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Bryony Roberts  
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Fair Housing Act Updates  
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Volume 110, number 02. March 2021.

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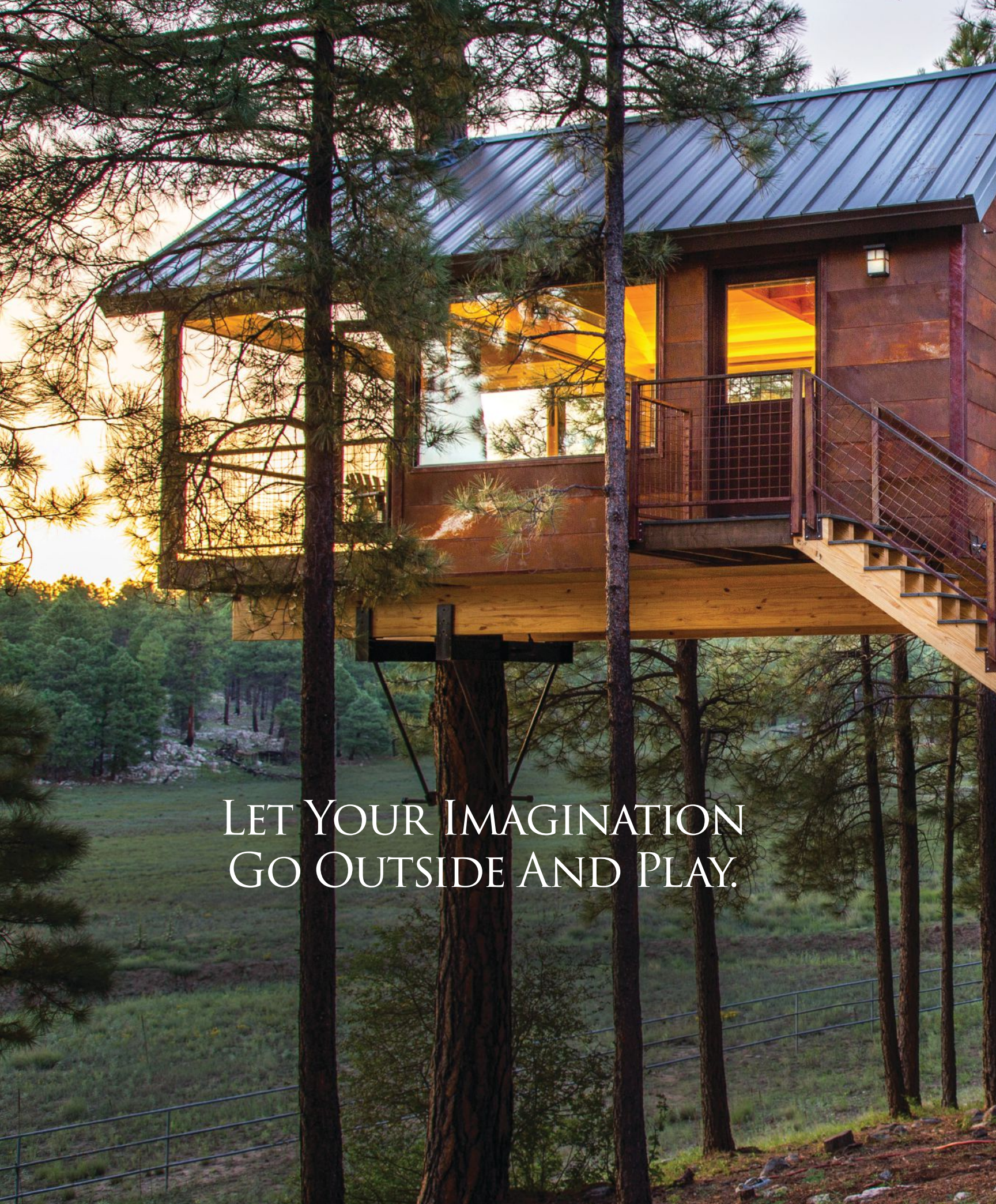
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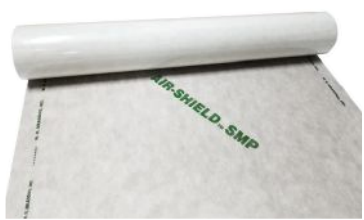
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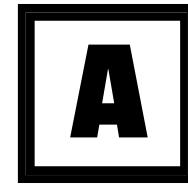
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# Next Progressives: Bryony Roberts Studio

EDITED BY ERIC WILLIS

**Location:**  
Brooklyn, N.Y.

**Year founded:**  
2012

**Firm leadership:**  
Bryony Roberts

**Education:**  
M.Arch., Princeton  
School of Architecture;  
B.A., Yale University



**Experience:**  
WORKac in New York; Mansilla +  
Tuñón Arquitectos in Madrid

**Firm's mission:**  
The practice creates community-based projects in the public realm. We produce immersive environments and events that transform existing public spaces, addressing their complex architectural and social histories. We combine methods from art, architecture, and historic preservation to pursue expanded site-specificity, responding not only to the existing architecture and landscape, but also to layers of social history and contemporary urban change.

**First commission:**  
It was actually self-initiated—an installation at the Neutra VDL House in Los Angeles. Funded by a Graham Foundation Grant, the project explored creative preservation, intertwining

new design and historical architecture. The installation included volumes of blue cord that extended the grid lines of the building and were hung from aluminum frames that fit snugly into the existing aluminum details.

**Defining project:**  
Marching On, which was a collaboration with Mabel O. Wilson and the Marching Cobras of New York. Commissioned by the Storefront for Art and Architecture, and presented with Performa 17, this research, performance, and exhibition project was a multiyear exploration of how marching band performances in African American communities have been important mediums of cultural and political expression. It examined how ephemeral actions and performances can be just as powerful as built structures in transforming public spaces.

**Another important project:**  
Soft Civic, which was commissioned by Exhibit Columbus in 2019 and transformed the City Hall building by Skidmore, Owings & Merrill. The project was an opportunity to engage a charged political space through both design and programming.

**Most successful collaboration:**  
Many of our projects are collaborative and we couldn't pick a favorite, but the most recent is being part of the WIP Collaborative. A feminist architecture collaborative, WIP is a platform for independent practitioners to work

together on shared projects. During the pandemic, WIP won the Urban Design Forum competition, titled Care for Hudson Square, and is now overseeing the construction of a streetscape in lower Manhattan for spring 2021.

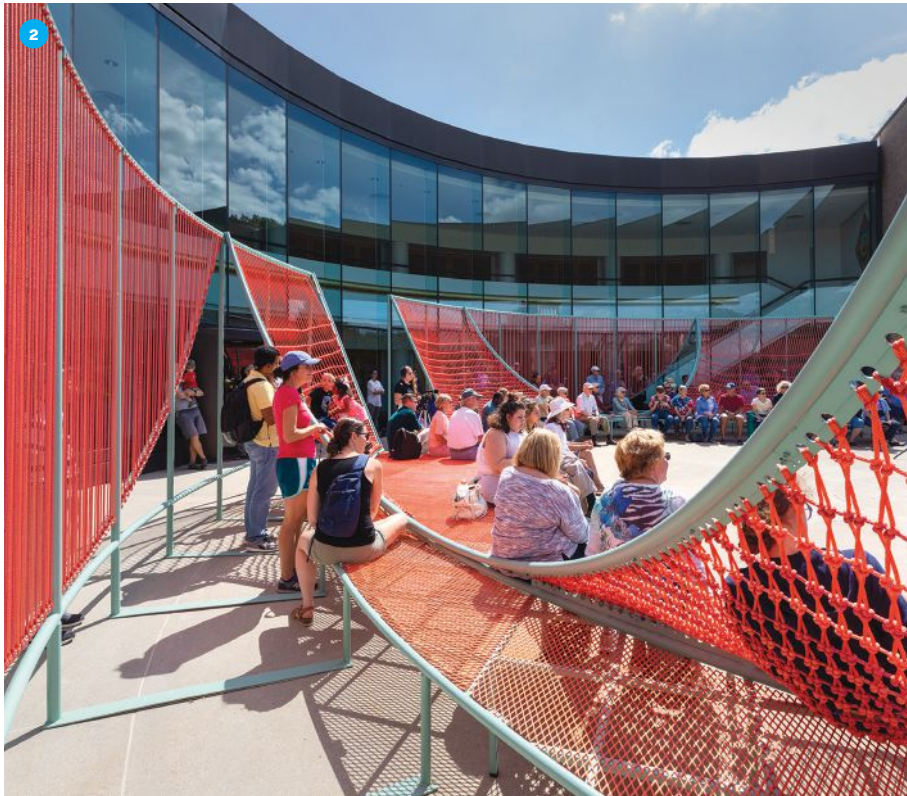
**Which architects have influenced your practice and how?**

Andrés Jaque, Anna Puigjaner of MAIO, and Mabel Wilson inspire us by combining research and practice and by addressing social issues intersectionally. Borderless Studio, WXY, Interboro, CUP, and Hector influence us with their community-based methods of urban design that bring participatory playfulness to serious planning issues. Many art and performance practices also inspire us, whether it's the material experimentation of Tanya Aguiñiga, Liz Collins, or Carmen Argote, or the interactive performance projects of Nick Cave, Franz West, and Hélio Oiticica.

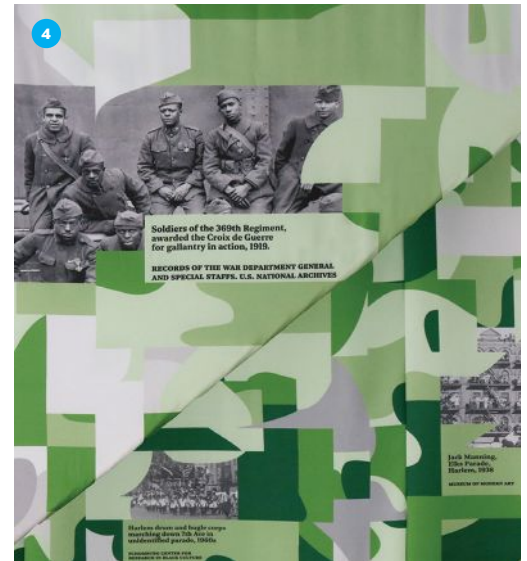
**Ambitions for the firm in the coming five years:**

Designing and building more projects in the public realm; continuing to scale up with projects that grow from research and social outreach and lead to strategic planning and design interventions; continuing to work with the WIP Collaborative on projects that use our combined skills in architecture, landscape architecture, and urban design.

**Next Progressives:  
Bryony Roberts Studio**



1: JAIME KOWAL (LEFT), COURTESY BRYONY ROBERTS STUDIO (RIGHT); 2: HADLEY FRUITS



1. *Imprint*, a 2017 installation at the Orange County Museum of Art in Santa Ana, Calif., featured an exact replica of the building's concrete façade—a kind of historical homage to the Brutalist structure, before the institution moved into a Morphosis-designed outpost.
2. Soft Civic used custom-fabricated structures with woven surfaces to turn the public spaces around SOM's City Hall in Columbus, Ind., into destinations for play and performance.
3. *Community Platform*, a collaboration with landscape architect Colleen Tuite, creates market stalls and other public space by connecting the two sides of the abandoned train tracks of the Petite Ceinture in Paris.
4. *Marching On*, a collaboration with the young performers of the *Marching Cobras*, helped develop new methods of social practice, collaboration, and research in the design of public space.
5. *Global Grad Show*, a collaboration with SO — IL for Dubai Design Week in 2019, featured 28,000 square feet of fabric and created an alien landscape in the desert.

# Opinion: A Moment for Optimism and Realism

TEXT BY DERYL MCKISSACK



The AEC industry has never been quite the meritocracy we may have thought. Racism thrives in a way that's painfully apparent to those who live through it. If history—at least my personal history—is a guide, bringing more diversity, equity, and inclusion to the industry will be harder than it seems in this moment of national reckoning.

I'm part of a long history of Blacks in architecture and construction. The anonymity of the drafting table allowed my grandfather Moses McKissack III and great-uncle Calvin Lunsford McKissack to co-found McKissack & McKissack in 1921. They designed houses, churches, and schools in Black and white Nashville neighborhoods, yet they struggled to secure contracts outside Tennessee and to build a Black-owned business during the Great Depression.

Even with a handsome portfolio of schools and commercial structures, the McKissack brothers and their credentials were questioned—and only grudgingly accepted—throughout the South. A turning point in their business came in 1942 when they won the 99th Pursuit Squadron air base in Tuskegee, Ala. At \$5.7 million (\$96 million in today's dollars), it was the largest federal contract ever given to a Black-owned firm at the time.

My career has also had challenges. Working at my father's drafting table while in high school, I could produce drawings by hand that passed muster with clients. Studying architecture and engineering at Howard University, a historically Black university surrounded by the Capitol's grandeur, substantiated my belief that talent moved you up in the AEC industry. But entering the working world as a civil engineer shook my certainty; as a Black woman, I was relegated to the task at hand and received clear reminders to stay in my lane.

In my first field job, a supervisor did not give a second thought to the Confederate flag displayed on the wall behind his desk. He also complained to me freely about the Black construction workers' lunch-break naps—the laborers worked by day to put themselves through school at night, yet he assumed they were lazy. But he was the boss and correcting him was not my place.

I vowed to do things differently in building my own practice. Everyone would have a role and a voice in the concepts they helped bring to life. But inclusion in the broader business world proved another matter entirely. According to the U.S. Bureau of Labor Statistics, women account for fewer than 30% of architects and Blacks only about 7%. In engineering, 16% of civil engineers are women and 3.9% are Black. It's tough to rise in these fields, especially given the importance of personal contacts. Early on, many men

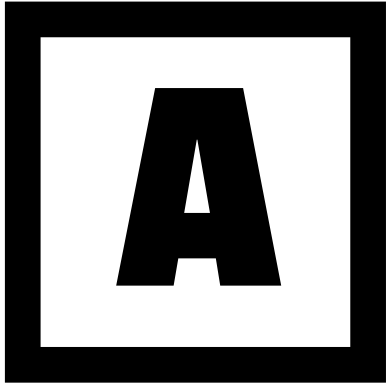
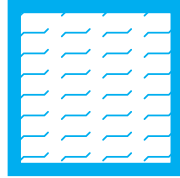
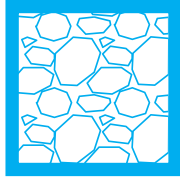
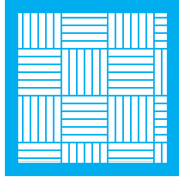
were not used to having a woman on the job, in the room, or giving orders. Business consolidations that have produced behemoth AEC firms have made it even more difficult for women- and Black-owned firms to grow and compete.

Awareness of bias will not guarantee that we can build back with equity once our COVID fever breaks. But the first step is having the humility to admit that sexism and racism are still among us—and that coming to grips with them will be a lifetime effort.

