapidly. Heat tends to flow to cooler areas until all areas are at the same temperature. It moves from the warmest to the coolest parts of any structure through three mechanisms: conduction, convection, and radiation.

- Conduction describes the transfer of heat through materials. An example is the heat that is transferred from a stove to a pot, or from a hot liquid to a spoon. Heat and cold

can both be conducted through materials in a building, with the result that warmth is conducted to cooler areas. Some materials are better conductors than others; metal, for example, is a good conductor while wool is a poor conductor.

- Convection is the process by which warmer gas or liquid rises, cools, sinks, heats, and rises again. Convection can be seen in a boiling pot, or felt in a poorly insulated building. During winter, convection is the process that moves warm air from lower floors to the roof. In many cases, warm air then escapes through gaps in the building.
- Radiation is heat that comes from a single source and moves in a straight line. The sun produces radiant heat, as does an electric heater.

Insulation is simply a tool used to manage the flow of heat. In construction, it may be used to keep heat in or out of a building or to maintain a constant temperature. In most cases, its purpose is to slow down the process of convection and conduction, or to reflect radiant heat.

In a building without insulation, heated and cooled air move through the building and are lost to the outside environment. As a result, the heater or air conditioner must work constantly to keep the building at a comfortable temperature. Proper insulation, however, can keep the building at a consistent temperature for long periods of time. This means less energy spent on heating or cooling air—which leads to lower environmental impacts and lower fuel costs.

To maintain comfort, the heat lost in the winter must be replaced by your heating system and the heat gained in the summer must be removed by your cooling system. Properly insulating your home will decrease this heat flow by providing an effective resistance to the flow of heat.

HOW TRADITIONAL INSULATION WORKS

The purpose of insulation is to stop the flow of heat from warmer to cooler areas. Natural materials have been used for thousands of years to insulate homes and maintain comfort. Rock and wood can literally stop the flow of air by putting an impermeable barrier in its way. Thick, fibrous material such as wool, horse hair, or thatch can trap heat in gaps between the fibers. While these materials were somewhat effective, they left plenty of room for improvement. With new technologies, more effective materials were developed.



Sweaters are like insulation, while wind breakers are like air barriers. Both are necessary for proper building envelope performance.

In the 20th and early 21st centuries, foam board and fiberglass became very popular insulation materials. Foam boards physically block the movement of air while also slowing conduction. Spun fiberglass can be stuffed between floors and into gaps in construction, and its many layers of fibers do a good job of trapping warm air.

The job of any insulating material is to stop heat from moving from one location to another. The ability of any individual material to stop this flow is measured by its R-value. A high R-value means that a material is a very effective insulator, while a low R-value means the material is a poor insulator. Paper, for example, has a low R-value while thick fiberglass insulation has a much higher R-value.

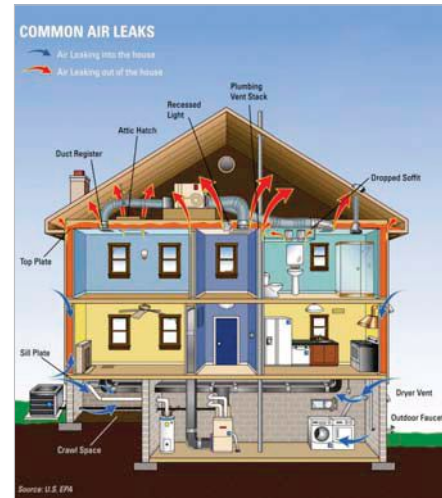
The R-value of an insulating material is also based on the degree to which the material is properly installed. An inch of fiberglass material in a five-inch gap will do little to stop the flow of heat. Fiberglass that completely fills a gap will do a far better job of stopping the flow of heat, and thus produces a higher R-value.

THE LIMITS OF TRADITIONAL INSULATION

Standard insulation works in very much the same way as a sweater. Like a sweater, it is made up of layers of fibers which trap heat. In the case of clothing, however, heat is generated by the human body rather than by a furnace.

A sweater is perfect for cool autumn days when the sun is shining. Not only is it a thick, barrier between your warm skin and the colder air, but gaps between the fibers do a good job of trapping warm air. But what happens when rain falls or cold winds blow? Because it does not provide an impermeable barrier, the sweater provides only minimal insulation from stormy weather.

A windbreaker is an external covering that helps stop wind and water. Put on a windbreaker over a sweater, and the sweater can do its job better. Together, the windbreaker



and sweater provide an ideal climate control system.

The sweater is a good analogy for standard insulation. Insulation is any material used to prevent transmission of heat or cold. Typically, structural insulation is made of fiberglass. In buildings, insulation is used to keep indoor environments separate from outdoor environments. No matter what the weather outside, insulation acts like a sweater—keeping warm air inside and helping to keep cold and heat outside.

When the weather becomes very cold, hot, wet, or windy, however, gaps in fiberglass insulation let in the cold and drafts. That's when an air barrier becomes important. Traditional air barriers are self-adhered sheets, membranes, films, or board stock that are attached to the outside of structures to stop wind and air leakage from occurring.

CAUSES OF AIR LEAKAGE

Air leakage is a result of pressure differences caused by the "stack effect," wind loading, flues, and ventilation systems. While some air leakage is unavoidable, it can be minimized through the use of high-quality insulation and/or air barriers. Causes of air leakage relate to basic physics, and to the way in which structures are insulated.

The Stack Effect: Hot air is lighter than cold air. Because of this, hot air rises to the top floors of a building. Positive pressure inside the building builds toward the roof as more air is forced into the same space. This pressure pushes air out through gaps in the ceiling and upper story windows.

Meanwhile, on the lower floors, air pressure is lower inside the building than outside. Higher pressure outside pulls cold air in through openings in windows, walls, and the building foundation. As the cold air warms, it rises—building pressure toward the ceiling and starting the process all over again.

The stack effect, also called convection, is always in process. It's an unavoidable reality of physics. But it can be mitigated if buildings are sealed to the degree possible.

OTHER CAUSES OF AIR LEAKAGE:

The stack effect describes one process by which air moves in and out of structures. There are also two other major reasons for air leakage.

Wind loading describes the outcome that occurs when the wind blows most often on one side of the building. As the wind blows, cold air enters through gaps in insulation, building up pressure on the windward side of the building. This leads to negative pressure on the down-wind side of the building. This phenomenon results in wind being pulled through the building—creating drafts and adding to leakage issues.

Flues and ventilation systems are openings in the building structure. They are used to expel air from the building when furnaces and hot water heaters are operating. When air is pushed out, it is replaced by outside air that leaks in through other openings.

Air leakage resulting from wind loading, flues, and ventilation systems is unavoidable. No one can stop the wind from blowing, and flues and ventilation are absolutely essential. But there are methods for minimizing air leakage and the problems associated with it.

PROBLEMS ASSOCIATED WITH AIR LEAKAGE

Why is air leakage such a serious issue? To go back to the sweater analogy, air leakage is similar to holes in a sweater. Cold air and rain can readily enter through any gaps in a sweater, allowing heat to escape and moisture to increase discomfort.

Air leakage can create a range of problems for home and building owners. It can impact health and safety, durability, occupant comfort, and heat and cooling costs. It can also lead to environmental issues as owners crank up the heat or air conditioning.

In structures, air leakage is a major concern. There are numerous problems associated with air leakage, including:

- Health and Safety Risks
- Durability Issues
- Loss of Occupant Comfort
- Increased Energy Costs

Health and Safety Risks: Air leaks carry moisture—and damage from airborne moisture from air leaks can cause a variety of safety problems. For example:

- When warm moist air leaves a building, and interacts with cold air, icicles form. In some cases, falling icicles can become serious safety hazards.
- When water freezes, it expands. Warm, moist air can freeze on the inside of building facades, pushing bricks or stones out of alignment and causing damage to the façade or masonry cladding. When the frozen water melts and refreezes, it pushes the bricks, stone, or other materials further out of alignment and even more damage is done.
- Warm, moist, dark environments are ideal for mold and mildew. Mold and mildew can cause long-term structural damage to the building. Some kinds of mold can also cause serious health risks, especially to people with allergies or asthma.

Durability Issues: Airborne moisture can negatively impact the durability of a building. When warm, moist air condenses on cold steel, the steel can rust and corrode. In addition, moisture condensing on a roof deck of an attic can lead to mold, mildew, rot, and corrosion.

Occupant Comfort: Air leakage creates cold drafts in winter. It also creates uncomfortable heat and humidity in summer. Even when air is cooled or heated, air leakage can bring in outdoor pollutants such as dust, pollen, and chemicals. These materials are difficult to remove, and can build up over time.

Heating and Cooling Costs: In summer, air leakage means more work for air conditioners as warm, moist air enters through gaps in insulation and air barriers. In winter, heating systems work overtime to warm up cold air. In both cases, costs and energy use are higher than they need to be for the same outcome. In fact, according to the Department of Energy, unwanted air leakage can account for nearly one-third of the heating and cooling energy costs of a typical home. Fortunately, it's possible to reduce air leakage by as much as 80 percent through the use of air barriers.



WHAT IS SPRAY POLYURETHANE FOAM?

Spray Polyurethane Foam (SPF) is a modern polymer produced as the result of a two-component chemical reaction between a polyalcohol and a polyisocyanate. Polyurethane is an extremely popular material, as it provides a huge range of benefits. It is used in a wide range of ordinary products, including:

- Footwear (Shoe Soles/Cushion)
- Sofas
- Mattresses
- Paint
- Bowling balls
- Insulation
- Roller blades wheels
- Golf balls

When it is used as an insulator/air barrier, Spray Polyurethane Foam (SPF) is applied as a liquid. The liquid quickly expands into a foam which surrounds and seals gaps. Over the course of seconds, the foam hardens and becomes an extremely effective insulator and air barrier.

OVERVIEW OF SPRAY POLYURETHANE FOAM INSULATION

Spray Foam Insulation has become the insulation of choice for builders, architects, and homeowners because of the myriad of benefits it provides, all stemming from its ability to provide a seal against air, moisture, and thermal fluctuations, all in one application. Spray foam is applied as a liquid, which allows it to flow into potentially leaky areas such as cracks, gaps, and penetrations. The foam quickly expands, seals, and hardens.

Fiberglass, in batt and blown forms, has traditionally been used in vented attics, walls, and crawlspaces. These traditional insulations act like loose blankets for a home, and much like blankets, only work when air is not moving over, under, or through the blanket. Spray foam



Spray foam flows, expands, seals, and hardens. As a result, it's ideal for insulating small and oddly-shaped openings.

insulation is a significant improvement over fiberglass options. It expands to fill cracks and corners of attic roofs, walls, and crawlspace joists, sealing conditioned air in and keeping unconditioned air out.

The benefits of this multi-barrier insulation are numerous and include: lower energy bills due to better HVAC performance and smaller size, longer HVAC system life, less dust and air pollutants in the home, equalized room temperatures, cooler and cleaner attics, lower carbon footprint, increased structural strength, added sound abatement, increased value of home, and lower home insurance, all of which lead to happier homeowners.

TYPES OF SPRAY FOAM INSULATION



Closed-cell (ccSPF) and open-cell (ocSPF) Spray Polyurethane Foams serve as effective air barriers and insulation but have different properties.

There are two types of spray foam insulation: closed and open cell. These foams, while made of similar materials, are quite different—both in their properties and in their uses.

QUIZ

- Which of the following actions can be described as "the movement of heat through solid surfaces?"
 - Conduction
 - Convection
 - Refraction
 - Reflection
- Which type of material is most often used in traditional insulation?
 - Film membrane
 - Natural fibers such as wool
 - Fiberglass
 - Drywall boards
- When warm air rises, it increases pressure toward the top of a structure. This forces warm air out through gaps in or near the roof. This phenomenon is known as:
 - R-value
 - Conduction
 - An air barrier
 - The stack effect
- A wind breaker is a good analogy for which of the following?
 - Traditional insulation
 - An insulation/air barrier system
 - Spray foam insulation
 - An air barrier
- Which of the following is an advantage of spray foam as opposed to traditional insulation methods?
 - Spray foam is both an insulator and an air barrier
 - Spray foam can be used to heat buildings
 - Spray foam can be applied by non-professionals
 - Spray foam comes in a variety of colors
- Which of the following problems can be solved with the use of spray foam?
 - Mold and mildew caused by moisture
 - High fuel costs caused by poor insulation
 - A and B
 - Only B
- True or False: It is possible to find and use spray foam which made up largely of recycled materials?
- Which of the following is an advantage of closed cell spray foam?
 - It can improve structural integrity
 - It provides better insulation than open cell spray foam
 - It can be used to improve ventilation
 - It is easier to apply than open cell spray foam
- Which of the following is true of both open and closed cell spray foam?
 - Both are appropriate for exteriors as well as interiors
 - Both can deaden sound between walls and floors
 - Both are more commonly used than fiberglass
 - Both expand to the same degree when applied in liquid form
- True or False: Spray foam does not perform as well as a system composed of fiberglass insulation and insulated sheathing

Open cell spray foam is low density, non-structural, and water vapor permeable. Its expansion rate is about 140 to 1, meaning that the foam, once applied, will expand by 140 percent. Open cell foam chambers are interconnected, so gas (air) can pass through multiple cells. Because it is water vapor permeable, it is used in interiors. Some examples of its use include:

- Exterior walls**—ocSPF insulation can seal cracks and provide in-house noise reduction.
- Partition Walls**—ocSPF can provide a sound barrier between rooms to ensure that noise stays in one area a building.
- Attics**—ocSPF can provide effective insulation in the tradition vented attic or high performing unvented attic.



This article continues on <http://go.hw.net/AR032017.1>. Go online to read the rest of the article and complete the corresponding quiz for credit.

