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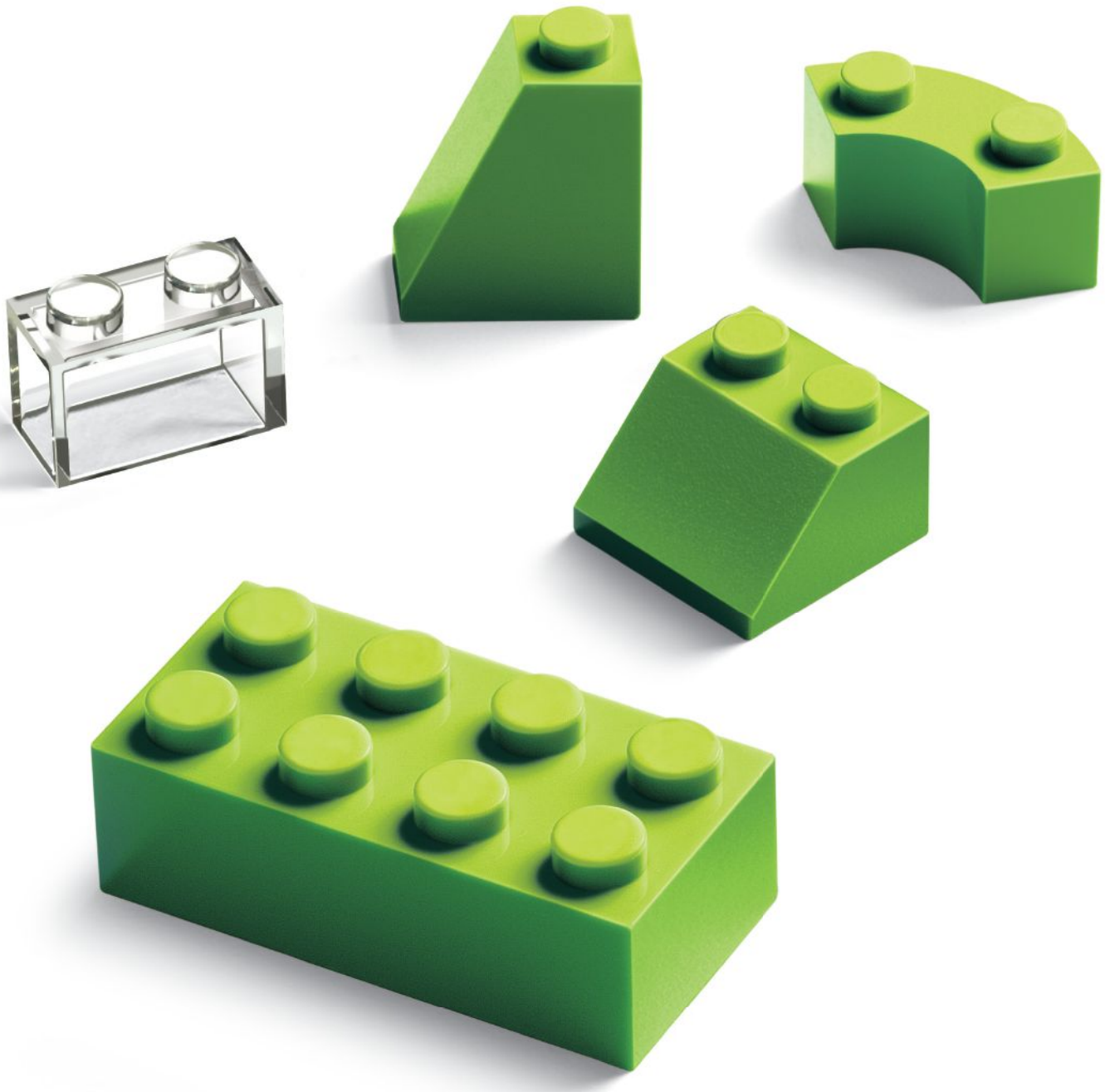
Gothic Revival

Robert A.M. Stern Channels James Gamble Rogers at Yale



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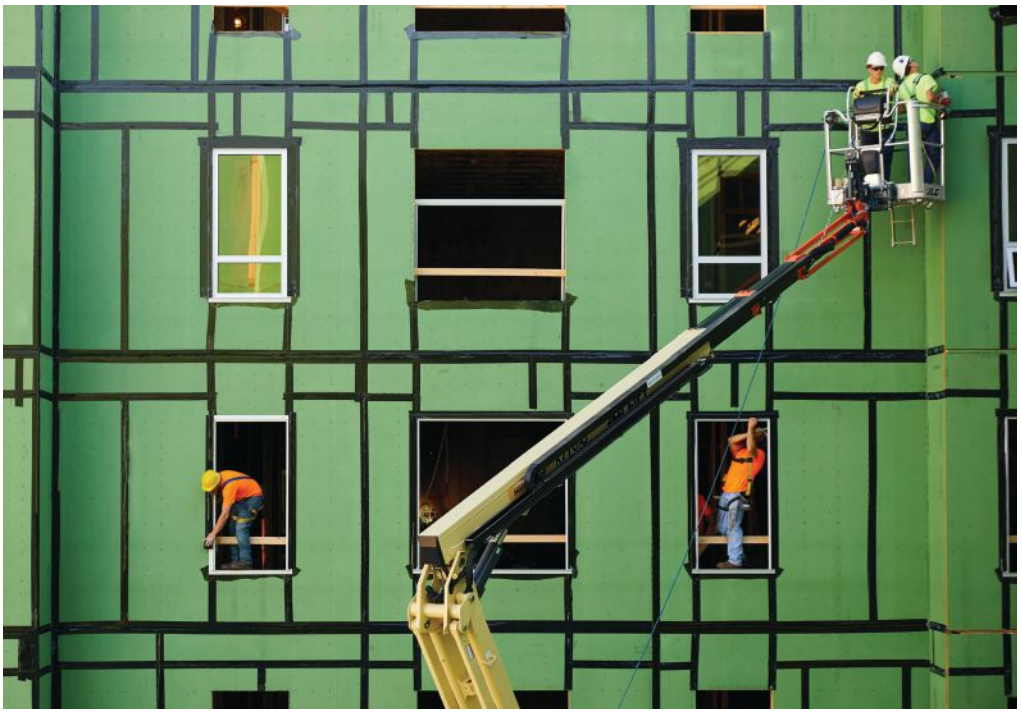
DETAILING BARRIER CONTINUITY IN BUILDING ENCLOSURES

A continuing education preview sponsored by ZIP System® sheathing and tape

The role of the building enclosure is to provide proper separation between the building interior and the exterior. Beyond the structural enclosure, separation is accomplished through the use of four primary types of barriers: water-resistant barriers (WRBs), air barriers, thermal barriers and vapor retarders. All of them are intended to restrict or control the passage of a targeted item (water, air, heat or moisture) through a roof, wall or foundation system.

While this can seem straightforward along flat, continuous surfaces, it is the non-continuous conditions that present design and construction issues. These can include transitions from one material to another, penetrations, interruptions caused by planned openings such as windows and doors, or changes in surfaces such as roof/wall junctions or parapets.

The key to continuity in building enclosure systems is a careful and coordinated approach to consistent detailing. Understanding the choices and developing complete details as part of construction drawings is the best way to ensure continuity in the building's enclosure for an airtight, weather-resistant exterior that promotes energy efficiency and long-term durability.

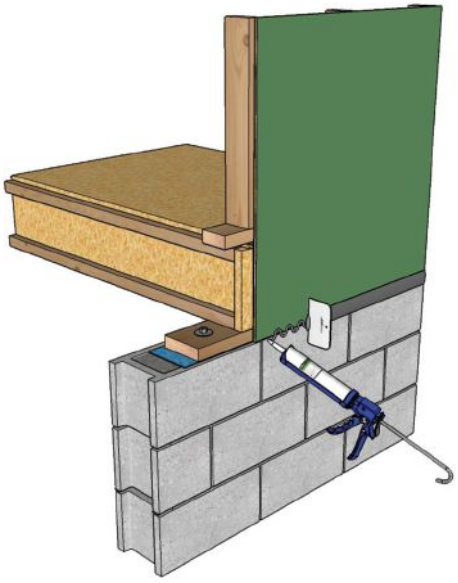


Choices in Barrier Systems

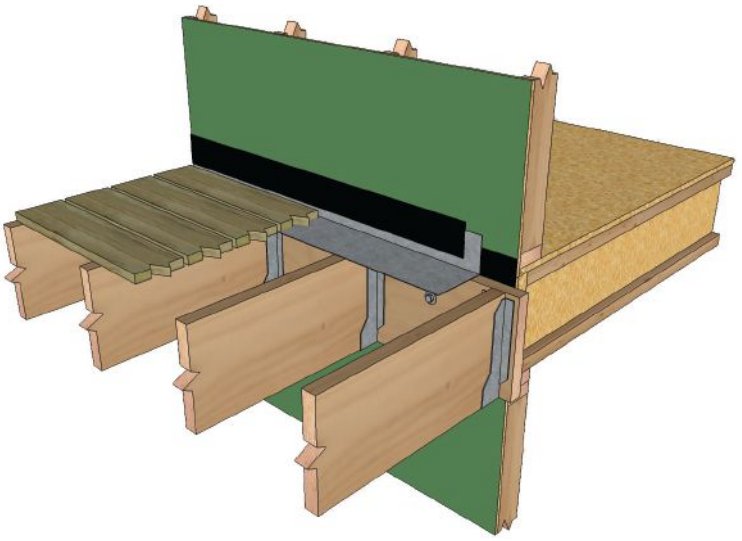
As with most design and construction systems, there are choices available for how to achieve each of the four barriers and their continuity on and around a structural framing system.

The conventional approach is to use a multiproduct, multilayer design in which each of the four barriers is specified

> Proper design and specification details are critical to reduce the risk of compromising the four primary barriers.



The joint where the wood framing meets the foundation wall needs attention to be sure that any wayward air or water does not penetrate. In this case, ZIP System™ liquid flash can be applied as a coating across the joint and ensures continuity.



For decks and balconies, once the ledger board is in place, the joint between it and the wall needs to be addressed to be sure that the barriers remain protected. Metal flashing that extends from the wall and under the decking or above balcony flooring should be covered at the top with ZIP System™ flashing tape for continuous protection.

and installed as a separate layer in an assembly. This requires specifying multiple products that need to be compatible. Each serves a single function and has individual installation requirements, often performed by different trades during construction, which can raise the risk of delay or incorrect installation, increasing the need for coordination. Further, to be sure that their installed performance will be satisfactory, the particular combination of products needs to have been tested to ensure they meet all of the water, air and thermal thresholds required for the assembly. There also needs to be proper detailing between the materials to ensure the total system will work as intended.

As an alternative, there are integrated sheathing product solutions that have become available. One of the most common transitions design and build teams is making is replacing the sheathing-plus-housewrap assembly with ZIP System® sheathing and tape, eliminating the need for housewrap. The newest addition to the ZIP System® brand of products is ZIP System® R-sheathing, which additionally incorporates built-in polyisocyanurate foam exterior insulation.

A revolutionary new approach to building enclosures, ZIP System sheathing and tape products streamline the weatherization process with an integrated air and water-resistive barrier and advanced-acrylic tape for panel seams and flashing details that deliver moisture and air protection in one easy-to-install system.

This means that a single, high-performing engineered wood sheathing product can be specified, used as the basis of design and installed by a single trade to achieve water, air and thermal barriers. This online course will show detailed specifications for critical transitions in places like windows, doors and wood to masonry when specifying wall assemblies using ZIP System sheathing and tape with an integrated water-resistive barrier onto the surface of the engineered wood sheathing.

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The full CEU course will explain in-depth the continuity issues of the four primary barriers and review a series of drawings and details that can help accomplish a continuous building enclosure system on critical transitions. Learn more about ZIP System sheathing and tape by visiting ZIPRevolution.com.

Continue this CEU course at http://go.hw.net/Huber318

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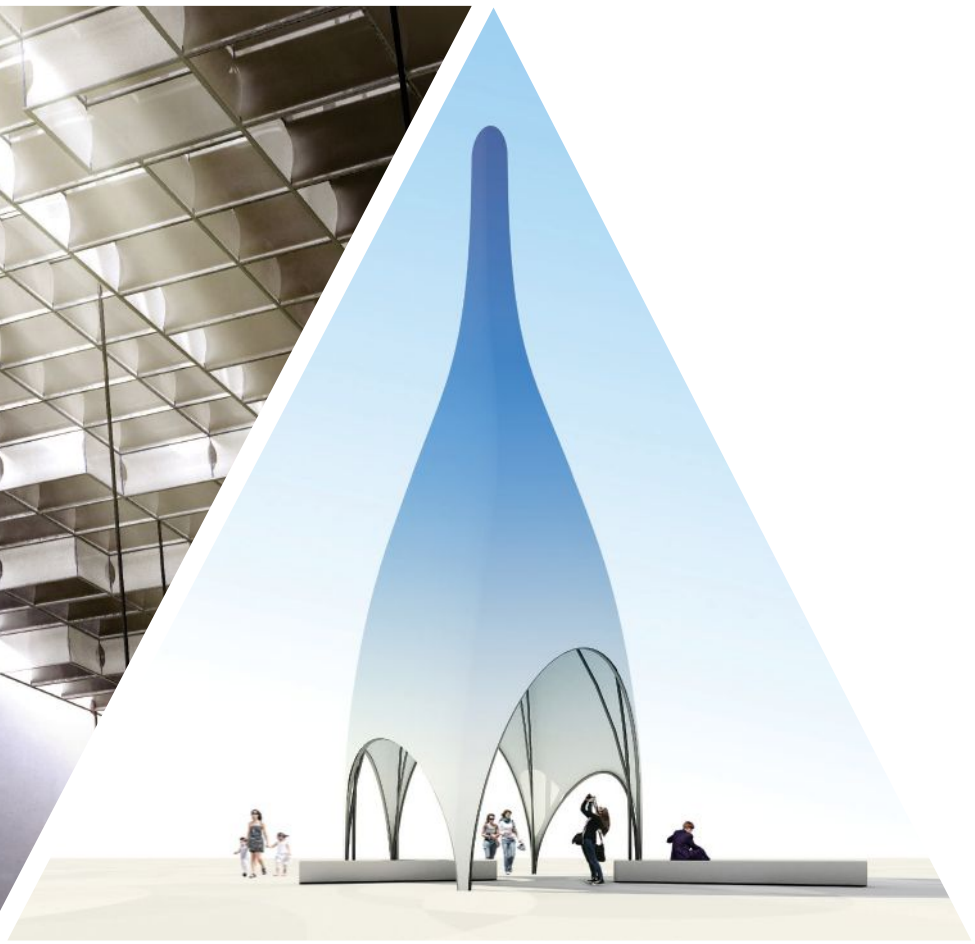

Winners of the Future of Shade competition's Well-Being category explored the use of fabric in shade and building design with concepts that focused on the healing effects of light and shadow. Find inspiration for your next shade design at

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Volume 107, number 3. March 2018.
On the cover: The "Bob-goyle" at Pauli Murray College and Benjamin Franklin College at Yale University by Robert A.M. Stern Architects. Photo by Peter Aaron/OTTO

Cover Feature

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Top Seed

Arthur Ashe Stadium at **USTA's Billie Jean King National Tennis Center** is one of sport's most beloved venues. But its roofless design meant rain often stopped play. To keep tournaments on schedule, the stadium's original designers, architect **Rossetti** and engineer **WSP Parsons Brinckerhoff**, proposed the tennis world's largest long-span retractable roof. With a 7-minute opening time and a design that keeps sightlines unobstructed, the new lightweight fabric and steel canopy is favored to win over athletes and fans alike. Read more about it in **Metals in Construction** online.

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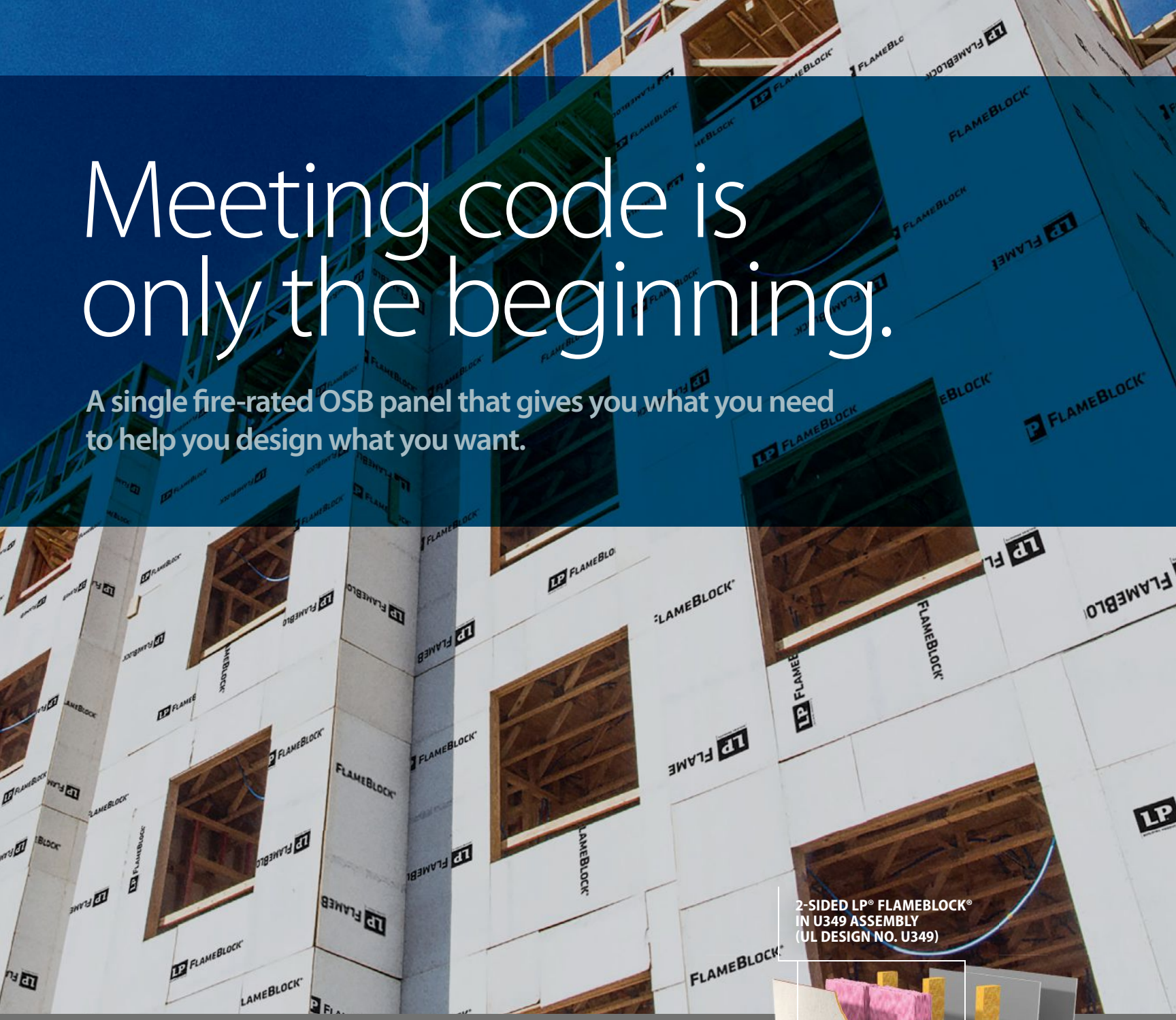

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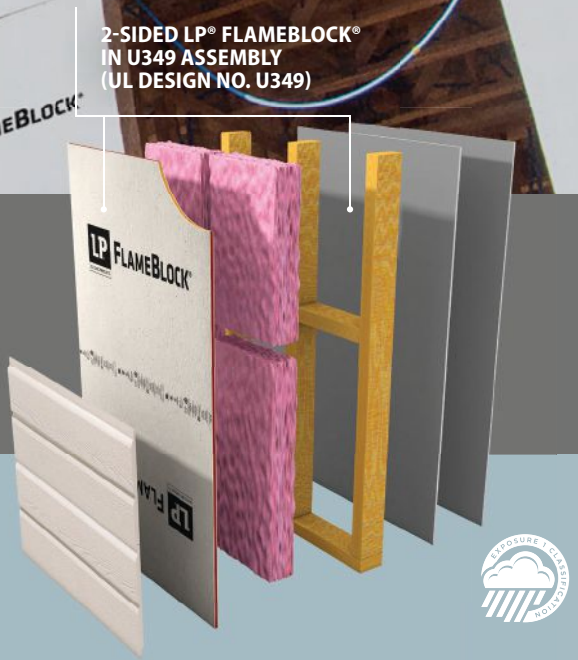

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Coming in 2022: A New U.S. Embassy in Mexico City

For more than 50 years, the U.S. Embassy in Mexico City has occupied a building that, when built, was "the second largest U.S. embassy in the world." Last month, the State Department broke ground on a new $943.1 million complex by New York firms Tod Williams Billie Tsien Architects | Partners (TWBTA) and Davis Brody Bond—the first project commissioned under State's Design Excellence Program. "The design and materials will speak to the materials and architectural traditions of Mexico in ways that recognize a sense of this place and the long and interlocking histories of the American and Mexican peoples," TWBTA notes. —SARA JOHNSON

> *Read more about the new U.S. Embassy in Mexico City at bit.ly/EmbassyMexicoCity.*


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JORGE PERÉZ DE LARA ELÍAS/INAH

LACMA Explores the Ancient City of Teotihuacan

On view from March 25 through July 15, "City and Cosmos: The Arts of Teotihuacan" at the Los Angeles County Museum of Art will feature nearly 200 artifacts from the ancient Mesoamerican city of Teotihuacan near Mexico City, some of which have never before been showcased in the United States. The exhibition will feature sculptures, mural paintings, buried offerings, and objects made of volcanic stones and ceramics (such as an incense burner, shown), as well as explore the ancient city's architectural elements, including three pyramids—Sun, Moon, and Feathered Serpent—residential compounds, and administrative centers. —AYDA AYOUBI

> *Learn more about LACMA's exhibition at bit.ly/CityAndCosmos.*

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COURTESY UCSD CROSS-BORDER COMMUNITY STATION—TIJUANA

Following Denise Scott Brown, Teddy Cruz Wins Top Vilcek Prize

While tensions over immigration policy make headlines nationwide, the New York–based nonprofit Vilcek Foundation continues its mission to celebrate immigrant contributions in the U.S., most recently with its 2018 Vilcek Prizes. Guatemala-born architect Teddy Cruz, the director of design at San Diego–based Estudio Teddy Cruz + Fonna Forman, won the top prize of $100,000 for his work and research in border communities, such as "UCSD Cross-Border Community Station: A Public Space that Educates" (shown). Denise Scott Brown, HON. FAIA, is the only other architect to have been awarded the prize. —KATHARINE KEANE

