

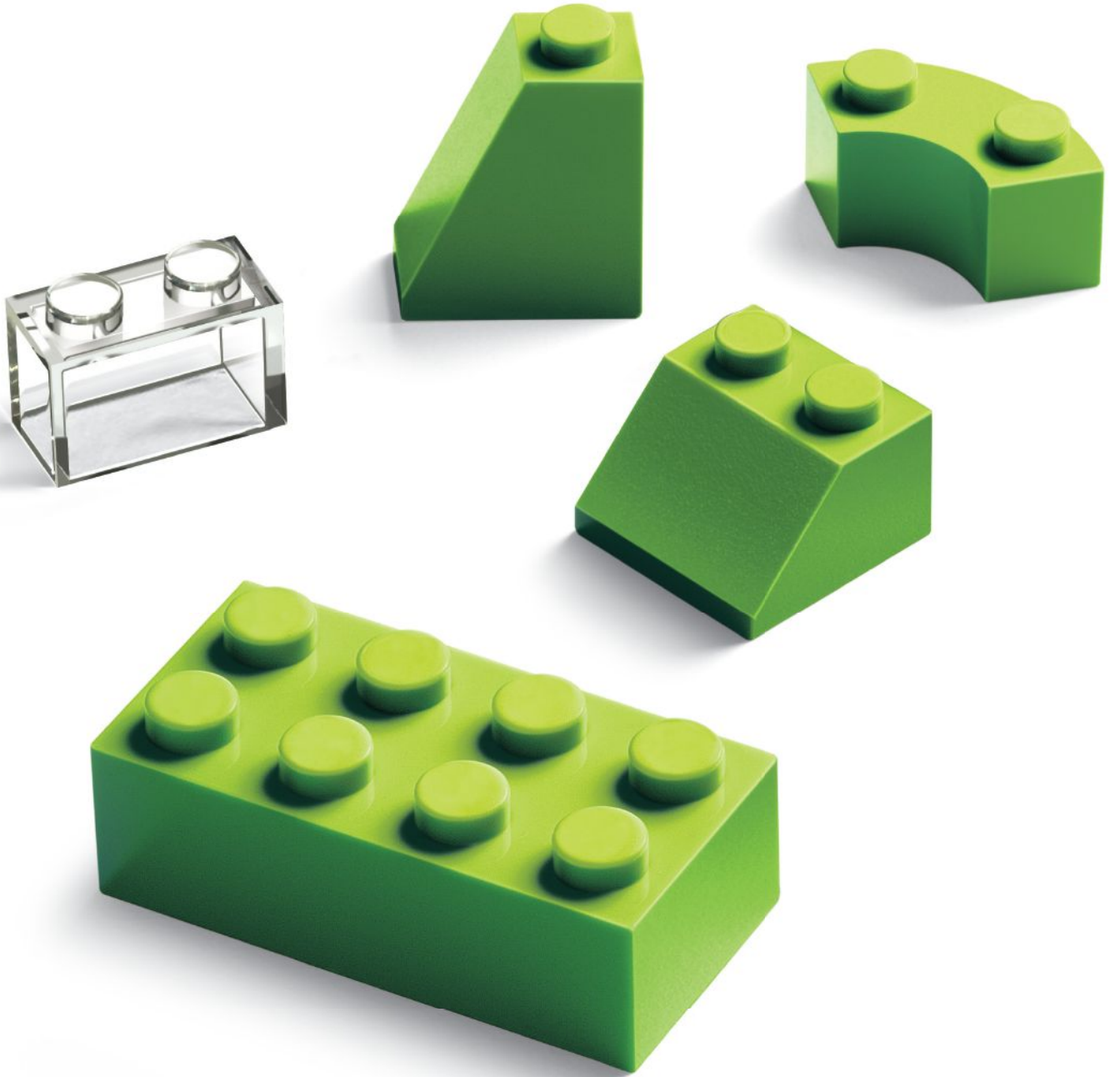
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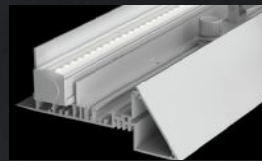




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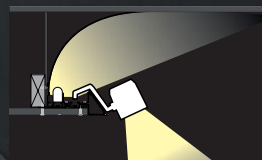
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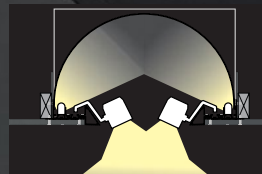
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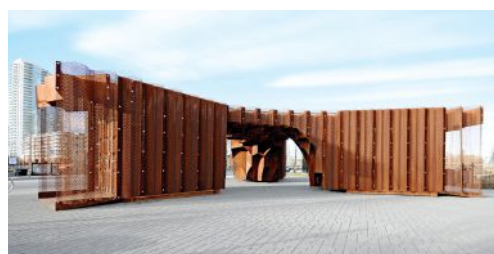
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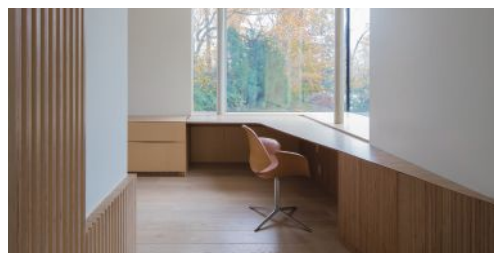
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### Midcentury Designer Jens Risom Dies at 100

In 2015, *New York* magazine noted: "It's not going too far to say that [Jens] Risom is the person most responsible for bringing Scandinavian design to this country, remaking the look of the American home forever." Born in Copenhagen in 1916, the designer died last month at 100 years old. Risom began working with Knoll in 1941, and went on to establish his own firm five years later. Later in life, he also designed furniture for Design Within Reach. "He lived an inspiring and long life," said Design Within Reach CEO John Edelman in a blog post. "We loved working with him." —SARA JOHNSON

> Read remembrances of Jens Risom at [bit.ly/RisomObituary](http://bit.ly/RisomObituary).





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### **A New Arts Center Premieres in Miami Beach**

One of three projects in Miami Beach, Fla., designed by the Office for Metropolitan Architecture for Argentinian developer Alan Faena, the Faena Forum, an arts building, opened in time to debut at the Art Basel and Design Miami fairs in late November. The structure, composed of a cylinder and a cube with 350 windows, creates a space for over 1,000 visitors to witness exhibitions, concerts, and gallery pop-ups. The cylinder can host a range of events, while the cube houses a hotel and meeting rooms. A third-floor assembly hall (above), located where the two volumes meet, features a 40-foot domed ceiling. —SYMONE GARVETT

> See more images of the Faena Forum in our Project Gallery at [bit.ly/FaenaForum](https://bit.ly/FaenaForum).

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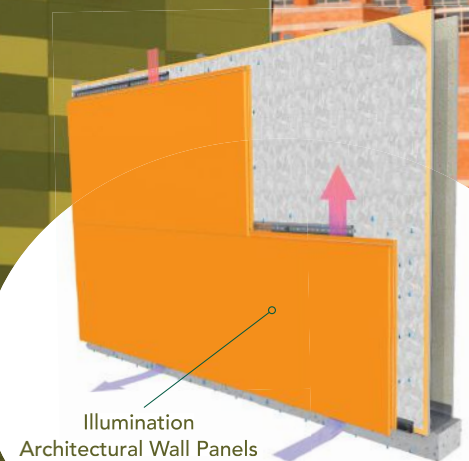
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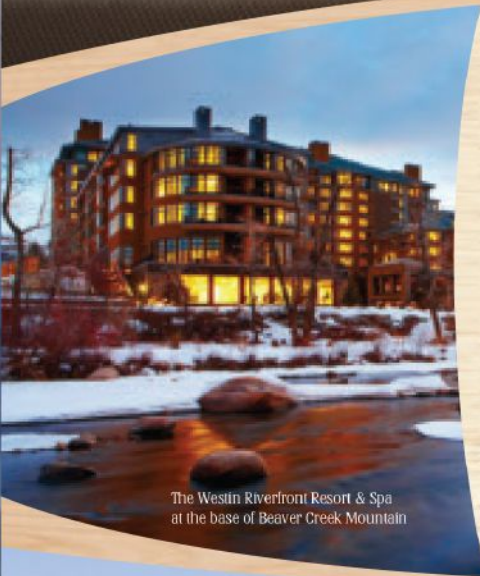
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### Goodbye, Guggenheim Helsinki

Helsinki's city council last month rejected plans for a new Guggenheim museum in its South Harbor. Comprised of glass and charred timber, the village-like proposal by Paris-based Moreau Kusunoki Architects beat out 1,714 other competition entries in June 2015, but is now unlikely to be realized. Following earlier concerns about funding the \$144 million building project, the latest proposal substituted \$55 million of proposed state funding with private money, according to *The New York Times*, with the remaining \$89 million to be paid for by the City of Helsinki. But last month, the city council said no. —CHELSEA BLAHUT

> Read more about the rejected Guggenheim Helsinki project at [bit.ly/GuggenheimHelsinki](http://bit.ly/GuggenheimHelsinki).



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General contractor: M.J. Harris Construction Services, Birmingham, AL  
Installing contractor: CSC Roofing, Birmingham, AL  
Profiles: Tite-Loc curved, Reveal Wall Panels  
Colors: Cardinal Red, Sierra Tan



"The curved roof in Cardinal Red and the Sierra Tan metal wall panels complement the other materials and really create a contemporary appearance..."

Tom Kidwell, senior associate and project architect, Birchfield Penuel & Associates



**REVEAL**

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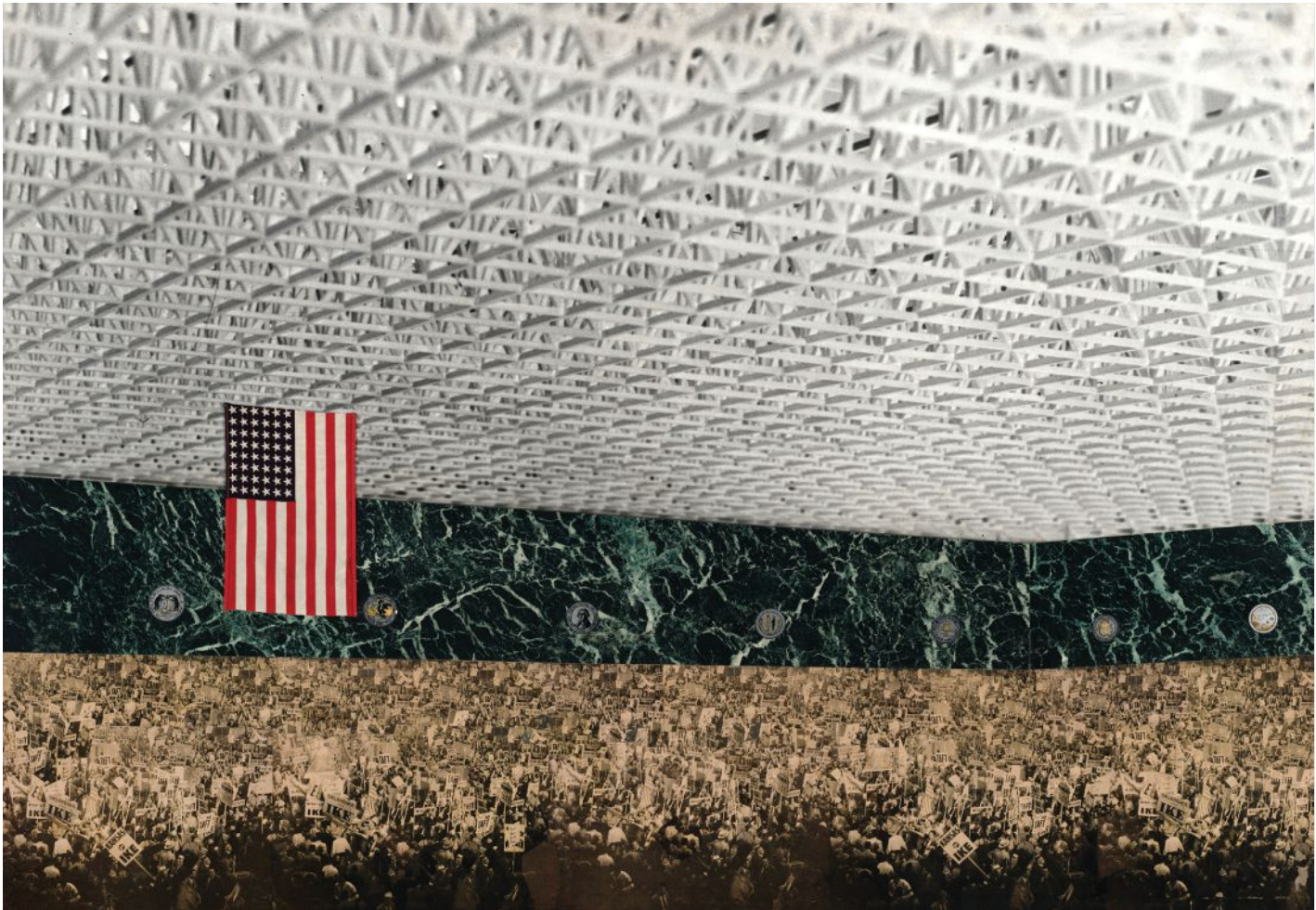
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### Collages from the Modernist Who Believed “Less is More”

About 50 of Ludwig Mies van der Rohe's architectural collages and drawings have returned to his birthplace of Aachen, Germany, for an exhibition at the Ludwig Forum. On loan from New York's Museum of Modern Art, Mies' collages illustrate his creative process as an architect. In the exhibition, his works are displayed chronologically from 1910 to 1965 as well as contextually by his variations in viewpoint, space, and media. On display through Feb. 12, the exhibition will then travel to Museum Georg Schäfer in Schweinfurt, Germany. —SYMONE GARVETT

> Read more about the exhibition at [bit.ly/MiesCollages](http://bit.ly/MiesCollages).



# The Cutting Edge

Constructed for the Salt Lake City Winter Games, the Weber County Ice Sheet and Sports Complex was an effective and attractive answer to the question of stadium space. The combination of an exposed fastening roof, wall panels and flat sheets achieves a sleek, industrial presentation — perfect for an athletic center of Olympic fame.

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**PROJECT:** Weber County Sports Complex

**LOCATION:** Ogden, Utah

**ARCHITECT:** FFKR Architects

**CONTRACTOR:** All Metals Fabrication

**PANEL PROFILE:** 7.2, Flat Sheets  
(Silver Metallic)

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### **A 17th-Century Palace Ballroom Becomes an Art Museum**

London-based Foster + Partners and Madrid-based Rubio Arquitectura have won the competition to renovate and refurbish the Salón de Reinos (Hall of Realms), a 17th-century ballroom once part of the Buen Retiro Palace, as part of an extension project for the Museo del Prado in Madrid. Scheduled for completion in 2019, the \$32 million transformation includes replacing the roof, reorganizing the floors to create new gallery and communal spaces, creating an indoor public plaza, re-establishing the facade's original openings, and adding a third floor above the restored façade. —VICTORIA CARODINE

> Read more about the Museo del Prado extension project at [bit.ly/SalondeReinos](https://bit.ly/SalondeReinos).





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# Best Practices: Where to Invest During a Strong Economy

TEXT BY NATE BERG

The worst of the Great Recession is behind us and markets are up for architects. The Architecture Billings Index, the main gauge of the health of the industry, has been going strong since 2012. Still, downturns can strike at any time. Firms that want to endure should start planning now. Strategic investments are one way to leverage the current economic climate—but where to start? The following business advisers and experts offer tips on how to spend while times are good.

## Think Sustainability, Not Growth

With replete coffers and abundant work, it can be tempting to grow staff or to acquire another firm. But Ray Kogan, AIA, of the Arlington, Va.-based strategic planning consultancy Kogan & Co., suggests that firms shouldn't pull out their wallets yet. Instead of focusing on short-term gains, they should be looking further ahead to stay afloat in case of future downturns. "You want to invest in sustainability more than growth right now," he says. "And that really means investing in things like marketing and positioning yourself in a strategic way."

## Nuture Client Relationships

Part of positioning one's firm for the long-term requires establishing a strong foothold in its primary markets—which takes cultivating relationships with individual clients through business development. "Investing and firming those up are important while things are good because those relationships will

sustain themselves when times aren't so good," says Kogan, who recommends spending the time—and money—to engage with clients often. That can mean anything from taking clients to lunch to maintaining regular contact through marketing materials. "When those clients have a little bit of work instead of a lot of work, they're likely to work with firms that have strong relationships with them."

## Train Your Staff

The future of a firm depends largely on its workforce, so consider using healthy economic times to invest in training and mentoring personnel. That can take the form of workshops, formal classes, or just tapping firm leaders to impart their expertise. "One of the best ways for staff to learn is from people who have done it," says Stephen Epstein, a management consultant at Strogoff Consulting in Mill Valley, Calif.

Unfortunately, Kogan notes, many firms are reluctant to prioritize training. "But it pays off when things go south

"You want to invest in sustainability more than growth right now."

—Ray Kogan, AIA, president, Kogan & Co.

because you have the very best staff," he says.

## Upgrade Your Technology

It has become increasingly important for firms to keep their technology and software up-to-date, and prosperous times enable investments in office resources and equipment. But Kogan argues that keeping a firm's tools up-to-date should be an imperative no matter how the economy is doing. "Firms shut off the tap to spend money on technology, but technology continues to advance even during a downturn," he says. "So if you're falling behind before a downturn, you'll fall way behind when you're out of a downturn."

## Invest in Saving

The best place to invest money during good economic times is in a firm's own capital base, says Colvin Matheson of Matheson Financial Advisors, in McLean, Va. Too many firms opt to distribute profits at the end of the year to avoid corporate taxes. "They're basically emptying the cupboards before each tax year, which weakens the entity," he says.

Matheson recommends that firms maintain enough funds to cover payroll and keep the lights on for at least a few months. "As you start to get closer to a downturn," he says, "you need to start shoring up your capital base, decreasing the amount of debt and [lenders'] financial leverage, and making sure you've got a strong balance sheet that will withstand a prolonged downturn."



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# Detail: Ark Encounter Exterior Wall

TEXT BY TIMOTHY A. SCHULER

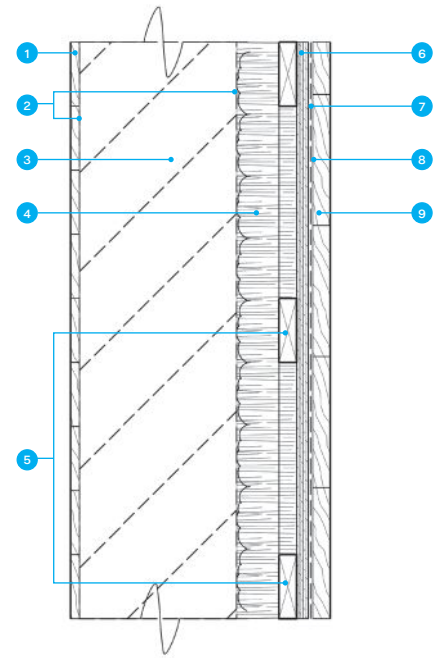
The term “of biblical proportions” is rarely meant literally, but the Ark Encounter in Williamstown, Ky., may be an exception. Completed in July 2016, the museum purports to be a full-scale replica of the titanic wooden vessel built “300 cubits long, 50 cubits wide, and 30 cubits tall”—or 510 feet long, 85 feet wide, and 51 feet tall—by the prophet Noah, according to the Book of Genesis.

Built almost entirely of wood, the \$102 million, 120,000-square-foot attraction is reportedly the largest timber-framed structure in the world. Turning to the Bible for building specs was a first for LeRoy Troyer, FAIA, the founder and president of the Troyer Group, in Mishawaka, Ind., which led the structure’s design. He worked with Tim Lovett, an ark researcher and exhibit designer for the project owner, the Christian organization Answers in Genesis, who had developed computer models of the ark to understand how it might have been constructed.

Sitting above grade on 100 15-foot-tall concrete piers, the structure consists of a series of timber bents, or cross frames, spaced every 18 feet. Each timber bent spans the 85-foot width of the boat and stands 50 feet tall.

But the building component that required the most research, Troyer says, was the exterior wood finish. Seeking a material that would last upwards of 150 years, he selected Accoya, a weather- and pest-resistant wood product by London-based Accsys Group that is treated with a highly concentrated form of vinegar to alter the chemical makeup of the wood and render it extremely durable. The Accoya planks, left unfinished, will weather to gray over time.

All told, Troyer estimates that the project required 3.3 million board feet of wood, 190,000 pounds of custom steel plates for its 4,000-plus structural connections, and nearly 5,000 pages of construction drawings.



1. 1×12 rough-sawn shiplap
2. Fire Kote 100 flame-inhibitor coating
3. Glulam rib (beyond) at 6' o.c.
4. 4" closed-cell spray insulation
5. Fire-treated 2×6 at 24" o.c.
6. 1"-thick fire-treated plywood
7. Tyvek CommercialWrap
8. Rainscreen batten (16" o.c.)
9. 1×10 Accoya acetylated radiata pine shiplap

> For the full story on how the Ark Encounter was designed and constructed, visit [bit.ly/ARArkEncounter](http://bit.ly/ARArkEncounter).





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Brock Commons showcases advancements in wood product research and hybrid building systems. Upon completion it will exceed fire ratings and seismic safety requirements.

Location:  
 Vancouver, Canada  
 Architect:  
 Acton Ostry Architects  
 Photographer:  
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# Next Progressives: StudioPM

EDITED BY KATHARINE KEANE

**Location:**

Boston

**Year founded:**

2013

**Leadership:**

Megan Panzano (founder)

**Education:**

B.A., Yale University; M.Arch., Harvard Graduate School of Design (Harvard GSD)

**Firm size:**

1 (plus a trusted array of fabricators and collaborators as project needs require)

**Experience:**

I worked closely with both Bob Venturi, FAIA, and Denise Scott Brown, HON. FAIA, at the former Venturi Scott Brown + Associates [now VSBA Architects and Planners] and then designed projects across scales at Utile, in Boston. I currently teach and coordinate terms in both graduate and undergraduate programs at the Harvard GSD.

**Mission:**

Leveraging “the edge.” The practice consistently identifies projects that carry a degree of change and instability with them. They often hail from “the edge,” occupying physical sites of as-yet-undefined space at the urban margins. The contingencies specific to each project are often rescued from what may be considered the periphery

of architecture and are centralized as a primary architectural engine.

**Memorable learning experience:**

In 2005, I learned how Bob Venturi *really* feels about landscape from a bold message he wrote to me in his classic, black Pentel Sign Pen on yellow ruled paper, the contents of which I cannot share here ...

**Design tool of choice:**

Adobe Illustrator. I am an old-school, what-you-see-is-what-you-get fan and often luxuriate in line-weight-heavy drawings that I sheet-feed print and layer up.

**Favorite project:**

The Stowaway House, in Cape May, N.J., because it extends my research interests in the architecture of spaces for object collection and their potential perceptions into a real project.