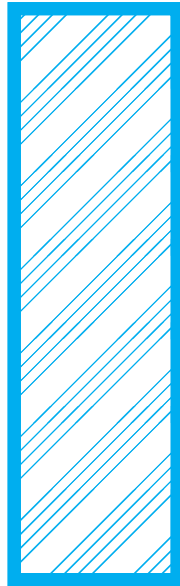
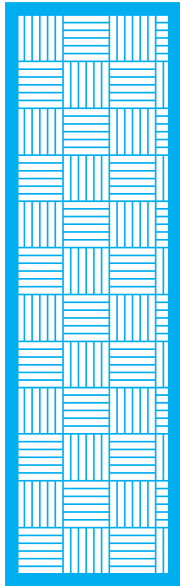
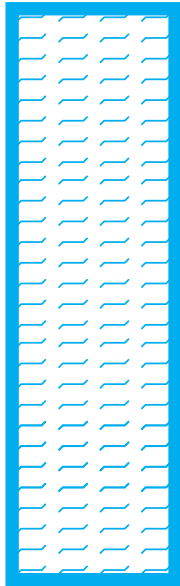
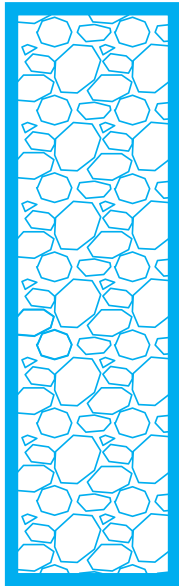
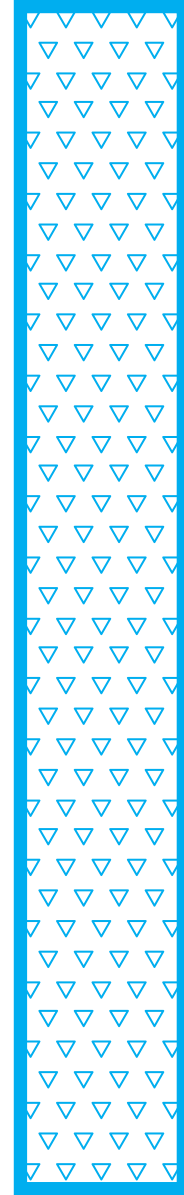
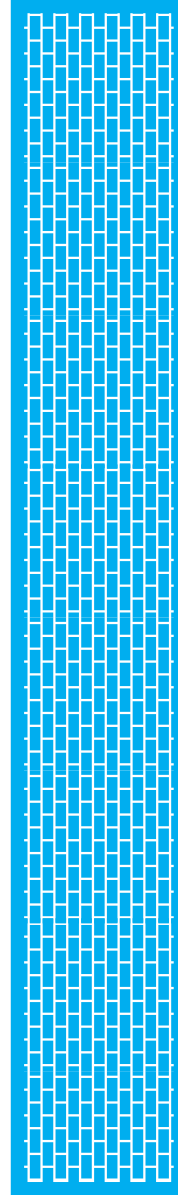
My firm owes its success not only to its ability to execute with precision and excellence but also to its efforts to give other women- and minority-owned business enterprises a seat at the table as partners and subcontractors. As AEC professionals, we must take steps in our practices not only in hiring, mentoring, and promotion, but also in procurement, charitable giving, and community action. When working in underserved areas, firms should find ways to hire local businesses and stakeholders.

These actions are easier said than done. But we understand process. We know how to put ideas and plans into practice to realize meaningful projects and effect substantial change. We can and should be able to apply these skills to our DEI efforts. If history is a guide, our work will be better for it. That alone merits optimism.

*Deryl McKissack is CEO of McKissack & McKissack, based in Washington, D.C.*



# 2021 Call for Products



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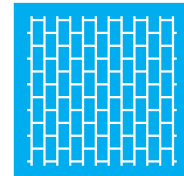
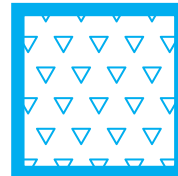
From finishes and MEP systems to lighting, furnishings, and hardware, we welcome products in a range of categories launched in or after May 2020 from domestic and international manufacturers alike. All products must be commercially available in the United States to be considered for publication. ARCHITECT will not publish products that it has already covered.

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# The Rules: New Safe Harbors for the Fair Housing Act

TEXT BY TERRI PETERS

On March 8, the U.S. Department of Housing and Urban Development will adopt new safe harbor design and construction requirements for the Fair Housing Act, a 1968 civil rights bill that was amended in 1987 to include accessibility requirements for the design and construction of multifamily housing. In addition to 10 existing resources, the new safe harbors are the 2009 edition of the International Code Council/American National Standards Institute A117.1 "Accessible and Usable Buildings and Facilities" and the 2009, 2012, 2015, and 2018 editions of the International Building Code, which reference ICC/ANSI A117.1.

The FHA requires that buildings with four or more units built after March 1991 incorporate features for people with disabilities. Its design and construction requirements apply only to new projects at the time of first occupancy. Existing buildings that are converted into multifamily housing are exempt, as is housing built before 1991, even in future renovations; however, state and local governments may mandate the requirements. Public housing or projects that receive federal funding also may be subject to other HUD requirements. Even with these exceptions, nearly 40 million multifamily projects across the country are subject to the FHA's design and construction requirements.

The last update to safe harbors was 15 years ago. Generally speaking, these safe harbors are outdated and no longer referenced by state and local

governments. "It is not as simple as getting a building permit or meeting local codes, and therefore thinking a project is FHA compliant," says Doug Anderson, a partner at Chicago-based LCM Architects, which is currently providing FHA consultation—including plan and due-diligence reviews and construction walk-throughs—on more than 300 multifamily developments across the country. Common violations Anderson has seen include errors in the design of accessible exterior routes, such as curb ramps; insufficient space in kitchens and bathrooms; and inadequate widths and slopes for accessible ramps.

The new safe harbors enable designers to choose a compliance path that is closest in alignment with their local regulations. Ideally, the result will be less confusion—and less paperwork. Integrating accessibility from the project outset can save costly updates and compliance work later on—and create more equitable housing. "Accessible design is just good design," says Karen Braitmayer, FAIA, founder and managing director of Seattle-based Studio Pacifica, which consults on accessibility and inclusive design. "If designers are clear on the features to aim for, they can use their creative spark to bring beauty and functionality together."

Anderson says lenders might request proof of FHA compliance from a third-party consultant when, for example, the owner wants to borrow money for future renovations; because



Projects with four or more units constructed behind a preserved façade must follow FHA guidelines.

the property becomes theirs should owners default on the loan, lenders want to avoid the liability of owning or selling noncompliant property. Likewise, owners want to ensure their buildings meet or exceed minimum requirements to protect the value of their asset.

Though updating the safe harbors is a step in the right direction, some architects may think more ambitious accessibility regulations should be put in place. For example, the compliance requirements could be extended to include renovations and pre-1991 construction. "Yes, we could go further, for example, to incorporate updates for the needs of mobility aid users or to further explore what folks with sensory disabilities need in their homes and communities," Braitmayer says. "But now is time to celebrate a win-win!"

# CarbonPositive: A Win for Climate Change Action

INTERVIEW BY KIRA GOULD, ALLIED AIA

The selection of Edward Mazria, FAIA, as the recipient of this year's AIA Gold Medal transpires at an auspicious time for architecture and the world. The U.S. has rejoined the Paris Agreement, emissions-related policy is actively being discussed in the government, and climate-responsive design and practice are becoming normalized. Having worked with Mazria for several years on climate change advocacy through his organization, Architecture 2030, and through AIA and its Committee on the Environment, I wanted to know what he thinks lies ahead for the profession.

**Does your win of the AIA Gold Medal seem like a significant departure from past recipients and a signal about how we view, practice, and celebrate leadership in architecture?**

*Mazria:* Definitely. In January, [Archimage co-founder] Richard Buday, FAIA, wrote in a provocative *Common Edge* article that we are in desperate need of a new "style" of architecture and proposed "buildings of the earth not on it" as an opportunity, evoking Frank Lloyd Wright's Usonian design style.

By awarding me the Gold Medal this year, AIA forced the issue of architecture and style into the open, recognizing that we're transitioning toward an "Architecture of the Earth"—not just as a style, but also as substance and actions—integrating existing and new architecture with the

Earth's systems, renewable resources, and energy, while protecting the planet's ecosystems and biodiversity.

**Some architects still balk at transitioning toward climate-responsive design, saying "clients aren't asking for it" or "it costs more."**

That response is a red herring, a deflection, a way to abdicate responsibility. Look, change is not easy: It requires work, education, and retooling, and it can be threatening. There are no additional costs to designing responsibly. Architects have almost total design flexibility as long as a client's programmatic requirements are met and the project is brought in on budget.

During design, architects make hundreds of decisions, and each has environmental and cost implications. In my 50 years of architectural practice, I've never heard a client say they wanted an inefficient building that costs more to operate and damages the environment.

**"I've never heard a client say they wanted an inefficient building that ... damages the environment."**

—Edward Mazria, FAIA,  
Architecture 2030 founder and CEO

**How is the AIA 2030 Commitment, with more than 800 signatory firms, progressing?**

The 2019 AIA 2030 Commitment Report details a 49% average reduction in energy use intensity (EUI) for buildings reported that year. For these projects, most of the energy and emissions decisions were made in the early stages of design, in 2015 to 2017, or even earlier.

The 2030 Commitment called for a 60% fossil fuel reduction prior to 2015 and 70% from 2015 to 2020, with the reduction accomplished by energy efficiency—measured by building EUI—and by adding on-site and/or off-site renewable energy for up to 20% of the total reduction. To meet these targets, a building's EUI would need to have a minimum 48% reduction from baseline if designed before 2015, and a 56% reduction if designed after that. So the average 49% EUI reduction reported in 2019 is an incredibly encouraging sign.

**How do you advise architects who are exploring the role that climate justice plays in climate action?**

Fossil fuel emissions and climate change have a disproportionate and devastating impact on low-income and underserved communities, which have also been hit the hardest by COVID-19. Tackling emissions is fundamental to seeking a healthy, equitable future for all. Our opportunity to slow emissions and then reverse global warming is right now—and it requires urgent and sustained action from every designer.





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# Residential:

## Motherhouse Denver Independent Architecture

TEXT BY MADELEINE D'ANGELO

In the summer of 2017, Paul Andersen, AIA, began designing a house for his mother—but not one that she would live in. Following a tradition of early-career architects taking on supportive family as clients, Andersen collaborated with his mother, Frandene, on a project that would give his firm, Denver-based Independent Architecture, a chance to explore formal innovations in residential design. Completed in 2019, the resulting Motherhouse, an honorable mention in ARCHITECT's 2018 P/A Awards, does just that, challenging the bounds of conventional, suburban architecture in the U.S.

Located in Denver's Sunnyside neighborhood, Motherhouse had two main sources of inspiration: Andersen's fascination with architectural repetition and variation, and the German architect O.M. Ungers' House Without Qualities, built in Cologne. "That house acquired a lot of character through the excessive repetition of identical elements," Andersen says, including a series of stacked double doors. Inspired

### Project Credits

*Project:* Motherhouse, Denver  
*Design Architect:* Independent Architecture, Denver ·  
*Paul Andersen, AIA (director),  
 Drew Stanley (project designer)*  
*Structural Engineer:* Rebecca Faverty,  
 KL&A Engineers and Builders  
*Civil Engineer:* Dave Beasley,  
 American Geotechnical  
*General Contractor:* Joe Dooling,  
 Dooling Design Build  
*Size:* 3,100 square feet (house),  
 550 square feet (garage)  
*Cost:* \$720,000



Motherhouse's candy-striped envelope comprises yellow-and-white-painted Boral TruExterior nickel-gap siding made from polymers and fly ash.

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**Residential:  
Independent Architecture**

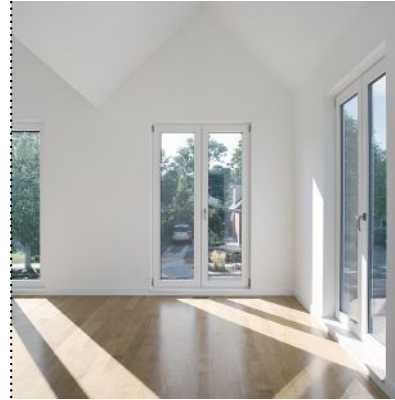
to design an “American, suburban version of the Ungers house,” Independent Architecture studied the existing architecture in Sunnyside, finding a number of “quirky houses” with truncated roofs and unexpected gables. “It seemed like there might be a way to do something where repetition of a single element [was] combined with an idiosyncrasy that was carried in a formal way through the entire project,” Andersen says.

The resulting two-story, 3,100-square-foot house is a collection of conventional parts in excess, with 24 exterior doors and a shingled roof with multiple gables. The project’s yellow-and-white-striped envelope, composed of a poly-ash siding, is a pattern of repeating blocks featuring identical double doors. But there’s a twist: Compared with the one next to it, each block shifts a quarter module to the side, disrupting the overall geometric repetition. A miniature gable, tacked onto the house’s right side, adds additional whimsy, as does a 550-square-foot detached garage. The garage has a “funny effect,” Andersen says, because “the smaller building has the larger scale.”

Daylight floods the interior through Motherhouse’s many doors, warming its open-plan ground floor. Some of the 59 interior doors lead to internal storage rooms—a pragmatic addition, because the water table at the site was too high for a basement. A monolithic staircase bifurcates the ground floor and rises to the second floor, where

four bedrooms each have unique, vaulted ceilings.

Motherhouse sold this past summer, achieving Independent Architect’s aim: to design a house that was architecturally ambitious, but also livable. “I hoped that, even if people weren’t interested in any of the intellectual architecture issues, that they would like it as a house,” Andersen says. “You can do interesting work without getting crazy technology or materials. You can use stuff that we use all the time.”



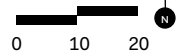
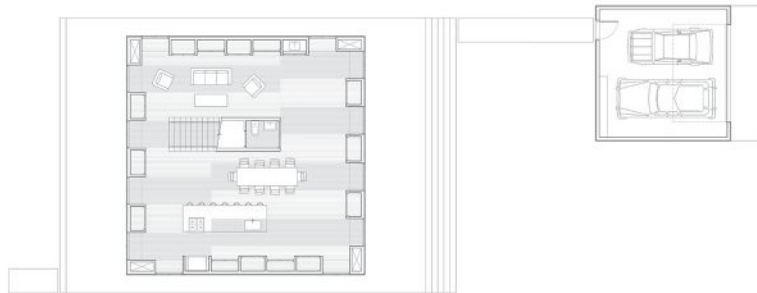
Upper Level Plan



*Daylight spills into the project’s open-plan main level through misaligned double doors.*

*Some of the project’s 111 total interior and exterior doors lead to additional storage space for the house.*

Main Level Plan



*Unique curved body is specifically engineered to eliminate large gaps and areas for entrapment*

*Deep-drawn corners have no visible welds and provide superior finish*



*Handles guide patrons to operate the unit with less than 5 lbs. force*

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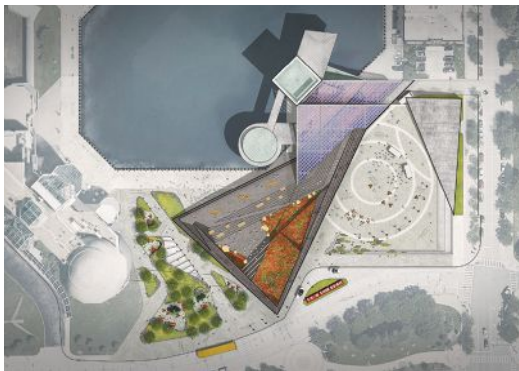
## Rock & Roll Hall of Fame Expansion Cleveland, Ohio Practice for Architecture and Urbanism

TEXT BY MADELEINE D'ANGELO

Ever since its completion in 1995, I.M. Pei's Rock and Roll Hall of Fame Museum in Cleveland, Ohio, a juxtaposition of geometric forms and shimmering glass pyramids along Lake Erie, has been an essential driver for the regional economy. So it's no surprise that the museum has embarked on a sweeping renovation and expansion of the 143,000-square-foot project. In January 2020, after securing a neighboring, 1-acre plot of land from the city of Cleveland, the institution submitted an RFQ to



The current design includes an outdoor performance space and public, lakefront gathering spaces.



22 leading architects around the world, then selected a shortlist of eight firms. This past December, the Rock Hall chose the winning team, led by New York's Practice for Architecture and Urbanism.

The winning design, a 50,000-square-foot triangular building clad in galvanized steel (a nod to Cleveland's industrial history), contains additional exhibition, events, and education spaces. The juxtaposition of the new triangle with Pei's existing pyramid—from above, he designed the building to appear like a giant turntable—pays homage to the architect while also channeling “some of the irreverence of rock and roll,” says PAU founder and creative director Vishaan Chakrabarti, FAIA. “There's a kind of beautiful, almost musical tension between the new and the old.”

A plaza at the triangle's core, landscaped by James Corner Field

Operations, softens the steel façade. The plaza also contains a band shell that resembles a “piece of flying concrete,” according to Chakrabarti, adding a kinetic quality and additional performance space to the project.

Construction is scheduled to begin soon after the finalized design is released in early 2022 (Cooper Robertson is responsible for programming and documentation, and the local firm Robert Madison International is the architect of record). Even as the design evolves, Chakrabarti aims to ensure that it generates “communities of connection” through accessible spaces—from the entry hall to the pathway through the museum—that encourage moments of “positive social friction,” Chakrabarti says. “When I think about a project like the Rock Hall, it's all about how do you generate spaces of human and cultural connection?”