> *Read more about the 2018 Vilcek Prizes at bit.ly/2018VilcekPrizes.*

THE HEART OF SYDNEY'S NEW FINANCIAL HUB

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Barangaroo, the new business district just besides the Sydney Harbour, is home to the new economic centre for the Asia-Pacific region: the International Towers Sydney. Viega ProPress Copper fittings are being used throughout to provide the 131 floors of the three towers with a reliable supply of drinking water. Not only does the system impress with its excellent hygienic properties, it is also quick and easy to install – a significant advantage for a major project like this on a tight schedule.
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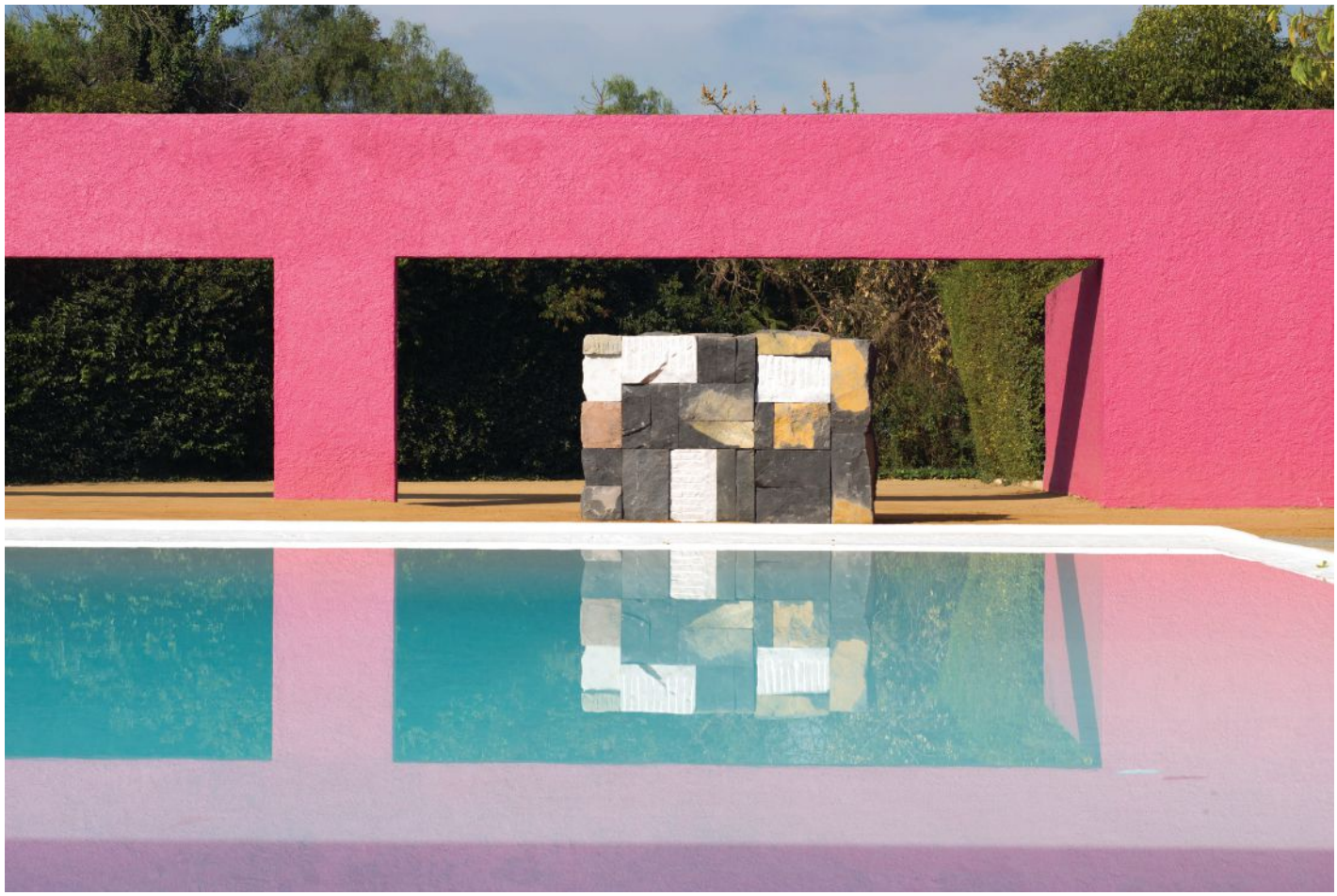

FELIX FRIEDMAN

Curating Cuadra San Cristóbal

Cuadra San Cristóbal in Mexico City, designed by Luis Barragán and built in the 1960s, is a complex of house and stables complete with pools for both species. Curator Emilio Ambasz, ASSOC. AIA, described the house as "Barragán's most complex creation" in a 1976 Museum of Modern Art exhibition catalog, published four years before Barragán received the Pritzker Architecture Prize. Through March 24, the private house is open to the public for an exhibition from Ireland-born artist Sean Scully, whose sculpture and paintings, installed throughout the space, pop against the iconic pink walls. —SARA JOHNSON

> *Read more about "Sean Scully—San Cristóbal" at bit.ly/ScullySanCristobal.*

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Best Practices: Securing Your Firm from Cyberattacks

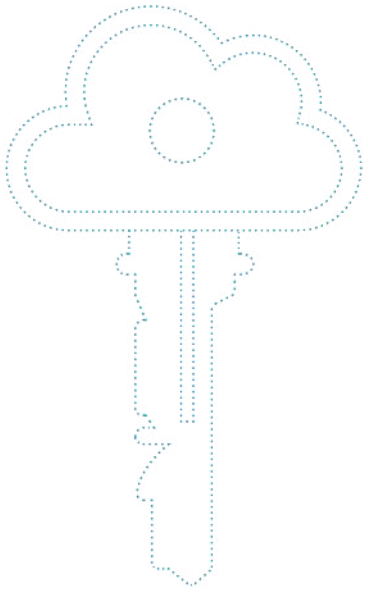
TEXT BY NATHAN MILLER

In May 2017, a ransomware attack exploited outdated operating systems in the U.K., resulting in the temporary shutdown of 16 hospitals. Two months later, credit reporting agency Equifax revealed that hackers used an application vulnerability to leak the personal information of more than 143 million Americans. Cyberattacks such as these risk more than sensitive information; they also jeopardize valuable capital. Cybereconomic data company Cybersecurity Ventures predicts that global ransom payout costs in 2017 will exceed $5 billion—15 times the amount paid in 2015. And according to technology research firm Gartner, global information security spending will reach $93 billion in 2018.

The statistics are staggering, especially since business workflows and assets have largely gone digital. Architects and builders have welcomed significant shifts in their digital workflow with cloud-based BIM software for remote project coordination, internet file hosting for global accessibility, and virtual workspaces for team communication. And the end results—the buildings themselves—are slowly but increasingly connected to Internet of Things (IoT) networks, with building management systems storing user information on everything from HVAC usage to lighting preferences.

Consider the following hypothetical scenarios: a hacker targeting an architecture firm could expose sensitive data about a client's confidential business operations; a data breach at Dropbox could expose any one of the 1.5 billion DWG (drawing) files currently stored on the platform; and a cyberattack focused on a building control system in a hospital or airport could put the safety of its occupants at risk.

These situations are certainly on the minds of technology leaders at any architecture firm doing government, infrastructure, defense, or corporate work. Below, design and information technology (IT) professionals explain how they stay one step ahead of cyberattacks through secure cloud platforms, prioritizing network security, and integrating blockchain.



Balancing Security and Collaboration in the Cloud

As Woods Bagot's principal of technical innovation based in New York, Shane Burger has witnessed his firm's digital tools become increasingly connected to the cloud. Instead of storing CAD files and 3D models on local hard drives, these files now live on internet-based services, allowing practitioners from the firm's offices worldwide to work together on a project. However, the transition to the cloud was not without its risks. The Breach Level Index estimates that 4.9 million data records are lost or stolen globally every day.

Thus, businesses relying on the cloud need to secure their data. "It's a balance," Burger says, "On the one hand, our teams need to be able to share their data with their teams and clients as freely as possible, but we also need to consider how digital data is being securely controlled and accessed." Woods Bagot balances these requirements by establishing an internal list of approved cloud services for employees to use. These services are set up under enterprise agreements with providers that address security and intellectual property.

Autodesk, the software giant behind AutoCAD and Revit, is one such provider that has been strategically connecting its programs to cloud platforms, such as BIM 360, for collaboration since 2013. Reeny Sondhi, Autodesk vice president and chief of product and cloud security and compliance, focuses on implementing

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Best Practices: Securing Your Firm from Cyberattacks

cloud strategies that address the top security threats facing the company's customers. For many of Autodesk's clients, security weaknesses still boil down to vulnerabilities associated with individual user passwords. In Verizon's 2017 Data Breach Investigations report, researchers found that 80 percent of hacking-related breaches leveraged weak or guessable passwords. Sondhi notes the importance of sharing this information so Autodesk's customers can better protect themselves. "It's a joint responsibility," she says. "Setting strong passwords, using two-factor authentication, and using federated identity and single sign-on reduce the risk of stolen passwords."

New Cybersecurity Standards

For global firm HDR, digital security standards are often dictated by new client requirements. "We believe that cloud collaboration adds value to our projects," says Rachel Riopel, AIA, digital design principal based in the firm's Omaha, Neb., office. "But we also need these technologies to comply with the policies of the clients we work with. Many of our government projects have security standards that impact how we use our tools."

To keep up with evolving standards and compliance requirements, HDR tasked an internal IT team with tracking the latest developments in policy and its potential consequences for the firm's data strategies in the future. One resource was the National Institute of Standards and Technology's 2017 publication of a cybersecurity self-assessment handbook that introduced new standards for increased security on the transmission and storage of controlled unclassified information. For architects and builders, this information could include data about facilities. The requirements affect anyone with a government contract.

"We discovered that some of our commonly used tools [including our cloud-based collaboration platforms] didn't fully comply with the new requirements," Riopel says. This realization meant devising production strategies and workflows that didn't rely on cloud services. "We had to find alternatives to meet the new standards and deliver our projects successfully."

Software companies are also taking steps to protect their users. According to Autodesk's product security website, the company regularly performs third-party audits on its platforms to ensure compliance with industry best practices and standards. "We continue to bolster our infrastructure and network security and are also focused on increasing our compliance efforts," Sondhi says.

Is Blockchain the Future of Security?

To say that blockchain—a digital ledger that chronologically and securely tracks transactions, including those involving cryptocurrencies like Bitcoin—is experiencing a great deal of media hype would be an understatement. Blockchain has been cited as a technology poised to disrupt banking, healthcare, manufacturing, and nearly every supply chain imaginable. Participants in a blockchain can collectively agree and verify any transaction without the need for a centralized authority, making a blockchain's records nearly tamper-proof—a very appealing concept for cybersecurity.

As an example, Kristoffer Josefsson, chief technology officer of New York–based blockchain development company Foam, is creating applications for using the technology in GPS, which is used to locate an object or person in the world, but is also vulnerable to hacking. This weakness made the headlines in 2017 after several U.S. Navy ship collisions raised concerns about the ability of navigation systems to be tampered. "When we apply blockchain to the problem of GPS location," Josefsson says, "proof is given when everyone on the blockchain agrees on the truth."

Greenville, S.C.–based human factors consultant and architect Joseph Manganelli, AIA, believes that blockchains may become a necessity as built environments and cities become smarter. "The complexity of a city with an infinite number of parameters makes the idea of centralized system impractical," Manganelli says. Blockchain could be used to securely regulate devices that track anything from available parking to infrastructure maintenance such that all devices in the network are able to verify the validity of their reports. "Blockchain offers a way for fast and cheap validation of transactions for a decentralized network of devices," he adds.

Though potential uses of blockchain in architecture and construction are still speculative, Manganelli outlined other potential applications in a January presentation at the National Institute of Building Sciences' Building Innovation conference: Blockchain could help track and secure deliveries to project sites, enable more accurate post-occupancy benchmarking by storing data on decentralized networks, and save money and man-hours by reducing transaction times, the number of staff necessary to process transactions, and the potential for mistakes.

As buildings and communities increasingly become interconnected, Manganelli says, architects are in the unique position to manage and utilize collected data once blockchain technology becomes accessible: "As an industry, if we are in a position to document and dictate how things are supposed to function and interact, and if that's a relatively low-risk and high-profit thing to do, we would be fools not to do it."

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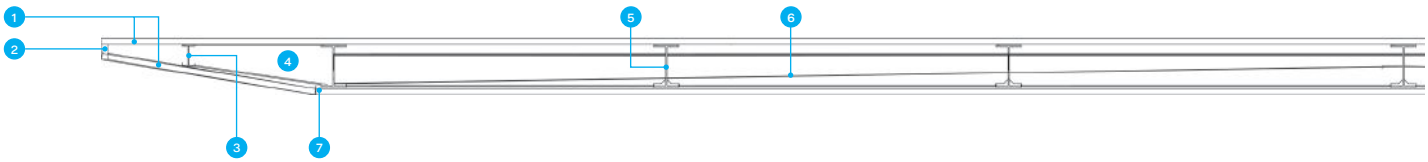
Innovative Detail: Ateliê Wäls Brewery Porte Cochère

TEXT BY TIMOTHY A. SCHULER



Carved into a steep hillside in the outskirts of Belo Horizonte, the capital of Minas Gerais in southeast Brazil, Ateliê Wäls' ribbon-like wood porte cochère stands out, beckoning passersby to the brewery's new restaurant and tap room, both designed by the local firm Gustavo Penna Arquiteto & Associados (GPA&A).

A stair and elevator shaft take visitors from street level down two stories to the reception area. Since the elevator shaft essentially has no façade, says GPA&A senior architect Oded Stahl, the firm conceived of the undulating wood-and-steel canopy curving from the restaurant roof over a sidewalk and vehicular drop-off area, reaching down to the ground, and then curling inward to form a long bench. "It's like somebody opened a huge barrel and stretched it over" the entrance, he says. "By making this canopy, we enlarged the presence of the building on the street level."

The architects began with sketches and detailed drawings that helped them explore scale, which they then translated into models in Trimble SketchUp and Autodesk AutoCAD. GPA&A worked with structural engineering firm Misa Engenharia de Estruturas to minimize the canopy's underlying steel frame, beveling its edges to create a thin profile. The canopy rises 17 feet above street level, forming a tunnel that is 38.5 feet deep and, if it were unrolled onto the ground, 104 feet long. Wood slats clad its inward and outward faces, sandwiching the steel frame, a sheet metal roof, and rain gutters.

The steel frame comprises 7.9-inch-deep, 40-foot-long wide-flanged-beams welded together to form a grid that ties into the elevator core. To create the fine edge GPA&A envisioned, the steel beams running along the canopy's longitudinal edges are just 4 inches deep. The transverse beams taper to meet them. Wood slats cap the sides, concealing the steel structure.

The wood slats fasten invisibly to the steel structure via small steel knife plates spaced roughly every 2 feet. The connection allowed for a clean appearance devoid of screw holes, but was a challenge for construction workers, Stahl says. With the structure just 6 inches deep, there was very little room for error, he says. "That was the headache on the site."

Completed in June 2017, the porte cochère has helped showcase how wood can be used in a way that Stahl says is "very plastic and very precise." GPA&A had never used wood in this fashion before. "The wood here was the king," he says. "It was the material that spoke."

1. 4"-wide by 0.75"-thick teak cladding, 6.5' to 19.5' long
2. Teak cap on edge
3. 3.9" × 2.3" wide-flanged beam
4. Metal corbel beam
5. 7.9" × 4.7" wide-flanged beam with cutouts for drainage
6. Sheet metal roof trough
7. Drainage pipe (not shown)

DANIEL MANSUR

> *To read more about the design and construction of Ateliê Wäls' port cochère canopy, visit bit.ly/ARAtelieW.*

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Next Progressives: Epiphyte Lab

EDITED BY KATHARINE KEANE

Location:
Pittsburgh

Year founded:
2009

Firm leadership:
Dana Cupkova, Kevin Pratt (d. 2013)

Education:
Cupkova: Dipl.Ing.Arch., Slovak University of Technology in Bratislava, Faculty of Architecture in Slovakia; M.Arch., University of California, Los Angeles

Experience:
Cupkova: T.R. Hamzah & Yeang, RUR Architecture, and Smith-Miller + Hawkinson Architects; currently an assistant professor at Carnegie Mellon University School of Architecture (CMU).

Firm size:
Two to six

Mission:
We love orchids and air plants—called epiphytes—because they are beautiful and need very little to thrive on their own; they grow on other plants but are not parasitic, using their context for physical support and only feed off waste. Our mission is to design and speculate about spaces, environments, and architectures that operate like air plants—tightly coupled with a flow of resources, thermodynamic behaviors, and perceptual experiences.


Dana Cupkova

Architecture is part of a larger planetary ecosystem and we are interested in intuiting and designing to encourage new forms, agencies, and authenticities.

Favorite project:
The Hsu House mass wall, mostly because the likelihood of it working as both a sculpture and architectural replacement of mechanical air conditioning was rather speculative. The odds of constructing it well were low and the process of building it gave us pause. We love it as much as our clients and their kids, who obsessively use it as an interior play-structure. As a sculptural piece of infrastructure, the mass wall became a center of social interactions for adults, kids, and plants. Also, it was "born" in the same year as our daughter.

Second favorite project:
Every other project, chronologically—currently, that would be a Thai restaurant called Senyai. It is Epiphyte Lab's first built project in Pittsburgh, where I relocated the practice from Ithaca, N.Y., after Kevin's sudden passing in 2013. The restaurant was produced collaboratively with CMU faculty member Gretchen Craig and CMU architecture students. We always strive to create a link between academic research and design practice, and Senyai was designed and built partially as a learning experience in making and digital fabrication at CMU. Additionally, it was a summer project, and building any work during the summer has a special, relaxed flavor to it.

Memorable learning experience:
Weeks spent in long houses visiting the jungle tribes of Borneo, realizing how shapes in space matter for survival in heat.

Modern-day design hero:
My students for their enthusiasm, obsession, and work to come.

Design tools of choice:
Frame of mind and a heat gun

Design aggravation:
A circle

Superstitions:
Stay away from superstitious people, especially if they want to be your clients.

Skills to master:
Running an academically based practice—it keeps me continuously in need of learning and can be humbling.

> *To learn more about Epiphyte Lab and its work, visit bit.ly/AREpiphyteLab.*

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Entries will be judged for their documented research and development methodology, impact on the building industry, and potential to advance the aesthetic, environmental, and social value of architecture.

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Winners will be featured in the July issue of ARCHITECT with expanded coverage online at *architectmagazine.com.*

ELIGIBILITY

The awards are open to architects, designers in all disciplines, engineers, manufacturers, researchers, and students. Full-time academics (faculty and students) will receive a discounted registration rate.

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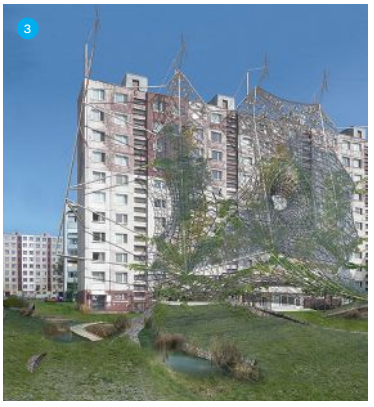
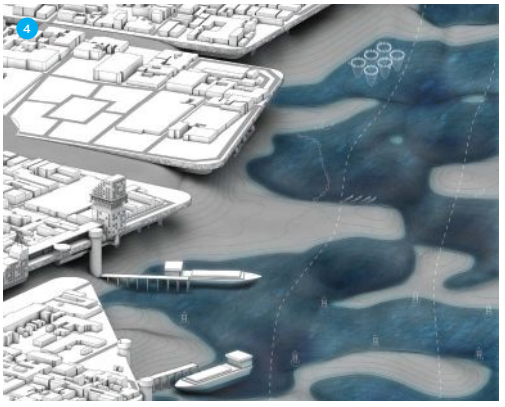
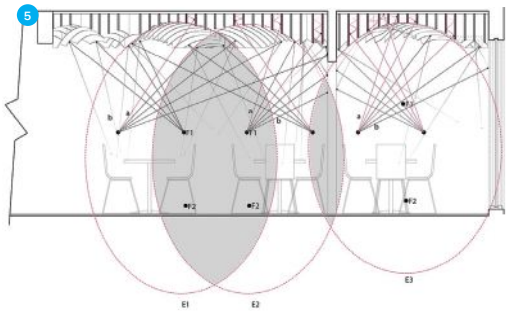
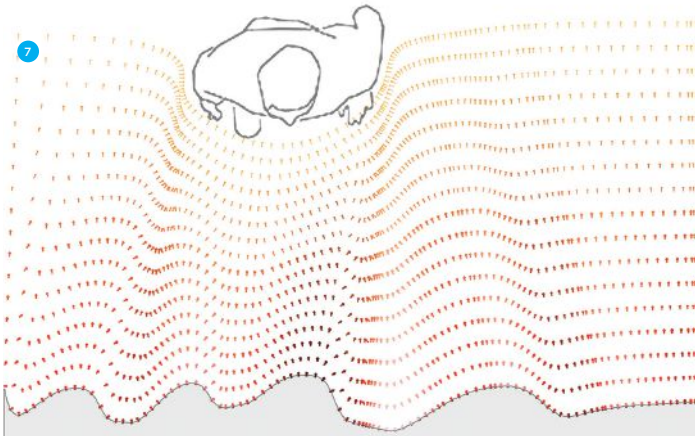
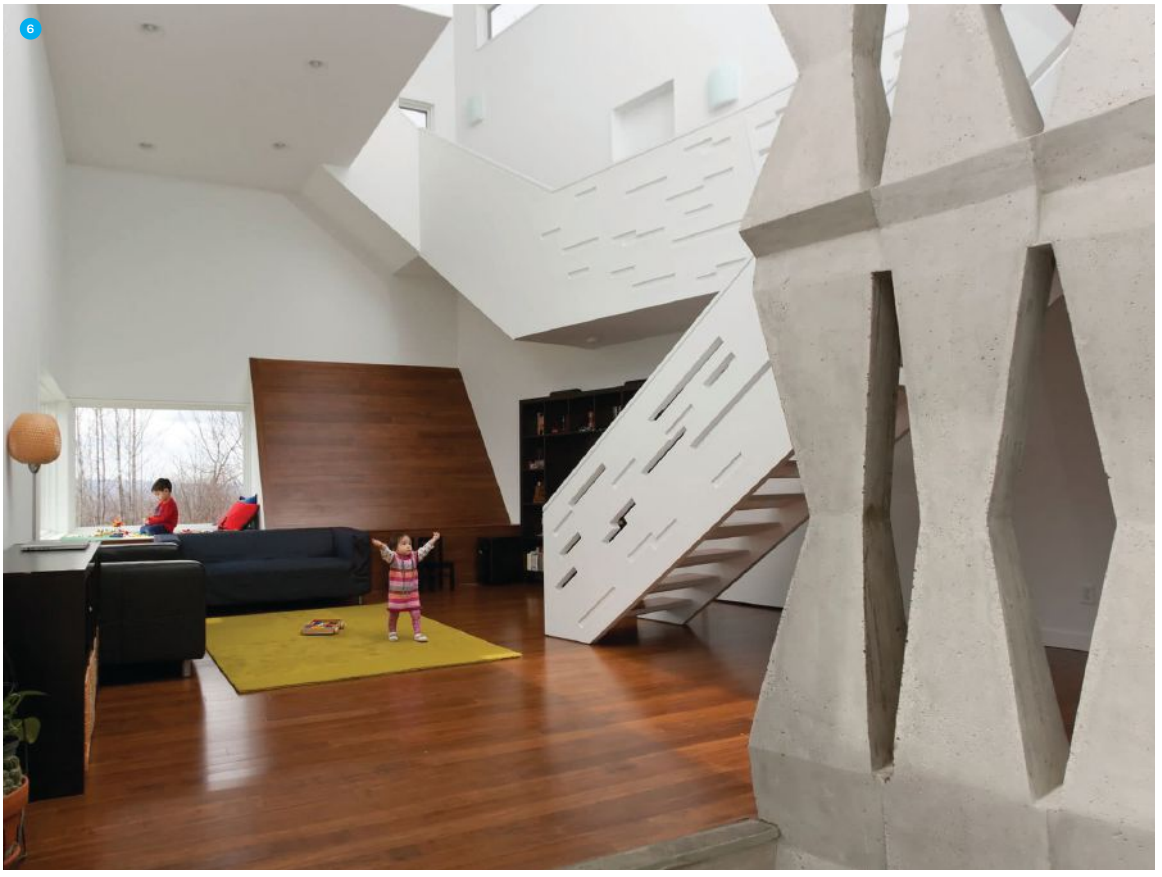