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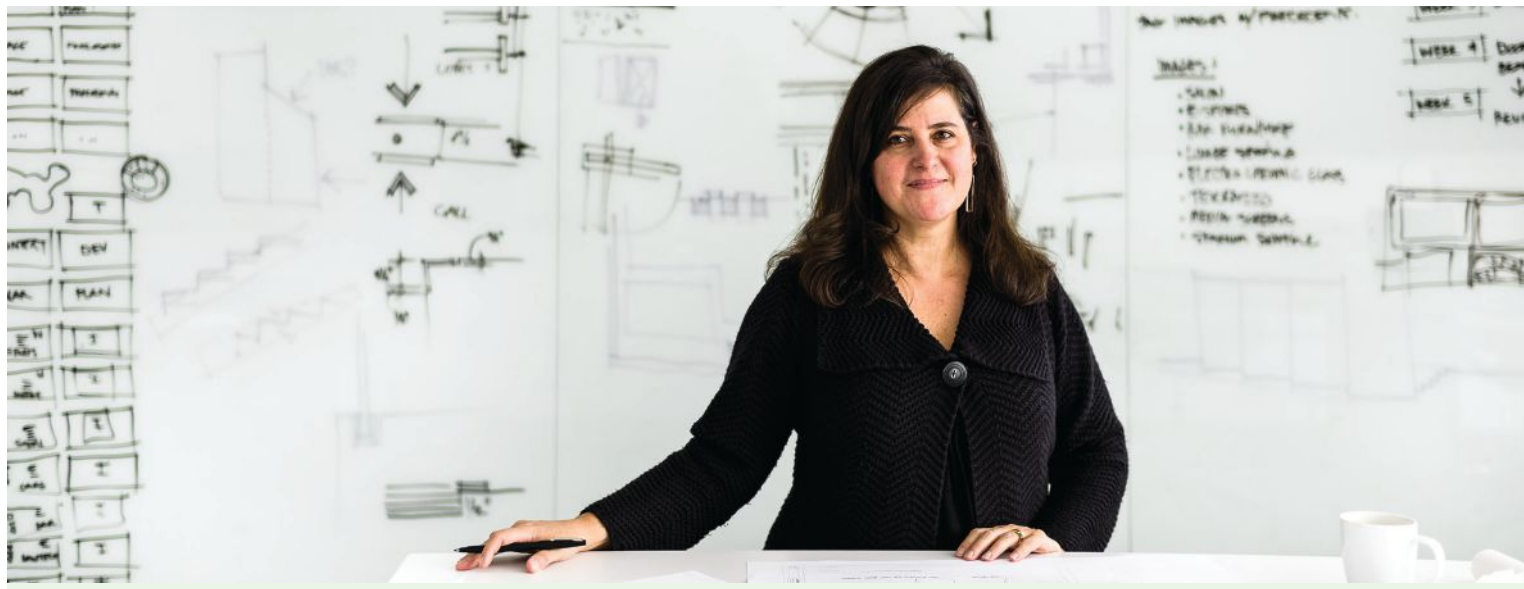
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AIA Architect

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PHOTOGRAPHY: CARL BOWEN

Urging Architecture Forward

Why our buildings and our profession need to work for everyone.

Tania Salgado, AIA, is a principal and co-founder of Handprint Architecture in Denver, a four-person firm that operates with a very simple and honest philosophy: Partner with experts, great clients make great projects, and design rules above all. She's carried those same ideals into her board and committee work, both at the AIA and in her city, all with the goal of creating modern buildings that work for everyone.

As told to Steve Cimino

Our approach at Handprint is maybe not unique but deeply important: To deliver innovative approaches and quality environments. As architects practicing today, we believe it is important to have projects that actually get built. Built work delivers true impact to the places where people engage, in their lives and day-to-day experiences. There's a lot of paper architecture happening, but something physical that makes a real impact in people's lives is what we choose to engage.

When I started in architecture, my goal was not to be a female principal. My goal was to be a great architect, and to make a difference using the built environment. But I do have to say: My eyes might have been closed when I jumped in. I went for it without thinking, "Maybe it will be tougher for a woman."

And that's probably a good thing. I focused on putting my mind solely to my goal. My deep persistence and passion have landed me where I am today.

But my eyes are open now. As my career has progressed, I've worked with different firms and have met people from around the world. I see

clearly the challenges, struggles, and inequity that stem from unconscious gender and racial biases. Now more than ever we need to create a greater urgency within the profession. I've been thrilled, as the chair of the Diversity Council and a member of the Equity Commission, to push the AIA to put these issues into the forefront. There is a very real need for mentorship, role models, and a change in how we operate.

Back home, I still think of Denver as a relatively new city. It's developing a personality, and the architectural scene is changing. I'm chair of Denver's Lower Downtown Design Review Board, where the design guidelines were once very traditional but are now expanding. It's very exciting to see that and help lead the way for architecture that's more relevant but still fits in.

Architecture is a tough profession. You have to love it and you have to live it, both in what you deliver and the path you take. And it's about people. When I was young, I was so moved by architecture; I continue to be, even now. I hope that those who see my work are equally moved, and feel included in those spaces. **AIA**

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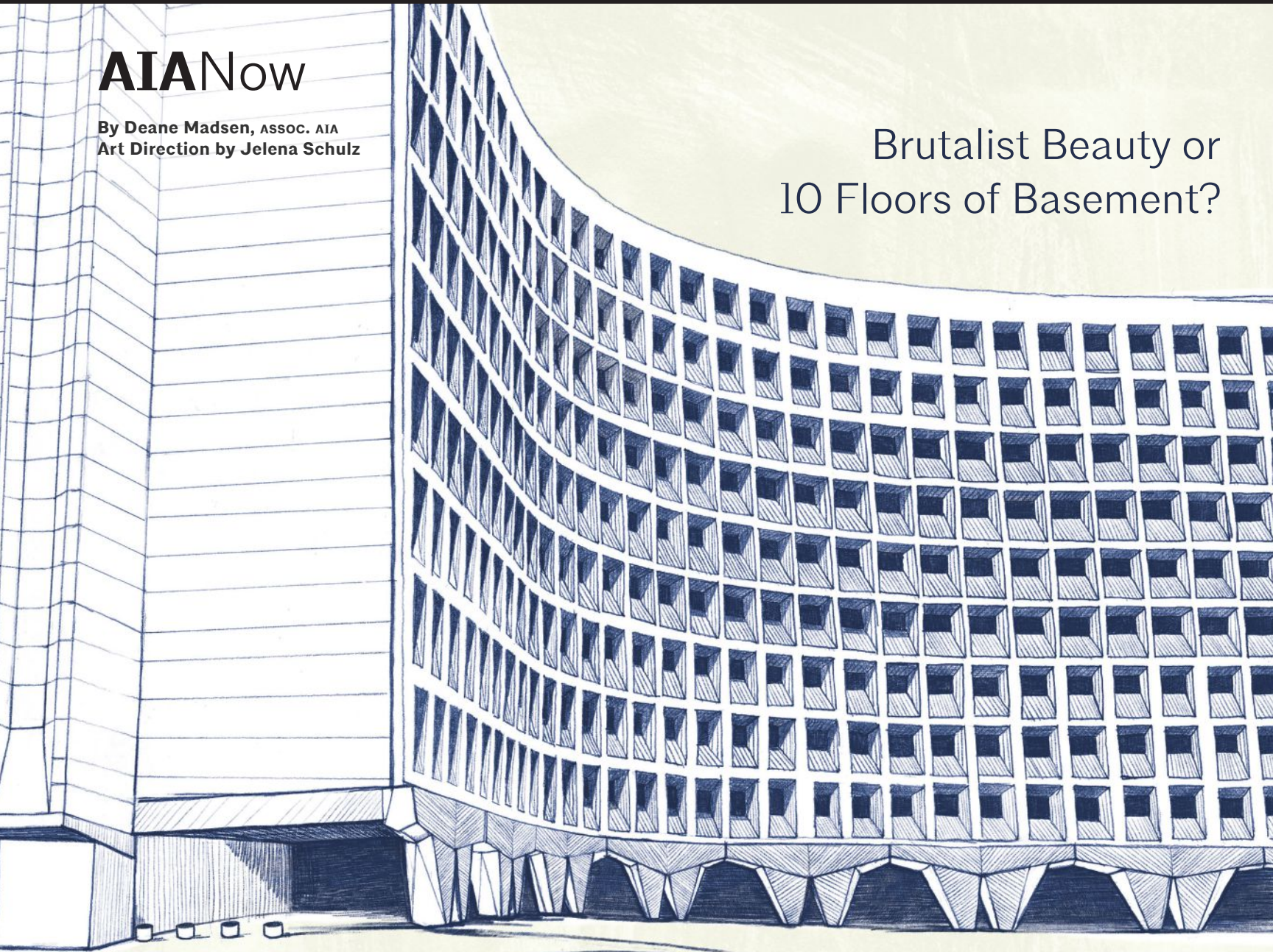
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By Deane Madsen, ASSOC. AIA
Art Direction by Jelena Schulz

Brutalist Beauty or 10 Floors of Basement?



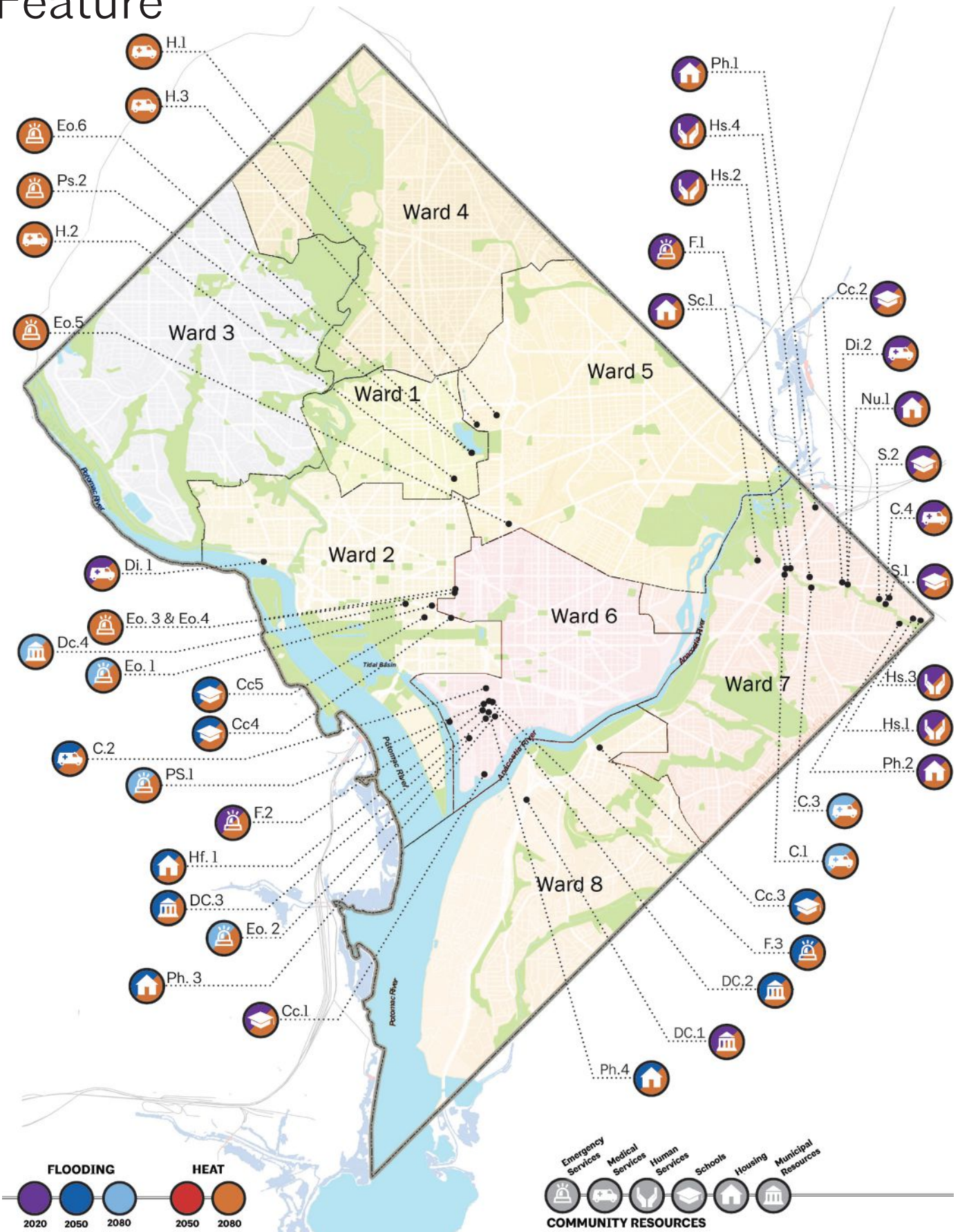
The architectural significance of the headquarters of the U.S. Department of Housing and Urban Development (HUD) cannot be overstated. Designed by Marcel Breuer and his associate Herbert Beckhard along with the firm Nolen-Swinburne, the 1.3 million-square-foot office building was completed in 1968—the same year Breuer won the AIA Gold Medal—and was the first government building completed under the U.S. General Services Administration’s *Guiding Principles for Federal Architecture*.

The 10-story building rests on tapered, board-formed pilotis that comprise a ground-level Brutalist colonnade, establishing it as the anchor of Washington, D.C.’s Southwest Washington, Urban Renewal Area. Rededicated as the Robert C. Weaver Federal Building in 2000 to honor HUD’s first secretary, the building is remarkable for its expressive modular deployment of precast concrete—another first for a government structure—as both structure and finish material throughout its curvilinear, elongated X-shaped volume. Upon its opening, *The New York Times* architecture critic Ada Louise Huxtable praised the building for its “contemporary monumentality,” noting that it was a “Federal demonstration project for better government architecture.”

Civil servants housed in the HUD building, however, told a different story. HUD’s ninth secretary, Jack Kemp, is said to have described the headquarters as “10 floors of basement.” Dim lobby and general lighting made wayfinding difficult amongst the long hallways of similar-looking offices. Mid-’90s landscaping additions made by Martha Schwartz to enliven the main façade and provide outdoor seating via circular concrete planters and plastic shading devices met with mixed reviews.

In recent years, complaints about indoor air quality led HUD to undertake a modernization that earned the building LEED Silver certification in November 2016. In 2008, the building was added to both the DC Inventory of Historic Sites and the National Register of Historic Places, earning landmark status for its pioneering materiality in a government context as well as for its enduring and exceptional formal qualities.

AIAFeature



Architects Author Climate Plan for Nation's Capital

Perkins+Will provides D.C. with adaptation strategies to confront the realities of climate change.

By Lester Siegel

Confronted by the game-changing outcomes of Superstorm Sandy and the devastating derecho storm of 2012 that wreaked havoc throughout the city, the Washington, D.C., Department of Energy & Environment (DOEE) decided to rethink ways to approach the effects of extreme weather on both the physical assets of the city and their residents. In 2013, the DOEE requested applications from groups and organizations to develop and write a comprehensive plan to evaluate vulnerabilities and make recommendations to mitigate the hazards caused by climate change, most specifically the increased risk of storm surge caused by rising sea levels and the occurrence of extreme heat and extreme precipitation.

After reviewing a competitive number of applications (the DOEE would not confirm specifics), officials chose the local office of Perkins+Will to orchestrate the city's new climate change-related strategy. Perkins+Will co-authored the report with AREA Research, the firm's nonprofit platform for discovery and exploration. Kleinfelder, with Atmos Research and Consulting, performed the

analysis on the effects of rising temperatures and frequency of extreme weather that would ultimately inform the recommendations.

"We felt that their [Perkins+Will's] main strength was that they can look towards the future, not the past, when it comes to the way we design buildings and our infrastructure," says Tommy Wells, director of the DOEE. "The impact that the built environment has is

tremendous when it comes to climate change, and having the perspective of architects and planners—along with their ability to work in both the public and private sectors—made them a truly ideal choice to spearhead this critical effort."

As for the need for a plan in the first place, Wells notes that climate change has become an economic as well as social and political

AIA Feature

CONTINUED

issue. “If you don’t reduce the risk to your capital assets,” he says, “it may impact your municipal bond rating, which can cost you more with insurance companies.”