### Project Credits

*Project:* Rock & Roll Hall of Fame Expansion, Cleveland, Ohio

*Client:* The Rock & Roll Hall of Fame

*Design Architect and Project Lead:* Practice for Architecture and Urbanism, New York

*Architect of Record:* Robert Madison International

*Landscaping:* James Corner Field Operations

*Programming and Documentation:* Cooper Robertson

*Lighting:* L'Observatoire

*Size:* 50,000 square feet


> To see more renderings of the Rock Hall Expansion, visit [bit.ly/ARockhall](http://bit.ly/ARockhall).



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# Customizable Acoustical Solutions for Open Plenum Design

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## ACOUSTICAL DESIGN FOR OPEN SPACES

Modern open spaces create a unique set of challenges when it comes to acoustics. For the past several decades, historic factories, warehouses, and other buildings with open floor plans have been converted into offices, studios, retail, or living spaces. The adaptive reuse of these buildings is a trend that is not going away, and it can pose challenges when the purpose of a building is fundamentally changed to meet different occupant needs. Noise control was not part of the design when most of these buildings were constructed, and now that they're being used for offices and living spaces that require varying degrees of privacy and quiet, optimizing acoustics is paramount.<sup>1</sup>

New buildings are also being designed with open plans and open plenums. These

tactics provide industrial flair to a space, but often lead to an uncomfortable acoustic environment. The use of glass, wood, metal, polished stone, concrete, and other acoustically reflective materials can further exacerbate this problem. In addition, the numerous benefits of daylighting buildings have been studied extensively, which has led to more open floor plans where daylight can spill across the entire space, or soaring atriums that flood lobbies and other public spaces with natural light.

Fortunately, there are innovative open plenum ceiling systems on the market that can help to overcome these challenges while adding incredible aesthetics to the space. Wall-to-wall suspended ceilings were typically used in the past for acoustic control and to

## LEARNING OBJECTIVES

1. Examine the importance of acoustical design for open spaces and how free-hanging and direct-mounted ceiling systems provide acoustic control.
2. Identify how to transform a space using customizable metal ceiling systems for open plenums.
3. Assess how to enhance open plenums with wood ceiling systems.
4. Describe how to design with innovative fiberglass ceiling systems, including oversized panels, clouds, and baffles, to achieve dramatic, sculptural design.
5. Explore how to use felt ceiling systems to maximize acoustics and aesthetics.

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hide unsightly HVAC ductwork, plumbing, and fire protection systems that are typically located in the ceiling plenum. But wall-to-wall suspended ceilings are often not aesthetically desirable or practical. Creative freedom and acoustic control can be achieved simultaneously, without the need for a suspended ceiling. With the strategic use of ceiling treatments, you can achieve the right acoustic performance in each space without compromising visual impact or the budget.

Acoustic alternatives to suspended ceiling tiles include clouds, pods, beams and

baffles, and wall panels, which are available in a variety of materials like metal, wood, fiberglass, and felt. These systems can significantly improve acoustics and, when properly configured, can achieve sound absorption comparable to that of a traditional wall-to-wall acoustic ceiling tile system, but with a much more exciting aesthetic.

## FUNDAMENTALS OF ACOUSTICS

Choosing the right acoustical products for an open plenum space requires a basic understanding of the acoustic principles these products are designed to address.

### Reverberation Time (RT)

A primary acoustic concern in open spaces is reverberation time (RT), which is the time it takes for the sound to die off after the source has stopped. RT is directly impacted by the exposed surface area of sound-absorbing materials in the space.<sup>2</sup> For example, a completely empty, unfurnished 1,000 ft<sup>2</sup> space with 12' high ceilings (12,000 ft<sup>3</sup>) and standard drywall surfaces has an RT of 3.2 sec. Acoustic surfaces anywhere within the space like upholstered furniture, carpet, and curtains will shorten RT. Room volume is also a driver. Larger spaces have larger volumes

and require more sound absorption to achieve an acceptable RT. The reverse is true for smaller volume spaces.

The right reverberation time for a space depends on the purpose of the space. If the goal is to maximize speech intelligibility, which is important for office environments, the RT should be less than 1 second. Some areas require a livelier, more energetic sound environment. Restaurants and other social spaces are most comfortable with an RT between 1.4 and 2 seconds, but even energetic spaces require some sound absorption to strike the balance between comfortably lively and just plain loud.<sup>3</sup>

### Noise Reduction Coefficient (NRC)<sup>4</sup>

Noise Reduction Coefficient (NRC) is another measurement that is often used with building products, such as acoustic panels. NRC is a test measurement of sound absorption. To appreciate how NRC is calculated, you must first understand frequency, which is the measurement of how often a wave passes a fixed point in one second. Measured in hertz (Hz), frequency dictates the pitch of the sound and its audibility to the human ear. High frequency sounds are high pitched. Low frequency sounds are low pitched. The human

voice has a general range between 80 Hz to 240 Hz for men and 140 Hz to 500 Hz for women. For comparison, a piano produces sounds between 27.5 Hz and 4186 Hz. The human ear can distinguish sounds between 20 Hz and 20,000 Hz. The NRC of a product is determined by averaging how much sound it absorbs at four frequencies: 250, 500, 1000, and 2000 Hz. This average is represented as a decimal between 0.00 (no absorption at all) and 1.00 (complete absorption), rounded to the nearest .05.<sup>5</sup> For example, fiberglass is one highly sound-absorbent option for ceiling panels, with an NRC that typically ranges from 0.90 to 1.00.

### Sabins<sup>6</sup>

Another key to understanding the sound absorbing capabilities of an acoustical product is the Sabin, which can be helpful when designing open plenum spaces. Every exposed surface has sound absorption and offers a quantity of Sabins when calculating RT. Sabins are the measurement of the quantity of sound absorption provided by anything inside of a space. This measurement can take the form of Sabins per square foot of an exposed surface (wall, floor, ceiling) or it can be the absorption from a three-dimensional element in the space like furniture, baffles, or clouds. This is important to our discussion as a wall-to-wall acoustic ceiling absorbs sound through a single, exposed face, whereas the products we will discuss in this course, such as baffles and clouds, are absorbing sound from all exposed surfaces.

There is a direct relationship between the reduction in sound level in a room and the amount of sound absorption added to the room. A high NRC material (like fiberglass) will typically translate to products having a high level of Sabins, but ultimately the total amount of sound absorption is determined by either the square footage of the material in the space or the number of panels, clouds, or baffles in the space. In order to compare Sabins to NRC, take the NRC provided for the product and multiply it by the total square footage for that product; that will give you the number of Sabins that it is bringing to the space. This will apply to products that are installed as a full wall-to-

## GLOSSARY

**Baffle**—An architectural device used to prevent the spread of sound or light in a particular direction

**Beam**—A horizontal ceiling element that creates visual interest, separation, and depth

**Cloud**—Free hanging ceiling element that is exposed for sound absorption on all sides

**Frequency**—The measurement, in hertz (Hz), of how often a sound wave passes a fixed point in one second; frequency dictates the pitch of the sound and its audibility to the human ear

**No-Added Urea Formaldehyde (NAUF)**—Urea-Formaldehyde is a type of resin that is used as a bonding agent in some types of plywood and composite wood panels; NAUF products are specifically manufactured by the wood industry to remove urea formaldehyde from the bonding process, eliminating the harmful effects of VOCs, like eye and throat irritation

**Noise Reduction Coefficient (NRC)**—Measure of sound absorbed by a material; the single number

designation represents the average of the sound absorption coefficients of a material at 250 Hz, 500 Hz, 1000 Hz, and 2000 Hz rounded to the nearest 0.05 when tested in accordance with ASTM C 423

**Open Plenum**—The space provided for HVAC, plumbing, lighting, and other systems that is typically located between the structural ceiling and a drop-down ceiling; an open plenum results in an exposed structural ceiling

**Reverberation Time (RT)**—The time it takes for the sound to die off after the source has stopped; RT is directly impacted by the exposed surface area of sound-absorbing materials in the space

**Sabins**—A unit of sound absorption necessary for Reverberation Time calculations

**Wall-to-wall suspended ceiling**—Typically a metal grid that supports ceiling tiles that are used for acoustic control and to hide unsightly HVAC ductwork, plumbing, and fire protection systems located in the ceiling plenum

wall ceiling, or to things like floor coverings and wall coverings, such as gypsum board or glass.

Free hanging elements like clouds and baffles, since they are exposed for sound absorption on all sides, behave somewhat differently than a traditional lay-in ceiling. As such, a good rule of thumb is that, typically, 50–60% coverage of the ceiling will perform similarly to a full wall-to-wall ceiling constructed of high-quality fiberglass ceiling panels. The panels being exposed on all sides allow for more than just the panel face to absorb sound, hence fewer panels are needed to perform like a wall-to-wall ceiling.

In short, 100 ft<sup>2</sup> of wall-to-wall fiberglass ceiling offers 100 ft<sup>2</sup> of 0.90 NRC or approximately 90 Sabins. However, 100 ft<sup>2</sup> of fiberglass hanging baffles actually have 200 ft<sup>2</sup> of exposed surface and can offer approximately double what is offered by the suspended ceiling. Of course, acoustic evaluation isn't quite that simple, but this conceptual description should provide a better understanding. Typically, acoustic elements are tested to provide a useful acoustic descriptor, Sabins per unit. This enables a calculation of how the introduction of this unit (or several units) will affect the RT of the space.

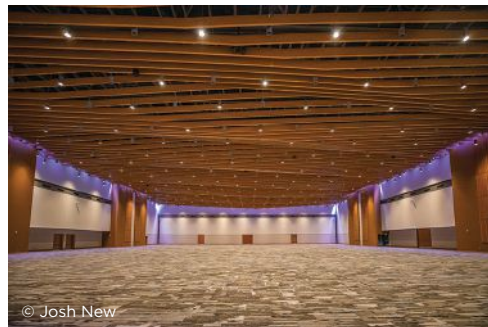
### OPEN PLENUM SOLUTIONS AND WHY FORM AND MATERIAL MATTER

There are many types of open plenum solutions available to achieve the acoustics we've discussed, including baffles, beams, and clouds. The materials used in these products matter greatly. Some materials, like fiberglass



With the strategic use of ceiling treatments, you can achieve the right acoustic performance in each space without compromising visual impact or the budget.

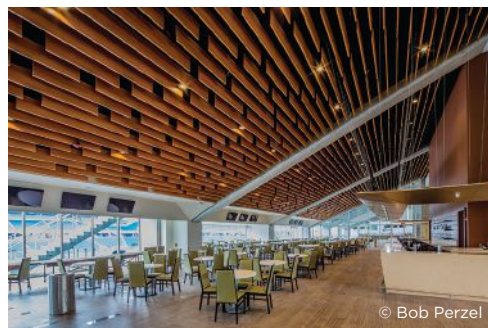
and felt, are inherently sound absorbent while others, like wood and metal, are not. But, they can be combined with sound absorbent materials to create solutions that have the desired combination of aesthetics and acoustic traits. Now let's delve more deeply into each of these open plenum solutions.



Beams and baffles help to disperse noise in a space, even when made from material that is not inherently sound absorbent. For better acoustical performance, metal beams and baffles are also available with a combination of perforations and acoustical infill that allow the sound to pass into the beam and be absorbed inside rather than reflect off its surface.

### METAL CEILING SOLUTIONS FOR OPEN PLENUM SPACES<sup>7</sup>

The metal ceiling systems we will discuss in this course include beams and baffles constructed of lightweight extruded aluminum. As mentioned earlier, metal is not sound absorbent, but metal beam and baffle products are available with a combination of perforations and sound absorbent infill that allows the sound to pass into the beam and be absorbed inside rather than reflect off its surface. Such systems can be specified for acoustic performance, as they can achieve NRC values of 0.70 and higher.



Designers are able to create topography and rhythm at interior ceiling planes by combining metal beams and baffles of multiple heights and reveals.

### Designing with Metal Ceiling Systems

Metal beams and baffles allow for easy plenum accessibility and a variety of installation options. There is an extensive portfolio of lengths, widths, and heights to choose from along with canted, tiered, and diverging options to create unique designs. Designers are able to create topography and rhythm at interior ceiling planes by combining beams and baffles of multiple heights and reveals. They can be precision-cut with straight and curved elements to create peaks, valleys, angles, walls, and screens. Twist clips can also be used to create a sense of motion.



Metal ceiling systems can be clad in both real wood veneer or decorative wood-look options.

A wide choice of colors, wood looks, and finishes are possible, with manufacturers often offering custom color matching upon request. Light color finishes such as white can increase daylighting, as they have higher light reflective values. To prevent glare, designers should specify a low-gloss finish. Metal ceiling systems can also be clad in both real wood veneer or decorative wood-look options. While real wood veneer is only suitable for interior applications, decorative powder-coated, wood-look options can be specified for both interiors and exteriors. In addition, designers can incorporate lighted backgrounds into some metal ceiling systems to create illumination and depth.

From a practical standpoint, a key feature of beam and baffle systems is its integration with a standard heavy-duty 15/16" T-grid system that allows for easy installation—the same type of system used for traditional suspended ceilings. Beams mount via hidden scissor clips to enable single-beam access to the plenum as well as freedom from fixed modular assemblies.

## WOOD CEILING SYSTEMS

Designing with wood brings the beauty of nature indoors, creating a sense of warmth as well as depth, separation, and visual interest in ceiling designs. Architectural wood ceiling systems range from familiar forms with options for customization, to fully engineered custom acoustic solutions, making it easy to elevate the style of any space on any budget. Like metal, non-sound-absorbent wood systems can be used for visual impact as part of a larger design plan that includes acoustic products. Some wood products can be specified with micro-perforations or grooving patterns along with a sound absorbing fiberglass core infill to provide acoustic performance. Acoustical absorption characteristics can also be modified by changing the thickness of the baffles as well as the spacing between installed baffles.



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Designing with wood brings the beauty of nature indoors, creating a sense of warmth as well as depth, separation, and visual interest in ceiling designs.



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## SPONSOR INFORMATION

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ARCHITECTURAL

A subsidiary of Saint-Gobain, CertainTeed has shaped the building products industry for more than 110 years. From acoustical ceiling panels and suspension systems to custom-engineered showpieces, the CertainTeed Architectural portfolio includes solutions for every space and budget—backed by collaborative support to help you unleash the creative potential of every project.

## QUIZ

- Which of the following measures the time it takes for sound to die off after the source has stopped?
  - Reverberation Time (RT)
  - Noise Reduction Coefficient (NRC)
  - Sabins
  - Decibel
- \_\_\_\_\_ measure the quantity of sound absorption provided by anything inside of a space (i.e. furniture and ceiling treatments).
  - Reverberation times
  - Noise Reduction Coefficients
  - Sabins
  - Decibels
- A good rule of thumb is that typically \_\_\_\_\_ percent coverage of a ceiling with free-hanging elements, such as clouds and baffles that absorb sound from both sides, will perform similarly to a full wall-to-wall ceiling constructed of high-quality fiberglass ceiling panels.
  - 30 to 40
  - 40 to 50
  - 50 to 60
  - 60 to 70
- Which of the following materials are inherently sound absorbent? Choose all that apply.
  - Metal
  - Wood
  - Fiberglass
  - Felt
- Metal beam and baffle products specified for acoustic performance can achieve NRC values of \_\_\_\_\_ and higher.
  - 0.55
  - 0.60
  - 0.65
  - 0.70
- Some \_\_\_\_\_ products can be specified with micro-perforations or grooving patterns along with a sound absorbing fiberglass core infill to provide acoustic performance.
  - Metal
  - Wood
  - Fiberglass
  - Felt
  - Both A and B
- When using wood products in design, which of the following should architects prioritize to ensure environmental responsibility and occupant safety?
  - Forest Stewardship Council certification
  - High recycled content
  - No-Added Urea Formaldehyde
  - Class A Fire Rating for veneers and Class C for solid wood
  - All of the above
- Fiberglass clouds should be spaced at least \_\_\_\_\_ inches apart to ensure optimum sound absorption.
  - 5
  - 10
  - 12
  - 18
- The square footage of fiberglass baffles and clouds should equal \_\_\_\_\_ percent of the wall-to-wall ceiling area to ensure adequate sound absorption.
  - 10 to 30
  - 30 to 60
  - 40 to 80
  - 60 to 90
- Some felt products offer a high acoustical performance of NRC \_\_\_\_\_ or higher.
  - 0.50
  - 0.60
  - 0.70
  - 0.80

# Adopting Sensor Technology Throughout Commercial Restrooms to Optimize Hygiene and Sustainable Design

Presented By:



## INTRODUCTION

Plumbing manufacturers are laser-focused on hygiene, sanitation, and accessibility, developing products that play an essential role in fighting disease. Anything that eliminates or reduces the number of surfaces the user touches cuts down the potential for cross-contamination, be it bacteria, virus, bodily fluids and waste, chemicals, and more. Sensor-operated restroom fixtures that prevent the need to touch surfaces are an important component of hygienic restroom design. These sensor-based, touch-free products include faucets, flushometers, soap dispensers, and hand dryers.