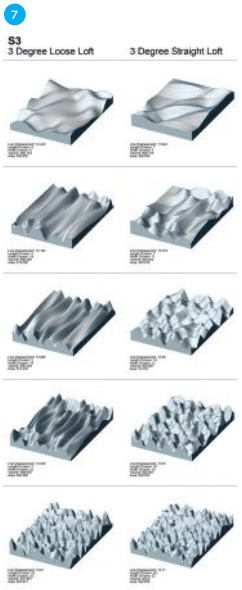


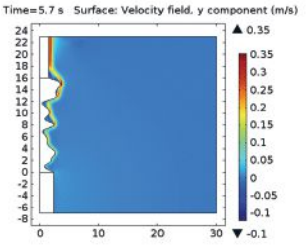


1, 2, 3, 4, 7: COURTESY EPIPHYTE LAB; 5: MASSERY PHOTOGRAPHY









6: SUSAN & JERRY KAYE

1. In collaboration with designer Ben Snell, Cupkova manipulated dough through net casting, creating bread that "wants to be teased, caressed, and eaten in chunks." **2.** Epiphyte Lab utilized the same underlying computational code to create the various forms shown in Indeterminate Set, which was exhibited at the 2017 symposium "Computational Design: Practices, Histories, Infrastructures" at CMU. **3.** Green Negligee is an alternative adaptive reuse strategy that employs a lightweight, secondary façade to blur the boundary between a multifamily housing block in Eastern Europe and the surrounding landscape. **4.** Migratory Landforms, a research submission for the 2016 D3 Natural Systems Competition, explores strategies for land-building in response to the loss of habitable ground caused by climate change. **5.** Completed in summer 2017, the ceiling of Senyai, a 340-square-foot restaurant in Pittsburgh, comprises 275 vertical slats to create acoustic pockets. The visual effect is also an homage to the restaurant's name, which means "big noodles." **6.** The 2,200-square-foot Hsu House residence in Danby, N.Y., features solar-responsive siding and a cast-in-place concrete mass wall that speeds thermal transfer of heat from the sun, filters light into the first floor, and functions as a sculptural focal point. **7.** Informed by the Hsu House mass wall, Cupkova's two-part Mass Regimes research assesses whether complex surface geometries can improve thermodynamic performance through convection.

Products: How to Specify a Window Frame

TEXT BY SELIN ASHABOGLU

Windows provide a host of benefits, from daylight, to views out, to natural ventilation. They also expose an otherwise solid building envelope to potentially significant energy losses and solar heat gain. Glazing aside, a quality window frame can improve a structure's energy performance—particularly as commercial buildings increasingly resemble glass boxes. But what differentiates one window assembly from the next?

Materials

Standard materials for commercial window frames are vinyl, aluminum, fiberglass, wood, and wood clad. Vinyl, or PVC, is the most cost-effective option, with units (including glazing) ranging from $150 to $2,000, depending on quality and size. Vinyl frames can be manufactured relatively economically and have low upkeep needs, as vinyl does not have to be painted or sealed.

Extruded aluminum frames are typically chosen for their strength and durability; units can cost between $400 to $1,200 each. Suitable for temperate climates, aluminum frames are highly conductive, which can exacerbate heat loss and gain; a thermal break helps reduce heat transfer.

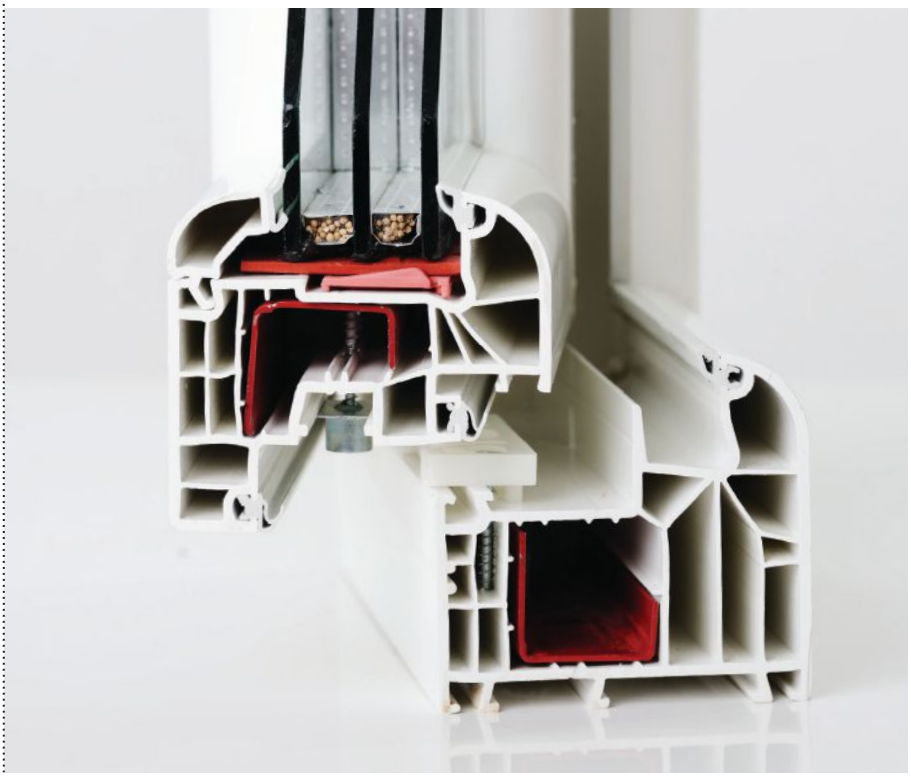
Fiberglass, or fiber-reinforced plastic, boasts high durability and can be eight times stronger than vinyl, which means larger windows can have thinner and lighter frames. Ranging from $400 to $1,400 per unit, the material requires little maintenance.

Wood window frames are less common in commercial buildings due to their high cost—between $270 to $2,100 per unit—and high maintenance requirements. A wood frame's exterior should be painted throughout its life to preserve its look and durability. A natural insulator, wood can be suitable for projects with specific aesthetic or historical preservation requirements.

Wood-clad frames have a resilient and low-maintenance material, such as a fiberglass, aluminum, or vinyl layer, on its exterior face while leaving the wood frame exposed on the interior side. This composite window frame can provide the look of wood but at a lower cost.

Energy Efficiency

Two values to note for a window unit are its U-factor and air leakage rating. A lower value is more desirable for both. The U-factor indicates the rate of heat



> *For more information on specifying commercial window frames, visit bit.ly/HTSWindowFrame.*

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Products: How to Specify a Window Frame

transfer through a window assembly. U-factors generally range from 0.25 to 1.25 Btu per hour per square foot per degree Fahrenheit. Look for air leakage ratings of 0.3 cubic feet per minute per square foot of window area or less.

Typical U-factors for window assemblies made of vinyl—a nonporous and moisture-resistant material—range from 0.30 to 0.50. Insulation added into a vinyl frame's air cavities can further reduce its U-factor.

Aluminum frames require a robust thermal break—an element with high insulating capabilities, which can be made of polyamide strips or reinforced fiberglass—between the exterior and interior faces to minimize energy loss. Standard U-factors for aluminum windows range from 0.50 to 1.0.

Wood and wood-clad frames typically have U-factors between 0.30 and 0.50. Fiberglass frames can be both durable and energy efficient, also with help from internal cavities that can be filled with insulation. Because fiberglass comprises in part glass, its rate of thermal expansion and contraction will be similar to that of the window glazing, reducing the possibility of a broken seal.

Seals and Weatherstrips

Window seals keep insulating gases, such as argon and krypton, between double- or triple-paned windows. Multilayered windows require two seals: an inner sealant, commonly made of polyisobutylene (PIB); and a secondary sealant applied around the perimeter of the exterior glazing lite, which can be made of silicone, polyurethane, butyl rubber, or polysulfide.

Weatherstrips further reduce air leakage and heat loss, and can include tension seals, foam tape, felt strips, and tubular vinyl or rubber. Tension seals come in vinyl, bronze, aluminum, copper, or steel strips that can be installed on the inner track of a window. This option is durable and invisible while in place, but it must be tightly installed in corners, and might make a window more difficult to open.

Foam tape comes in nonporous, closed-cell foam, open-cell foam, or EPDM rubber. With its affordable price point, this option comes in a variety of lengths and thicknesses; however, it is not particularly durable and should be installed where little wear is expected, such as in fixed windows.

Felt strips are installed solo or paired with a metal strip, and can be self-adhered, stapled, or glued to a window frame. Felt strips are susceptible to water damage. Meanwhile, tubular vinyl or rubber strips come at a low-to-moderate price point and can be applied to the top and bottom edges of a window sash. This option is less discreet, but the strips come in a host of colors to help minimize its appearance.

Life Expectancy

If maintained properly, vinyl windows can last up to 40 years. The material's weakness is its susceptibility to deterioration caused by ultraviolet (UV) light, which can also lead to fading, as well as broken insulation seals due to freeze-thaw cycles.

Aluminum frames can better withstand severe weather events, and can last for up to 20 years with regular upkeep and inspection, but they are susceptible to rusting and dents. Wood and fiberglass can both last up to 50 years. Wood is vulnerable to rot from prolonged exposure to UV and precipitation, as well as insect damage; fiberglass will also naturally deteriorate and fade if exposed to UV light over time.

Finish Options

Vinyl windows do not require additional finishes and cannot be painted. The standard vinyl color is white, but other darker colors are offered at a premium. Aluminum frames are typically anodized to help delay corrosion.

Similar to vinyl, fiberglass also does not require further coating for durability; however, it can be painted in different colors to meet specific aesthetic needs. Wood frames need painting and sealing regularly throughout the product's lifespan. Pine is a standard wood species for windows, but premium woods like mahogany are also available.

References

For more information on window assembly ratings and testing, refer to the *AAMA/WDMA/CSA 101/I.S.2/A440-17 North American Fenestration Standard*, which was jointly published by the American Architectural Manufacturers Association, the Window and Door Manufacturers Association, and the Canadian Standards Association. The International Code Council also has information on window performance requirements.


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Residential: Johnsen Schmaling Architects

TEXT BY EDWARD KEEGAN, AIA

A design by the Milwaukee-based partnership Johnsen Schmaling Architects is easy to spot: a crisp essay in a particular building type, elegantly deployed with a twist or two for interest. Now ranging far from their Midwestern base, principals Brian Johnsen, AIA, and Sebastian Schmaling, AIA, recently finished a set of six single-family residences in Sacramento, Calif., featuring multicolored façades that nod to the neighborhood context.

Located just over 2 miles southeast of the California State Capitol building, Oak Park Housing takes its name from the gentrifying neighborhood in which it sits. Broadway, a main thoroughfare just steps west of the site, is largely a commercial strip, so the site fits within a transitional zone between larger commercial structures and more fine-scaled residential development. "It made sense to restore the grain and rhythm of the neighborhood," Schmaling says of the infill project's massing.

Indie Capital, a local developer, bought the 80-foot by 140-foot multifamily-zoned lot as one parcel, and the architects laid out the six market-rate units as side-by-side houses, with three facing the street and three facing an alley.

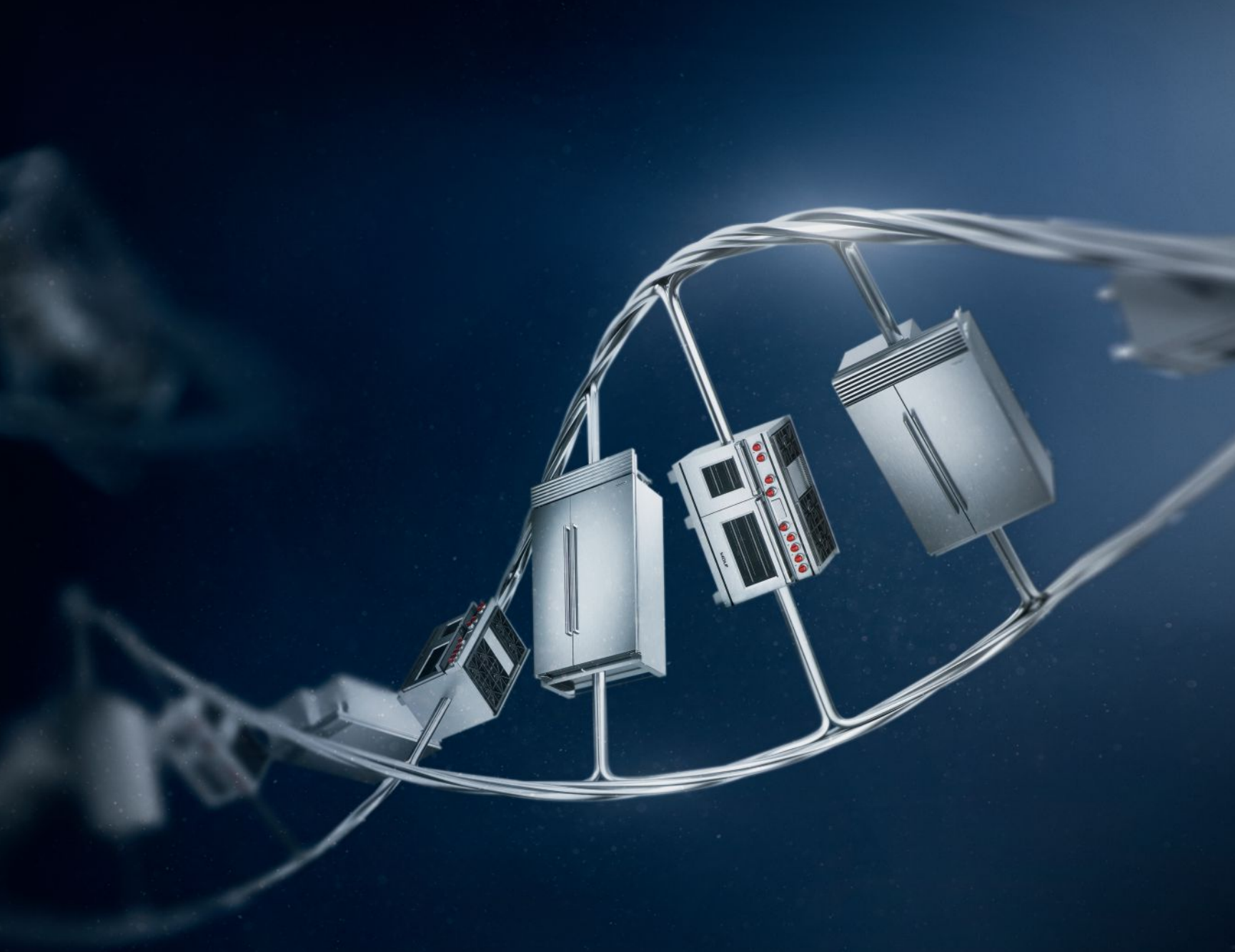
At 20 feet by 47 feet each, the two-story wood-framed houses look identical from the street, but there's a bit of variation within. In the southern units, entry, garage, and a second-story master bedroom face the street. A living/dining/kitchen area opens to a small

Colorful aluminum fins front 2nd Avenue on the site's south side.

JOHN J. MACAULAY

Project Credits
Project: Oak Park Housing, Sacramento, Calif.
Client/Owner: Indie Capital
Architect/Interior Designer/Landscape Architect/Lighting Designer: Johnsen Schmaling Architects, Milwaukee · Brian Johnsen, AIA, Sebastian Schmaling, AIA (principals-in-charge); Matt Wendorf, Ben Penlesky, P.J. Murrill, Angelina Torbica, Andrew Cesarz (project team)
Structural Engineer: Core 4 Engineering
Civil Engineer: JTS Engineering Consultants
General Contractor: Indie Capital Constructors
Fire Protection: Ultimate Fire Systems
Size: 11,679 square feet (total), 1,913 square feet (street units), 1,980 (alley units)
Cost: $1.7 million

> *Visit ARCHITECT's Project Gallery for more images of Oak Park Housing by Johnsen Schmaling Architects: bit.ly/OakParkHousing.*



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Residential:
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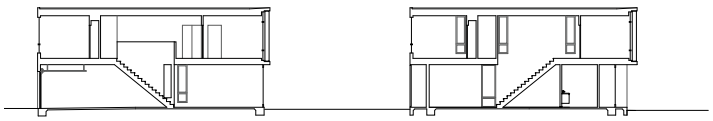
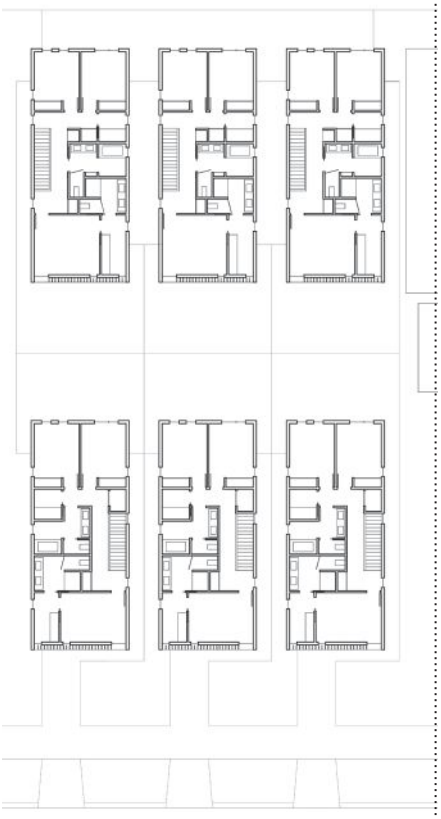


Ground-Floor Plan

Second-Floor Plan



yard, with two bedrooms overlooking the yard from above. The north units reverse the ground-floor plan—with entry and garage facing the alley on the site's north side, and the combined living/dining/kitchen space facing south toward a yard—but the second-story master bedroom on these units is on the south side. This inversion was based on two design intentions: "We didn't want the master bedroom facing the alley," Schmaling says. The designers also wanted the colorful framed opening that denotes the larger bedroom to face the street on all of the units, so that the complex would be seen as a composition of six repeating façades to passersby.

The quirky, idiosyncratic folded-aluminum fins that define the second-floor façades reflect the neighborhood, where stores stocked with colorful goods and covered in artful graffiti are the norm. "We must have looked at a hundred color schemes," Schmaling says. The architects settled on a relatively simple palette of five hues, plus off-white. They drew inspiration from the adjacent Volkswagen repair shop, which is often filled with classic VW Beetles. "Many '70s cars fall into a range—blue, but not quite; red, but not quite; a very particular orange," Schmaling says. "It's just a bit off—and our colors are similar."

The simple material palette reflects the limited budget: The exterior uses a three-coat stucco system for the dark gray volumes, a horizontally striated fiber cement board for the light-gray volumes, and colorful lacquered aluminum fins that define the upper level of the south-facing façades. The interiors are drywall, and most of the kitchen and bathroom built-ins are from IKEA.

Construction finished in December, and all six have been sold already. Sacramento's reputation as a design center pales in comparison to other California locales like Los Angeles and San Francisco, but Johnsen and Schmaling have discovered an affinity with the city. "It has the scale and vibe of Milwaukee," Schmaling says, "and it's being rediscovered."

Experience. Innovation.

BILCO Roof Hatches Add Unique Element to D.C. Housing Project

The historic buildings, monuments and scenery around Washington D.C. draw tourists from all over the world. Tenants of 32 new townhomes in the city's swanky Capitol Hill will have a unique and private vantage point to the area with individual roof hatches, offering them a perspective that is available to only a few residents of the nation's capital.

Buchanan Park is a residential development being built by Ditto Residential. It will include 41 condominiums in a redeveloped historic three-story school building that dates to 1895 and was named after James Buchanan, the nation's 15th president. Buchanan Park includes a central green, multiple outdoor gathering areas and pedestrian walkways.

The 32 three- and four-bedroom townhomes will line 13th and D Streets in Washington, surrounding the Buchanan School. Inspired by the Federal-style homes in the neighborhood, the townhomes will include brick exteriors and spacious living areas.

The architect for the townhomes, Maurice Walters, designed them to provide residents with individual access to rooftop deck areas. DJB Contracting is installing 32 thermally broken roof hatches from The BILCO Company to meet the architect's request.

"We have used BILCO roof hatches all the time," said Eric Ward, project manager for DJB, whose business has been providing roofing and related services to the Washington area for more than two decades. "We had never used the thermally broken roof hatches before this project. I think it's a good fit for the situation. It's an access point to the roof, and I like that they are pre-fabricated and pre-coated. It makes the job a lot easier."

