

Delma Palma
Modular and
Affordable Housing
Seattle and
Housing Density
Youssef Nassef
and Resilience

THE GAME CHANGERS ISSUE

Meet Tonika Lewis
Johnson and 11
other visionaries
reshaping design
and the built
environment.





There's Always Another Level



Give your building a performance and aesthetic advantage. The Solarban® family of solar control, low-e coatings delivers myriad choices for solar control and aesthetics. There's a Solarban® glass for every project. Learn more at vitroglazings.com/solarban



Hawa Junior

A new level of Universal Design

Hawa Junior 100
Sliding Door Hardware

Introducing the Hawa Junior 100

With the Hawa Junior 100, sliding has reached a new level of convenience and usability. This hardware features an innovative magnetic soft closing system that ensures the required opening forces are below 22 N (5 lbf). The Hawa Junior 100 is the first system of its kind to meet criteria for full accessibility: it is both ADA-compliant and follows the tenets of Universal Design. Moreover, the soft close is available in both directions on doors as narrow as 800 mm (32").

www.hawa.com/junior



*Easy to specify for Architects: use
the QR code to download Junior
100 BIM files*

SIX SURPRISING FACTORS ARCHITECTS SHOULD KNOW ABOUT SPRINKLER TRADE-OFFS

The costs, design limitations, and safety considerations when considering an ESR 2397 wall assembly in lieu of fire-resistive glazed wall assemblies may surprise you.



Section 104.11 of the International Building Code anticipates the changing dynamics of materials, design, and construction methods.

In many respects, alternate means and methods is a smart, judicious provision. It recognizes the built environment as a living, continuously evolving ecosystem. For AHJs (authorities having jurisdiction), section 104.11 offers a degree of decision flexibility within the strict demands of public health and safety.

Consider assemblies for one- and two-hour wall applications, for example. Recently an alternative to one- and two-hour wall assemblies emerged: ICC-ES ESR-2397 3.3 represents an alternative fire, smoke, and radiant heat containment solution. This mixed-method approach offers a transparent, code-compliant wall system without a fire-resistive glazing material that needs prior AHJ approval

WEAKENED ASTM E-119 TEST

The heart of ESR-2397 is a special purpose deluge sprinkler system. In the event of a fire, special wall-directed sprinklers bathe the adjacent non-rated tempered-glass partition in water, to form an insulating barrier against fire, smoke, and radiant heat. This water-on-glass method meets the requirements of a specially modified, less stringent ASTM E-119 test. Other than following the time and temperature curve, there is nothing that resembles the original ASTM E-119 test.

There is no cotton-waste test; there is no hose-stream test; and there is no documented report showing how it limits the temperature rise on the non-fire side to less than 250 degrees F over ambient.

By contrast, fire-resistive glazing passes all ASTM E-119 test requirements without modifications. More than three decades of life-safety experience demonstrates its effectiveness in shielding occupants and first responders from fire, smoke, and radiant heat in a safe, "never fails" manner.

AHJ REVIEW

Which approach is best? That depends on the application, budget and, in the case of the ESR-2397, the discretion of the AHJ. "It's a question of trade-offs," explains Tim Nass, vice president of sales for Safti-First, a leading U.S.-based manufacturer of fire-rated glass and framing products.

Nass says the application of sprinklers as a fire-resistive wall substitute may not be as well understood as a rated window assembly. In the IBC, one to two-hour fire-resistive ASTM E-119 wall assemblies are required to compartmentalize smoke, flames, and limit radiant heat transmission to less than 250 degrees F above ambient temperature without the need for mechanical triggers. "ESR-2397 is an exception to the rule," Nass says, requiring prior AHJ review and approval.

For their corporate office, a Tech Giant wanted a transparent, two-hour wall for daylight and visual connectivity between spaces. Initial designs showed an alternate assembly requiring prior AHJ approval that uses a combination of special purpose sprinklers with non-rated glass. This was later abandoned because the designers wanted unobstructed, floor-to-ceiling views that can only be achieved with 2-hour, ASTM E-119/UL 263 fire resistive glazing — no AHJ approval required.

SIX FACTORS TO CONSIDER

What should an architect anticipate in seeking AHJ approval of the ESR-2397 exception? Nass says the architect, who assumes all the work and related costs

for submitting the required documentation necessary for the AHJ to consider the exception, should anticipate at least six factors:

1. Sprinkler design and installation requirements are met. This alternative assembly uses a special wet-pipe sprinkler system that is different from the sprinklers used throughout the building. Also, design limitations such as a 3-foot pony wall, height restrictions, and no horizontal mullions must be considered.
2. Hydraulic calculations for each installation are provided.
3. Design of the dedicated water source with the capability of supplying one or two hours of water, depending on the rating of the wall.
4. Documentation of water pumps and pipes sufficient to maintain prescribed water pressure across all installations.
5. Budget allocations for ongoing sprinkler system maintenance.
6. Any additional costs, such as ceramics.

Nass also advises architects prepare for at least three questions the AHJ panel may ask:

1. Does the sprinkler manufacturer guarantee sprinkler performance? (Sprinklers fail 12% of the time, according to an October 2021 NFPA report.)
2. What is the danger of a failed sprinkler system to building occupants and first responders?
3. Due to the weakened ASTM E-119 test, what evidence does ESR 2397 have to show that the wetted glass approach limits the passage of radiant heat to less than 250 degrees F over ambient?

MORE CLARITY AND SIMPLICITY

"It's the architect's right and privilege to consider any code-compliant alternative," Nass says. "The more you know about ESR-2397, the more the simplicity, safety, and flexibility of fire-resistive glass stands out for the clarity, transparency, and natural daylight most architects seek." ■

Learn more about how fire-resistive glazed assemblies from Safti-First can transform your space at safti.com.

Contents

Volume 111, number 07, October 2022.

On the cover: Tonika Lewis Johnson; photo by Phillip Dembinski.

Background: Concrete knit casting from a team at University of Michigan; photo by project authors.

20 Housing Innovators

20 Block Project

22 Hamilton Passive House Modular Housing,
by Montgomery Sisam Architects

26 The Hilda L. Solis Care First Village, by NAC

32 Game Changers

11 Housing: Next Progressive Delma Palma

34 Photography: Laurian Ghinițoiu

36 Education: The Next Generation
of Preservationists

38 Community: Open Design Collective

39 Public Health: Nupur Chaudhury

40 Social Justice: Tonika Lewis Johnson

42 Materials: Knit Casting

44 Technology: Segregation by Design

46 Equity: Maslow Development

47 Infrastructure: TreesAI by Dark Matter Labs

48 Culture: Living Lands, Canadian
Centre for Architecture

80 Climate Change: Editorial on Resilience Frontiers

AIA Architect

53 Creating Positive Spaces

55 Many Firms Concerned About Operating Costs

56 Growing the Missing Middle

60 The Tension Between Garden and Machine

62 Support Nationally, Act Locally

The 3D funnel/shell casting typology pictured here is one of four knitted concrete formworks developed by a team at the Taubman College of Architecture and Urban Planning.



CHANGING THE WAY YOU LOOK AT YOUR SPACE

Modernfold's PureView® movable glass wall system, features clear sight-lines, daylighting benefits, and industry leading acoustical control values of 33, 35, and 37 STC. Enjoy the beauty of glass with the privacy you desire.

• ACOUSTICS • AESTHETICS • PERFORMANCE •

 **MODERNFOLD**®

MODERNFOLD.COM

ARCHITECT Live

Hear from the Architects Shaping the Future of Architecture

November 7-9, 2022 | The Watergate, Washington, DC

Learn more or register at: architect-live.com



FEATURED SPEAKERS



Rosa Sheng
Vice President
SMITHGROUP



Mitchell Joachim
Co Founder
TERREFORM ONE



Danish Kurani
Founder
KURANI



Kai-Uwe Bergmann
Partner
BJARKE INGELS GROUP



EARN UP TO
12 CE CREDITS

USE CODE MFE100
SAVE \$100

Thank you to our sponsors

TITLE SPONSOR



PLATINUM SPONSORS



CORPORATE SPONSORS




For sponsorship opportunities, please contact
jtatusko@zondahome.com

Powered by

ARCHITECT

Zonda
Events

THE LOOK... THAT WORKS



For more than 100 years, Airlite has been the innovative leader in the design and manufacture of architectural louvers, grilles, screens and sun controls. Our products provide ventilation, prevent water penetration, reduce solar heat gain and permit natural lighting—while complementing building aesthetics. Specify Airlite to achieve a masterful balance between form and function on your next project.

Visit our redesigned website to learn more. airolite.com



LOUVERS | SUN CONTROLS | GRILLES

Editorial**Editor-in-Chief**

Paul Makovsky
pmakovsky@zondahome.com
@paulmakovsky

Senior Editors

Alex V. Cipolle
acipolle@zondahome.com

Andrea Timpano
atimpano@zondahome.com

Managing Editor

Laurie Elden
lelden@zondahome.com

Associate Editor

Madeleine D'Angelo
mdangelo@zondahome.com

Design**Design Director**

Carolyn Sewell

Contributing Editors

Aaron Betsky
Blaine Brownell, FAIA
Elizabeth Evitts Dickinson
Thomas Fisher, ASSOC. AIA
Eva Hagberg
Karrie Jacobs
Edward Keegan, AIA
Cathy Lang Ho
Ian Volner
Mimi Zeiger

Advertising**Executive Vice President**

Paul Tourbaf

Vice President

John Tatusko
jtatusko@zondahome.com

Strategic Account Directors

Mike Gilbert
mgilbert@zondahome.com

Lori Lenis

llenis@zondahome.com

Tracy Szafarz

tszafarz@zondahome.com

Account Coordinator

Katrina Billado
kbillado@zondahome.com

Marketing**Group Director, Audience****Marketing & Circulation**

Chris Lustan

Production**Senior Director,****Print Production**

Cathy Underwood

Senior Director,**Print Production**

Margaret Coulter

Production Manager

Stephanie Fischer

Published by Zonda Media**Chief Executive Officer**

Jeff Meyers

Chief Financial Officer

Melissa Billiter

Chief Operating Officer

Andrew Reid

Executive Vice President,**Chief Content Officer**

Jennifer Pearce

Vice President,**Digital Strategy and****Operations**

Bridget Forbes

Vice President,**Audience Development****and Analytics**

Jennifer Malkasian

Group Vice President,**Talent Strategy**

Kurt Nelson

Executive Vice President,**National Sales**

Amy Dudley

Senior Managing Principal,**Advisory Group**

Tim Sullivan

List Rentals

The Information Refinery

Brian Clotworthy

brian@inforefinery.com

800.529.9020

Copyright 2022 by Zonda Media, 1152 15th Street NW, Suite 850, Washington, DC 20005. 202.452.0800. Reproduction in whole or in part prohibited without written authorization. All rights reserved. ARCHITECT will occasionally write about companies in which its parent organization, Zonda Media, has an investment interest. When it does, the magazine will fully disclose that relationship. Reproduction in whole or in part is prohibited without written authorization. Opinions expressed are those of the authors or persons quoted and not necessarily those of ARCHITECT. Printed in the USA.

Zonda
Media



The AIA Architect section of this magazine is produced by the Institute as a benefit to its members in partnership with ARCHITECT's editorial and production teams. Please direct any questions or comments to Frank Scanlan, MD, Strategic Communications & Content for AIA.

Senior Director External Affairs

Clinton S. Manning

Senior Manager External Relations

Katherine Flynn

2022 Board of Directors

Daniel S. Hart, FAIA, PE, President

Emily A. Grandstaff-Rice, FAIA, First Vice President

William R. Turner Jr., AIA, Secretary

Timothy C. Hawk, FAIA, Treasurer

Ryan J. Gann, ASSOC. AIA, At-large Director

Kevin Holland, FAIA, At-large Director

Nathaniel Hudson, AIA, At-large Director

Laura Lesniewski, FAIA, At-large Director

Mark L. Levine, FAIA, At-large Director

Britt Lindberg, AIA, At-large Director

Rusty Bienvenue, CACE Director

Scott Cornelius, ASSOC. AIA, AIAS, Student Director

Gail Kubik, ASSOC. AIA, Associate Director

Mindy Fullilove, MD, Director

Thomas Fisher, ASSOC. AIA, Director

Lakisha A. Woods, CAE, EVP/Chief Executive Officer

Power Grommet & Light Switch

PCS106B



Power your wall sconce, overhead lighting, or desk lamp with the press of a button right on your power console. Mount into headboards, entertainment center consoles, desks, or anywhere convenient power and USB access is needed.

MOCKETT
DOUG MOCKETT & COMPANY, INC.

www.mockett.com | 800.523.1269



- Light Switch
- Two Power Outlets
- USB-A*
- USB-C*

*The two USB ports share a load of 3.1A output, sufficient for fast charging mobile devices and charging two devices simultaneously.



Smart Upgrades for a Venerated University's Facilities

York University has long been known as a leading international institution of higher learning. Founded in 1959 and with multiple campuses in the greater Toronto area, India, and Costa Rica, the university gives its broad sociodemographic of 59,000 students access to a world-class education. And to make sure the quality of its facilities matches the top level of education the students get, the university recently launched an initiative to renovate and improve more than 785 public-use restrooms throughout its Toronto campus, many of which still featured original fixtures from the 1960s. The goals were to develop a uniform design standard to maintain consistency, simplify maintenance, and enhance the user experience. The university selected Sloan, with which it has had a solid relationship since the 1960s, for its high user satisfaction and forward-thinking technology.

TOUCHLESS TECH

York University has always emphasized restroom hygiene, so it picked Sloan's EFX-275 BASYS® Solar-powered Deck-mounted Faucets with active infrared sensing. When the user's hands reflect the invisible light beam, the faucet turns on. And the university chose Sloan's SOLIS® 8186 BT Exposed Sensor Solar-powered Urinal Flushometers and 8111 BT Exposed Sensor Solar-powered Dual Flush Water Closet Flushometers, which also operate touchlessly via an infrared sensor and automatically flush (1.1 or 1.6 gallons per flush, based on how long the user remains in sensor range). And to add to the future-thinking technology, some of the new restrooms feature Sloan's next-generation, fully integrated AER-DEC® Sinks, which save water, reduce energy consumption, and eliminate the need for paper towels.



A SOLAR-POWERED FUTURE

York University has made sustainability a priority, with the restroom renovations playing a major role. So it chose the 8111 BT Exposed Sensor Water Closet Flushometers and SOLIS 8186 BT Sensor Urinal Flushometers, both of which feature solar-powered panels with battery backup using photovoltaic technology. Sloan's BASYS Deck-mounted Faucets also use solar power, helping the university's sustainability efforts.

SIMPLIFIED MAINTENANCE

Restroom maintenance can be a very time-consuming and difficult part of a facilities department's job. But now that York University's restrooms include exclusively sensor-operated Sloan products, maintenance has been greatly simplified. The new flushometers and faucets are Sloan Connected Products, which use Bluetooth and advanced technology to wirelessly monitor the status of products and spot potential issues. Because of that, managing restroom usage and tracking for the university's maintenance team is easier than ever. ■



For more information on Sloan's lineup of advanced restroom products, go to [sloan.com](https://www.sloan.com).

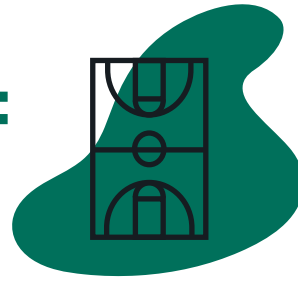


Emerging professionals are fueling today's design conversation with high-energy ideation that challenges stated norms.

Zonda Media congratulates and thanks ASI Group for its ongoing commitment to design innovation driven by architecture's next generation.



Next Progressives: Delma Palma



EDITED BY ALEX V. CIPOLLE AND MADELEINE D'ANGELO



Organization: Architecture and Engineering Services (AES) in the Asset & Capital Management Division of the New York City Housing Authority (NYCHA)

Title: Deputy director of design

Education: B.Arch., University of Notre Dame

Experience: TECHO, Torti Gallas + Partners

Organization mission: To provide affordable housing for low- and moderate-income New Yorkers. NYCHA, the largest public housing authority in North America, houses roughly one in 16 New Yorkers across more than 177,569 apartments within 335 housing developments. With a housing stock that spans all five boroughs, NYCHA is a city within a city. AES serves as subject matter experts on design for all capital projects at the agency and sets design standards for sustainable and resilient architectural, landscape, and urban design at NYCHA.

How did you decide to become an architect? My parents are Honduran immigrants who came to the U.S. to find security and social mobility. They were able to accomplish this—largely by benefiting from living in tight-knit, walkable communities that had many affordable housing options. Seeing the benefits that well-designed spaces and access to affordable housing provided my family, I was motivated to see if it was something I could help bring to other people who needed it.

What inspired you to join NYCHA? I was working at a private architecture and planning firm in Washington, D.C., and worked with public housing authorities across the country. I kept wanting to be on the other side of the table to understand how decisions were made that impacted the built environment—particularly in vulnerable communities or communities of historic disinvestment. I then transitioned to the public sector through a fellowship—the Enterprise Rose Architectural Fellowship—that places architects in “ownership” roles of developers or agencies. I then become a permanent employee at NYCHA and a New York City public servant.

Which architects and firms have influenced your practice? I have always admired mission-driven practices, particularly ones that branch out from a purely “design” practice—those that use anthropology, research, behavioral science, or participatory research to inform

how the best spaces can be funded, designed, built, *and* maintained. I’m interested in the full life cycle of a place and the people that support that. Some of the private firms I looked to earlier (and today) are MASS Design Group, Gehl, and BlackSpace Urbanist Collective, but I am also influenced by organizations and networks of public interest design that unite practitioners at many scales doing community design across the country.

Most successful collaboration: I am especially proud of two collaborations that I have managed in my time at NYCHA. I worked with the New York City Department of City Planning to produce the *Connected Communities Guidebook*, urban-design and community-engagement guidelines for public housing. This really strengthened our relationship with the agency and increased NYCHA’s ability to be in discussions about broader planning policy in the city. The other is NYCHA’s Open Space Masterplan—the first master plan of this scale in the history of the authority. We assessed and master-planned over 130 sites with consultants Grain Collective and Nancy Owens Studio, and those plans are now leading to millions of dollars in investment in the public realm at NYCHA.