Of course, the battle against disease transmission starts with the simple task of washing our hands.

## HISTORY OF HAND HYGIENE

The disease-fighting power of handwashing was discovered in 1847 by Hungarian physician Ignaz Semmelweis. After observational studies working in the obstetrics ward at Vienna General Hospital, he was the first to advance the idea of “hand hygiene” in medical settings. He noticed that students and doctors who regularly went back and forth between performing autopsies and delivering babies, rarely washing their hands between tasks, became sick or died (as did their patients) at a much greater rate than those doctors and midwives who only worked in delivery. This was two decades before Louis Pasteur proved the germ theory, and at the time it was believed that bad odors transmit disease. “Realizing that chloride solution rids objects of their odors, Semmelweis mandated hand-

## LEARNING OBJECTIVES

1. Explore the history of sensor technology and how it has continually evolved to optimize hygiene for the health, safety, and wellness of occupants.
2. Examine the importance of designing commercial restrooms utilizing sensor technology to improve hygiene, save water, and conserve energy.
3. Understand the advantages of sensor versus manual operation and explore considerations for replacing or retrofitting with sensor-operated fixtures.
4. Describe cutting edge advancements in sensor technology and how high-efficiency sensor faucets and flushometers can help meet sustainability goals.

## CONTINUING EDUCATION

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washing across his department. Starting in May 1847, anyone entering the [department] had to wash their hands in a bowl of chloride solution. The incidence of puerperal fever and death subsequently dropped precipitously by the end of the year.”<sup>1</sup>

We have come a very long way in our understanding of germ transmission, and indeed the importance of hand hygiene has

become abundantly clear due to the recent pandemic. You can't turn on the television without seeing infectious disease expert Dr. Anthony Fauci pleading with Americans to wash your hands...wash your hands...wash your hands.

#### WHY HIGH-TOUCH SURFACES CAN BE RISKY

Germs (microbes) are either bacterial or viral in nature. Bacterial infections reproduce by themselves, while viral infections must have host cells to replicate. They reproduce in the body, which tries to eliminate them via immune system responses such as coughing, sneezing, and inflammation. This coughing and sneezing releases tiny, germ-containing droplets into the air that can travel as far as 6 feet and can spread germs by landing in another person's eyes, nose, or mouth or on surfaces that are then touched by a healthy person.<sup>2</sup>

"High-touch" surfaces are those that many people touch throughout a day, such as door handles, faucets, soap dispensers, flushometers, etc. Reducing contact with potentially contaminated surfaces is a proven method for mitigating infection. Regular handwashing is also one of the best ways to remove germs, avoid getting sick, and prevent the spread of germs to others. Doing it correctly is critical. We should all be

following the Centers for Disease Control and Prevention's (CDC) long-published *Guidelines for Proper Handwashing*, which can help prevent sickness and the spread of germs.

#### CDC GUIDELINES FOR PROPER HANDWASHING

Hand hygiene is important in any commercial restroom, but it's especially critical where larger numbers of people may be exposed to germs, such as hospitals, airports, stadiums, retail centers, restaurants, schools, and offices. According to the CDC, "Handwashing education in communities reduces the number of people who get sick with diarrhea by 23 to 40 percent; reduces diarrheal illness in people with weakened immune systems by 58 percent; reduces respiratory illnesses, like colds, in the general population by 16 to 21 percent; and reduces absenteeism due to gastrointestinal illness in schoolchildren by 29 to 57 percent."<sup>3</sup>

The CDC recommends that users wet their hands with clean, running water (warm or cold), turn off the tap, and apply soap. Turning off the water prevents the user from washing their hands in standing water sitting in a contaminated basin. **Sensor faucets with automatic shut-off are a great solution to eliminate this potential risk.** The CDC

notes, "Using soap to wash hands is more effective than using water alone, because the surfactants in soap lift soil and microbes from skin, and people tend to scrub hands more thoroughly when using soap, which further removes germs." Lathering all areas of the hands, including under the nails, is important. The optimal length of time for handwashing is a bit subjective depending on the amount and type of soil present, but the CDC recommends an average of 20 seconds, with an additional 20 to 30 seconds for drying.<sup>4</sup>

#### HISTORY OF SENSOR TECHNOLOGY

As expertise in germ transmission and hand hygiene evolved, manufacturers of commercial restroom products led the way in developing technologies that would decrease the transfer of harmful microbes on surfaces throughout the restroom. Their most important innovation, when considering disease mitigation, is sensing technologies that allow users touch-free operation of restroom fixtures, such as faucets, flushometers, soap dispensers, and hand dryers. Once you enter the restroom, you can now go about your business without ever having to physically turn on a faucet, flush a toilet, push a soap dispenser, or tap the hand dryer. This is ultimately benefitting the health, safety, and wellness of all who visit public restrooms.

Infrared detecting has long been used in military applications, since as early as 1929 when Britain produced the first infrared-sensitive electronic television camera for anti-aircraft defense.<sup>5</sup> But passive infrared (PIR) sensors were a later development, with the basis of the technology evolving in the early 1970s at both the Optical Coating Laboratory in California, a company specializing in non-contact temperature measurements (pyrometers), and at Barnes Engineering, who were active in military infrared applications.<sup>6</sup> PIR was first (and still is) used for security systems to detect the presence of humans, but the technology was soon adapted to create sensor-operated faucets.

In 1974, Sloan introduced the first hands-free commercial sensor faucets, which at the time were sold under the name "proximity faucets." Another early product development breakthrough in plumbing technology occurred in 1980, when Sloan integrated electronics into their flushometers

*"Surface areas in general are reservoirs for viruses, bacteria, and other germs. When you sneeze into the environment, the respiratory particles can land on surfaces. Simply touching a contaminated surface won't give you COVID-19, but then touching your mouth, nose, or eyes can transfer the virus to those sensitive spots, allowing the virus to enter the body and cause infection."*

Manish Trivedi, M.D., Director, Division of Infectious Diseases and Chairman of Infection Prevention and Control, AtlantiCare Regional Medical Center, NJ



The CDC recommends that users wet their hands with clean, running water (warm or cold), turn off the tap, apply soap, lather for 20 seconds, then rinse and dry.

and introduced the first sensor-operated flushometers.<sup>7</sup> Chicago's O'Hare International Airport underwent a major renovation in the early 1980s, which included retrofitting the airport's public restrooms with toilets featuring this new, infrared sensor flushometer technology to monitor the light level in individual stalls. "When an object blocked the sensor, a timer activated and prepared the toilet to flush when the object was removed. Faucet manufacturers studied this technology and realized that if it were modified, it could potentially work in their products."<sup>8</sup> The popularity of electronic sensor faucets gained traction when they were updated with this infrared technology, but they were not widely adopted until 1985, when the electronic handwashing faucet was tested at O'Hare, teaching America how to use automatic faucets.

According to Plumbing and Mechanical Magazine, "Electronic research and development efforts became even more critical with the passing of the Americans with Disabilities Act (ADA) in 1990...With the creation of a sensor faucet, a person would be able to operate it without the use of hands or fingers, making it an ideal ADA compliant product." The magazine also notes, "Throughout the late 1980s and early 1990s, many faucet

companies created prototype electronic faucets operated by wiring, power source, and sensor technology. A big push for the use of sensing faucets came in 1992 when the U.S. government issued the Energy Conservation Act of 1992. This legislation dictated new water use levels for faucets...thus increasing the need for efficient hands-free products."

"In the mid-1990s, with improvements in sensory technology, many faucet companies had either successfully brought an electronic faucet to market or were developing improved products."<sup>9</sup> Energy-efficient and cost-effective battery-powered faucets were developed, which led more organizations to install them in their facilities. "As people began to learn of



In schools and hospitals, sensor-operated fixtures are a highly effective way to reduce the spread of germs and bacteria because hand contact is not required for their use, and they greatly decrease instances of cross contamination resulting from multiple people handling infected fixtures.

## GLOSSARY

**Adaptive Sensing**—Digitally calibrated electronics automatically adjust to environmental conditions, preventing false faucet starts while maintaining operational sensitivity; the self-adaptive sensor automatically adapts itself around permanent "targets" in the sensor's environment, such as a wall or stall, so that it can more easily recognize non-permanent targets

**Anti-scald Technology**—Water is mixed as it passes through the spout of the faucet via an integrated thermostatic mixing valve; the mixer lever can be set to a desired temperature and can be removed for facilities where tamper resistance is required

**Capacitance Sensing Technology**—Senses the electrical field (aura) that surrounds every human; when it senses a nearby electrical field, it will activate; when the electrical field is removed, the fixture will turn off

**Dual-flush Technology**—Dual-flush sensor-operated flushometers that automatically activate by means of an infrared sensor with multi-focused, lobular sensing fields, then initiate either a 1.1 gpf reduced flush or a full flush based on how long the user remains in the sensor range.

**Guided Handwashing Faucet with LCD Display**—An on-demand sensor faucet with a solar LCD screen on the faucet crown that walks the user through the CDC's five steps to correctly wash hands

**Infrared Sensing Technology**—Every several milliseconds a photoelectric sensor sends out a beam of infrared light from the faucet (or other fixture) and is looking for a reflection; when it senses the reflection of infrared light and decides that there is a valid "target" within range, the sensor then triggers a solenoid valve to open, releasing water flow

**Material Recognition**—Advanced technology that allows a sensor to recognize the object in front of it as a person rather than a color; this recognition ability reduces false activations and non-activations

**Monitored Control Systems**—Systems that automatically regulate water flow and can be used in conjunction with other plumbing products to substantially reduce restroom water use; they provide views of when and how long each connected sink, water closet, urinal, or shower is used and offer administrators valuable usage information that relates directly to water efficiency

**Side-mount Retrofit Flushometers**—Flushometers that replace or fit over the handle assembly and do not require water shut-off; you simply remove the handle and install the side-mount retrofit kit

**Top-mount Retrofit Flushometers**—Flushometers that replace the cover and diaphragm assembly; water shut-off is required and flush volume can be changed



the faucet's hygienic benefits and ease-of-use, the products became much more accepted and requested for use in new building and remodeling projects."<sup>10</sup>

The histories of other sensor-operated restroom fixtures, such as soap dispensers and hand dryers, are a bit more obscure, but some information can be gleaned from patents placed on the products. The patent for the first automated soap dispenser, under the name "Automatic Cleaning-liquid Dispensing Device," was issued in 1991 to Guey-Chaun Shiau and also used infrared sensing to detect users.<sup>11</sup> World Dryer got its start in 1950 with the introduction of the Model A, their original hand dryer designed for commercial use. In 1987, World Dryer again led the way by introducing its first sensor-activated automatic dryers.<sup>12</sup>

### DESIGNING SENSOR TECHNOLOGY INTO COMMERCIAL RESTROOMS

State-of-the-art sensor technology for restrooms includes sensor faucets, which have immense hygienic and water savings benefits; soap dispensers that can be designed to match sensor faucets; and sensor hand dryers with integrated HEPA filters that reduce contaminants by removing 99.97% of bacteria at 0.3 microns or larger. There are even sink systems that combine all three fixtures on one deck for the ultimate touch-free system. Apart from touch-free sink features, sensor-operated flushometers on both toilets and urinals are more hygienic and, when integrated with dual-flush technology, can save water by telling the system when a longer flush is needed.

### SPONSOR INFORMATION



Sloan is the world's leading manufacturer of commercial plumbing systems. Sloan has been at the forefront of the green building movement since 1906 and provides smart, sustainable, and hygienic restroom solutions by manufacturing water-efficient products such as flushometers, electronic faucets, soap dispensers, sink systems, and vitreous china fixtures to promote wellness in commercial, industrial, and institutional markets worldwide.

### QUIZ

- What did Hungarian physician Ignaz Semmelweis mandate in 1847 that reduced puerperal fever dramatically?
  - Penicillin
  - Vaccinations
  - Handwashing
  - Hand drying
- Which of the following is a proven method of mitigating infection?
  - Reducing contact with potentially contaminated surfaces
  - Regular handwashing
  - Both A & B
  - None of the above
- The optimal length of time for handwashing is a bit subjective depending on the amount and type of soil present, but the CDC recommends an average of \_\_\_\_\_ seconds, with an additional 20 to 30 seconds for drying.
  - 10
  - 20
  - 40
  - 60
- At which airport were electronic faucets used that popularized the adoption of this technology?
  - Hartsfield-Jackson Atlanta International
  - Chicago O'Hare International
  - Ronald Reagan Washington National
  - LaGuardia
- High frequency use occurs in heavily transient populations and is considered \_\_\_\_\_ activations per day.
  - 50+
  - 100+
  - 200+
  - 250+
- Which type of sensing technology available for touch-free restroom fixtures sends out a beam of light from the fixture, looking for a reflection?
  - Infrared
  - Capacitance
  - Proximity
  - Mirroring
- High-speed and super-energy-efficient hand dryers can dry hands in 8 to 15 seconds, saving \_\_\_\_\_ percent more energy than traditional hand dryers and 90 to 95 percent in paper towel costs.
  - 50
  - 60
  - 70
  - 80
- Aside from significantly improving hygiene, what is another key advantage of sensor-operated products over manual?
  - Vandal resistance
  - Concealed sensors
  - Easier maintenance
  - More advanced technology
  - Sustainability
  - All of the above
- Side-mount retrofit flushometers are more affordable than top-mount retrofit flushometers; they replace or fit over the handle assembly and do not require water shut-off, which reduces conversion time to \_\_\_\_\_ minutes.
  - 1-5
  - 5-7
  - 7-10
  - 10-13
- Which advancement in sensor technology allows digitally calibrated electronics to automatically adjust to environmental conditions, preventing false faucet starts while maintaining operational sensitivity?
  - Adaptive sensing
  - Material recognition
  - Sensor range adjustment
  - Dual-flush



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# High-Performance Water-Proof Wall Panel Systems Interiors

Presented By:

**Wetwall**  
— A WILSONART COMPANY —



## INTRODUCTION TO WATER-PROOF WALL PANEL SYSTEM

An innovative wall panel system has entered the market that is ideal for wet applications such as tub and shower walls, wainscoting, wall cladding, backsplashes, tub skirts, and more. Unlike tile and grout, the system doesn't need to be surface sealed and is very easy to clean. This wall panel system makes it easier than ever to provide consumer-driven designs in a waterproof solution that is functionally beautiful, quick and easy to install in as little as 2.5 hours, and offers the look of luxury at an economical price. Designed to complement popular bath fixtures, panels can be used wherever design meets water.

Water-proof wall panel systems can be used on single walls, in corners, or in alcoves

within baths and showers. The post-formed panels can even extend beyond bath and shower surrounds because of an innovative tongue and groove installation. Note that these panels are designed for wall and ceiling applications only and cannot be used on the floor.

### Material Composition and Sizing

This water-proof wall panel system consists of two panels made of High Pressure Decorative Laminate (HPDL) bonded to a waterproof, Wood-Plastic Composite (WPC) core. To produce the HPDL decorative sheets, surface papers are impregnated with melamine resins and pressed over the wood-plastic core. Sheets are then bonded together under pressure greater than 1,000 lbs. per sq. in.