BILCO's E-50TB thermally broken roof hatch offers a new standard in energy efficiency, making them ideal for the project at Buchanan Park. The hatch minimizes heat transfer and the effects of condensation. The unit includes a thermally broken cover and curb featuring R-20+ insulation. The unit also offers corrosion resistant aluminum construction.

"The increased R value makes this hatch superior to its competitors in the industry," Ward said. "Typically, roof hatches don't have much insulation in the cover. It's made of aluminum, too, while others are made of steel around the base. It's much lighter. I like this model because it's lighter and maintenance free."


Photo: Studio Trejo


Photo: Metin Yikar

When DJB started the project, the general contractor pushed for a quick install of the roof hatches. BILCO delivered them swiftly so that Ward and his team could meet the project timeline. While there have been other delays in the construction process, BILCO's customer service team delivered astonishingly fast. "BILCO's customer service is great," Ward said. "They did what they promised they would do. I absolutely loved working with BILCO."

Ward believes the residents of the townhomes will appreciate the roof hatches. Besides increasing energy efficiency, they will allow residents rare private access to their roofs. Most city housing projects that offer rooftop access accommodate multiple tenants, and not individual access.

"I think the hatch will work great," Ward said. "I've never seen this application before, but I think it's a great idea and tenants will find they really like the BILCO product."

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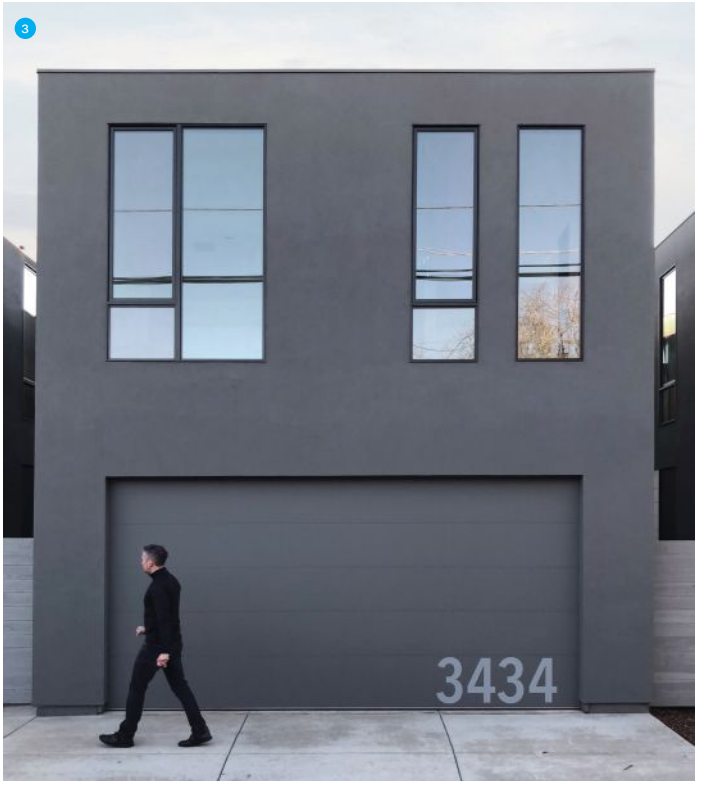

1. Aerial view of the 11,900-square-foot complex from the southwest **2.** Second-story master bedroom in one of the three southern units **3.** Alley-abutting façade on a northern unit **4.** Ground-floor kitchen featuring IKEA built-ins

JOHN J. MACAULAY

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LEARNING OBJECTIVES

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

1. Compare the key differences between light frame and mass timber structural systems and how each can contribute to sustainable and resilient design
2. Describe the applications for both light frame and mass timber structural systems and the classes of buildings where they are appropriate
3. Identify performance benefits for each system, including fire safety, seismic stability and wind resistance, as well as pertinent codes related to each
4. Examine several case studies that feature light frame and mass timber projects, all of which incorporate environmentally sensitive design

CONTINUING EDUCATION

AIA CREDIT: 1 LU/HSW
GBCI CREDIT: 1 CE HOUR

AIA COURSE NUMBER: AR032018-1
GBCI COURSE NUMBER: 0920015331

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INTRODUCTION TO LIGHT FRAME STRUCTURAL SYSTEMS

Whether designing for light frame or mass timber structural systems, project teams that opt for wood can benefit from the material's versatility, sustainable supply chain, benefits to occupants, as well as thermal, acoustic, seismic and fire performance. Wood can also help to maximize value through gains made in square footage and building height.

Light frame wood construction has long been the go-to framing choice for low-rise and, increasingly, mid-rise residential and commercial buildings. Cost-effectiveness, material use efficiency, ease of assembly, minimal environmental impact and the ready availability of labor and materials make light frame construction the most common type of wood construction in North America. Typically nail-assembled light frame construction uses a formulaic combination of dimensional lumber, I-joists, trusses, structural composite lumber, and plywood and oriented strand board (OSB) decking and sheathing for floors, walls and roof decks.

While mass timber structures are often built as components off site and assembled at the project site, light frame construction typically occurs entirely on site. Increasingly, however, elements of light frame buildings are fabricated off site and assembled on the job. Off-site construction offers greater control over construction conditions and improved safety oversight for all material types while requiring less skilled labor on site and contributing to faster construction timelines.

Light Frame Roofs and Floors

Typical light frame roof and floor systems consist of repetitive framing members such as rafters or trusses with wood structural panel decking. Framing components include solid sawn dimension lumber, I-joists, structural composite lumber, and parallel chord and pitched trusses. OSB and plywood are used interchangeably as decking material.

As part of the lateral resisting system, roofs and floors are designed as horizontal diaphragms and may require special considerations for high loads or irregularly shaped structures. Diaphragm design can also affect the structure's load distribution, so in making an assumption as to whether a diaphragm is flexible or rigid, it is important to analyze the lateral deflections.

Typical light frame roof and floor systems consist of repetitive framing members such as rafters or trusses with wood structural panel decking. Photo courtesy of Think Wood

Roofs shed water and act as part of the thermal building envelope. In many non-residential applications, low-slope roofs are common and may need special attention to ensure building longevity. How the roof is insulated can often affect the building's thermal performance. Prescriptive paths within the energy codes prefer continuous insulation, but performance paths offer opportunities for other insulation techniques.

Light Frame Walls

Typical light frame walls consist of studs spaced at 12 to 24 inches on center (o.c.) with a double top plate and single bottom plate, and are often sheathed with wood structural panels. Construction depends on the amount of load bearing on the wall, its height and whether it is part of the lateral force resisting system.

Walls higher than 12 feet are often designed as tall walls and may require additional engineering.

Shear walls refer to wall components that participate in the lateral resistance of the structure and can be designed a number of ways; methods include segmented, perforated and force transfer around openings.

APPROACHES TO LIGHT FRAME CONSTRUCTION

There are several approaches to light frame wood construction and each is suited for a specific application, most often in the Type III (4-5 stories) and Type V (2-3 stories) categories. These approaches are distinguished by the wall-to-floor connection and include platform, balloon, semi-balloon, plank and beam, and truss-framed.

Platform

In platform construction the floors are framed separately and the walls of the story beneath each new level bear the load. The rim board, which is typically made of structural composite lumber, transfers lateral and vertical loads. Framing members are typically spaced between 12 and 24 inches o.c. Due to its relative ease of building, platform framing is the most common form of light frame construction for Type VA residential buildings.

Balloon

In balloon framing vertical structural members extend from the foundation to the rafters and framing members are spaced between 12 and 24 inches o.c. The wall extends two or more stories and the floor is hung off a ledger connected to the wall. Balloon framing is often used in industrial and retail applications where a parapet is needed.

Semi-Balloon

Often used for multistory projects due to its fire-management abilities, semi-balloon framing sees floors suspended from the double top plates of the walls below them, with the walls stacked directly on the wall below. This approach limits shrinkage throughout the building, although it requires more hardware than other framing types. Framing members are typically spaced between 12 and 24 inches o.c. Semi-balloon framing is an alternative to platform framing for Type VA and Type IIIA buildings.

Plank-and-Beam

Historically used in heavy timber buildings, plank-and-beam construction has since been adapted for light frame projects. It uses larger wood members and spaces them more widely than does platform or balloon construction. This type of framing sees two-inch subfloors or roofs on post-or pier-supported beams spaced up to eight feet. Additional framing allows for interior and exterior cladding and finishes.

Truss-Framed

Truss-framed light frame construction employs engineered wood systems made up of roof and floor trusses as well as wall studs for additional strength. These assemblies are fabricated off site, offering the additional advantages previously discussed. Truss-framed systems also boast greater resilience, making them particularly well suited for areas that experience high winds. Spacing of 24 inches between frames is possible. A lack of headers, floor beams and interior columns contributes to material and cost savings, maximizing value with gains in square footage and height.

DESCRIPTION OF A MASS TIMBER SYSTEM

Mass timber is a category of framing styles typically characterized by the use of large solid wood panels for wall, floor and roof construction. Building with mass timber offers a reduced carbon footprint, construction efficiency, fire and life safety and occupant well-being. We will discuss these performance benefits in more detail later in the course, but let's first review the primary types of mass timber construction.

LIGHT FRAME CASE STUDY

The Yobi represents a very important housing type, providing private market affordable housing in a desirable location, designed to promote community and featuring a carbon footprint per occupant that is leaps and bounds ahead of conventional housing. Yobi Microhousing | Neiman Taber Architects. Photo courtesy of William P. Wright

The commons provides a public counterpart to the private rooms, a place to bring people together for movie night, weekend dinners and group meetings, to build the social glue that transforms living together into a positive, desirable experience. Photo courtesy of William P. Wright

Yobi Apartments—Reinventing Microhousing

The Yobi begins with a simple assertion that a large number of people living together in a communal setting deserve architecture that is designed from the ground up to build community among residents. Inspired by community space, the Yobi is a different kind of microhousing project than what has come before. Whereas earlier micro projects were designed as a cluster of townhouses with multiple entries and stairwells, the Yobi is designed as a single building with one entry at the street. The ground floor features a generous commons with a lounge, fireplace, kitchen, study room, laundry and media area. The route to the private rooms goes through the commons, activating the space and creating opportunity for chance encounters.

The commons provides a public counterpart to the private rooms, a place to bring people together for movie night, weekend dinners and group meetings, to build the social glue that transforms living together into a positive, desirable experience. While the commons on the first floor is a living room at the building scale, the kitchen provided on all other levels acts as a "pajama commons," where immediate neighbors can casually interact. This layering of public and private space fulfills the need for a sense of community, as well as solitude, when desired.

Congregate microhousing development is widely recognized as the least expensive form of housing that the market can produce, with typical rents ranging from 45 percent to 65 percent of area median income (about $700 to $1000 per month). Seattle's Housing Authority and Livability Agenda (HALA) committee recognized congregate microhousing as an important tool that can help cities with housing supply, affordability and access to desirable neighborhoods for low-income renters. The Yobi is a new prototype for how to build this housing in a way that promotes livability as well.

The Yobi is certified Built Green 4 Star, which means that it has met performance criteria over a broad range of categories, including stormwater management, water use, energy use, indoor air quality and waste reduction. Conventional wood frame construction with dimension lumber shear walls combined with high insulation levels and sealed openings helped create a high-performance exterior envelope. The Yobi has a number of additional energy saving features, including spray foam insulation, passive solar design, high efficiency lighting and high efficiency gas boilers. All together, the project has an energy use budget that is 60 percent of what is required under the current energy code. When you take space efficiency into account, you start to see just how energy efficient small apartments can be. A person living in the Yobi uses roughly one-third of the energy of someone living in a conventionally designed apartment building.

Glulam

Glue-laminated timber (glulam) is a structural engineered wood element commonly used for beams and columns in residential and commercial applications. To form a glulam component, dimension lumber wood laminations are positioned according to their stress-rated performance characteristics. In most cases, the strongest laminations sandwich the beam in order to absorb stress proportionally and ensure the member's longevity. The laminations are jointed end to end, allowing for long spans, and are bonded with a durable, moisture-resistant adhesive. The laminations' grains run parallel with the member's length to improve its strength.

Glulam is stronger than steel at comparable weights, and it is stronger and stiffer than dimension lumber, according to APA—The Engineered Wood Association. That makes the material a cost-effective choice for long, structural spans and tall columns with minimal need for additional support. Glulam is a highly visible form of mass timber in contemporary projects, with long spans framing signature designs that have been left exposed to take advantage of wood's natural aesthetic. Glulam can be used in interior and exterior applications, as several manufacturers sell glulam products with adhesives that can withstand moisture and wear from use outdoors.

NLT gets its strength and durability from the nails that fasten individual dimension lumber, stacked on edge, into a single structural element. Photo courtesy of Think Wood

NLT

Nail-laminated timber (NLT or nail-lam) is a century-old construction method that is undergoing a design renaissance. It can be found today in many historical buildings as well as in compelling new projects of all sizes, where its structural performance and design elegance come together to create inspiring spaces.

NLT gets its strength and durability from the nails that fasten individual dimension lumber, stacked on edge into a single structural element. Applications for NLT include flooring, decking, roofing and walls, as well as elevator and stair shafts. Because NLT is made of wood, it offers a consistent and attractive appearance for decorative or exposed-to-view applications.

CLT

Cross-laminated timber (CLT) is a relatively new structural engineered wood panel system that is gaining popularity in the U.S. after being widely adopted in Europe. CLT panels are made of layers of lumber boards (usually three, five or seven) stacked crosswise at 90-degree angles and glued into place. The panels can be manufactured at custom dimensions, though transportation restrictions dictate their length.

CLT is the basis of the tall wood movement, as the material's high strength, dimensional stability and rigidity allow it to be used in mid- and high-rise construction. Photo courtesy of Structurlam

Applications for CLT include floors, walls and roofing. The panels' ability to resist high racking and compressive forces makes them especially cost effective for multistory and long-span diaphragm applications. CLT is the basis of the tall wood movement, as the material's high strength, dimensional stability and rigidity allow it to be used in mid- and high-rise construction.

DLT

Dowel-laminated timber (DLT) is common in Europe and is gaining traction in the U.S. for its ease of use with computer-controlled (CNC) machinery such as lathes, routers and mills and its all-wood composition. DLT is similar to NLT but instead of nails or screws, DLT uses wood dowels to join laminations. To form DLT members softwood lumber panels are stacked like NLT and are friction-fit together with hardwood dowels. Friction fit, achieved by the differing moisture content of the softwood panels and the hardwood dowels, affords additional dimensional stability. The dowels can be inserted diagonally, offering additional resistance. Because DLT does not use nails or screws it is easier and safer to mill and route and the lack of an adhesive is also attractive for projects looking to maximize the use of wood.

In application, DLT performs similarly to glulam and NLT. Because its grains run in one direction, DLT is a next-generation mass timber product that allows for significant architectural flexibility and is well-suited for horizontal spans such as flooring and roofing applications.

QUIZ

1. True or False: Typically nail-assembled, mass timber construction uses a formulaic combination of dimensional lumber, I-joists, trusses, structural composite lumber and plywood and OSB decking and sheathing for floors, walls and roof decks.

2. Which of the following is often built as components off site and assembled at the project site?
   a. Light frame structural systems
   b. Mass timber structural systems

3. Which of the following approaches to light frame construction is described as vertical structural members that extend from the foundation to the rafters and framing members spaced between 12 and 24 inches o.c.?
   a. Platform
   b. Balloon
   c. Semi-balloon
   d. Plank-and-beam
   e. Truss-framed

4. Which type of mass timber structural member is made of layers of lumber boards (usually three, five or seven) stacked crosswise at 90-degree angles and glued into place?
   a. Glulam
   b. NLT
   c. CLT
   d. DLT

5. True or False: The International Building Code (IBC) permits up to six stories of wood framed construction depending on building type and the use of concrete-and-steel podiums allows light frame construction to be used to create even taller buildings.

6. Mass timber offers a low-carbon alternative to steel, concrete and masonry for many applications and is typically used in _____ construction.
   a. Type I
   b. Type II
   c. Type III
   d. Type IV
   e. Type V

7. True or False: A tall wood building is a minimum of 100 feet in height.

8. Which of the following contributes to the sustainability of wood buildings?
   a. Reduced carbon footprint
   b. Long life cycle
   c. Resiliency
   d. All of the above

9. True or False: The main difference between the fire resistance of light frame and mass timber structural systems is that for mass timber the fire resistance is inherent in the material (mass of product offers fire resistance), while light frame systems require active fire protection measures such as sprinklers, fire watch during construction, firewalls, etc.

10. True or False: Wood's elasticity and strength give buildings an advantage during high-wind events.

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The Expert Generalist

Complex projects require creative solutions.

Pamela Sams, AIA, is the southeast design realization leader at Gensler in Washington, D.C., and she has her hands in several major projects at the same time. That's a big departure from her theory-heavy master's program at Princeton University but something Sams has been building toward over a lengthy career that included serving as 2016–17 chair of the AIA Building Performance Knowledge Community. "I had this feeling I would thrive working on big projects," she says, and a résumé that includes the western expansion to Washington Dulles International Airport and a forensic laboratory campus for the U.S. Department of Justice indicates that is indeed the case.

As told to Steve Cimino

My focus on building performance mirrors the industry's emerging focus on sustainability. At a certain point in my career, I tasked myself to become more knowledgeable about building science. To me, building enclosure performance and material selection are the two areas where architects have the largest impact on the sustainability of a project. They're squarely within the architect's area of expertise, and we should be leading those efforts in every single project we do. I believe very strongly that all architects should have a good and fundamental base in building science knowledge.

Our clients should expect us to be delivering something other than base minimum when it comes to energy performance in their spaces. Building codes are becoming more stringent, but they're still very attainable and they still represent minimums. A firm like Gensler—or any firm that prides itself on good project design—should strive for a baseline of 30 percent above minimum. That should be the starting point for everyone. That's not a high mark to have to meet.

What I like about the work I do is that there are a lot of opportunities to learn. I think of myself as an expert generalist. I love working on these complex projects because the team has a lot more flexibility in crafting the solutions to particular aspects of the problems being solved. Such large projects are very engaging and immersive, which I need. I could never be a part-time architect; I'd be terrible at it.

These days, I don't always have a leading role on only one project; sometimes I play a support role on several projects, as a technical resource for all these teams simultaneously. That's a new challenge for me; over the last 20 years, I was only assigned to one project at a time. Being more of a resource requires a different kind of thoughtfulness and creativity; I have to look at the teams, understand what they need, and try to be exactly that. But that's why I came to this firm: to challenge myself in a new environment and push myself. To step through that door, even if I don't know what's on the other side. AIA

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When CBGB became a John Varvatos shop, New Yorkers mourned the end of the Bowery. Notorious as the city's skid row in the 19th century and countercultural zone through the 20th, the Bowery's rapid gentrification has left a strange mix of old and new. Among the new constructions, the Bowery boasts buildings by well-known architecture firms and up-and-comers. The effect is a series of connected neighborhoods that might be pricier than ever, but remain as varied as before. Interested? Sign up for this tour at *conferenceonarchitecture.com*.

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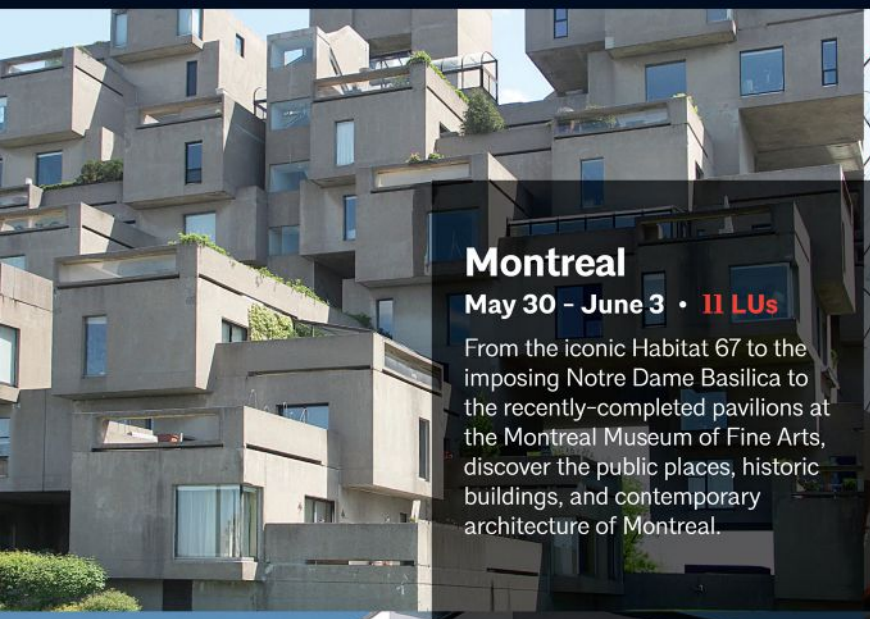

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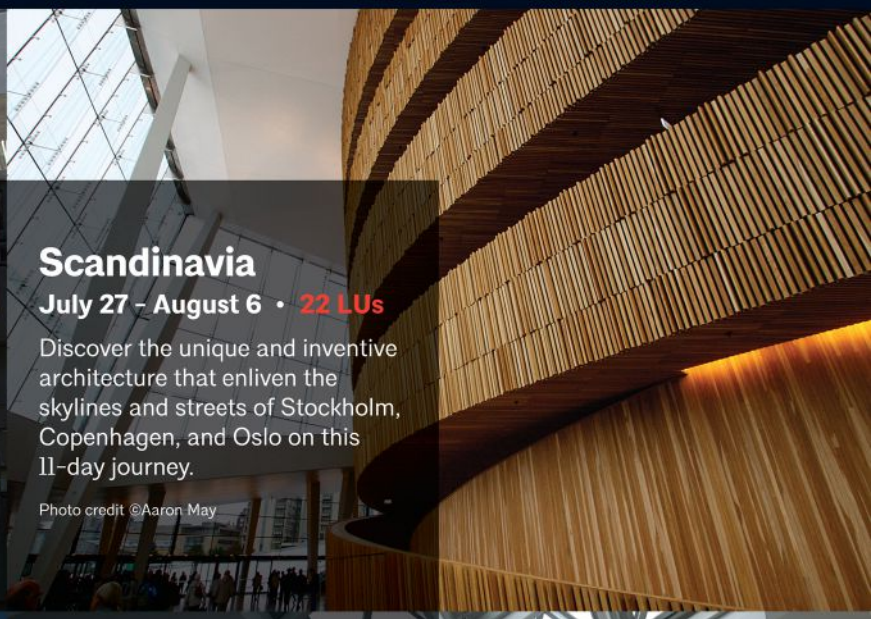