After examining and highlighting threats to the most vulnerable neighborhoods in the city, the Perkins+Will team—comprised of Amy Thompson, project manager and member of the American Institute of Certified Planners (AICP); Jon Penndorf, AIA, sustainability leader; Doug Pierce, AIA, project architect; and Janice Barnes, global resilience director—set out to provide a road map for the District to proactively address the dangers from the possibility of catastrophic climate change impact.

The Plan Takes Shape

“Our team used a number of sources to create a framework for a plan that encompasses sustainability, hazard preparedness, equity, and other design criteria,” Penndorf says. “From there, we listed out actions and workshopped them with DOEE to prioritize areas for implementation.”

At the press conference announcing the release of the report, deputy mayor for greater economic opportunity Courtney R. Snowden passionately explained that the lessons of Hurricane Katrina reinforced how important it is that cities prepare their most vulnerable residents for the shocks associated with extreme weather and natural disasters. “Cities must have a plan,” she emphasized, “and equity is infused in every part of this plan.”

Wells adds that vulnerable areas face a disproportionate impact from the effects of extreme heat, snowfall, and flooding—not just because of lack of income but because of a lack of mobility. “The plan acknowledges that reality,” he says, “and we will be striving to improve not just the resiliency of the most vulnerable areas in the city—like the Watts Branch neighborhood prone to severe flooding—but to also working to offer community resources and services that residents can turn to in times of crisis.”

Four Critical Areas

The Perkins+Will plan provides specific recommendations across four critical areas:

Transportation and Utility Infrastructure: Develop site-level adaptation plans for all

transportation, energy, water/wastewater, telecommunications/data facilities, functions, and service areas that are identified as at-risk from rising sea levels and flooding.

Buildings and Development: Upgrade existing buildings, addressing resilience with new construction and development, incentivizing private owners and developers to implement resilience measures, and developing agency protocols to ensure compliance with these measures.

Neighborhoods and Communities: Improve public awareness of threats and ways to counter them, improving the readiness of emergency responders and community members and increasing opportunities for community engagement and citizen response.

Governance and Implementation: Develop an organizational strategy that links all adaptation efforts in D.C.

The Climate Ready DC plan, which contains 77 action items, was written to be phased in through short-, medium-, and long-term implementation. But for the plan to be successful, residents need to be aware of its existence and what it might mean for them personally. To that end, the DOEE held three public meetings, with breakout sessions for attendees to discuss elements of the four main topic areas. Residents could share what they valued most in the plan, and what they felt was missing.

There are still gaps that will need to be addressed, as well as questions about zoning ordinances and building codes, but the plan is intended to also work as a catalyst for activation for the city. Perkins+Will has urged the DOEE to collaborate with multiple agencies and partners so that its structure, protocols, and cohesive communication allow for the successful realization of the plan. Taking that a step further, they suggested establishing a public-private task force, including infrastructure owners and operators, to oversee and coordinate the implementation of the plan.

Lessons, Takeaways, and Next Steps

When it came to drafting the plan itself, Amy Thompson says, “You really need to know your audience. In the end, it is both a document that you want the public to be able to read and understand, but you also

want it to serve as a set of recommendations that D.C. could use to get funding to execute elements of the plan.”

She also notes that the vulnerability assessment showed that, regardless of flooding or a severe snowstorm, “there are language barriers and other entrenched obstacles for residents to be able to react to problems.” As the plan evolves to address these and other realities, D.C. will be updating its overall comprehensive land use plan in 2017.

“We are hoping to infuse our building codes, based on the International Green Construction Code, with more resilient building codes,” says Kate Johnson, program analyst for the D.C. Urban Sustainability Administration. “We will be using the Climate Ready DC plan as a guide for future development and taking the opportunity to leverage existing ongoing projects, like stream restoration to minimize flooding.”

Design-Oriented Approaches with Community Reach

When it comes to the significance of being involved in an undertaking of this magnitude, Penndorf says, “We believe that the systems thinking that architects and planners do every day adds great value to tackling big issues like climate change, and offers tangible ways to improve the design and development process.”

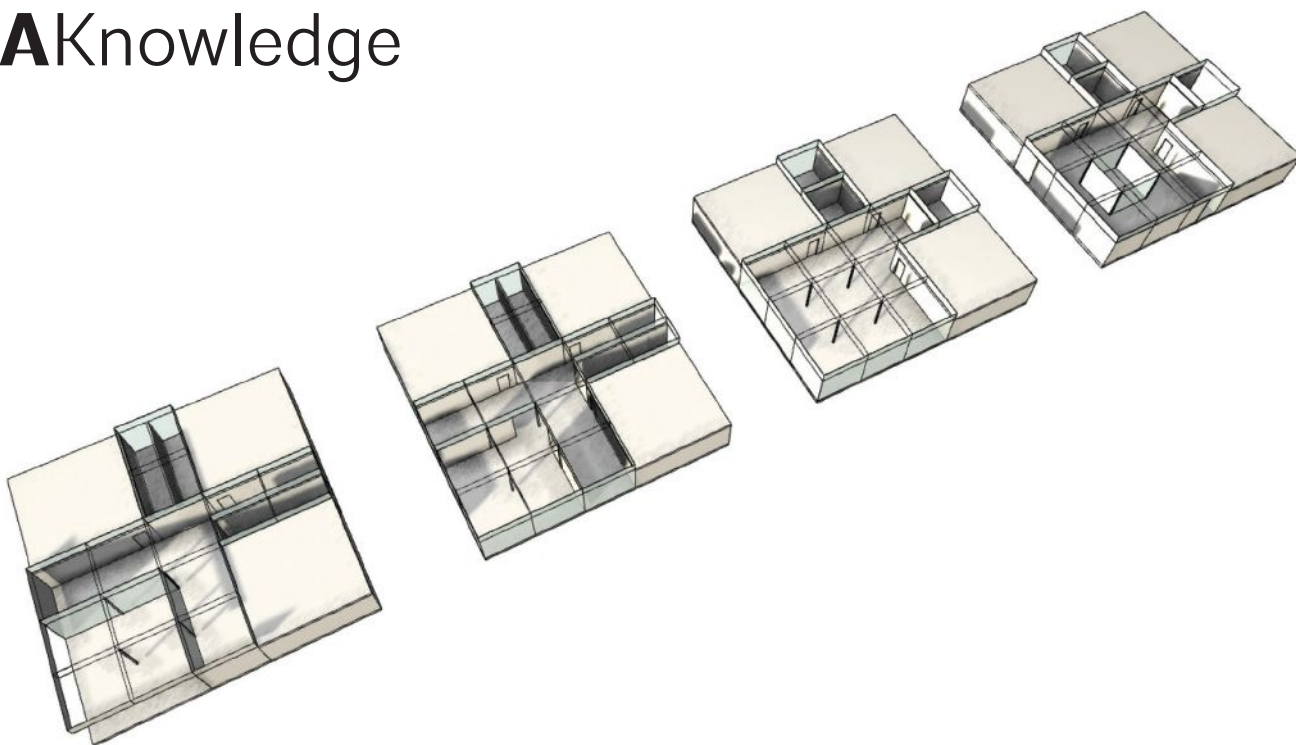
“Perkins+Will considered this project a form of civic engagement,” he adds. “We hope our efforts will make a positive difference at a different scale, to make communities and neighborhoods across the city safer, healthier, and sustainable to survive and recover from extreme weather and environmental shocks.”

Architects often stress the importance of “being at the table” when it comes to crucial big-picture decision-making at the local, state, and federal levels. How better to substantiate the value of an architectural vantage point than to apply to conduct research and write similar wide-reaching plans for government agencies?

This carefully fine-tuned effort can serve as an example of a time when the leaders of government agencies and elected officials welcomed input on matters that influence and shape the built environment from those who plan and design, and, to a larger degree, determine the way their communities function and prosper. **AIA**

AIA Knowledge

COURTESY OF: MASTERS OF SCIENCE STUDENT, CHRISTOPH OPTIZ



ABOVE: In between space variations. 1. Covered corner terrace. 2. Enclosed assembly space. 3. Open assembly space. 4. Courtyard.

Buildings That Teach

AIA research grants are helping make classroom design part of the curriculum.

James R. Jones' daughter went to middle school in a slapdash modular classroom. "It was oppressive," Jones says. "It had poor acoustics and one window for daylighting." The deadening scene compelled Jones, the director of the doctoral program for Design Research and the Center for High Performance Environments at the Virginia Tech School of Architecture + Design, to design a better classroom. His idea was to create an environment that not only kept students engaged, but also served as an interactive learning tool that could help tie together institutional educational goals with students' immediate surroundings.

His ideas were collected in "Guidelines for the Design of Sustainable Learning Laboratories that Teach Through Architecture," a project on which the AIA awarded a 2008 Upjohn Research Initiative Grant. The grant, which provides material support of up to \$30,000 for "applied research projects that enhance the value of design and professional practice knowledge," has given his proposal the credibility to be positioned as an alternative to conventional modular classrooms, Jones says.

Jones' idea is based on making the architecture of a classroom a tangible part of the learning experience. Schools often approach design in a passive manner, as if the buildings in which they educate are simply vessels to contain young minds and bodies in the most efficient utilitarian fashion. Even schools that incorporate forward-thinking design elements that employ sustainability principles—think rainwater cisterns—often fail to turn these assets into actionable learning opportunities. "This missed opportunity undervalues the role of architecture and its systems in the learning process," Jones says.

Rather than perpetuate this division, Jones proposes tying together architecture and pedagogy through a conceptual framework of "buildings that teach." This means not just incorporating technological and sustainability enhancements like photovoltaic panels, but also the sensors and monitors needed to record the energy used (and saved). In turn, these readings of energy inputs and outputs become supporting facts that teachers use within the classroom to complement their lessons.

The "Guidelines" examine the application of this new model of participatory architecture for fifth and sixth graders in accordance with expectations set forward in the Commonwealth of Virginia Department of Education's Standards of Learning (SOL). A close look at these standards reveals 15 SOL objectives that could be met through designing interactive

exhibits or by utilizing elements of the surrounding architecture.

"At the time [of the project], the idea was geared toward SOL," Jones says. "Now, though, the idea is geared towards STEM curricula across different states"—referring to national trends in fostering educational awareness in science, technology, engineering, and math (STEM).

Although confident in the way his work brakes down the theoretical boundaries between learning and architecture, Jones acknowledges the financial woes that many school districts face. He is quick to point out that schools are "budget-driven, so that any initial costs that would be higher than typical modular space are hard for them to grasp." The ballpark cost of his model is around \$160,000 at its most basic. "There will be a graded cost structure depending on the amenities included," he says. Compare that to an approximate \$45,000 outlay for an 800-square-foot modular unit.

Yet, as Jones tells local county boards in Virginia, there are potential dividends that mitigate those higher initial front-loaded costs. The increase of daylighting through open design plans or the incorporation of electricity-saving systems will most certainly lower maintenance and energy costs over time. But beyond the bottom line, the greatest dividend may be in the edification of the students who use architecture as a learning lens. **AIA**

Ben Schulman

NOTICE

of AIA Candidates & Convention Business Items

CANDIDATES FOR INSTITUTE OFFICE

Elections for the Institute's 2018 First Vice President/2019 President-elect, 2018-2019 Treasurer, and 2018-2020 At-large Director on the AIA Board of Directors, will be held at A17 which takes place April 27-29, 2017, in Orlando. If no candidate for First Vice President or Treasurer obtains a majority of the votes cast during the initial round of voting on April 27, a run-off election will take place on April 28. The following members have declared themselves candidates for national office.

2018 First Vice President/ 2019 President-elect



William J. Bates, FAIA
AIA Pittsburgh/AIA Pennsylvania

2018-2019 Treasurer



Patrick P. Panetta, AIA
AIA Phoenix Metro/AIA Arizona

2018-2020 At-large Director (one to be elected)



Emily Grandstaff-Rice, FAIA
Boston Society of Architects-AIA/
AIA Massachusetts



Daniel S. Hart, FAIA
AIA West Texas / Texas Society of
Architects/AIA

ACCREDITATION

Delegate accreditation for the annual business meeting of the Institute will take place in Orlando, Florida, on Tuesday, April 25, from 12:00-5:00pm and on Wednesday, April 26, from 6:30am to 12:30pm. Only accredited delegates may take part in the annual business meeting or vote for candidates.

THE INSTITUTE'S ANNUAL BUSINESS MEETING WILL BEGIN PROMPTLY AT 2:45PM ON WEDNESDAY, APRIL 26. DELEGATES WHO FAIL TO CLAIM THEIR VOTING KEYPADS AND TO USE THEM TO REGISTER THEIR PRESENCE AT THE START OF THE MEETING WILL NOT BE ABLE TO VOTE AT THE MEETING.

PROPOSED BYLAWS AMENDMENTS

The AIA Board of Directors is sponsoring amendments to the Institute's Bylaws, scheduled for consideration by the delegates at the annual business meeting. Bylaws amendments require approval by an affirmative two-thirds majority of the votes cast (or accredited to be cast) by delegates at the meeting, determined in the manner prescribed in Section 9.011 of the Bylaws.

Beginning in 2015, amendments to the Bylaws permitted AIA state organizations (other than statewide AIA chapters) to form sections. The Board of Directors supports amendments to the Institute Bylaws such that, when a chapter dissolves to become the section of a state organization, the dissolving chapter's member delegates at the conference would effectively be reallocated to the state organization.

The Board may also sponsor certain technical amendments to the Bylaws for consideration by the delegates at the annual business meeting.

RESOLUTIONS

The delegates at the annual business meeting of the Institute will also be asked to consider resolutions, which require approval by a majority vote of the delegates present and voting.