## LEARNING OBJECTIVES

1. Examine water-proof wall panel systems and how they compare to traditional tile installations.
2. Explore the features and performance benefits of water-proof wall panel systems, including antimicrobial protection that benefits occupant health and safety.
3. Identify the dangers of moisture intrusion and how water-proof wall panels can help mitigate moisture damage.
4. Review installation considerations and how maintenance is minimized due to the material's continual microbial reduction and scratch-resistance.

## CONTINUING EDUCATION

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and high temperatures approaching 300°F. The finished sheets are trimmed, then the backs are sanded to facilitate bonding to the substrate. Wall panels have balance laminate surfaces, meaning they are on both sides of the panel. The panel's core material is a wood-plastic composite composed of cellulosic materials, glass fibers, polypropylene, and a bonding agent, resulting in a durable, waterproof, and dimensionally stable substrate suitable for decorative laminate overlays.<sup>1</sup>

Panels can feature a flat edge, a tongue and groove edge, or a decorative bullnose

edge, with their configuration dependent on the application. For example:

- Panels with a flat edge + tongue (or groove) are suitable for back walls
- Panels with two flat edges are suitable for a back wall with no seams
- Panels with a flat edge + bullnose edge should be used for wing wall panels
- Panels with two bullnose edges are feature panels for use behind vanities or as end caps
- Panels with tongue edge + groove edge are suitable for extending the design beyond a surround or single panel width
- Panels with a bullnose edge + tongue (or groove) edge are suitable to cap (or end) the panel

Panels are available in sizes up to 60"X96". 30", 32", 34", 36"X60", 72", and 96" panels are the common sizes for wet applications. Panel thickness is 11mm or approximately 0.43 inches. These lightweight patented panels weigh approximately 1.65 lb/sq.ft. each, meaning a standard 32"X60"X72" 4-panel kit will weigh approximately 105 lbs.

### COMPARING WALL PANEL SYSTEMS TO TRADITIONAL TILE INSTALLATIONS

Wall panel systems can help to overcome some of the inherent disadvantages and installation challenges of traditional tile installations. When installing tile, a great deal of time must be spent on surface prep to ensure that the surface is clean and the tile backer substrate is level. Planning the tile layout is another essential step because once the tile is set, it's hard to go back and rethink the layout. Next, thinset mortar is applied, which takes approximately 30 to 40 minutes depending on the temperature, humidity, and other environmental conditions. You must select the right trowel based on the size of the tile, then mix thinset to the proper consistency while keeping in mind the manufacturer's suggested open and cure time. Open time is the amount of time you have to work with the thinset before it hardens. Cure time is the amount of time it takes for thinset to set up fully once it's installed.

When finally installing the tile, some tiles will need to be cut using a wet saw or scoring snap cutter, which requires the use of safety equipment. Spacers must be used between the tiles to ensure a consistent gap, then any excess thinset must be removed from the tile while still wet. Cure time can then take from 1 to 3 days. Depending on the weight of the tile, the installer may have to wait for the first few rows to cure before applying more tiles to prevent tiles from sliding down the wall. Another day will be spent grouting the tile, which involves removing spacers and cleaning off any excess thinset that may have squeezed out and into grout joints. Then a grout float is used to apply grout parallel to the joint. Finally, the tile surface must be cleaned to remove the grout haze, then the grout must be sealed. Most sealers cannot be applied until 48 hours after the grout has been installed, and the sealer drying time is 2 to 3 hours.

The total installed cost of tile can be more expensive than water-proof wall panels, ranging from \$18.85 to \$21.68 per square foot for materials and installation, while water-proof wall panels cost approximately \$20.41 per square foot installed, result in far fewer call backs for contractors, and minimize waste and overage. Additional costs may include backer board, mortar, grout, sealer, edge transition pieces, and demolition and prep. And, skilled labor is necessary to install tile, which has become harder to come by in recent years as the number of trained trades people have dwindled.

In addition, tile can be difficult to maintain. Soap scum, mineral deposits, and water spots are just the first challenge in keeping tile looking pristine. Cleaning grout is very tedious and because it is porous it tends to soften and decay, allowing water to get behind the tile, causing moisture damage. Grout must be continually sealed and eventually may have to be removed, replaced, and resealed.

As you can see, tile takes a great deal of material, skilled labor, and time to install, and continual maintenance is necessary to maintain a hygienic, waterproof surface.

### FEATURES AND PERFORMANCE BENEFITS OF WATER-PROOF WALL PANELS

Fortunately, a less expensive and labor-intensive product is available for wet wall applications. We will discuss the detailed installation steps



For wet wall applications, water-proof wall panels are a less expensive and labor-intensive product than tile.



To help protect the surface from today's more frequent and stringent cleaning and disinfection protocols, antimicrobial protection can be built into laminate surfaces such as water-proof wall panels to inhibit the growth of stain and odor-causing bacteria, mold, and mildew.

for water-proof wall panel systems later in the course, but first let's explore their many features and performance benefits. These include antimicrobial protection, scratch and scuff resistance, low cost, easy installation, and on-trend design options.

### ANTIMICROBIAL PROTECTION

Due to the pandemic, remodeling projects are booming and health, safety, and welfare have become a very high priority when specifying surfaces. Now, more than ever, we are aware of the things around us and the surfaces we touch. High-touch surfaces include many different items from phones and doorknobs, to countertops and desk tops. It is now also more critical than ever that these surfaces are cleaned on a routine basis, using soap and water followed by a disinfectant. While it has become common practice to disinfect surfaces every couple of hours in high use environments, this task is very time consuming and can ultimately damage surface materials due to the harsh nature of disinfecting chemicals. Luckily, there is an alternative.

The ability to provide continual microbial reduction on surfaces can be accomplished using built-in antimicrobial silver technology.

## GLOSSARY

**Abrasion Testing**—Laminate samples were subjected to 200 passes with a weighted, industrial strength Scotch-Brite® pad; competitive laminate was placed side-by-side with laminate manufactured using enhanced scratch and scuff-resistant performance technology

**Enhanced Scuff and Scratch-Resistant Technology**—A new technology that deposits aluminum oxide particles in layers onto high pressure decorative laminate, controlling resin flow so that small particles reside nearer the surface of the overlay sheet and larger particles reside within the overlay sheet; this results in a highly scuff and scratch-resistant HPDL surface

**High Pressure Decorative Laminate (HPDL)**—A paper-based product created by bonding melamine-impregnated decorative papers to layers of resin-treated kraft paper under high heat and pressure; HPDL is commonly used as the decorative surface for residential and commercial countertops and cabinets, work surfaces, laboratory surfaces, backsplashes, partitions, retail fixtures, panel applications, furniture, built-ins, signage/displays, decorative wainscoting and walls

**High-touch Surfaces**—Surfaces that many people touch throughout a day, such as door handles, phones, and countertops

**Mold**—A common fungus that can be found almost anywhere and can grow on virtually any substance; molds thrive on moisture and reproduce by means of tiny, lightweight spores that travel through the air

**Silver-Ion Antimicrobial Technology**—A silver-based active ingredient that can be incorporated into polymers, coatings, textiles, and more to offer continuous product protection against bacterial growth

**Thinset**—An adhesive mortar made of cement, sand, and a water retaining agent that is used to attach tile or stone to surfaces such as cement or concrete

**Water-Proof Wall Panel System**—A system that consists of two panels made of High Pressure Decorative Laminate (HPDL) bonded to a waterproof, Wood-Plastic Composite (WPC) core

**Wear Resistance Testing**—A voluntary standard for the laminate industry that measures the number of cycles it takes for an abrasive sandpaper pad to wear through the laminate surface at two points: Initial Point (IP) when the laminate surface first shows wear and Final Point (FP) when the pad wears all the way through the decorative surface

**Wood-Plastic Composite**—The core of an HPDL panel composed of cellulosic materials, glass fibers, polypropylene, and a bonding agent, which results in a durable, waterproof, and dimensionally stable substrate suitable for decorative laminate overlays

“Silver ion antimicrobial technology is a silver-based active ingredient that can be incorporated into polymers, coatings, textiles, and more to offer continuous product protection against bacterial growth.” This is important because while surfaces can be disinfected, they quickly regrow bacteria within a couple of hours. Silver ion provides *continuous protection*.

HPDL with antimicrobial protection utilize silver ions (Ag+) encapsulated in glass beads. The antimicrobial action of silver is a fundamental material property with a long history of efficacy in the health and food service industries. Silver ion technology has demonstrated broad spectrum efficacy to control/eliminate the growth of microbes in a variety of applications. The antimicrobial activity of silver ion technology is believed to result from the ions’ abilities to interfere with the process critical to cell function that eventually causes cell death.<sup>2</sup> Silver ion technology works through moisture to disrupt bacteria’s metabolism by preventing it from converting nutrients into energy, which inhibits bacteria survival, reproduction, and colonization.<sup>3</sup> It does so by attacking and destroying the outer cell membrane. Once this is destabilized, cell respiration, food intake, and cell division are inhibited.

## SPONSOR INFORMATION



Wilsonart, a world-leading engineered surfaces company, is driven by a mission to create surfaces people love, with service they can count on, delivered by people who care. The Company manufactures and distributes High Pressure Laminate, Quartz, Solid Surface, Coordinated TFL and Edgebanding, and other decorative engineered surfaces for use in the office, education, healthcare, residential, hospitality, and retail markets. Operating under the Wilsonart®, Arborite®, Bushboard, Durcon®, KML, Laminart®, Mermaid™, New Leaf™, Polyrey®, Ralph Wilson®, Resopal®, Shore™, Technistone® and Wetwall™ brands, the Company continuously redefines decorative surfaces through improved performance and award-winning designs. For more information, visit [www.wilsonart.com](http://www.wilsonart.com).

## QUIZ

- Which of the following is a disadvantage of tile?
  - Extensive surface prep
  - Requires skilled labor
  - Installation takes several days to weeks
  - Requires numerous materials and tools
  - All of the above
- Which technology provides continual microbial reduction on HPDL surfaces?
  - Enhanced scratch resistance
  - Silver ion
  - Commercial disinfectants
  - None of the above
- Depending on the finish type and pattern of the laminate, HPDL enhanced with scuff and scratch-resistant technology outperformed competitive laminates with similar finishes by a factor of up to \_\_\_\_\_ in industry testing.
  - 1x to 3x
  - 2x to 4x
  - 3x to 5x
  - 4x to 6x
- Water-proof HPDL wall panels are available in which of the following looks?
  - Marble
  - Granite
  - Wood
  - All of the above
- A study by the Lawrence Berkeley National Laboratory concluded that building dampness and mold raise the risk of a variety of respiratory and asthma-related health effects by \_\_\_\_\_ percent.
  - 10 to 15
  - 20 to 30
  - 30 to 50
  - 40 to 60
- Moisture damage can cause which type of building material to return to solution?
  - Wood
  - Structural fasteners
  - Gypsum board
  - Paint
- Which of the following is not a recommendation of the EPA when considering moisture control?
  - Limit areas of a building that are routinely wet because of their use and dry them out when they do get wet
  - All areas of a building must remain dry at all times
  - In unavoidably wet areas, use materials that tolerate repeated wetting and drying
  - Specify materials that are highly resistant to the growth of mold
- What is an ideal application for water-proof wall panels?
  - Shower walls
  - Bathroom stalls
  - Vanity backsplashes
  - Wainscoting
  - All of the above
- Unlike with tiles, an expert fitter is not required to fit the wall panel system, meaning it takes less time and is on average \_\_\_\_\_ percent cheaper than tile installation.
  - 10
  - 15
  - 25
  - 35
- Water-proof wall panel installation takes approximately \_\_\_\_\_ hours compared to days or weeks for traditional tile.
  - 2.5
  - 10
  - 15
  - 25



This article continues on <http://go.hw.net/AR032021-2>. Go online to read the rest of the CEU course, complete the corresponding quiz for credit, and receive your certificate of completion.



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DESIGN. CULTURE. CRAFT.

# AIA Architect

CREDIT: EVA WOOLRIDGE



## ‘We Can Do Both’

**Architect-activists shouldn't have to choose between the two.**

*Architect-activist Pascale Sablan, FAIA, was recently awarded the 2021 Whitney M. Young Jr. Award, distinguishing her as an architect that embodies social responsibility. Sablan is the youngest African American to become a Fellow, an honor that accompanies winning the award. Her dedication to creating equitable spaces for all is well known. As founder and executive director of Beyond the Built Environment, an organization that seeks to engage diverse communities through architecture, Sablan champions people of color—especially women—through her design work. She recently accepted a position as both an architect and advocate at Adjaye Associates.*

*As told to Audrey Taylor Ward*

I founded Beyond the Built Environment to represent marginalized people both within the profession and in communities most underserved by the profession. We aim to involve everyone, from preschoolers to practitioners and pundits, as critical

stakeholders and advocates for just, diverse environments. Beyond the Built Environment provides a holistic platform aimed to support numerous stages of the architecture pipeline. We do this through our approach, which utilizes a method I termed “the triple E, C.”

It's a strategy to Engage, Elevate, Educate, and Collaborate. We engage diverse audiences through programming, promoting intellectual discourse and exchange. We elevate the identities and contributions of women and diverse designers through exhibitions, curated lectures, and documentaries that testify to the provided value of their built work and its spatial impact. We educate through formal and informal learning opportunities that introduce architecture as a bridge to fill the gaps of inequity. We collaborate with community stakeholders and organizations.

In underserved communities, poorly appointed architecture perpetuates

inequity. These inequities, more often than not, adversely affect communities of color. I believe representation is essential to achieving diversity. When I was studying architecture, one of my professors stated I was incapable of becoming an architect because of my gender and race. I resent those words for serving as my call to action, and for being such a prominent part of my purpose.

With my advocacy work, I aspire to inspire marginalized groups to understand the important role they can have in deciding and designing their surroundings.

In my work with NOMA (National Organization of Minority Architects) and in my new role at Adjaye Associates, I'm both an architect and an advocate. As an associate in Adjaye Associates' New York office, I will be running projects, as well as working on project management and business development and supporting diversity and advocacy work.

To have the ability to hold both parts of my identity while working on world-impacting projects that push for design justice is a dream come true. For those like me who were told we had to choose, we can do both. **AIA**



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CREDIT: RACHEL KAPISAK JONES



## Circling Back

By Michele Russo

70 percent of all architecture firm billings were from repeat clients in 2019. Small firms (fewer than 10 employees) had over half (51%) of their billings come from noncompetitive repeat client projects and almost one fifth (18%) from noncompetitive new-client projects.

In contrast, the repeat business for the largest firms (over 50 employees) was split relatively evenly between noncompetitive projects (34%) and those that were competitively selected (36%). Midsized firms also had a more even distribution, although more of their repeat business was

noncompetitive (44%) than competitive (30%). Overall, the share of firm billings from noncompetitive selection declined from 54% in 2017 to 49% in 2019. **AIA**

*Source: AIA Business of Architecture Firm Survey Report, 2020 ([aia.org/firmsurvey](http://aia.org/firmsurvey)).*



# Feeling the Squeeze

Women are losing hard-won gains in every sector of the economy. Architecture's not immune.

By William Richards and Katherine Flynn

Christina Cho, AIA, and her business partner Ming Thompson, AIA, are both mothers of children under the age of 6. Cho and Thompson run a bicoastal firm together, Atelier Cho Thompson, and Cho admits that even with live-in help from a family member, keeping up with work at her normal pace during the pandemic has been challenging. Thankfully, she says, the private nursery school where she sends her children recently returned to four days of in-person learning after months of being remote.

"I would be dead right now if that wasn't the case," she says. "I'm really lucky. But even with the four days in person, it's a shortened day. Ming and I already were working 40-plus hours a week, so as a result, we're having to do more late nights to make up for the lost time during the day."

The post-COVID displacement of work hours (not just workers, as the Bureau of Labor Statistics measures) is difficult to measure but easy to understand, as the workplace has bled into the home and work hours have bled into every waking minute, corrupting time itself.

If child care is not an option for you and you are attempting it yourself while working, then you're in good company. Awake before dawn, send a bunch of emails, rouse a kid, make a breakfast, clean a counter, dial in to a meeting, get the mail, drive to a carefully orchestrated play date, review a change order, jump into Rhino or Revit, take a call—and that's just the first four hours of a day that repeats but never seems to resolve itself, week-in and week-out.