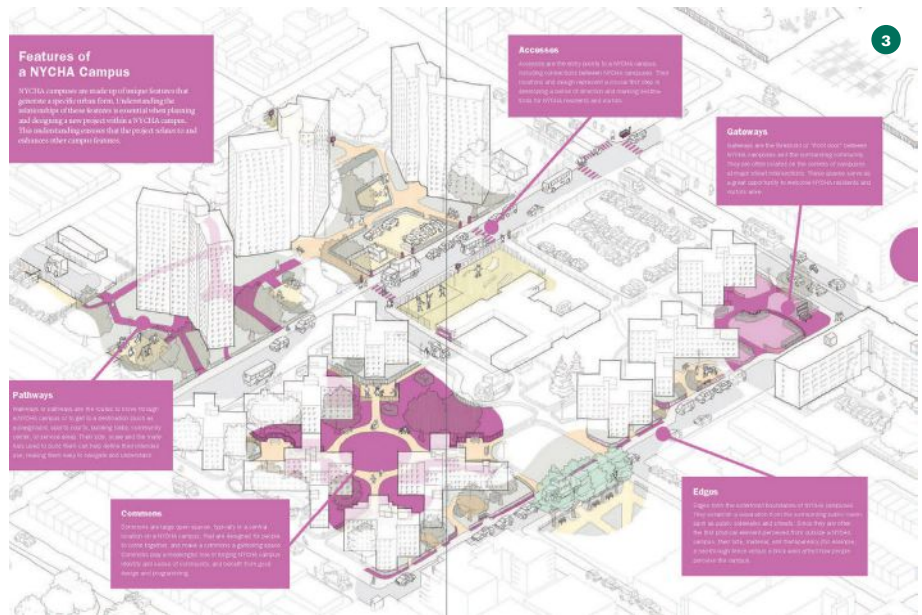
Most urgent political issue facing architects: Ending single-family zoning.

Most urgent policy issue: The right to housing in America.

Next Progressives: Delma Palma



1. Delma Palma served as the primary author and project manager for the *Connected Communities Guidebook*, a handbook for community engagement and design on NYCHA campuses. **2.** A model of Vladeck Houses, a 20-building, Lower East Side public housing project from NYCHA originally completed in 1940. **3.** A rendering from the guidebook that details strategies, forms, and approaches developed to strengthen NYCHA's campuses. **4.** New York's first Public Housing Fitness Zone at the Carver Houses in East Harlem. **5.** In 2021, NYCHA renovated the first of 14 basketball courts across its campuses as part of its Safe Summers NYC initiative. The courts received updates including resurfacing, fresh logos, new lighting, added seating, and more. **6.** The NYCHA Open Space Masterplan rendering by the New York-based Nancy Owens Studio. **7.** The Marcy Houses basketball court in Brooklyn was one of the 14 revamped courts. **8.** The Jefferson Houses Cloudburst Project design workshop.





TRANSFORM YOUR SPACE.

AC Hotel by Marriott | Beverly Hills, CA
Architect: AXIS/GFA Architecture + Design
Product: Endure™ Linear 900



**ACOUSTICAL
WOOD CEILINGS AND WALLS**



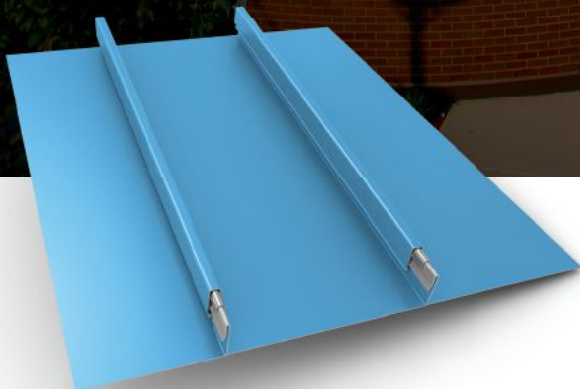
rulonco.com

Whimsical Roofline



Vibrant Dynamic Blue Snap-Clad metal panels brighten the playful roof shapes and walls of two interior courtyards, invigorating this mixed-use building that houses a Chicago Public Library, childcare center and community meeting space.

Altgeld Family Resource Center, Chicago Installing contractor: Progressive Dynamics Architect: KOO LLC
Owner: Chicago Housing Authority Photo: hortonphotoinc.com



Snap-Clad
Metal Roof and Wall System
Custom Dynamic Blue



View the
case study
and video



HANOVER[®] ASPHALT BLOCK



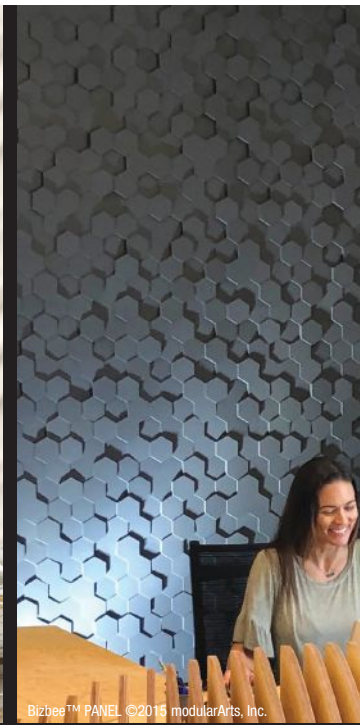
HANOVER[®]
Architectural Products
www.hanoverpavers.com • 800.426.4242



**A UNIQUE, PEDESTRIAN-FRIENDLY
PAVING ALTERNATIVE**



Breeze™ PANEL ©2022 modularArts, Inc.



Bizbee™ PANEL ©2015 modularArts, Inc.



Dune™ PANEL ©2003 modularArts, Inc. | Photo credit: Jessica Delaney




Orca™ PANEL ©2021 modularArts, Inc.



Breeze™ Acoustic ©2022 modularArts, Inc.

modulararts[®] 
sculptural walls in modular components

modulararts.com 206.788.4210 info@modulararts.com made in the USA


A modern outdoor dining area at dusk. The scene is illuminated by a warm fire pit on the left and the ambient light of the twilight sky. Large, dark-framed windows in the background offer a view of a mountainous landscape. Several people are seated at long, dark wooden tables, engaged in conversation. The architecture features a mix of stone, wood, and dark metal elements.

When you choose a window brand,
you'd be surprised how many other
choices you're making.



Manufacturing updated to run with power from our own 30,240-panel, 30-acre solar farm

Architect: Skylab Architecture
Builder: Celilo Contracting Inc
Photo: Stephen Miller



The large expanses of glass in our timber curtain walls bathe interiors with light for more natural, healthful working spaces.

The latest glazing technology for more efficient thermal properties

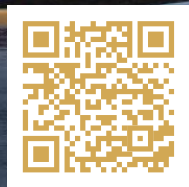
Advanced performance powder coating on our clad exteriors delivers nearly zero VOCs and a significantly reduced carbon footprint

Windows that never compromise.
Stewardship that never quits.



SIERRA
PACIFIC
WINDOWS

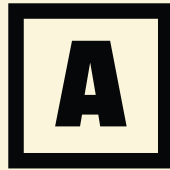
Watch our brand video



SierraPacificWindows.com | A Division of



Join us on  @sierrapacificwindows

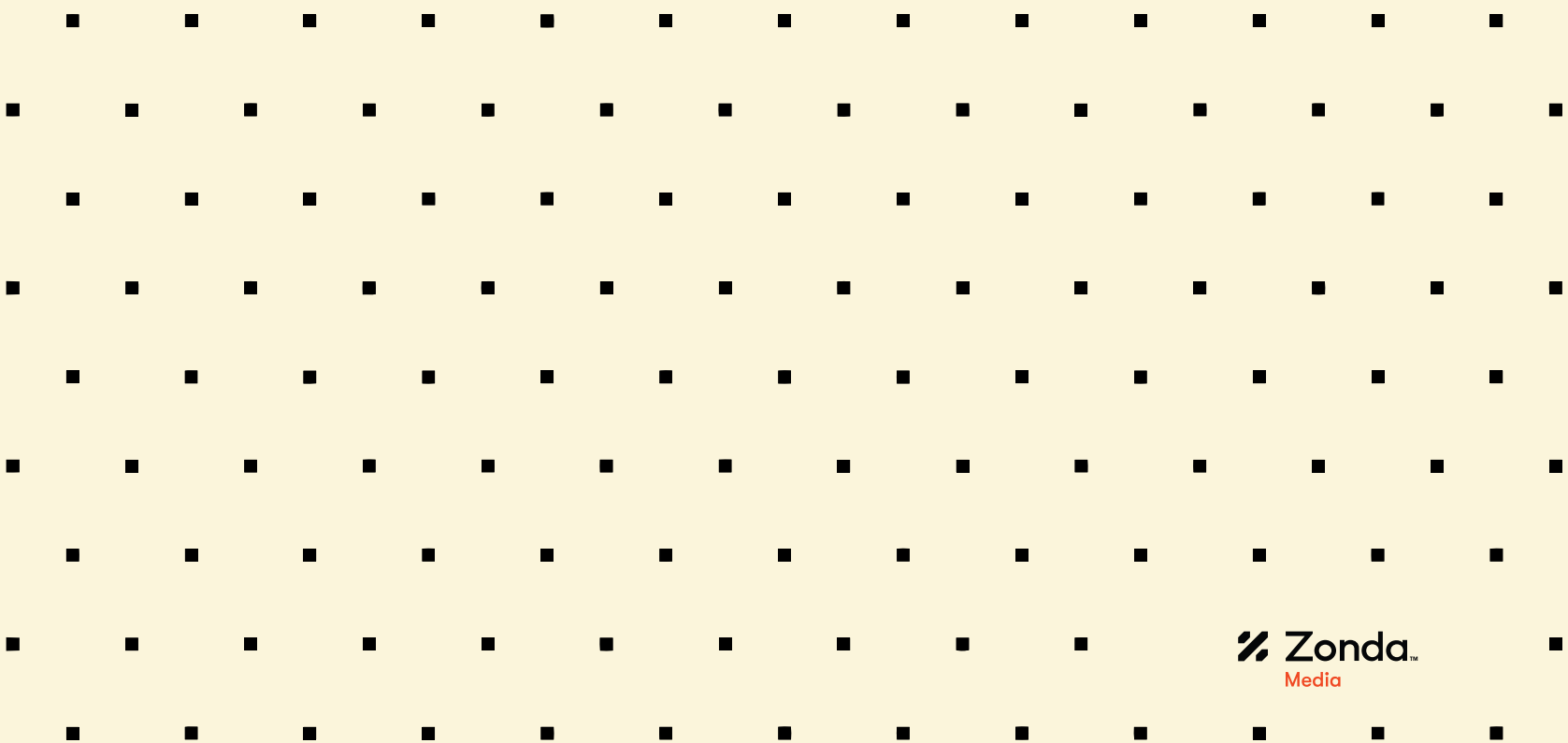


You Deserve More.

The premiere website for practicing architects and designers—featuring news, project galleries, continuing education, blogs, videos, and more—is architectmagazine.com

- > More projects
- > More products
- > More critiques
- > More tech
- > More news
- > More business

Get more today at architectmagazine.com



Prevent structural damage caused by cast-in-place planters above grade
with Modular Planters by DeepStream Designs



Complete Modular Landscaping Systems
Structural internal aluminum frame - No roof penetrations
Anodized aluminum legs - No paint or powdercoating to fail
Liners with advanced drainage hide irrigation and wiring

www.DeepStreamDesign.com

(305) 857-0466

Lifetime Structural Warranty



LOOK FOR THE **UES MARK**



When it comes to building product acceptability, we ask the tough questions. Our Uniform Evaluation Reports provide the assurance you need to specify with confidence.

We deliver:

- Trusted third party recognition of compliance to building codes and national standards
- Model code issuing agency
- Extensive building product quality expertise and comprehensive internal and external review by known industry experts
- Ongoing surveillance of manufacturing operations to verify continued product quality
- ANSI Accreditation as an ISO/IEC 17065 Product Certification Body, IBC Sections 104.11 and 1703 compliant
- Concise product certification information and support for your interactions with building departments and building owners

For Assurance of Your Specified Building Products, visit <https://bit.ly/2s0BQwU>

IAPMO's Uniform Evaluation Service...Your Building Product Quality Assurance Company

Assurance
~~CALL THE INSURANCE COMPANY~~™





CORNELL

COOKSON

Five Considerations for Specifying Commercial Garage Doors

Here are several things to keep in mind when looking for the right door.

If you've ever been involved in specifying commercial garage doors, you know it's no easy task. The landscape of modern door products is massive and offers a dizzying array of design and performance options that add aesthetic value, efficiency, and security to buildings. But specifying the right look, calculating dimensions, optimizing performance, and cross-referencing code compliance for your project is a complex and time-consuming endeavor. Architects and designers must account for everything from space clearances, operating speeds, and cycle ratings to wind load, fire resistance, and more to do the job right—not to mention ensuring it is compliant with local and national building regulations. And that often involves significant legwork to gather information from a variety of sources.

Luckily, help is available. Here are five considerations to focus on when going through the specification process of commercial garage doors. And for more help and resources, check out the Architect Portal at ArchitectDoorHelp.com.

1 | CLOSURE TYPE

There are two main types of commercial garage doors—rolling and sectional—and each has its benefits and intended applications. Rolling doors typically are made of steel slats that coil when rolled up and interlock when fully closed. They're compact and versatile, and they can be specified to operate at a varying degree of speeds depending on your performance needs. Rolling doors are usually made with heavy-duty materials, so they're engineered for increased security and, in some cases, a longer lifespan. Recent manufacturing advances allow custom perforations and unique graphics to be added to enhance aesthetics.

Sectional doors have panels that move upward. They're more common in residential garages but are used in commercial applications too. Full-view section

options offer natural light, visibility, and a modern look. Sectional doors can also insulate a space more effectively with a higher U-factor available than rolling doors. Sectional doors work for applications where visibility is a priority or where climate control is a concern.



2 | SPACE AND MOUNTING

The two main types of doors have different requirements for proper installation. Rolling doors need enough space above the opening to fit the retracted coil, but they don't need much backroom. Sectional doors, though, need very little headroom (just enough for the track and door to be flat against the ceiling) but more backroom for the door to retract into the space. Both types of doors have code requirements. For example, ADA standards require openings in parking facilities to have at least 98 inches of clearance for lifted vans.

Ensuring there's enough room between the selected door and things like HVAC equipment, lighting fixtures, and sprinklers is crucial for avoiding obstructions and maintaining proper operation of your facility.

3 | CYCLE RATING

Knowing the desired overall lifetime cycles and the peak cycle times (concentrated, high-volume operation) for your needs will help you find the right door. Overall rated lifetime cycles can range from 10,000 to one

million and are an important consideration to ensure the components (door, motor, other mechanical parts) will hold up well over the planned lifetime of the door, especially in applications with a consistent flow of use. And selecting a product with appropriate peak cycle times is crucial for places such as parking garages, in which the door will be used frequently during certain parts of the day to handle a higher number of cycles per hour.

4 | OPERATIONAL SPEED

Both main types of doors (rolling and sectional) offer a variety of speeds that can vary greatly. How quickly do you need your door to be able to open and close? If the door will be installed in a facility that requires temperature control, like a food-processing plant, you'll want it to be able to open and close quickly. But for other types of buildings and uses, high operational speed might not be a big factor and you might be able to focus on other features.

5 | WIND LOAD

Doors can be tested for both static wind load (the force they can withstand while closed) and operable wind load (the force they can withstand while safely operating). Making sure the door you specify is able to safely withstand the wind in your geographic area and protect the people, equipment, and products in the facility is crucial to the safe operation of the facility.

Code requirements for wind load also vary between different parts of the country, so fully understanding the code in your area is crucial, especially in places where hurricane or tornado activity is common. Some manufacturers even have high-performance doors with reinforcement or "wind locks" built in and can also provide doors that meet the strict FEMA P-361 guidance for safe room construction. ■

For much more detailed information and resources to help you simplify your commercial garage door specification process, visit the Architect Portal at ArchitectDoorHelp.com.

Housing Innovators:

Block Project Reimagines Long-Term, Supportive Housing in Seattle

TEXT BY MADELEINE D'ANGELO

In Seattle, the United States city with the third-largest population of unsheltered residents, folks at the local nonprofit Block Project like to say that the problem with homelessness is a lack of proximity. "When you get closer to the people experiencing it, you start to see your shared humanity and that, we say, is the beginning of the solution," explains Bernard Troyer, the Block Project construction manager.

Founded in 2017 by the local architects Rex Holbein and Jenn LaFreniere, Block Project aims to foster proximity—and community—in the built environment by allowing homeowners to volunteer their land to host a fully equipped, permitted, and modular 230-square-foot Block House while Block Project volunteers and staff offer its resident continued support. In a country where inhabitants often have a possessive sense of land ownership and where urban areas are shaped by single-family zoning policies, this quietly radical project could offer a housing blueprint for richly diverse and connected urban networks.

Stemming from Holbein's Facing Homelessness nonprofit, Block Project began with a single residence: Block Home 0001 in Seattle's North Beacon Hill neighborhood. The project expanded—replicating the original design in host yards across the city—thanks to support from local volunteers and private donors, many of whom work in the AEC industry. When it came time to build the 10th Block residence, Block Project leadership convened a 2019 design charrette to reimagine the



Block House in response to resident feedback. Suggestions included "more space for a taller fridge, more space for storage, a different kind of flooring," recalls Phoebe Anderson-Kline, the Block community programs manager. "We're making sure that the homes are reflective of needs of people living in them."

The new Block houses also value efficiency at a premium: Each residence contains 130 square feet of living space, a kitchenette, and a bathroom. "We're trying to maximize the number of backyards we can put them in," Troyer says. Plus, in a city where traditional affordable housing can cost approximately \$330,000 and take years to develop, each redesigned Block House costs \$75,000 and can be built in six months.

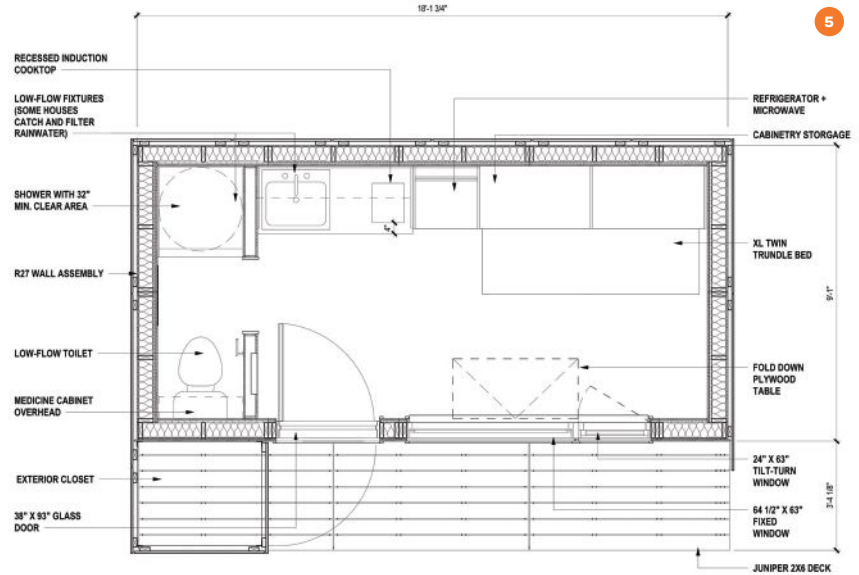
The breathtaking speed of the Block houses comes from a

process that Troyer likens to "IKEA furniture on steroids." Volunteers prefabricate components of each residence at the Block Workshop in Seattle's Georgetown neighborhood. From there, the modules can be assembled—and disassembled and reused—in backyards around the city. The simple design becomes a blank canvas, seamlessly adapting to different settings, varied resident needs, and the unique relationships between each resident and host.