For candidates' statements, and the full text of the proposed Bylaws amendments and resolutions, visit the A17 website at conferenceonarchitecture.com



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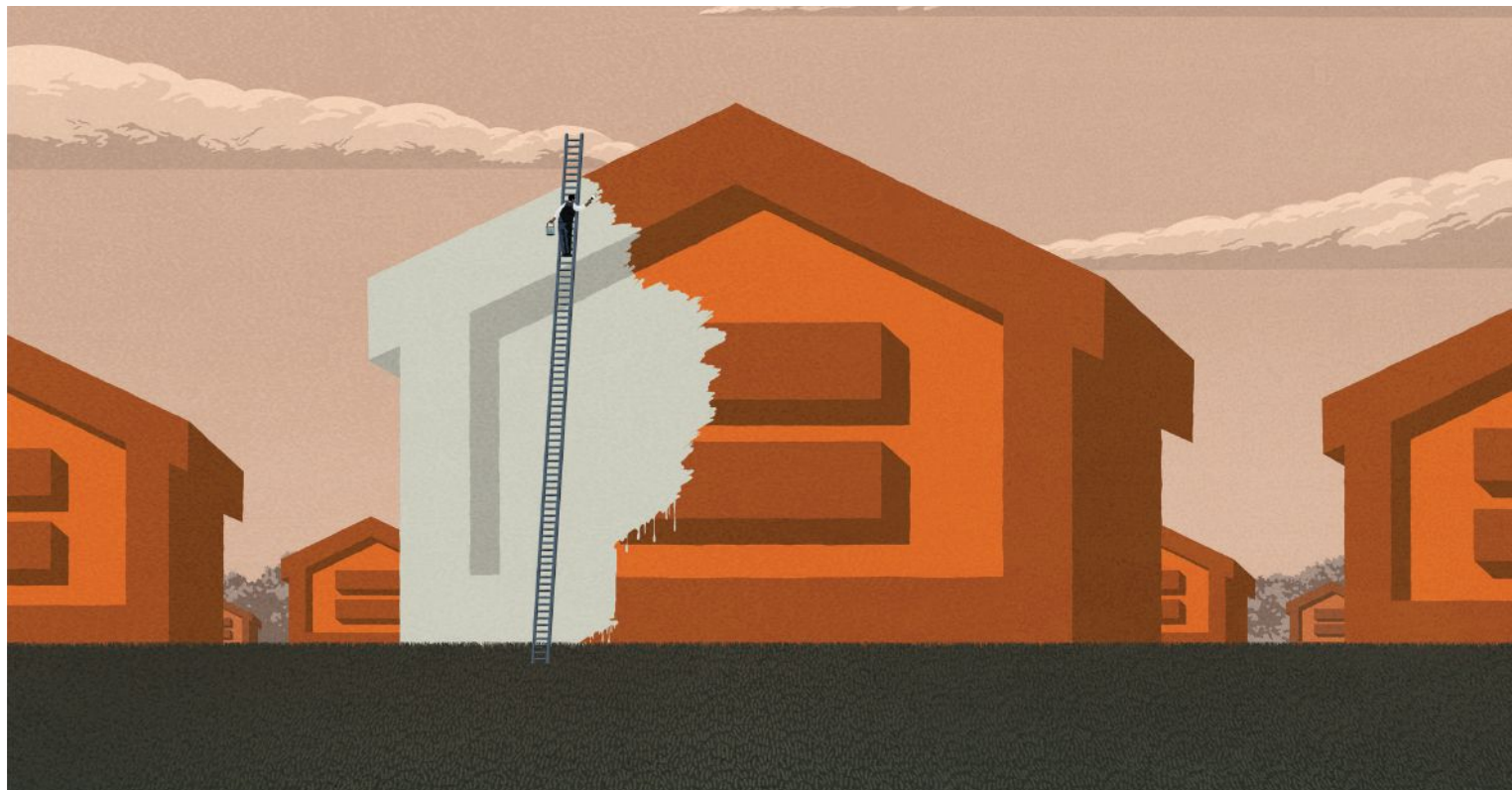


ILLUSTRATION: MICHAEL GLENWOOD AKA MICHAEL GIBBS

HUD's Next Chapter Proves Elusive

Incoming HUD secretary Ben Carson says he will bring a holistic approach to housing. But his beliefs on housing policy spell an uncertain future for the agency.

To understand what lies ahead for the U.S. Department of Housing and Urban Development (HUD) and its new secretary, Ben Carson, it's useful to examine HUD's legacy as well as Carson's backstory.

HUD was formed under President Lyndon Johnson with a mission of building inclusive communities while ensuring affordable housing for all. This started with the Fair Housing Act (also known as Title VIII of the Civil Rights Act of 1968), which prohibited discrimination in housing on the basis of race, color, religion, sex, or national origin. The agency has earlier roots in the U.S. Housing Authority, which was created by the Housing Act of 1937 as a part of President Franklin D. Roosevelt's New Deal. This legislation was aimed at providing safe and sanitary dwellings for low-income families by establishing subsidies for local agencies.

The objective of allowing all people, regardless of means or personal characteristics, to live in decent housing has survived in subsequent policy updates and revisions. HUD's mission has evolved to include protection against discrimination, promotion of sustainability, and, following the housing crisis of 2008, distribution of \$13.61 billion of economic stimulus through the American Recovery and Reinvestment Act of 2009 as well as insuring about one in five mortgages.

Carson's upbringing began in a 750-square-foot house purchased through the GI Bill with a lawn and a one-car garage in southwestern Detroit. When his parents separated, Carson and his mother moved to Boston to live with relatives before resettling in a multifamily building back in Detroit. Carson was not yet 17 when the Fair Housing Act was passed. He left Detroit soon thereafter to attend Yale University, where he earned a psychology degree in 1973. A medical degree from the University of Michigan followed in 1977, and he completed his neurosurgery residency at Johns Hopkins in 1983.

At his confirmation hearing in January, Carson detailed his personal experience with housing insecurity as well as the lessons he learned from his mother. He has stated elsewhere that she was eligible to receive

assistance through the federal Aid to Families with Dependent Children program, but insisted that she would not be dependent on anyone but herself. She instilled in him the belief that people could lift themselves out of poverty rather than relying on help from others, whether in the form of government aid or otherwise.

This belief in everyone's self-reliant potential for upward mobility—the bootstrap argument—puts Carson at odds with the agency itself. HUD provides assistance to Americans who cannot overcome impoverishment or disenfranchisement. The department's 2015 final rule, Affirmatively Furthering Fair Housing (AFFH), establishes guidelines by which equal opportunity and fair housing goals can be achieved because, as the legislation states, “no child's ZIP code should determine her opportunity to advance.” Carson suggests that environment isn't as much of a determining factor as willpower.

And his assessment of the policies that created HUD calls into question how he will apply them. “One need look no further than the programs that stemmed from Great Society policies of the Johnson era,” Carson wrote in a *Forbes* opinion piece during his presidential run. “Those programs have utterly failed to improve the lot of the poor and underprivileged.”

Beyond his scathing review of a half-

AIAFuture

AIA Perspective

century of policy, among the few indications Carson has given about his general position on housing are those he wrote in an op-ed for *The Washington Times* in 2015 comparing the AFFH rule to school integration via busing in the late 1970s. In the piece, he argues that not only have well-intentioned policies been ineffective, but that entrusting the government to enforce them is cause for alarm.

“[G]overnment-engineered attempts to legislate racial equality create consequences that often make matters worse. There are reasonable ways to use housing policy to enhance the opportunities available to lower-income citizens, but based on the history of failed socialist experiments in this country, entrusting the government to get it right can prove downright dangerous.”

During his confirmation hearing, Carson dialed back his criticism of government programs while still questioning their efficacy. “What has happened often is people who seemingly mean well have promoted things that do not encourage the development of innate talent in people,” he said. “Hence we have generation after generation of people living in dependent situations.”

Carson has suggested a holistic approach to housing without offering specifics on what that might be or what reasonable policies HUD might promote. His indictment of HUD’s policies—and of government more broadly—could be looked at as an indication that HUD will undergo significant reductions under his leadership. An administration focused on reducing spending for everything but defense, as President Donald Trump has promised, could put HUD in its sights for more than just a simple streamlining.

HUD has a current staff of more than 8,000 and a proposed 2017 budget of \$48.9 billion, which includes \$38 billion for rental housing assistance. HUD’s numbers might change, but during his tenure as its 17th secretary, Carson will be tasked with defining reasonable ways of interpreting housing policy to create “strong, sustainable, inclusive communities,” per the agency’s official mission.

Although his current outlook suggests his understanding of those policies is somewhat limited, the civil servants who remain at the agency under his leadership will be able to present to him the full scope of HUD’s services for achieving housing access equality across all demographics. For Carson to get it right, he will need to first understand the dire implications of getting it wrong. **AIA**



PHOTOGRAPHY: CARL BOWER

Influence

Beyond ideas, only action leads to power.

Architects around the world seem to face the same issues. They certainly voice the same complaints: Fees aren’t adequate; clients expect too much, don’t value design, and don’t understand what we do; it takes too long to become an architect; other professions are taking over our territory; and, of course, nobody’s doing enough about any of it.

Well, what can we do?

We can design.

Architects tend to underestimate—or underuse—their power to influence. We overlook our ability to give physical form to concepts. Most people can’t easily shape images of how tomorrow might differ from today—they can’t “see” what something could become.

This ability to envision has the power to influence, and we can (and should) use it to cause change and affect outcomes.

Even in the absence of strong leadership from national elected officials, many state and municipal governments—along with many businesses and citizens—will demand more economical and environmentally benign energy systems. They will continue to seek more equitable cities, affordable housing, and convenient lower-impact transit.

Residents in cities from Paris to Columbus, Ohio, have cheered steps to curb the dominance of private automobiles in their streets. Such plans meet with huge resistance at first, but eventually only the most diehard car enthusiasts (and lobbyists for the tire, road paving, and auto industries) remain skeptical. Most people now understand how the city can be friendlier for people on foot, in strollers, and on bicycles—and not just why it’s a good idea in theory.

The political will to make these changes comes in large measure from alluring designs by architects and planners, who show how much better things could be. There is force inherent in this ability to envision alternatives and to show possible futures.

We’ve all experienced the power of images and imagination—in winning support for an improved school, for a better streetscape, or for a new building or park.

Most people can advocate for ideas, but few are able to wield the additional influence of giving ideas form. That’s the kind of influence we can use with state legislators, city officials, agency heads, and even members of Congress.

Sound argument, compelling speech, and political heft will always have a place, but let’s neither forget nor underestimate our power to influence. As never before, we must use it to address our pressing challenges. **AIA**

Thomas Vonier, FAIA, 2017 AIA President

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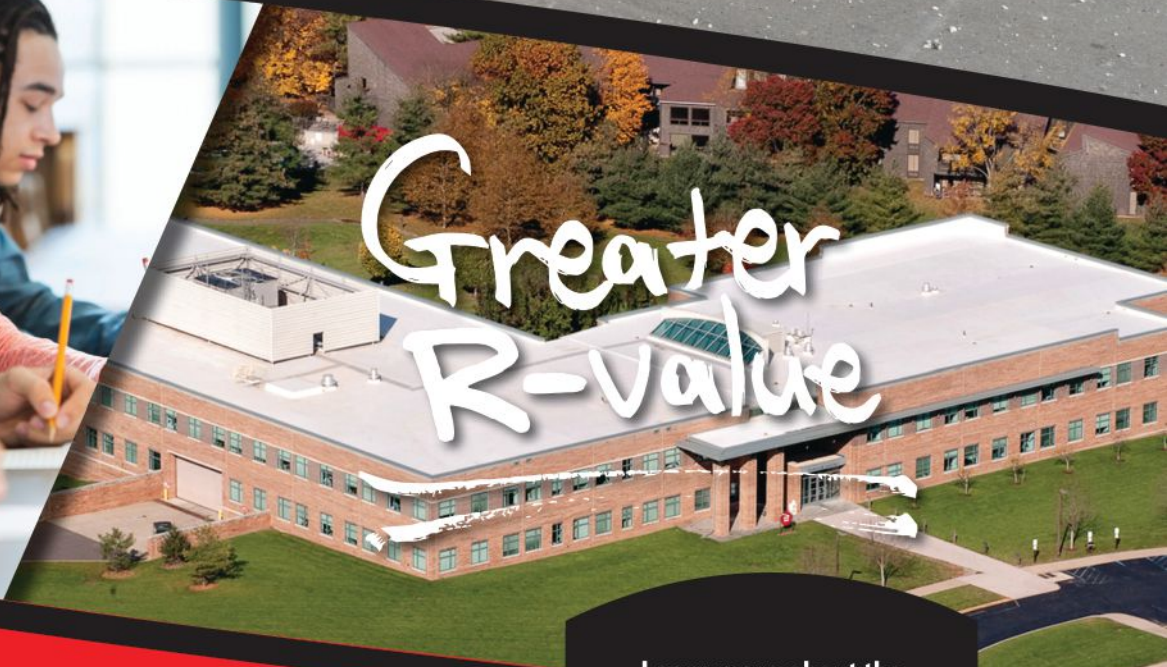
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“The line between privately owned and publicly accessible is really beginning to blur. I think that’s going to represent a real challenge, particularly under this administration.”

On the last Saturday in January, news began to spread of President Donald Trump’s executive order (issued the day before) that temporarily suspended entry into the United States by passport holders from seven countries—Syria, Sudan, Iran, Somalia, Libya, Iraq, and Yemen—and permanently shut down admission of Syrian refugees. By late morning, a plethora of non-travelers were racing to the nation’s airports: elected officials bent on rescuing some of those trapped in immigration limbo by the order, lawyers who’d volunteered to help detainees and their families, hordes of protesters, and, inevitably, reporters. Among the first journalists to arrive at John F. Kennedy’s Terminal 4, the airport’s main international hub and a prime entry point into this country, was Charlotte Alter from *Time*.

“I heard there was going to be a big protest about the immigration ban,” Alter later told me. When she arrived, she was wearing a press pass and had her notebook out. “We were asking the Port Authority police officers, the ones in uniform ... ‘Hey officer, where are people being held?’” She was surprised by the response: “They were like, ‘You can’t be in here. You can’t be in here. This is private property.’”

Alter, in an airport traversed by some 57 million passengers a year, couldn’t fathom how she could possibly be on private property. Then, some of the uniformed officers left and returned with a terminal representative, a man in a suit who refused to identify himself. According to Alter, he told the small cluster of reporters, “You have to leave. We don’t have any press here.”

“Who says we have to leave?” Alter recalls asking. “And he said, ‘The client.’”

Even though JFK is owned by the city of New York and is operated by a public agency, the Port Authority of New York and New Jersey, most of the terminals are private fiefdoms maintained—and in some cases built—by the airlines. T4 is unusual only in that it isn’t operated by an airline but, since late 1990s, by a subsidiary of the Dutch company that runs Amsterdam’s Schiphol Airport.

For Alter, it was her introduction to a growing trend: many of the places in which Americans spend a lot of our time, places that may look and feel public, are, from a legal perspective, private. Generally, we only notice the difference if we try to exercise our First Amendment rights, whether that means gathering signatures for a petition, peacefully protesting, or, as Alter was doing, trying to report a news story. Consider, for instance, how in 2015 an unscheduled closing famously shut down a Black Lives Matter protest at Minnesota’s Mall of America.

City University of New York government and public affairs professor Anthony Maniscalco has written



The atrium of Trump Tower in New York

a book, *Public Spaces, Marketplaces, and the Constitution* (SUNY Press, 2015), about the complex puzzle of overlapping gray areas that we routinely navigate. He explains that a place like T4, although publicly owned, was built for a very specific purpose, air travel, which the Supreme Court has ruled “excludes expression.” That ruling, Maniscalco adds, tends to undercut the trendy idea that airports are the new cities.

“What you’ve got is an amazing amount of public land being taken off line and reserved for private developers and property owners. The more stuff that’s put into the private property hopper, the more concern I have about the viability of First Amendment expression around the country,” Maniscalco told me. “The line between privately owned and publicly accessible is really beginning to blur. I think that’s going to represent a real challenge going forward, particularly under this administration.”