**Second favorite project:**

I did a series of small design charrettes for the Boston recycling company Save That Stuff. Our collaboration is an enjoyable, ongoing evolution in scale, speed, and communication of their ethos through design solutions.

**Skills to master:**

Distillation (I’m trying).

**Architecture hero:**

I’m re-obsessed with John Hejduk for his simultaneous smarts, originality, and



Megan Panzano

clear commitment to evolving as a designer.

**Special item in your studio space:**

Heat-sensitive, hypercolor thinking putty.

**Morning person or night owl:**

The morning is for idea concocting while the evening is for exploring the potential of those ideas that have been churning throughout the day.

**Social media platform of choice:**

Twitter for work, but Instagram for life.

**Superstition:**

I have to listen to the song “In the Light” by Led Zeppelin before I give a presentation.

**Vice:**

Spying.



“

**BY LAW ALL  
BUILDINGS  
SHOULD BE  
WHITE.**

Le Corbusier

**WE BEG  
TO DIFFER.**

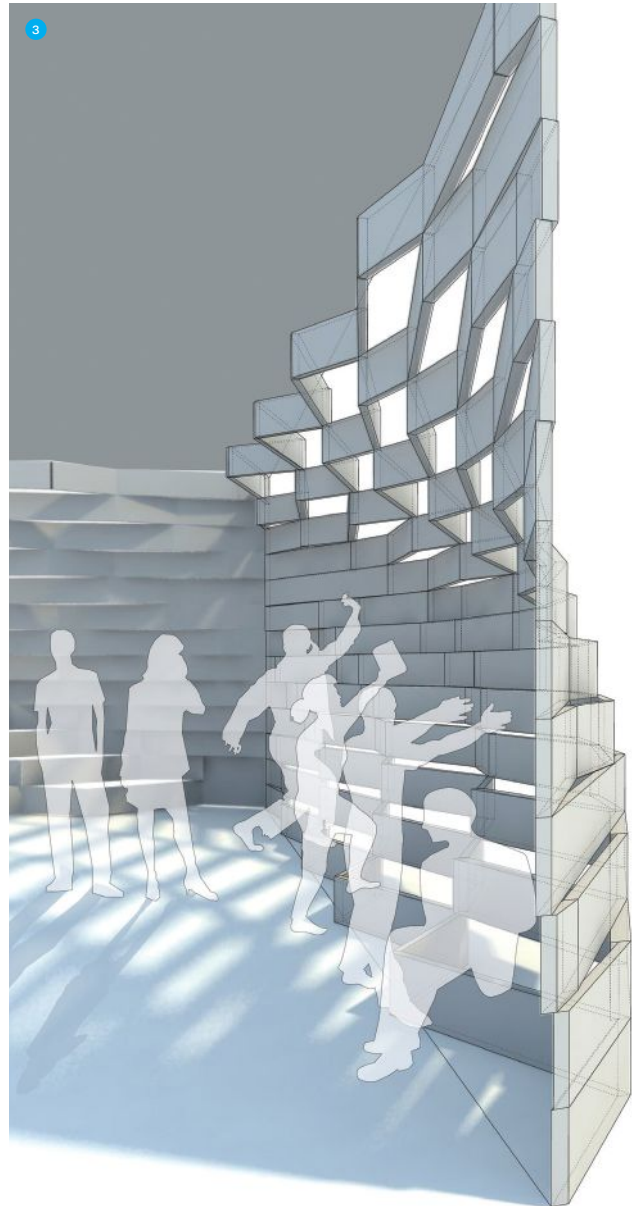
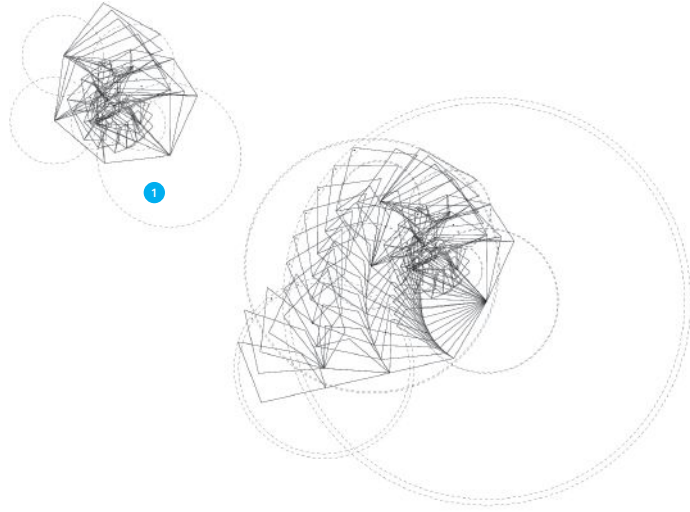
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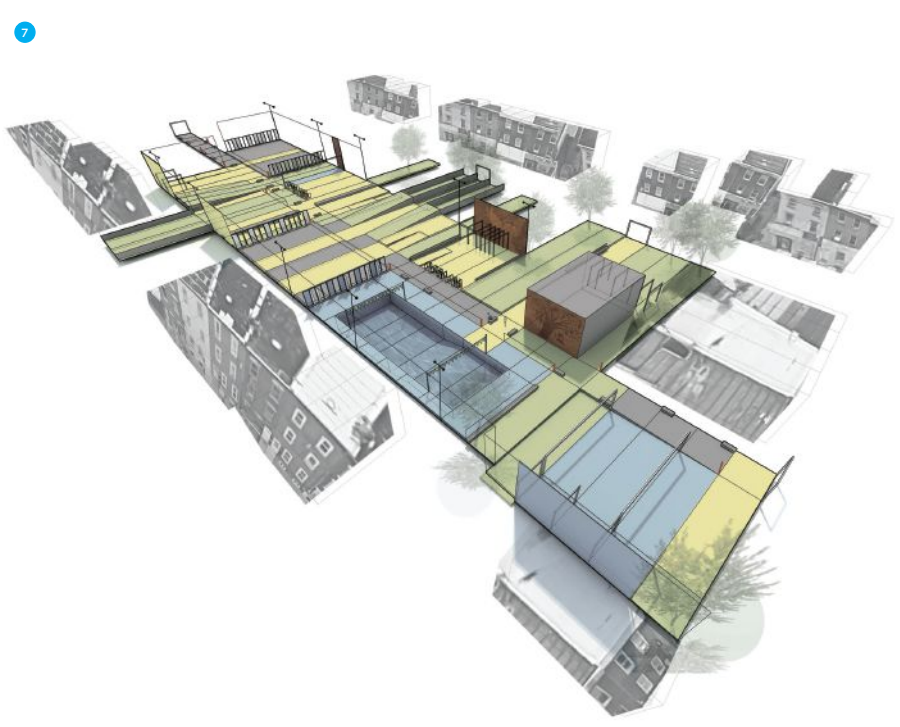
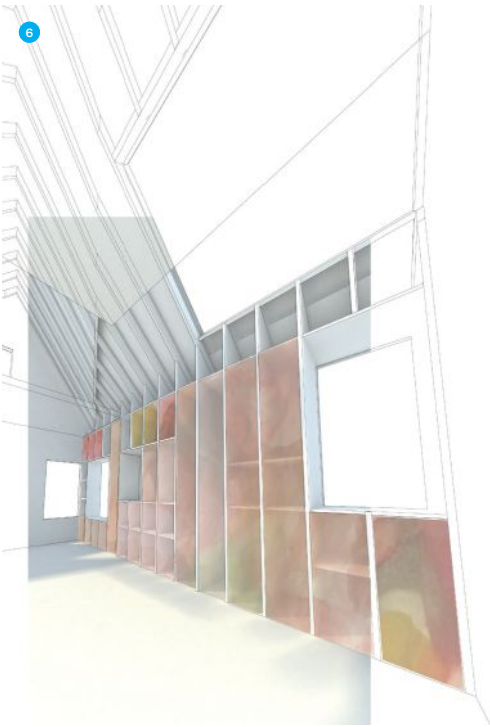
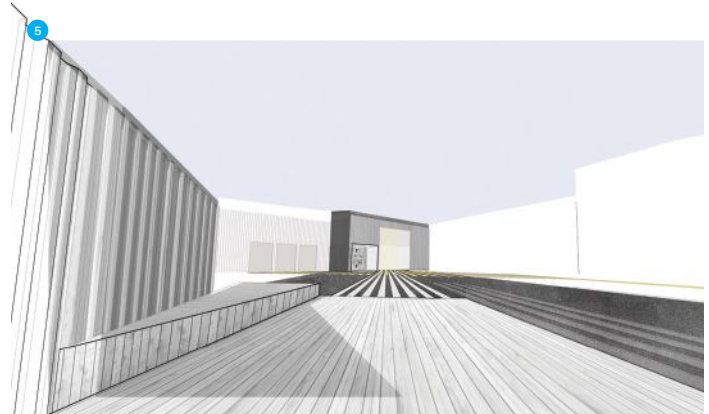
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**Next Progressives:  
StudioPM**







**1, 2, 3.** BMW Inspired Housing was influenced by the shape-shifting BMW Gina Light Visionary Model car, skinned in elastic fabric in lieu of sheet metal. The modular walls of the living units can be stacked and customized, allowing variations in lighting, form, and apertures. **4.** The design for Harvard GSD's fall 2015 exhibition "Living Anatomy" featured aluminum and plexiglass panels that let visitors see other sections of the gallery. **5.** The STS Master Plan+ for Save That Stuff, in Boston, uses shading to distinguish vehicular and pedestrian pathways and identifies neighboring space for future expansion. **6, 8.** Designed to complement the style of its landmarked neighborhood in New Jersey's Cape May, the Stowaway House will host both guests and beach gear, the latter of which will occupy storage spaces defined by the rhythm of the wood frame structure. **7.** Interplay Philly, a submission in collaboration with Seher Erdogan Ford, AIA, to the 2016 Philadelphia Community Design Collaborative competition to invigorate the city's underutilized urban sites, envisioned a space for play and community engagement that incorporates climbing structures, murals, and existing amenities.

# Products: Concrete

TEXT BY SELIN ASHABOGLU



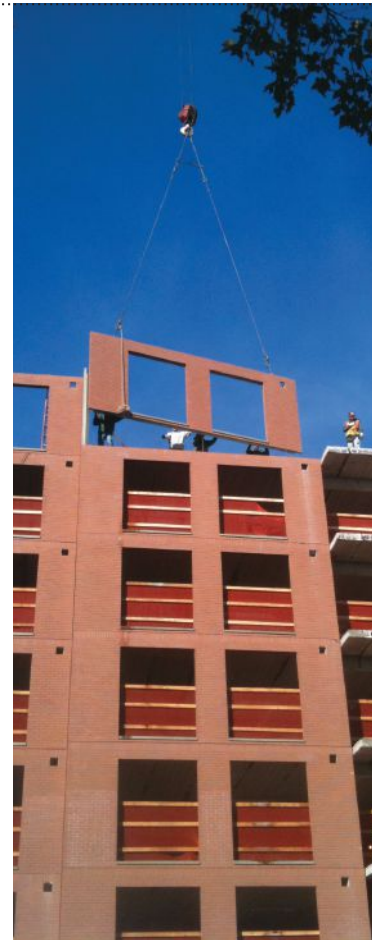
## Cement Colors, Sakrete

Resistant to the detrimental effects of ultraviolet light and alkali, this synthetic mineral oxide adds pigment to concrete, mortar, and sand mixes. Available in eight colors. [sakrete.com](http://sakrete.com)



## MasterLife AMA 100, BASF

This admixture reduces the risk of microbial-induced corrosion in shotcrete and precast, and cast-in-place concrete pipes, tanks, and manholes used in sewage and drainage systems. [basf.com](http://basf.com)



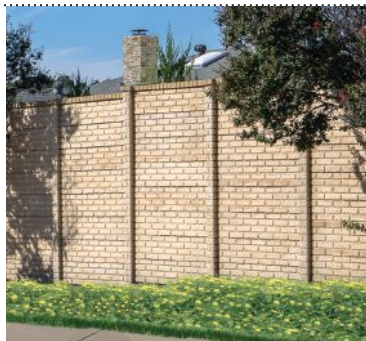
## Residential Precast Building System, Oldcastle Precast

Customizable for many building types, including multifamily housing and hotels, the factory-made components include stairs and beams. [oldcastleprecast.com](http://oldcastleprecast.com)



## Form & Pour Concrete Mix, Quikrete

Aggregates and admixtures, including microsilica, in this concrete mix help improve its durability and workability. For 1.5"- to 2.4"-thick vertical and horizontal rehabilitation projects. [quikrete.com](http://quikrete.com)



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# AIA Architect

## AIA Voices



PHOTOGRAPHY: CARL BOWER

## Seeing Around Corners

**How the mayor of Oklahoma City sparked his metropolis' redesign.**

Mick Cornett has been the mayor of Oklahoma City since 2004, OKC's only four-term mayor and one who is leading its design-centric renaissance. Beginning with a successful citywide campaign to encourage residents to collectively lose 1 million pounds—Cornett himself lost 40—he spearheaded downtown revitalization that was centered on walkability (and a 1-cent sales tax). For Cornett, his city's future is tied to reinvestment in terms of economics as well as reinvestment in the health of its citizenry. Design, he says, is the key to both.

As told to Steve Cimino

When Oklahoma City showed up on a *Men's Fitness* list of the fattest cities in the country, I started looking at our city for the very first time through the lens of health and obesity. I realized that we had created a city around the automobile. Almost every decision we made—from a civil engineering standpoint, an architectural standpoint, and a city planning standpoint—started with cars. And I understood what an unhealthy environment we had created for ourselves.

Once the weight-loss awareness campaign had effectively permeated the market, we realized an existing sales tax initiative was expiring and saw an opportunity to look at an extension to fund changes to the built environment. The reason we didn't try to fund them before was, if you grew up in a city and it's all you're knowing, it's difficult to understand how it can be different—or even better. But we had established, through the weight-loss campaign, that what we had was unhealthy. All of a sudden we saw all these funding opportunities, to build more sidewalks and jogging and biking paths. We even

redesigned all of our downtown streets to be more pedestrian-friendly.

Twenty-five years ago Oklahoma City's downtown basically closed at 5 p.m. We had streets that were five lanes wide and it was almost as if our engineers had been instructed to see how fast we could get somebody in and out of downtown. We had never bothered to create a place out of the core of our city, and we were trying to become a suburb of nothing. In response, we added lots of on-street parking, and we narrowed and heavily landscaped every street. Now it's a pleasure to walk downtown in Oklahoma City, all because of the investments we made in the built environment.

It's not that I or the leaders of our community have figured this out and others haven't. The real key is that we figured out how to pay for it. The secret to Oklahoma City's success is not that we're enlightened or smarter. It's that we're more creative, and we have a citizenry that has put faith in local government and is willing to tax itself to pay for these changes. **AIA**

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# AIA **Client Insights** **Commercial &** **Institutional Report**

## Data that drives business

Find out what goes into the decision-making process for education, health care, and office building owners—from how they hire architects to what they plan to include in their upcoming projects—with AIA's newest report.

[aia.org/clientinsights](https://aia.org/clientinsights)



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# AIA Now

By Steve Cimino  
Art Direction by Jelena Schulz

## The City of Reinvention

Ten years ago, walkability expert and city planner Jeff Speck strolled down every single street of Oklahoma City's downtown as part of an analysis to determine why the city was so unfriendly to pedestrians. In 2008, it was voted the "worst U.S. walking city" in a review of 500 communities by *Prevention* magazine and the American Podiatric Medical Association. Then in 2009, it was dubbed the "number two fattest city" in America by *Men's Fitness*. Visit Oklahoma City today, however, and you'll see miles of new sidewalks, bike lanes, and recreational trails, not to mention a city successfully challenged by Mayor Mick Cornett to lose over a million pounds.

At the core of Oklahoma City's transformation is Metropolitan Area Projects Plan 3 (MAPS 3), a \$777 million capital improvement program funded by a 1-cent sales tax. MAPS 3 ensures all its projects are debt-free before they begin, reinforcing the city's full commitment to reinventing itself. More than anything, the goal is to lessen Oklahoma City's urban sprawl and make it a walkable, livable, healthy community for all residents. The following projects are helping to power the comprehensive push for a new Oklahoma City.

**Three urban trails** will link the city to its rivers and lakes, and provide safe spaces for residents to walk, bike, and skateboard. The multiuse ADA-compliant trails are already contributing to the city's connectivity; the 7.5-mile West River Trail was finished in 2015, and ground was recently broken on the 8.1-mile Will Rogers Trail.

A **70-acre public park** stretching from downtown to the shore of the Oklahoma River will connect the residents to nature and add a beautiful public space. A 380-foot-long pedestrian bridge with a 197-foot-tall sculpture will connect the park's north and south sections; the north section is set to be completed in 2018, with the south section following three years later.

A **whitewater rafting and kayaking center** on the river, Riversport Rapids, was completed in 2016, providing outdoor excitement in a near-urban setting and appealing to weekend adventurers and competitive water sports enthusiasts alike.



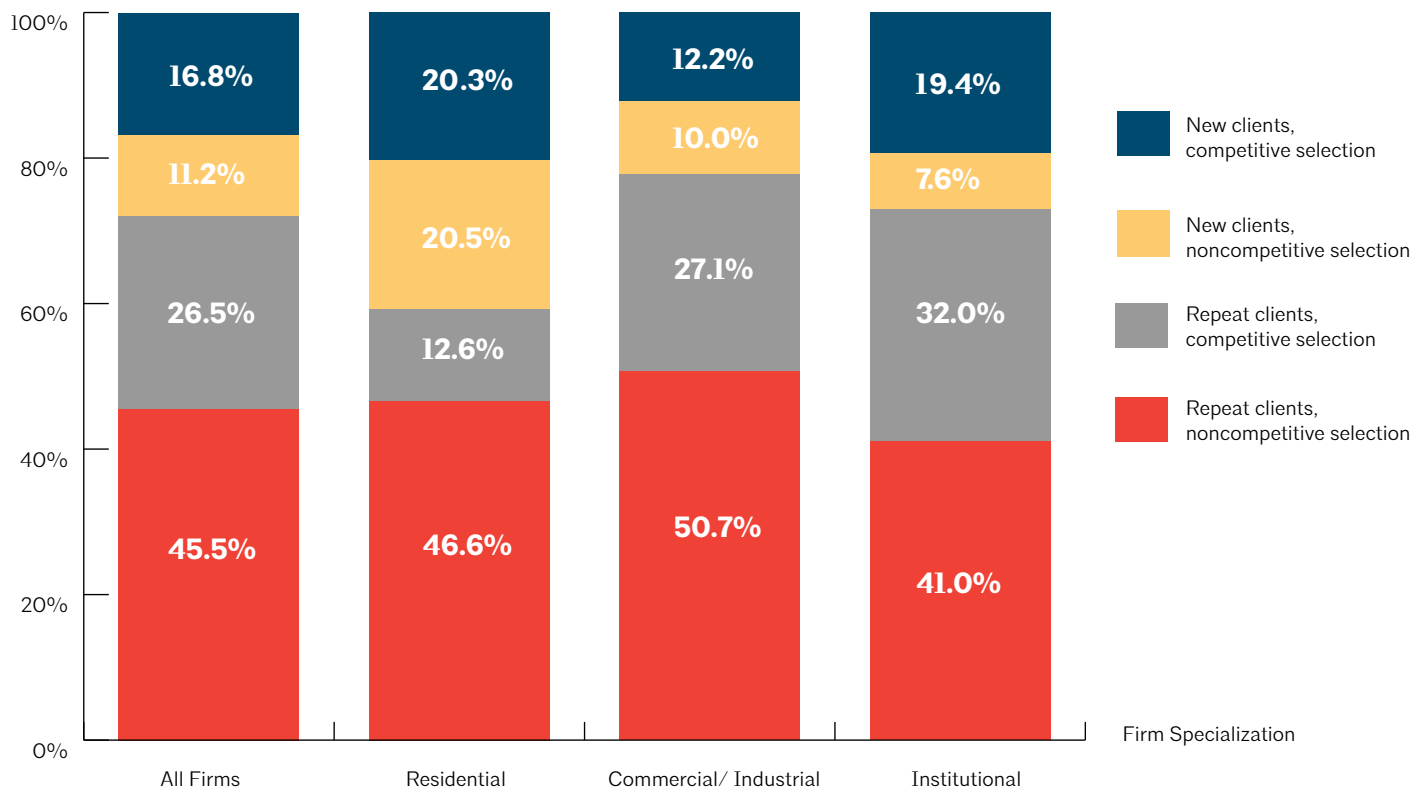
ILLUSTRATION: LAUREN NASSEF

AIAFeature

# How to Align Your Firm with Client Needs

As firms restructure and plan for the future, the needs and wants of the owner, occupant, and user should move to the forefront of the design process.

By Michele Russo



Architecture firms see more work from repeat clients  
Percent of firm billings by work source

Source: AIA Business of Architecture 2016 Firm Survey Report



Architecture firms in the United States recovered in 2015, after the Great Recession had created dramatic downturns for the profession in 2008. The *AIA Business of Architecture 2016 Firm Survey Report* reveals that more than 90 percent of today's firms report profits, with more than a fifth reporting a high profitability of over 20 percent. Insights from their clients can help direct and inform where the future is going—and how to invest profits and thrive regardless of market conditions.

If we juxtapose the *AIA Client Insights Report* against this *Firm Survey Report* (both released in 2016), we can see the thinking of building owners in the three largest nonresidential building construction sectors—education, healthcare, and office—and whether firms are lined up to meet these clients' needs.

### Relationships Matter

While good relationships lie at the heart of success across all professional and personal ventures, the design and construction industry is one that is fundamentally built on strong relationships. Architects and their clients agree on the critical nature of these relationships, and their business reporting confirms a substantial amount of repeat business within the profession. Architecture firms that specialize on commercial report 78 percent of their work comes from repeat clients, and those that specialize on institutional report 74 percent of billings comes from repeat clients. Confirming this, 83 percent of office, education, and healthcare owners report that previous firm

experience is extremely important when they select an architect for a job; in fact, it is the factor that ranks higher than any other in their selection process, including value, cost, and reputation.

Accordingly, fostering these architect-client relationships should be a priority, and education-, healthcare-, and office-building owners provide some insights into what architects need to do in order to achieve success in these sectors:

**Involve firm leaders in project proposals and at the outset of projects.** Seven in 10 owners noted that—above all other factors—firm principal involvement is a very important qualification they look for during hiring. Notably, it is deemed more important than referrals and much more important than a low-cost bid or proposal.

**Focus on what owners prioritize in their decision-making.** When forced to choose, most owners in these sectors (58 percent) want architects to understand the performance of their buildings and the impact on occupants. Of the remaining 42

percent, more than half of them (24 percent overall) prioritize architect knowledge of their organizational goals and culture. While it is always preferable to discern what matters most to a particular client, the importance of the occupant was reinforced by several findings of the client insights survey. Therefore, architects would significantly benefit from framing discussions around experience, function, and performance—perhaps even more so than the visual aspects of their work.