The houses—which are currently being evaluated for Living Building Challenge certification, a rigorous green building benchmark—also exemplify a careful environmental consideration. Sustainably harvested juniper wood—an invasive species choking out biodiversity in Eastern Oregon—wraps around the Block residence exterior as decking

and rainscreen siding. Havelock wool offers high-performance insulation in the walls and cork provides a comfortable yet sustainable flooring option.

With Block Home 0013 recently completed in July and with a collaboration with the Indigenous-led, Rapid City, S.D.–based advocacy group NDN Collective already on the way, Block Project hopes to expand “in a way that other people can learn from us,” Troyer says. “We’d love to grow the mission here in Seattle and get into more neighborhoods and give more folks an option of living in a Block Home, but we’re no silver bullet. We’re meant to be on a growing menu of options for housing needs.”



1. Block Home 0010, built in 2020 in Seattle’s Central District neighborhood, was the Block Project’s first completed structure following 2019 redesign efforts. 2. Volunteers transform Havelock wool into insulation at the Block Project workshop. 3–4. Thanks to prefabricated elements, Block houses can easily be constructed on-site by small teams of four people. 5. A drawing for the redesigned Block Home. 6. A Block Project construction team at work.

Housing Innovators:

A Toronto Firm Takes on Affordable Housing

TEXT BY ANDREA TIMPANO

There's a saying among members of Toronto-based architecture firm Montgomery Sisam Architects: "The building has to last a hundred years," intones Enda McDonagh, one of the practice's nine principals. That ethos permeates the firm's plans for a modular, affordable housing project in the city of Hamilton, Ontario, set on Lake Ontario.

Commissioned by CityHousing Hamilton, a local affordable housing provider, to shelter those experiencing homelessness, the forthcoming residence—which is designed to achieve Passive House Certification—will consist of 24 studio apartments. The building's modular construction ensures the project will be "delivered on a rapid timeline," McDonagh says, while its incorporation of sustainable design principles speaks to the longevity goals of both CityHousing Hamilton and the firm. "The client is very forward-thinking and has quite a few Passive House projects under their belt," says McDonagh, a certified Passive House consultant. "Passive House is relatively new for us, so we wanted to get involved."

Despite the building's novel approach, McDonagh says the Montgomery Sisam team felt rooted in "familiar territory" throughout the design process. With a background in both municipality-driven housing projects and net-zero energy builds, the firm was well-equipped to base its scheme around all-electric heating and cooling systems, an insulation-heavy exterior, triple-glazed windows and doors, and an array of photovoltaic panels on the south-facing roof.

Designing the interior of the



As part of its Passive House Certification goals, the new Hamilton residence will feature photovoltaic panels on its south-facing roof.

18,000-square-foot building—which will replace a parking lot set between a church and another multifamily residence—was a different challenge. There, McDonagh and his colleagues crafted inviting units and common spaces with "all the home-like qualities and features that we take for granted," he says. The goal, the architect adds, was to ensure that "somebody walking into the space isn't thinking 'institutional.' They're thinking 'home.'" That meant specifying durable yet eye-catching materials such as warm Douglas fir, which will line the ceiling in the building's shared entry, and wood-look vinyl flooring in individual suites.

The team embraced a similar approach for the project's landscape, joining forces with local firm OMC Landscape Architecture to plan a

welcoming yard. Complete with a community garden and seating areas, the outdoor hangout also includes plantings such as eastern redbud trees, boxwood shrubs, and daylilies. Like the residence itself, the landscaping is poised to stand the test of time thanks to hardy, low-maintenance flora.

As McDonagh and other project contributors look forward to completing construction in 2023, the architect notes that the endeavor isn't just about building something to last. "The starting block for us is that we're creating a home for someone who either has fallen on hard times and lost their home or never had one to speak of," he says. "We're trying to create a place for them, an address—something that they want to come back to."



GENERATION 4™

Folding Glass Walls by NanaWall

Drawing from four decades of innovation, NanaWall once again creates the most advanced family of folding glass walls.

Easy Operation: Smoothest and easiest operation of any folding glass wall.

Increased Transparency: Clean aesthetics with the slimmest profiles available.

Acoustical Privacy: STC ratings from 35 to 45.

Flexible Stacking: Unique floating panel sets can stack either to the left or right.

Proven Durability: Swing doors tested to 500,000 and bi-fold panels to 20,000 open/close cycles.

Available in
three different
material choices:



ALUMINUM



WOOD



CLAD

NanaWall.com
800 873 5673

NanaWall[®]
Boundaries **Unbound**[®]

Housing Innovators:
Hamilton Passive House Modular Housing



1. A community garden, ample seating, and a variety of low-maintenance trees, shrubs, and perennials anchor the landscape plan.
2. Each of the building's 24 prefabricated studios will include a dining area in addition to sleeping and living space.
3. The team specified hard-wearing finishes such as laminate countertops and wood-look vinyl tile for individual units and common areas.

m·pwr™ Smart
Doors

Masonite® Unveils M-Pwr™ Smart Doors

Introducing the first residential exterior doors to integrate power, lights, a video doorbell and a smart lock into the door system. Exclusively available to new construction builders.



Learn More Today.

© 2022 Masonite All Rights Reserved



MASONITE.
DOORS THAT DO MORE.™

Housing Innovators:

NAC Builds Modular, Temporary Housing in Months

TEXT BY IAN VOLNER

"It was a remarkably fast project," says Michael Pinto, AIA. The principal at the Los Angeles office of NAC Architecture is speaking of his firm's Hilda L. Solis Care First Village project completed in 2021 in LA's famous Chinatown neighborhood. Tasked by Los Angeles County in 2019 with creating an interim, 232-bed residential complex with on-site supportive care for Angelinos transitioning from being unhoused, Pinto and his team faced a daunting set of challenges: Working at the height of the COVID-19 outbreak, they would have to create a project aimed at a uniquely vulnerable community and do it on an extremely tight schedule—just six months from start to finish.

The pandemic dictated the basic contours of their solution. "Ordinarily this would have been on a dormitory model," says Pinto. "But because of COVID, we have had to design independent units with separate air control and restrooms." With that as a starting point, the designers were able to conceptualize the project as a series of modestly sized apartment blocks formed into a familial cluster—leading to their key decision, one with significant implications for the project's fast rollout. "We decided to go with a modular solution," says Pinto, with 132 of the sleeping units located in two permanent, three-story resident buildings, and the remaining 100 located in temporary mobile trailers. Relying on these modular typologies—Crate Modular shipping crates, conventional prefabricated units from Palomar, and trailers from Guerdon, all installed by Vesta Modular—the architects reduced the



Constructed in just six months, the Hilda L. Solis Care First Village in Los Angeles features three kinds of modular elements: shipping crates, conventional prefabricated units, and single-story trailers.

production and assembly time to meet their deadline early.

Using what Pinto refers to as "a radial strategy," the different modular typologies are laid out in staggered rows on the wedge-shaped site with a separate structure housing administrative functions and shared services to one side. Between the volumes, landscaped corridors provide communal outdoor space of a kind not often seen in such projects, including areas for al fresco dining and even a dog run. "One of the barriers to helping with people experiencing homeless is that a lot of them have pets," notes Pinto; the dog run, he says, "allows us to address

a population that is often harder to serve."

The stubborn problem of homelessness in LA (along with the dire housing deficit that has contributed to it) intensified the urgency to bring the project online as fast as possible. From that perspective, hyper-efficient prefab construction had obvious advantages—but as Pinto sees it, the discrete, all-in-one dwelling units that the modular approach made possible also provide a longer-term benefit to residents. "There's a level of autonomy there, with your own front door, your own thermostat," he says. "It makes it a more tangible solution."

STONE THAT STIRS



Like a diamond's evolution from raw earth to unique design, every idea becomes a reality that opens your imagination. Eldorado Stone can transform your space nurturing humble materials to create any world within your home.

Extraordinary can begin small and turn into *the start of something beautiful.*™

ELDORADO
STONE™



THE DOOR OF BEAUTY & INNOVATION



PLASTPRO QUALITY:

1 FIBERGLASS REINFORCED DOOR SKIN

Our exclusive formula is measured precisely to ensure each skin is produced to the highest quality. The skins require little maintenance and will not splinter, dent, warp, rot, or rust. Choose a door skin from a variety of grains that can be painted or stained.

2 FULL-LENGTH COMPOSITE STILES

Our full-length, composite stiles protect the door from external moisture to prevent warping or rotting. They have twice the screw-holding strength of wood.

3 COMPOSITE TOP & BOTTOM RAILS

High-strength, composite top and bottom rails prevent moisture from seeping into the door and stop the buildup of mold.

4 EXTENDED LOCKBLOCK

Plastpro's full-length LVL allows any type of lock to be placed for increased security. Our 8/0 doors have a steel bar in addition to the LVL to help increase the structure's rigidity.

5 POLYURETHANE FOAM CORE

Our advanced, CFC-free, high-density, polyurethane foam core enhances the door's soundproofing capabilities and provides insulation up to six times greater than wood doors.

6 INSULATED 1" GLASS

Direct glazed glass creates a seamless and elegant design with large panes to allow the most amount of light into your home.



For more information about our products scan the QR code or visit: plastproinc.com

GAF

Unburdening Overburden Considerations for Commercial Roofing

Enhance your roof design through insights into building science and roof performance.



A vineyard and bee hives on the roof of City Hall in Paris.
Photo: Standard Industries.

A roof's primary purpose has been to shelter its inhabitants from the elements, and now the underutilized potential of roof surfaces is being realized. Roofs with overburden can make a significant impact on the sustainability goals of a building including: increased energy efficiency, stormwater retention, energy generation, biohabitat restoration, food production, reduced urban heat-island effect, and outdoor space.

However, selection of the overburden system is only part of the design. Selection and design of the roof assembly is critical for a long-lasting installation and performance and paramount to the overall success and longevity of the overburden system.

OVERBURDEN ASSEMBLIES

Overburden is material or equipment that is located above the roof assembly. While each property is unique, there are many overburden options such as vegetative roofs, blue roofs, blue-green roofs, purple roofs, and rooftop solar.

MEMBRANE SELECTION

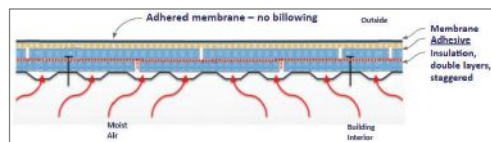
Both single-ply membranes and modified bitumen roof systems can be an excellent choice for overburden installations. The type of overburden will determine whether the membrane should be installed at the deck level or at the top of the assembly. Membranes that will be used at the deck level, such as for vegetative assemblies, should be evaluated for durability and longevity since access for repairs will be limited and costly. Membranes where overburden systems, such as solar, are installed directly on the membrane should be able to withstand abrasion and puncture from roof elements above it. For blue roofs and water catchment systems, single-ply membranes are commonly used.

MEMBRANE COLOR

When the membrane is exposed, the color can have a significant impact on the performance of the system. Reflective roof membranes can lower ambient temperatures, decrease urban heat-island effect, and may decrease the heat load into a building's interior. Vegetative roof systems can take advantage of reflective membranes in areas where vegetation is not installed.

MEMBRANE ATTACHMENT

Mechanically attached single-ply systems are subject to billowing in high wind events, which can cause stress and fatigue over time. Overburden installed over mechanically attached systems may billow with the roof membrane during high wind events, causing abrasion of the membrane surface. The overburden may also experience stress and fatigue, potentially decreasing overall service lives.



Adhered system where only the first layer of insulation is mechanically attached, significantly reduces interior air loss and thermal bridging.

INSULATION

Insulation is critical for the energy efficiency of the building. The higher the R-value, the better the thermal performance of the insulation and its effectiveness at maintaining interior temperatures. Higher R-value per inch means less material is required to achieve the desired insulating value.



Staggered and offset insulation board joints.

COVERBOARDS

Inclusion of a coverboard must be considered after selection of the overburden. Rooftops with overburden assemblies generally have increased foot traffic on the roof. Coverboards provide added protection against foot traffic, penetrations, service contractors, wind-borne debris, and hail.

SUMMARY

While the roof is the primary defense to prevent water entering into a building, this previously underutilized asset is being recognized by owners for the sustainability opportunity and the additional space that the roof offers. Once the overburden type is selected, the roof assembly needs to be determined and installed to match or exceed the service life of the overburden systems. Special consideration should be given to roof assembly design decisions as the overburden success is dependent on the success of the roof beneath them. ■

To learn more and for our blog, webinars, seminars, workshops, industry articles, technical white papers, and conference presentations go to gaf.com/architects.

2nd ANNUAL
**Architecture &
Interiors Awards**



**CALL
FOR
ENTRIES**

ELIGIBILITY

Design professionals practicing worldwide may enter one or more architectural lighting design projects. Each project entry is a submission and has an entry fee associated with it. This is NOT a product competition. Submissions are encouraged from all design professionals, including but not limited to architects, lighting designers, interior architects, interior designers, and landscape architects. **Projects must have been completed after July 2020.** Projects previously entered can be resubmitted so long as they still meet the eligibility window.

ARCHITECTURE CATEGORIES

1. Government and Civic
2. Institutional
3. Cultural
4. Hospitality
5. Office
6. Sports and Recreation
7. Adaptive Reuse / Historic Restoration
8. Mixed Use
9. Landscape Architecture

**SPECIALTY ENTRY
CATEGORIES**

20. Innovative Use of Material
21. Stair

DEADLINES

REGULAR Oct. 1, 2022
(Standard Entry \$160; Specialty Entry \$130)
LATE Oct. 14, 2022
(Standard Entry \$210; Specialty Entry \$180)

HOW TO ENTER

SUBMIT YOUR WORK AT
architectureandinteriorsawards.com

QUESTIONS? EMAIL
ardesignawards@zondahome.com

 Zonda.
Media

19th ANNUAL
**Light & Architecture
Design Awards**



**CALL
FOR
ENTRIES**

ELIGIBILITY

Design professionals practicing worldwide may enter one or more architectural lighting design projects. Each project entry is a submission and has an entry fee associated with it. This is NOT a product competition. Submissions are encouraged from all design professionals, including but not limited to architects, lighting designers, interior architects, interior designers, and landscape architects. **Projects must have been completed after July 2020.** Projects previously entered can be resubmitted so long as they still meet the eligibility window.

CATEGORIES

1. Interior Lighting
2. Exterior Lighting
3. Whole Building (in which the same designer is responsible for interior and exterior lighting scope of work)
4. Exhibition and Lighting Installations

DEADLINES

REGULAR Oct. 1, 2022
(First Entry \$175, Each Additional Entry \$125)
LATE Oct. 14, 2022
(First Entry \$225, Each Additional Entry \$175)

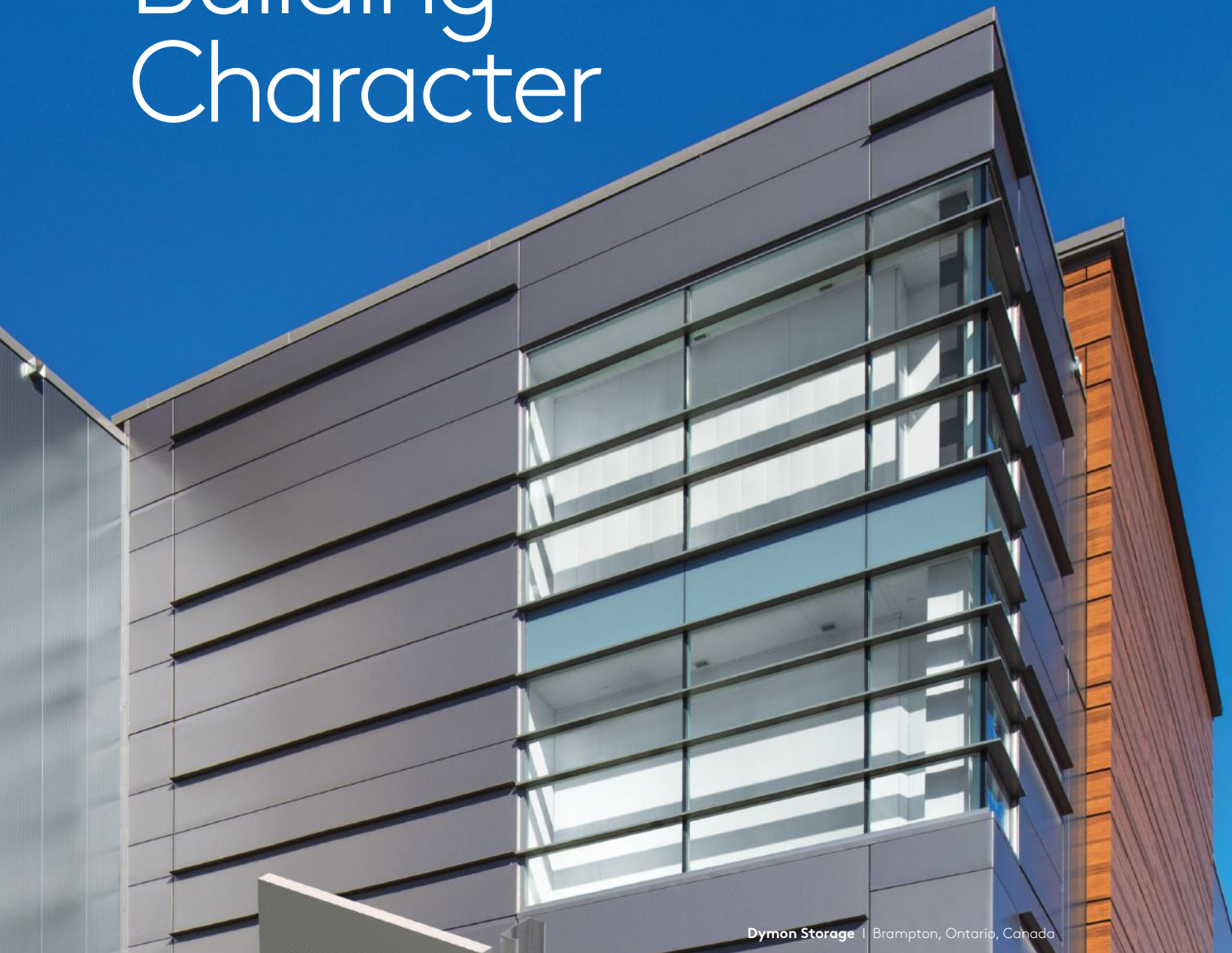
HOW TO ENTER

SUBMIT YOUR WORK AT
aldesignawards.com

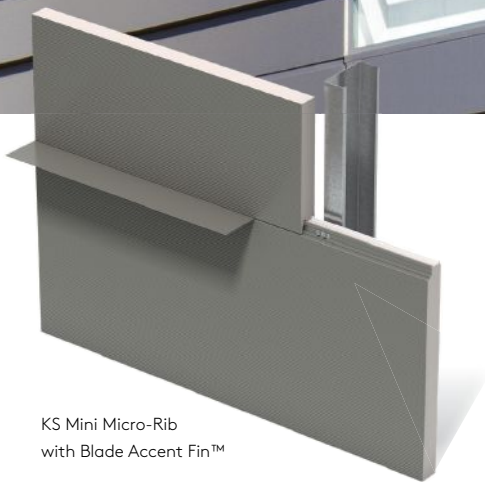
QUESTIONS? EMAIL
aldesignawards@zondahome.com

 Zonda.
Media

Building Character



Dymon Storage | Brampton, Ontario, Canada



KS Mini Micro-Rib
with Blade Accent Fin™

Give your next design something special.