A Public Bench with Unexpected Significance

By the simple fact that he is our first real-estate developer president, Trump is putting new stress on the old fault lines that exist wherever public overlaps with private. Take, for example, Trump Tower, that shiny 58-story glass trophy building with its 80-foot-tall “public” atrium decorated in shimmering pinkish marble and equipped with its own waterfall. It has public passageways, seating areas, and outdoor terraces that are mandated by law to be open from 8 a.m. to 10 p.m., because the atrium is what’s known in zoning

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parlance as a “privately owned public space” (POPS). This oxymoron describes a commonplace circumstance in New York City, created when a developer like Trump gets a zoning bonus (in his case an allowance to build 20 stories higher than the rules stipulated) in exchange for including a public amenity in the project.

These days, Trump Tower is more famous but less public than it once was. On a normal weekday when there are no protests and the president himself is in Washington, gaining entrance requires navigating a maze of metal police barricades, walking past a phalanx of NYPD officers who appear suited up for warfare, and allowing one’s bags to be x-rayed by uniformed Secret Service officers.

Once inside, Trump’s aesthetic is still as flashy as a disco ball (the building is vintage 1983), but its public amenities are somewhat hidden. Outdoor terraces are on the fourth and fifth levels, and they are hard to find (the fourth-floor terrace is currently closed for construction). The public restrooms are down a long hallway in the basement. A marble bench, part of the public seating mandated by the POPS agreement, was banished sometime over the past decade in favor of a counter selling Trump-branded merchandise. When this disappearance was reported by *The New York Times* in 2015, the city forced the Trump organization to replace it. Now an unwelcoming bench made of black steel slats sits across from the tower’s elevators.

That bench, however, has taken on unexpected significance. “Since Election Day,” wrote Jerold Kayden, an urban planning professor at the Harvard University Graduate School of Design, in a January essay for the *Boston Globe*, the bench “has played an outsized role in our democracy. Each morning, the bench fills with journalists and their cameras as they record who rides up and down the elevators to meet with Trump or his transition team.” And the rules that govern POPS make it nearly impossible to throw the reporters off the bench.

Protestors and Trump Hotel in D.C.

The mix of public and private interests in and around Trump Tower, however complex, is nothing compared to those surrounding Washington, D.C.’s Old Post Office Building, which the Trump Organization leased from the General Services Administration in 2013 and renovated into a Trump International Hotel. For one thing, the arrangement has spawned legal issues that were still unaddressed in late February, like a stipulation in the agreement that states, “No elected official shall be admitted to any share or part of this lease or to any benefit that may arise there from.”

Moreover, during inauguration week, reporters, including those just planning to eat breakfast, were



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reportedly banished from the premises. Is this legal? According to Trump's lease with the GSA, the building's historic clock tower (which won't reopen until next year) must be publicly accessible, but the management has more discretion over other areas of the building. Still, Washington, D.C., law forbids denying "full and equal enjoyment" of "public accommodations" for a variety of reasons, including "source of income." Which would seem to suggest that you can't prevent a reporter from eating breakfast simply because he or she is a reporter.

The hotel, like many of Trump's holdings, has become a magnet for protesters, but as ARCHITECT contributor Amanda Kolson Hurley reported in the *Washington City Paper*, "Thanks to the terms of the lease, the Trump Organization controls the small plaza in front of the hotel. Anytime it wants to evict protesters, it can."

The project is a perfect symbol of the conflicts that can arise with a real estate developer as president in a world where the distinctions between public and private have become difficult to discern. But it merely hints at greater conflicts to come. As it happens, the one Trump campaign promise that even his fiercest detractors can, perhaps, get behind is infrastructure spending. The Trump campaign's website says he plans "investments in transportation, clean water, a modern and reliable electricity grid, telecommunications, security infrastructure, and other pressing domestic infrastructure needs."

The details of his plan remain unclear. But a list of 50 "emergency & national security projects," including a new Kansas City airport terminal paid for by Southwest and other airlines, a privately funded high-speed rail line connecting Houston and Dallas/Fort Worth, and a federally funded rehab of Chicago's Union Station were reportedly given to the National Governors Association in December by the Trump transition team. The document proposes \$137.5 billion in infrastructure spending, with 50 percent of the funding theoretically coming from "private investment." The amount of privately owned and operated "public" space appears destined to increase dramatically.

The Senate Democrats have responded to Trump's talk of infrastructure by issuing their own plan for a trillion dollars of spending, funded mainly by closing corporate tax loopholes. In other words, the plan proposes—radical idea!—public funding for public infrastructure. There is practically no chance of that proposal going anywhere.

Meanwhile, the AIA's New York chapter has responded to President Trump's not-yet-fleshed-out infrastructure intentions with high-minded but vague statements of principle: "Public-private partnerships



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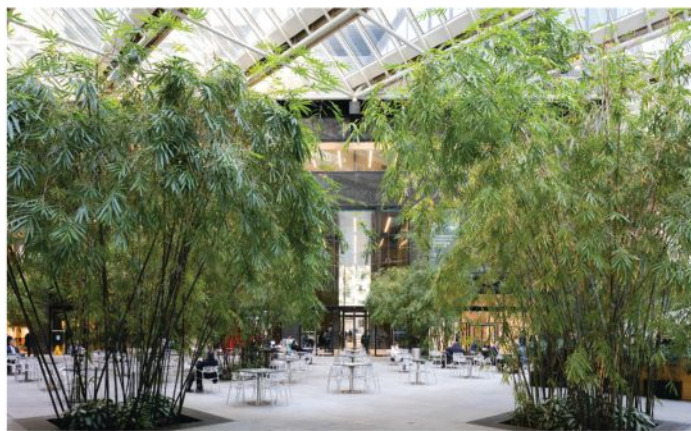


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The atrium of the IBM building, located next to Trump Tower

should achieve public initiatives where there is a clear benefit to the public good and where standards of quality and service are assured,” wrote the organization in a recent release.

I emailed Kayden, a leading authority on POPS, to get his take on how effective these arrangements can be. He wrote back: “The keys to effective public-private partnerships are thoughtfully drafted legal contracts describing with clarity and metrics the ‘public’ obligations of the private owner or operator, as well as established government institutions charged with monitoring the deal and enforcing it when necessary.” A few minutes later, Kayden sent me a second email: “It’s the fox guarding the henhouse. From the hen’s point of view, the outcome may not always be ideal.”

A Question of Two Atria

Which brings us back to Trump Tower. Its atrium, in fact, connects directly to a much nicer, more generous POPS, the atrium of 590 Madison Avenue, originally called the IBM building, which was designed by Edward Larrabee Barnes. Completed a year earlier than Trump Tower, the IBM building has long been treasured for its daylight-filled public room, with its stands of bamboo and plentiful seating. (Now, of course, the building is almost as heavily barricaded as its illustrious neighbor, lest a truck bomber decide to barrel from one atrium to the next.)

Stop in sometime and compare the two atria. Most of the visitors to Trump Tower these days appear to be tourists. They navigate security, ride the escalators they’ve seen on TV, snap a few selfies, and leave. 590 Madison, by contrast, is a convivial oasis, a club that it costs nothing to join, with lightweight tables and chairs hosting a cross-section of midtown. Everyone seems to enjoy the space: office workers eating lunch, people lost in thought, a startup team having a meeting, the discreetly homeless escaping the cold. Decide for yourself which of the two projects fulfills its obligation in a transparent, straightforward, public-spirited way.



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“It is not unusual for unbuilt work to advance an architect’s career, and it raises an interesting question. How would their makers’ reputations have fared if such projects had actually been constructed?”

What If: The Unbuilt Legacy by Witold Rybczynski, HON. FAIA

Last November, the Museum of Modern Art in New York held a symposium to mark the 50th anniversary of the museum's publication of Robert Venturi, FAIA's *Complexity and Contradiction in Architecture*. Leafing through the book I was reminded how many historic and modern examples Venturi managed to squeeze into only 105 pages. The last chapter is devoted to the author's own work, a dozen projects including a shingled beach house with a startlingly tall chimney. This little weekend cottage, designed in 1959, brought Venturi into the architectural limelight. Though never built, it was immediately published in *Architectural Design*, Vincent Scully called it "the first major project of the new Shingle Style," and a cardboard model now resides in MoMA's collection. It is not unusual for unbuilt work to advance an architect's career—think of Peter Eisenman, FAIA's House X or Zaha Hadid's The Peak—and it raises an interesting question. How would their makers' reputations have fared if such projects had actually been constructed?

It's unlikely that, had it been realized, Venturi's beach house would have added to the architect's luster, since only three years later he would build the celebrated Vanna Venturi House. Eisenman's House X, coming on the heels of Houses I, II, III, and VI—all built—would have merely confirmed his deconstructivist tendencies. On the other hand, the competition-winning Peak would have established Hadid as a practitioner a full decade before her first built commission—not inconsequential in what would turn out to be a truncated career.

Mies the Minimalist Poet?

Architectural competitions have produced other tantalizing "what ifs." What if Eliel Saarinen had won the 1922 Chicago Tribune competition? His Art Deco design anticipated Raymond Hood's RCA Building by more than a decade and might have altered the history of the American skyscraper. On the other hand, Saarinen's second place finish (Hood and John Mead Howells' entry won out) brought him to America, ensured the creation of Cranbrook, and meant that Eero became an American architect rather than a Finnish one. And what if Congress and the Washington establishment hadn't nixed Saarinen, Swanson & Saarinen's competition-winning design for the Smithsonian Gallery of Art? We would have had a modernist building on the Mall in the 1940s, which would undoubtedly have influenced the architectural future of the nation's capital.

Ludwig Mies van der Rohe's entry to the 1921 Friedrichstrasse office building competition in Berlin didn't receive even an honorable mention, yet the



A model of Venturi's beach house

20-story tower became a modernist icon, immortalized in Mies' lyrical charcoal and graphite drawings. The evocative crystalline glass cliff, almost expressionist, represents a very different answer to the tall building than his later boxy designs. Had it been built, we might have gotten Mies the Minimalist Poet instead of Mies the Minimalist Rationalist.

And what if the first glass-clad skyscraper in Manhattan had been built not by the international team responsible for the United Nations Secretariat but 20 years earlier—by Frank Lloyd Wright? In 1927, Wright received a commission to build two 14-story and one 18-story apartment buildings next to the old church of St. Mark's-in-the-Bouwerie in the East Village. The pinwheeling floors of the angular towers were cantilevered from a central "tap root," with a glass-and-copper curtainwall hanging from the concrete structure. In his upcoming book *Wright in New York* (Oxford University Press, 2018), Anthony Alofsin, FAIA, calls the project "no less than an attempt to create an entirely new model for the modern skyscraper."

Although St. Mark's was scuttled by the Depression, Wright adapted the design to another urban project, Crystal Heights, in Washington, D.C. He described the spectacular real estate development—no less than 14 towers on a 10-acre site near Dupont Circle—as "Arabian Nights Entertainment" and "the apotheosis of GLASS." This pioneering example of what today would be called mixed-use included a hotel,



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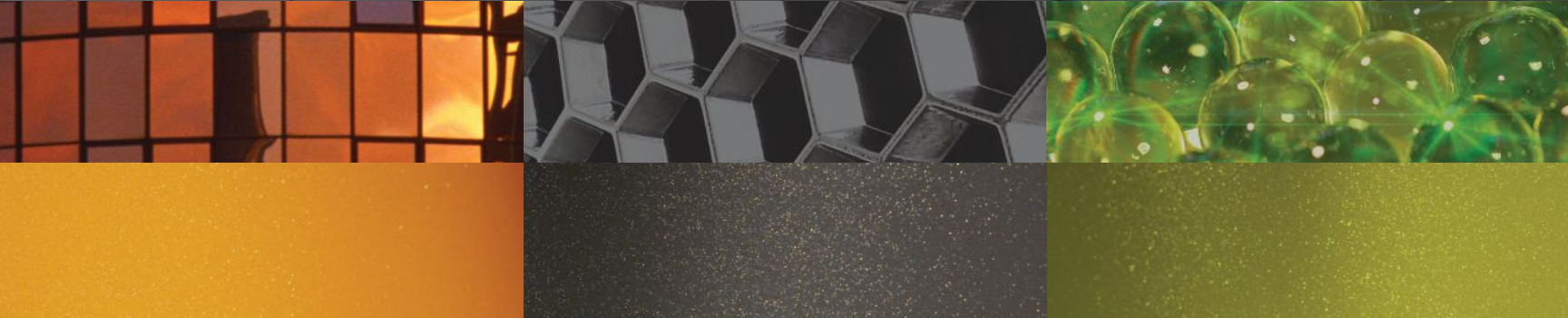
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apartments, shops, an 1,100-seat cinema, an art gallery, nine bowling alleys, and a cocktail lounge with a 400-foot-long bar. The roof of the vast parking garage served as an arrival court for the hotel. Crystal Heights, designed in 1940, was scuttled by regulatory obstacles and the onset of the Second World War. Had it or St. Mark's been built they would have altered Wright's ill-founded reputation as an anti-urban architect.

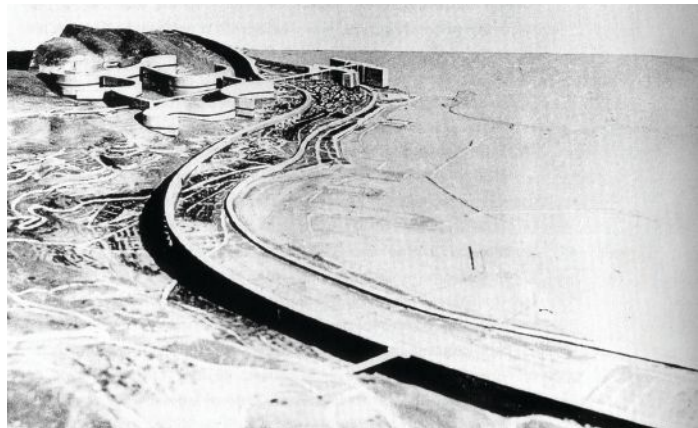
Le Corbusier's plan for Algiers—Plan Obus—was even more ambitious. During the 1930s, the peripatetic architect dashed off many urban proposals during his international travels. Often these were no more than back-of-the-envelope sketches made during lightning visits, but the Algiers project occupied him for more than a decade. The most striking part of the master plan is a sinuous elevated highway that follows the coastline and links downtown to a new suburban residential area. The roadway, more than 100 feet above the dense traditional city, is on the roof of a 9-mile-long linear building housing 180,000 people. How would this vertical casbah have performed had it been built? The noise and vibrations of the traffic would likely have made the homes beneath it uncomfortable, if not uninhabitable. In a decade or two, as traffic increased, the absence of off-ramps, shoulders, and rest areas would have become evident. One can only imagine what effect such an urban disaster would have had on Le Corbusier's later career.