Workforce issues for women everywhere have only been exacerbated during the pandemic. "In three months, women lost a decade's worth of economic advancement," reported the nonprofit digital newsroom *19th News* in August 2020. The question of how is just as important as why.

## Child Care Is a Big Part of the Equation

In the workforce generally, including architecture and all other professions and vocations, labor economists have observed that the share of women over men has

increased each year for five decades straight, peaking in 1999 at 60% (where it has largely remained since).

Kathryn Edwards, a labor economist at the RAND Corporation and a professor at the Pardee Rand Graduate School, says this is the most important aspect of a conversation about women in the workforce: They are the majority. "When you're talking about women workers, you're not talking about a minority of the workforce or a special case scenario," she says. "You are talking about the majority of employees, at least heading into the recession."

For all their gains—thronging the job market, as one correspondent from the *Atlantic* wrote in the mid-1980s—women have been more vulnerable than men in the last 18 months of pandemic-induced upheaval. The Bureau of Labor Statistics recently published numbers showing that 2.2 million women left the labor force between October 2019 and October 2020. The most precipitous drop was among women with children, especially women with children between the ages of 2 and 6.

Within architecture, this scenario is all too familiar. For men and women, the hours can be long, deadlines can be inconvenient, workflows across multiple team members working on the same project can be tedious, and expectations can run high for even the most easy-going client. But, for women, it has been particularly punishing. According to a 2020 Gallup poll, in more than half of U.S. households, women are more likely than men to care for children on a daily basis. Laundry, cleaning, and preparing meals are also tasks that are more likely to be carried out by women.

In a recent op-ed for the *Dallas Morning News*, Edwards argues for better child care policies and more affordable child care offerings as the most effective strategy to retain women in the workforce—a solution that has gained considerable support among labor economists since the late 1990s, when the Clinton White House’s Council of Economic Advisors published a report correlating child care subsidies with an effective return to work.

Since then, the argument has been bolstered by successive administrations and economists from a range of affiliations on both sides of the aisle: If women workers are imperiled, so is our economy.

“The size of an economy is almost one for one determined by the number of workers in it,” says Edwards. “For every woman that leaves the workplace permanently, that’s another hit to our potential GDP. And if we remained 3 million women smaller as workers, this is what we can expect for a per capita GDP.”

Within architecture, Cho’s and Thompson’s experiences are common refrains, as is the financial burden of child care. Even for a profession with an average per capita income of \$80,750 (nearly 52% more than the average per capita income among all workers), there isn’t a single place in the United States where the cost of child care meets the federal definition of affordable, which is no more than 7% of annual household income. According to the Center for American Progress, the average cost to send one child to an above-board and licensed child care center is \$1,230 per month, or \$14,760 per year. Double it if there are two children. According to the Economic Policy Institute’s survey of all 50 states, in Washington, D.C., the average annual cost of infant care for one child is \$24,243—that’s \$2,020 per month, or nearly 30% of a median family’s annual income. In Mississippi, reportedly the most affordable state with the lowest cost of living, the average annual cost of infant care is nearly 12% of a median family’s annual income, far above the federal ceiling.

In other words, life is expensive for everyone, even if the severity of the financial pinch varies from household to household. But child care isn’t the only thing eroding the gains women have made in the workforce. It’s the conditions of work and even the definition of work itself.

### Inches and Miles

If women have made gains in sheer numbers within the workforce, the gender wage gap has persisted as a cause of workforce inequities for women. Several organizations have measured this gap and the figures vary from \$0.79 to \$0.81 earned by white women for every dollar earned by a white man. Asian women earn \$0.90 against the dollar, Black women earn about \$0.62, Native American women, \$0.57, and Hispanic women, \$0.54.

In her 2018 story for *The New York Times*, the architecture critic Allison Arieff argued that the pay gap was a symptom rather than a cause of inequities. The real culprit, she says, is a culture of assumptions that working women will inevitably quit to marry and have kids, anyway, that they cannot command authority on a construction site, and that they are inferior creatives. “Every woman I spoke to on this topic has a story ... of men questioning their competency and qualifications,” she wrote, “of not believing they were actually in charge of a project.”

Within architecture, some observers place child care in a broader constellation of solutions that could make the workplace more equitable and address the assumptions that drive those inequities. The AIA’s Guides for Equitable Practice include one on mentorship, which delineates allies, coaches, and sponsors as part of a network that, along with mentors, can offer the necessary long-term support to women workers. Atelier Cho Thompson’s Ming Thompson identifies mentorship and self-promotion as two ways to call inequities out, and as ways to restructure workplaces where perception about women’s value and contributions should meet reality, rather than drive it.

“In the last half-century, the profession has gained more women than ever and is finally promoting women to its highest echelons,” she wrote in an op-ed for ARCHITECT last May (adapted from a *Medium* piece published the month before). “The COVID-19 pandemic imperils this progress, but it also presents an opportunity to think differently about the way architects live, work, and practice.”

If the pandemic takes away 2.2 million women from the workforce, what could it give back, so to speak?

A conversation that leads to real change among women inside the workforce, women

who wish to rejoin the workforce, and women who are poised to join them in the coming years, fresh out of school.

“I encourage [upcoming generations] to say, ‘Work-life balance doesn’t mean 50% of my time is for me, and 50% of my time is for working,’” says Sarah Whiting, dean of the Graduate School of Architecture and Design at Harvard University. “It’s saying you need to carve out time for thinking and advancing your own ideas about what’s important in the world.”

Whiting encourages students to think about their contributions within two contexts: what she calls their intellectual project and their future selves.

“You should be thinking about what your own intellectual project is—what drives you in architecture? And when you’re thinking of your next phase, think about it in two years, five years, and 10 years,” she says. “You should be constantly saying, ‘Okay, in 10 years, where do I see myself?’”

For a student standing on the dais and on the precipice of an internship, a decade hence can seem like a lifetime. For RAND’s Kathryn Edwards, it is not so much about the promise of 10 years, but the career inches women need to guard, as well as the potential pitfalls women need to guard against.

“I’m more concerned about the doctor that takes the part-time job at a clinic instead of [the job as] the head of a hospital because she has to be the one to pick up the kids,” she says. “Those types of stories are endemic to any female professional association of women who skipped promotions, didn’t go after opportunities, and really took those inches back from their career. The pandemic just made that inch 10 miles long [for some women] and a lot of them didn’t have a choice. It was an exit.”

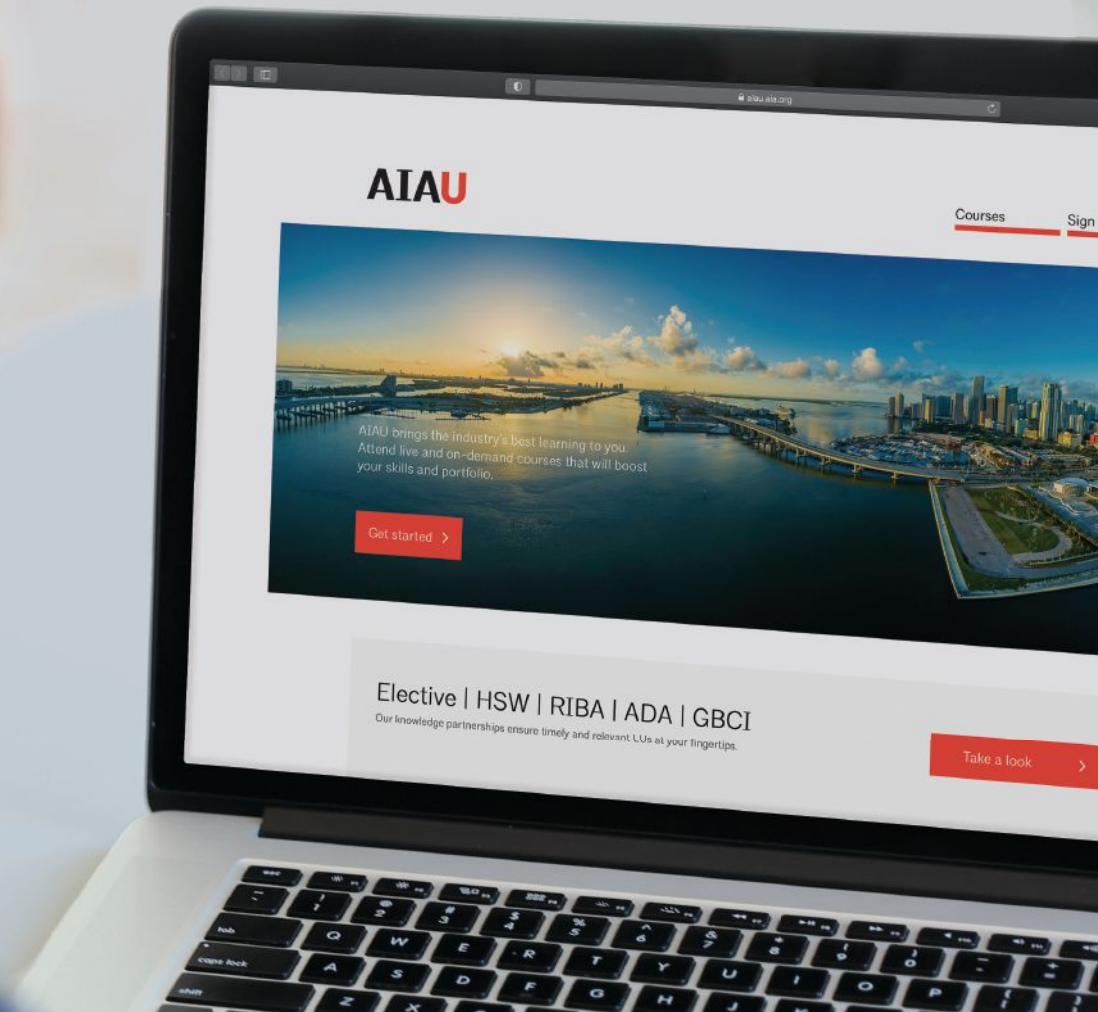
Kara Swanick almost became one of those women. Before the pandemic, she, one of two employees under the principal, sometimes worked 50-hour weeks at a landscape architecture firm in Pennsylvania. When business slowed down, Swanick’s pay became hourly rather than salaried. As business dwindled even more, she told her employer that she would rather receive unemployment money than continue without billable hours—and so, she became unemployed.

“It felt like a weird ‘mutual’ breakup where you’re not sure what happened or where it all fell apart,” she says. Swanick was unemployed for about six months before taking what she calls a “huge risk” and moving to a town eight hours away for a new position.

“I feel beyond fortunate to have found a new job this year, especially doing work I find fulfilling and interesting,” she says. But not everyone will be as lucky. **AIA**

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# The Biden Plan to Jump-Start Affordable Housing

Architects are hopeful that a new administration will breathe new life into stagnant housing policy.

By Christina Sturdivant Sani

President Joe Biden wasted no time during his first day in office, signing more than a dozen executive orders, memorandums, and directives—several of which served as ways to course-correct or reverse decisions made by his predecessor.

Many architects and developers, especially those focused on affordable housing projects, view President Biden's arrival as a chance for transformation. "He changed the tone from the moment he got in there. It gave a jolt of energy and a commitment and conviction for possible change," says Lorcan O'Herlihy, founder and principal of Lorcan O'Herlihy Architects in Los Angeles. In comparison, he says, the last four years have been "somewhat challenging in terms of wanting to do work of consequence."

For Mark Ginsberg, principal at Curtis + Ginsberg Architects in New York, "the last four years at a federal administrative level has been the worst." Though Congress has thwarted former President Trump's plans

to cut HUD's budget, it wasn't expanded. "We've had our hands tied," Ginsberg says. "We know we can do more architecturally. We know we can do more in terms of sustainability and affordable housing. But there has been no new federal funding or commitments for sustainability."

Noting that "housing should be a right, not a privilege," President Biden laid out his housing plan early in his campaign. The proposal, released in March 2020, addresses the nationwide housing shortage, the need for more affordable units, and the discriminatory practices that have caused Black and Latino Americans to have lower homeownership rates.

President Biden's proposed investment in housing includes an influx of \$640 billion over the course of a decade. But this funding has to stretch across dozens of cities and states, and Congress has yet to approve the new initiatives, as Ginsberg points out. "I can't necessarily tell you if it's enough," he says. "But it's clearly in the right direction."

## Helping Americans Buy or Rent Homes

Eric Paine, the CEO of Community Development Partners, an affordable housing developer in Portland, Ore., believes President Biden's proposed expansion of Section 8 vouchers is "a critical affordable housing finance tool that will make a meaningful impact in terms of housing production for extremely low-income households."

Roughly three in four households that are eligible for Section 8 rental assistance do not receive it because the program is underfunded, according to President Biden's proposal. His plan includes distributing vouchers to "every eligible family" so that no one has to pay more than 30% of their income for rental housing.

"As chronic homelessness has increased significantly in so many of our communities, this Section 8 expansion is going to be vital," says Paine, whose development firm focuses on building



Nesika Illahee, a Native-focused affordable housing development in northeast Portland, Ore., was brought to fruition by Community Development Partners

CREDIT: JOSH PARTEE



Lorcan O’Herlihy Architects collaborated with Clifford Beers Housing to transform a vacant lot in South L.A. into a 100% affordable housing community.

“mission-driven communities” in Western states such as Oregon, California, and Arizona. “We are using Section 8 in every single housing community that we develop that is targeting homelessness,” he says.

President Biden’s proposal also includes enacting a \$5 billion yearly tax credit to reduce rent and utilities to 30% of income for low-income families who earn too much money to qualify for Section 8 vouchers. “Right now it’s 60% to 70% [of income] for quite a few people,” O’Herlihy says, referring to renters in Los Angeles, one of the most rent-burdened metropolitan areas in the nation. “And you can see what happens if they lose their

jobs—they lose their source of income, can’t pay the rent, and they’re out on the street,” he adds.

### Increasing Supply and Lowering the Cost of Housing

The President’s plan not only calls for sending vouchers and allocating tax credits to individual Americans, it also directs billions of dollars to states and localities where housing supply is limited and the cost of living is high.

With more than 180,000 units, New York City has the largest number of public housing residences in the country and is in

desperate need of funds. “Just to give you an idea of demand, we’ll finish a 100-unit affordable housing building and there will be 50,000 applicants,” says Ginsberg, noting that many city neighborhoods have public housing developments that are falling apart. “Unless we get enough money to fund and repair them, we can lose them,” he cautions.

To mitigate such issues, the President’s proposal includes \$65 billion in new incentives to construct or rehabilitate low-cost, efficient, resilient, and accessible housing for localities that are suffering from an affordability crisis and are willing to implement new zoning laws that encourage more affordable housing. Biden also plans to increase funding for the Housing Trust Fund by \$20 billion, expand the low-income housing tax credit with a \$10 billion investment, and set aside \$5 billion for localities to purchase vacant, underdeveloped, or underutilized property and construct affordable housing.

Ginsberg is hoping these new rounds of funding will kick-start projects that were stalled because of New York’s budget deficits caused by the pandemic. “Our clients can’t get commitments for funding, so they don’t want to spend money having us design a building that might sit there for two years,” he explains, adding that if federal government money does not materialize, New York Governor Andrew Cuomo warned of raising taxes and “cutting everything to the bone.”

### Improving the Quality of Housing

Several architects and developers are refreshed by President Biden’s commitment to science, particularly in terms of climate change and sustainability. The President’s plan states a commitment to ensuring that every American has housing that is energy-efficient, resilient enough to withstand the impacts of climate change, and capable of reducing greenhouse gas emissions.

To this end, he’s proposing an influx of \$10 billion to make homes more energy-efficient; he will require states and localities to eliminate regulations that contribute to sprawl; and he will expand investments for technical assistance and planning support to modernize housing regulations.

The world’s “low carbon future” ties directly into housing, says Ginsberg. “Affordable housing has often been more energy efficient than typical market-rate housing partially because of requirements and partially because it’s largely rental buildings. Particularly with affordable housing where owners can’t raise the rents, keeping your operating costs down is really critical for the long-term health [of the development].”

## Ending Redlining and Other Discriminatory Practices

In one of the many rollbacks from the Trump administration, President Biden plans to undo policies that gutted fair lending and fair housing protections for homeowners. He wants to implement a rule from the Obama-Biden-era requiring communities receiving certain federal funding to proactively examine housing patterns and identify and address policies that have a discriminatory effect.