**Highlight what clients explicitly want, and demonstrate collaborative approaches.** Architects and clients both acknowledge the breadth of what today's client is looking for from an architect, reflected by architecture firm structure and the importance of services to clients.

### Diversify Service Areas

Architecture firms are becoming more multidisciplinary as they take on a larger breadth of services such as engineering

# AIA Feature

CONTINUED

and interior design, once less prevalent in-house offerings. In 2015, 42 percent of architecture firms were multidisciplinary, while those that were single-discipline remained at slightly over half (51 percent). This is dramatically different from the firm structure we saw in 2008—before the recession—when less than a third (32 percent) were multidisciplinary. Larger firms are even more focused on a multidisciplinary approach, with 82 percent of them with more than 100 employees in 2015 identifying as multidisciplinary. Shops with nonresidential specialties also show a greater affinity with the multidisciplinary moniker than those with a residential focus. Reinforcing the expanded nature of services is the share of architecture firm revenues that are pass-through (that is, revenues received from a client for services performed are passed directly to the consultant or subcontractor). In 2015, 30 percent of billings were pass-through, reflecting that firms are increasing the revenue they pass on directly to their specialty contractors. The most commonly used consultants include engineers (with 88 percent of firms using structural engineers; 84 percent using mechanical, electrical, and plumbing engineers; and 77 percent using civil engineers) and landscape architects (60

percent). Fewer firms (likely due to in-house expertise), but a notable share, contract with interior designers (36 percent of all firms), lighting designers (33 percent), and cost estimators (30 percent).

Education, healthcare, and office owners want their architects to perform a series of services for them, likely influencing the increase in the number of multidisciplinary firms. While the traditional architecture work of delivering high-quality design and documents is extremely critical, clients also place a high importance on a number of other services they want from architects.

First, these owners want expertise from their architects—nearly nine in 10 (88 percent) want architects to bring in expertise they are missing in-house, and nearly as many (82 percent) want architects to develop innovative project solutions.

Second, owners want their architects to help them meet their budget and timeline constraints—85 percent place a high importance on designs that meet budget, 81 percent want designs that will have easy and cheap maintenance, and 78 percent want architects to adhere to schedule.

Finally, clients want architects they can trust to be their advisers and partners throughout the design—but also

construction—phases of projects: Nearly four in five place a high importance on architects serving as their advocate, two-thirds (67 percent) want them to facilitate interactions with the construction team, and nearly as many (63 percent) want them to lead the design and construction team.

Currently, clients report high satisfaction with their architects across all these service areas, suggesting that owners do view their architects as important partners, agents, and advisers—not only as transactional service providers creating designs and delivering documents. Recognizing the importance that clients place on all these services can help architects strengthen their relationships or even expand services—and, with that, fees.

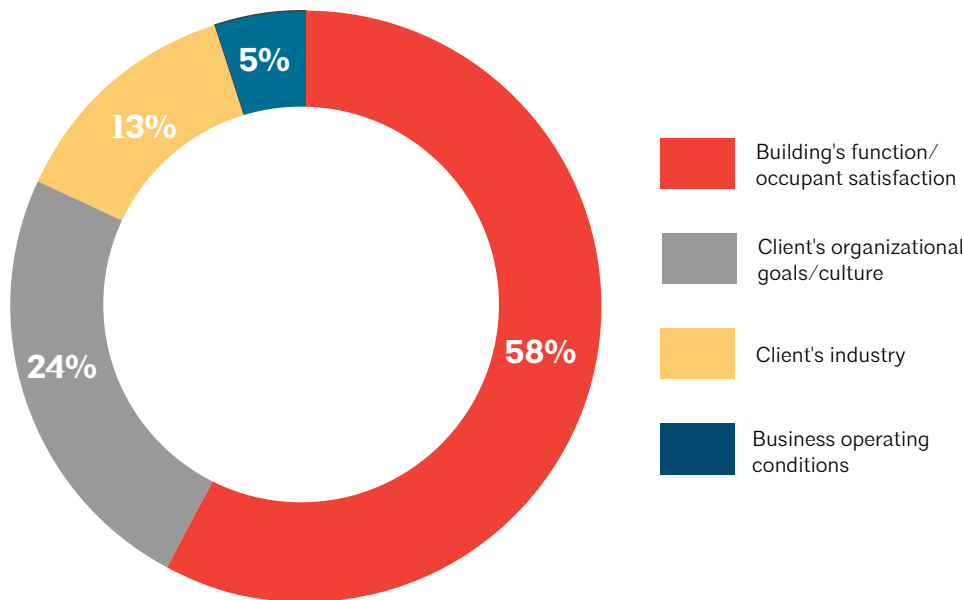
## Clients Focused on Building Occupants

While architects certainly can transform building design—and have motivated and led the way—owner demand can also help accelerate markets. It is through their consultative relationships that architects can help advance areas that education-, healthcare-, and office-building owners are embracing—namely sustainability, occupant health, and flexible spaces for interactive design.

These owners are highly oriented toward their building occupants in terms of the factors that they are planning to include in projects over the next three years, namely safety, occupant satisfaction, and thermal comfort. Those factors are also deemed very important to more than 90 percent of responding owners.

At the same time, owners also want projects that reflect their design aesthetic and help them be profitable. For example, almost nine in 10 office (87 percent) and healthcare (89 percent) owners rate ROI increases as very important aspects of their projects, and nearly as many education owners (87 percent) report enrollment growth as very important.

Over the next three years, these owners are highly committed to realizing energy efficiency, overall health, and improved social interaction in the attributes they want for the projects they commission. Specifically, 87 percent definitely plan to have energy-efficient systems in their building projects, and 73 percent are including continuous metering and building controls. And these numbers are even greater if you add in the share of owners that might



## Factors architects need to understand to be hired

Share of education, healthcare, and office owners who report each factor as most important



include such features. As for health, it is the second-most reported feature that owners want in their buildings (at 84 percent). Social interaction and flexibility are also important, with 75 percent of owners planning spaces for social interaction and collaboration in their projects and 72 percent planning adaptable design elements to enable multiple uses.

This research suggests that architects and other industry players should highlight the ways they can address these important areas of efficiency, health, and flexible design in proposals, client meetings, and design and project work. Given that the owner looks to architects as experts and innovative solution-providers, it would behoove firms to ensure they have expertise to address these needs in-house or to find partners that can help them provide it.

Firms do seem to be aligned with their clients, especially as it relates to energy performance. A majority of firms of all sizes are using energy modeling—either internally or through the use of an outside

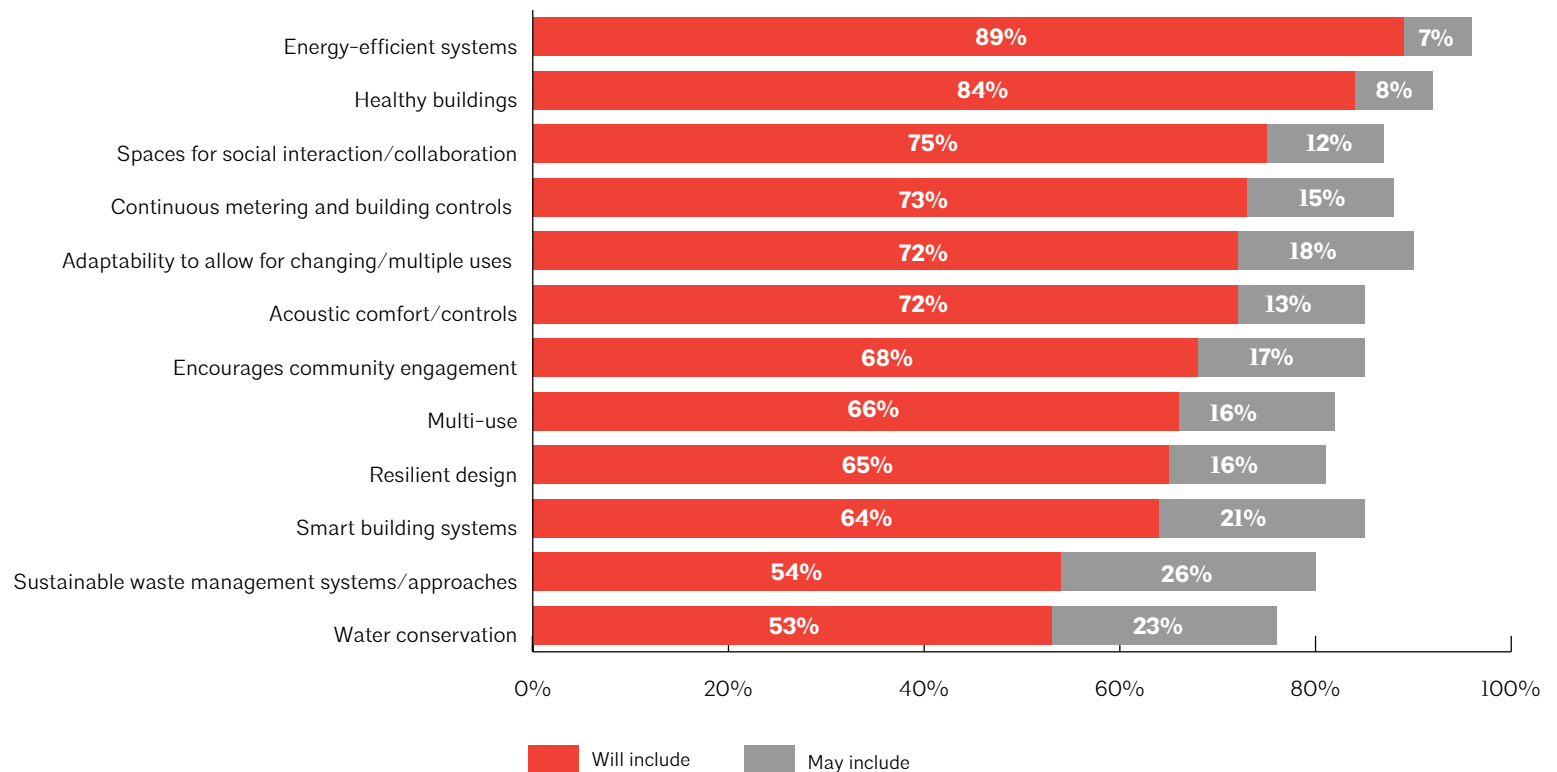
consultant. Nearly three in five large firms (with 50 or more employees) are using energy modeling for at least some billable projects, while smaller firms are mostly requiring this function from outside consultants. Midsize firms (20 to 49 employees) are a mix of those that use energy modeling for billable work (18 percent) and those that require outside energy analysis (37 percent).

BIM is also becoming standard across the industry—enabling a better visualization of design and improved project efficiency. While nearly all larger architecture firms with 50 or more employees (96 percent) use BIM on billable projects, it is also used by midsize firms (72 percent). Owners are also embracing BIM, and want this to be a service that architects provide—84 percent of education owners, 90 percent of healthcare owners, and 80 percent of office owners report using BIM on at least some of their projects. Owners mostly see its value at the design phase, but office and healthcare owners also see its value throughout the construction process.

### Looking Forward

As our market conditions inevitably shift over the next couple of years, insights from clients can help architecture firms prepare for the future. Clients no longer view their architects as only suppliers of beautiful and safe building designs. The largest nonresidential owners report that they want their architects to be trusted partners and advisers who listen, work collaboratively, and provide expertise, as well as innovative design solutions.

Most notably, these owners want to see a focus on the eventual function and performance of their buildings—as it relates to occupant experience and health, building energy performance, and financial building performance. If architects can address these needs, as they continue to foster and strengthen their client relationships today and throughout the life of a building, they will be in a much stronger position to weather any coming storms. **AIA**



### Attributes to be included in projects over the next three years

Percent of education, healthcare, and office owners reporting that they plan to include the attribute in projects

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# AIAFuture



ILLUSTRATION: MICHAEL GLENWOOD AKA MICHAEL GIBBS

## The Point-0 Conundrum

**With the launch of the latest version of the Architect Registration Examination, future architects have to choose which version of the exam to take.**

For the next 18 months, future architects will have at their fingertips more exam options than ever before. In November, the National Council of Architectural Registration Boards (NCARB) launched ARE 5.0, the next version of their Architect Registration Examination.

The first new version in eight years, ARE 5.0 is NCARB's reassurance to the profession that its exams will stay relevant with current practice. Its divisions—six instead of ARE 4.0's seven—include the new Practice Management, Project Management, and Project Planning & Design areas, which attempt to test emerging architects more effectively on elements of daily architecture work. It also includes case studies and adopts a more modern graphical feel—as opposed to the dated and pixelated (if beloved by some) graphic vignettes that will be retired with ARE 4.0.

With this new version comes uncertainty: Which exam path is best for you? For a limited time, an unprecedented three options will be available: ARE 4.0, ARE 5.0, and a mix of the two. Each option has its drawbacks and its benefits, and each emerging professional should evaluate all three to find the right path based on individual need.

“To me, it's about playing to win,” says Drew Bell, ASSOC. AIA, of Atlanta-based Robert M. Cain, Architect. Bell is going with the “3+2” approach, which allows licensure candidates to take three specific exams in ARE 4.0 followed by two more in ARE 5.0. It's the most efficient option, one with both time and financial benefits. It also appeals to those who don't fear a mix of known and unknown.

“The people who want to take it all in 4.0 seem to be doing so because they have all the study guides and they know what they're

# AIAFuture

# AIA Perspective

getting into,” Bell says. “It seems like playing not to lose.”

The traditional approach isn’t dead and buried, however. As Bell notes, a smorgasbord of study guides and test prep materials await licensure candidates who aren’t interested in the new and unfamiliar. This is the approach Jason Takeuchi, ASSOC. AIA, of Hawaii-based Ferraro Choi is taking.

“There are so many resources to support anyone taking 4.0,” he says. “You can ask licensed colleagues, look at forums online, read through all the study materials. If I were to move to 5.0, there would be a huge learning curve.”

He also looks at his exams as an educational process, not something to rush through as quickly as possible: “The more tests you study for and pass, the more you’ll learn. And the better you’ll be at your job.”

Then there is ARE 5.0, still freshly released and underexplored, but the wave of the future and a boon to those who haven’t yet begun the process. Hannah Hunt Moeller, ASSOC. AIA, may be leaning towards 5.0 for logistical reasons but still sees the value in NCARB’s latest offering.

Moeller received an M.Arch. from the University of Michigan, which led to complications when she decided to practice rather than pursue research. She is currently based in Colorado, at Denver-based RNL Design, which means she can eventually be licensed but needs more experience hours. This will take about 18 months, pushing right up against the June 30, 2018, date when ARE 4.0 will be removed from test centers and ARE 5.0 will become her most realistic path.

“In my position, I can’t currently be working and testing at the same time,” she says, “so I’ll have a lot more experience when I get there. That, plus the fact that 5.0 is supposedly going to be more context-based within the profession, is compelling.”

Ultimately, most emerging professionals view the ARE with a similar mix of necessity and reverence. While completing all of the necessary tests is a lengthy process that compounds the stress of being an oft-overworked full-time employee, passing the exams is a badge of honor that demonstrates your worth to all the architects who came before. And while many future architects are now debating which path suits them best, it’s likely that NCARB will fulfill at least one of its ARE 5.0 goals: Increase the flow of traffic.

“I feel like more people are going to get licensed,” Takeuchi says, “and that’s a good thing.” **AIA**

Steve Cimino



PHOTOGRAPHY: CARL BOWER

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Thomas Vonier, FAIA, 2017 AIA President



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H A R D W A R E  
HOSPITALITY

LEFT TO RIGHT: FLUTE BY THE ROGER THOMAS COLLECTION CABINET KNOBS AND PULL, SHIFT GRIP BY TED BOERNER, FLUTE DOOR HARDWARE, RAIL PULL, 2 3/4" HOUSE LETTER 'A'



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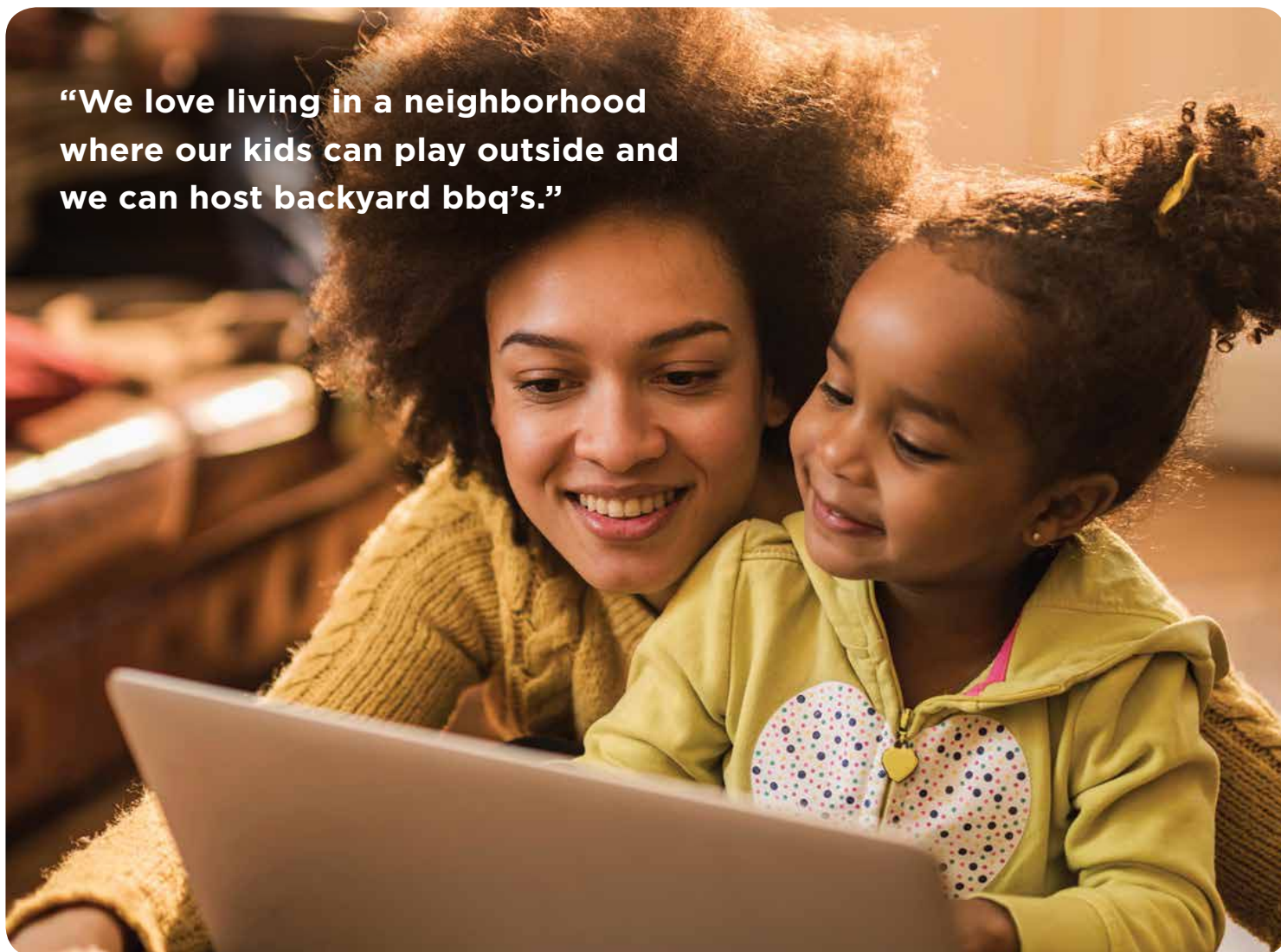
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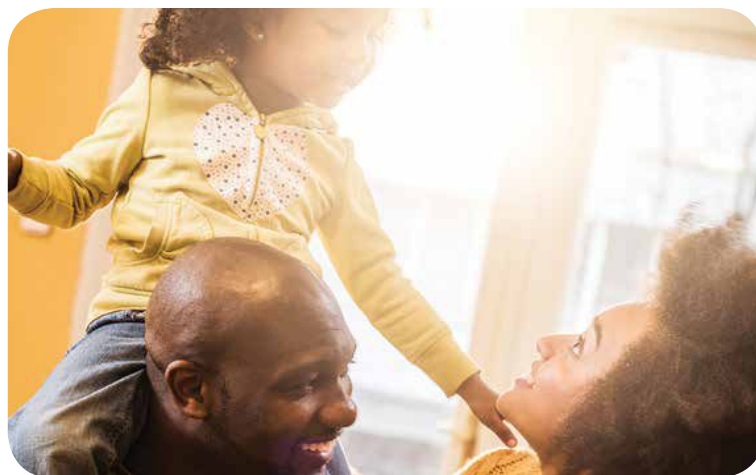


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# CASE STUDY: A POLYASPARTIC COATING MADE A COMMERCIAL BAKERY FLOOR LOOK REALLY SWEET

Presented by:



## LEARNING OBJECTIVES

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

1. Review the flooring needs of SpringHouse bakery and why the existing flooring had to be replaced.
2. Discuss polyaspartic coatings technology and their benefits when being used as a polyaspartic floor coating.
3. Identify the proper steps to prepare a floor for application of a polyaspartic floor coating.
4. Describe how contractors planned for and executed the application process.

## CONTINUING EDUCATION

AIA CREDIT: 1 LU/HSW  
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By Steven Reinstadtler, Construction Market Manager, Coatings, Adhesives and Sealants Covestro LLC Pittsburgh, Pa., U.S.A.

The SpringHouse Country Market and Restaurant has been a local icon in the southwestern Pennsylvania region for over 40 years. In 1975, the Sam and Bev Minor family, complete with five children twelve and under, started milking cows, processing and bottling the hormone-free milk, and running the country store that is the original part of today's SpringHouse Country Store, Creamery and Eatery. Today, three generations of the Minor family continue to milk the herd of Holsteins and Jerseys on the farm covering 420 acres of land in North Strabane Township, Washington County, Pennsylvania. Over the years, the business has grown to include a buffet style restaurant, a from-scratch bakery, a larger kitchen, a smokehouse, catering, ice cream

concoctions, and farm fresh milk in an old-time country setting.

One of the more heavily used areas of the building is the roughly 1000 ft<sup>2</sup> commercial bakery. The area is used daily to bake a variety of pies, cakes, and pastries. Because of this daily use, the floor is cleaned with a variety of disinfecting chemicals like detergents and bleach. It also experiences the abrasion from wheeled carts and shelves, and cleaning equipment.

The bakery floor had been covered for years with a commercial sheet vinyl that was applied directly to the concrete slab-on-grade substrate. The main issue the owner experienced was that the sheet vinyl would

fail in spots due to the infiltration of water and cleaning materials at the seams during the cleaning process. This disbonding created a void underneath that could hold contaminants. Additionally, as the seam started to fail, the problem was exasperated by additional trapped water, cleaning agents, and contaminants which caused further adhesion issues. Eventually, this required repairs to the damaged seams in the sheet vinyl by cutting out the section adjacent to the failure and installing a new piece of vinyl. After several repairs, this process created a patchwork quilt look as well as additional seams that could disbond. The owner finally made the decision to renovate the area which would include new wall coatings and a new floor option.