Kingspan insulated metal panels empower your vision with exceptional design flexibility, efficiency and outstanding thermal, air, water and vapor barrier performance for the ultimate building envelope solution.

www.kingspanpanels.us



Game changers

6

SOCIAL JUSTICE

Tonika Lewis Johnson

page 40



8

TECHNOLOGY

Segregation by Design

page 44

2

PHOTOGRAPHY

Laurien Ghinitoiu

page 34



10



INFRASTRUCTURE

TreesAI, Dark Matter Labs

page 47

12



CLIMATE CHANGE

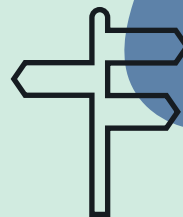
Resilience Frontiers

page 80

COMMUNITY

Open Design Collective

page 38



4

1

HOUSINGDelma Palma
page 11

9

**EQUITY**
Maslow Development
page 46**EDUCATION**
Next Generation of
Preservationists
page 36

3



11

**CULTURE**Living Lands, CCA
page 48

7

**MATERIALS**Knit Casting
page 42**PUBLIC HEALTH**Nupur Chaudhury
page 39

5

12 visionary people, organizations, and ideas reshaping architecture and design today.

In this issue, **ARCHITECT** celebrates a dozen inspirational individuals and organizations who, through their practices, projects, and ideas, are changing the world of architecture and design. Many of these game changers are emerging in their fields of expertise, but they all provide innovative solutions to obstacles we face every day. The leaders profiled here are challenging the status quo to lay the groundwork for inclusive, sustainable, and caring environments around the world. If one thing brings them together, it's that they offer a model for practitioners during our turbulent times—demonstrating the power of architecture and design to forge real change.

Written by Annie Howard, Edward Keegan, Anjulie Rao, and Andrea Timpano

PHOTOGRAPHY

Laurian Ghinițoiu



► **LAURIAN GHINIȚOIU DOESN'T CALL** himself an architectural photographer. The typical staged stills of recently completed buildings, featuring people blurred in motion and pristine surfaces, might encompass much building documentation, but Ghinițoiu's lens has a much wider angle.

Ghinițoiu, who is based in Berlin, began his career as an architect but picked up the camera after nearly a decade in the field—eight years in school and one year in practice. Acknowledging that photography is a tool for documentation, his work doesn't focus on buildings themselves, but the social, political, and physical contexts of the built environment. Ghinițoiu is most interested in

the built environment in a state of change. "Photography gives you a freedom that architecture can't. And I think at the same time that the practice of architecture is a bit too rigid and probably doesn't understand enough of the context," he says. "So, photography pushes you to observe in a different way."

During the height of the COVID-19 pandemic, Ghinițoiu embarked on a voyage capturing materials: an opportunity to document the transformation of one piece of marble from its point of origin in Portugal to its final resting place at the Ronald O. Perelman Performing Arts Center at New York's Ground Zero site. According to

Ghinițoiu, the marble moved across Europe, and was processed at various factories. Using video and photography, he captured this two-year, transcontinental journey in what will become a one-hour documentary.

The film "show[s] all the process and the humanity around it and all the details of transformation—how material becomes construction material," Ghinițoiu says. "So it is about architecture, but at the same time, it's about space and time."

This type of long-term work marks a relatively recent shift for the artist; the pandemic provided him with time to focus on new projects, but the longevity of attention and observation, he says, is, "built into [his] DNA."

Recently, Ghinițoiu began a documentation project that addresses the Eastern NATO border shared between Romania, Moldova, and Ukraine. While the border has remained relatively innocuous for 70 years, the recent war, he says, has changed its power. “As a first step, I went on the Romanian segment on both sides in Ukraine and Moldova and Romania, in order to visualize the reality of the territory with all its human and spontaneous moments,” he says. “It’s a different type of documentation that takes into consideration bigger forces—politics, which are carried through the territory—a contradiction, I would say, from a fictional line that was drawn on paper; you see the actual reality in the territory.”

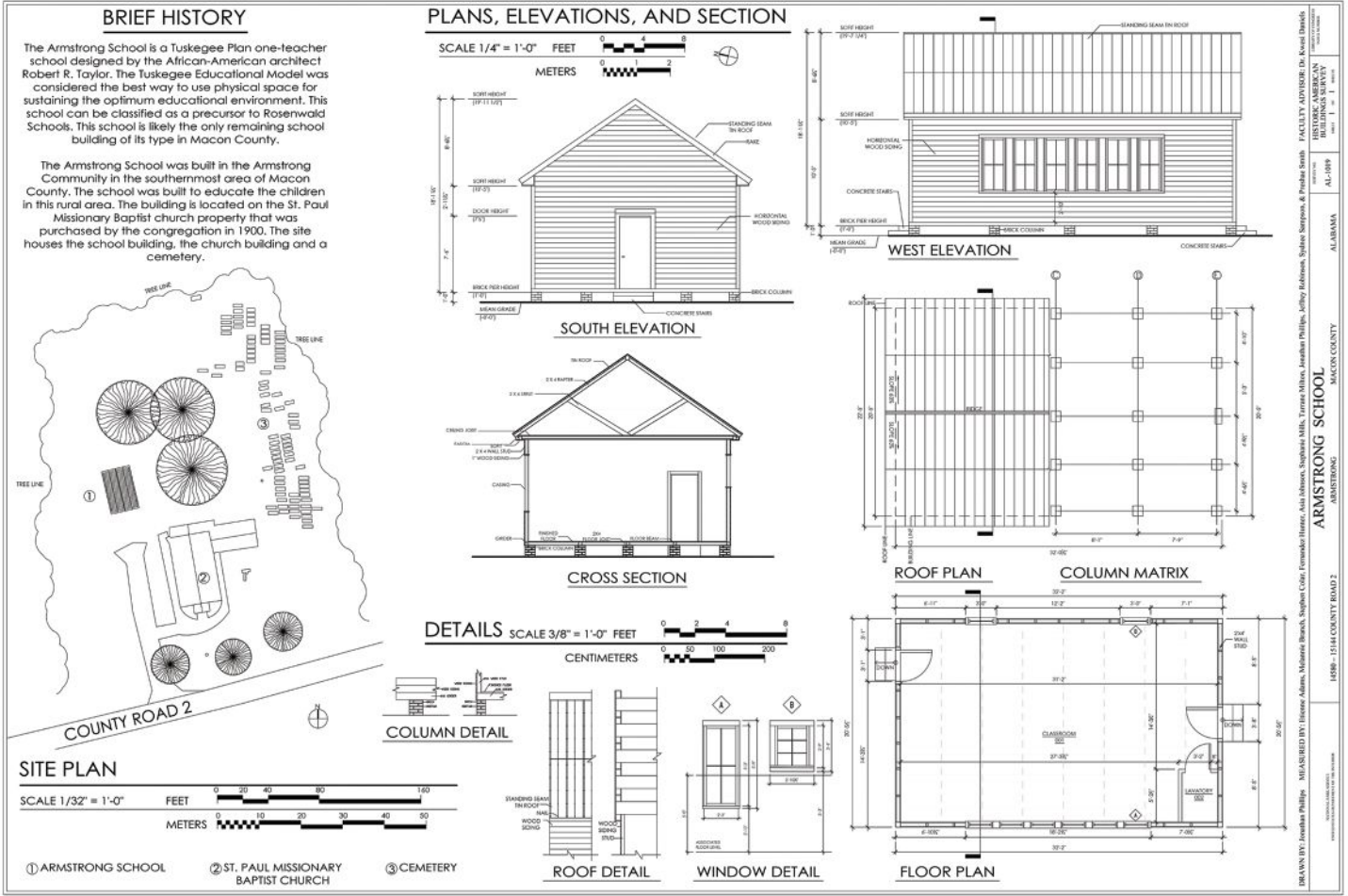
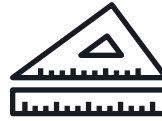
Ghinițoiu’s work will continue to traverse landscapes, continents, and timescales to expand upon the capacity of photography as a tool to both document the built environment and better process transformation as conflict, environment, and politics—the nuances so often unconsidered by conventional architecture photography—exert their influence. —A.R.

OPPOSITE: “The Line (between East and West)” photographed in Moldova, from Laurian Ghinițoiu’s work on the Eastern NATO border.
BELOW: “Marble Journey (from matter to material)” —During the COVID-19 pandemic, Ghinițoiu followed the transcontinental voyage of Portuguese marble bound for the REX-designed Ronald O. Perelman Performing Arts Center at New York’s Ground Zero site.



EDUCATION

The Next Generation of Preservationists



COURTESY TUSKEGEE-UPENN



The Tuskegee-UPenn partnership worked to preserve the Armstrong School in Tuskegee, Ala. The structure stands as a valuable example of the Rosenwald Schools, the “state-of-the-art schools for African-American children across the South,” created by Sears Roebuck president Julius Rosenwald and Tuskegee’s own Booker T. Washington, according to the National Trust for Historic Preservation.

► **THE ARMSTRONG SCHOOL, A PETITE, COLONIAL COTTAGE**

located near Tuskegee University in Alabama, was in poor shape. With significant structural issues, the red-roofed schoolhouse needed restoration and repair. Built in 1906 as a part of then-Tuskegee faculty Booker T. Washington’s efforts to educate rural Black children, the building itself has become an artifact of the Historically Black University’s legacy—and an opportunity to train emerging architects and preservationists on historic preservation.

Kwesi Daniels, associate professor and head of Tuskegee University’s Department of Architecture, has assembled a curriculum for students to study and preserve nearby historic sites, including other Rosenwald Schools, the name given to Washington’s education efforts. In 2019, Daniels led Tuskegee in a partnership with the Graduate Program of Historic Preservation at University of Pennsylvania’s Weitzman School for an initiative dubbed “Capacity Building for Sustainable Preservation of Civil Rights Heritage Places.”

“Tuskegee has laid the foundation to be the center of a bigger preservation movement in the Alabama Black Belt. In order to continue to build the capacity and momentum around that, we could add fuel to the fire as an additional academic partner,” says Randall Mason, a UPenn professor of historic preservation. “We’ve been teaching preservation for a long time—engaging with some of the same issues—but there’s a way to both give more resources to professor Daniels and his students and faculty, and provide more opportunities to work for our students.”

Daniels and Mason set out to preserve the Armstrong School, on which Daniels’ students had already performed extensive documentation. Despite the pandemic, the collaboration brought new resources and knowledge to the project.

“Being trained as an architect, I see the buildings and say, ‘let’s think about stabilization.’ But what Randy was able to bring to the table were practitioners who focus on materials, how to conduct research; testing on wood and paint, soils, and brick at a very granular level,” Daniels says. They spent their first year working virtually, Daniels says, collaborating with the property stewards and community members through video interviews and virtual site tours.

Each university’s team, understanding their expertise and limitations, offers specific skills and responsibilities to the Armstrong School project. “As we’ve jumped into preservation, because we’re a school of architecture, we have honed in on what the architecture contribution is. And because [UPenn] is not architecture, it focuses on all these other aspects of preservation. And we’re able to play in the same sandbox without any competition over the work, because they’re unique contributions that we both bring to the table,” Daniels says.

This long-term partnership model could be formalized and exported to other architecture or preservation schools looking to expand their curricular offerings and impact, Daniels says, but the alliance’s most immediate benefit, both Daniels and Mason agree, is the pipeline that it creates from a Historically Black undergraduate institution to a graduate program.

“What the partnership does is demystify a lot of the graduate school process; it’s not this faraway entity,” Daniels says. Adds Mason, “We take very seriously the challenge of diversifying design schools—especially Historic Preservation. By any sensor, any measure, we’re woefully behind. And this brings our students and faculty in contact with students and faculty from Tuskegee, and I think builds a bigger common ground that we can continue to build on, and brings more different voices into our program and into our work.” —A.R.

► ARCHITECT AND URBANIST DEBORAH

Richards, AIA and social-impact planner Vanessa Morrison began the Oklahoma City-based Open Design Collective in 2021 with a shared observation: The communities they hoped to plan and design for knew what they needed but were often disregarded by the architecture and planning experts designing their neighborhoods from the outside in. That understanding led the two, who both serve as faculty at the University of Oklahoma's College of Architecture in Norman, Okla., to work in deep partnership with the residents who know their neighborhoods best.

Open Design's first major project, commissioned by the Oklahoma City Redevelopment Authority, was a master plan for property owned by the Oklahoma City Urban Renewal Authority. The goal was to repair the damage from decades of urban renewal in the largely Black community of South of 8th Street. The area bears deep scars: population displacement to less walkable neighborhoods, a highway that created a barrier, and the demolition of buildings, all of which contributed to cultural erasure, disinvestment, and the loss of Black wealth.

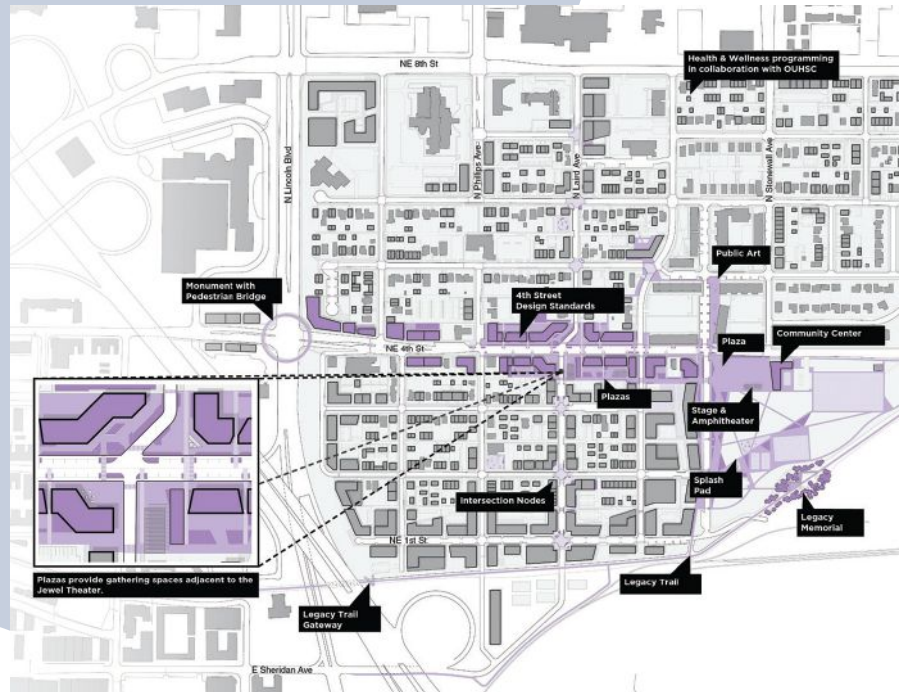
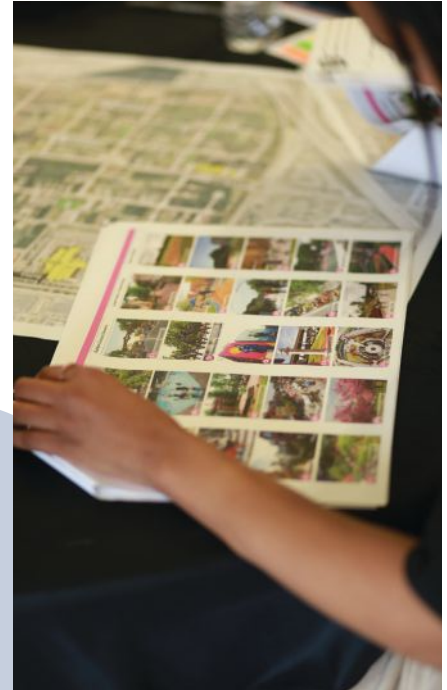
To ensure resident involvement, Open Design created a tactical committee of intergenerational community experts, enlisting "legacy residents, people with lived experiences, community leaders, and cultural producers," who were paid honorariums for their input, Richards says. By working with committee members and the broader community, Open Design was able to make recommendations to OCURA on how to strategically release OCURA-owned lots to the public through an open RFP process, that can be reimaged for transformative uses, stitching back together the city fabric.

"The neighborhood we were looking at was really known for Black creativity in music and performative arts before urban renewal, but today, you can walk around and not see that," says Morrison, who grew up in the city. "How do we revive that history while thinking about the future?"

While their first projects have focused on Oklahoma City, the pair is already envisioning projects nationwide. Wherever they work, though, their goals remain the same: As Richards describes it, the fundamental objective is to "understand how people who aren't trained as designers can participate in the design of architecture and place." —A.H.

COMMUNITY

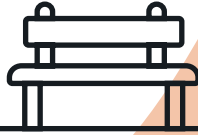
Open Design Collective



CLOCKWISE FROM TOP LEFT: Open Design Collective co-founders Deborah Richards and Vanessa Morrison; community engagement for the South of 8th Street neighborhood; a culture map of South of 8th Street.

PUBLIC HEALTH

Nupur Chaudhury



TOP: Nupur Chaudhury. BOTTOM: A Dark Matter University site visit for the Gowanus Houses community center.

► **COMING FROM A FAMILY OF PHYSICIANS**, Nupur Chaudhury says she “fought the urge or pressure to be in the health world,” and instead pursued urban planning. After college, Chaudhury began working in rural development and youth empowerment while living in a small town on the border of Bangladesh and India, where she often encountered negative health outcomes correlated directly to urban conditions, including access to health-care facilities. Ever since, the urbanist and health-equity expert has dedicated her career to generating equity-focused outcomes for those most negatively impacted by environmental and health injustices. Beginning 15 years ago with a project in Brownsville of eastern Brooklyn, N.Y., Chaudhury worked with community members to better imagine health not just as proximity to a local hospital—a place residents perceived as “where people would go to get their vaccines, or to die,” she says—but instead as a matter of the built environment.

“A lot of what we discussed together was the fact that health actually is not defined by a pill or by a doctor. But that health actually is a park. It’s the double-wide sidewalk. It’s the diameter of a tree canopy,” Chaudhury says. “And these are all things that we get to collectively create and change and be agents of in our own health.”