As a firm that focuses on partnering with organizations led by people of color, Paine says he is “inspired to see the Biden administration’s acknowledgment of the need for approaching housing policy with a racial equity lens to ensure communities of color are consulted with and their needs served.”

As the CEO of McAfee3 Architects, a Black-owned firm based in Atlanta, Cheryl McAfee has a personal history with discrimination and advocating for racial justice. Her father, Charles McAfee, began fighting for equal housing legislation in the 1960s. “We had threats and all kinds of things against our family because he was going to Washington and fighting for equal housing,” she recalls.

Though her father had ambitious plans for affordable housing, financial constraints have prevented the firm from producing such projects since the Clinton era. “There are a lot of sacrifices I have made personally. And I’m not the only one. Friends have also sacrificed financially to withstand these economic challenges,” she says. “We need to make building affordable units profitable for small businesses.”

Now, McAfee is looking to President Biden’s plan, which assures that minority-owned businesses will benefit from federal housing and infrastructure spending.

From McAfee’s view, this should include breaking down barriers, such as HUD’s criteria to produce affordable housing, as well as providing access to capital and building bridges between big developers and small firms. There also needs to be a cultural shift, she says. “Society needs to value the worth of small and minority-owned businesses—black-owned businesses, indigenous-owned businesses. And that requires a change of attitude in government.”

With the new administration’s plans in sight, she declares a sentiment shared by many of her peers: “I want to come out of these next four years very strong and resilient as a company.” **AIA**

## A I A P E R S P E C T I V E

# An Inclusive Agreement

**We need a broader constellation of solutions for gender equity in the profession.**

By Peter Exley, FAIA, 2021 AIA President

Women are the majority of the workforce in the United States, but they comprise only a quarter of its 208,000 registered architects. Unequal pay and lack of recognition have historically challenged women in our ranks. Even recent gains—women now hold one-third of the deanships at NAAB-accredited schools—are symbolic at this juncture. Real structural change must guide the agenda to wrest architecture, its practice, and its academy from outmoded hierarchies.

On the policy front, forward thinkers outside architecture say a more comprehensive national investment in child care prior to kindergarten will help bring about systemic change. If we can entrust our children to qualified caretakers as young as 5 months, just as we entrust them to certified educators as late as 5 years old—funded by tax dollars, employer subsidies, and other financing mechanisms—we might just see a more balanced workplace in architecture. We might just achieve the plurality that drives equity, diversity of thought, innovation, and competitive talent. At press time, it appears as if the Biden administration might succeed in deploying a Child Care Development Block Grant to help women return to the workforce, a stabilization fund for providers to stay open,

and a boost to child care tax credits for working parents. As our feature story this month mentions, the pandemic has posed a particular challenge for professional women, forcing tough choices and, in many cases, threatening hard-won career advancement. As we look forward, we must recognize that greater equity benefits everyone.

Within architecture, a progressive perspective places child care in a broader constellation of solutions, including mentorship and modified promotion practices that could make the workplace more equitable. The AIA Guides for Equitable Practice point to allies, coaches, mentors, and sponsors as the elements of a network that have proven to benefit employees and employers. Among protégés who activate this network, 65% are likely to find satisfaction in their advancement, and 57% less likely than their unsponsored peers to leave their current employer within one year. Beyond mentorship and sponsorship, the guides cover a range of topics from compensation to negotiation to recruitment and retention, and they should be required reading for anyone who draws a paycheck—or signs one. Once and for all, we must clamp down on the abuse of the unpaid internship, not to mention the

foolish romance we have with the all-nighter. Let’s start in the academy with that one (or remunerate with credit hours to compensate student’s commitment rather than perpetuate the concept that free labor is all right. It’s not). Where is the evidence that this makes better architects or architecture?

Some also say advocating for a higher percentage of guaranteed remote work is another advantage given the flexibility it offers. COVID-19, of course, might very well take care of this last point, as the business advantages to remote work have been revealed to employers and chronicled in the media. Nevertheless, the promise of remote work raises the question of how we should define economic productivity for employers in light of our daily commitments to ourselves and our families. Peggy Deamer, professor emerita of architecture at Yale, has raised an even larger question: how architects can begin to acknowledge what has been called their own “precarity as laborers.” Employment, after all, depends on mutual agreement. If we can improve the agreement, we can improve the circumstances of employment. **AIA**



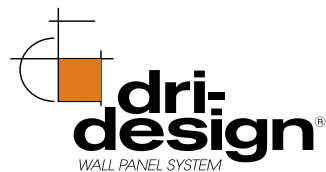
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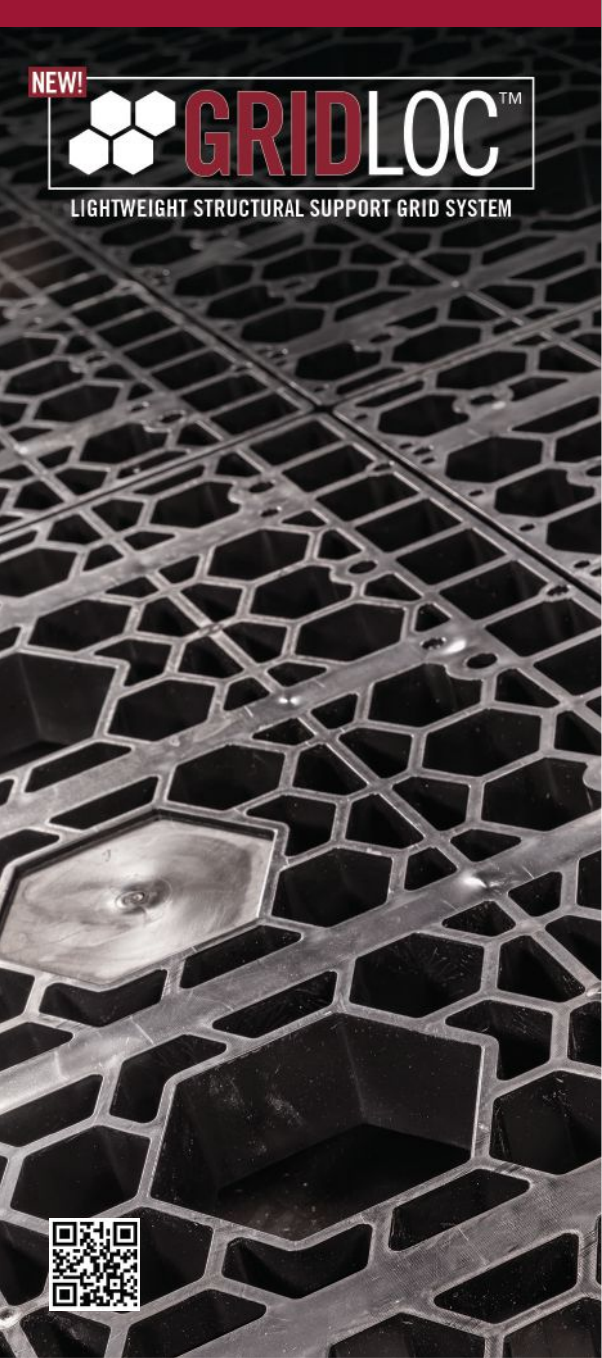


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Progressive  
Architecture  
Awards**



JURY

**Koray Duman, AIA**  
Büro Koray Duman, New York

**Jeanne Gang, FAIA**  
Studio Gang, Chicago

**Daimian Hines, AIA**  
Hines Architecture + Design, Houston

For project credits and more images of each winner, visit [bit.ly/AR68PA](http://bit.ly/AR68PA).



For the 68th Annual P/A Awards, jurors Koray Duman, Jeanne Gang, and Daimian Hines were drawn to entries that embrace what recent times have made clear are central to a thriving society: community engagement, environmental stewardship, and equitable access to services. From health care and cultural centers to housing, these six winning projects shed the excess in favor of the essential to tackle these core needs and underscore how architecture in service of the greater good is worth celebrating.

EDITED BY WANDA LAU  
PROJECT DESCRIPTIONS BY  
EDWARD KEEGAN, AIA



**Mary Potter School Shop Restoration**  
**Oxford, N.C.**  
**Evoke Studio Architecture**

Site Plan





*This is a very compact project with the potential to be transformational by adding a few interventions to reinforce a sense of place and create a new cultural center.*

—Daimian Hines, AIA

Previous spread, clockwise from top left: The Mary Potter Academy revitalization includes a new pavilion and the adaptive reuse of the industrial arts building into a conference center (interiors and exterior shown).

From 1888 to the early 1970s, the Mary Potter Academy was a boarding school in Oxford, N.C., that nurtured the early development of Black leaders. Now, Durham, N.C.-based Evoke Studio Architecture is reimagining the academy's remaining buildings in the downtown's historic district as a complex of flexible programmed spaces that can serve the local community and extend the campus's legacy of service into the future.

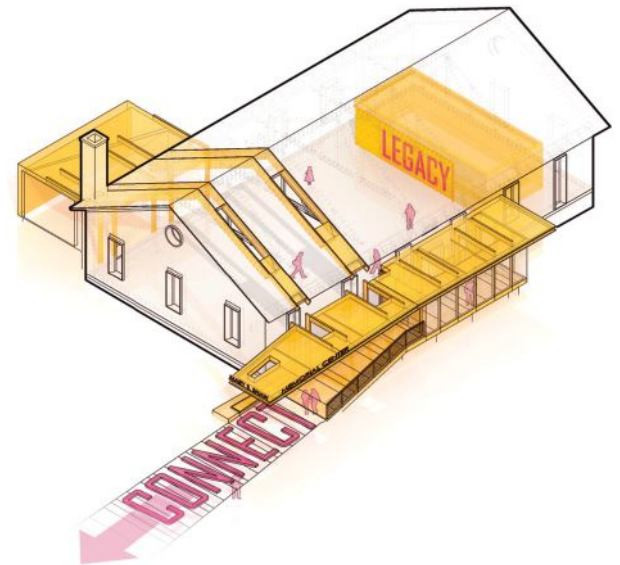
The Mary Potter Academy was formerly one of the largest landowners in downtown Oxford, but just three of its buildings remain: the founder's residence, a museum since 2004; a 9,600-square-foot brick-and-wood-framed industrial arts building, which has been vacant since the 1990s; and a similarly scaled gymnasium structure. The industrial arts and gymnasium structures were originally constructed by the students, so it was important to the designers that new interventions honor the craft-oriented legacy these buildings embody.

Evoke Studio Architecture's renovation proposal transforms the industrial arts building into a two-story conference center, with a variety of meeting rooms, a gallery space, and offices. The single-story gymnasium becomes a cultural center with a multipurpose space under its restored trusses. The design uses a common language of architectural intervention, inserting carefully crafted canopies and additions that feature dark gray aluminum-composite panels with wood insets and glass juxtaposed against the existing brick masonry envelopes.

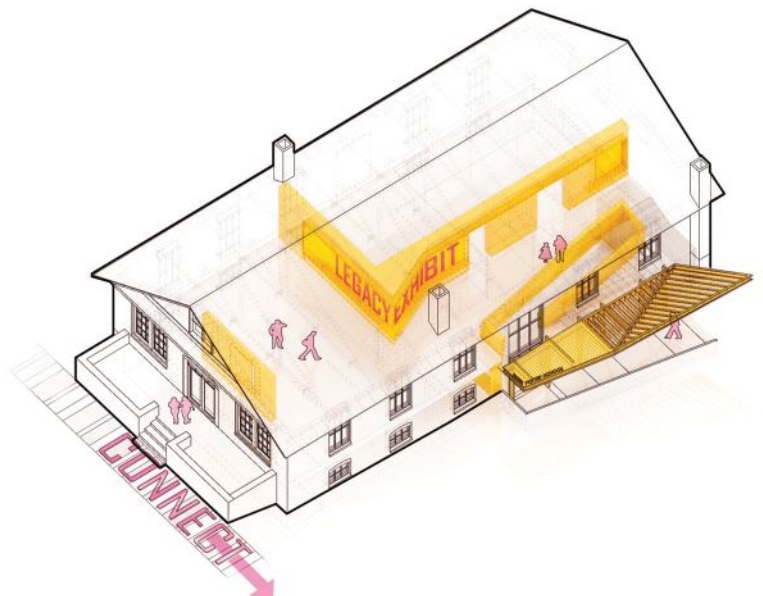
Cantilevered canopies will shelter a new entrance and a wide glass vestibule to welcome visitors to the complex. The interiors' simple palette of wood, glass, gypsum board, and terrazzo allows the exposed original masonry walls and wood trusses to provide a legacy-filled framework for the new activities.

Between the repurposed buildings, an open-air pavilion will replace an aging wood-framed structure for the Oxford Farmers Market. A new steel-and-wood canopy that forms the reconceived market relates to additional exterior interventions across the site.

Mary E. Shaw Cultural Center (Former Gymnasium)



Conference Center (Former Industrial Arts Building)



## Wardell Toronto Ja Architecture Studio

In Toronto, a striking sculptural brick pavilion will break the rhythm of a long row of generally undistinguished two-story houses on Wardell Street. Designed by local firm Ja Architecture Studio, the approximately 1,475-square-foot structure not only expands one of these single-family townhomes, but also fits neatly into a constrained wedge-shaped lot.

The steel-and-wood-framed addition allows the architects maximum flexibility in their willful form-making. At the same time, their decision to clad every exterior surface in brick allows the bold shape to play well with its more prosaic neighbors. The simple, straightforward design on a tricky site is both evocative and poetic, transforming an ordinary material typical of the neighborhood into something memorable both inside and out.

The main level of the three-level addition cantilevers slightly into the front yard, permitting a tall window to overlook the quiet residential street and establish a strong mutual relationship between interior and exterior. Configured as a dining room, the space connects directly to the existing house. The second floor of the house is expanded by the addition's upper level, which receives ample southern sunlight through a dramatic light scoop and can serve as a winter garden or an additional bedroom. The front brick façade is perforated at this level for glimpses of the street without compromising privacy.

A narrow-arched passageway several feet below sidewalk level connects the front yard with a sunken terrace in the backyard while separating the lower levels of the existing and new construction. A commercial test kitchen in the addition can be accessed from the passageway or through an internal stair. A double-height window faces the rear yard and provides natural light and views for the kitchen and stair.

While the addition's curved form is highly distinct and articulated, its functions are designed to permit maximum flexibility. In fact, each of the uses described above can, and presumably will, change over time.







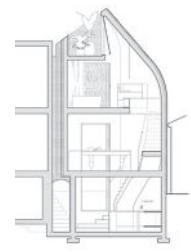
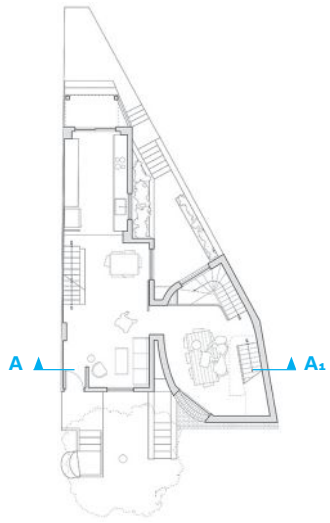
*The brick and the scale of this project are approachable. It has a sense of familiarity; it is poetic. It's not about boldness or newness, but it has this strange softness to it. It is considered.*  
 —Koray Duman, AIA

Lower-Level Floor Plan

Main-Level Floor Plan

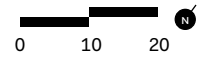
Upper-Level Floor Plan

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



Above: Street view looking west

Left: The addition's upper level provides space for growing plants year-round.