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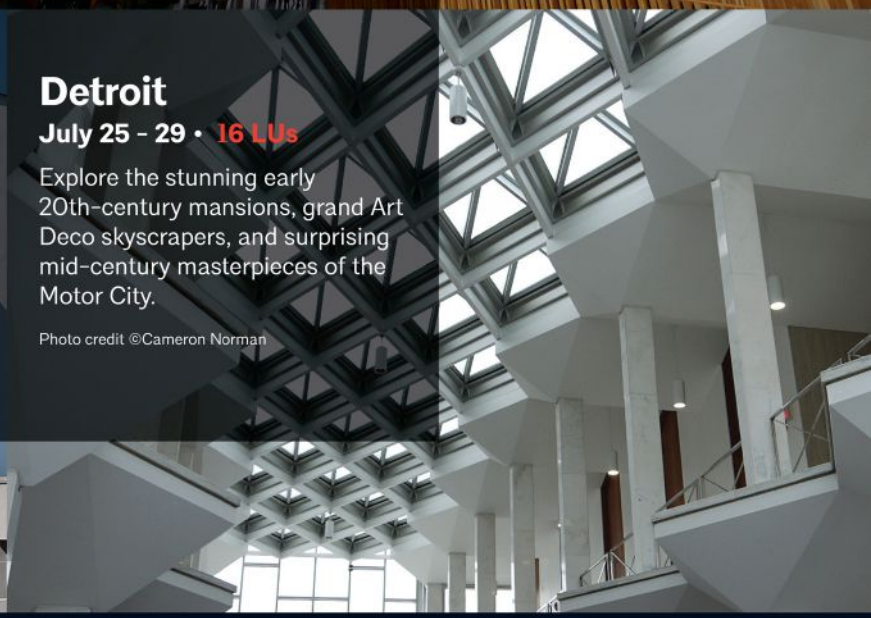

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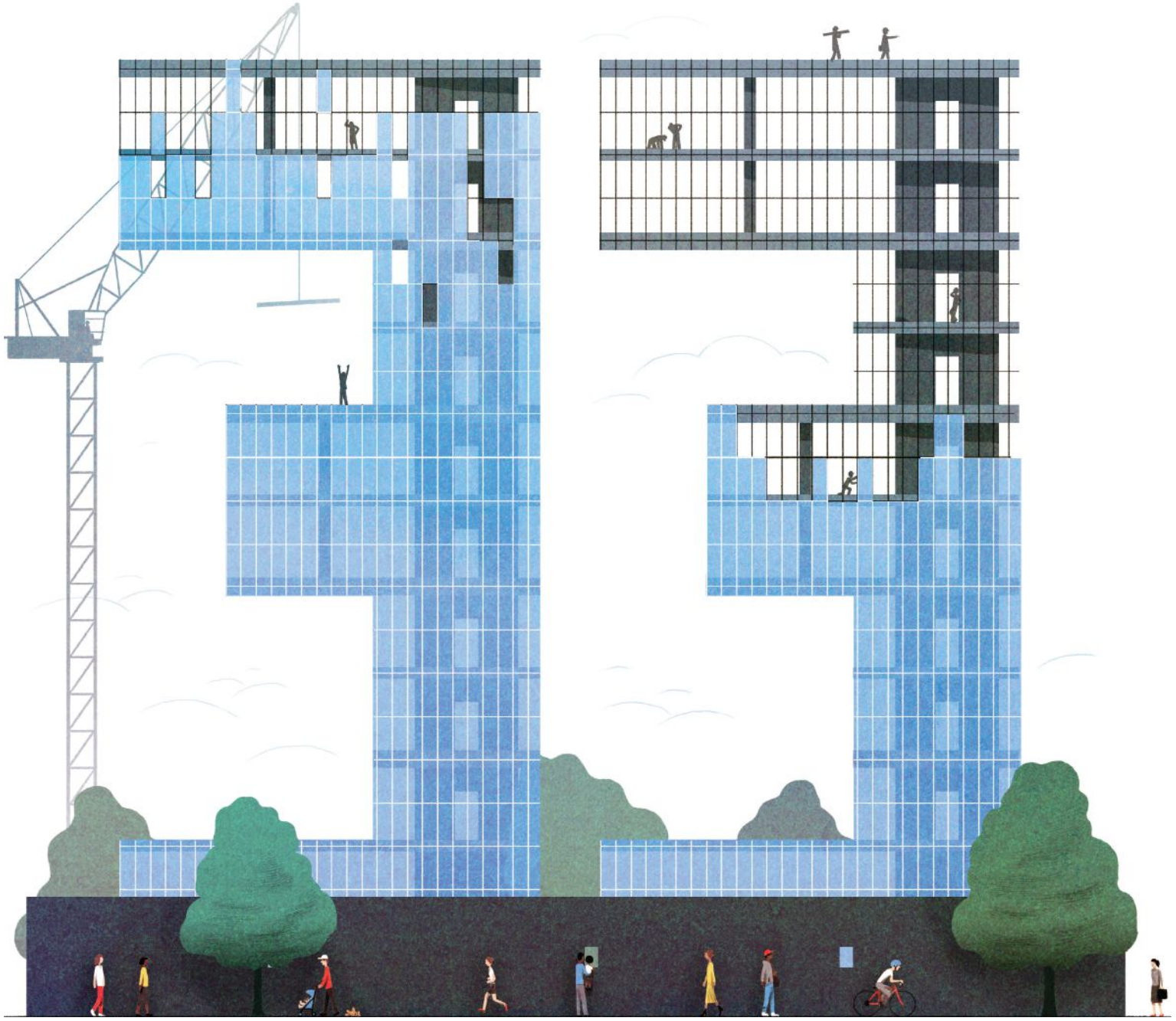


ILLUSTRATION: MICHAEL KIRKHAM

33 Percent of Firm CEO/President Compensation Comes from Nonguaranteed Pay

Up from 30 percent in 2015, a larger share of CEO/president pay at architecture firms is coming from nonguaranteed income sources such as bonuses, profit-sharing, and other cash compensation, according to the 2017 AIA Compensation Report. These increases were not universal; for example, they were more dominant for leaders at mid-sized firms (20 to 49 employees) and the largest firms (100+ employees) with 8- and 10-point jumps, respectively.

Director of operations positions also saw large increases in the share of their compensation coming from non-guaranteed sources—up to one-fifth of their salary in 2017 from 14 percent in 2015. The increases came from firms with more than 20 employees.

Additionally, almost all positions saw base compensation pay increases. This combination of guaranteed and non-guaranteed income points to a more prosperous profession over the last two years. **AIA**

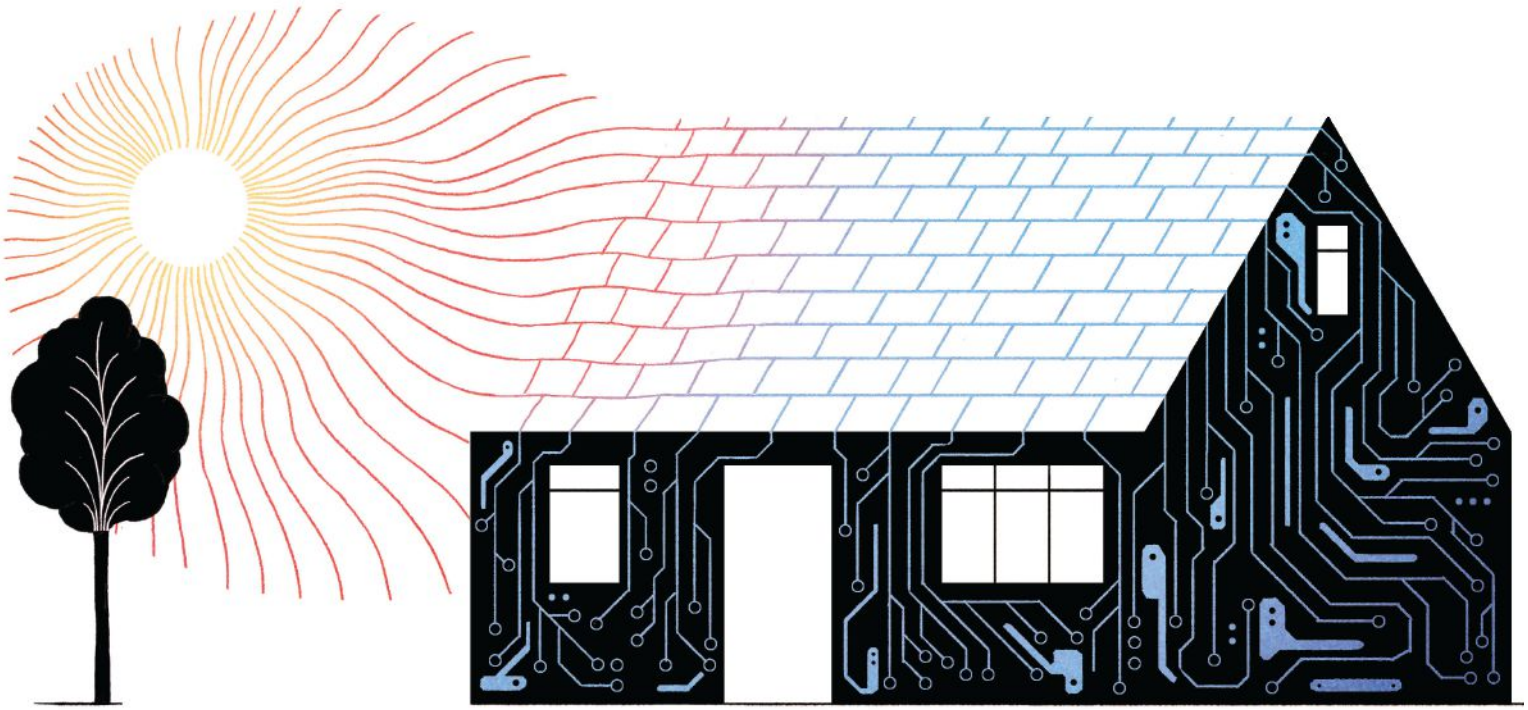
—Michele Russo

AIAFeature

Commodity, Solar Power, and Delight

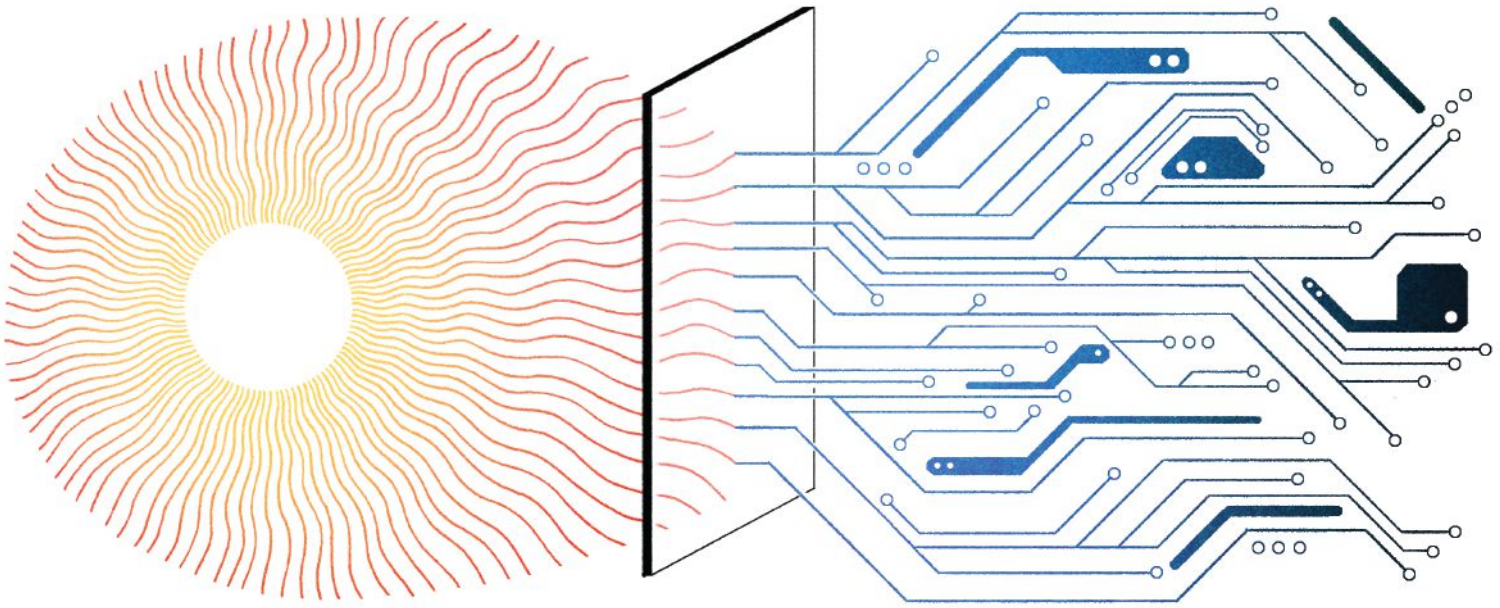
Harvesting the sun's power to create net-zero (or even net-positive) energy is cheaper than ever now. So why aren't more architects doing it?

It probably comes as no surprise that solar power is currently the least-used energy source in the United States. It has had a lot of catching up to do. According to the Green Building Alliance, solar technology powers only 1 percent of the nation's total energy consumption. But thanks in part to subsidies like the Solar Investment Tax Credit, solar power's star is on the rise, and government data estimate that solar harvesting across the U.S. has experienced an average growth rate of more than 50 percent per year in the last decade.



ILLUSTRATIONS: MICHAEL KIRKHAM

TESLA SOLAR ROOF TILE: Tesla has spent years developing roof tiles with built-in solar panels, and full-scale production started in early 2018. According to the company, the roof tiles will cost $21.85 per square foot. Standard asphalt shingles can cost anywhere from $12 to $40 per square foot.



SOLAR WINDOWS: Glass windows covered with an electricity-generating coating remain transparent, resulting in the world's smallest functional solar cells (1 square millimeter for a single cell). They measure less than one-fourth the size of a grain of rice. Currently, the coating is able to produce a solar conversion efficiency close to 1 percent, but researchers are hoping that it will reach efficiencies above 5 percent when fully optimized.

As solar technology continues to become more efficient and more affordable, architects and other professionals are beginning to think more holistically about how solar technology can be incorporated into the design process from the beginning.

"Oftentimes solar panels might be tacked on as an afterthought after the building has already been designed, and that's pretty unattractive, generally," says Anthony Denzer, a professor of civil and architectural engineering at the University of Wyoming and a member of the university's Building Energy Research Group (UW BERG).

Denzer and his colleague Jon Gardzelewski, AIA, believe that solar power might be more widely implemented by architects in both residential and commercial buildings if it were not only more affordable but also more aesthetically appealing. To that end, they've created an "architectural taxonomy" for incorporating solar technology into the building design phase.

"If we're going to boil down our conclusions to a really trite sentence or two, it would be that architects can think about solar panels as a building material, rather than a piece of equipment that's just thrown on the roof," Denzer says. The taxonomy includes concepts like planar composition, in the style of Ludwig Mies van der Rohe's Barcelona Pavilion, to better accommodate panels; another concept is to adapt a building's shape to the path of the sun. Even if a client isn't planning on installing solar from the get-go, the taxonomy can help building owners to incorporate solar panels more aesthetically in the future.

A large part of the choice to incorporate solar power into a building's energy usage for many clients, of course, comes down to money: what they can afford to implement and what the projected payoff will be. The cost of solar panels is at an all-time low, but there's plenty of room for innovation when it comes to making the installation costs more practical and affordable, and therefore more accessible.

"The panels themselves have really fallen in price the last five years or so—the labor has not," says Gardzelewski. Currently, a solar panel costs about $0.50 to $0.75 per watt, making a 5-kilowatt-hour system—a standard array for a single-family home—cost anywhere from $2,500 to $37,500 for the panels alone. In terms of return on investment, a 2010 analysis from Brookhaven National Laboratory found that the energy payback time (EPBT) of one solar panel is about six months, a figure that has most likely fallen as prices continue to decrease. Installation costs are more variable and, of course, consist of more than just the panels themselves. A fully functioning photovoltaic system involves at least four components—and the know-how to put them all together.

"When the cost of LED lightbulbs came down, people could just buy them and screw in a lightbulb," says Denzer. But even though the panels have decreased in cost, their installation "hasn't yet become do-it-yourself."

The installation price tag can be mitigated if the process is rolled into the construction process. In the case of a custom home for a private client overlooking Roaring Fork Valley in Aspen, Colo., local firm Cottle Carr Yaw Architects (CCY) incorporated a 7.5-kilowatt-hour solar array as part of the client's larger sustainability goals for the structure. According to the house's owner, the solar array, combined with a geothermal loop field and more passive strategies for controlling the amount of sunlight the house receives, allows the structure to produce about 70 percent of the energy it consumes.

"There are very few of our residential projects right now, in Aspen or Pitkin County [where Aspen is located], which don't have solar arrays," says CCY's Todd Kennedy, AIA, noting that many of the residences in the region are occupied only seasonally. "A solar array can continue to produce [and store] energy, even when they're not occupied," Kennedy says. "So in a lot of partially occupied structures, it's a pretty good strategy."

Another recurring theme in how solar power is increasingly being incorporated into design is a sense of social and environmental responsibility—a perspective available to only a relatively privileged few—rather than an overarching concern for the bottom line. This ethos is prevalent in the homes in and around Aspen designed by CCY as well as larger-scale structures like the 62,000-square-foot home of the American Geophysical Union (AGU) in Washington, D.C. This circa-1994 building is currently being renovated by Hickok Cole Architects—with the goal of transforming it into a net-zero structure, one of only a few dozen in the country—by the spring of 2018.

"The AGU wants to be a catalyst for showing others the way," says Yolanda Cole, FAIA, senior principal at Hickok Cole. "They wanted to be targeting net-zero energy, so that other people will do it, too."

AIA Feature

CONTINUED

Since the largest concentrations of net-zero buildings currently exist in sun-drenched states like California and Florida, achieving net-zero status for an urban building located in a historic district in a temperate area of the United States has posed its own unique set of challenges. A 693-panel photovoltaic array on top of the five-story building remains invisible from the street, satisfying the requirements of the surrounding historic Dupont Circle neighborhood. In addition, 24 panels are mounted vertically on the south façade at the roof so, ideally, the building will produce more energy than it consumes.

"The building was operating at about 63.7 EUI [energy use intensity, or the energy use per square foot of a building]," says Roger Frechette III, managing principal of Interface Engineering. "We needed to reduce that significantly to be able to get to that net-zero condition." When the building is completed, in the spring of 2018, Frechette's goal is to have it produce 13 EUI with the use of solar while consuming 11 or 12.4 EUI, thereby making it an even rarer thing: a net-positive building that gives energy back to the grid.

One potentially industry-changing innovation on the horizon is Tesla's solar roof, which could—Tesla hopes—make solar a feasible option for every homeowner at some point in the future. The Tesla system uses custom solar roof tiles to generate power for a given structure and, in combination with the proprietary Powerwall battery, is poised to be a way to think about solar power as an integral part of a structure, rather than a premium add-on. However, the technology is still too new and pricey to make it a pragmatic choice for most consumers.

"People all across the board are very excited about the solar roof, and about the battery—it gives you more control, and it's a smarter system," says UW BERG's Denzer. "The only disadvantage I'm seeing is that we don't have a lot of examples yet. People are in this holding pattern for the technology to mature." Consumers who might otherwise be installing standard solar arrays are holding out for the Tesla technology to become more accessible.

Gardzelewski likens the recent advances in solar technology, such as the Tesla Powerwall, to owning a luxury car before there were paved roads. "At some point, the technology and infrastructure aligned," he says. "I think we're at that place where the technology and infrastructure are slightly mismatched." AIA

—Katherine Flynn

AIA Future

COURTESY OF THE LOCAL HISTORY ROOM, ADRIANCE PUBLIC LIBRARY, POUGHKEEPSIE, NY

Poughkeepsie's Main Mall was intended to thwart the threat of suburban-style strip malls and preserve the city's historic Main Street shopping district. Instead, its design and inaccessibility alienated users.

The Problem with Poughkeepsie

MASS Design's Michael Murphy wants to be the catalyst for his hometown.

In the late 1950s, progress was coming for Poughkeepsie.

The small city of roughly 30,000, 80 miles north of New York City, spills eastward from the Hudson River, its streets forming a network of tributaries that trickle out like an outstretched hand. Its cityscape typifies the architectural eclecticism of ascendant America: a Main Street of mid-rise, densely packed Italianate and cast-iron façades; neighborhoods of palatial Queen Anne and Second Empire mansions, and others full of more humble Federal and Victorian homes; and heavy red-brick factory buildings scattered about.

This historic landscape was challenged in the immediate postwar period. IBM set up shop on a 450-acre campus just south of the city, and the company was expanding its footprint to accommodate its growing workforce. Surrounding municipalities—and Dutchess County, of which the City of Poughkeepsie is the seat—were aggressive in reshaping zoning to feed the hunger for suburban-style housing and high-speed access roads. In 1958, Poughkeepsie retained the planning firm Candeub, Fleissig & Associates, a leading consultancy of the time, to envision a comprehensive plan that would remedy the city's supposed blight and traffic, and graft a new, more modern skin onto its traditional urban form.

"Poughkeepsie received more urban renewal funds per person than any other city," says Harvey Flad, emeritus professor of geography at Vassar College, which sits just outside the city's border. "[The city] was able to do a lot with that money, especially tearing down; but what they didn't do, of course, was rebuild a whole lot."

In the age of automobiles and horizontal expansion, Poughkeepsie declared war on traffic. Route 9, the main north–south thoroughfare at the city's western edge, was converted into a freestanding highway, cutting the city off from the riverfront while demolishing some 400 homes. The construction of the East–West Arterial, essentially a forked intra-city highway that pinches the downtown in between two one-directional routes, necessitated massive demolitions on the north and south sides of the city.

This was coupled with the creation of Main Mall, an at-the-time progressive idea to pedestrianize Main Street to stave off the threat of Victor Gruen–esque malls on the suburban fringe. Main Mall closed off the city's main artery to all traffic.

"These arterials completely surround Main Street," says Flad, co-author of *Main Street to Mainframes: Landscape and Social Change*

in Poughkeepsie (SUNY Press, 2010). "What you have is vehicles going through the city and not to Main. And between Main Street and the arterials, almost all the buildings were torn down for parking lots."

Poughkeepsie's core became encased like a jewel wrapped in ribbons of concrete.