The owner reached out to a professional flooring contractor to discuss renovation ideas that would remediate the current area. One of the primary requirements was a long-lasting, durable flooring option that would hold up to common contaminants from the baking process, abrasion from foot and wheel traffic, staining from spilt materials, and resistance to the cleaning process. Another requirement was a surface with superior cleanability that was seamless and would resist dirt in order to minimize scrubbing. The owner also wanted a good looking floor since customers will be able to see the bakery area from multiple points in the facility and aesthetics was important to their brand image.

The requirement that posed the biggest challenge for the flooring contractor was the need for the whole renovation process to be installed in a two-and-a-half day timeframe since the baked goods are a significant revenue stream for the owners. This meant the contractor would need to remove the existing sheet vinyl, clean and profile the underlying concrete, and perform moisture vapor testing. Then the contractor would need to install a new floor system, whether it would be another sheet vinyl system or a high performance coating system, all in a span of about two days, allowing for some time for cure if a coating system was employed.

After inspecting the area and taking samples, the flooring contractor suggested removing all existing sheet vinyl and replacing it with a multiple layer, high performance floor coating system. After careful consideration and managing all of the owner's expectations, the flooring contractor determined a resinous floor coating system incorporating a topcoat of polyaspartic coating technology would meet the requirements. This solution would address long term durability, abrasion resistance, seamless design, and aesthetics as well as enable the contractor to meet the stringent return to service requirements that the owner sought. This recommended floor coating system would also eliminate future sheet good bonding problems and would be easier to maintain.

### POLYASPARTIC COATINGS TECHNOLOGY OVERVIEW

Polyaspartic coatings were invented in the 1980's and have been used for more than 25 years in high-performance industrial protective applications such as bridge, water,



This floor coating was completed in the summer of 2007, demonstrating the long term durability of this technology.

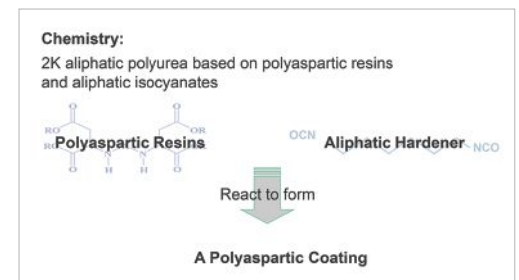
and wastewater infrastructure, as well as transportation. These types of coatings also have proven performance in commercial and architectural applications due to end users' desires to protect their architectural infrastructure while maintaining a high degree of aesthetics and beauty. The technology enables architects and specifiers to recommend a solution with fast return-to-service time to alleviate timing issues at the end of a build when a project may be behind schedule. Commercial and decorative flooring is one area where polyaspartic coatings have successfully addressed the industry's key unmet needs.

There are a variety of reasons that a building decision maker would choose a polyaspartic based floor coating over another technology such as epoxy or acrylic. For example, architects and construction professionals in the commercial and residential markets seek durable and beautiful coatings to protect the concrete floors of their clients. They have a fiduciary obligation to their clients and want to ensure a long lasting investment, so coated floors have often become a design element of a renovated space. When asked what property matters most, the response is often, "It needs to look better longer." Flooring contractors and applicators are looking to utilize high-performance materials with low volatile organic compounds (VOCs), low odor and a fast return-to-service time to improve their productivity and avoid possible disruptions. Contractors applying the coatings are often under pressure to accomplish excellent work cost effectively in a limited timeframe.

Whether for residential garage floors or game rooms, or commercial applications such as hotel lobbies, cafeterias or retail space, polyaspartic coatings provide durable, aesthetically pleasing floor finishes with minimal downtime and faster return to service that meet contractors' and end users' needs. So, for multiple points in the value chain, the polyaspartic coating technology attributes are a good match for those unmet needs.

Polyaspartics are in a class of polymers called polyureas. Typical polyureas that one may be familiar with are thick film, fast reacting, flexible, spray-applied systems similar to a spray-in truck bedliner. However, while a polyurea, polyaspartics are very different than the typical polyurea coating. They are a two component system consisting of:

- Polyaspartic resin blend on the A side which is a blend of resins, additives and possibly a pigment
- Aliphatic hardener on the B side which is typically provided as-is or with a small amount of thinning solvent for low VOC systems



A 2K aliphatic polyurea, based on polyaspartic resins and aliphatic hardeners

Unlike typical polyureas, polyaspartic technology usually has a fairly high hardness, a property preferred for floor coatings to resist scratches, scrapes, and chips. They are also applied at a thinner film thickness, typically in the 5–20 mils range suitable for flooring topcoats. Polyaspartics are based on aliphatic hardeners which impart excellent long term color and gloss retention and are most often used as a topcoat due to their non-yellowing properties. In addition, they can be formulated to cure slow enough to be applied using conventional manual coating methods rather than high pressure spray equipment.

The chemistry of polyaspartic coatings has a unique, adjustable reactivity with the capability

for fast curing that offers high gloss retention and excellent abrasion resistance. Traditional two component aliphatic polyurethanes, the bastion of durability, typically cure enough to accept light foot traffic on the order of 6 to 12 hours, whereas polyaspartic coatings typically cure in 1 to 4 hours. This ultra-low VOC 100% solids coating technology allows formulators the flexibility to control the rate of reaction and cure by a combination of fast and slow resins rather than the use of heavy metal catalysts. The coating technology provides the option to formulate a mixture with a working time ranging from ten minutes to more than an hour.

This leads to increased productivity as well as reduced labor costs for contractors. One drawback is that polyaspartic reactivity can be affected by very high humidity during application. The humidity acts like a catalyst, speeding up the reaction and shortening the working time slightly. A contractor familiar with using polyaspartic coatings will stage their work differently to accommodate this change in working time.

Depending on the commercial floor coating system chosen, polyaspartics have a range of benefits and limitations. A good comparison can be found in the sidebar below.

There are many floor coating manufacturers who offer commercial systems that optimize ease of installation. For example, polyaspartic coatings can be formulated to achieve a 1:1 or 2:1 (by volume) mix ratio, which are two preferred ratios since they are easier to proportion out in cans or pails on the jobsite. The formulator can accomplish these mix ratios by adding a higher molecular weight hardener or lower molecular weight reactive diluents, solvents or plasticizers to the formula. Newer formulas employ the next generation of polyaspartic resins that offer very low viscosity, allowing the final can of coating to have less or no solvent and plasticizers. One limitation for polyaspartic coatings for some applicators is that they are a two component (2K) system.

This necessitates the mixing of the A and B components in the field. Some floor coating contractors are not experienced in using two component systems.

Polyaspartic coatings can be applied at temperatures below 50°F as well as in high-humidity environments, which extends the application season for commercial and residential projects. Therefore, many building decision makers specify their use as an 'insurance policy' for unforeseen circumstances at the end of the build cycle such as cold weather or project delays. These coatings can be applied by simple brush and roller and do not require special application equipment. Typical polyaspartic coatings can be applied from start (base coat) to finish (top coat) in an eight-hour work day which can make up for time if a project is delayed since the floor coating process is usually one of the last tasks to complete.

### PREPARATION OF A CONCRETE FLOOR

A successful concrete floor coating application is much like baking a cake. The desired recipe is reviewed and laid out, the equipment, utensils, and ingredients are prepared, then all the necessary ingredients are combined and the recipe steps are followed. Just like baking a cake, leaving out one ingredient puts the whole cake at risk. That is why proper inspection and surface preparation is such a crucial part of a long-lasting floor coating project.

That said, it is important to go about methodically creating a great recipe to follow to prepare the concrete surface for a successful coating application. There are several steps in the surface preparation process to consider for every concrete floor surface:

- Survey and inspect
- Repair
- Clean
- Profile

The contractor can use several industry references to determine the best course of action for the specific substrate once the observations are completed. Two excellent sources of information are:

- ICRI Guideline Number 310.2R
- NACE No. 6/ SSPC—SP 13 Joint Standard

ICRI 310.2R discusses surface preparation method selection, definition of common terms, mechanics behind each method, concrete surface profiles and a method selector process. It also contains a thorough method summary and several helpful summary charts.

NACE No. 6/ SSPC—SP 13 covers the definition of industry terms, inspection procedures before surface preparation, surface preparation, inspection and classification of prepared concrete surfaces, acceptance criteria and safety and environmental requirements. The appendix covers suggested acceptance criteria and surface preparation methods.

As with any floor coatings project, the coating system manufacturer should be a prime resource for recommendations on repair and preparation of the substrate specific to their coating and possible surface issues.



Application of an epoxy mortar to cracks and large defects.

### Repair

If the concrete floor has significant spalling, flaking, cracks or other structural issues, it will need repair prior to further preparation. Small damaged areas can be cut out and repaired with cementitious or polymer-modified mortars and concrete. For larger areas with more superficial damage, a cementitious or polymer-modified overlay may be applied. This step gives more assurance that the surface will be sound and homogenous for the subsequent steps of cleaning, profiling and coating application. It is important to follow the cure time for coating along with recommendations from the mortar, overlay and coating manufacturers, as premature coating application can result in disbondment and defects due to alkalinity and moisture issues.

### BENEFITS AND LIMITATIONS

#### Benefits:

- Excellent durability
- Fast return-to-service time
- High build per coat
- VOC compliance
- Extends application season
- Excellent 'color pop' on decorative stained floors

#### Limitations:

- Difficult to downgloss
- Smaller batches must be mixed
- Two component requires a mixing step



The repair process should also address cracks and joints. Small cracks, like those found in the floor at SpringHouse after the removal of the vinyl sheet good, may be addressed by filling them with a cement- or polymer-based material. However, larger cracks may need to be chased or enlarged, in order to be filled with a suitable crack repair material.

### Cleaning

If the concrete surface to be coated is sound, free of undesired cracks, and has the desired profile but has topical issues such as stains, mold, organic contaminants, or residual concrete-curing compounds, the surface may need cleaning. Several common methods of surface cleaning include air blast, steam cleaning, scrubbing with detergents or solvent by manual or pressure washing and low pressure water jetting. The appropriate cleaning method depends on the nature of the contaminant. For example, a detergent solution or steam cleaning might be used for removing oil, grease or glycol contamination as was the case in this project. For removing loose materials, dirt and dust, a contractor may employ pressure washing, vacuum cleaning or air blast cleaning.

After cleaning with liquids, the surface can be wet vacuumed to remove any remaining water. Allow the surface to dry completely after any cleaning procedure that involves liquids. This drying process can be facilitated with heaters and fans. It cannot be stressed enough—cleaning solution or solvent that has not been removed or allowed to evaporate from the concrete surface can greatly effect the proper adhesion and long-term durability of the floor coating.

### Profiling

Depending on the coating system and final system thickness, there are industry-wide recommendations for the corresponding surface profile necessary for good adhesion. The International Concrete Repair Institute has established guidelines for measurement of the concrete surface profile, or CSP. The scale ranges from a fairly smooth finish at CSP 1 up to a very coarse finish at CSP 10. Sealers and thin film floor coatings typically require a profile in the CSP 1–3 range. Thicker high-build floor coatings need a profile in the 3–5 range. Since the coating system that was used for the SpringHouse bakery floor was a multi-coat system in excess of 20 dry mils, a CSP of 3–4 was needed.

## QUIZ

- Which of the following was a factor in choosing a floor coating at SpringHouse bakery?
  - Long term durability
  - Abrasion resistance
  - Fast return-to-service
  - Aesthetics
  - All of the above
- Which floor coating system was chosen?
  - Polyurea
  - Polyaspartic
  - Epoxy
  - Acrylic
- True or False: Polyaspartics are a 3-component system.
- What are the two components of a polyaspartic coating?
  - Polyaspartic resin
  - Polyurea resin
  - Aliphatic hardener
  - Anaphalactic hardener
- True or False: Polyaspartic coatings can be formulated to cure slow enough to be applied using conventional manual coating methods rather than high pressure spray equipment.
- Polyaspartic coatings typically cure in \_\_\_\_\_ hours.
  - 1 to 4
  - 4 to 10
  - 10 to 15
- True or False: Polyaspartic coatings can be applied at temperatures below 50°F as well as in high-humidity environments, which extends the application season for commercial and residential projects.
- Which of the following profiling methods was used at Spring House bakery?
  - Grinding
  - Acid etching
  - Shot blasting
  - Dry abrasive blasting
  - Ultra-high pressure waterjetting
- Since the coating system that was used for the SpringHouse bakery floor was a multi-coat system in excess of 20 dry mils, a CSP of \_\_\_\_\_ was needed.
  - 1–2
  - 3–4
  - 4–5
- True or False: At SpringHouse bakery the finished floor was put back into service in 4 days from start to finish.

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“The conflict over supertalls intersects with a bigger debate over New York’s increasing inequality and unaffordability.”

Zoning isn't glamorous. It's not edgy like architecture or lucrative like real estate; kids don't grow up aspiring to serve on their city's zoning board. But just about everyone who loves cities loves zoning. "Zoning is a matter of values, ultimately," said Raphael Fischler, director of McGill's School of Urban Planning, during a December panel on New York City's landmark zoning code that was hosted by the City Museum of New York. "It's what we care about. It's how we see our city." Zoning matters because it is the public's most powerful tool to shape the cityscape.

The City Museum has hosted a series of panels about controversial zoning issues as part of its yearlong celebration of New York's code, which turned 100 last July. The museum has also curated a fascinating exhibit, "Mastering the Metropolis: New York and Zoning, 1916–2016," which runs through April 23. December's panel focused on the slim supertall residential skyscrapers going up along the southern edge of Central Park, which will cast long shadows, obstruct familiar views, and change the city's skyline—as well as house some of its most expensive condos. Central Park's southern border, 57th Street, has recently been nicknamed "Billionaires' Row."

In 2013, the Municipal Arts Society (MAS), an advocacy organization and one of the panel's co-sponsors, published "The Accidental Skyline," a critique of supertalls (buildings taller than 1,000 feet). To better regulate those skyscrapers, the report argued, the city should consider changes to the zoning code. "Because advances in building technology allow extraordinarily tall buildings to be built on very small sites and the demand for luxury apartments make these buildings desirable investments, it is now important to consider how and where we—New Yorkers—want our skyline to continue to develop and grow," the report says. Many New Yorkers agree. Over the past few years, they've flooded community board meetings, marched on 57th Street, and formed advocacy groups to protest the towers, particularly their park-darkening shadows. So far, though, the city has avoided the supertall question.

#### **The Skyline as a Symbolic Reflection**

The panel at the City Museum reinvigorated the debate, even though the evening was, by all accounts, subdued. Panelists took care not to talk over one another, and audience members quietly wrote questions on note cards. Many of the panelists really like supertalls. John Cetra, AIA, whose firm CetraRuddy is constructing one of them at 45 Broad Street in Lower Manhattan; Michael Sillerman, whose law firm, Kramer Levin, counsels developers building supertalls; and Carol Willis, director of the Skyscraper

432 Park Avenue,  
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Museum, which has curated multiple exhibitions on the buildings, all bristled at MAS's suggestion that they will mar the city's skyline or make it "accidental." "I certainly think it is surprising," Cetra said of the changing skyline, "but accidental is the wrong terminology." They argued that creativity and change make New York great. But other panelists noted that the conflict over supertalls intersects with a bigger debate over New York's increasing inequality and unaffordability. A skyline is "a symbolic reflection of a society," Fischler said, noting that the prominence of super-luxury condos makes wealth super visible. "Is this the image we want to project?" he asked. "Maybe it's great—New York has the superrich, why don't we show that off to the world? That's legitimate. But not everyone agrees with it."

In New York, zoning first emerged because of shadows. When the bulky, 40-story Equitable Building, designed by Ernest Graham, opened on Broadway in



A Central Park shadow study published in MAS's "Accidental Skyline" report

Lower Manhattan in 1915, it cast a 7.5-acre-long shadow across the financial district, triggering a commercial and political fiasco. The shadow lowered the value of nearby properties, which forced the city to lower the taxes on them. Meanwhile, the real estate industry, fearing future losses, began advocating for regulations on tall buildings.

But the Equitable Building wasn't the only spark that fueled change. At roughly the same time, housing advocates were mobilizing to protect poor residents

from the overcrowded, unsafe, dark tenements that Jacob Riis documented in his photographs of the Lower East Side. The political will to zone New York emerged from concerns over the way the city's built environment blocked sunlight from both homes and businesses, and harmed residents' standard of living, especially of the city's poor. One Riis photograph shows a dim room lined with sewing machines, doubling as a sweatshop; another shows a sliver of an alleyway between two apartment buildings, a few small windows opening onto the narrow air shaft.

The 1916 zoning resolution was the first of its kind in the United States, regulating buildings' size (or "bulk") and use (residential, commercial, manufacturing) across an entire city rather than in piecemeal fashion. The resolution responded to skyscrapers' shadows by codifying "the setback," a design innovation exemplified by the Empire State Building and the Chrysler Building. City commissioners realized that tall buildings could still allow sunlight to hit streets so long as they didn't rise straight up; regulations allowed a building's base to rise a certain height (calculated in relation to the street's width), before "setting-back" and creating a tiered tower. It worked, and for the next few decades, setback skyscrapers proliferated.

Since then, the city has added thousands of addendums to the code, totaling more than 1,000 pages of text, to create, among other things, more public space and more affordable housing. A 1961 zoning resolution added the conjoined concepts of floor area ratio (FAR), which reduced a building's bulk by defining its maximum square footage, and incentive zoning, which allows developers to build beyond their defined FAR if they include an amenity like a public plaza. This enabled developers and architects to be more creative with form and height, and ensured that the city would have more public space. But it also meant that tall buildings increasingly had ugly, ad hoc plazas, like 1 New York Plaza, in the Financial District, completed in 1969 and recently identified by the city as one of many public spaces in need of upgrades.

In March 2016, the city added mandatory inclusionary zoning, which allows residential developers to build a bigger building if 25 to 30 percent of its units are affordable (as defined by the median household income for area).

#### The "As of Right" Transfer

Never has the zoning code imposed an outright limit on building heights. Instead, it employs innovations like the setback principal, FAR, and inclusionary zoning to impose nonuniform limits on how big a



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building can be. These regulations welcome a certain degree of creativity. If a developer buys a lot next to a building that wasn't constructed to its maximum allowed square footage—basically, if it's shorter than zoning requires it to be—the developer can buy these unused air rights and transfer them to his building.

And all of this can happen “as of right,” which means that, as long as the new tower adheres to the square footage allowed by its lot plus the newly purchased air rights, the developer doesn't have to go through any review by the City Planning Commission. Forty years ago, this meant a really tall skyscraper might rise to, say, 50 or 60 stories. When Trump Tower, on Fifth Avenue, opened in 1983 after purchasing the air rights from its neighbor, the jeweler Tiffany's, it rose to a then-controversial 664 feet. Thanks to amazing feats of engineering, architects are building more than twice these heights today. 432 Park Avenue, completed last year on 57th Street, stands 1,396 feet tall.

Critics of supertalls argue that the city needs to update zoning regulations to respond to these unanticipated height increases, perhaps ending the use of “as of right” transfers. Zoning was never intended to streamline the construction of such projects, they say, particularly ones filling the streets around Central Park. In Montreal, new skyscrapers near parks must meet a specific performance criteria: the building must allow 8 hours of sunshine on at least 50 percent of the park. Some in New York have argued for similar zoning regulations that set specific height limits alongside important public amenities.

At the panel discussion, not everyone agreed, of course. “The great genius of New York is *Delirious New York*, and creative destruction,” Sillerman said. “We have had changes in scale and form before, and I think we have to be concerned about not allowing the evolution of New York.” The conflict over supertalls invokes the desire for change versus the desire to preserve, but it also taps into questions over whose rights should drive city-making: the builders and their clients, happy to pay millions for spectacular views, or the walkers and workers down below, eager to soak in a few rays?

While it's too late for the city to do much about the shadow-making supertalls around Central Park, these slender megaliths have only just begun to change the skyline; according to MAS, areas ripe for supertall development include Lower Manhattan, Brooklyn, and Long Island City. There's still time to figure out what New Yorkers think about supertalls and, perhaps, to add a few more pages to the century-old zoning code.





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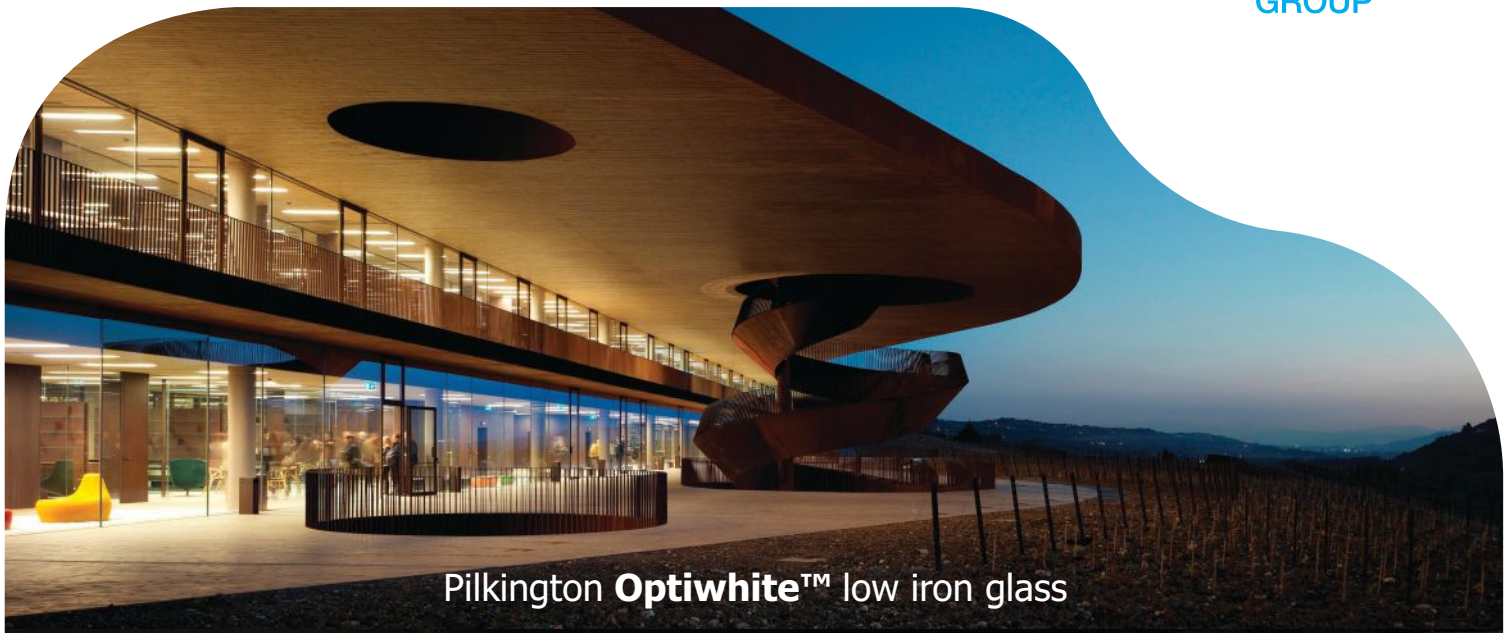
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“A movement that began in earnest when Penn Station fell in 1964 has not run its course. Preservation can continue to be a force for good—but not the way it was a half century ago.”