Or perhaps not. Eric Mendelsohn once wrote that architects are remembered best for their one-room buildings, and Corb would always have Ronchamp. Louis Kahn's Hurva Synagogue in Jerusalem's Old City is another one-room building that, had it been built, might have fulfilled the Mendelsohn Rule. Great stone walls rise out of the dense, historic fabric, and enclose a numinous top-lit sanctuary surrounded by pyramidal niches. The building that Paul Goldberger, HON. AIA, called "a silent, contemplative, massive work of monumental power" could have been the architect's culminating achievement. The design was shelved when Kahn died in 1974.

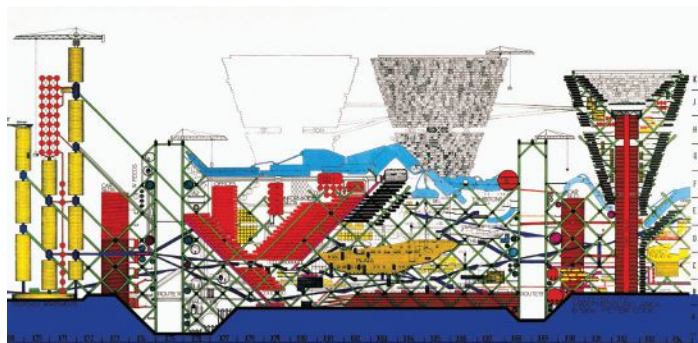
The Friedrichstrasse office building, Plan Obus, and the Hurva Synagogue are regularly included in architectural monographs. Unbuilt projects have been a part of architectural discourse ever since Andrea Palladio's *Four Books of Architecture*, which includes examples of the architect's own work but does not distinguish between buildings that were built, those that were unfinished, and those that had never seen the light of day. Of course, most of his designs in *Four Books* did exist; as Goethe observed, "You have to see these buildings with your own eyes to realize how good they are." But some architectural reputations



Frank Lloyd Wright's St. Mark's tower (left) and Eliel Saarinen's Tribune building



Le Corbusier's Plan Obus



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have been achieved largely—if not wholly—on the basis of unbuilt work. Think of Étienne-Louis Boullée, Joseph Gandy, Tony Garnier, and Antonio Sant’Elia; in our own day, John Hejduk, Lebbeus Woods, and Léon Krier.

Another celebrated modern non-builder is the British group Archigram, whose science-fiction fantasies were all the rage in the 1960s. In 2002, Archigram was honored with the RIBA Royal Gold Medal, but one wonders how its reputation would have fared had projects like Plug-In City and Living Pod actually been built. Technology was a big part of the Archigram ethos, but would all those mechanical gimcracks really have worked? Or would they have broken down, like the non-functioning retractable roof of Montreal’s Olympic Stadium, or the failed “lenses” in the façade of Jean Nouvel, HON. FAIA’s Institut du Monde Arabe? Would buildings with exposed structure and services have suffered the same fate as the Centre Pompidou, which required a major do-over after only two decades of operation? Adaptability and

flexibility were Archigram bywords, yet one wonders how successfully its ponderous megastructures would have adapted to today’s digital world.

Better Left Unbuilt

Robert Venturi and Denise Scott Brown, HON. FAIA, designed a number of notable unbuilt projects: the Mathematics Building at Yale University, the College Football Hall of Fame, a Staten Island ferry terminal, the Philadelphia Orchestra Hall. I came across a less well-known proposal in their book *Architecture as Signs and Symbols* (2004). The unsuccessful entry in a 1994 developer competition for a Manhattan hotel consists of 45-story tower sitting on top of a base that is festooned, Times Square-style, with illuminated advertising. The over-the-top postmodern design verges on self-parody, but as it was featured on the jacket of the book, it is obviously intended to be taken seriously. The most striking feature is a huge, 200-foot-tall crown on top of the building in the shape of a sunburst, or perhaps a jester’s cap, depending how

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you look at it. The flattened sunburst is basically a billboard, in VSBA parlance a “sign.”

The Westin New York Hotel that stands today on the Eighth Avenue site was designed by Arquitectonica, but what if the sunburst proposal had been built instead? Would it have enhanced Venturi and Scott Brown’s reputation as semiotic pioneers? The building would probably have suffered in comparison to Renzo Piano, HON. FAIA’s neighboring New York Times Building, as does Arquitectonica’s garish design. Two decades later, long after the shapes and colors would have lost their ability to surprise, the building’s cartoonish top would have been a daily reminder that architectural jokes quickly get stale.

Venturi and Scott Brown’s proposed Manhattan hotel

photo: Bill Baxley

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“Taken together these three new Kahns—on the page, in the gallery, and in the lecture hall—suggest that the architect’s work and legacy is in the midst of a significant and thorough reappraisal.”

The Louis Kahn who emerges in the pages of Wendy Lesser's superb new biography, *You Say to Brick* (Farrar, Straus and Giroux, 2017) is different from the Kahn celebrated in the extensive retrospective of his work that recently ran at the San Diego Museum of Art and will reappear this month at the Kimbell Art Museum in Fort Worth, Texas. That second Kahn, in turn, is distinct in key ways from the Kahn whom I see young and mid-career architects increasingly citing as a touchstone in essays and public talks.

But taken together these three new Kahns—on the page, in the gallery, and in the lecture hall—suggest that the architect's work and legacy is in the midst of a significant and thorough reappraisal. It is one that in



some respects comes as a surprise, not only because an earlier generation of critics and historians, led by Yale's Vincent Scully, had seemed to wring nearly every drop of meaning out of Kahn's buildings, but also because of the penetrating and devastating insights at the center of the 2003 documentary, *My Architect*, directed by and starring his son Nathaniel. In the wake of that film, which fully excavated the relationship between Kahn's architecture and his unconventional personal life—which included a long marriage to his wife, Esther, but also children (including Nathaniel) born to two other women—it seemed that pretty much everything that could be said about Louis Kahn had been. The work as well as the man had been laid bare.

"A Generous Egotist"

Yet here we are. Kahn, like Frank Lloyd Wright, is a figure for every new American generation to grapple with. Lesser, who is not an architecture writer but the longtime editor of the literary journal *The Threepenny Review* and the author of several nonfiction books, brings a fresh pair of eyes to Kahn's work. There are

moments in *You Say to Brick*, especially early on, when that freshness seems closer to naïveté. "Kahn's best buildings are works of art that, to be fully appreciated, need to be experienced by a body moving through space," she writes in the prologue, as if this were somehow unique to Kahn.

But as the book unfolds, Lesser more than finds her footing. A careful historian who also has a keen sense of the big picture, she bores deeply into Kahn's complicated life, ultimately describing his architecture with as much sympathy and sophistication as she brings to her analysis of his relationships with colleagues, clients, and family members. Her Kahn is a "generous egotist": "the kind of egotist who saw and acknowledged the corresponding ego in every other living thing, and even in some things—like brick—that were not living." He was an architect who could be "in his own way, ruthless" but also was "a collaborator of extraordinary abilities." This seeming contradiction—the charming architect whose buildings and personal life were both the products of a self-absorption that was no less obvious for being largely generous and humane—is what ultimately powers her book.

Among my favorite scenes is the description of a visit by Nathaniel Kahn to his father's office in 1973, as the architect was working on the design (built posthumously in 2012) for a memorial to Franklin Delano Roosevelt on Roosevelt Island in New York. Louis Kahn, who was "fiddling with a model" of the design, asked his son, then 11 years old, for advice on how far apart to slide the memorial's massive exterior walls. "Nathaniel the child was delighted to be asked," Lesser writes. "Nathaniel the adult, reflecting back on the occasion, thought it offered a crucial insight into how his father worked."

"He liked to talk as he worked," Nathaniel Kahn told Lesser. "And it didn't matter whether you were young or old or an architect or not. He wasn't necessarily interested in your solution, but he was interested in what a conversation with you might bring out *for him*" (*italics mine*).

Lesser gives the book an unusual structure. She begins with Kahn's death in March 1974, at age 73, of a heart attack, just outside a men's room in the bowels of Pennsylvania Station in New York, at the tail end of a trip home from India. Then she turns back to his childhood, in a working-class family in Estonia and then Philadelphia, before moving the story forward in a largely chronological manner. She interrupts this essentially straightforward narrative at five different spots, however, to drop in chapters that each describe a single Kahn building in detail. And so between the section on Kahn's death and his childhood we get an analysis of

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the Salk; later entries of this kind, which she calls “In Situ” chapters, take us to the Kimbell; the library at the Phillips Exeter Academy in New Hampshire; the National Assembly Building in Dhaka, Bangladesh; and the Indian Institute of Management in Ahmedabad. These five buildings, Kahn’s widely accepted masterworks, were all built in the incredibly prolific final 15 years of his life (or finished after his death).

It seems to me that one goal of this narrative strategy, which always keeps the reader at least mildly off balance, is to pay tribute to the combination of monumentality and complexity that marks so many of Kahn’s buildings—the way they are reassuringly solid, with a kind of ancient logic, but also full of surprises and hidden sources of light. As Lesser writes of the Exeter library, “The sense of symmetry is overwhelming, but the use of asymmetry is equally important in the design. You can easily lose yourself in this building, and yet you can always find out where you are by orienting yourself to the atrium.” Lesser’s book is organized the same way, with the chronological

It is that clarity, as much as anything, of purpose as well as form, that seems to appeal to the generation of architects now finding fresh inspiration in Kahn’s work.

narrative as an orienting mechanism (her version of the Exeter atrium) and the “In Situ” chapters injecting an element of asymmetry. Like the library, to borrow Lesser’s description of it, the biography is “a puzzle that asks you to fit its odd pieces together.”

Along the way the book is full of stories that will be familiar to Kahn fans (the scars on his face that were the product of a childhood accident; the semi-clandestine affairs with colleagues Harriet Pattison and Anne Tyng; the collaborations with the engineer August Komendant and the Mexican architect Luis Barragán; the revelatory stint at age 50 at the American Academy



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in Rome) alongside plenty of less familiar ones (Esther Kahn's own affair, with a man who is not named, and the surprising influence inside the architect's office during the 1960s of a young Hungarian employee who went by the single name Gabor).

Lesser, throughout, makes astute and sometimes surprising connections between the details of Kahn's personal history and his architecture. Among the most striking is her argument that in both life and art Kahn was interested in those moments when need—necessity, regularity, predictability—gave way to desire. In his architecture, she contends, desire—the drive to keep moving to discover what the unseen spaces of a building might reveal—is the motivating force." She quotes Kahn: "Need is so many bananas. Need is a ham sandwich. But desire is insatiable and you can never know what it is."

An Overstuffed Exhibit

There were no bananas or ham sandwiches on display at the San Diego Museum of Art over the winter,

where "Louis Kahn: The Power of Architecture" had a three-month run ending in January. Indeed, in certain ways the Kahn on view in the exhibition—first shown at the Vitra Design Museum in Germany four years ago and the first major Kahn show since the Museum of Contemporary Art in Los Angeles organized one in the early 1990s—was strikingly different from the one defined by Lesser's biography. The show (which runs at the Kimbell from March 26 to June 25) largely portrays Kahn as a singular creative force, a man who stood apart from both other architects and from the cultural zeitgeist.

The exhibit also suggests that Kahn still qualifies as a model for anyone dismayed by the increasingly cozy connection between high-end real-estate and contemporary architecture, turning Kahn's infamous failure to forge lasting bonds with deep-pocketed clients into a strength. The opening wall text in San Diego put it this way: "In today's world, where the act of building is increasingly subordinated to marketing strategies and financial speculation, Kahn reminds us



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of the age-old significance of architecture as the universal conscience of humanity.”

Divided into six thematic sections—Science, Eternal Present, City, Landscape, House, and Community—the show in its San Diego incarnation was lively, wide-ranging and (with its video screens, models, drawings, and photographs) thoroughly overstuffed. And in that sense quite different from Kahn’s buildings, which while never shying away from complex spatial ideas also tried to pare down their forms to some essential level of clarity.

A Return to History

It is that clarity, as much as anything, of purpose as well as form, that seems to appeal to the generation of architects now finding fresh inspiration in Kahn’s work. In the diverse reaction against parametricism and overwrought form-making that has followed the 2008 economic crisis, a group of still-emerging architects (and by that I mean a group born between, say, 1965 and 1985) has focused anew on the uses of history. But this interest has none of the ironic, cheeky, or flimsily scenographic qualities that marked the historicism of postmodernists like Philip Johnson (in his AT&T phase), Robert A.M. Stern, FAIA, or Charles Moore.

Instead it seeks a deeper, even a primordial, history, on the one hand, with plain-spoken and often Euclidean forms, and on the other is determined not to give up on the idea of novelty and innovation even as it plumbs the past. Among the architects working in this vein are Los Angeles-based Sharon Johnston, FAIA, and Mark Lee, AIA, (who, appropriately, are directing this year’s Chicago Architecture Biennial under the thematic banner “Make New History”); the Swiss firm Christ & Gantenbein; the Chinese architect Hua Li; and the Chilean firm Pezo von Ellrichshausen.

Lesser’s description of Kahn’s National Assembly in Dhaka, completed posthumously in 1982, is very much in line with the sensibility of those architects, who look forward and backward at the same time and feel no sense of divided loyalty about the double perspective. The building’s eight-sided concrete parasol ceiling, Lesser writes, a feature Komendant and several other engineers worked to perfect, “seemed like something that had flown in from outer space—as, indeed, did the entire Assembly Building. Yet in this version of the science-fiction visitation, the aliens from the future did not obliterate the past, but somehow managed to preserve a sense of the ancient and the traditional.” Make new history indeed.



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— Robert Ivy, FAIA
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**Renovation of Wencun Village
FuYang, China
Amateur Architecture Studio**



Taking inspiration from local materials and vernacular architecture, Wang Shu and Lu Wenyu remade a rural Chinese village in their image.

TEXT BY NATE BERG
PHOTOS BY IWAN BAAN



Wang Shu and Lu Wenyu have been studying villages in China for years, documenting the slow decline of rural towns as the nation has run headlong into a new urbanized era. These villages are the last bastions of a way of life, and a fading traditional architecture. Wang and Lu hope to preserve both, without rebuilding the past: Instead, their Hangzhou-based firm Amateur Architecture Studio is designing new buildings based on traditional forms that aim to rejuvenate these areas—and maybe even lure young people back from cities.

The husband-and-wife team's first major rural intervention has been realized in Wencun, a village of about 1,800 residences in Zhejiang province. "Half of the village is old buildings and the other half is ugly, huge new ones," Lu says. When she and Wang started talking with Wencun residents in 2012, the feeling was that newer, and bigger, was better, and the space taken up in a house by a traditional courtyard would be better used for bigger rooms. "Their real desire was to demolish all the old buildings," Lu says.

Wang and Lu worked with them to try something different: For a new extension to the western edge of the village, Wang and Lu looked to the rammed earth, bamboo, and stone historic buildings in their design

for 30 new residences spread across 14 three- and four-story structures. All were built with local materials in the traditional courtyard style, but with a modestly contemporary feel. The buildings include space for a shrine to ancestors, storage for farm tools, a workshop, and, in a modern touch, a living room for watching TV.