Architect Michael Murphy, co-founder of the Boston-based nonprofit architecture firm MASS Design, grew up against this backdrop. Known for their "healing" work—such as the proposal for the Kigali Genocide Memorial in Rwanda and proposals for the National Memorial for Peace and Justice in Montgomery, Ala., that commemorates the more than 4,000 victims of lynching—MASS's mission is built on being attuned to the social power embedded in architecture and infrastructure, and to inculcating a publicly informed stance on any design. For Murphy, also an adjunct assistant professor at the Columbia University Graduate School of Architecture, Planning and Preservation (GSAPP), urban renewal's most lasting legacy on his hometown has been to sever its historic memory and cast a pall over its perception of place.

"It's striking how severe these projects were," Murphy says. "The shadows these projects cast on the city were both extreme and banal. By that I mean it's so car-centric that people drive through the city and don't notice the historic fabric that once existed; there's a perception that these arterials have always been there. The memory of this infrastructure has been removed, which has kept it from being a mobilizing force."

Last summer, MASS opened the Hudson Valley Design Lab (HVDL), an annex in downtown Poughkeepsie that houses both an office and public storefront.

"We're here as a catalyst, connector, a partner," Murphy says. MASS's goal is to provide a design framework for the city to reclaim the perception of Poughkeepsie's intact assets—such as direct transportation on the Metro-North railroad to New York City—and anchor institutions—of which there are many either within or immediately outside of the city, including Vassar and Marist colleges, Dutchess Community College, and the Culinary Institute of America. Through the HVDL, MASS is aiming to reframe the pervasive narrative of Poughkeepsie as a place "where the future never came." Chris Kroner, HVDL senior project manager, describes the HVDL storefront almost as an extension of the street, a place of community engagement and exchange, "to welcome people in and program it more completely."

In addition to the public gallery, MASS's HVDL is looking at three specific projects within the city: reimagining the defunct cisterns in College Hill Park; redesigning the hazardous Creek Road roundabout intersection; and increasing access along the Fall Kill creek.

A resulting feature of Poughkeepsie's urban renewal—on top of the vehicular traffic that bypassed downtown and the Main Mall's eventual failure (it was decommissioned in 2001)—was to outline in asphalt the city's economic and racial divisions. From 1970 to the present day, neighborhoods north of the East-West Arterial have been heavily African-American, some more than 60 percent, while certain neighborhoods to the south have been less than 10 percent. (Since the late 1990s, the city has seen a healthy influx of immigrants from Oaxaca, Mexico, into its core.) As of 2015, the city had a poverty rate of 24 percent, nearly 1.5 times the average in New York State.

Urban renewal itself didn't cause (nor was it designed to exacerbate) poverty, but it did erect concrete barriers toward mitigating poverty's effects. This worked by concentrating poverty, thereby cutting off neighborhoods from capital, but also by devaluing neighborhood assets, making them susceptible to overdevelopment as market conditions change. This dynamic amplifies the vulnerability of poor neighborhood residents to development if and when it comes—a symptom of a city operating without a functioning market.

"Poughkeepsie is a perfect example of a place abandoned by the marketplace," Murphy says. He and Kroner envision MASS providing design advocacy to help stem this struggle.

COURTESY OF POUGHKEEPSIE JOURNAL PHOTOGRAPHER SPENCER AINSLEY

Waterfront aerial. Poughkeepsie's urban renewal projects encased the city's core like a jewel in ribbons of concrete.

AIAFuture

CONTINUED

"There is the emergence of new organizational typologies that are both public and private, of which MASS is one, and a benefit of that is that there's public accountability as part of [our] charter," Murphy says. "That means an ability to both navigate and circumvent market forces, with grant dollars and predevelopment dollars that are necessary to catalyze or seed a market, but also resist a market that's out of control."

MASS's presence is but one domino of mobilization as a larger awareness of urban renewal's historically negative effects takes hold. Paul Hesse, community development coordinator for the Dutchess County Department of Planning and Development, works exclusively on issues relating to the city. He speaks encouragingly about the conversations taking place between the city, county, and a multitude of motivated organizations while acknowledging the pace to implement real change is incremental.

"The conversation happening just around the arterials has been around for a long time," he says, referencing a transportation study done in 1997. In 2014, the city adopted the Poughkeepsie City Center Revitalization Plan, proposed by Kevin Dwarka of the Pace University Land Use Law Center. In 2016, the city worked with Sam Schwartz Engineering and the Street Plans Collaborative to test out a complete street concept on Market Street. Now Columbia University GSAPP's Hudson Valley Initiative, MASS's HVDL (whose last exhibit showcased GSAPP students' work), the local nonprofit Hudson River Housing's Middle Main Initiative, and others all have projects percolating.

"It creates a better environment with all of these institutional partners," says Hesse, who notes that the City Planning Board has asked MASS to serve as an architectural and planning review organization for proposed projects. "It's a way to say, 'architecture matters,' and bring their community ethos into the review."

Sarah Salem, a Poughkeepsie native and a first-term city councilmember who's an advocate for communication between community organizations, "especially before we start designing things," sees the HVDL as a "great resource filling in gaps where other organizations or nonprofits don't have capacity."

"There's a lot of energy right now to revitalize the city," Salem says. "More people, more organizations are rowing in the same direction. We've got a real chance at doing redevelopment right." AIA

—Ben Schulman

AIAPerspective

PHOTOGRAPHY: CARL BOWER

Architects of Advocacy

How AIA members influenced the Tax Cuts and Jobs Act of 2017.

In the closing weeks of 2017, the U.S. Congress passed Public Law No. 115-97, the Tax Cuts and Jobs Act of 2017, the most sweeping alterations to the Tax Code since 1986. The bill took shape behind closed doors. No hearings were held. Its final form was negotiated under the budget reconciliation process by a joint House–Senate conference committee.

Despite the cloistered process, the voices of architects were heard. Notably, contrary to earlier versions, the final bill restored (though modified) historic tax credits and provided tax parity for "pass-through" entities like S corporations and partnerships. The AIA's advocacy strategy and efforts were cited in numerous publications, including *The New York Times*, *The Wall Street Journal*, and *Politico*, which stated: "The American Institute of Architects ... started reaching out to its members in districts represented by the House conferees shortly after they were named this week and urging them to call their lawmakers."

While it is too soon to know the long-term impact of 115-97, it is important to acknowledge the influence your letters and calls to legislators across the nation had, as well as the expert guidance that the AIA's Government Relations and Advocacy team had on the outcome. Together, we made a difference under difficult circumstances.

Our credibility throughout this legislative process was enhanced by our profession's overwhelmingly favorable reputation. We come from every region and have allies on both sides of the political aisle. We work closely with business leaders from every field, and with community leaders from every city and town. We represent thousands of large and small businesses that create good jobs. Indeed, today architecture leads all fields in the percentage of new graduates finding full-time employment (over 96 percent). Architectural billings—documented in the AIA's Architecture Billings Index (ABI)—are viewed as a leading indicator of trends in the $1 trillion U.S. construction industry.

Moving forward, we are well-positioned to play an even stronger role in advocating for our profession at the federal and state levels. According to AIA chief economist Kermit Baker, HON. AIA, "there will be a projected need for approximately 25,000 new architecture positions over the coming decade." We must work even harder now at engaging and inspiring the next generation of architects to become strong advocates.

It is time architects take this to heart. While there are certainly ongoing challenges to our profession—even licensure itself—the preponderance of evidence points to the rapidly evolving relevance of architecture in every major social, economic, and environmental issue facing our nation and the world. Architects can and must play a more visible and vocal role in addressing these key issues.

The American Institute of Architects can view its advocacy successes on Public Law No. 115-97 as testament to its opportunities and responsibilities to shape the world through public engagement. We can have influence when we work together to positively impact our profession and the communities we serve. AIA

—Carl Elefante, FAIA, 2018 AIA President

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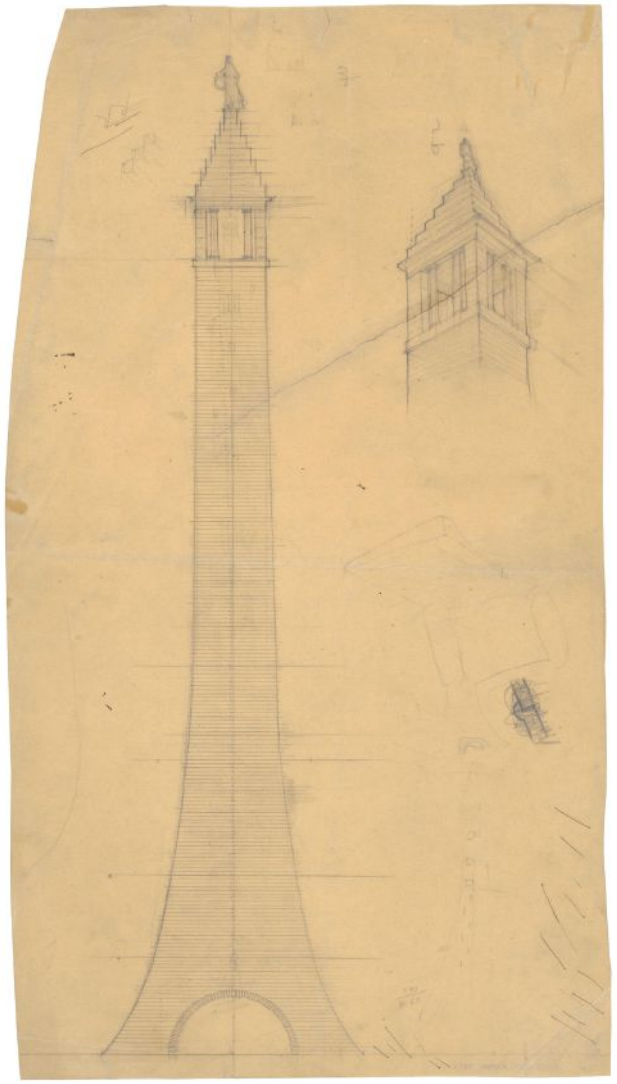
“The collection in its full scope and breadth has never before been celebrated. This book remedies that oversight.”

Architectural Drawings at the Albertina Museum by Eric Wills

From Leonardo da Vinci to Zaha Hadid, and Michelangelo to Frank Lloyd Wright, the more than 40,000 architectural drawings at the Albertina Museum in Vienna have long been a priceless collection of riches. But apart from studies that have focused on a single architect, the collection in its full scope and breadth has never before been celebrated. Masterworks of Architectural Drawing from the Albertina Museum *(Prestel Publishing, 2018) by Christian Benedik, the head of the institution's architecture department, remedies that oversight. Along with a two-part exhibition at the museum (the second half runs from June 22 to Sept. 30), the book features 140 drawings from the collection: masterworks, as the book title suggests, but also more obscure unbuilt projects that unearth forgotten corners of famous architectural careers or that reveal avenues not taken in the development of our world capitals. On the following pages we spotlight some of the most compelling selections from the book, which double as a pretty good argument against our computer-obsessed present.*



Tower of the Kaiserjubiläums-Gedächtniskirche of Sankt Elisabeth at Mexikoplatz in Vienna, 1898
Adolf Loos

Six years after Loos had embarked on an extensive tour through the United States, where he was inspired by the modern buildings in New York and Chicago, he sketched this competition entry for a church along the Danube River in Vienna. The building, intended to honor of the 50th jubilee of the reign of Emperor Franz Joseph I, contains multiple allusions: to a lighthouse; to the city's cathedral, the Stephansdom; and to the recently constructed Eiffel Tower. Loos, after realizing the conservative leanings of the judges, decided not to submit his design. Instead, Viktor Luntz's proposal won out; his imposing Rhenish-Romanesque style church, dedicated to St. Francis of Assisi, stands today.

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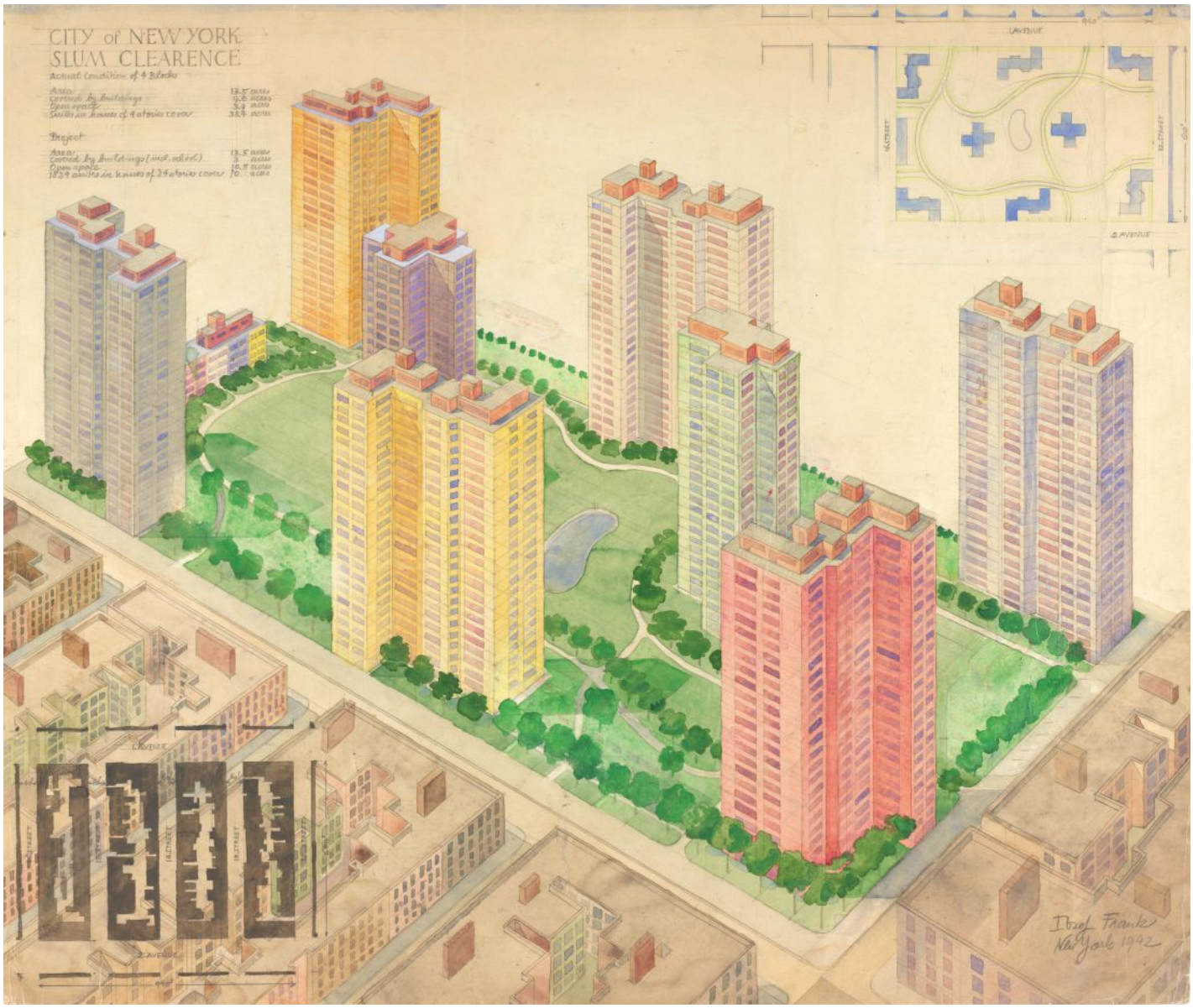

Plan for the City of New York Slum Clearance, 1942
Josef Frank

Soon after Frank moved to the U.S. from Vienna, becoming a lecturer at the New School for Social Research in New York, he responded to a call for proposals for the development of "Stuyvesant Town" in lower Manhattan. The architect submitted this design, which drew on his social housing work in Vienna. It featured 1,824 units, a school, and interior green space that disrupted the existing street grid. Instead, the city chose Irwin Clavan's Le Corbusier–inspired plan, whose 35 cross-shaped buildings, in conjunction with the neighboring Peter Cooper Village, house more than 25,000 residents today.

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Triumphal Arch for Emperor Francis I and Maria Theresia, 1745
Franz Anton Danne

Danne, a painter for the imperial theater in Vienna, designed this temporary triumphal arch, one of three constructed in the city to honor Francis' ascension as Holy Roman Emperor. Members of the Austrian House of Habsburg had been successively elected emperor for three centuries, until a Bavarian prince grabbed the title in 1742. Francis' elevation marked the end of the three-year hiatus. The Roman-inspired design, 27 meters high and punctuated by 16 sculptures of previous Habsburg emperors, celebrated the economic prosperity and influence Vienna was bound to regain as the home to the imperial crown.

Elevation of the new Hofburgtheater, 1873
Gottfried Semper and Karl von Hasenauer

In 1857, Emperor Franz Joseph I ordered that the fortifications and walls that ringed Vienna be demolished in order to build a grand boulevard, the Ringstraße, modernizing the city and making it the equal of Paris or Berlin. The Hofburgtheater, modeled after Semper's second opera house in Dresden, was part of that ambitious plan. Its façade, based on Italian Renaissance precedents, gives way to a stunning Baroque interior. After splitting with Semper, von Hasenauer saw the project to completion in 1888. During World War II, the building was damaged by a bomb and was later rebuilt by Michael Engelhart and Otto Niedermoser.

Elevation of the Palace Station of the City Railway at Vienna-Hietzing, 1896–97
Joseph Maria Olbrich

Charged with the planning and construction of Vienna's steam-powered railway, Otto Wagner delegated the design of the stations to Olbrich, one of his trusted colleagues. Olbrich designed this station, sited across from the Schönbrunn Palace, for the exclusive use of the ruling family. A prominent example of Jugendstil architecture, the building conveys both a modern and regal air: The porte cochère is made of steel and glass, and the imperial monogram and family coat of arms appear on the façade. The station was little used by the emperor and, after being threatened with demolition in the late '60s and '70s, lives on today as an exhibition space and café.

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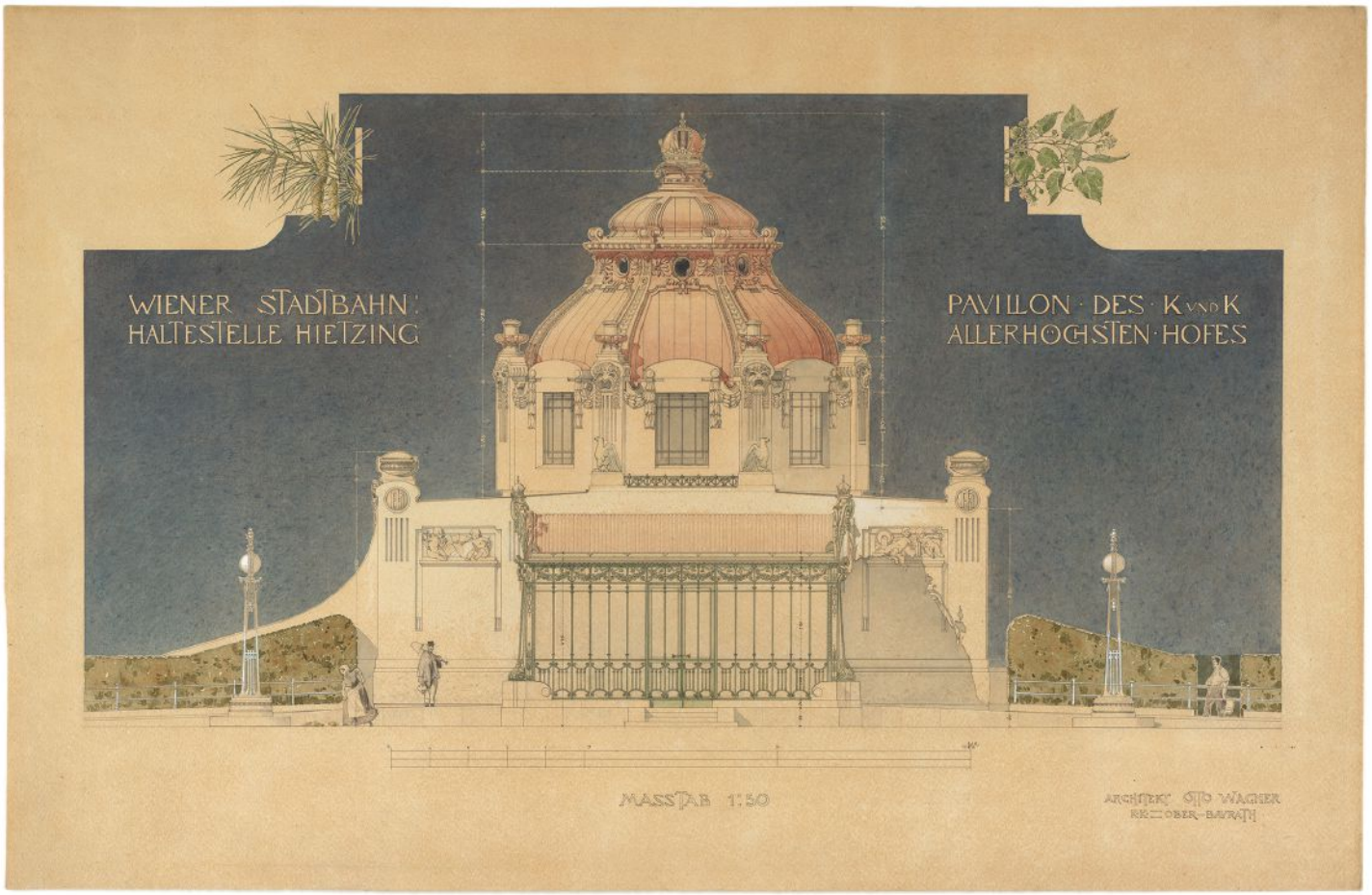

TOP: BUNDESTHEATER HOLDING GMBH ARCHITEKTUR;
BOTTOM: COURTESY ALBERTINA MUSEUM, VIENNA

Cathedral of Belo Horizonte, 1942–50
Clemens Holzmeister

In 1939, Holzmeister, an Austrian architect who had been recently exiled to Turkey after the Nazi occupation of Vienna, accepted an invitation to travel to Rio de Janeiro and design a number of buildings. Among them was this monumental church, never realized, that was intended to accommodate 14,000 parishioners. Drawing on his fascination with the Hagia Sophia, Holzmeister designed a circular structure that gave worshipers unrestricted views of the altar, which was dramatically topped by a crown of reinforced concrete that rose 150 meters into the air.