Since then, Chaudhury has expanded her organizing initiatives, including coalition building after Hurricane Sandy. Recently, through a partnership with Dark Matter University (DMU), she helped launch a curriculum that trains communities to lead their own design processes. Working alongside a team of DMU designers, Chaudhury hopes the program will entirely reshape the traditional, and often impervious, community-engagement model typical of architecture and planning. One of these projects is in the Brooklyn neighborhood of Gowanus Heights.

“We’re working with the Gowanus Heights community, building the capacity of residents to understand the fundamentals of design, justice, and urban planning, so that they can actually shape what it is that they want, independent of what’s happening—a rezoning, a housing development,” she says. Empowering communities with tools to design how their own community health manifests in the built environment re-centers justice in the process. And it communicates to architects a core value of Chaudhury’s own practice: “Architects, designers, and planners can be the most successful health ambassadors, but they just don’t realize it,” she says. —A.R.

SOCIAL JUSTICE

Tonika Lewis Johnson



FOLDED MAP



5400 S. Hermitage resident



6400 N. Hermitage residents

MAP TWINS



FOLDED MAP

6329 S. Paulina

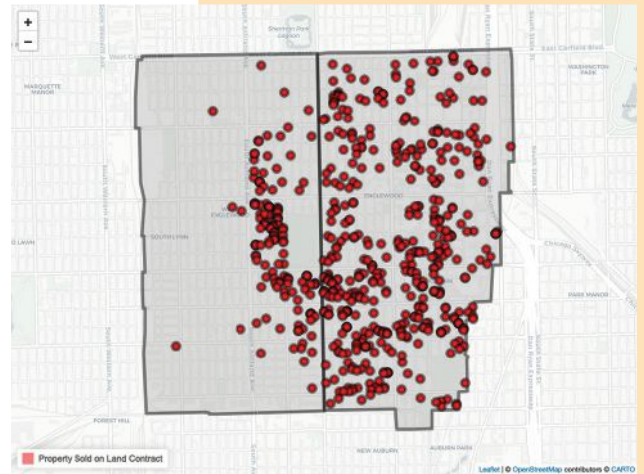
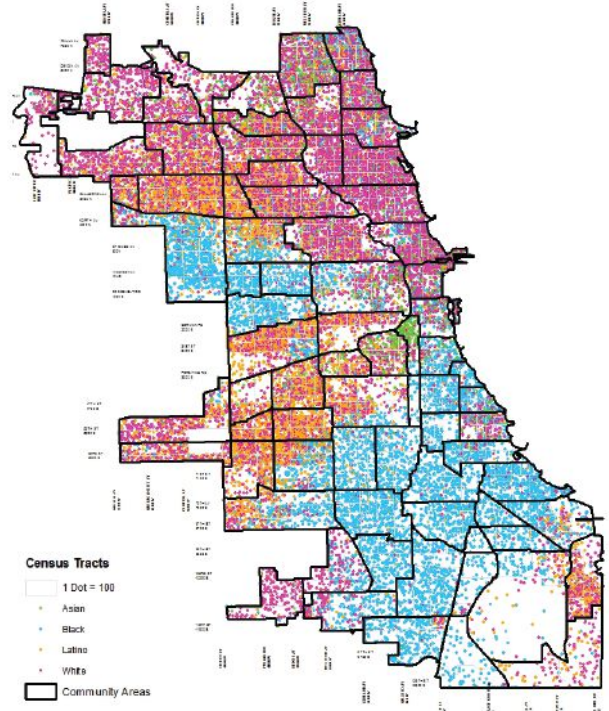


6330 N. Paulina



ADDRESS PAIRS

Race by Census Tract, 5-Year ACS 2017



► SOCIAL JUSTICE ARTIST TONIKA LEWIS

Johnson first drew public attention with the *Folded Map Project*, which uses Chicago's mirrored addresses across the South and North Side divide to connect residents for vital conversations about property values and a city known for segregation. Now, with *Inequity For Sale*, the artist has dug deeper into the harm done to the West Englewood neighborhood—a place she's called home throughout her life—through contract buying, a widespread practice in the 1950s and 60s that preyed upon Black homebuyers through fraudulent home lending.

At the heart of both the *Folded Map Project* and *Inequity For Sale* are maps. By putting into spatial terms the socioeconomic forces that shape Chicagoans' houses and neighborhoods, Johnson reveals a city still reckoning with generations of violent neglect. While the *Folded Map Project* “visually connects residents who live at corresponding addresses on the North and South Sides of Chicago” to create cross-community conversations, *Inequity For Sale* homes in on the lasting effects of contract buying within just a few square miles, revealing how 3,366 Black families lost their homes.

“The expression ‘You are a product of your environment’ is how I have come to know the importance of geography in my life and its connection to race,” Johnson says. “Not just whatever people's preconceived ideas about your neighborhood are, but the good and the bad, all inclusive.”

Johnson worked on the project during her 2021 Artist as Instigator residency with the National Public Housing Museum, which is set to start construction this fall on a permanent physical home in one of the buildings of the former Jane Addams Homes in Chicago. In the same era that large-scale public housing developments offered some Black Chicagoans a fresh start—only to be betrayed by years of organized abandonment—misleading contract sales to homebuyers cost Black Chicagoans upward of \$4 billion in lost wealth, according to a 2019 study by Duke University and the University of Illinois-Chicago.

In addition to digital maps that document the thefts, and a multi-part podcast, produced by Johnson and the National Public Housing Museum called “*Legally Stolen*,” Johnson has created land markers planted in front of people's homes in the community. These markers—which will soon expand to sites of Native land dispossession, and the banks that facilitated this large-scale theft—aim to remind people why we're still bound to historical injustices that continue to harm communities today.

The discriminatory housing practices perpetuated against aspiring Black homeowners parallels how land has been stolen from Indigenous peoples, Johnson explains. “It's a throughline across time,” she says. —A.H.



OPPOSITE: Images and maps from the *Folded Map Project*. ABOVE: Tonika Lewis Johnson and house markers from the *Inequity for Sale* project.

MATERIALS

Knit Casting



► **SINCE WORKING IN A CLOTHING** manufacturing facility in China almost a decade and a half ago, Tsz Yan Ng, associate professor at the University of Michigan Taubman College of Architecture and Urban Planning in Ann Arbor, Mich., has developed a deep interest in the relationship of clothing manufacturing and architecture (including teaching a course called “Sartorial Architecture”). Her knit-casting process uses CNC-manufactured knits as formwork for creating glass-fiber-reinforced concrete.

With applications that include serving as an intricate façade panel system or as a remote concrete casting system in situations

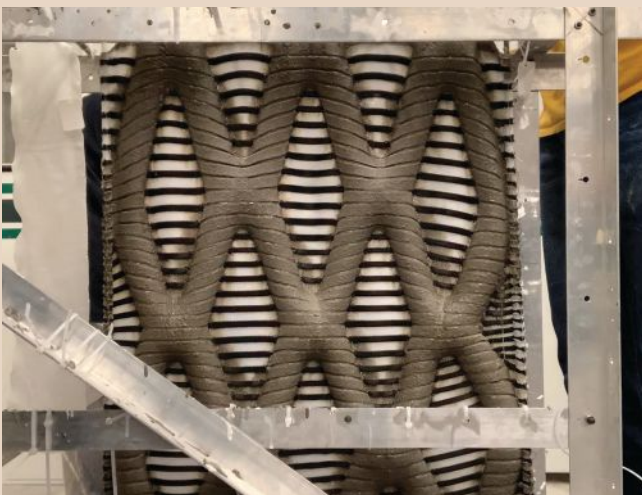
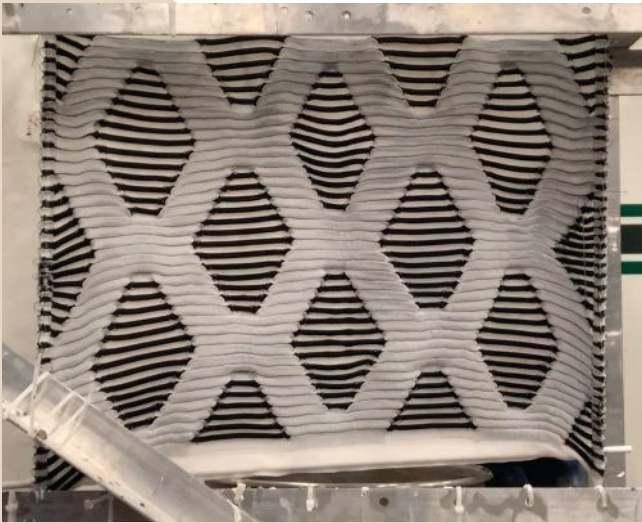
where formwork or labor are unavailable, the dynamic form-finding process also eliminates the need for typical molding materials, such as wood or foam, and the waste that comes along with them. The project was conceived and developed in collaboration with university colleagues Sean Ahlquist, an expert in CNC knitting, and Evgueni Filipov, a structural engineer who specializes in deployable structures.

“I was interested in how the knits can be a lightweight material that has the possibility of producing complex geometries that are very difficult to do for concrete,” Ng says.

Initial studies have created four distinctive typologies: diagrid, drupelet,

apertures, and 3D funnel/shell. Each uses closed-knit formwork, which Ng considers more desirable than open formwork (which is typical for most concrete structures). “It’s more volumetric [than an open form], almost like inflating a bag,” she says. Plus, closed systems, which allow for greater quality control, require less labor during the pour.

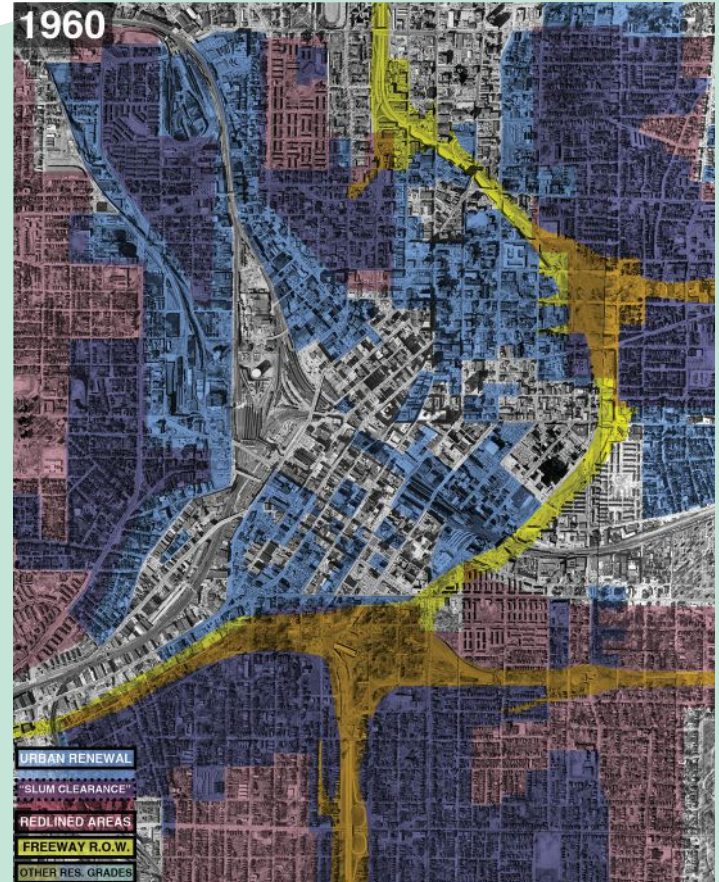
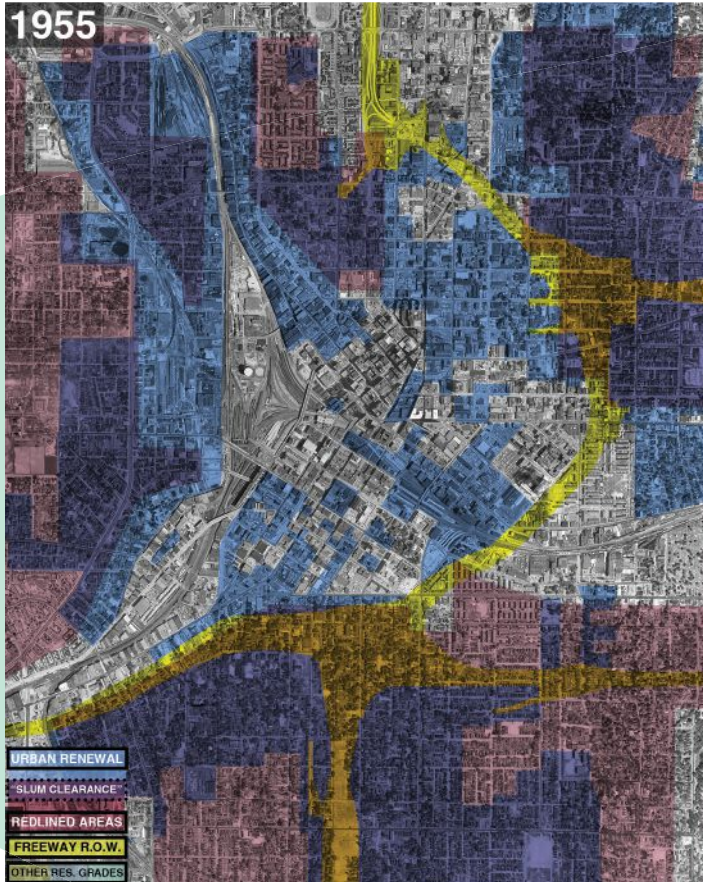
“My interest in textile applications is sort of hybridized in the way that I think about architectural production now that we have advanced fabrications in these different modes of manufacturing, but it opens up other kinds of design opportunities that we haven’t had before,” Ng says. —E.K.



Knit casting relies on hydrostatic pressure to “inflate the fabric formwork,” according to a project description. This approach reduces waste by eliminating the need for traditional concrete molding materials, such as wood or foam.

TECHNOLOGY

Segregation by Design



► NEW YORK CITY-BASED ARCHITECTURAL DESIGNER

Adam Paul Susaneck started the Segregation by Design website after reading Richard Rothstein's *The Color of Law: A Forgotten History of How Our Government Segregated America* (Liveright, 2017). "[Rothstein] goes tactic by tactic, describing the policy measures by which the government enacted segregation," Susaneck says. "I want[ed] to see what that looks like in practice."

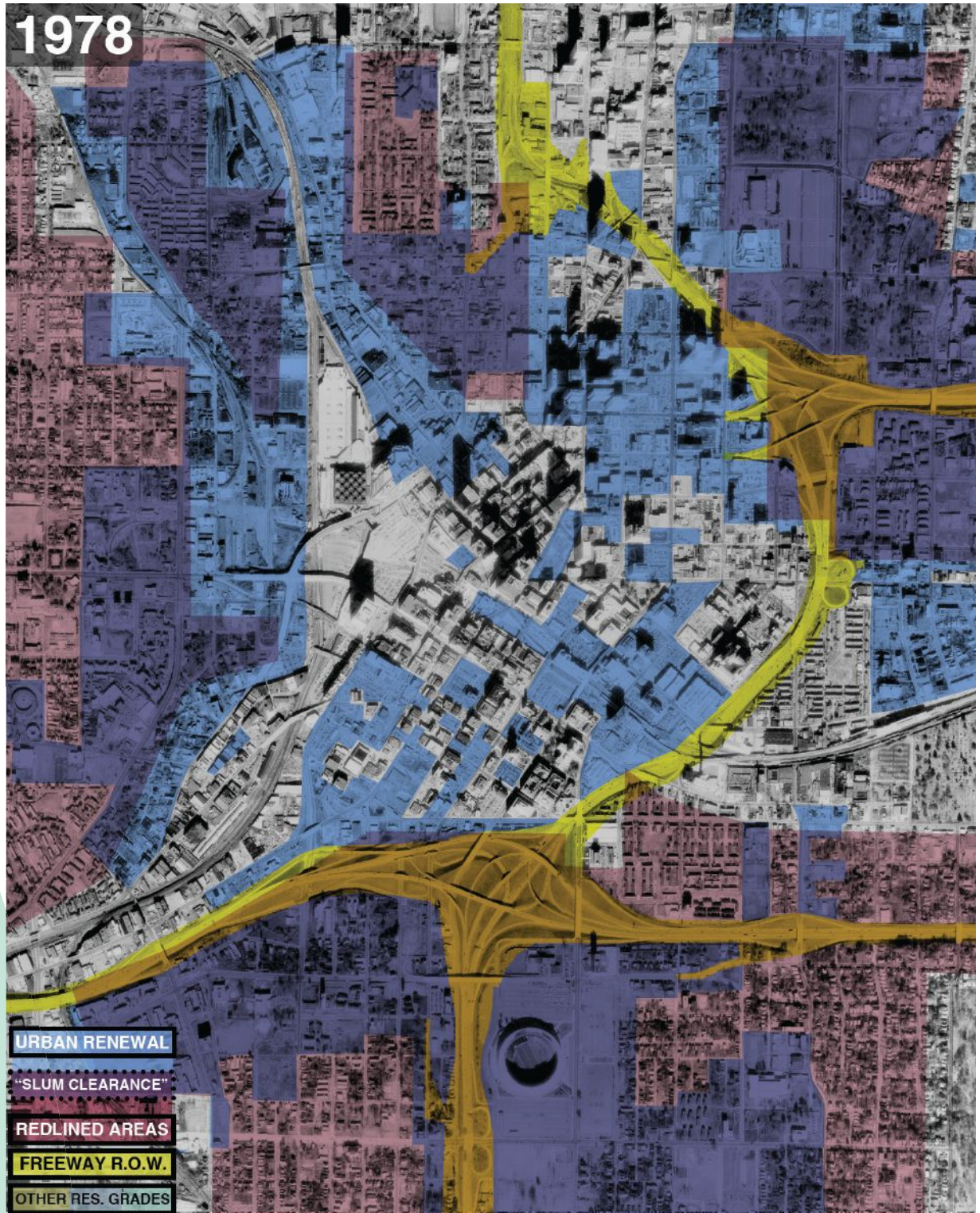
The website grew out of his increasing frustration with the American city. "When you walk around in the American downtown, the sense of destruction is palpable," Susaneck says. The architect is clear in his position that the U.S. is at the center of the world's worst Modernist city planning. "I think the lack of respect for the built environment is an American thing," Susaneck says. "A lot of the disrespect for the urbanism built into Modernism is racism."

These topics are touched upon in architectural history—through transportation and housing, for example—but a lot of the issues are discussed separately even though they are interrelated. "It's systemic," Susaneck says.

Using a combination of striking visual elements and careful

research, the site—which is organized by cities, including Atlanta, Boston, Philadelphia, and Houston—clearly marries these topics and makes obvious ways that midcentury politicians, architects, and planners used the Federal-Aid Highway Act of 1956, which created the interstate highway system, to literally divide and conquer communities. Compelling videos accompany the site's imagery, depicting the new expressways and housing projects relentlessly scything through American cities in the 1950s and 1960s. Visitors accustomed to seeing Google Earth's ubiquitous satellite imagery might take a moment to recognize the work these videos entailed. To show the pre-1956 cities, Susaneck has stitched together 1938 aerial photographs to create nearly flawless visual depictions of the intact urbanism that was systematically destroyed.