**How to Reinvent Historic Preservation** by Amanda Kolson Hurley

My first job out of graduate school was an internship at *Preservation*, the magazine of the National Trust for Historic Preservation in Washington, D.C. It was the early 2000s and the magazine overflowed with ads and famous bylines, thanks to the pre-internet economy and an editor-in-chief named Robert Wilson.

Wilson and the other editors saw themselves as cultural omnivores in a field that had become ossified and narrow. So they ran articles about a road trip through the Navajo Nation, the reglazing of Lever House, the glories of Las Vegas' fake monuments. To highlight the break with old-school preservation, Wilson pointed to the cover of an issue published before he had helped relaunch the magazine in 1996. It showed a white woman in colonial garb, holding a teacup in a stuffy period room. You could almost hear the grandfather clock ticking forlornly.

Wilson and his staff were onto something. Historic preservation was starting to change. Once dominated by a rigid concern for accuracy—painting shutters the right color, repointing the bricks just so—it was becoming more flexible and self-aware. Today, preservation no longer pits itself against the forces of philistinism, hoping to rescue architectural gems one by one and mothball them against the ravages of time. The new preservation movement cares about neighborhoods as much as individual buildings, and not just gussied-up districts like the French Quarter or Old Town Alexandria. It recognizes the importance of non-buildings, too, like cemeteries, plazas, and parks. It looks beyond architecture for reasons why a place resonates, often finding them in social history.

#### **Rethinking the Movement's Priorities**

In other words, this is big-tent preservation. You don't even have to think of yourself as a preservationist to be one, claims Stephanie Meeks. "When churchgoers pass the plate or a school holds a bake sale to raise money for needed renovations, they are doing historic preservation," she writes. "When local activists work together to keep their neighborhoods affordable and sustainable in the face of rising rents and climate change, respectively, they, too, are saving places that matter."

Meeks is the president of the National Trust and the author, with Kevin C. Murphy, a Trust speechwriter, of *The Past and Future City: How Historic Preservation Is Reviving America's Communities* (Island Press, 2016). (Note: I left the Trust before Meeks arrived and have never met her.) In the book, she argues that preservation does much more than keep old buildings standing up. It can boost local economies, fend off climate change, make us happier, and help us understand our own—and our country's—past.

Meeks' book came out the same month as a manifesto by Max Page, an architectural historian at the University of Massachusetts, Amherst. *Why Preservation Matters* (Yale University Press, 2016) is less a defense of preservation than a call to rethink its priorities. Taken together, the books show that a movement that began in earnest when Penn Station fell in 1964 has not run its course. Preservation can continue to be a force for good—but not the way it was a half century ago, and not without a lot of work by its leaders.

Meeks spends much of *The Past and Future City* aligning preservation with the (increasingly influential) principles of New Urbanism. She praises dense, mixed-use, pedestrian neighborhoods, and in particular, those with buildings dating to before World War II, which tend to be smaller than new structures. Meeks also champions the adaptive reuse of historic buildings, which traditionally was seen as a less desirable outcome than strict restoration. On the contrary, adaptive reuse is "the very warp and woof of preservation," she writes. She urges governments to ease their permitting processes to make adaptive reuse easier.

The defense of adaptive reuse makes sense when you get to the next, most surprising section of the book, "Beyond House Museums." For early preservationists, the default was to turn saved buildings into house museums. Now the United States has a glut of them: 15,000, more than the number of McDonald's nationwide. Few of them get many visitors, and Meeks is in favor of selling them to private owners, so long as they are protected by easements.

The house-museum problem illustrates why leading preservationists are in a reflective mood, questioning their methods and priorities. The movement has achieved much of what early activists set out to do. There are now more than 80,000 properties listed individually on the National Register of Historic Places—1 million if you count contributing resources in historic districts. Tearing down Penn Station would be unthinkable today, and trendy companies like Twitter and hip restaurateurs often prefer old buildings for their outposts.

But the movement has had a few major blind spots, chief among them the lack of preserved sites that speak to the history of nonwhite Americans. Page devotes a chapter of *Why Preservation Matters* to "difficult places," including Shockoe Bottom in Richmond, Va., once home to the nation's second-largest slave market which, until recently, was buried under a hospital parking lot.

#### **A Broadside Against an Elitist Movement**

The Trust is preserving Shockoe Bottom as "a site of conscience," and the group has bestowed its "National





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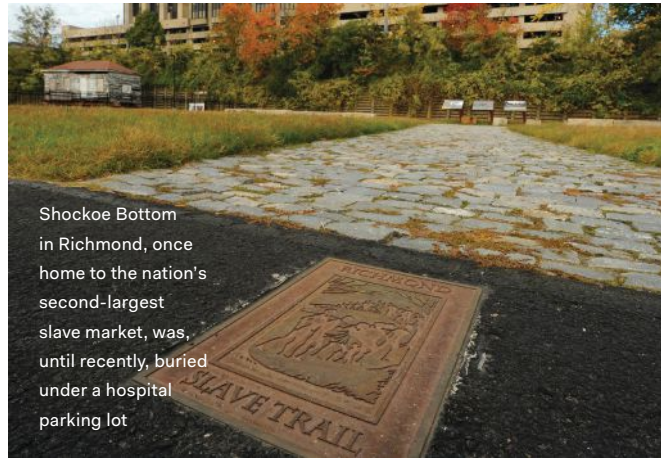
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Shockoe Bottom in Richmond, once home to the nation's second-largest slave market, was, until recently, buried under a hospital parking lot

Treasure” designation on Shockoe as well as on Hinchliffe Stadium in Paterson, N.J., one of the three remaining stadiums of the Negro League, and Seattle’s Panama Hotel, a hub of Japanese American life before World War II. Nevertheless, Page—while covering much of the same ground as Meeks—throws down the gauntlet in *Why Preservation Matters*, calling out members of a movement he finds elitist, in thrall to neoliberalism, and disconnected from its rightful aim of social justice. Page complains that preservation has focused “obsessively” on high architecture, to the detriment of places that are architecturally undistinguished but historically significant. Fetishizing architecture has also led, he argues, to the neglect of interpretation, so sites that should be eloquent are rendered mute.

Most of all—and in stark contrast to Meeks, who rattles off statistic after statistic to prove the return on investment—Page hates how preservation has become inseparable from real-estate development. The tail wags the dog, he notes; developers decide what gets saved. “It is preservation in reverse—if a developer is interested, preservationists will help prove that the property qualifies for a tax credit.” In booming cities, he points out, old buildings have become tools of gentrification, whereas in struggling ones, no amount of spiffing up Main Street will fix deeper problems. Writing about struggling Camden, N.J., Page imagines that repairing building façades here would be “like offering a band-aid for an amputated limb.”

Both authors reject recent criticisms, by economist Edward Glaeser and others, that historic districts inhibit the supply of housing in cities and push prices up. Meeks notes that historic districts take up a small percentage of urban land, and they’re not frozen in amber, since alterations and some new construction are allowed. Page calls “preposterous” Glaeser’s claim that New York’s historic districts have hurt housing





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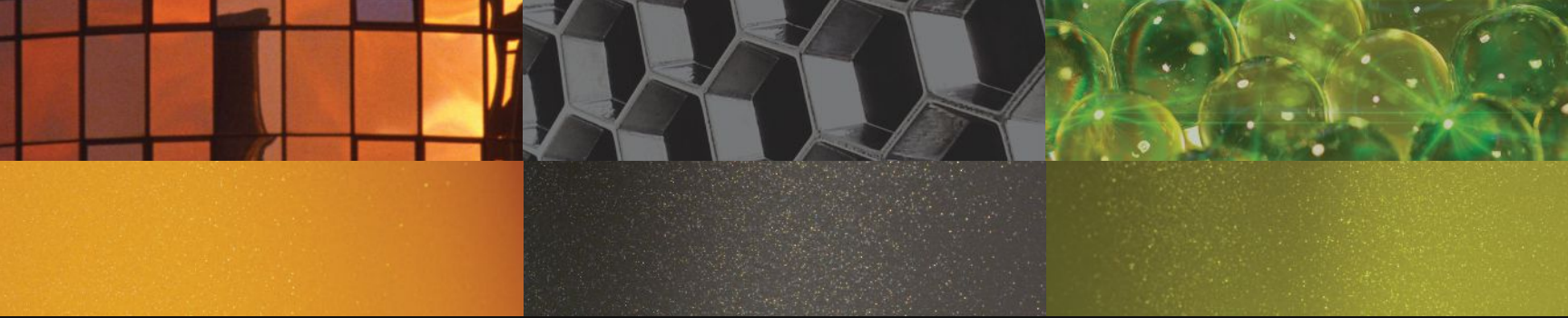
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affordability in that city, pointing the finger at developers who chase after the luxury market.

Page's recommendations are provocative. He would like to see a process for re-evaluating listed buildings every generation or so, to prevent "endless accretions of memory" that lose meaning as the years

pass. The various layers of a site's or building's history should be respected as they are in cities like Rome, he contends, not wiped away in search of "authenticity," a concept Page calls "a mirage and a chimera," since there is no such thing as a building that is "perfectly preserved." In the age of climate change, he would

insist that all buildings are renovated rather than demolished, unless a strong case can be made otherwise. Finally, preservationists must "[stand] against the market as the measure of all things," protesting disinvestment in poor neighborhoods and advocating for public housing.

"The question deserves to be asked," he writes. "For what are preservationists prepared to be arrested?"

Both Page and Meeks dodge the question of who decides what to save, and how. "This place matters" is a Trust motto—but according to whom, and compared to what? Understandably, neither wants elite conceptions of architectural quality to be the determining factor. Meeks more or less defers to the market and motivated citizens. Page rejects market solutions, but it's unclear how he would support a model where the will to preserve comes first, the funds second. Such an approach might work in a place like Havana, but it's hard to see it succeeding on a large scale in the U.S.

Practical hurdles aside, both books raise timely questions for a movement that is looking for its second act, even as it continues to defend its first: As of December, Republican Congressmen had proposed eliminating the federal historic tax credit in a draft tax-code reform. Only 8 percent of listings on the National Register represent women and racial minorities, and a recent survey by the Trust found that 93 percent of preservation-group leaders are white. If anything will hobble them, it will be acting like cultural gatekeepers. As the National Historic Preservation Act celebrates its 50th birthday, preservation has to stop being the movement of no, and start saying yes.



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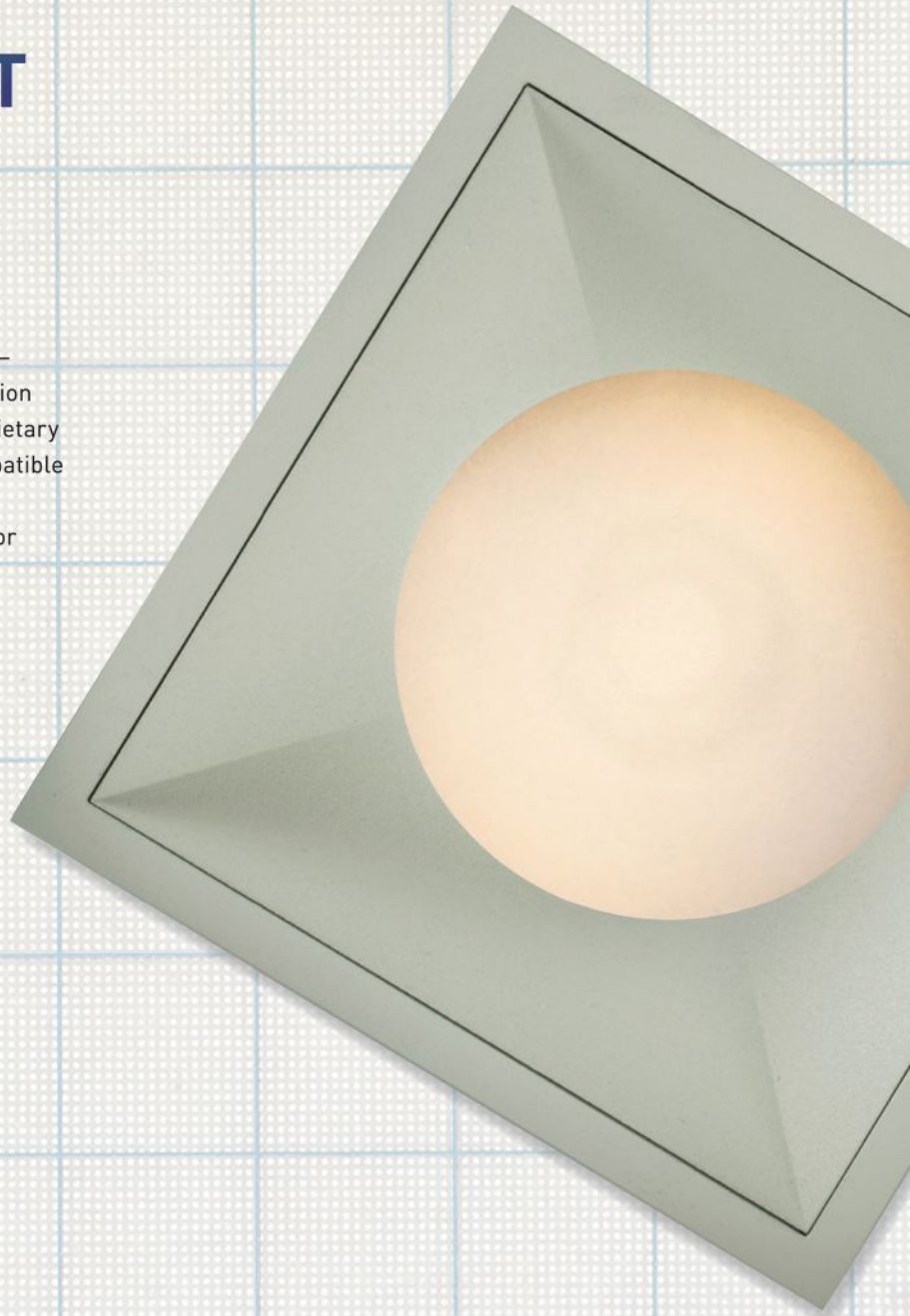
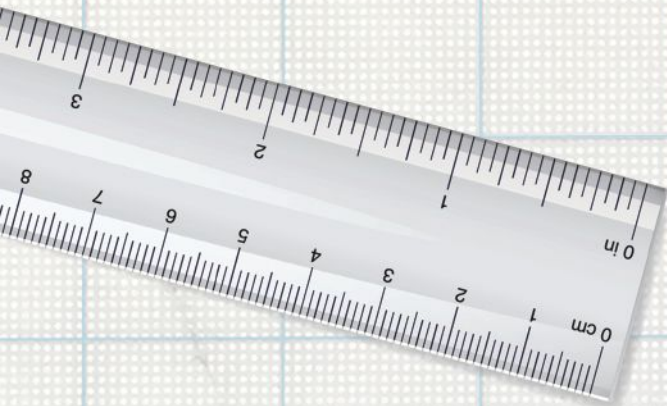


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“The Chicago Housing Authority has never before attempted to transform one of its existing affordable housing projects into a mixed-income community, and on such a massive scale.”

**Redesigning Lathrop** by Zach Mortice

The Julia C. Lathrop Homes, built in 1938, are one of the oldest Chicago Housing Authority (CHA) projects in the city. Inspired equally by Ebenezer Howard's English Garden Cities and company towns like Pullman on Chicago's far South Side, Lathrop was designed by a cadre of architects punching below their weight during the Great Depression, including Daniel Burnham's son Hubert and Robert De Golyer, who designed high-end Lake Shore Drive high-rises. Lathrop's collection of brick three- and four-story, U- and T-shaped courtyard buildings—31 in all—offer a sense of warmth and New Deal humanity.

Each building is pedestrian-scaled and low enough to the ground that you can greet your neighbors on the top floor when you walk by, which is what Cindy Scott does on an October afternoon as she takes me on a tour of the neighborhood, located on the North Side. She raised four kids in Lathrop and has lived there for 30 years. Like many CHA residents, she has internalized the lessons of the agency's failed high-rises—the towering concrete blocks built during the 1950s and '60s, the most notorious of them being Cabrini-Green. Lathrop was different, she says. There were gangs, drugs, and prostitution, but she never felt in danger. If the threat of violence loomed, those involved gave her advanced warning. "Even when there were gangs, if I was outside with my children, they'd say 'Ms. Scott, you need to go inside,'" she says. "I could walk down the street [coming] home at two in the morning and I felt safe. People watched over me. People watched over my kids. I love this community."

But Lathrop now stands on the verge of a radical transformation. After the CHA—cash-strapped, its projects crumbling—suffered a high-profile collapse and federal takeover in 1995, it unveiled its Plan for Transformation, an ambitious reinvention of its approach to public housing. In conjunction with U.S. Department of Housing and Urban Development, the CHA agreed to work with developers in the private market to tear down 18,500 of its public housing units and replace them with mixed-income developments. By putting public housing residents next door to people paying market rates, the agency aspired to remove the stigma and social dysfunction of concentrated poverty.

In 2006, as part of the plan, the CHA called for Lathrop to be demolished. But Preservation Chicago placed the development on its annual Seven Most Threatened Buildings List, calling it "the best public housing project Chicago ever built." The CHA reversed course, hiring developers Related Midwest and the nonprofit Heartland Alliance, who will preserve 21 out of the 31 historic buildings and add in a handful of ground-floor retail spaces. The first phase of the

\$75 million project, on the north side of the site, only includes renovation work and has been approved by the city planning commission. Construction is scheduled to begin early this year.

Lathrop is shaping up to be one of Chicago's most significant historic preservation victories. There are only a few examples of the CHA renovating its affordable housing developments, and the agency has never before attempted to transform one of its existing projects into a mixed-income community, and on such a massive scale. (Theaster Gates' Rebuild Foundation and Landon Bone Baker's Dorchester Art + Housing Collaborative renovated a handful of CHA public housing units into



A historic aerial rendering of the Julia C. Lathrop Homes

market-rate housing, though that project is primarily oriented around a community center arts hub.)

Yet not everyone has championed the Lathrop project. In anticipation of redevelopment, the CHA instituted a leasing freeze at Lathrop in 2001, and today 140 residents occupy the project's 910 homes. Related Midwest is proposing 1,116 rental units for the site, about 60 percent of which would be subsidized: 400 units would be public housing, and another 200 or so would be lightly subsidized. The rest would be market-rate. That's more equitable than many mixed-income developments, but Leah Levinger, the executive director of the nonprofit Chicago Housing Initiative, argues that the entire Lathrop project should have been public housing. Consider Chicago's pressing need for affordable housing: In 2014, 282,000 households applied for the CHA wait list; in a lottery, only one-third were awarded a spot. "Mixed-income is great," Levinger says, "when it doesn't come at the expense of poor people."

#### The Push for Social Cohesion

This summer, Kevin Meyer, AIA, of Juan Gabriel Moreno Architects (JGMA), which was commissioned





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for the first phase of work at Lathrop, showed me the plans in the firm's Chicago office. JGMA can't alter the external appearance of the buildings, which are listed on the National Register of Historic Places. (Significant restoration work is needed to fix crumbling parapets and damaged walls.) Instead,



A Related Midwest rendering of a renovated Lathrop

the firm is proposing interior renovations for both the market-rate and subsidized units, which will be consistent in every way. Those changes will push semi-public, social living spaces like kitchens and living rooms towards the site's wide community lawn, and will knock out walls to make rooms and bathrooms less cramped and more open. One building will be turned into a community center with a kitchen and landscaped public plaza. Overall, the apartments will have 90 different floor plans, a far cry from the relentless standardization of past CHA high-rises. "There are so few that are the same or even mirrored," Meyer says. "Almost every one of them is unique."

"This whole idea of transforming existing buildings absolutely friggin' fascinates me," Juan Moreno, AIA, (the firm's namesake) tells me when he joins our discussion. The Lathrop buildings, he says, "are incredibly well-crafted," and Related Midwest's plan appears to be a perfect blend of preservation, embrace of the landscape, and sensitivity to public housing density concerns. Still, the Lathrop project poses a significant challenge: How do you redesign the site so that everyone wants to live there, without making CHA residents feel like they don't belong? "How do you change the psychology, fully knowing that we can't touch the outside [of the buildings]?" Moreno asks.

The job of creating social cohesion, a sense of community, will largely fall to Michael Van Valkenburgh Associates (MVVA), the Brooklyn-based landscape architects. MVVA will restore the original landscape by legendary Chicago landscape architect Jens Jensen, connecting it to a former liability-

turned-selling-point: the adjacent Chicago River. For Depression-era residents, the river was a festering sewage slurry fed by factories. "If you look at the entries to all the buildings," says Meyer, "they turn their back to the river."

The revised plan will reorient the units to the river and build out the city's expanding network of riverwalks. MVVA has also designed a new hybrid dog run and "council ring," Jensen's most famous and elemental contribution to landscape architecture: a simple circle of rocks, demarcating a communal forum. "It really can function as that social circle," says Gullivar Shepherd, the MVVA principal in charge of the Lathrop project.

When Shepherd tried to kayak the Chicago River, he discovered pent-up demand (kayaks strapped to back porches) and a lack of infrastructure: He had to scan neighborhood blogs to find a spot to put in. "I had the same experience having snuck onto the High Line [pre-renovation]," he says. In response, the firm has designed a boat house and kayak slip slicing into the water, amenities that will help draw visitors to the site. "Just looking at housing as a social service isn't enough in this day and age," says Shepherd. "It's about integrating [it] with the city."

#### **The Market Upside (and Downside)**

Lathrop appears well positioned to have significant market upside. The project is surrounded by affluence (homes on sale in the nearby Roscoe Village neighborhood go for \$1 million or more), making it the perfect location for such a project, Moreno says. The market-rate renters subsidizing the affordable development are likely to be young professionals who are more open to living with different demographic and economic groups, and who can help champion the mixed-income concept.

It "ends the isolation of CHA tenants that was the result of 40 years of segregation," says CHA spokesperson Molly Sullivan. "This is the model being adopted across the nation, and the one that has worked—resulting in greater opportunities for CHA tenants and renewed investment in communities that had seen none for more than 50 years."

Yet long-time residents like Cindy Scott remain skeptical of the project. She and the other remaining Lathrop tenants will be offered units, but Scott fears that "the market-rate people are not going to want us there." Those affluent arrivistes will be swooping in to claim what she and her neighbors struggled to preserve. Moreover, she says there's already plenty of retail in the area: big box stores, local restaurants, chains. For her, the live/work/play suite of urban renaissance amenities





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misses the point: People need homes, not kayaks.