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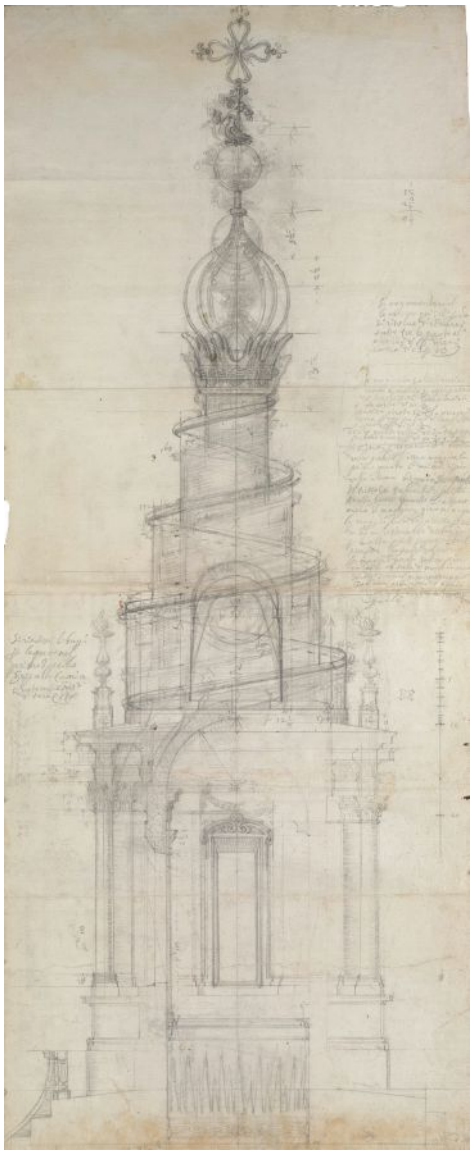

Lantern of Sant'Ivo alla Sapienza, 1649–52
Francesco Borromini

Borromini designed this church, an exemplar of the Baroque style that was completed in 1660, for the University of Rome. In the Albertina's drawing, the architect renders the spiral structure transparently, so the building's interior features and supports can be seen behind the tapering parapet walls on the exterior. Today, the project is one of a handful of buildings designed by Borromini that dot the Roman skyline and streetscape, including the Oratorio dei Filippini, the Collegio di Propaganda Fide, the Palazzo Pamphilj, and Sant'Agnese in Agone.

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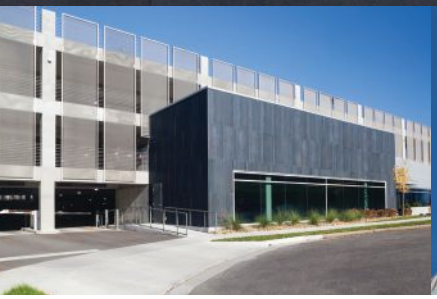
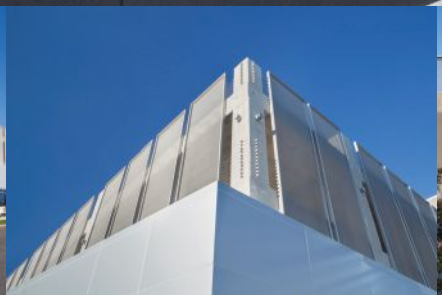
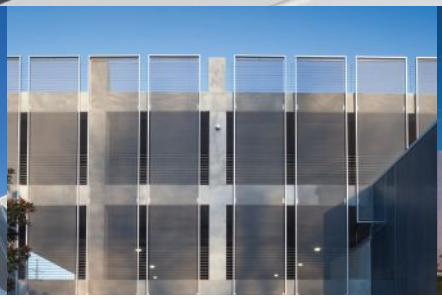


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Architecture Embraces Performance Art (Again) by Mimi Zeiger

On a Sunday afternoon this past fall, a small group gathered in Marcus Garvey Park in Harlem, one of the oldest parks in Manhattan. Architects and artists, curators and academics, neighborhood residents and stage moms—all had come for a performance of *Marching On*, a collaboration between architectural designers and scholars Bryony Roberts and Mabel O. Wilson, and the Marching Cobras of New York, a Harlem-based after-school drum line and dance team.

With a start, the sound of drumbeats cut through the autumn air. Dancers dressed in white and musicians in military-type fatigues filed into the square, their camouflage capes flapping with each high-energy move. For the next few minutes, the audience was united by the beat and transfixed by the performers' shifting formations. Just as quickly, it was over. After a couple rounds of cheers, the team marched off and the audience dispersed.

Commissioned by the Storefront for Art and Architecture for Performa 17, a biennial dedicated to performance art, *Marching On* celebrates the political legacy of African-American marching bands and how they used cultural expression to assert their right to public space. The performance and costumes referenced two historical events: the 1917 Silent Parade, in which 10,000 African-Americans marched down Fifth Avenue to protest racial violence, and the celebration five years later when the 369th Infantry Regiment, better known as the Harlem Hellfighters, triumphantly returned from World War I.

Marching On represents a growing trend: projects that engage performance art as an architectural medium. Long a mainstay of contemporary art, performance offers two main advantages in a field where it usually takes years for a project to be realized: immediacy and the chance to experience urban spaces in new ways. "Oftentimes in architecture we deal only in abstract forms, and that can be problematic," says Roberts, a professor at the Columbia University Graduate School of Architecture, Planning and Preservation (GSAPP), whose collaborations with dancers and choreographers have been showcased at the 2015 Chicago Architecture Biennial and in Rome's Piazza del Campidoglio. "What interests me about performance is that it's a chance to work through politics very directly in terms of working with people and not through representation. I hear directly from them how they want to move through space."

To understand the extent to which architecture has embraced performance, consider some of the other performers from the lineup for Performa 17. There was Bucharest, Romania–based French visual artist Jimmy Robert, who staged *Imitation of Lives*, a choreographic work performed at Philip Johnson's Glass House that merges ideas of visibility and spectatorship with a host of historical references, including the romantic affair between the architect and Harlem Renaissance cabaret

The Marching Cobras of New York perform *Marching On*

singer Jimmie Daniels. And there was Montreal-based architect François Dallegret, who collaborated with Los Angeles–based architect François Perrin and choreographer Dimitri Chamblas to build a transparent dome—the Environment-Bubble—in Brooklyn Bridge Park. Dallegret had sketched out a drawing of the bubble a half-century ago—it was famously used to illustrate Reyner Banham's 1965 critique of American residential architecture, "A Home is Not a House"—but this was the first time it took material form.

Consider also that the Graham Foundation has created a performance residency program, now in its second year. In January, Chicago-based artist Brendan Fernandes, the current resident, unveiled "The Master and Form," an installation and performance series in which he collaborated with architecture firm Norman Kelley and dancers from the Joffrey Academy of Dance. There's a clear connection between the architecture and the performance: The structures and hanging ropes that are a part of the installation help the dancers achieve perfect ballet poses.

Reasons Behind the Revival

The emergence of performance in architecture isn't exactly new. It has always been a bit player in the

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The Environment-Bubble in Brooklyn Bridge Park

discipline, cycling in and out of favor since the beginning of Modernism—from the theatrics of the Futurists and the Bauhaus to Bernard Tschumi, FAIA's event-spaces and conceptual works by Elizabeth Diller and Ricardo Scofidio, AIA. "Our practice has always defied the border police between art, architecture, and performance," Diller says. "For us it's simply finding the right tool for each research pursuit. Sometimes the job requires bricks and mortar, sometimes pixels and bits, sometimes performers and stage magic. We have had the freedom to move between building geo-fixed structures and transient experiments in space. The promiscuity to step between time frames and disciplines affects the work."

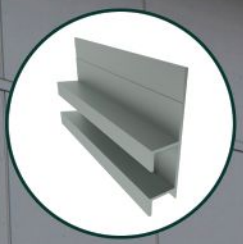
RoseLee Goldberg, who founded Performa, the nonprofit that organizes the biennial, in 2004, traces her interest in performance back to the 1970s, when she was director of the Royal College of Art Gallery in London. Part of a circle of experimental practitioners that hailed from the Architectural Association, Archigram, and Superstudio, she saw how they valued magazines (like *Archizoom*), exhibitions, and performance as an intensely vibrant way to disseminate architectural ideas. "They still [thought] like architects, which is different from how artists think—different methods, different ideas of abstraction," says Goldberg. For her it was proof that a building wasn't the only possible distillation of an architectural argument.

What accounts for the recent re-emergence of performance in architecture? There are three main reasons. There's the pragmatic: A generation of design curators have gravitated to works that push the boundaries of representation, and the proliferation of biennials and triennials has offered new forums and audiences for that work. There's the phenomenological: The very nature of performance suggests a study of the physical across space and time, which runs counter to the accelerated and disembodied culture we encounter online. "The digital has made understanding scale in relationship to the body more difficult, since it is a virtual space without scale," says Wilson, a professor at GSAPP. And finally, there's the political: Because performance focuses on the human body, it lends itself to urgent issues of race and sexuality, of belonging and migration.

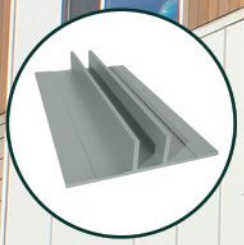
Indeed, architectural performance has the ability to confront subjects often missing from the profession, the academy, and the so-called avant-garde. "There are some urgent issues that we want to deal with. We have the desire, but the tools we have—the built and the formal—don't work," says Lluís Alexandre Casanovas Blanco, whose presentation on the relatively unknown 1960s-era performance-based work of Spanish architect Ricardo Bofill was featured at Performa 17.

It's tempting to say that architectural performance is having a "moment," but its resurgence actually

MODERN ARCHITECTURAL LINES



HORIZONTAL REVEAL



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The *Imitation of Lives* performance at Glass House

PAULA COURT

reflects a series of moments: the global economic crash a decade ago, the rise of economic inequity and populism, the emergence of social justice movements like Black Lives Matter and #MeToo. In 2011, in response to the austerity protests across Europe, architect and curator Pedro Gadanho, now the director of the Museum of Art, Architecture and Technology in Lisbon, took to the opinion pages of *Domus* and called architects to embrace guerrilla practice that goes beyond traditional confines of the profession. In "Back to the Streets: The Rise of Performance Architecture," he wrote: "Architects must not only turn into multifaceted cultural producers and everyday programmers of the city. They must also become truly streetwise."

Soon after, as the then-curator for contemporary architecture at MoMA, Gadanho commissioned Spanish architect Andrés Jaque and the Office for Political Innovation to stage *IKEA Disobedients*, a theatrical performance that marked the opening of the exhibition "9 + 1 Ways of Being Political: 50 Years of

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This Page and Opposite:
"The Master and Form" at
the Graham Foundation

NORMAN KELLEY

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Political Stances in Architecture and Urban Design." Jaque designed a set out of hacked IKEA furniture in which select New York City residents were asked to publicly perform scenes from their everyday lives—rituals that explored the political side of domesticity.

The Politics of Performance

Around the same time, in 2011, Occupy Wall Street captured our attention, as citizens and designers across the country took part in the appropriation of urban space, fueled by a belief, as Wilson puts it, that "Neoliberal capital has taken over and other means must be enacted."

Last year, a couple blocks from Zuccotti Park, the original site of the Occupy encampments, under the shadow of Skidmore, Owings & Merrill's 28 Liberty St. skyscraper (formerly One Chase Manhattan Plaza), architects and artists Alex Schweder and Ward Shelley staged *The Newcomers* as

> At a time when our culture is undergoing seismic shifts in who gets to speak out, who wields power, and who gets included, performance art offers architecture a way to weigh in.

part of Performa 17. Along with collaborators Lena Kouvela and Sarah Burns, they lived in a bridge-like shelter that they built (and rebuilt) in new configurations over the course of 10 days. The idea was deceptively simple: to challenge architecture's relationship with permanence. But the project also managed to confront pressing social issues, such as the refugee crisis and housing precarity.

There's an inherent tension in *The Newcomers* between the act of performance and the physical and political issues it provokes. Abstract concepts like time, body, or comfort take on real meaning when you have to live in your work of art. The days and nights Schweder and Shelley spent there were long and, given the cold snap that hit New York that week in the fall, often uncomfortable. "We were living rough, wearing three layers of clothes, we didn't wash, we were pretty grungy and stinky compared to anyone else," says Schweder. "But no one would mistake us for homeless." Instead, the artists served as stand-ins for the less fortunate.

DESIGNER'S MULTI-TASKING MARVEL.

The Rockwell, San Francisco, CA
photo: Peter Alfred Hess

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Schweder's work often requires him to practice empathy, to embody a perspective. Take his "Performative Renovations" pieces, which begin with therapy-like consultations that ask a participant/client to reveal the intimate details of why they want to renovate their apartment or house. But this isn't a traditional renovation; no drywall gets demolished. Rather, it is a thorough rethinking of how you live in your space. In the end, Schweder often poses as the client in a photographic representation of the "renovation."

I participated in this process with Schweder last year, which culminated with a multiple-exposure photograph of the artist, posed and dressed as me on my couch and at my desk. What began as a desire for a spare room in my Los Angeles flat ended with an image that conveyed my emotional need for more space in my personal life. I can attest to the vulnerability the process required of us both, and the uncanny nature of seeing your private desires visualized. "It is a search for connection with another person," Schweder told me. "The world becomes more interesting when you let more people into it."

The co-authoring and collaboration also serves another purpose: It undermines the old hoary conception of the architect as singular genius and affirms the importance of a chorus of new voices in the profession. "We are letting go of the master, the star—that seems to be eroding culturally, at least," says Schweder. "In letting go of the one who speaks and makes meaning, and is the only one who is legitimate in doing so, we have come around to discourse as the authority. It's through different angles and situated positions that meaning gets made."

At a time when our culture is undergoing seismic shifts in who gets to speak out, who wields power, and who gets included, performance art offers architecture a meaningful way to weigh in. Largely forgotten for decades, it has made a dramatic return. As Goldberg puts it: "Performance has been waiting in the wings to be a catalyst."


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FRANKLIN & MURRAY COLLEGES
2017

YALE CAMPUS PLAN
2017

Bob Stern doesn't want to go to modernist heaven.

Pauli Murray and Benjamin Franklin Colleges,
Yale University
New Haven, Conn.
Robert A.M. Stern Architects

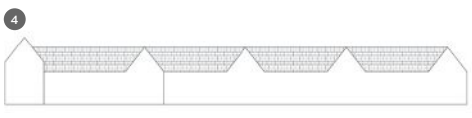
What was your first experience of Yale?
Robert A.M. Stern, FAIA: I studied architecture, graduating in 1965. A. Whitney Griswold was the president, and Yale had embarked on a policy of building modern, highly iconic buildings: For example, the Beinecke Rare Book & Manuscript Library by Skidmore, Owings & Merrill—Gordon Bunshaft, in particular—and the Art and Architecture building by Paul Rudolph, which I got to be a student in for two years. The building that kicked off that campaign was

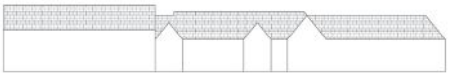
INTERVIEW BY KATIE GERFEN
PHOTOS BY PETER AARON/OTTO

Comparative Elevation Studies of Yale Residential Colleges

1. Pierson & Davenport colleges, west elevation 2. Davenport College, north elevation 3. Silliman College, north elevation

The new Benjamin Franklin College (and the new Pauli Murray College beyond) sit slightly removed from Yale's central campus, at the base of Science Hill, on a roughly triangular site bordered by Prospect, Canal, and Sachem streets. The complex encompasses, among other things, 900 student beds, two dining halls and serveries, two Head of College houses, common rooms, a black box theater, and a dance studio. The highest point is Bass Tower (at left), which terminates Canal Street, a main thoroughfare to the central campus. Prospect Street (at right) leads to Eero Saarinen's Ingalls Rink.





4. Pauli Murray College, south elevation 5. Branford & Saybrook colleges, west elevation 6. Pauli Murray College, north elevation

He wants to go to architect's heaven, for choosing appropriate solutions over style.

Louis Kahn's art gallery. Most relevant to this project, I watched the construction of the first residential colleges since World War II, the Ezra Stiles and Morse Colleges by Eero Saarinen. They were quite controversial—he was derided as doing a stage set for *Hamlet*—but I think it was a sincere and largely successful attempt to make something new that fit into what was there before.

How much of your project was influenced by the legacy of James Gamble Rogers, who designed several of the residential colleges at Yale?

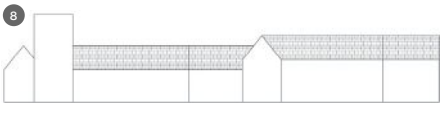
We were very influenced by Rogers. Rogers didn't only do Gothic buildings. Some of the residential colleges were in the Georgian style, but his major palette was Gothic. It was not only used for the residential colleges, beginning with his Memorial Quadrangle and Harkness Memorial Tower which opened in 1921, but also on nonresidential buildings on the campus like the Sterling Memorial Library. Gothic was the DNA of the campus, in my view, and I was able to persuade the officers in the university that that was the way to go. It wasn't hard. We studied Rogers' palette in exhaustive detail, its balance between different materials and wall and window, its proportions and roof pitches. There are many reasons for this, my total admiration for what Rogers accomplished not the least of them. The new colleges are relatively remote from the central campus, separated by a large, impenetrable—that is until you die—cemetery, and a long walk which was rather bleak. Beyond our site is the science campus with Gothic-style buildings going back to the early 20th century. Undergraduates often groaned about having to climb to Science Hill, so it seemed even more compelling that these two new colleges adopt the Gothic vocabulary to integrate with the sciences at one end and the central campus of a few blocks away.

What were the goals of the project?

The functional goals were to accommodate 900 students with support facilities ranging from dining halls, to Head of College houses, to the first covered off-street loading-dock facility at Yale—because the buzz, buzz, buzz of garbage trucks and deliveries were driving people crazy. One whole side of our project faces a neighborhood, and we had to be respectful. So it ranged from soup to nuts. As far as the design, I wanted to combine all the best features of the other colleges, especially as they had been, the new and old in those colleges had been blended in the renovations of the late 1990s and 2000s. I won't say I was given carte blanche—no architect is ever given carte blanche—but the university, I would say, trusted that I had my head screwed on correctly and that I could really pull this off. And I don't think we disappointed them.

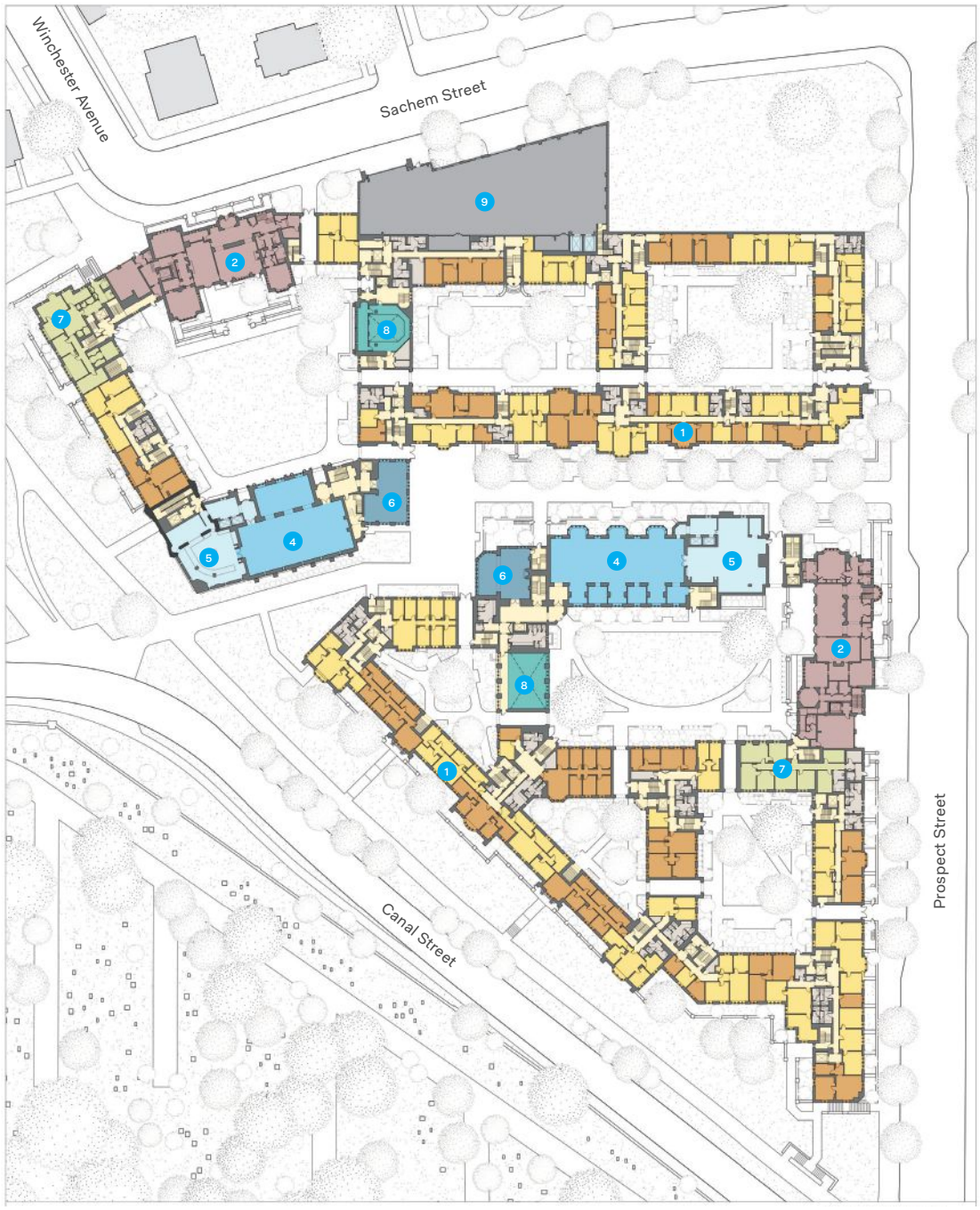
So often, there is a perception that we just can't build like this anymore. What systems did you use?

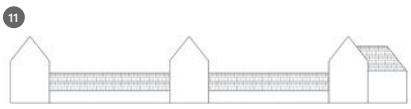
The building is hybrid construction using reinforced concrete and steel framing on the upper parts where it was more appropriate, but the idea was one that we've used many times in the last 15 years, which was



7. Branford & Saybrook colleges, east elevations 8. Benjamin Franklin College, north elevation 9. Branford College, south elevation

Ground-Floor Plan





10. Saybrook College, north elevation 11. Benjamin Franklin College, southwest elevation 12. Trumbull College, south elevation

to have precast panel walls. It's super high quality and an incredibly modern way of building. Having detail features in the factory, assembling them off site, and bringing them to the site in a systematic way eliminated the chaos that you find in construction sites. It went very smoothly, though I am not the best source for discussing that. I don't want to disillusion readers of ARCHITECT, but I am not the field guy.

But in my view, the reason people say you can't do something like that anymore is that they don't want to do something like that anymore. They've convinced themselves that if a building looks a certain way, they get into modernist heaven. I'm not interested in modernist heaven—I'm not even certain I'm interested in heaven—but in any case, I want to go to architect's heaven, not on the basis of one style or another, but on the basis of an appropriate solution to a particular problem in a particular place.