Segregation by Design continues to grow. Thanks to a forthcoming full-time Ph.D. program at the Delft University of Technology in the Netherlands, Susaneck intends to document the approximately 180 municipalities that received funding from the 1956 Highway Act. As of this writing, there are only a dozen cities on his site, but that's soon to change. —E.K.



Adam Paul Susaneck's research on Atlanta highlights how racist urban practices shaped the city's built environment over time.

► THE MEMPHIS, TENN.-BASED MASLOW

Development—named after Maslow’s hierarchy of human needs, from physiological requirements like shelter to self-actualization—has a clear mission: Anchor its projects in meeting the fundamental needs of communities. With access to shelter, health care, food, and education, people thrive, and yet, these interlocking necessities often escape low-income areas, leaving residents deprived of the basics that provide for an adequate life, let alone a transcendent one. Recognizing this gap, Maslow Development co-founders Nora Jendoubi and Derwin Sisnett hope to use high-quality schools as a foundation for mixed-use, income-diverse community development, creating structures for all residents to succeed.

“We’ve seen schools disconnected from communities,” says Jendoubi, which has made it difficult to use schools as anchors or hubs for the community beyond a school’s direct users. “Education by itself is hard; real estate by itself is hard. And somehow we decided to bring those two together,” Sisnett said in a 2021 interview with Tennessee SCORE, a state collaborative for education reform. “We essentially are a nonprofit real-estate development company that co-designs and develops communities with community at the center of it.”

The firm’s proof-of-concept design is the Lighthouse Project in Memphis, a “holistic ecosystem anchored by learning” currently in its early stages. With 15 acres of land situated between two communities with stark socioeconomic differences, Lighthouse would bridge divides by ensuring that the school, after the final bell rings, is also available as an adaptive community resource with both a canteen and coworking space. Jendoubi and Sisnett, who both have experience in the education field, want to reinvigorate a model of development that’s powered by dynamic communities for generations, while guaranteeing access for low-income housing through the use of affordable housing tax credits, taking the Lighthouse Project concept wherever it’s wanted elsewhere.

“We’ve been doing community schools since the beginning, but we veered away from having the school as an anchor,” says Sisnett, who is also a 2023 Harvard GSD Loeb Fellow. “How can we make affordable housing, health and wellness, and education accessible, and bring that back to life with a development architectural lens?” —A.H.

EQUITY

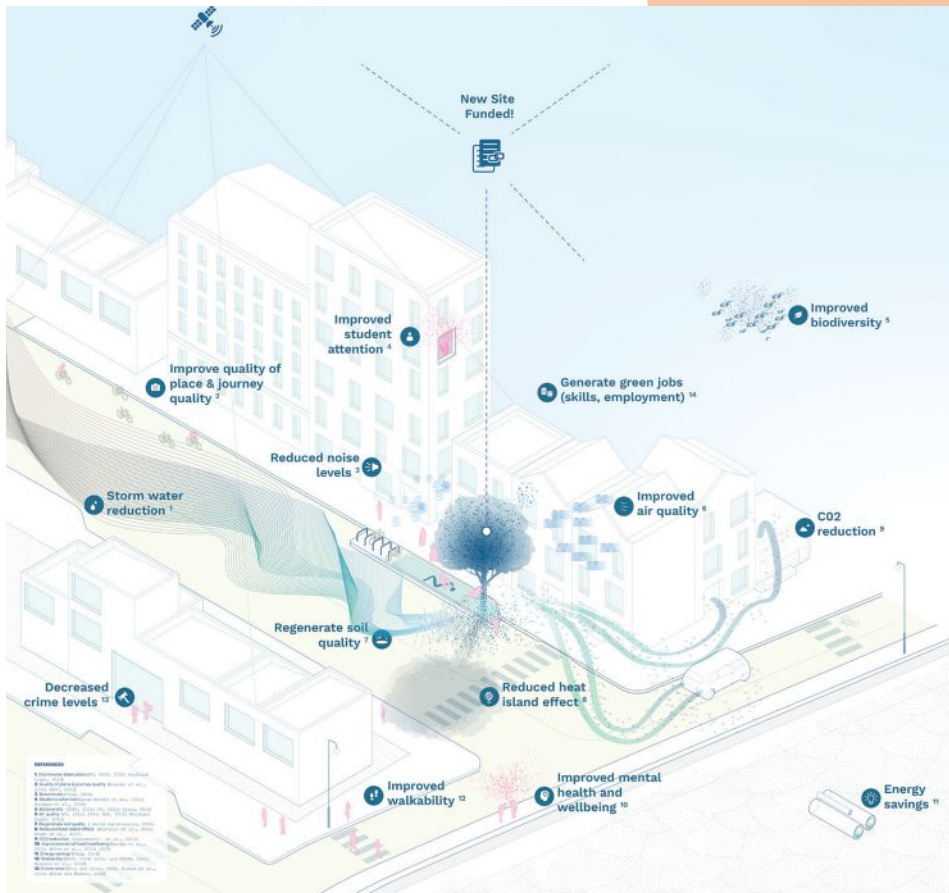
Maslow Development



TOP: Co-founders Nora Jendoubi and Derwin Sisnett. BOTTOM: The Lighthouse Project in Memphis, Tenn.

INFRASTRUCTURE

TreesAI by Dark Matter Labs



TOP: A diagram outlines the services that urban trees can offer. BOTTOM: The TreesAI project team.

► **FROM IMPROVING AIR QUALITY** and reducing street noise to filtering and managing stormwater, trees offer tangible advantages to cities and their residents. But how can a community best expand and maintain the urban forest it needs?

That question is top of mind for the creators of Trees as Infrastructure, or TreesAI, slated to launch its portfolio of building services in November. Developed by the international team of urban planners, technologists, and financial whizzes at the Amsterdam-headquartered, not-for-profit Dark Matter Labs, the open-source, cloud-based software aims to help cities plan and execute urban forest projects through a variety of tools. In addition to providing site-specific information such as tree inventory, the effects of various plant-care practices, and models of tree-related benefits like runoff reduction, among other data points, TreesAI hopes to connect project leaders and beneficiaries with potential investors to streamline the funding process.

“TreesAI is not a traditional startup,” says team leader Carlotta Conte-Billant. The platform “seamlessly integrates state-of-the-art technology to map climate risks, model [nature-based solutions], and monitor [their] impact in order to finance portfolios,” she adds. “Currently, there is no other organization that is developing the same connected components.”

And, thanks to a recently launched pilot program in Glasgow, Scotland—where city leaders hope to plant 18 million trees by 2030—potential platform users will soon have a glimpse into how those components work. In partnership with Glasgow City Council, among other local stakeholders, Dark Matter Labs plans to deliver a series of projects focused on bolstering stormwater retention to reduce the cost of flood damage. While Conte-Billant says the launch of the pilot is one of the team’s biggest successes to date, she looks forward to watching TreesAI grow. “Following requests by a number of municipalities, we foresee new revenue streams to help us scale our impact in more cities and regions globally,” she says. —A.T.

CULTURE

Living Lands, Canadian Centre for Architecture



► BASED IN MONTREAL, THE CANADIAN CENTRE FOR ARCHITECTURE

is known for addressing architecture in an international context. According to CCA Collection associate director Martien de Vletter, however, that international focus creates a blind spot in the institution's own role within Montreal and its home in greater Québec and North America.

"I think for a long time we were mainly focused on what happened elsewhere," de Vletter says. "Now, I think we're in a very interesting moment in time for the CCA; in Canada, there's a lot going on in terms of the relationship with Indigenous communities, where I think we have a story to tell—not just we but with other people."

In 2020, the institution began to consider what it might look like to collaborate with Indigenous researchers and artists to tell that story, a consideration that grew into Living Lands—a land-acknowledgment working group that, since 2021, has produced residencies, exhibitions, and fellowships that deepen relationships between CCA and Indigenous communities, while providing opportunities to address colonization and reparation. Importantly, Living Lands offers a different kind of land acknowledgment, an ongoing discourse regarding histories of dispossession and redistribution of resources.

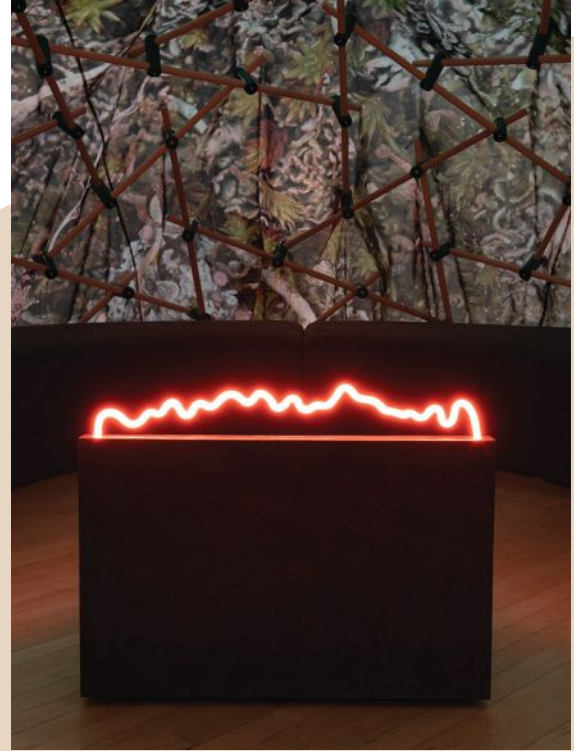
Beginning in 2020, CCA assembled the Living Lands team, made up of museum staff and members of the Kanien'kehá:ka Nation, that resulted in an exhibition, ᐱᓐᓐᓐᓐᓐ / *Ruovttu Guvlui / Towards Home*. Led by a group of Inuit, Sámi, and settler co-curators, the exhibition and subsequent publication, according to CCA, "examines and celebrates practices of designing and building on the land that empower Indigenous communities."

Living Lands also established a biennial fellowship for Indigenous artists and researchers that was awarded to multidisciplinary performance artist Ange Loft, from the Kahnawà:ke Kanien'kehá:ka Territory, for 2021–22. The group created an inaugural research assistant position; an initiative with their masters students program inviting graduate students to expand upon issues of the built environment and colonization; and ongoing programs and workshops in conjunction with the *Towards Home* exhibition that produce new materials by Indigenous designers, which will then be incorporated into CCA's collection. "All of these little pieces together make a different story to tell now," de Vletter says.

Each initiative combines to produce a "living" land acknowledgment: Unlike many land acknowledgments in the United States that manifest as statements "nodding" to past Indigenous sovereignty and the histories of violent dispossession, CCA's Living Lands generates ongoing uncoverings and dialogues—exhibitions that grow and transform, workshops that generate new material—that, says Rafico Ruiz, CCA director of research, move toward a redistribution of resources.

"Because all the work we do including exhibitions is a form of research, that implies actual transfer of tangible resources to Indigenous designers, as researchers," Ruiz says. "I hope, at its best, acknowledgment is an actual engagement with both histories of dispossession and ongoing dispossession, which is an endless project."

"As a cultural institution, you have an opportunity to bring forward questions or issues that other people are not yet asking, or are asking but don't have the words or the visual components to bring forward," de Vletter says. "I do think you have two options: You're addressing the issue, or you're not addressing it. If you're not addressing it, it's a choice. And that is also a political standpoint." —A.R.





Installations from the ᐱᕐᕐᕐᕐᕐᕐ / Ruovttu Guvlui / Towards Home exhibition.

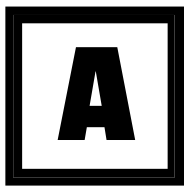
ULINE

Protect your precious cargo! From peanuts to padding, Uline has over 900 cushioning items to fill your void. Order by 6 PM for same day shipping. Best service and selection – experience the difference.

COMPLETE CATALOG
1-800-295-5510
uline.com



Socialize



@architectmag



< Visit our new
LinkedIn page

ArchitectMagazine

Fire Resistant. Design Consistent.

Fire-Rated Aluminum Window And Door Systems

Alufam has a complete offering of true extruded aluminum fire-rated vision doors, windows and glazed wall systems, fire-rated for up to 120 minutes. Available in all architectural finishes, our products are almost indistinguishable from non-fire-rated doors and windows. You won't have to compromise aesthetics to satisfy safety regulations.

alufam



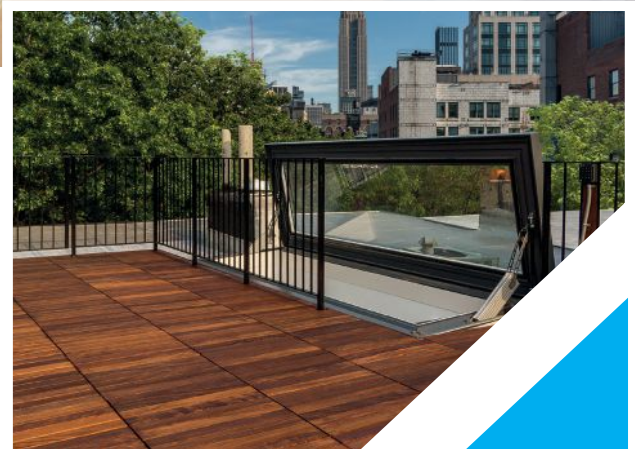
Photo: @Mendoza Photography

Alufam North America
562-926-9520
alufam-usa.com





Over **25 years** of innovative design



GLAZING VISION

the glass skylight company

833-759-3667

info@glassskylights.com



Access more with
Glazing Vision
roof access skylights
glassskylights.com

Your **market.**
Your **schedule.**
Your **needs.**

Your **vision.** Our **purpose.**

A **Customer First** approach. A purpose-built team. Three world-class manufacturing facilities in California, Arkansas, and now, Pennsylvania. All Weather Insulated Panels is distinctly positioned to support your design intent, performance requirements, and sustainability goals with our industry-leading lineup of insulated metal walls, roofs and roof deck solutions. Visit awipanel.com/you



All Weather
Insulated Panels

AIA Architect



PAIGE MCWHORTER

Creating Positive Spaces

There's no such thing as a neutral space.

As told to Greg Menti

Emily Grandstaff-Rice, FAIA, will be sworn in as AIA's 99th president in 2023. Currently a senior associate at Arrowstreet in Boston, Grandstaff-Rice has a broad range of experience with hospitality, institutional, and commercial projects. Recently, her focus has been on designing spaces in the public K-12 academic sphere. We spoke with Grandstaff-Rice about design for education and how school buildings can teach kindness.

There is nothing like the feeling of walking through a space that you had a hand in designing. That, for me, is one of the reasons I know the physical realm is important to me.

Because most of my work is public K-12 academic work now, I make a point to design for discovery—and that includes designing for both adults and children. I once had a client who said he measured success by giggles. I think about creating environments where children can allow their minds to question, to make sense of patterns, and make their own meaning. I think back [on] my experiences in school,

what spaces made me feel comfortable, what spaces created meaning. I use that perspective to work with my clients to define the type of educational experience they want to provide. I see it as a great journey that I can [provide] for generations to come.

Sarah Williams Goldhagen, architecture critic and author, says, "There's no such thing as a neutral space." Spaces can either uplift or deflate the spirit. As architects, we always have a choice when we design even the most routine of spaces.

There is a lot of talk these days about what schools should and should not be. As architects, we have a choice to help our clients define what safety means to them—[whether it means] promoting socio-emotional learning, healthy spaces, community access, resiliency, or security.

Recently I was working with a client to think about the ways in which school buildings can teach kindness, especially small moments. What does kindness look like in a cafeteria? Responsibility

on the playground? Or cooperation in the corridors? I talk with my clients about behaviors they want to see, and as experts in child development, they provide direction in how spaces can engage with educational pedagogy. Every school culture is different. I honor that by ensuring that our designs reflect their vision.

My perspective is diverse—I have family who are educators, members of law enforcement, victims of gun violence, and those affected by mental health issues. I hear many opinions about what school safety should be. I believe there is no amount of building fortification that will stop the bigger picture of what is happening in our society. School safety is also about feelings and emotions with some of our most vulnerable citizens. Schools need to be welcoming and create a sense of belonging. School is where many children develop independence and skills. Again, as architects, we can uplift or deflate in the spaces we create. I choose to focus on creative, positive spaces. **AIA**

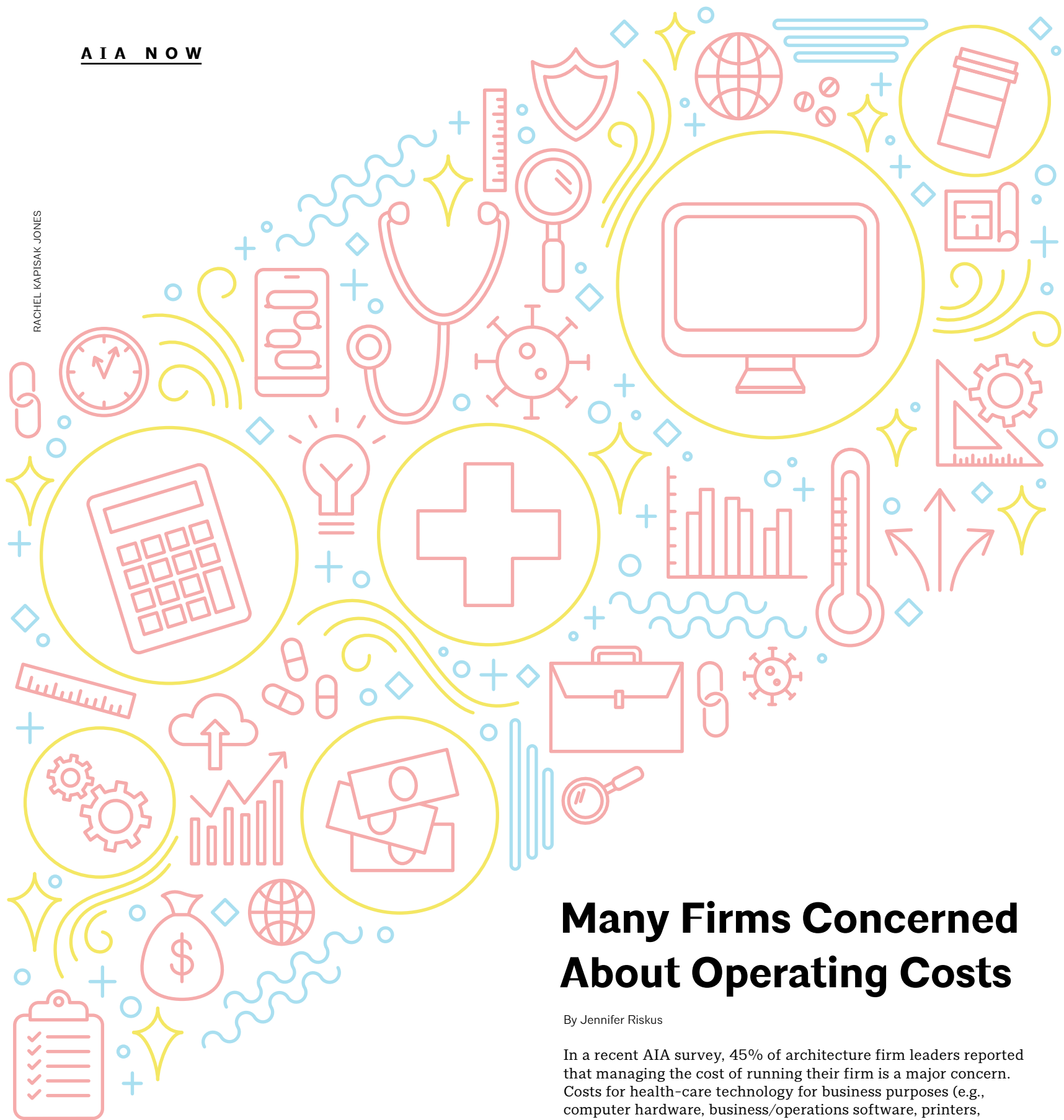


Pledge for a better future.