Levinger of the Chicago Housing Initiative argues that because Lathrop is surrounded by the well-moneyed, “it’s already a mixed-income community,” she says. “To privatize and take away public housing from some of the best-resourced areas of the city doesn’t make sense, except for a marketized approach. It’s everything the Plan for Transformation, in terms of lip service, was designed to create. It’s one of the rare public housing success stories.”

To make up for the lost public housing units at Lathrop, the CHA has agreed to build 630 subsidized apartments in the neighborhood. Since tearing down nearly 19,000 affordable housing units as part of the Plan for Transformation, the agency had, by the end of 2015, built back just 2,600 public housing units in its mixed-income properties. According to a University of Chicago study, just 11 percent of residents living in CHA affordable housing units have moved back once those projects were redeveloped. (As reasons for not returning, residents cited lack of information, bureaucratic hurdles, and new rules and requirements in mixed-use housing, among other concerns.) Vouchers, which allow residents to use CHA funds to rent from private landlords, have picked up much of the gap, though they usually only cover rent in the city’s poorest, most segregated neighborhoods.

Indeed, there’s a stark divide between how mixed-income developments benefit the city, and how they benefit low-income residents, says Susan Popkin, a senior fellow at the Urban Institute, a nonpartisan think tank in Washington, D.C., who has studied Chicago public housing extensively. Consider that Chicago’s Near North Side, where the Cabrini-Green redevelopment is located, is one of the hottest real estate markets in the city. Areas like these, especially those close to downtown are “boom boom booming,” Popkin says. “But most of the economic activity isn’t benefiting [affordable housing residents] directly.”

Advocates of mixed-income housing have argued that by giving economically isolated groups access to networks of people with higher levels of social capital, the resulting interactions might help break the cycle of poverty. So far, argues Popkin, there’s little evidence of that. The best chance for success, she says, rests with the current generation of children in public housing who have grown up in mixed-income communities—the children who will soon move into Lathrop. “We have kids growing up who are safe and in much better housing, who are not being exposed to crime and all the other things they were dealing with in the old public housing,” Popkin says. “The jury is out on what’s going to happen.”



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# What's Next:





# Rethinking the Refugee Camp

A special report by Karrie Jacobs

One of the most remarkable things about the “Insecurities” exhibition at the Museum of Modern Art in New York is that Shigeru Ban, HON. FAIA, plays a very minor role in it. The show, after all, was mounted by the museum’s department of architecture and design, and Ban’s works for displaced people—models of grace and ingenuity—are what earned him a Pritzker Prize. Ban’s ability to design and build elegant temporary structures out of humble, readily available materials, such as paper tubes and compressed earth blocks, has made him a hero within the architectural profession and beyond. But his work makes just a single appearance at the MoMA show: Within a wall-sized grid of 20 photos, discerning visitors will spy a lone image of a Ban-designed paper shelter.

In a way, that’s the message of “Insecurities,” which runs through Jan. 22 and makes palpable the urgency of the current refugee crisis. It’s not that there’s anything wrong with Ban’s work or, for that matter, the many ingenious shelters that have been designed for competitions run by organizations like the now defunct Architecture for Humanity. It’s that the typical architectural response to disaster may be fundamentally misguided. Despite the exhibition’s subtitle, “Tracing Displacement and Shelter,” and wall text, which notes that the United Nations Refugee convention of 1951 declared shelter a human right, the show demonstrates that the vast majority of designs for temporary housing, well-intentioned as they may be, are largely beside the point.

#### **A Crisis Out of Sight and Far Away**

According to the most recent Global Trends Report issued by the United Nations High Commissioner on Refugees (UNHCR), in 2015 there were 65.3 million “forcibly displaced” people in the world, who were

uprooted by “persecution, conflict, generalized violence, or human rights violations.” Most of them, 40.8 million, are what the language of humanitarian relief calls Internally Displaced Persons (IDPs), meaning they have been dislodged by violence or threats of violence, but remain within their own countries. Another 21.3 million are refugees, people who have been compelled to leave their homelands. When you subtract the Palestinians, whose well-being is attended to by the United Nations Relief and Works Agency (UNRWA), and people who are in the process of seeking asylum in one country or another, there are currently 16.1 million refugees who fall under the protective mandate of the UNHCR—about twice the population of New York City. The Global Trends Report puts these statistics in context: “The current number of displaced globally is the highest since the aftermath of World War II.”

Here in the U.S., we’ve largely managed to ignore this catastrophe because it happens out of sight and far away. Most of the world’s refugees, nearly 5 million of them, are from Syria, and represent nearly a quarter of that country’s population. Driven from their homes by a hellish civil war, the majority of them have landed in Turkey, Lebanon, or Jordan. (The U.S. has accepted roughly 10,000 of them.) There are also 3 million Afghan refugees, mostly in neighboring Pakistan and Iran. Somalia’s endless civil war has generated a million refugees, most of whom have ended up in Kenya, Ethiopia, and Yemen. Only occasionally has their plight entered the mainstream American consciousness. An encampment in Calais, France, made news as desperate refugees attempted to reach England via the Eurotunnel. There was also the death of one small Syrian boy, 2-year-old Alan Kurdi, photographed face down in September 2015 on a beach in Turkey after he drowned in the Mediterranean, the same fate suffered by his mother, his older brother, and 3,600 other refugees who attempted similar crossings that year. That devastating image grabbed our attention, if only for a moment.

The refugee crisis emerged as the theme of the MoMA exhibition because of Sean Anderson, the museum’s new associate curator in the department of architecture and design, who taught previously at the University of Sydney. “Before coming back to New York,” Anderson says, “I was a professor in Australia, and I had been working on a series of projects to not only critique but examine the offshore immigration detention facilities that Australia horrendously maintains.”

Refugees who try to reach Australia have been shunted into encampments of over-crowded tents on the islands of Papua New Guinea and Nauru.



A recent Amnesty International report has described the conditions in these camps as “appalling.” Initially, the refugees there were primarily Sri Lankans escaping their nation’s civil war. But, more recently, a general assortment of the world’s most desperate people have landed there. As an American, and not an Australian, Anderson was allowed to visit the camps. “To be honest, it’s the worst, most horrendous thing I’ve ever seen people be subjected to at every level,” he says. Although this experience inspired the exhibition, the off-shore refugee camps in Australia were not displayed on MoMA’s walls: “I tried to think about ways to show it, and the sad and scary thing is that there is a very tight lid on images and works and anything that has to do with it because they don’t want people to see.”

Anderson, trained as an architect, resisted making a show about the formal concerns the profession tends to address when confronted with humanitarian problems, although it would have been easy to do. Architects love to design shelters. “When we sent out the press release,” Anderson tells me, “I received over 200 different proposals from around the world of people who thought that they had cracked the code.”

Anderson doesn’t buy it: “Architects and designers frequently overlook for whom they are designing,” he says. “They are also fundamentally disregarding the length of time with which people are being forced into these conditions. One of the statistics that we found was that the average length of time for a stay in a refugee or a displaced condition is 17 years.”

So Anderson relegated most of shelters in the show to a single wall-sized grid of photos, featuring the handsome architect-designed tents like the German-made Domo or the Belgian Maggie; an improvised dome-like construct of bent sticks and plastic sheeting seen at the Dadaab refugee camp in northern Kenya; and precious bamboo houses built by the Norwegian Tyin Tegnestue Architects for orphans living on the Thai Burmese border. And, of course, Ban’s paper shelter.

Instead, most of the exhibit is dedicated more to creating a context for understanding the situations in which the world’s displaced masses find themselves. For example, there’s a detailed video, produced by a University of London–based research team called Forensic Architecture, that tells the story of a deadly refugee boat ride in the Mediterranean. And there’s a handmade map projected on the floor that documents everyday life in a Northern Iraq refugee camp, part of a larger multimedia project called Refugee Republic. The result is an exhibition that, unlike almost everything I’ve ever seen at MoMA, is tied to the real world, is rooted in the present moment.

#### Ikea and the Quest for a Better Shelter

Anderson’s impulses as a curator largely capture the views of professional relief workers, some of whom are architects and combine their professional training with a deep understanding of conditions on the ground. “The architectural solutions are developed in architects’ offices or universities that are remote from the context,” says Brett Moore, an Australian architect and Loeb Fellow who is the UNHCR’s Shelter and Settlements Section chief. “They’re often too expensive, too heavy, too hard to move. They take too long because of customs clearance and global logistics and flying. The budgets per family often are very, very small, sometimes \$25 or \$30 per family, or maybe even \$100, so sometimes these solutions that are devised by architects, they might be \$1,000 or \$2,000 each, and it’s not viable.”

The Shelter and Settlement Section of the UNHCR has issued a Shelter Design Catalog showing all the available housing types and rating them to, in the organization’s bureaucratized, “assist sector specialists in implementing a phased shelter response through more predictable planning and implementation.” The catalog is fascinating, like a revised and highly specialized edition of the Bernard Rudofsky classic, *Architecture without Architects*. It details the cost, construction, and life span of generic standbys like the UNHCR Family Tent, your basic canvas construct supported by metal poles (\$420, one year), and it diagrams geographically distinct structures: for instance, the Taureg Shelter, designed for nomadic refugees from Mali who find their way to Burkina Faso. A traditional shelter, it is made of eucalyptus and has a curved roof covered with plastic sheeting instead of the customary tanned goatskins (\$300, two years).

Local solutions, Moore says, are often the best. But they don’t always exist. “An example,” he explains, “might be camps in Iraq where they’re deep in the desert. There just aren’t local materials, and you can’t do mud brick easily or there’s no timber to utilize.”

Enter the Refugee Housing Unit (RHU), also known as the Better Shelter, which is devised and manufactured under the auspices of the Ikea Foundation, and which serves as the centerpiece of the MoMA show. A sample unit, a rudimentary plastic house, occupies the middle of the gallery along with UNHCR supplies, including stackable water bottles, a “school in a box,” and a package of art supplies labeled “Adolescent Kit for Expression and Innovation.” The 188-square-foot houses come with four windows, two ventilation hatches, a photovoltaic array that provides lighting, and a USB port for charging phones and computers; they can accommodate a family of five, last

65.3 million

Number of forcibly displaced people in the world at the end of 2015

40.8 million

Number of internally displaced people at the end of 2015

24

Average number of people displaced from their homes every minute in 2015

2.5 million

Number of refugees hosted by Turkey in 2015, the most of any country

201,400

Number of refugees who returned to their countries of origin in 2015

three years (“with maintenance”), and sell for about \$1,150. Architecturally speaking, they’re the equivalent of a garden shed, except made from polyolefin plastic panels with a steel frame. Naturally, they pack flat, in two cardboard cartons and, like a Mostorp TV unit or a Billy bookcase, can be assembled with a minimum of skill.

The concept for the Better Shelter emerged in 2010, when Swedish industrial designer Johan Karlsson found himself consulting on a project to upgrade the tents that his country was using in Pakistan. “I didn’t know anything about humanitarian relief,” Karlsson recalls. “It was very new to me. But my reflection was that these tents that we are working on, they’re very much like the tents that my grandmother slept in when she was young.” Karlsson thought we might have learned a thing or two about lightweight structures since his grandmother was a girl. He began to discuss this with colleagues: “Why do we put refugees in tents? We [know] that commonly refugees stay for years, sometimes for decades, in refugee camps. It’s not like they [are] going camping.”

Karlsson pitched his idea to a design manager at Ikea with whom he’d worked on another project, who took it to his bosses, who then directed him to the Ikea Foundation, the furniture maker’s philanthropic arm. With the foundation’s backing, Karlsson and his project team formed a not-for-profit company, Better Shelter. The team spent nearly three years designing a shelter “in the middle of Sweden, in the forest.”

“We thought that we were very good at making flat packs, being Sweden and all that,” says Karlsson. He was correct up to a point. They tested some of their prototypes at a refugee camp called Dollo Ado in Ethiopia. This meant the cartons had to travel by ship from Sweden to Djibouti and then by truck to Addis Ababa and on to the camp near the Somali border. The truck, as it turned out, also carried passengers who used the Ikea-type cartons as seats, which meant that by the end of the journey, the boxes were falling apart.

Once Karlsson and his team determined that all the parts were still there, “the second thing was how to assemble it. We had Ikea manuals,” Karlsson notes, but “no one read them.” While the purchasers of Ikea furniture around the world are accustomed to following complex step-by-step pictorial instructions, the Somali refugees of Dollo Ado were not. “They didn’t even bother to look at them. So we learned that this is ‘learning by doing.’ We set up a small training program that taught people, then they taught themselves.”

Karlsson’s team also discovered that different cultures have different opinions about how a shelter should be configured. Placement of the door at

the far end of the unit, shotgun style, for instance, offered anyone who entered a full view of the interior, something unacceptable among Muslim refugees, who prefer that women are more hidden. Similarly, large windows, good for ventilation, are bad for privacy. “Our main conclusion after the test was that we can never make a shelter that works for every family around the world,” acknowledges Karlsson. His team is now focusing on making the Better Shelter more easily reconfigurable. “We need to have something that is adaptable and flexible.”

The lesson: Even a determined group of designers with access to the intellectual and logistical resources of Ikea, a company that perhaps comes the closest to the grand modernist project of mass producing essentials for everyone on the planet, can’t design and manufacture a universal dwelling. Also, according to the UNHCR, 60 percent of the world’s refugees don’t live in camps but, rather, in ordinary buildings in cities or towns. So what can architects do? What is the profession’s best approach to responding to this tragic and persistent problem?

#### The Refugee Camp as City

Moore suggests that they learn, in architecture school, the skills necessary for humanitarian relief. For example, Tommy Sandløkk, an architect with the Norwegian Refugee Council (NRC), has taught an Oslo School of Architecture course called “Architectural Solutions in Emergencies,” as part of a master’s concentration on “safe spaces in a crisis context.” He did fieldwork for the UNHCR in Nepal after the 2015 earthquake and worked with the UNRWA in Gaza on Palestinian camps that have been in place since 1948. Currently he’s on loan from the NRC to the International Organization for Migration

The Better Shelter, as displayed in “Insecurities”







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Northeast Nigeria, working as a shelter and site planner in a region where Boko Haram attacks have forced millions of people out of their homes.

He tells me that the shelters he's helping to site and construct are fairly rudimentary: "The emergency shelter is a wooden structure with pitched roof, covered with tarpaulin, one door and one window. The reinforced shelter is a wooden structure with a pitched roof, façade covered with tarpaulin, roofing sheets, two doors, two windows, and ventilation with mosquito net."

Even in the dire situation in which he's operating, Sandløkk believes the shelters and the settlement could be better. "Our aim," he says, "is to achieve contextualized and community-based participated design solution and site planning. Many camps and settlements around the world are growing into cities," Sandløkk notes. Zaatari, for instance, the vast refugee camp in Jordan, has developed a business district with a pet store, a barber shop, and vendors selling barbecue chicken. "Knowledge from urban planners and architects is therefore essential to provide a good and sustainable response. We need to think about long-term consequences and recognize the possibilities of camps becoming a permanent settlement. Our physical structures and infrastructural layouts (site plans) will be important guidelines if the settlement becomes permanent."

Which is actually a pretty good summation of the emerging view on refugee relief. Sandløkk referred me to Kilian Kleinschmidt, a lifelong aid worker who spent 25 years with the UNHCR, and who most recently managed Zaatari, population 79,000 or more. In 2015, he left the UN to form Vienna-based Switxboard, an "innovation and planning agency" that works with refugees. He is perhaps the most forceful spokesman for the idea that refugees are not necessarily a transient population. "In the Middle East, we were building camps: storage facilities for people. But the refugees were building a city," he told the London-based publication *Dezeen*. Beside the hive of small businesses, Zaatari has streets, gardens, electricity, satellite dishes, and the occasional private toilet. Kleinschmidt argues that the refugee "crisis" in Europe is actually an opportunity: "Many places in Europe are totally deserted because the people have moved to other places," he said, citing Eastern Germany, Southern Italy, and parts of Spain. "You could put in a new population, set up opportunities to develop and trade and work. You could see them as special development zones which are actually used as a trigger for an otherwise impoverished neglected area."

#### Ennead's Revolutionary Tool Kit

Kleinschmidt's argument is controversial, because many (perhaps most) governments don't want a new, ethnically distinct population and won't permit refugee encampments to have anything resembling permanent housing. But it's exactly this type of thinking that motivates another pair of architects who, although less famous than Shigeru Ban, claimed more wall space at MoMA's "Insecurities." Ennead partner Don Weinreich, FAIA, and his colleague Eliza Montgomery have been working for about four years on a "planning & design tool kit" specifically for refugee communities.

The project began in 2012, when Weinreich was based at Stanford University and working on a building for the law school there. A visiting faculty member, Mariano-Florentino "Tino" Cuéllar, now a justice on the California Supreme Court, invited the Ennead partner to participate in a workshop organized by Alexander Aleinikoff, who was then the UN's deputy high commissioner for refugees. "Alex had this idea," Weinreich explains, "which was very timely, that the way UNHCR was responding to refugee crises, perpetuating refugee camps, was no longer

"There are a couple of truths that we arrived at. One was that 'camp' is kind of a misnomer. It already labels it as a second-class place and these places should be thought of as cities."

—Don Weinreich, FAIA, partner, Ennead

-serving the intended purpose. It's still a good system for moving people quickly out of harm's way, keeping them biologically alive, but it wasn't really going beyond that. The UNHCR policy—and actually their mandate—was the false premise that these situations will resolve very quickly and people will go home or they will go elsewhere."

Weinreich was the only architect in attendance, and the workshop led to his ongoing relationship with the UNHCR as part of a team, led by Cuéllar, developing strategies to make refugee settlements better places. When Montgomery joined Ennead in 2013, she began working closely with Weinreich. "There are a couple of



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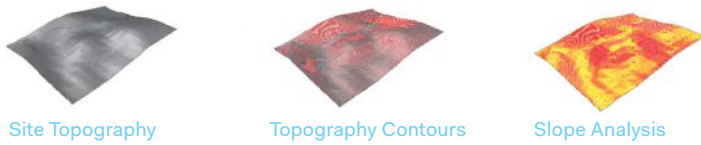
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Images from the Ennead tool kit for planning a refugee camp

truths that we arrived at,” Weinreich says. “One was that ‘camp’ is kind of a misnomer. It already labels it as a second-class place and these places should be thought of as cities. The term ‘refugee’ in the context of planning is again a second-class role that lacks agency and, similarly, ‘hosts’ is also a privileged role. So we talk about settlements and we call refugees ‘citizens’ and hosts ‘partners.’”

The upshot was that accepting refugees shouldn’t be viewed as a charitable act, but instead, Weinreich says, there “should be mechanisms available to make the arrival of refugees a benefit to the population. Because refugees, along with humanitarian aid, can help remedy deficits that might exist in a place.” In other words, refugees attract resources.

Weinreich and Montgomery began developing planning strategies to implement these ideas. Invited by the UNHCR to plan a new refugee camp, they wound up on the ground in Mugombwa, Rwanda, where they learned that 10,000 Congolese refugees would be arriving in two months. “We did manage in

two months to pull off a very decent plan,” Weinreich says. “[The UNHCR] was thrilled with it. It began to take into account the topography, the local neighborhood, the characteristics of the site that might make the refugees more comfortable.”

For example, instead of laying the camp out on a military grid, the customary procedure, Weinreich and Montgomery created a curving site plan that used the hilly terrain to advantage and placed public facilities like schools along a road that was already the main transportation corridor for an adjacent town.

Out of the Rwanda experience, Weinreich and Montgomery began to build the “tool kit,” a booklet and associated apps that would allow humanitarian organizations to map out a settlement by taking into account basics like topography and access to water and, also, to negotiate the sharing of resources between the refugee camps and existing communities. “The idea is that there would be sliders that you can use in these negotiating meetings,” says Montgomery of one of the tool kit’s apps. “You could say: We know there’s a deficit of schools in this certain region of the country. Let’s move that slider up so that you show the benefit of adding a school for this area.”

Montgomery describes the tool kit as “an inspiration tool for planners,” and notes that its “spatial ideas” and “design vignettes” offer a corrective to UNHCR’s quantitatively driven bureaucracy. But the ultimate goal of the tool kit might be, as Kleinschmidt has proposed, to encourage and enable refugee groups to settle permanently in underpopulated regions. Weinreich and Montgomery have led workshops at Stanford and Pratt in which the students worked on strategies for settling refugees in places closer to home and in need of repopulation, such as Gary, Ind., or Sullivan County in the Catskill Mountains north of New York City.

Indeed, the tool kit is not simply a neutral device for understanding how a settlement can be best positioned on empty ground. It’s a polemic about refugees. In the long run, they are an asset, not a liability—an economic benefit that can help revitalize a region, not a drain on resources. The Ennead strategy is a strong signal that runs counter to the rampant xenophobia of the present moment. (And who’s to say, given the realities of climate change and political turmoil, that some of us in the U.S. won’t someday end up as another UNHCR statistic?) It’s the beginning of a broader architectural approach to the refugee problem, an approach with far greater resonance than a multitude of innovative little sheds, even if designing one of those sheds might help an architect score a Pritzker.



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**Northern Arizona University Science and Health Building  
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A new science building for a rapidly growing university knits together a complicated program and fragmented urban campus.

TEXT BY CLAY RISEN  
PHOTOS BY BILL TIMMERMAN





View of east colonnade, looking south



When Northern Arizona College gained university status in 1966, it was a commuter campus in the small mountain town of Flagstaff, population 25,000. Fifty years later, the renamed Northern Arizona University (NAU) is bursting with nearly 30,000 students. It spills far beyond its original quadrangle in the center of a city that has nearly tripled in size.

A sizable chunk of the school's growth has come in STEM fields, where the university reports a nearly threefold increase in enrollment between 2004 and 2014. So when, in 2011, university leaders decided to pour resources into its natural science programs, including a new home for its chemistry department, it went in search of an architect with a complicated brief in hand: a building that could house labs, classrooms, and faculty offices inside, and outside could knit together different parts of the expanding campus—all the while sitting on a postage-stamp of a site.

Fortunately, university leaders didn't have far to look: Richârd+Bauer, a Phoenix-based firm with two decades of experience designing educational and public buildings, working in a joint venture with GLHN Architects & Engineers. "The old campus core has been disengaged from the rest of the campus," says James Richârd, AIA, who, along with Kelly Bauer, founded the firm in 1996. The site had sat cleared for years, awaiting the construction of a museum dedicated to Native American history and culture. When that institution was built elsewhere, the site continued to lay fallow, splitting the northern and southern halves of the campus. "We wanted to reconnect it," Richârd says.

The result, the \$57 million, 122,000-square-foot Science and Health Building, sits at the three-way intersection of the university's historic quad immediately to the north, a complex of science buildings to the northeast, and the rest of the campus to the south. The V-shaped edifice—which is clad in a pattern of 13 unique profiles of terra-cotta-colored aluminum composite rainscreen panels—opens its arms toward the old quad, while its eastern wing lifts two stories off the ground, facilitating pedestrian traffic.