## Teweles and Brandeis Grain Elevator Sturgeon Bay, Wis. La Dallman



Above: View to the northwest

Right: Section perspective looking south



***This project shows how the structures that dot the landscape and are inherently recognized by us as a certain typology could be transformed for reuse, recognition, and a sense of place.***

—Daimian Hines, AIA

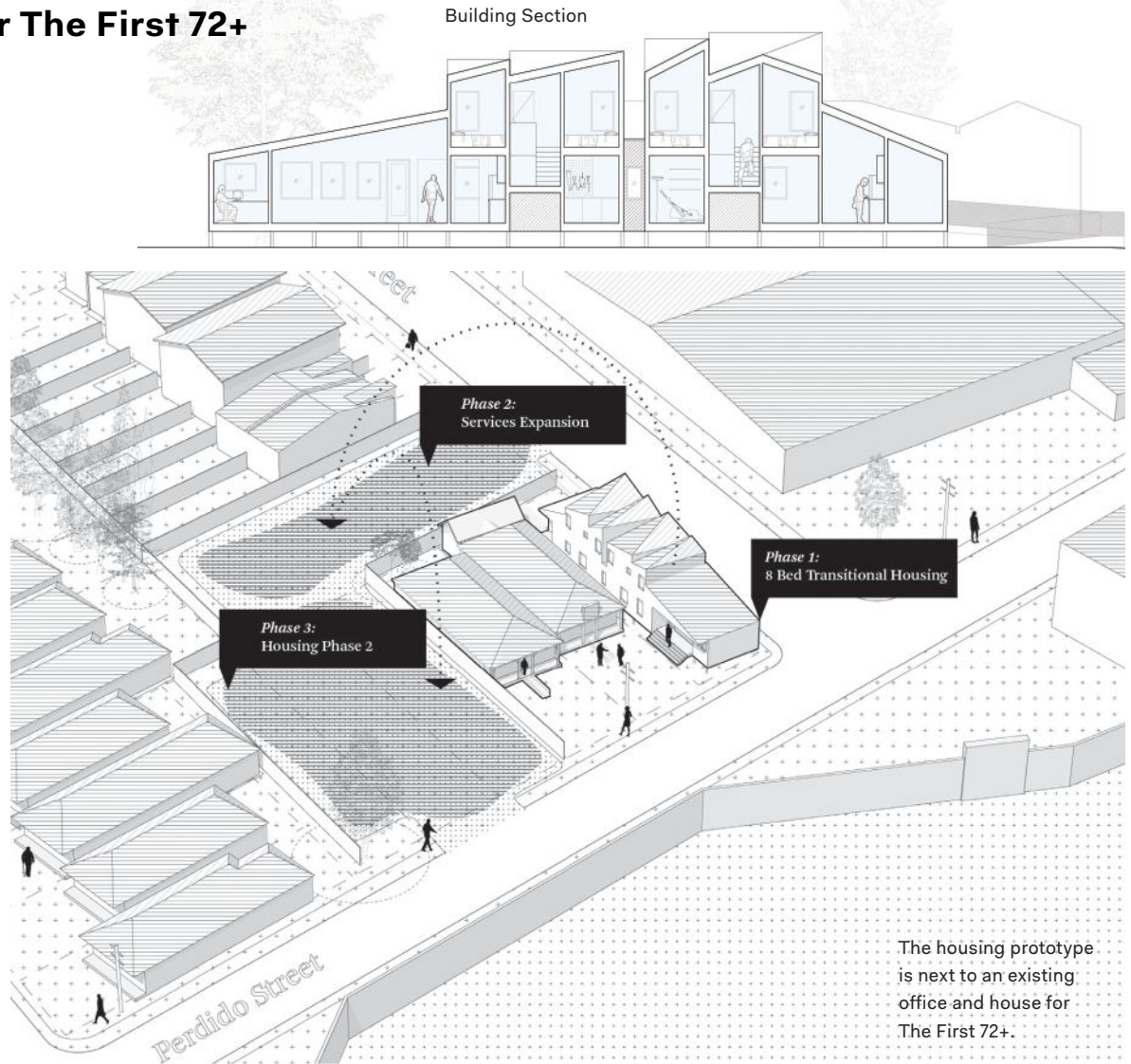
Built in 1901, the Teweles and Brandeis Grain Elevator on the shore of Sturgeon Bay, Wis., is a reminder of the area's rich agrarian history. Midsize grain elevators, once a staple of the landscape, provided farm cooperatives a central location for the collection and distribution of their produce to distant markets via rail and sea.

Milwaukee- and Boston-based La Dallman conceives the iconic structure's adaptive reuse as a new amenity and tourist destination for Door County. Decommissioned and idle since the 1960s, when the rise of industrial farming techniques rendered those locally based collective ventures inviable, the 40-foot-wide by 50-foot-long old-growth, nail-laminated timber structure is divided into 20 vertical grain bins, each 10 feet square, raised on columns. Topped by a headhouse, which previously enclosed machinery for moving grain, the structure's distinctive silhouette in the city's skyline is preserved while its role as a local landmark is transformed for new generations.

The architects reimagine the originally windowless utilitarian structure as an opportunity to carve out spaces for gathering and performance through strategies of subtraction and addition. A linear addition to the structure's west side houses a catering prep kitchen and restrooms on the ground level, adjacent to a primary gathering space situated within the field of columns that support the old grain bins above. A second and third floor are inserted within the elevator compartments, with surgical cuts made in the walls to create a series of intimate, curvilinear gathering spaces that can support multiple activities, such as exhibits recounting the structure's and area's histories.

New, meandering catwalks allow exploration of the original rigidly compartmentalized spaces. A new fourth floor—within the grain elevator's headhouse—telescopes from the main roof and is re clad in glass to create both a glazed aerie that allows visitors to overlook the city's harbor and a beacon for the community.

## New Home for The First 72+ New Orleans OJT



*The domestic scale of architecture can live comfortably in a neighborhood while having a mix of living, working, and services in it. It should not be something that is separate or on the outskirts.*

—Jeanne Gang, FAIA

Assisting formerly incarcerated individuals re-entering society is particularly important in New Orleans, as Louisiana has the highest per capita prison population in the country and a recidivism rate of 34%. The First 72+, a local nonprofit, is hoping to end this cycle. Locally based OJT worked with the organization to develop a 3,200-square-foot transitional housing prototype that fulfills one of the biggest challenges facing formerly incarcerated individuals and their families: finding stable housing.

The project, based on a contemporary variation of the city's traditional double shotgun house, can accommodate eight occupants and fit within a typical lot zoned for a two-family residence. On the wood-framed structure's ground level are shared living and office spaces. The second floor features four two-person bedrooms, divided between two suites accessible by separate stairs and served by their own bathroom. The project massing differs from traditional precedents by

its saw-toothed sloped roofs, which provide formal diversity while maintaining a single-story expression at front and rear.

Beyond providing shelter, the prototype was designed to support a full complement of services, including health, job placement, education, and business incubation, to help its residents re-enter society. Each home's shared spaces accommodate and encourage these uses to facilitate positive outcomes.

The initial eight-unit prototype is under construction on a corner site adjacent to The First 72+'s existing office building, with plans for additional residential units to be built across nine neighborhoods within New Orleans. This deconcentrated development model encourages the reintegration of The First 72+'s clients into the city through design. By emulating the vernacular two-family shotgun envelope, OJT hopes to ease the replication of this model within diverse communities.

## Uganda Women's and Children's Clinic Mityana, Uganda LS3P



Local materials, traditional construction techniques, passive solar design, and a campuslike plan that encourages community mark the 20,000-square-foot complex for the Uganda Women's and Children's Clinic. Located adjacent to an existing school, the rural site just north of the equator in Mityana, Uganda, enjoys cooling breezes from Lake Victoria to the south.

Wilmington, N.C.-based LS3P provided pro bono design services for the nonprofit GoDesign to develop a three-phase plan that encompasses 10 single-story structures arrayed along a central path. A sculptural chapel standing nearly twice as tall as the surrounding buildings rises at the center of this axis.

In the first phase, three structures will create a financial anchor for the clinic by providing essential health services, including patient treatment, emergency, and dental. The first two buildings are splayed to provide a sense of entry to the complex.

In phase two, the size of the campus will double with the addition of maternity and laboratory services. The final phase will add four buildings, including a training center and physician housing. The interstitial spaces between buildings along the sloped site create opportunities for informal connections among visitors and staff.

In all, the 10 structures follow a common aesthetic based on construction methods typical of the region: a mix of short-span post-and-beam concrete construction with dry-stacked block walls made of compressed dirt excavated on-site. A layered screen system—a combination of bamboo sticks with mosquito mesh for infill and windows—provides diffused light and airflow. Eucalyptus planks make appearances in doors, screens, and accents throughout the complex. Topped with corrugated metal, shallow shed roofs with wide eaves appear to float high above the structures, creating shade year round. Solar chimneys rise above spaces that require additional ventilation. As a result, the complex does not require mechanical HVAC systems and can achieve net-zero status.

LS3P's design and material choices aim to facilitate the training of local tradespeople in modular construction, enhancing the transfer of knowledge between generations and extending the project's positive impact on the community.

A chapel anchors the center of the medical campus and is surrounded by patient care buildings.



Campus Section



*The design is sophisticated, environmentally sensitive, and light on the Earth. It takes away any stigma of going to a health clinic and creates an uplifting place. Think about how many people's lives this will impact in a positive way.*

—Jeanne Gang, FAIA



# p/a HONORABLE MENTION

## Urban Awning Los Angeles Gensler

A series of low-slung sloped roofs provides a bold and recognizable identity for the Urban Awning, an affordable multifamily residential development in the Wilmington neighborhood of Los Angeles. Designed by the local office of the global firm Gensler, the open-sided structure is reminiscent of a greenhouse, pairing arrays of south-facing solar panels with north-facing translucent roof panels.

Moreover, the broad roof creates a microclimate for the prototype project's shared outdoor spaces, which encourage communal activities. Urban Awning's simple, bold form fits within the constraints of a 45-foot zoning height limit, making it suitable for many locations throughout Southern California. Dubbed a "Trojan Horse" by its designers, the model can be inserted into sites that might otherwise be overlooked, such as those containing warehouses, obsolete big box stores, or contamination.

Inside the development, 131 studio apartment units fit in just 36,000 square feet. Three configurations are offered: a single-level, ground-floor flat; a second-floor split unit with an elevated sleeping loft; and a double unit, which combines the flat and split units into a tidy triplex. Toilets placed within showers maximize space,

while a single sink serves both the bath and kitchenette. Compact, convertible furnishings enable living rooms to double as bedrooms. Occupant-controlled, passive environmental systems prevail with the transparent glass-fiber ceiling providing natural light, and windows and ceiling fans placed for ample cross ventilation.

Urban Awning's economies are multiple, with individual design moves adding to a whole that is greater than the sum of its parts: Units are fabricated off-site using panelized steel-stud construction, and water and waste occupy a service way between units, precluding the need for deep foundations or excavation into potentially contaminated soil. The expansive roof harvests stormwater for reuse, generates solar energy, shades the vegetated community living room, and provides an extra layer of protection from the harshest environmental conditions; the roofs of the individual prefabricated units do not need full weatherproofing.

With the two-story building's occupant density equivalent to a four-story building at half the construction price, Gensler expects the prototype to become a cost-effective solution for supportive housing, low-income households, college students, and seniors on fixed incomes.

Double-Unit Section  
Perspective



*This represents a new way of looking at affordable housing, where the green architecture helps with creating a new typology. Here, it is driving the project form and is unapologetic about it.*

—Koray Duman, AIA




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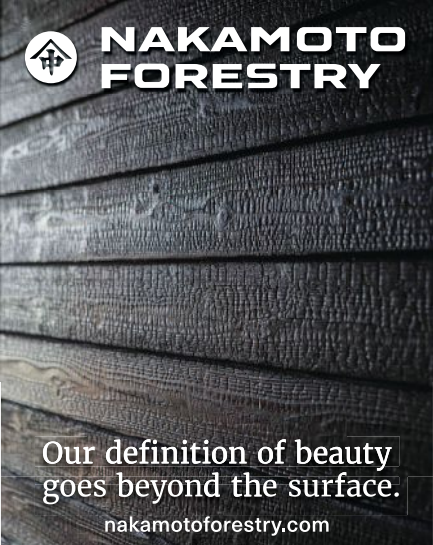
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### **Ponti Reborn**

When the Italian architect Gio Ponti's Denver Art Museum was completed in 1971, *The New York Times* reported that some "unkind souls" had blasted the building as "an Italian castle wrapped in aluminum foil" and "a campy set for a production of Hamlet." A half-century later, Machado Silvetti, in collaboration with Fentress Architects, has revived this daring project that has outlived the initial myopia of its critics. Featuring a new welcome center, as well as mechanical, electrical, and plumbing upgrades, the refurbished museum is scheduled for an official reopening this fall. Read David Hill's story about the transformation at [architectmagazine.com](http://architectmagazine.com).

> To learn more, visit [bit.ly/PontiMuseumReborn](http://bit.ly/PontiMuseumReborn).

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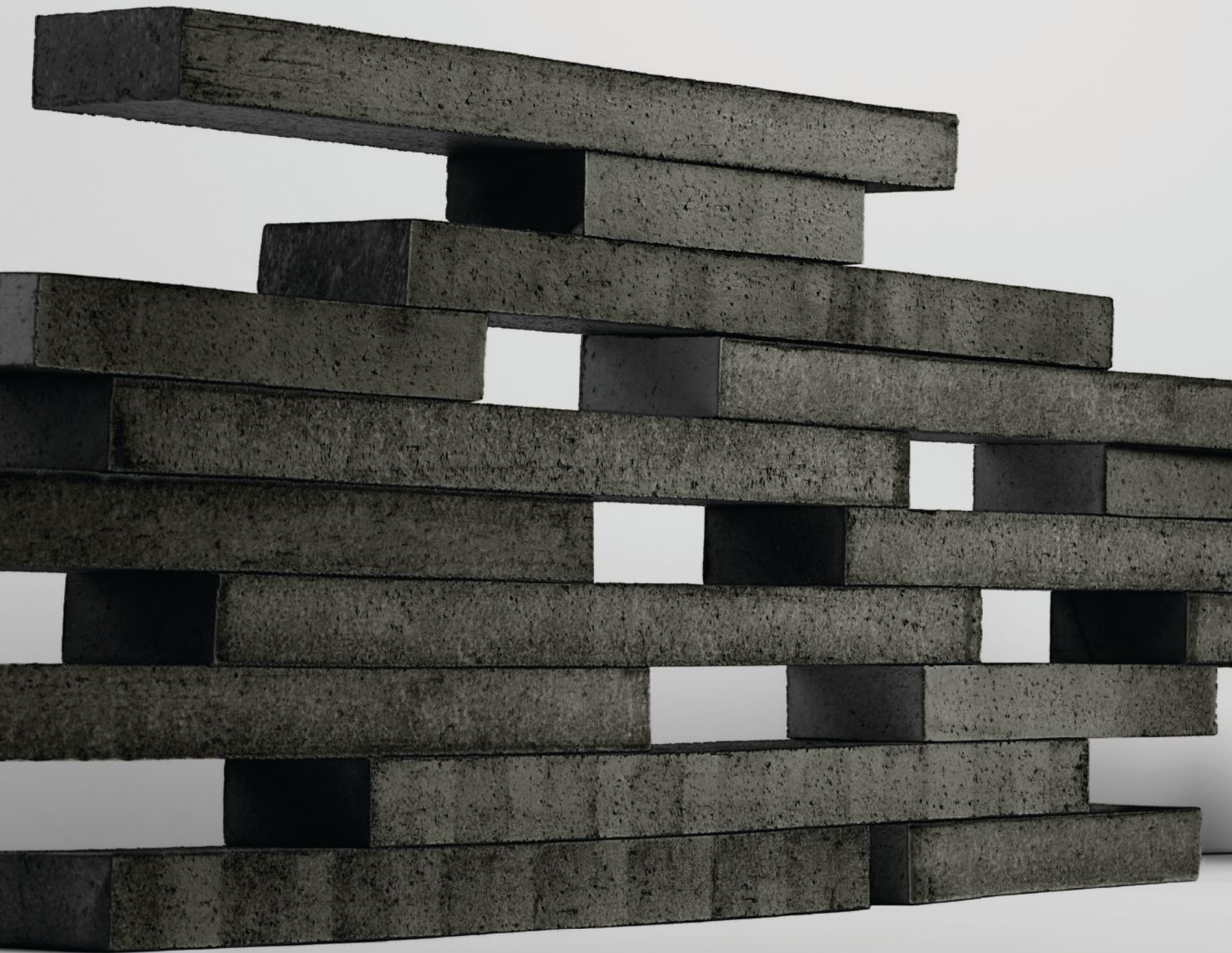
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