Each courtyard, dining hall, and common room has its own ornamental theme. How did you determine these?

Well, in order to design them, we had to study Rogers, and we also studied Gothic architecture. You learn things by looking, and we looked, and we sketched, and we measured things that architects have done for thousands of years. Somehow, many have lost interest in contemporary practice, but we're still hanging on to tradition. We took this on as a labor of love, a pleasure of looking and using an existing vocabulary in a fresh way. After all, I'm talking to you in English. Neither of us invented English. We don't speak English exactly as they did in medieval times, but we could understand them and they might be able to understand us.

The masons had a hand in a Robert Stern–themed ornament, the "Bob-goyle." What was your reaction?

I was flattered, I have to say. Graham Wyatt, one of my partners, who was very much involved with the project, worked with the masons specifically, to make it look more like me. I think it could have looked a tad more. I'm much more handsome, but we'll leave that for the future to decide. I had said, early on, when Rogers had designed the Memorial Quadrangle, his bust was there and there's a plaque tribute to him, and I said, "Well, I wouldn't be unhappy if I had a little tribute at the end of this process if people thought well enough of me." I suppose I did drop a not-too-subtle hint. But that was to the Yale officers, and this was from the contractors.

How did you decide where to deploy the different types of materials—natural, precast?

We tried to deploy the more-refined materials like limestone, the more-precious if you will, where people could appreciate them better, certainly where they could put their hands on them. But a precast lintel on the third floor over a dormitory window, a bedroom window, you can't really tell that it isn't limestone. That's a strategy that Rogers used, and I did a lot of work for the Walt Disney Co. in the 1980s, and the rule there was where a guest could touch something, it had to be real, genuine material. Up in the air, we could use, shall we say, synthetic materials, to save cost.

This is a huge project, but everything feels incredibly human-scaled. How did you balance that?

I think it has to do with the vocabulary of the buildings, the details, the fact that there are multiple entryways, so you don't have gigantic walls in the courtyards, unpenetrated. The fact that you have a vocabulary of materials that takes the light in an interesting way. I mean, if you do the building with a wall of glass, as other universities have done for residential buildings—I can think of one, but I will not mention it—it's completely abstract and there's no sense of scale. Built into the vocabulary here, like any rich vocabulary, spoken or architectural, there are all the scalar elements. The scale also comes from the intricate plan of small and big courtyards, which was not as easy to achieve as you might think, especially in the Benjamin Franklin College because the sides are triangular. But we used the triangle as a stimulus for making interesting spaces, not as an obstacle to it.

Is there anything you would have changed?

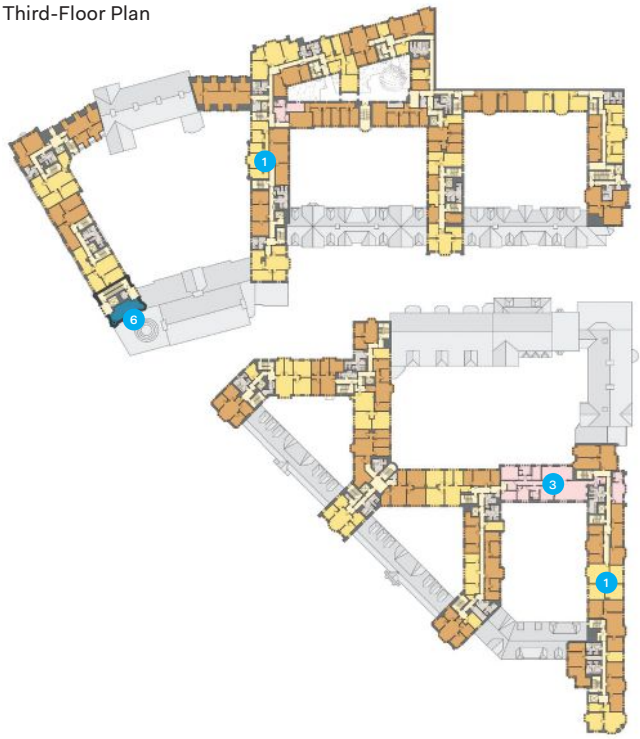
I'm not the kind of person who thinks that each project I do is perfect. I have done a few clunkers here and there. I won't tell you what they are—I won't tell anyone. But I think this is a very successful project and I'm very proud of it. I feel that what I, my colleagues here, and the university set out to do, we accomplished.

Yale has a storied architectural legacy. Besides your legacy as dean, what are you leaving the school with the addition of these two residential colleges?

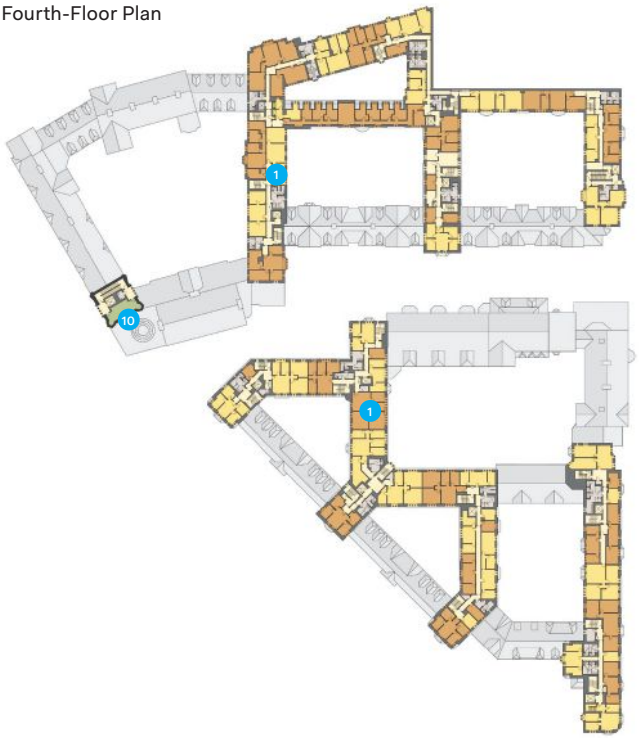
I think I'm leaving a legacy that I had good enough sense to climb on the shoulders of what went before, and to add to the legacy, not to go off in a new tangent.

13. Benjamin Franklin College, east elevation 14. Jonathan Edwards College, north elevation 15. Silliman College, south elevation 16. Timothy Dwight College, west elevation

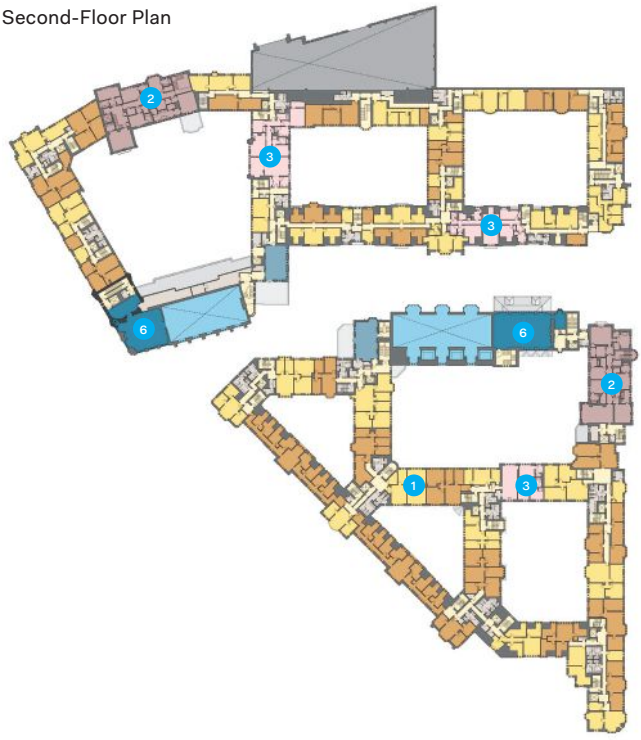
Third-Floor Plan



Fourth-Floor Plan



Second-Floor Plan



1. Student suites
2. Head of College house
3. Faculty housing
4. Dining
5. Servery
6. Common room/library
7. Administrative
8. Recreational
9. Loading dock
10. Classroom

0 60 120 N

17. Pauli Murray College, west elevation 18. Silliman College, east elevation 19. Branford College, north elevation 20. Jonathan Edwards College, west elevation

Top, Left: The new residential colleges may seem tall, as seen here from the garden of the Greek Revival Aaron Skinner House across Prospect Street, but the massing is based on James Gamble Rogers' colleges, which went from two stories to as high as six or seven. Rogers, and Stern, placed lower volumes to the south, to allow maximum daylight into each courtyard in winter.

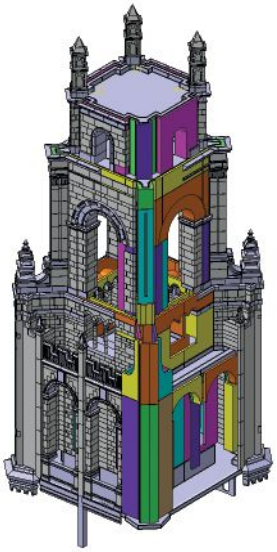
Left: The brick- and stonework on the new colleges took 80 masons, not counting specialized stone carvers, nearly a year to complete. The walkway, facing east to the Skinner House, separates Benjamin Franklin College (at right) from Pauli Murray College (at left).

21

22

21. Saybrook College, south elevation 22. Timothy Dwight College, north elevation

3D Model of Bass Tower,
Showing Precast Panelization



Right: The Pauli Murray and Benjamin Franklin colleges mark the first large-scale project on which the team at Robert A.M. Stern Architects (RAMSA) used BIM. "Looking back, there's really no way we could have gotten the level of coordination without using BIM. It was a big challenge for us getting everything up to speed, but we got a lot out of that model," says RAMSA associate partner Kurt Glauber, AIA. In 2007, when the project started, Revit wasn't yet sophisticated enough to handle such intricate geometries, so the team worked with Autodesk to find solutions. "When we started, it couldn't model dormers," Glauber says. "Some architects might say, 'Well, let's just not do dormers.' But we weren't going to relent to the software." The team also used Digital Project for complex elements such as the bay windows.

Below: One of the strategies that the team used to speed up construction and reduce costs was look to prefabrication of systems where efficiencies could be had. "Some of the major prefab items were precast panelization," Glauber says. "We've done that on a lot of other projects, so as we went through each phase of the project, we were looking for cost-effective ways to do this." The panels of the tower, for example, were all prefabricated, as were the 45 chimneys, each of which required eight pours, and most of which hide mechanical systems to keep the roofscape clean.

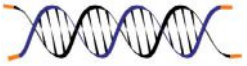
"We treated the courtyards like outdoor rooms," says RAMSA partner Melissa DelVecchio, AIA. "The first thing we wanted to do was make sure there was a good distribution of large and small spaces." Based on studies of Rogers' buildings, the team distributed nine courtyards throughout the colleges, seven at grade (including the main courtyard of Benjamin Franklin College, pictured), and two on roofs. Olin was responsible for the design of the landscape in each, and prioritized local plantings and sustainability.

Top, Right: The large courtyard in Pauli Murray College fronts the dining hall. Each residential college needs one courtyard large enough to hold all the residents and families during graduation ceremonies.

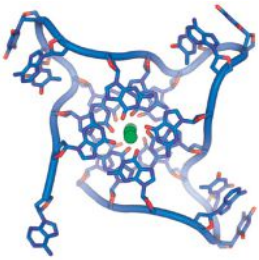
Right: Smaller courtyards, such as this one in Benjamin Franklin College, provide more intimacy, and idiosyncrasy. “We assigned the courtyards to different architects on our team with the intention that that would help them have a different personality,” DelVecchio says. “So one of the great things for me walking around the site now is thinking about the individual people who helped develop those spaces.”

Ornamental Detail

Detail Precedent: DNA



Detail Precedent: Telomeres



"The bay windows are so complex, with so much intricate stonework, that it was efficient to prefabricate those," Glauber says. But this bay in Pauli Murray College, which features a decorative DNA motif designed by RAMSA, "was all done in a traditional handlaid way, like you would 100 years ago," Glauber says. While RAMSA designed much of the ornamentation, for Yale-specific ornament—part of a long history of commemoration on campus—the university tapped Yale architecture alum Patrick Pinnell, FAIA, who wrote a guidebook to the campus.

Top, Left: A bedroom in one of the student suites, with standard Yale furniture. To keep with the 9-foot-4-inch floor-to-floor height of the James Gamble Rogers college houses, running standard ductwork was impossible. The structure, which was designed to LEED Gold standards, relies on HVAC systems that run above the windows.

Middle, Left: The two new dining halls (Pauli Murray College's is pictured) had to accommodate more students than is typical at Yale, so the team created smaller spaces off of the main room in each to vary the sense of scale.

Bottom, Left: This common room features the dark wood detailing that lines the interior of Pauli Murray College. Benjamin Franklin College's spaces feature a lighter wood.

Opposite, Top: The library in Benjamin Franklin College is a place where students can study, and where successive Heads of College can build a bespoke book collection over time.

"About a third of our work continues to be single-family houses," says project partner Graham Wyatt, FAIA. "Coming out of that is a real understanding of detail and personal scale that a lot of firms working on commercial and institutional projects just don't have. We were at pains to apply that to this project so that these residential colleges really felt residential." The round window overlooks the adjacent dining hall, and is super-insulated to keep out sound.

Opposite, Bottom: The dining hall in Benjamin Franklin College.

Top, Left: The Head of College house at Benjamin Franklin College.

Bottom, Left: The first floor of both houses are very much public spaces, used to entertain students and hold lectures. Stairs in each lead to private living quarters on the second floor.

Top, Right: Both Head of College houses have a dining room that can be used to host events with and for students. Each also has two kitchens: One for catering, and one for the family.

Bottom, Right: The Head of College house at Pauli Murray College.

The entry gates of Yale's residential colleges are so detailed they have had a book written about them, and RAMSA made sure that the ones at the Pauli Murray and Benjamin Franklin colleges are no exception. "The gates are one of the most high-touch and elaborate design elements," Glauber says. The metalworker who was hired to help design the gates started his own company, Covax, during the process, and it ended up getting the bid for fabrication. The project kept him busy for more than a year.

All told, the Benjamin Franklin and Pauli Murray colleges have nearly 1.5 miles of façade—entirely without repeat. The north side of Pauli Murray College, seen at right, faces a New Haven neighborhood as well as Eero Saarinen's Ingalls Rink (at right) across Sachem Street; it also conceals a covered loading dock. The construction fence seen at left encloses an unbuilt corner of the 6.7-acre site that the university wanted to hold back for future development.

Project Credits
Project: Pauli Murray College and Benjamin Franklin College, Yale University, New Haven, Conn.
Client: Yale University
Architect/Interior Designer: Robert A.M. Stern Architects, New York · Robert A.M. Stern, FAIA (senior partner); Melissa DelVecchio, AIA, Graham S. Wyatt, FAIA, Jennifer L. Stone, AIA (project partners); Kurt Glauber, AIA, (project associate partner); George de Brigard, AIA, Anya Grant, AIA, Christopher McIntire, AIA, Sungchan Park, AIA, Sara Rubenstein, AIA (project senior associates); Jennifer Bailey, Kenneth Frank, Lara Kailian, Jonathan Kelly, William West, ASSOC. AIA (project associates); Alexander P. Lamis, FAIA (interior design partner), Lawrence Chabra, Philip Chan, Megan Dohmlo, Shannon Ratcliff (interior design associates)
M/E/P Engineer: BuroHappold Engineering
Structural Engineer: Thornton Thomasetti
Civil Engineer: Tighe & Bond
Geotechnical Engineer: Haley & Aldrich
Construction Manager: Dimeo Construction
Landscape Architect: Olin
Lighting Designer/Consultant: BuroHappold Engineering
Acoustical and A/V Consultant: Jaffe Holden
Vertical Transportation Consultant: VDA
Graphics and Wayfinding: Spagnola & Associates
Food Service Consultant: Cini-Little International
Façade Consultant: Curtain Wall Design and Consulting
Building Code Consultant: Philip R. Sherman
Materials Management Consultant: Kleinfelder
Size: 531,953 gross square feet
Cost: Withheld

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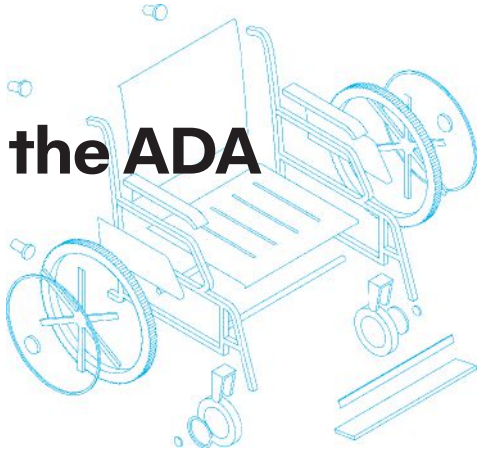
Editorial: Don't Dismantle the ADA



TEXT BY NED CRAMER

Nuisance lawsuits are just that—a nuisance. So on the surface, it would seem like a good thing that the House of Representatives just passed a bill, H.R. 620, that promises to remedy the issue in regards to the Americans with Disabilities Act of 1990. Some individuals are building a reprehensible cottage industry, filing dozens, hundreds, even thousands of suits against businesses for alleged noncompliance of the law.

However, if the ADA Education and Reform Act passes muster with the Senate and White House, it will do nothing to prevent such suits. Under a false flag of reform, it instead will unnecessarily impede the disabled with new legal barriers.

This is no small constituency: According to the Social Security Administration, 56 million Americans (or 1-in-5) live with disabilities, due to age, illness, or genetics. And 38 million of them (1-in-10 Americans) live with "severe disabilities" such as epilepsy, Down syndrome, schizophrenia, deafness, and blindness.

For nearly 30 years, the ADA has protected people with disabilities from discrimination. Of most immediate concern to architects is Title III of the act, which covers physical access to privately owned places of public accommodation—restaurants, stadiums, retail stores, and the like. The goal, quite simply, is to ensure that everyone has equal ability to enter and use such places. Hence the wheelchair ramp, restroom grab bar, and other standards of universal design.

Currently, if a person with a disability encounters an accessibility barrier, and the property owner refuses to accommodate them, they can file a complaint with the Department of Justice's Disability Rights Section (a small team of some nine lawyers that may mediate or file a suit on a complainant's behalf) or they can file a lawsuit themselves. H.R. 620 effectively gives businesses a 120-day grace period, during which complainants cannot file a suit. At the end of that time, businesses need only to have made "substantial progress in removing the barrier," which is a far cry from actually providing access.

As the American Civil Liberties Union noted in a statement opposing H.R. 620, by making it harder to sue businesses for noncompliance, the legislation all but encourages owners to adopt a "wait and see" attitude. As in, "Let's wait and see whether we get caught breaking the law."

Supporters of the new legislation (as listed on the website of the bill's co-sponsor, Rep. Ted Poe of Texas) include the American Hotel & Lodging Association; American Resort Development Association; Building Owners and Managers Association International; Institute of Real Estate Management; International Council of Shopping Centers; International Franchise Association; National Apartment Association; National Association of Realtors; National Association of Theatre Owners; National Council of Chain Restaurants; National Federation of Independent Business; National Multifamily Housing Council; National Restaurant Association; National Association of Truck Stop Owners; Retail Industry Leaders Association; and the U.S. Chamber of Commerce.

That's quite a list. Unfortunately, signing the ADA Education and Reform Act into law will not protect the industries these associations represent from frivolous suits, because the ADA already prohibits complainants from suing for damages. Under the ADA, winning a case compels the noncompliant business to provide access, pay your legal fees, and nothing more. (Access is, after all, the whole point of such cases.) Accessibility nuisance cases, with their costly damages, are brought to court under state and local laws, not at the federal level. And that's where reform should occur. H.R. 620 will just make it easier for recalcitrant business owners to avoid the nuisance (read, expense) of providing equal access.

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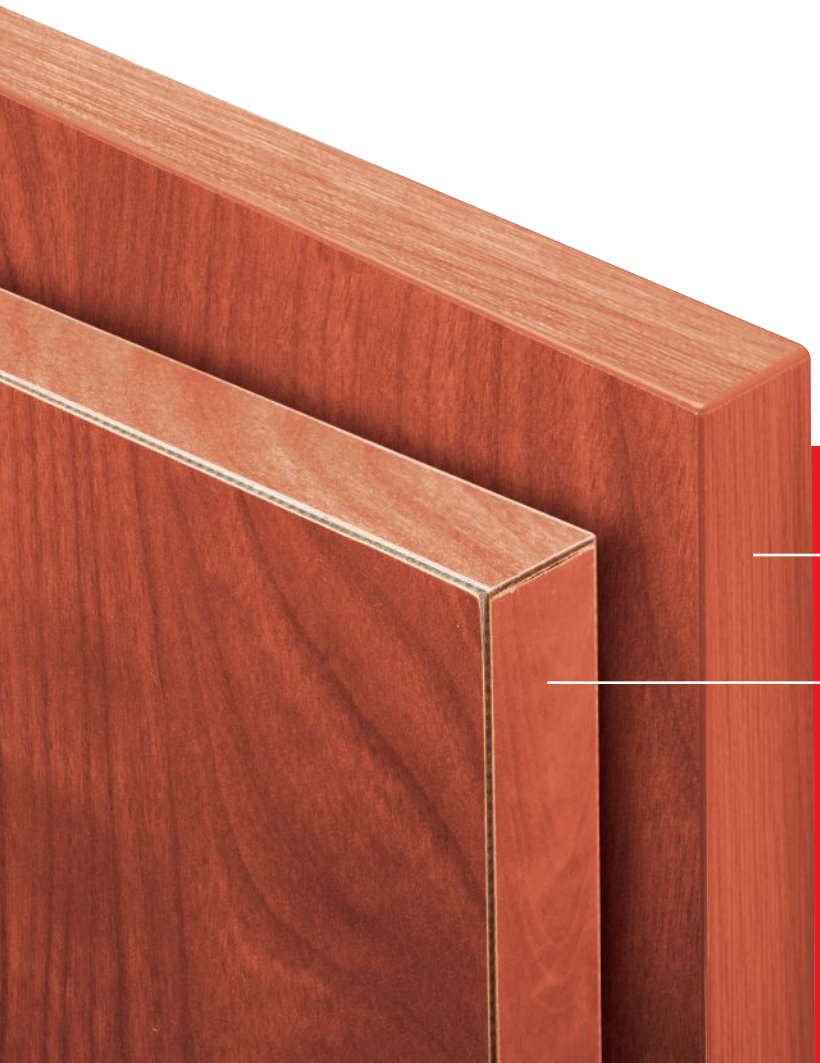

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