Join 1,100+ design firms who have made the AIA 2030 Commitment.
aia.org/2030commitment

Change how you evaluate the materials you specify daily.
aia.org/materialspledge



Many Firms Concerned About Operating Costs

By Jennifer Riskus

In a recent AIA survey, 45% of architecture firm leaders reported that managing the cost of running their firm is a major concern. Costs for health-care technology for business purposes (e.g., computer hardware, business/operations software, printers, mobile phones) and technology for design purposes (e.g., design software, BIM, virtual reality) are of most concern over the coming year, with 30% of firms selecting health-care costs as the one office expense that they expect to proportionately increase the most in 2022. **AIA**

Source: AIA Work-on-the-Boards/ABI survey. For more information, visit aia.org/abi.



Growing the Missing Middle

Seattle's innovative Oak & Alder development can serve as a model for other firms looking to increase their city's housing density.

By Joann Plockova

Seattle's Central District is where architect Robert Humble, founding partner and design principal of Hybrid, calls home. About a mile from the interdisciplinary firm's offices, the historically African American neighborhood—today reflecting the city's housing crisis with issues of gentrification, affordability, and displacement—is also where the majority of Hybrid's development projects are located. "Most of the development work that we do in Seattle comes through relationships that we've developed over the last 20 years of just getting to know our community and getting to know our neighbors," Humble says.

It was through a relationship with a local brewer that one of Hybrid's latest projects came to fruition. The Oak & Alder, a high-density, urban infill housing project, began inside the walls of Humble's neighborhood bar. The owner, who had recently purchased a new house, was looking to sell his existing house on a large single-family lot and saw potential in an undeveloped side yard.

"We took what was an existing house on a 5,000-square-foot lot and subdivided [the lot] to create two 2,500-square-foot lots," Humble explains. "We took one of those 2,500-square-foot lots and created two primary housing units," as well as a rental option.

At a prominent intersection where a large oak tree sits in front of the project on East Alder Street, the multifamily structure designed, developed, and built by Hybrid offers a "missing middle" solution to the city's housing crisis.

"The Oak & Alder meets the textbook definition of 'missing middle' in that it is in a very dense walkable neighborhood in close proximity to amenities and transit, and it directly relates to the scale and context of neighboring single-family homes," says Alex Herbig, Hybrid's project designer and development manager. "Despite its outward continuity with the neighboring single-family houses, the

project is three times more dense than its neighbors."

Completed in the spring, the Oak & Alder residences comprise a 1,270-square-foot unit and a 1,540-square-foot unit. The larger of the two has a ground floor "flex space" with its own entrance and a kitchenette. The two are connected by a central gasket topped by a deck, and share three parking spaces with the existing house. Both units are filled



Both units in the Oak & Alder development were designed with natural light in mind.



Hybrid has incorporated flex spaces that can be used as ADUs in several of its infill projects.

with light from large windows and feature a reverse floor plan that allows the upper-level living spaces, including lofted solarium spaces in the roof pitches, to benefit from the most light. “We did not have to tear down any buildings and displace anyone to build the project,” Humble says. Reflecting the appearance of the brick used at a nearby high school, the units are clad in rusted

corten steel. Their pitched roofs, shifted 90 degrees, echo the roof forms of the residences on both streets. Elevated stoops on the front steps of both emulate those of the surrounding Craftsman homes. “What we focus on is context,” Humble says.

A family of four from Denmark occupies the slightly smaller back unit—purchased presale, sight unseen. Although

the ground floor was permitted as flex space, the family chose to create two additional bedrooms for the children. A tech professional lives in the front corner unit. He rents out the ground floor unit to a longtime friend.

“These 1,500- to 1,400-square-foot townhouses nowadays are selling for close to a million dollars and we understand that is not by any means affordable, even for dual income [and] no kids,” Humble says. “We can’t really address the price of the housing market, but we can [address affordability] through the design.”

Designing flex spaces that can be used as accessory dwelling units is one move Hybrid has incorporated into several of its infill projects through the years. “We’ve seen [homeowners] use these flex spaces as an Airbnb,” for example, Humble says. “In the summer, they can pay 100% of their mortgage through Airbnb rental income. In the winter, they might pay half of it.”

At a neighbor’s house two doors down from Humble’s home, one of Hybrid’s latest projects (currently under construction) will transform what was one house on a double lot to a single-family house with a flex space, two attached townhomes, and a detached ADU. “Once again, there was one house on this lot, and now we’ve created four primary structures plus one rental opportunity,” Humble says.

Hybrid’s unique collaborative approach to development helps with the housing crisis by increasing density and avoiding displacement, as is the case with Humble’s neighbor, who has lived in the same spot for 30 years. “[My neighbor is] going to use the money from the equity of her existing land plus the money she’s going to make as a developer and buy one of the new units in the project,” Humble says.

The former property owner where the Oak & Alder now sits was able to increase his property value. “He was able to make more money selling his house and a lot as two separate transactions than he would from just selling the house with a big yard,” Humble says.

For Hybrid, co-development allows the firm to avoid the hassle of looking for land on the open market and helps improve its local community through density that does not sacrifice good design.

“I think that’s a big reason why we want to be developers and work with the community,” Humble says. “We’ll create our own vision [for] ways we can address issues of density and displacement instead of sitting around and waiting for the phone to ring for someone to ask us to do a project we’re inspired by. We’ll do our own inspiring project and learn from it, and then do another one.” **AIA**



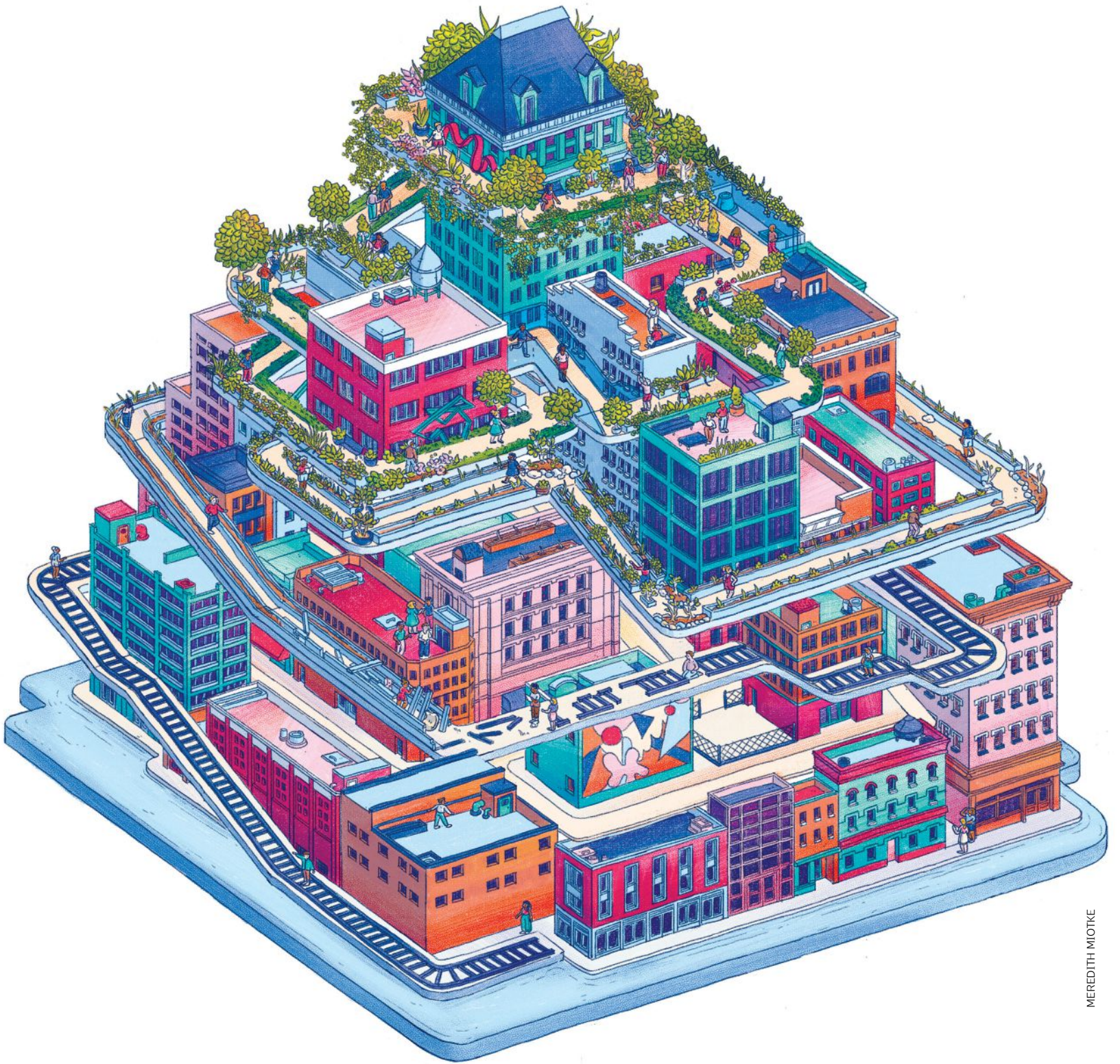
The context of the existing neighborhood was an important consideration in Hybrid’s design.

A man with short dark hair, wearing a blue button-down shirt over a light grey t-shirt, is leaning over a table. He is looking directly at the camera with a slight smile. On the table in front of him are several sheets of architectural blueprints. The background shows a modern office or studio environment with bookshelves filled with books and a staircase railing.

YOU BELONG HERE.

Join the largest, most influential network
of architecture professionals and let's
design a better world, together.

aia.org/join



The Tension Between Garden and Machine

Disused infrastructure, once invisible in its banality, is often made remarkable in its rebirth.

By William Richards

Consider urban canals and their towpaths, many of which have been repurposed as pedestrian leisure ways. The C&O Canal in Washington, D.C., which links lockhouses and campsites far afield, is one example. Edinburgh has no fewer than five canals for fishing, rowing, running, and walking. Nearly 500 miles of towpaths link Bordeaux and Toulouse along the Canal des Deux Mers—a favorite of cyclists. Consider the adaptive reuse of airports like Tempelhof in Berlin, now an enormous public park. There are also highway underpasses in Boston; Miami; Portland, Ore.; Seattle; San Diego; and Toronto, which host skate parks, picnic benches, art installations, and ice-skating rinks. Consider all of the notable riverwalks in Chicago, Cincinnati, Oklahoma City, Providence, and San Antonio.

Finally, and notably, there are more than 2,100 rail-trails in the United States alone for bikers, hikers, and overnight campers. In Europe, there are more than 11,800 miles of rail-trails in 19 countries. Among these, the Coulée verte René-Dumont is arguably the crown jewel—an elevated promenade tracing a railway that once connected central Paris to Verneuil-l'Étang, 37 miles to the east. Transformed into a 3-mile path in 1993 and slicing through the city like a knife through cake, it provides vital habitats for flora and fauna, as well as some of the most dramatic vistas of urbanist Georges-Eugène Haussmann's handiwork. It's also one of the last bastions of the strolling (or snoozing) flâneur in a city overrun with Lime scooters.

But, what gives these initiatives—often imagined and pursued by grassroots organizations, local councils, or deep-pocketed benefactors—the staying power required to contribute to the fabric of their adjacent communities?

It's not just clever programming or needed amenities. It's their collective promise of cultural and economic capital, and lots of cities want in on the action. Chicago, Houston, and New York are three such cities cited in *Parks for Profit: Selling Nature in the City*, the first book by Temple University assistant professor of sociology Kevin Loughran. Each city represents the sites of what he calls “postindustrial parks,” or reimagined infrastructure that pleases pedestrians and generates economic activity, including the elevated rails of Chicago's Bloomingdale/The 606; New York's High Line; and the urban parks and paths along Houston's Buffalo Bayou.

Loughran addresses the real value of bolts, concrete, girders, and rebar—recovered, repaired, repainted, and reimagined—as a way of exploring the perceived value of nature in the “neoliberal park era,” which is rife with contradiction. Who pays for postindustrial parks and how? Who maintains these parks, for how long, and with what money? Will rampant privatization in American cities improve rampant urbanization and our collective quality of life? Do donors whose wealth is derived from destroying nature with an oil pipeline in one part of the world absolve themselves by creating a bit of green space in another? Loughran is reasoned and methodical in introducing and discussing these questions. The reader understands why he's investigating these three sites, their industrial histories, and their post-industrial futures in tandem. Readers also understand why he calls them “win-win propositions,” but the twist of the book is parsing the definition of winning.

Places, of course, are real and propositions (win-win or otherwise) are only hypothetical. This book occupies a middle ground in asking what these new-old places propose for cities with aging or outmoded

infrastructure. In greening these places, are we commodifying nature? Yes, says Loughran, but not in the sinister way that offends our sensibilities to privilege nature over profit. To commodify nature by making it the basis of infrastructure's rebirth, in Loughran's view, is to find new value in that which has been devalued. These three examples of urban entropy demonstrate how the second (or third) lives of outmoded infrastructure are enriched by nature, thereby appealing to society's instinct toward the common good.

When you consider this list of “win-win” candidates, nature is the basis of the projects' fortunes. Mayors and “eager elites” interested in legacy; city coffers and lucky landlords; adjacent neighborhood residents and tourists—all of them stand to gain. Quoting urban planner Robert Moses, who said, “Parks symbolized something good,” Loughran suggests that we'd be wise to accept this as a win for all of us—at least hypothetically—because the truly untenable position is to choose what historian Leo Marx called “the machine” over “the garden” (or even vice versa).

Marx, who died this past March, shows up in more than just Loughran's chapter titles. He was one of the giants of the field of American Studies, and he wrote one of its most important studies in 1964, “*The Machine in the Garden*,” which created an enduring framework to consider America's pastoral ideal and the necessities of industry. Marx connected the Transcendentalists, who resisted modernization (or at least claimed to), to F. Scott Fitzgerald—who accepted modernity (without approving of it)—and explored the great tension of American life and literature between nature's majesty and our inevitable disruptions. It's an unresolved tension for Marx and Loughran, who both find the choice between the garden or the machine an untenable proposition. Only the

prospect of nature and machine, in relation to each other, is the engine of placemaking.

Drive south on the New Jersey Turnpike, “neath the refinery’s glow out where the great black rivers flow,” to quote Bruce Springsteen, and you’ll eventually be enveloped by oak, walnut, and pine trees straddling the highway. Drive north through central New Hampshire, and you’ll glimpse white cedars, firs, spruces, and pines cossetting the Northern Railroad’s swaths blessed on opening day in 1847 by none

other than 19th-century statesman Daniel Webster himself. I’ve spent a lot of time on these roads, and their unresolved tension between garden and machine doesn’t bristle with contradiction at all—it seems just about right.

As cities (and architects) push for a net-zero and climate-positive future, repurposing infrastructure rather than destroying it—not to mention capitalizing on the liminal spaces created by infrastructure—is common sense. We must

get used to unresolved tensions in cities if we’re going to resolve the issues of climate crisis: clean water, food insecurity, and homelessness. “Behind the design of any park are assumptions about normative cultural practices,” Loughran writes. One could say the same about cities and communities. But can we make the sensible and healthy reinvention of our infrastructure a normative practice, too? If we accept machines and gardens as a package deal, then the answer is yes. **AIA**

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

Support Nationally, Act Locally

Getting involved on any level can have a big impact.

By Dan Hart, FAIA, 2022 AIA President

Sustainability. Climate change. Equity. Diversity. These are not just words in our strategic plan—these are core tenets that drive our mission to inspire and empower our membership to improve society and transform the world.

This mission requires a two-pronged approach. First, we want to encourage daily actions that apply our values across practices, firms, and the profession. You may be aware of the range of programs that support this goal, such as the Framework for Design Excellence, Guides for Equitable Practice, Next to Lead, and the 2030 Commitment. If not, I recommend discovering, through AIA’s website, how you can engage and participate.

Second, we need a long-term plan that communicates our mission with objectives for advocacy and legislation. AIA’s board sets the policy direction for AIA’s federal agenda every two years, incorporating member feedback, surveys, and resolutions. From there, the board-level Government Advocacy Committee (GAC) provides more specifics and sets the policy prioritization based on current developments on Capitol Hill and within the administration.

Progress takes time—that is why our efforts require staying on track. We have had significant successes in this past year:

- Continuing AIA’s Buildings Are Infrastructure campaign from 2021, AIA successfully secured multiple priorities in the Budget Reconciliation

package, called the Inflation Reduction Act. Biden signed it into law on Aug. 16. The package includes grants to states and local governments to adopt the latest energy codes; investments in a residential energy rebate program; an energy-efficient electric home rebate program; and updated tax incentives for energy-efficient commercial and residential buildings (179D). The 179D deductions are now almost three times more robust, and, for the first time, tax-exempt entities are eligible for the deduction as well.

- AIA, in conjunction with its member-led Committee on Architecture for Education (CAE), advanced the authorization of the Federal School Safety Clearinghouse in the Bipartisan Safer Communities Act. An AIA and member-backed priority since 2018, the Clearinghouse is now ensured to operate through future administrations and features CAE best practices for design that create safe and welcoming learning spaces. These designs encourage diversity, equity, and inclusion for the well-being of students and educators.
- AIA hosted a successful hybrid Lobby Day in April 2022. The event included live remarks from Democratic Rep. Dina Titus of Nevada on the Democracy in Design Act and recorded remarks from Republican Sen. Todd

Young of Indiana about the Yes In My Backyard Act. Those two bipartisan bills were the focus of the Lobby Day, and congressional support for both bills has grown since then.

We also have a political action committee—ArchiPAC—that supports candidates at a federal level. The AIA board created the PAC in 1980. We provide full transparency about the fund on our website. Every year, as part of our volunteer opportunities outreach, we invite members to apply for the PAC’s 11-member steering committee. These members are appointed by the AIA President and approved by the AIA Board of Directors, and serve a one-year term.

If you have an interest in being a part of this process, please contact us via member services to learn if you are eligible. We need an active and diverse committee to help make decisions on the application of PAC funds.