To integrate the new buildings and the rest of the village, Wang and Lu worked with some local homeowners to renovate—or even rebuild—their own self-built houses in the older section of the village to embrace the style of Amateur Architecture Studio's new designs. That, plus new bridges, pavilions, and even a school, help extend the aesthetic throughout Wencun.

Eighteen of the new residences are now occupied by villagers, and 12 are being used as an inn—an initiative aimed at increasing tourism from city-dwellers. But the primary goal was to help Wencun to remain a thriving rural village. "What is important is that it does not become a theme park," Lu says.

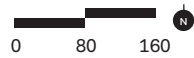
The hope is that this intervention can serve as a model for other such villages, but, she argues, it cannot simply be copied. "The most critical point is how to maintain the rich diversity of Chinese rural culture," she says. "This work is complicated."

Site Plan





1. New residences
2. New bridge
3. Rebuilt residences
4. Pavilions
5. New family altar
6. New school
7. Main access bridge
8. Dam
9. Rice fields



Previous Spread: View southeast along the stream that runs through Wencun, showing new residences

Above: View of new pavilions that create public space in the old sections of the village



Above: View of old and new residences as seen from the border of the new village neighborhood, which extends to the left

Opposite, Top: A courtyard in one of the new residences, lined in locally sourced bamboo

Opposite, Bottom: New residence interior





Project Credits

Project: Renovation of Wencun Village,
FuYang, China

Client: Wencun Village Committee

Design Architect: Amateur Architecture
Studio, Hangzhou, China · Wang Shu, Lu
Wenyu (principals); Cheng Lichao, Cheng
Hao, Shen Yue, Wang Tiantian (project team)

Structural Engineer: Shentu Tuanbing

Electrical Engineer: Cheng Chunji

Site Supervision: Lu Zhenfeng

Consultant: The Design Institute of
Landscape and Architecture China
Academy of Art

Size: 7,590 square meters (81,698 square
feet), total floor area; 48,905 square meters
(526,409 square feet), site

Construction Cost: \$483 per square meter
(\$45 per square foot)

A street in the new neighborhood,
lined with the three- and four-story
multifamily buildings





Exterior view from northwest, with view of minaret

**Amir Shakib Arslan Mosque
Moukhtara, Lebanon
LEFT Architects**

The design for a new mosque in an old structure southeast of Beirut explores the intersection of secular and religious ideas in Islamic sacred architecture.



TEXT BY CLAY RISEN
PHOTOS BY IWAN BAAN

Makram el Kadi and Ziad Jamaledine, the principals at Brooklyn- and Beirut-based firm LEFT Architects, never planned on actually building a mosque when they embarked on an extended study of Islamic sacred architecture in 2013. But two years later, a wealthy client in Lebanon invited them to build one in Moukhtara—his village, southeast of Beirut—and they jumped at the opportunity to put ideas into practice.

For the pair—whose East–West practice reflects their ideas about the intersection of the secular and religious and of Christianity and Islam—the mosque is a problematic but fruitful form: In theory, it offers a variety of approaches, but too often it is pigeonholed into a rigorous interpretation. “There’s nothing that dictates what a mosque should look like in the Koran or the Hadith, the sayings of the Prophet Muhammed,” el Kadi says. “The Arabic word for mosque—*masjid*—can mean ‘gathering place’ or ‘liturgical space.’ We were interested in how mosques link the sacred interior space to the exterior, everyday social life.”

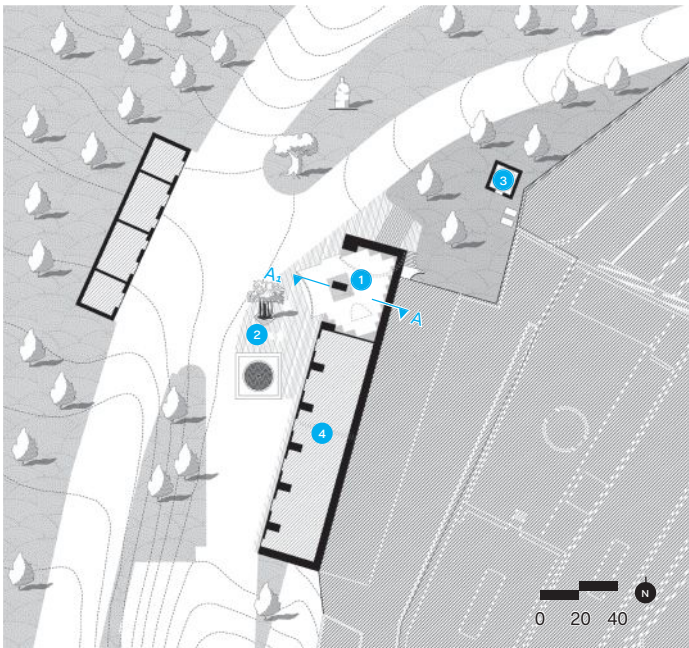
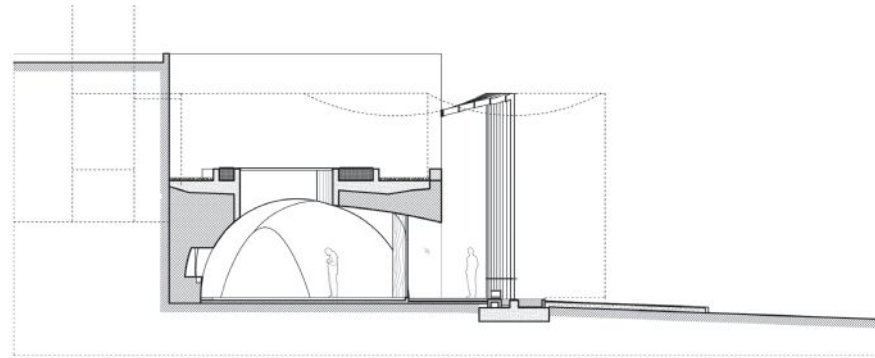
The project involved the renovation of a hillside structure whose brick, cross-vaulted first floor was built in the 18th century and whose utilitarian second floor was added at the turn of the 20th. LEFT lopped off

most of this upper level to create a terrace around a skylight into the 1,000-square-foot interior below.

The walls and ceiling of the single room inside are layered with locally sourced plaster, while the floor is covered in a carpet whose zigzag design represents a sound map of the mosque’s call to prayer. Outside, the mosque’s most striking feature is a minaret crafted from thin steel slats—more vertical screen than tower. The slats are folded such that people approaching the mosque from one angle read the word “*Allah*” in Arabic script but from another see a void. The same gesture appears below, where the slats form a canopy and wall that mark the mosque’s entrance. On the wall is the word “*Insan*,” which means “human.”

Gestures to such tensions—solid words vs. void, God vs. man—go to the heart of LEFT’s project, not just in the design of the mosque, but in their research into the form. To el Kadi and Jamaledine, Islam is neither monolithic nor fundamentalist; it is open to interpretation, to doubt, to reason. They want their mosque to be a place where Muslims gather not just to pray, but to learn and debate. “The war against fundamentalism is at heart a war of ideas,” el Kadi says, “and architecture is one of those ideas.”

Floor Plan

Section A–A₁

- 1. Mosque
- 2. Piazza
- 3. Mausoleum
- 4. Existing building



Top: Interior, looking south toward mirrored *mihrab*, or prayer niche

Above: Interior, showing plaster-clad brick vaulting



Above: View of interior skylight and custom carpet, designed by LEFT and sound artist Lawrence Abu Hamdan

Opposite: View of entry, showing wall of steel slats inscribed with "Insan"

Project Credits

Project: Amir Shakib Arslan Mosque, Moukhtara, Shouf, Lebanon
Client: MP Walid Joumblatt
Architect/Interior Design/Landscape Architect: LEFT Architects, New York and Beirut · Makram el Kadi, Ziad Jamaledine (principals); Gentley Smith (project architect); Rafah Farhat, Elias Kateb, Alex Palmer, Nayef al Sabhan, Tong Shu, Shun-Ping Liu (design team)
Structural Engineer: Antoine Bou Chedid


Electrical Engineer: Eng Bassam Ghazal
Construction Manager/Conservation Architect/Owners Representative: Arch Zaher Ghosseini
General Contractor: Acon
Lighting Designer: HiLights
Call to Prayer: Lawrence Abu Hamdan, Nisrine Khodr
Size: 1,000 square feet
Cost: Withheld



وَأَنَّ الْمَسْجِدَ



**Buffalo Bayou Park
Houston
Page and SWA Group**



“The bayou is about 20 to 30 feet lower than the street, and the existing park didn’t feel particularly safe,” says Scott McCready, principal at SWA group. “Our goal was to introduce a more extensive network of infrastructure that really invited people in.”

A reimagined green space brings new life and activity to central Houston, and bridges much more than just a bayou by fostering community interaction in the city.

INTERVIEW BY THOMAS FISHER, ASSOC. AIA
PHOTOS BY ALBERT VECERKA/ESTO



I know there was a long community effort to get Buffalo Bayou to happen—how did the project come to be?

Lawrence W. Speck, FAIA, Page: The Buffalo Bayou Partnership has existed for decades. They've done work on other parts of the bayou, a section right through downtown, in particular. But this long stretch was derelict and on the radar screen as an important challenge. Landscape architects SWA Group did work for them on another part of the bayou, and we did the park structures at Discovery Green. They hired us separately and married us together on this project. It was a fantastic relationship.

How did you site the pavilions in the park?

The two big architectural concentrations are at Lost Lake in the western part of the park, and the Water Works to the east—those are the only two places where there's any substantial land outside the flood plain, so that's where we have more activities. Page and SWA collaborated on where the other, smaller, pavilions should go in the rest of the park—where trails converge, there's a sculpture nearby, or it otherwise seems appropriate to have one. I love these gorgeous sites where you walk in and say, "Oh my God, we've just got to make the architecture live up to the site here." I'm not saying the buildings should go away, in the park you need to be able to see those buildings from a long distance. The point wasn't to make them go away, but to make them engage the landscape.

The pavilions balance masses of concrete and the lightness of steel roofs. How did that design develop?

This park really has two roles: It's a drainage way for the city, but it's also a great green space for the city. That's a remarkable double function, but it means that what we put there had to be extremely resilient. Even with the bigger buildings, where we could just kiss a little bit of above-flood-plain ground, the substantial part of the building was still in the flood plain. And

this park floods very regularly—we've already had at least one major flood event where there was water way up those columns, and there could be tree limbs rushing down the flooded bayou that hit the buildings. We needed pavilions that could take that kind of impact, but could also be refreshed easily. Once the water goes down, just hose them off and they're good to go.

The board-formed concrete has enough texture to it that it can take a little ding and it's no big deal. The roofs are those wonderful grilles that cast nice light patterns and shade below it. And the soffits are Massandaruba, which is a kind of bulletproof wood, very tough, and a great way to have warmth without the vulnerability. And I am happy to say, they performed like a champ during the flooding.

There's a somewhat archaic quality to the massiveness of those concrete piers, almost as if they're a ruin.

I'm an old Louis Kahn fan. I love the eternal quality of a lot of his work where you just can't date it. It's good forever. The Kimbell looks as fresh today as it did 40 years ago. I love the quality of the pavilions' concrete columns that makes them seem like they could be industrial. They just are what they are—not fussed up.

Tell me about the history of the cistern, which is the art space under the green at the Water Works. How did it become part of the project?

It was never in the scope of budget, to begin with. The cistern was adjacent to the park land, and owned by the water utility for the City of Houston. They were ready to demolish it, but they thought, "Maybe we just give this land to the park." So we went over to see what would we do with it. As soon as we saw it, we knew we had to preserve it, had to find another alternative use for it and make it real public space. We had this idea about an exhibition space, and the cistern's 17-second reverberation time meant sound installations would

Site Plan



be possible, as well as visual art. Our client found additional funds, partnered with the Houston Arts Alliance and other institutions to create a program for installing art in the space, and it's been a huge success.

It's such a powerful space—it almost has a religious quality to it, which is enhanced by the way you've lit that perimeter walkway, so the space seems to glow.

The space had no light, so something had to be done to make you able to experience it. And we went through 50 versions that were way more over the top, but finally just pared it back to the least we could do to make it simple and elegant. The intention has been to always keep it flooded with at least a few inches of water, because the effect is just spectacular. That's the way we found it, and it just makes it way more dramatic.

This entire project seems like a kind of essay on water, and on how we relate to water.

That is totally intentional. In Texas, water is a super-precious resource that we're having to figure out how to manage properly. So theming the park that way is really about raising awareness that we need to be thinking about drainage ways, we need to be thinking about the preciousness of water, and we need to be talking about the management of water in the 21st century.

Overall, the images of the park look so appealing. How much is it used?


It's very heavily used. It goes right into downtown, and then along a parkway that has high-rise buildings all along it. On one side, it's a very affluent, kind of hip, neighborhood with lots of good mixed-use buildings and on the other it's a funky, not particularly affluent, but really cool, neighborhood. It's a really good demographic cross-section of that part of Houston.

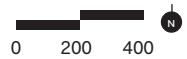
It's horrible how siloed we are in American cities. Houston is just about the most diverse city you can imagine—it's a freakin' United Nations—but

the demographics don't often converge. Buffalo Bayou Park and Discovery Green are places where you see everybody—very affluent people, those who are struggling, every ethnicity you can imagine—all interacting. It's really great.

It's remarkable to watch how our cities have come back to life in this country. It's a wonderful shift in the history of American urbanism.

Who would have thought, when we were in school, that we would still be making major public spaces in the U.S. that are flooded with people of all backgrounds who are really enjoying the outdoors? By now, public spaces were supposed to be dead. Everybody was supposed to be inside watching TV. I just love the idea that we're thinking of architecture as a device for health. There are solutions in lifestyle, and lifestyle depends on architecture.

- 
1. Lost Lake Boathouse
 2. Open-air pavilion
 3. Hobby Family Pavilion
 4. Water Works visitors center






Above: "Too much shade is really impossible to get in Houston," Page senior principal Lawrence W. Speck says of the oversized metal roofs that top the pavilions in the park. On the open-air structures down in the flood plain, that shade provides respite from the intense Texas sun for people on the Bayou trails, and the thermal mass of the concrete helps keep the shaded areas cool.

Opposite, Top: The Lost Lake Boathouse is one of very few enclosed buildings in the park because "if you look at that building, the finished floor elevation of that is above the 100-year flood plain," McCready says. "It's one of the only sites in the corridor that you can put a building." During major floods, the lower level will be submerged, so it was designed to allow water to flow through.

Opposite, Bottom: All park infrastructure was designed with resilience in mind. Handrails are galvanized metal, the pavilions use board-formed concrete, and even pathway lights were designed to withstand flooding. "We sized everything a little bit bigger than you might normally see in a park because during a flood, it has to withstand the impact debris," McCready says.