Richârd+Bauer was well positioned to respond to the university's complex brief. Like a growing number of firms, it designs both the interiors and exteriors, with Bauer focused on the former and Richârd on the latter. "We work on projects together, from beginning to end, through design charrettes, gaming out configurations of space from the get-go," Richârd says.

After winning the project through an RFQ, the team spent a week embedded at NAU, interviewing stakeholders and developing a proposal that they presented to members of the university. "The research informs and directs the path of the process, so that

we're presenting the conclusions of our study, not trying to sell an idea to a client," says senior project architect Lee Swanson, AIA.

Spending so much time on the site before sitting down to the drawing board also helped them discover unforeseen challenges, like the need for isolated, protected pathways between the new building and an older chemistry building to the north for the movement of dangerous chemicals. The team decided to split that pathway in two, utilizing a tunnel below ground and a dedicated skybridge above.

The firm's approach works particularly well for their institutional clients, who are almost always end-users with very specific and complicated requirements for interior spaces. Indeed, according to Richârd, the overall shape of a Richârd+Bauer building is in some ways the incidental outcome of the interior needs. "The organizing of space inside is often a key driver of how the building as a whole is organized," he says.

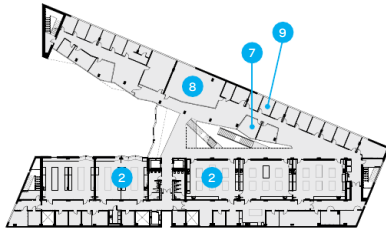
Here, the team needed to make a 16,732-square-foot footprint, across five floors, accommodate 26 labs, five classrooms, three lecture halls, and 54 faculty offices. This presented a particular challenge, Richârd says, because usually the firm works in the large, flat spaces of central and southern Arizona, where creating a natural sense of flow and connectedness among individual spaces is easy. In a dense, vertical structure, though, that's a problem. "Once you go vertical, you can end up with a lack of intercommunication," he says.

To facilitate that vertical connection, the team created a soaring, 85-foot-tall glass atrium nestled at the intersection of the building's two wings. Not only does it unify the space, it also facilitates movement among the different floors through a dizzying array of staircases and walkways. "It's not just a large, empty space," Richârd says. And, it reinforces the connection to the landscape around it, framing views of the San Francisco Peaks, a snow-capped range of extinct volcanic mountains to the north of Flagstaff, through an articulated curtainwall.

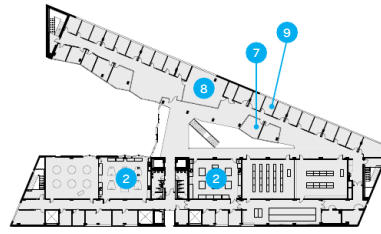
But the building is not simply a self-reflexive response to its internal program. The need for a unifying landmark at the center of campus meant that the architects had to make gestures to the rest of campus, and beyond. The building bristles with references to the region's intense geological beauty. Illuminated white stairs zigzag across the atrium, a nod to the crystalline formations found in nearby caves; the composition of the exterior rainscreen panels references the rock strata in the mountains around Flagstaff. "We always try to bring back the nature of a place to the architecture," Richârd says. "In some ways, it's a shell that responds back to the rest of campus."



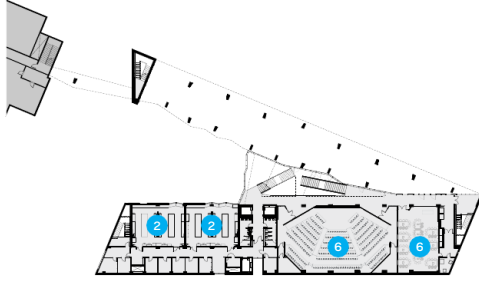
Fourth-Floor Plan



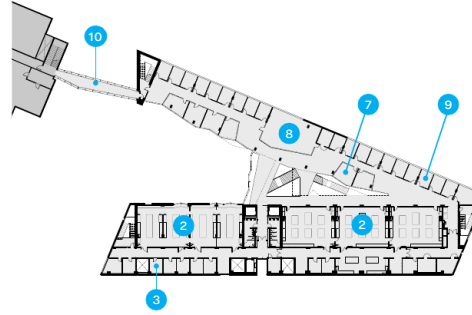
Fifth-Floor Plan



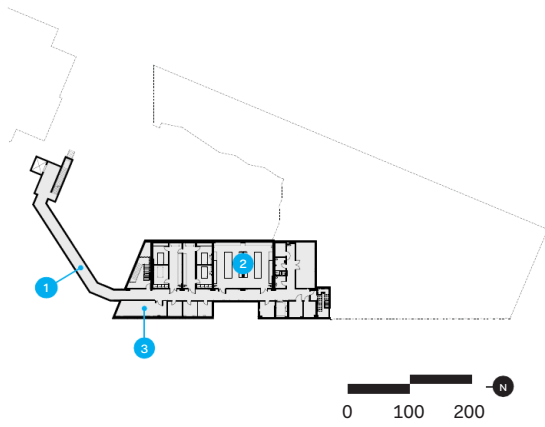
Second-Floor Plan



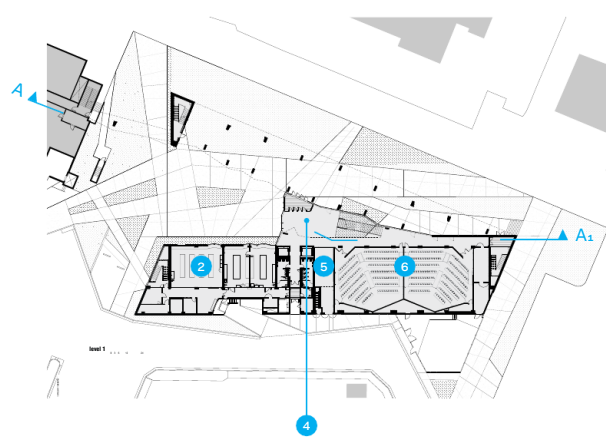
Third-Floor Plan



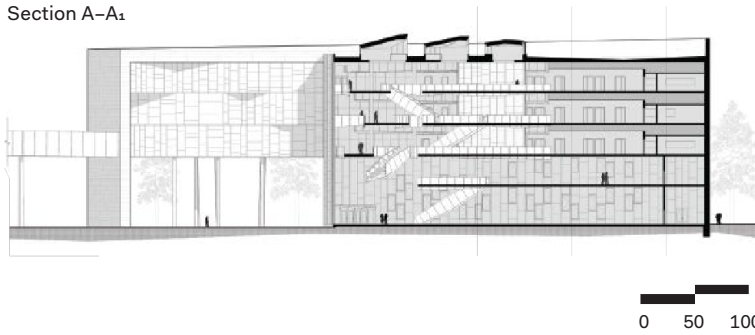
Basement-Level Plan



Ground-Floor Plan



Section A-A<sub>1</sub>



- |                    |                      |
|--------------------|----------------------|
| 1. Service tunnel  | 6. Lecture hall      |
| 2. Laboratory      | 7. Breakout spaces   |
| 3. Support/storage | 8. Classroom         |
| 4. Lobby/atrium    | 9. Office            |
| 5. Mechanical      | 10. Bridge connector |



View from northeast, showing new bridge connector to neighboring building













View of central courtyard with articulated curtainwall, looking south into the atrium and lobby







*Top:* Third-floor breakout space with atrium beyond

*Bottom:* Ground-floor circulation along east façade

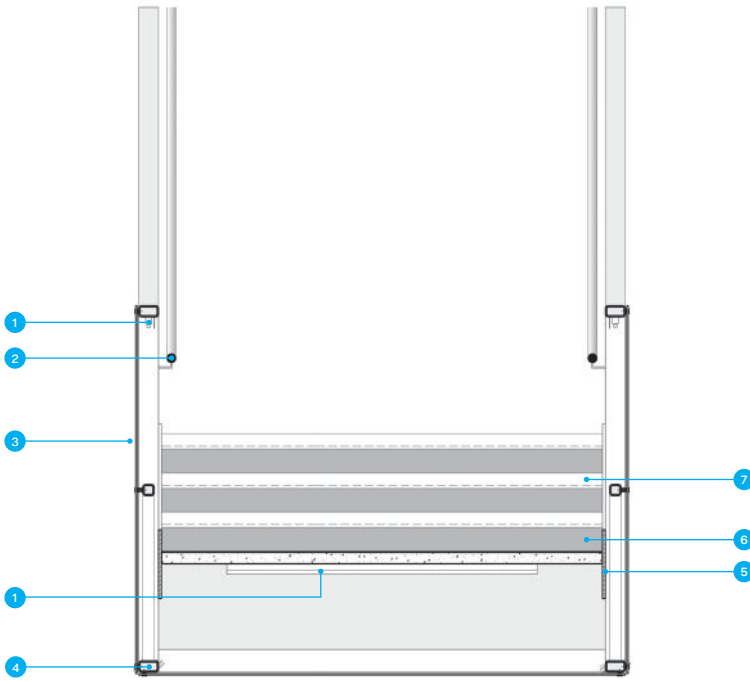




Top: Lecture hall

Bottom: Third-floor laboratory overlooking courtyard

Atrium Stair Section Detail



- 1. Light fixture
- 2. Stainless steel handrail
- 3. 1/4" frosted acrylic panel
- 4. Tube steel support
- 5. Steel plate stringer, welded and painted white
- 6. Expanded metal mesh
- 7. 3/4" stainless steel plate with brushed finish



Opposite: Central atrium with breakout areas for informal meetings

**Project Credits**

*Project:* Northern Arizona University Science and Health Building, Flagstaff, Ariz.  
*Client:* Northern Arizona University  
*Architect:* GLHN Architects & Engineers | Richärd+Bauer joint venture  
*Design Architect:* Richärd+Bauer, Phoenix · James E. Richärd, AIA (design principal); Kelly K. Bauer (interiors principal); Stephen J. Kennedy, AIA (principal architect); Lee Swanson, AIA (senior project architect); Maura González (interior designer); Nick Nevels, Mark Loewenthal (project architects); Brant Long, William Craig, Alex Therien (project team)  
*Architect/Engineer of Record:* GLHN Architect & Engineers, Tucson, Ariz. · Henry Johnstone (principal engineer); Brian G. Hagedon, AIA; Miguel Camacho, AIA

(project manager/senior project architect/CA); Kevin L. Miller, John McGann, Manny Ellsworth (civil engineering); R. Douglas Stingelin, James Hughes, Nathan Fullerton (mechanical engineering); Thomas A. Evans (electrical engineering, power); John Jolly (electrical engineering, lighting); Paul W. Norine (technology engineering)  
*Structural Engineer:* Rudow + Berry  
*Lab Planning:* RFD (Research Facilities Design)  
*Landscape Architect:* T. Barnabas Kane, Environmental Designer Landscape Architect  
*Acoustical Consultant:* McKay Conant Hoover  
*CMAR:* M.A. Mortenson Co.  
*Size:* 122,000 square feet  
*Cost:* \$57 million







**Crossroads Garden Shed  
Calgary, Alberta  
5468796 Architecture**

In Calgary, the architects elevate a modest program and a limited budget into the centerpiece of a new community.

TEXT BY NATE BERG  
PHOTOS COURTESY 5468796 ARCHITECTURE





View from the north,  
showing layered mesh skin





East Village, the new 49-acre master-planned development being built just outside of downtown Calgary, is only about half finished, but its community garden is thriving. There are about 100 plots, and the space it uses on the edge of the new development, along with an adjacent playground, is becoming the main public space of a burgeoning neighborhood.

Its unlikely centerpiece is the garden shed. “We had this missing piece in the overall project that we needed to fill,” says Kate Thompson, vice president of projects at the Calgary Municipal Land Corp., the city subsidiary leading the development project. They figured they could fill the space with a utilitarian storage structure for gardening tools and outdoor furniture, almost as an afterthought. “Initially we looked at some prefab models and tried to figure out a simple way of doing it,” she says. Unsatisfied with the prefab options, they turned to Winnipeg, Manitoba-based 5468796 Architecture, who saw potential for the project to provide more. “We had budgeted for foundations, a roof, and a space heater,” Thompson says. “They flipped that notion on its head and said well, actually, what a community garden needs is gathering space.”

On a budget of just \$100,000 (Canadian), 5468796 designed a low-slung Y-shaped structure, covered in rusted metal mesh. Hidden beneath the metal mesh in each of its three arms are shipping containers, providing storage and workspace, as well as a pre-engineered structural form that eliminated the need for expensive foundation work. A honeycomb of Cor-Ten steel sheets connects the containers and creates a mini pergola over the central space between. Three openings invite people to walk under the pergola and through the structure, which is half-building and half-pavilion. “We’re always trying to see the latent potential in projects that allow us to expand the possibilities further,” principal Johanna Hurme says. Here, that potential turned a shed into a pavilion.

Beyond helping keep costs down, the shipping containers also served to inspire the overall design of the project. The 5468796 team based the approach on the containers’ corrugated sides, using these trapezoidal surfaces to build on and transform the structures’ appearance. This is most evident in the skin that wraps the containers: three layers of metal mesh, each of which mimics that corrugation in different depths and thicknesses. The result is a stratified cage of rusted metal ridges that pop out from the containers’ surfaces by nearly a foot. It’s a way to “blur the edges of the container and expand it out,” Hurme says.

The three containers’ corrugated walls also inspired the pergola that connects them. The designers created

an oblong grid of varied hexagonal shapes out of Cor-Ten that web between the tops of the containers. The space below is accessed through arched entries, and the hexagons above are cut at varying heights to form an almost domed ceiling.

Creating this connection ended up being one of the more complicated parts of the project. Hurme says the design team worked and reworked the form of the pergola, sending multiple iterations to their fabricator to try to reduce material costs and increase the overall size. “There was a lot of structural testing of how this could stand up,” Hurme says. “We were trying to push the parameters of how thin it could be, how the connections could allow us to pull the containers apart as far as we could and still afford the material.”

The steel honeycomb forms open to the sky like vertical flues and enable an interesting interplay of light and shadow, pulling sunlight all the way into the space below during different parts of the day, as well as creating pockets of light and dark within the vertical facets of the pergola itself. “There’s something about the quality of light in the prairies that’s so intense. And we have such beautiful access to it that there’s many opportunities to use the primary materials of light and shadow in the project,” Hurme says. “It creates varying conditions on the site and shadows on the ground plane that keeps it alive throughout the cycle of the year.” The space beneath the pergola becomes a kind of gateway, Hurme says, connecting the still-developing East Village to the community garden and playground area, designed by Stantec and Moriyama & Teshima, and to Fort Calgary, a historic public park nearby.

The garden shed and the gathering space it’s created are only part of the public sphere that’s emerging in this formerly industrial part of town. The area links with RiverWalk, a new linear park that winds along the banks at the convergence of the Bow and Elbow rivers. East Village is also connected by pedestrian bridge to a 30-acre open space on St. Patrick’s Island in the Bow, recently redesigned by Civitas and W Architecture. The 5468796 design emphasizes views of this surrounding landscape.

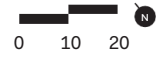
The East Village site is about halfway through a 20-year development plan that’s set to include housing, commercial, retail, and civic spaces, including a new central library designed by Snøhetta. Eventually, East Village will be home to around 11,500 residents. But for now, the community is getting its kickstart in the garden and its new public space. Thompson says the design, along with active programming, is helping to show East Village’s growing population that a nascent neighborhood can still have a heart. “Even though it’s not fully built out yet, there’s a pride of place here.”



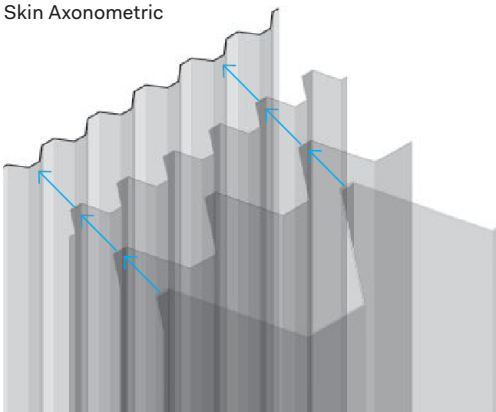


Site Plan

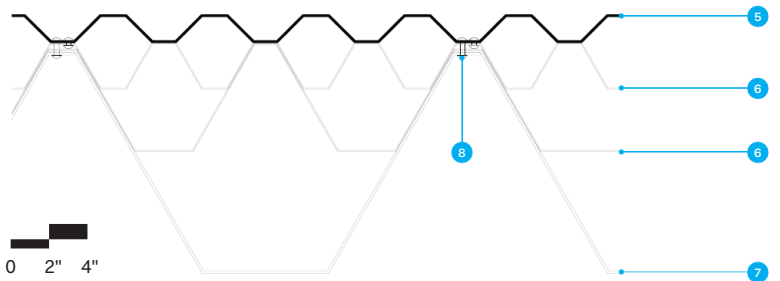
- 1. Garden shed pergola
- 2. Garden shed storage
- 3. Community garden plots
- 4. Playground
- 5. Container skin
- 6. 1/16"-thick mesh
- 7. 1/8"-thick mesh
- 8. Bolts to secure assembly



Skin Axonometric



Skin Plan Detail





*Above:* Coffered pergola over central gathering space

*Opposite:* Wrapped shipping container that serves as garden storage



**Project Credits**

*Project:* Crossroads Garden Shed,  
Calgary, Alberta

*Client:* Calgary Municipal Land Corp.

*Architect:* 5468796 Architecture, Winnipeg,  
Manitoba · Apollo Au, Pablo Batista, Ken

Borton, Jordy Craddock, Ben Greenwood,

Johanna Hurme, Caroline Inglis, Jeff Kachkan,

Eva Kiss, Kelsey McMahon, Colin Neufeld,

Sean Radford, Sasa Radulovic, Trent  
Thompson, Shannon Wiebe (project team)  
*Structural Engineer:* Lavergne Draward &  
Associates

*Construction Manager:* o812 Building  
Solutions

*Size:* 320 square feet

*Cost:* \$100,000 Canadian (\$74,544 US)



**Fast Horse  
Minneapolis  
Salmela Architect**

With the renovation and addition of an advertising firm office in Minneapolis, residential maestro David Salmela brings his brand of exacting, idiosyncratic design into the commercial realm.





View to office at dusk



**How did this project come about?**

*David Salmela, FAIA:* It actually came out of another project. We were hired by Tilia's Restaurant to do a courtyard. The owner's partner was Jörg Pierach, and he started talking at a meeting about his other building, which housed the advertising firm Fast Horse. I thought I could help out on some analysis of it. The restaurant project didn't materialize, but, amazingly, the Fast Horse project did. They had renovated a two-story building from its previous use as a vehicle shop for a candy company, but they were over-growing the building. We renovated it and added two floors.

**It's a very tight site in Minneapolis, is that right?**

When we started, we knew that the site was real tight and that there wasn't much property. It's also a very difficult thing to add two floors to a concrete block building—any engineer would say you can't do it. I thought about spanning over the top of the existing two floors with columns on the back and front sides of the building, but when we got the site survey back, it showed that we only had 7 inches on the back side. We had to get structure into it. We ended up putting four new columns in the middle of the building and four columns on the street side that played with the exterior walls. It became a very efficient structural system, with a lot of work. There's a beauty in these two contrasting systems—the existing, which wasn't even really a system, it was just a functional space, and this new very orderly structure that fits in.

**You put the core right on the front—the two egress stairs and the elevator shaft are the front of the building. It plays on your sense of what's utilitarian and what isn't.**

It was expedient to do double egress stairs on the front of the building, rather than putting them inside, which would destroy the existing structure of the first and second floors. But what's interesting are some of the things you don't notice. We had to bring in all of the utilities from the front. They snake from the street, between the new columns, the elevator, and the stairs and right into the main floor. If you look carefully, you'll see all of the fireproofing pipes—it's all there. Their presence actually adds those contextual, unexpected elements that exist in life—like power poles and things like that. They make things even more interesting if you deal with them carefully.

**How did the graphic pattern on the rear façade evolve?**

I was making a field inspection, walking around the building, and I started to think that we need to do some scale play here. I was thinking about all these people in the neighboring buildings, who have to look

at this building. And I realized we could make it sort of an art object rather than just a pragmatic building. I've always had the philosophy that if you design a building, it has to be functional, pragmatic, and affordable, and then it has to make the neighborhood better as a total. It makes everything more interesting.

**What about the materials for the exterior?**

We used corrugated Cor-Ten on the elevator. And all of the stairs and the sunscreen are made out of galvanized angle. They're pretty much maintenance-free materials. With something like punched metal, which is done on all kinds of elaborate screens, I think that the screens become the sculpture, rather than the building. But these galvanized angles—they're the same material that is at the farm where I was raised, which was built in 1917. I like the notion of using these very base materials. If we had used something else, I don't think it would have been as powerful.

**How did you approach the interior? It seems very open.**

The concept of Fast Horse is that nobody sits in the same seat the next day. You're sitting at a table or a lounge chair and you have your computer plugged in. There's plugs everywhere. There are conference rooms and then there are telephone booths for calls, which are constructed out of solid timber for sound protection. Carpenters assembled the front desk with the wood that was left—the face of it was the artistry of the carpenter, using the leftover chunks.

**You've spent your career largely doing residential work, and it strikes me that commercial projects have more constraints. Has it changed your design process?**

When I was younger, I worked on a lot of commercial projects, but in the last 25 years, there's only two projects that were larger—both in rather idyllic settings. Most of our houses are in the city, but not necessarily urban. With Fast Horse, you do think a little bit differently because of the context. The assembly of structures is a process and is sort of inherent to our culture, but in an urban setting, the neighbors already exist and have their own unpredictable history.

**Fast Horse cost \$323 per square foot. You have a skill for creating great architecture on the lowest budgets. How?**

It's not that I'm so smart. I was raised on a farm and there wasn't a lot of money, but you always solved the problems in a progressive way, so maybe that's still coming through. It's always interesting: During the process, you rely on your instinct, and in the aftermath of a project, you realize what you actually did and why you did it. It's kind of a mystery. And I really like that.



South, street-facing façade, showing double egress stair







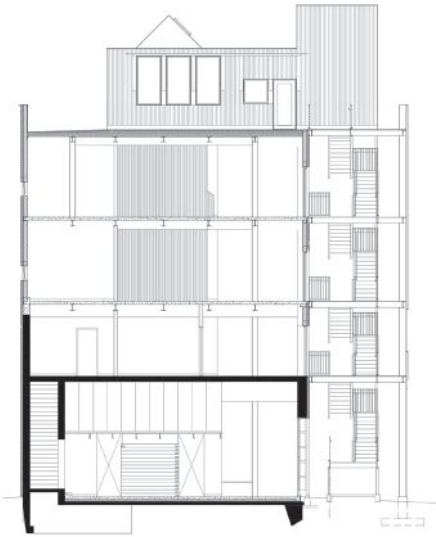
*Top, Left:* East façade

*Top, Right:* North façade

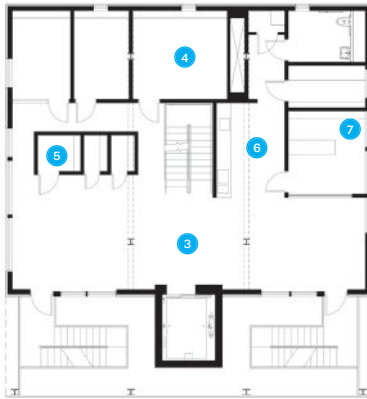
*Left:* West façade, with black demarking the existing structure and white the addition



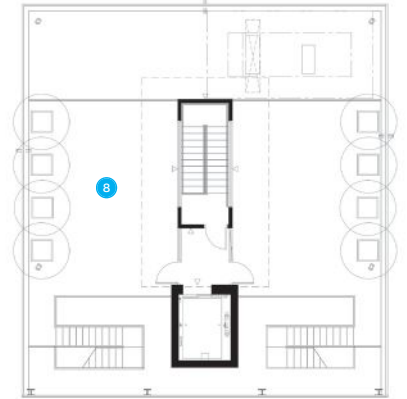
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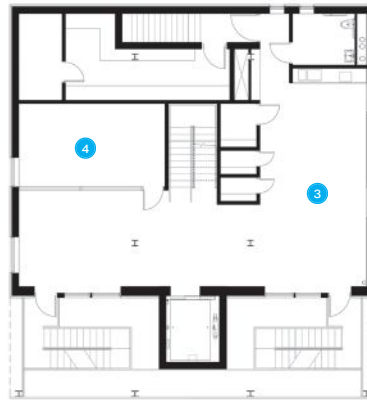
Fourth-Floor Plan



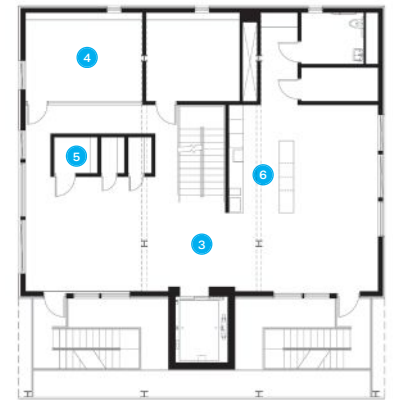
Roof-Level Plan



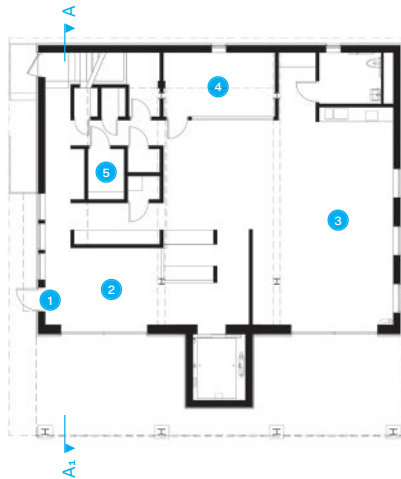
Second-Floor Plan



Third-Floor Plan



Ground-Floor Plan



Mezzanine-Level Plan



- 1. Entrance
- 2. Lobby
- 3. Open office space
- 4. Conference
- 5. Call booth
- 6. Kitchen
- 7. Private office
- 8. Roof terrace







Detail view of egress stair and  
corrugated Cor-Ten elevator core  
on street front of building







Above: Interior view looking west from ground-floor open office into lobby

Opposite: View of interior stair, lined in same steel angle at south façade, into fourth-floor kitchen

#### **Project Credits**

*Project:* Fast Horse, Minneapolis

*Client:* Fast Horse

*Design Architect:* Salmela Architect, Duluth, Minn. · David D. Salmela, FAIA (principal); Malini Srivastava, AIA (project architect); Darin Duch, Stephanie Getty, David Getty (project team)

*Mechanical/Electrical Engineer:* EDI

*Structural Engineer:* Meyer Borgman Johnson

*Civil Engineer:* Pierce Pine and Associates

*General Contractor:* Watson-Forsberg

*Size:* 12,000 total square feet (9,000 interior square feet, plus 3,000 square feet of terraces and balconies)

*Cost:* \$2.9 million

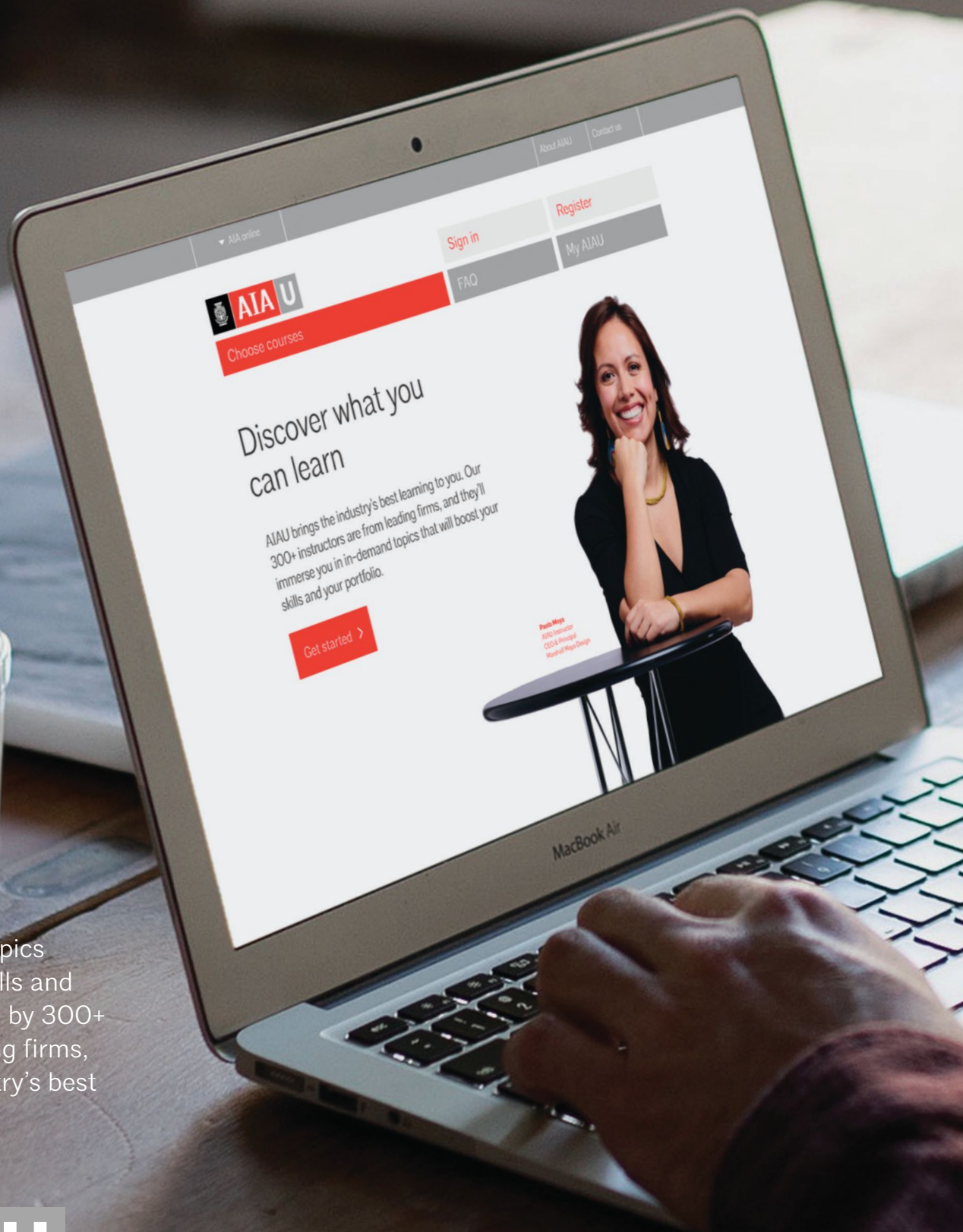






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## Residential:

An Exhibition at the Philadelphia Museum of Art Explores the Young Designers Behind the Cabbage Chair, the Armour Bench, and the Prisma Stool



TEXT BY SYMONE GARVETT

This year, Collab, a group that supports modern design at the Philadelphia Museum of Art, has honored three young contemporary designers, Tokyo's Oki Sato, London's Faye Toogood, and Rio de Janeiro's Zanini de Zanine, with the group's Design Excellence: New Generation award. A new exhibition highlights the commonalities between the designers' experimental techniques and how their cultural backgrounds influence their designs for modern chairs, tables, and lamps. Contemporary furnishings, such as the Serfa and Espasso chairs (shown) by de Zanine, explore the use of materials such as impregnated paper, wood, metals, and fiberglass. "Design Currents: Oki Sato, Faye Toogood, Zanini de Zanine" runs through March 12, 2017.

## Lustrous Bronze and Brass Accentuate These Elegant Geometric Knobs and Pulls

TEXT BY SELIN ASHABOGLU

**1. Mod Hex Pull, Emtex** Part of the company's new Urban Modern Collection, this hexagonal prism cabinet pull is offered in lengths of 3.5", 4", 6", and 8", and is available in five finishes including polished nickel and satin brass (shown). [emtek.com](http://emtek.com)

**2. No. 8987RAM, The Nanz Company** This hexagonal knob by New York-based hardware company Nanz measures 1.06", and comes in 28 finishes including polished chrome, dark pewter, and polished brass (shown). [nanz.com](http://nanz.com)

**3. Tilde Pull, Alice Tacheny** A minimalist's dream, this rectangular 5"-long fixture, in brass (shown) or blackened bronze, is designed to fit snugly into the edge of a drawer front. [alicetacheny.com](http://alicetacheny.com)

**4. Lumiere T-Knob, Schaub & Company** This 2"-long contemporary knob juxtaposes an opaque metal base with a clear acrylic bar. Available in five finishes, including satin brass (shown). [schaubandcompany.com](http://schaubandcompany.com)

**5. Elongated Shard Pull #2, Marion Cage** The Louisiana-based architect and jewelry designer pays homage to former boss Zaha Hadid with this 7.48"-long jagged, hand-cast fixture. In brass or bronze (shown). [marioncage.com](http://marioncage.com)



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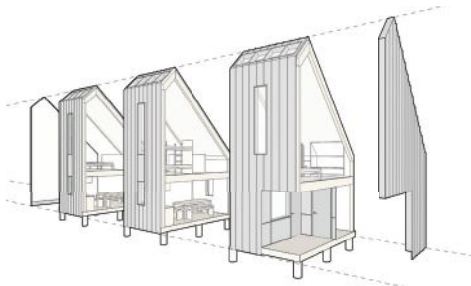






## A Flat-Packed, Made-to-Order Modular House that Doesn't Sacrifice Design

TEXT BY SARA JOHNSON



In the age of KonMari and Airbnb, tiny houses and micro-units appeal to a demographic looking to minimize material possessions in favor of experiences and public spaces. Launched in 2015 and starting production next year, Vancouver-based Backcountry Hut Company designed a flat-packed, built-to-order modular house that marries efficient production with high-style minimalism. The company is a collaboration between founder Wilson Edgar, architect Michael Leckie of local firm Leckie Studio Architecture + Design, and manufacturing partner Cyrill Werlen, an owner of Cascadianwoodtech in Union Bay. Costing roughly \$150 Canadian (about \$112) per square foot before customizations, the modules can be freestanding units (a single 191-square-foot module can sleep up to four people) or be combined to form a larger house. Inside the shell, clients can go basic or high-end: The company will have interior options, but also plans to offer custom interiors from regional studios such as Lock & Mortice Build Co. "We have had a diverse range of interest: from retirement and off-grid communities, to individuals who want to expand on their existing property with an additional residential unit, as an Airbnb enterprise, outdoor clubs and associations," says a Leckie Studio spokesperson.

COURTESY BACKCOUNTRY HUT COMPANY

> Read more about the Backcountry Hut Company's modular house at [bit.ly/BackcountryHutCompany](http://bit.ly/BackcountryHutCompany).





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**Rock Creek House**  
**Washington, D.C.**  
**NADAAA**

TEXT BY IAN VOLNER  
PHOTOS BY JOHN HORNER





Nader Tehrani was born to roam: Raised by diplomat parents who bounced between the U.K., U.S., and their native Iran, the 53-year-old architect and his firm, NADAAA, have exhibited an intellectual approach that finds opportunity for function and signification in such disparate locales as Gwangju, South Korea, and Newton, Mass. Since being named Cooper Union's dean of architecture, Tehrani has continued to push his office forward while swinging between studios in New York City and Boston, and his ability to marry pedagogy with practice is borne out in a project completed this year: a house in Washington, D.C.

An expansion of a 1920s structure on the edge of scenic Rock Creek Park, the house shows how Tehrani can train his mental firepower on the domestic concerns of an affluent family in a quasi-suburban setting. Expanded from two levels plus a basement to four finished floors, the building's brick envelope is the launching pad for an irregular pattern of windows that hint at the new and more sectionally complex interior: a warren of nooks and crannies, of private spaces that peek into public ones, and of privileged views into the park beyond. "We basically kept the ghost of the existing order," says Tehrani, who kept most of the rooms in or close to their original alignment.

The biggest shift by far is in the northeast garden façade, which ceased being load-bearing and became a curtainwall. "A reconstructed Frankenstein monster," as Tehrani calls it, the approach allowed for even more windows, the new openings furnishing castoff bricks used to pop up the attic into the new upper floor.

The house's signature moment—if NADAAA can be said to have signatures—is in the central stairwell, a bristling array of wooden banisters. Aesthetically and practically, it recalls the vertical metal louvers in the firm's Melbourne School of Design (with John Wardle Architects), with warmer materials and more subdued details as befits a residential project. Everything about the house, in fact, seems to find Tehrani in a more toned-down mode. "What we're doing nowadays is decomposing, erasing, curating," he says. "We're eliminating the marks, so you come and pay attention to the irreducible aspects of the project."

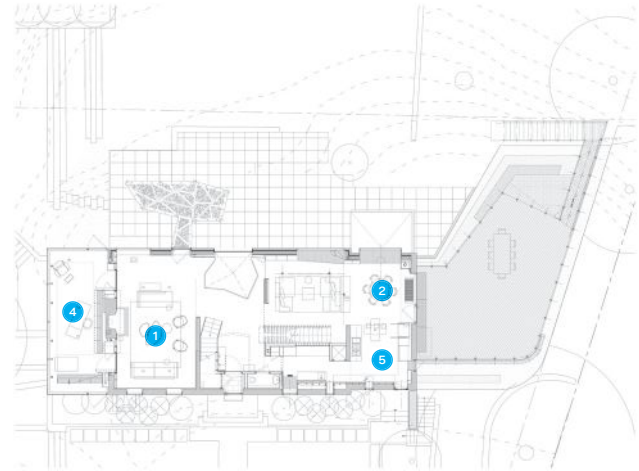
Fourth-Floor Plan



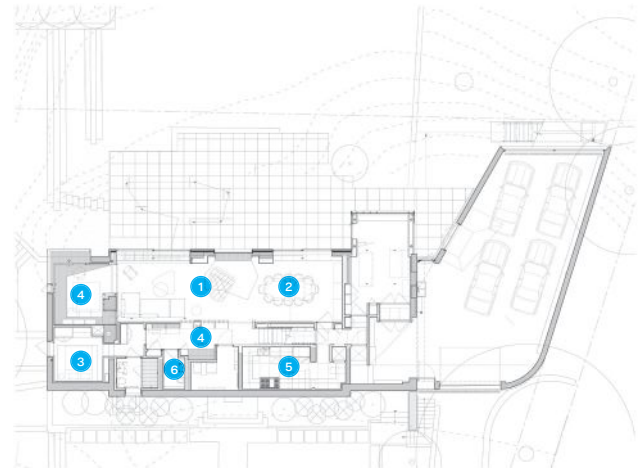
Third-Floor Plan



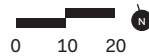
Second-Floor Plan



First-Floor Plan



- |                |               |
|----------------|---------------|
| 1. Living room | 5. Kitchen    |
| 2. Dining room | 6. Bathroom   |
| 3. Bedroom     | 7. Study nook |
| 4. Office      | 8. Playroom   |







*Previous Page:* As renovated and expanded, the four-level house (seen here from the north), contains eight bedrooms as well as seven full bathrooms and two half baths.

*Top:* The new butterfly roof channels water off the southwest side of the house.

*Above:* A CNC-milled metal trellis on the northeast façade provides shade near the backyard pool as well as a deck off the second floor.









*Opposite:* C.W. Keller + Associates fabricated the millwork using quartered anigre from Brookside Veneers over a euro-birch core.

*Above:* The wooden banisters in the central stairwell, seen here looking northeast into the third-floor study nook, are deflected to allow light to pass through while blocking views into the bedrooms.



*Top:* The master suite containing Molteni&C closets takes up nearly half of the second floor. A two-sided Stûv fireplace is open from the bedroom through to the bathroom next door.

*Above:* The master bathroom features an egg-shaped bathtub and separate shower, both by Agape.





*Top:* Located at ground-level on the southwest side of the house's sloping site, the second-floor kitchen features Bulthaup cabinets and appliances by Miele, Asko, and Gaggenau.

*Above:* Sliding glass doors provide access from the first-floor living spaces to the northeast patio.



Above: Carlisle Wide Plank Floors in white oak run throughout the house.

#### **Project Credits**

*Project:* Rock Creek House, Washington, D.C.

*Client:* Withheld

*Architect:* NADAAA, Boston and New York City · Nader Tehrani, Katherine Faulkner, AIA (principals); Harry Lowd (project manager); Sarah Dunbar, Remon Alberts, John Houser, Stephen Saude, Jonathan Palazzolo, Lisa Lostritto, Parke MacDowell, David Richmond, Dane Asmussen, Ghazal Abbasy-Asbagh, Mahdi Alibakhshian, Sina Mesdaghi, Tom

Beresford, Dan Gallagher (project team)

*Landscape Architecture:* Landworks Studio

*Structural Engineer:* Simpson Gumpertz & Heger

*Mechanical Engineer:* Allied Consulting Engineering Services

*Contractor:* Abdo Development

*Lighting:* Hinson Design Group

*Size:* 10,193 square feet

*Cost:* Withheld



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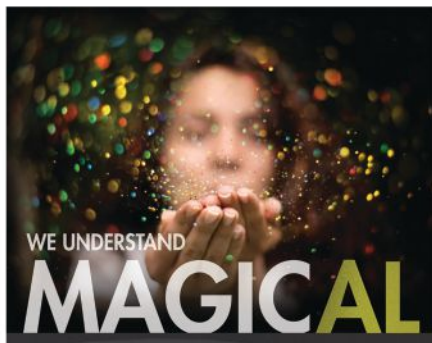
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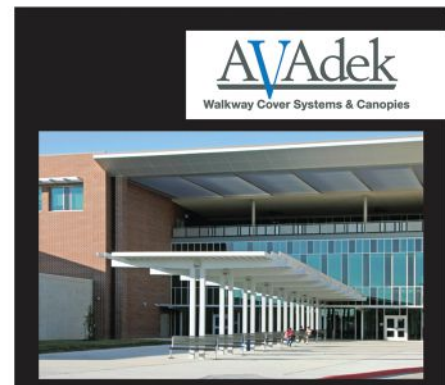
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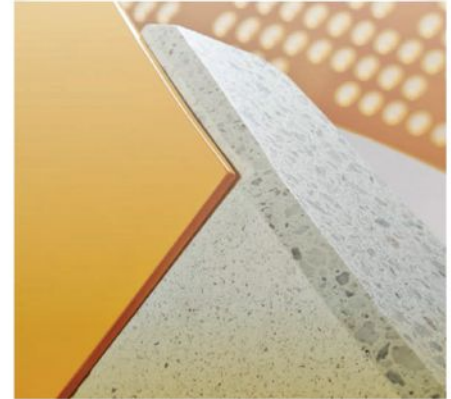


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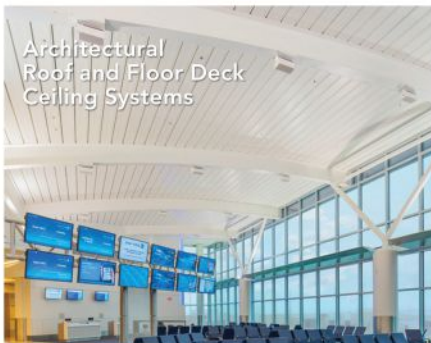
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# Editorial: The Housing Deficit

There's an unsettling statistic in "Redesigning Lathrop" (page 71), Zach Mortice's story about a New Deal-era public housing project in Chicago: From 2000 to 2015, the Chicago Housing Authority (CHA) has demolished nearly 19,000 public housing units, and only 2,600 affordable units have been built in their place. This abysmal replacement rate epitomizes the slow-motion disaster of low-income housing in the U.S.: Starting with the Clinton-era HOPE VI program and continuing under every administration since, the government has eliminated funding for public housing and been transferring property to the private sector.

A major shortfall of privatization is that the market isn't keeping pace with demand—not even close. According to the National Low Income Housing Coalition, the majority of America's poor families devote more than half their take-home pay to rent. They have no alternative: The coalition estimates a nationwide shortage of 10.5 million affordable units. In 2012, *The Washington Post* reported that there were 66,297 households on the D.C. Housing Authority wait list, and a wait time of 43 years for a studio apartment.

The CHA claims to be "rehabilitating or redeveloping the entire stock of public housing in Chicago." The statement, from the agency website, is misleading. Like other local housing agencies, the CHA is no longer in the business of building or managing public housing, any more than it is replacing the "entire stock" of affordable units one for one. Instead, the CHA has spent \$1.5 billion in federal funds on what amounts to slum clearance, to make way for private developers to build market-rate housing.

In such deals, developers do have to include some affordable units, the idea being that cleaner, safer living conditions and prosperous neighbors will have a salutary effect on those lucky enough to get a spot. If the social experiment goes awry, no worries: The deals are generally brokered so the affordable units revert to market rate, sometimes in as few as five years.

Most displaced residents and newcomers to the system are given vouchers that subsidize their rent on the private market, through the Department of Housing and Urban Development (HUD) Section 8 program. Which usually means the displaced are moving from badly maintained public high-rises to badly maintained private apartment buildings.

In today's political climate, advocates of public housing might as well bear a biohazard warning label. Ben Carson, Donald Trump's pick to run HUD, is a retired surgeon with no track record in housing to indicate what his policies as secretary would be. But his books and speeches suggest limited affinity for government assistance of any kind, and some pundits suggest the appointment is the start of a purposeful effort to further degrade the agency and its mission.

"Based on the history of failed socialist experiments in this country, entrusting the government to get it right can prove downright dangerous," Carson wrote of U.S. housing policy in a 2015 op-ed in *The Washington Times*. Few would deny that by the 1970s, the government's top-down approach was in need of reform. Sadly, the privatization strategy that followed is proving equally flawed: Those who need help most seem to be deriving the least benefit from it. Our nation can and must do better.





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