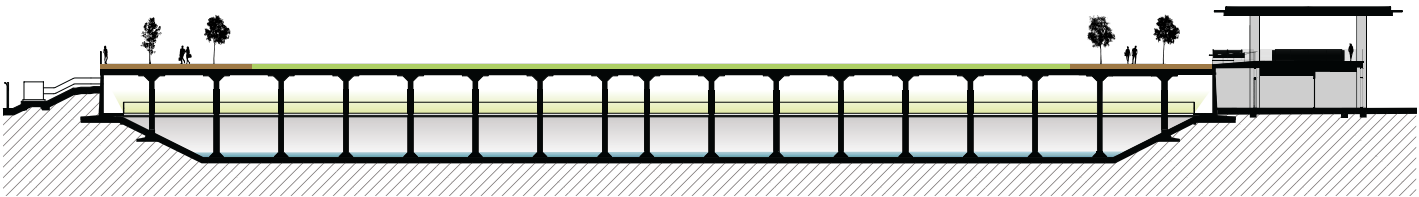




McCready says that pacing the park plantings was critical, with some being more sparse, and others, like those of this restaurant patio in the Lost Lake Boathouse, being more lush. "We worked with what was already there, but we added trees or manipulated grading to encapsulate different moments as you're traversing the park," he says.



Cistern Section




Above: The green above the cistern features panoramic views of downtown, and is bordered by the Water Works visitors center and the Hobby Family Pavilion, which holds events. "When you looked at postcards of the city 20 years ago, you'd see downtown with freeways in front of it," McCready says. "Now, the shot is taken from the bayou."

Project Credits

Project: Buffalo Bayou Park & the Cistern, Houston, Texas
Client/Owner: Buffalo Bayou Partnership
Architect: Page, Washington, D.C. · Lawrence W. Speck, FAIA (principal-in-charge, park structures, cistern); Melanie Starman Bash, AIA (project manager, park structures, cistern); Randolph L. Hurst (senior project architect, park structures, cistern); Tami Merrick, AIA (senior project architect, park structures); John Garrett Neubauer, Luis Reyes (cistern project team);

Andy Phan (cistern visualization director)
Landscape Architect: SWA Group
M/E/P Engineer: Page
Structural Engineer: Ingenium (park structures); RDP Engineers (cistern)
Civil Engineer: United Engineers
Environmental Consultant: Hunt and Hunt Engineering
Construction Manager: Millis
Size: 16,414 square feet (park structures); 88,300 square feet (cistern)
Cost: Withheld



Page's design for the interior of the existing underground cistern turned a failing city resource into an arts and cultural venue. The first art and sound installation is now on view and can be viewed from the perimeter walkway.

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Residential:

The Greenest House of Them All, According to the Living Building Challenge

TEXT BY SYMONE GARVETT

An unassuming wood house in Bend, Ore., became an international benchmark late last year when the single-family complex, called the Desert Rain House, achieved the first Living Building Challenge (LBC) certification for a residential project.

The LBC program, developed by the International Living Future Institute, identifies net-zero energy and water buildings that positively impact their environment. A new building must pass 20 imperatives in seven performance areas—place, water, energy, health and happiness, materials, equity, and beauty—and sustain them for more than a year. The Desert Rain House is the 12th LBC-certified project worldwide.

Designed by local firm Tozer Design, the 4,810-square-foot compound is made up of a one-story residence, two detached guest apartments, and two garages, all constructed out of locally sourced materials. Precipitation is the only water source, and a graywater system treats used water from everything except toilets and dishwashers for irrigation. Sixty-five solar panels generate energy for the house.

"The biggest and most beautiful feature is when you turn on the water," says Barbara Scott, one of the owners. "You know that it is coming from the rain and the snow."



CHANDLER PHOTOGRAPHY

> Read more about the Desert Rain House at bit.ly/DesertRainHouse.

The Barbican Surveys Japan's Post-WWII Residential Innovation

TEXT BY VICTORIA CARODINE

The destruction from World War II led to new demand for housing in postwar Japan; from this need for shelter arose a tradition of ingenuity in residential design. Experimenting with the single-family house, architects such as Kenzō Tange and Seiichi Shirai searched for ways to connect traditional styles with Modernism, and to incorporate client needs with evolutions in technology. A new exhibition, opening March 23 at London's Barbican Art Gallery, examines how the country's residential design has developed over the last 72 years: "The Japanese House: Architecture and Life after 1945" features more than 200 pieces—including models, drawings, photographs, and films—highlighting work by more than 40 architects in the mid-to-late 20th century and beyond. Highlights include projects by Tadao Ando, HON. FAIA, Kazunari Sakamoto, and Hideyuki Nakayama (whose O House is shown at left), as well as a full-size reconstruction of Tokyo's Moriyama House, built by the Office of Ryue Nishizawa in 2005. The exhibition runs through June 25.



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TEXT BY SELIN ASHABOGLU

Contemporary Casement, Marvin

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Siteline Wood Double Hung, Jeld-Wen

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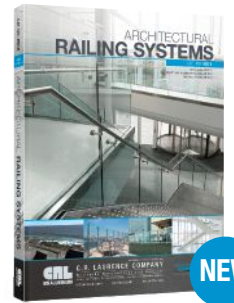
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Lincoln Park House
Chicago
HBRA Architects

TEXT BY EDWARD KEEGAN, AIA

PHOTOS BY STEVE HALL/HEDRICH BLESSING



The clients for a new single-family house in Chicago's Lincoln Park—a couple with two young children—were both trained as architects, and their experience proved to be both an asset and a challenge for local firm HBRA Architects. “They had a real aversion to precedent,” says Aric Lasher, FAIA, the firm's director of design. While the clients' backgrounds allowed them to articulate their concerns, the two were locked in what they thought were conflicting aesthetic goals: The husband preferred a vernacular approach, while the wife was interested in contemporary Modernism. However, “I've always thought there was a simple relationship between the vernacular and modern,” Lasher says. “The two are not exclusive.”

The house's simple plan is efficient, with a central hall and stairway topped by a skylight and living spaces located on the northwest and southeast sides to maximize natural light. Interstitial zones hold services, including a second means of egress (condensed as a spiral stair behind closed doors), and storage. Common spaces are clustered on the second floor, with a living room that opens onto a small private backyard and a semi-private park that's shared with the neighboring townhouses and a related high-rise. The third floor contains the house's four bedrooms. Two outdoor rooms defined by the core and party walls comprise most of the fourth floor: The front northwest-facing room features a kitchen garden while the rear southeast-facing outdoor room is a living space with a fireplace.

The palette is constrained, balancing the interests of the clients and the architect in expressing both vernacular and modern touches. Travertine tile floors, white plaster walls, and oak doors and stairs provide most of the interior material interest. On the exterior, the challenge was how to be a good neighbor to the rest of the development, which is a new series of traditional-style townhouses spanning half a block. The architect's answer lay in gridded masonry that gives a material sense of the bearing wall's construction with a bit of abstract expression of the traditional Venetian palazzo—a typology that famously balances symmetries with asymmetries. “I don't like the approach of randomness,” Lasher says. “I believe there can be a liveliness to formalism.” The post-and-lintel system utilizes buff-colored Minnesota dolomitic limestone. Metal-clad wood windows alternate with infill sandstone panels, whose natural graining and patterning brings variation to the façade.

While discussion of precedent with the clients was verboten, Lasher still managed to incorporate references to architectural history within the house's seemingly simple exterior and interiors.

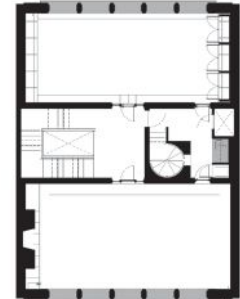
Section A-A1



Third-Floor Plan



Fourth-Floor Plan



First-Floor Plan



Second-Floor Plan



Previous Page: The façade for the four-bedroom, five-and-a-half bathroom house needed to jibe with the rest of the development's new, traditional-style townhouses.

This Page: A 9.5-foot-wide foyer sees the start of the wide oak staircase that serves as the main circulation route through the house.



This Page: The restrained approach to the interior design continues in the kitchen, with its stainless steel and white painted metal kitchen cabinets and counters.





Top: An open-air southeast garden on the rooftop is one of two outdoor spaces on the fourth floor.

Bottom: On the second floor, the 18-foot-deep living room spans the house's full 40-foot width.



Above: The southeast façade, seen here from the shared second-floor park, contains Loewen Windows partially covered with custom sunshades from Navillus Woodworks.

Project Credits

Project: Lincoln Park House, Chicago
Client: Withheld
Architect: HBRA Architects, Chicago - Aric Lasher, FAIA (director of design and principal-in-charge); Gary Ainge, FAIA (administrative principal); Adam Tomski (project manager); William Mahalko, Jeff Policky (project team)
M/E/P Engineer: GeoSolar Energy Farm
Structural Engineer: Goodfriend Magruder Structure

General Contractor: LG Construction
Landscape Designer and Green Roof Consultant: Intrinsic Landscaping
Lighting Designer: Anne Kustner Lighting Design
Exterior Envelope: Wiss Janney Elstner Associates
Home Automation: Connectoriors
Size: 7,011 square feet (includes 875-square-foot garage)
Cost: Withheld

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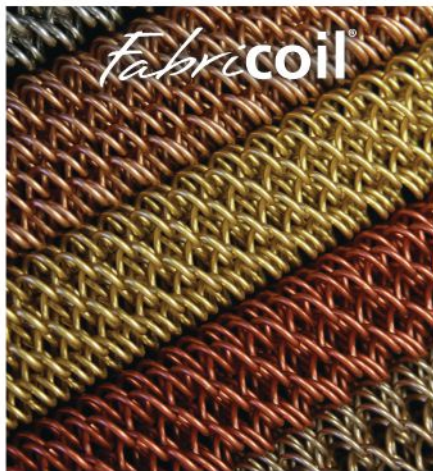


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Editorial: The Real Las Vegas

Did you know that the Las Vegas Strip isn't in Las Vegas? The casual observer might think that the 4-mile agglomeration of hotels and casinos comprises the city's downtown, but the Strip in fact lies outside the city limits, in the unincorporated towns of Paradise and Winchester. The actual, historic downtown of the actual city of Las Vegas sits 3 miles north of the Strip, and it is decidedly downmarket by comparison. While many U.S. cities have enjoyed a downtown revival over the past decade or so, Las Vegas unfortunately isn't one of them, and local leadership appears hungry for solutions. So it was an honor to be included in an urban design symposium in February that the mayor's office sponsored and the University of Nevada, Las Vegas (UNLV) organized.

Five years back, Zappos CEO Tony Hsieh raised hopes and made headlines by relocating the online retailer's headquarters from Henderson, Nev., to downtown Las Vegas and pledging to personally invest \$350 million in nearby property and area businesses. In 2014, building on the momentum, the city government commissioned a downtown master plan from RTKL (now CallisonRTKL). "The City as a Startup" was Hsieh's ambitious pitch, but the billionaire's effort seems to have stalled: Media coverage now focuses ominously on his "regrets" and "lessons learned." The master plan, too, reportedly has failed to gain traction.

Denizens of downtown Vegas do have Hsieh to thank for amenities such as a nonprofit bookstore and an open-air shopping mall made of shipping containers. But downtown has yet to attain a critical mass of tourists, residents, workers, businesses, and institutions. The UNLV symposium's moderator, Reed Kroloff, asked at least a dozen audience members to name their favorite thing about Las Vegas. To a person they praised the natural surroundings—the desert, the mountains—and said almost nothing about the city itself. When pressed, participants bemoaned the lack of activities, the lack of urban life, beyond

the Strip. "I wish you could go to a museum without having to walk through a casino first," one man said, neatly illustrating the point.

Despite palpable dissatisfaction with the status quo, the mood of the symposium was upbeat. Las Vegas doesn't lack for boosters, and rightly so. After a day and two nights of conversation with speakers and attendees, a kind of manifesto for downtown began to emerge, at least in my mind. We set nothing in stone, there being no mandate to do so, but it seems worthwhile to record some key ideas, as I recall them.

As a guiding principle, consensus held that planning, development, and design should respect the strong spirit of the place. Downtown Las Vegas isn't the Strip, and shouldn't try to be. It's smaller and more relatable in scale, more authentically quirky in character, richer in history, less corporate, and more rooted in local life. These qualities are assets; they should be cultivated. The comparatively tight street grid and many remaining small lots suggest that new construction be less gargantuan than the typical casino. The desert climate, in turn, should encourage density in zoning and infrastructure and radical innovation in building performance. And perhaps most importantly, the needs and desires of residents, rather than tourists, should be the overwhelming priority.





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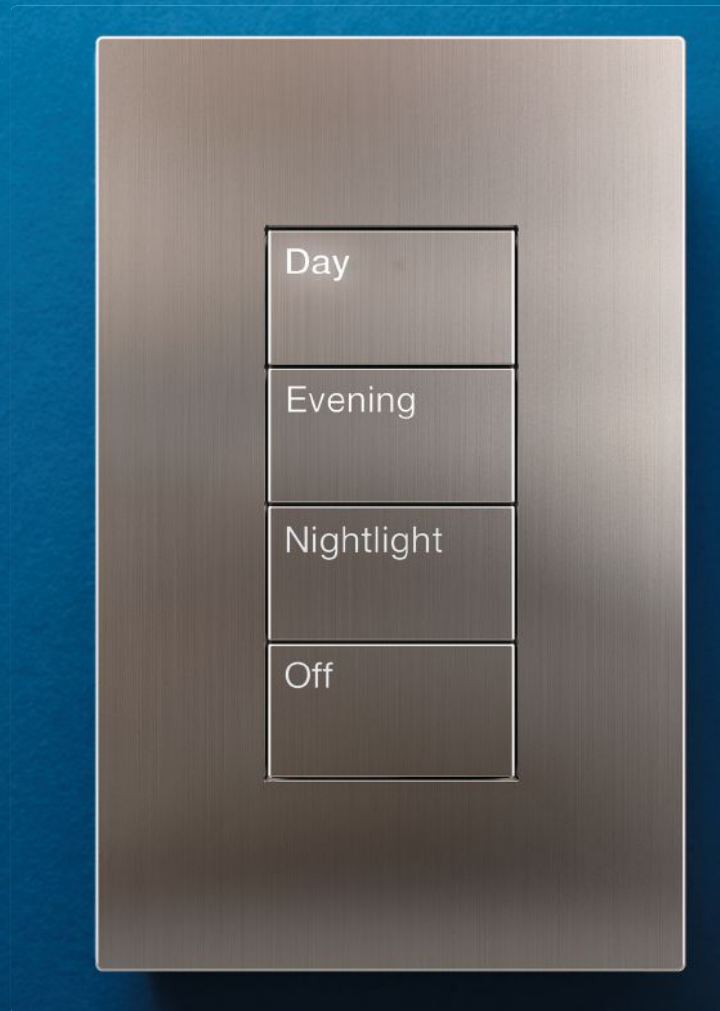
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