All of our many programs and services help us promote prosperous, sustainable, and equitable communities. Our collective support also signals our priorities and relevance to the public.

On an individual level, you can seek ways to get a seat at the table in your communities when important decisions are being made. You can also define your personal values and the vision you have for your community; evaluate your city, county, and state candidates using that lens; and apply the power of your vote. **AIA**



PAT STEWART

LIGHT WORK DAY.

TCP makes it **EASY**
to plan your lighting
design project.

GET A QUOTE
GET A GIFT

Visit TCPi.com or
call 888.399.4217

INNOVATION IS LED BY TCP



Improving Occupant Health and Well-Being in the Built Environment

Sponsored By:



LEARNING OBJECTIVES

1. Explore how architects and designers can improve occupant health, comfort, and well-being and how WELL v2 helps to meet this growing demand.
2. Assess the impact of acoustics on occupant health, comfort, and well-being in spaces where occupants spend prolonged periods of time such as offices, classrooms, and healthcare facilities.
3. Examine how to possibly improve occupant health and well-being with architectural ceiling and wall products.
4. Explore an education case study where biophilic design enhanced a community school while addressing acoustical challenges.

CONTINUING EDUCATION

This course is approved for
AIA, IDCEC, and GBCI



Learning Unit Credits.

Use the learning objectives to focus your study as you read this article. For details on the learning units or credit information, and to earn credit and obtain a certificate of completion, visit <http://go.hw.net/ARI0222> to view the entire CEU and complete the quiz. If you are new to Hanley Wood University, CEU courses are free of charge once you create a new learner account; returning users log in as usual.

THE CHALLENGE: OPTIMIZE HEALTH, COMFORT, AND WELL-BEING

Discussions about workplace health and well-being continue to rise—particularly with the departure from offices during COVID-19. Businesses, closely examining the built environment their workers are re-entering, are turning to the architectural and design community to help them create safe, healthy spaces that may increase happiness and productivity. Similar attention is being paid to classrooms, healthcare facilities, and other commercial and institutional buildings where people tend to spend prolonged periods of time. Why? Multiple academic studies imply that the acoustics, indoor air quality, thermal comfort, daylighting,

and general aesthetics of the space can significantly affect employee morale and productivity, student concentration and ability to learn, and patient healing.

When designing a building that optimizes occupant comfort, owners and designers should collaborate to determine the level of health and productivity necessary for the application. Architects can then work through design and performance details to specify high performance building materials for acoustics, indoor air quality, and cleanability; establish ideal airflow throughout the building; optimize lighting; and integrate biophilic design principles to ensure the final building meets the owner's goals.

Much of a space's aesthetics and performance lies in its ceiling and wall design. Fortunately, today's architectural ceiling and wall solutions are evolved products that can play an enormous role in occupant comfort. From enhanced daylighting to improved air quality to improved acoustics, they offer architects and designers a variety of opportunities to revolutionize the way they conceptualize and build commercial spaces. This course will explore how architects and designers can improve occupant health and well-being in the built environment, and more specifically offices, classrooms, and healthcare facilities where people spend a great deal of time, through the use of acoustic ceiling and wall systems.

WELL V2 AND LEED V4

The LEED certification model has been used for the past two decades to demonstrate a project team's commitment to sustainability when designing a building. But through this work it seems there may be a difference between the sustainability of a building and the health and well-being of the occupants in that building. Conceptually, this is captured in a newer program, WELL v2, which is administered by the International Well Building Institute (IWBI™). While there is an overlap in terms of recognizing the need for product transparency (such as Environmental Product Declarations, Health Product Declarations, and Declare Labels), and both programs help to meet the growing demand for advancing occupant health and well-being in buildings, LEED v4.1 primarily considers environmental sustainability while WELL more thoroughly measures the impact of building products on occupant well-being and health.

Indeed, certifications from both LEED and WELL have taken quantum leaps forward. Continuing its focus on helping communities thrive while increasing the health of building occupants, IWBI recently introduced the WELL Health-Safety Rating™ to provide businesses with annual guidance to ensure owners have the proper direction on actions including sanitation, health services, and clean air. Since COVID-19, employees and visitors are more attuned to looking for this "third-party verified rating" as a business's symbol of commitment to their well-being.¹

WELL v2 encompasses four key concepts, and related features within each concept, designed to enhance buildings and promote the physical and mental well-being of their occupants. The chart shows these Concepts and the Features where some architectural ceiling and wall products can help earn points.

WELL V2 CERTIFICATION STANDARDS AND REQUIREMENTS		
CONCEPT	FEATURE	REASON
Air	A01 Air Quality	Part 1: Products meet Threshold for Organic Gases via laboratory testing (CDPH v1.2, 2017)
	A05 Enhanced Air Quality	Part 2: Meet Enhanced Thresholds for Organic Gases
Light	L07 Visual Balance	Part 1: Manage Brightness by meeting at least three of the requirements in all regularly occupied spaces
Sound	S01 Sound Mapping	Part 1: Manage Background Noise Level Part 2: Manage Acoustical Privacy Ceiling and wall panels provide acoustical insulation against external sounds and provide acoustical performance
	S02 Maximum Noise Levels	Ceiling and wall panels provide acoustical insulation against external sounds so that background noise levels do not exceed thresholds
	S04 Reverberation Time	Minimum reverberation time evaluations for a number of specifically defined spaces
	S05 Sound Reducing Surfaces	Noted minimum sound absorption performance from acoustic ceilings and walls for a number of specifically defined spaces
Materials	X01 Material Restrictions	Restrict widely known hazardous ingredients in newly installed building materials (specifically asbestos, mercury, and lead)
	X05 Enhanced Material Restriction	Ceiling and wall panels contain 100 ppm (0.01%) by weight or less of the following: <ul style="list-style-type: none"> • Halogenated flame retardants • Orthophthalates
	X06 VOC Restrictions	75% by cost or surface area of ceiling and wall panels (verified by CDPH v1.2, 2017)
	X07 Material Transparency	50% of permanently installed products with HPD (to 100 ppm) or Declare Label
	X08 Materials Optimization	Minimum 25 permanently installed products shown Red List Free (LBC v4.0) via Declare Label

Acoustics

Acoustics, in particular, should be a primary concern in relation to occupant comfort, as building inhabitants are constantly exposed to sound that they do not want, need, or benefit from. This excess noise can influence the health and well-being of occupants, while an acoustically sound environment can help increase focus, improve speech intelligibility,

enhance privacy, reduce stress, and promote healing. As such, the design and material selection of ceilings and walls is critical because they account for the vast majority, if not all, of the acoustical control in a building, particularly in spaces where no partitions are present. We will discuss the importance of acoustics in greater detail later in the course.

Indoor air quality (IAQ)

While indoor air quality (IAQ) is always an important building consideration, the pandemic and increased guidance from the IWBI has reinforced the need for effective ways to improve indoor air. Specifying products that are VOC compliant is a must for acceptable indoor air quality. It's important



Some ceiling materials consume VOCs within a space, other top-quality materials are manufactured without VOCs to begin with, thereby actively increasing indoor air quality.

for architects and designers to know the components used in the products they specify and have general knowledge of how they may interact with each other in enclosed spaces. They should specify products from a manufacturer that provides Health Product Declarations (HPDs), which identify material makeup and how it may affect occupants.

In addition, in certain applications a greater air exchange rate may be recommended (per ANSI/ASHRAE Standard 62.1-2019, Ventilation for Acceptable Indoor Air Quality). Ceiling solutions often provide easy plenum access to accommodate more frequent air exchanges in the HVAC system. An increase in air exchanges can also create more areas in which germs and dust particles gather and cling to ceiling and wall surfaces, so it is important that these surfaces facilitate any implementation of more stringent cleaning guidelines should that be desired.

Biophilic design

Biophilia literally translates to “love of nature,” which is an innate human trait. Biophilic design is a human-centric approach to architecture that seeks to connect occupants more closely to nature. This can

be accomplished by incorporating natural materials, plants, water, daylight, views to nature, and geometric patterns into a space. Studies have indicated that nature has restorative abilities—decreasing stress, improving attention, and increasing cognition. The rise of both physical and mental health concerns brought on by the pandemic have increased interest in biophilic design—particularly in the ways it might help decrease stress and increase productivity. Working from home and virtual school enabled employees and students to go for walks, sit outside, or position their workspaces next to windows. With employees already experiencing the mental stress associated with COVID-19, businesses are considering biophilic design principles to integrate feelings of serenity into an update of the work environment.

Using natural materials, such as wood, creates connections between interiors and the outside world. Wood can be used as a restorative material and can be incorporated into ceiling and wall elements, such as wood panels, planks, and grilles, to possibly increase attention while reducing stress. “The natural grain patterns and textures, the natural aroma, and the warm colors contribute to reducing

GLOSSARY

Biophilia: The innate human instinct to connect with nature and other living beings

Biophilic Design: A human-centric approach to architecture that seeks to connect occupants more closely to nature by incorporating natural materials, plants, water, daylight, views to nature, and geometric patterns into a space

Ceiling Attenuation Class (CAC): The ability of a ceiling to block sound transfer to adjacent spaces separated by a ceiling-high partition; high CAC values translate to improved speech privacy

Felt: An age-old material that is believed to be one of the first textiles humans ever created; it has been long admired for its warmth, tactile nature, and sound absorption

Health Product Declaration (HPD): A document that provides a full disclosure of the potential chemicals of concern in products by comparing product ingredients to a set of priority “hazard” lists based on the GreenScreen for Safer Chemicals and additional lists from other government agencies; HPDs qualify for numerous green building schemes, including LEED v4.1, WELL, Google Portico, and Living Product Challenge

Indoor Air Quality (IAQ): The air quality within and around buildings and structures, especially as it relates to the health and comfort of building occupants

Noise Reduction Coefficient (NRC): The standard for rating how effective a material is at absorbing sound; higher NRC values translate to quieter spaces with less reverberant noise within the room

Plenum: Space between the structural ceiling and the dropped ceiling or under a raised floor that typically houses the HVAC, electrical, and plumbing systems

Volatile Organic Compound (VOC): Compounds that have high vapor pressure and low water solubility that are emitted as gases from certain solids or liquids; VOCs include a variety of chemicals, some of which may have short- and long-term adverse health effects

WELL Building Standard: A performance-based system for measuring, certifying, and monitoring features of the built environment that impact human health and well-being through air, water, nourishment, light, fitness, comfort, and mind



Using natural materials like wood in interiors can imbue a space with a sense of calm.

stress responses, lowering blood pressure, and improving overall mood,” said Gary McNay, an architect at Gensler/Atlanta.

Another biophilic design tactic is to use organic patterns or shapes in design. Advances in technology paired with mathematical algorithms have resulted in the ability to perforate metal ceiling panels with custom designs and patterns that can imply movement, with panels perforated in rolling waves or streaks of rain, further reinforcing a space’s biophilic design. Some ceiling panels, wall panels, and wall coverings can also be manufactured in curved formats, offering curved, organic gestures that are evocative of waves and other natural forms.



Exposure to light indoors has been shown to increase moods. Ceiling designs that incorporate lighting that mimics natural daylighting and reduce glare can also increase visual comfort and calm the mind.



This article continues on
<http://go.hw.net/AR10222>.

Go online to read the rest of the CEU course, complete the corresponding quiz for credit, and receive your certificate of completion.

QUIZ

- _____ primarily considers environmental sustainability while _____ more thoroughly measures the impact of building products on occupant well-being and health.
 - LEED, WELL
 - Declare, WELL
 - WELL, Declare
 - WELL, LEED
- According to the course materials, an acoustically sound environment can do which of the following to influence the health and well-being of occupants?
 - Increase focus
 - Improve speech intelligibility
 - Enhance privacy
 - Reduce stress
 - Promote healing
 - All of the above
- In classrooms, better acoustics can do which of the following?
 - Boost academic performance
 - Reduce teacher stress
 - Improve student behavior
 - All of the above
- Which mode of work is individual work that requires concentration on a particular task such as writing, problem-solving, and analysis?
 - Focus
 - Collaboration
 - Socializing
 - Learning
- Increased exposure to natural light indoors heightens the brain’s production of serotonin and can help improve occupant mood. A best practice for designers to impact occupancy comfort is to specify:
 - Diffused light
 - Vibrant light
 - Focused light
 - Pendant light
- A best practice for the aim of acoustic design in healthcare facilities should be which of the following?
 - Enhance speech privacy
 - Prevent noise intrusion from outside the building
 - Control noise and vibrations from equipment
 - Provide restful conditions
 - All of the above
- According to the course materials, the most inherently sound absorbent material is:
 - Fiberglass
 - Wood
 - Metal
 - None of the above
- What is an appropriate strategy for modifying the acoustical absorption characteristics of wood baffles?
 - Specify wood baffles with micro-perforations
 - Specify a fiberglass core infill
 - Change the baffle thickness
 - Change the spacing between baffles
 - All of the above
- _____ products are most closely related (visually) to traditional ceiling tiles, but they are much higher performing and offer a sleek white monolithic aesthetic.
 - Mineral fiber
 - Fiberglass
 - Felt
 - Wood
 - Metal
- _____ is an age-old material that is believed to be one of the first textiles humans ever created and has been long admired for its warmth, tactile nature, and sound absorption.
 - Metal
 - Wood
 - Fiberglass
 - Felt

SPONSOR INFORMATION



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.

The WELL Building Standard and Electric Fireplaces

Sponsored By:

HEAT&GLO
No one builds a better fire



LEARNING OBJECTIVES

1. Analyze the growth of the wellness industry as it relates to the built environment.
2. Identify how architects can use WELL v2 to prioritize the health and safety of their clients.
3. Examine how electric hearth products used in commercial buildings may coincide with several of WELL v2's concepts and features.
4. Explore how to incorporate electric hearth products into commercial and residential design to create a wellness retreat.

CONTINUING EDUCATION

This course is approved
for AIA, IDCEC, and GBCI

AIA
Continuing
Education
Provider

IDCEC
APPROVED

GBCI

Learning Unit Credits.

Use the learning objectives to focus your study as you read this article. For details on the learning units or credit information, and to earn credit and obtain a certificate of completion, visit <http://go.hw.net/ARI0221> to view the entire CEU and complete the quiz. If you are new to Hanley Wood University, CEU courses are free of charge once you create a new learner account; returning users log in as usual.

GROWTH OF THE WELLNESS INDUSTRY

Wellness is a growing trend in many industries, including building design. This is especially true since the COVID-19 pandemic markedly disrupted how we work, learn, live, and play in the spaces we inhabit. The Global Wellness Institute (GWI) is a nonprofit organization that seeks to empower wellness worldwide by educating public and private sectors about preventative health and wellness. GWI estimates that wellness real estate was a \$134.3 billion market in 2017, accounting for 1.5 percent of total annual global construction, and it is expected to grow 8 percent annually through 2022.¹ The growth in “wellness architecture” has occurred due to changing consumer lifestyles and worldwide concerns about the environment and health. Wellness architecture incorporates high performance materials, superior lighting (both natural and artificial), optimized sound

and air quality, biophilic design principles, and integration of indoor and outdoor spaces. Wellness amenities in the built environment can include living walls, lap pools, outdoor rooms, green spaces, spas, workout rooms, meditation areas, and fireplaces among others. It's of utmost importance that these spaces be comfortable, sanitary, and functional as well as aesthetically pleasing.²

Architectural Digest notes, “The design profession has long been primed to address the wellness race, in part because it has positioned itself as a problem-solving industry. Designing with wellness in mind is to design spaces with intention that enable a better lifestyle.” Indeed, the Global Wellness Institute has found that wellness architecture is a mega-trend in 2022 and beyond. GWI says, “The way people work, live, and socialize has changed dramatically for most of us during the pandemic. Newly embraced lifestyle and

workplace shifts, coupled with an increasing focus on climate change, have opened the gates wider for investors, developers, and designers to further explore design possibilities for this new paradigm.” Part of this trend is the blurring of lines between our internal and external environments and a deep integration with nature. Outdoor areas have become an integral part of our daily lives and well-being, with people spending more time working, exercising, playing, and relaxing outdoors. Conversely, building occupants are seeking a connection to the outdoors when they must be inside, so designers are incorporating biophilic design principles such as views to the outdoors, more daylight, plants, neutral, calming colors of nature, and natural materials such as wood, stone, and bamboo. “More architects and designers today are embracing biophilic design principles throughout their developments, as



Building occupants are seeking a connection to the outdoors when they must be inside, so designers are incorporating biophilic design principles such as views to the outdoors, more daylight, plants, neutral, calming colors of nature, and natural materials such as wood, stone, and bamboo.

they are proven to reduce stress, help regulate circadian rhythms through greater exposure to sunlight, and enhance our overall physical and mental wellbeing.”³

In addition, architects are designing for sleep, rest, and calm, as “better sleep is the biggest single contributor to living better,” according to the Living Well Index. Inadequate amounts and quality of sleep can lead to anxiety and depression, not to mention dementia, heart disease, and stroke over the long term. Therefore, it’s important that spaces are designed to improve sleep and rest via dimmable lighting, the incorporation of neutral color palettes, and designing contemplative spaces for calm and meditation.⁴ Other growing trends that GWI noted were “architecture and design for mental wellness,” which means “the conscious planning, designing, and developing for well-being by defining the purpose and values of a development project upfront, identifying functional areas and initiatives in which a positive impact can be achieved, and communicating these with all the project stakeholders to reach consensus and further idea generation.”

The American Society of Interior Designers (ASID) also notes the growth of wellness architecture in their 2022 Trends Outlook, stating that “the construction of wellness-oriented properties is outpacing the

rest of the real estate market, with health and wellness features serving as a differentiator in luxury residences. Enhancing wellness is also an increasing justification for remodeling or reinvigorating the home, namely in the kitchen, bath, and outdoor spaces. On the commercial side, the use of wellness-oriented certifications, including the WELL Building Standard—which monitors factors like indoor

air purification, natural light, and water quality—increased 476% from 2018 to 2020.”⁵

Let’s explore the WELL Building Standard and how it is gaining momentum to improve the comfort and well-being of occupants in built environments worldwide.

INTRODUCTION TO THE WELL V2 BUILDING STANDARD

Fortunately for architects and building owners, there is a way to capture and promote the wellness aspects of the buildings they design via the WELL Building Standard™, a program administered by the International Well Building Institute™ (IWBI). WELL is similar to the LEED rating system architects are so familiar with, but WELL focuses more on the building occupant versus the sustainability of the building itself. The WELL Building Standard version 2 (WELL v2™) is the most recent update of the standard, which is “a vehicle for buildings and organizations to deliver more thoughtful and intentional spaces that enhance human health and well-being. WELL applies the science of physical and social environments to benefit the health, well-being, and performance of people.”⁶

Since WELL launched in 2014 there has been a great deal of further empirical evidence connecting the relationship



Architects are designing for sleep, rest, and calm, with spaces that improve sleep and rest via dimmable lighting, the incorporation of neutral color palettes, and designing contemplative spaces for calm and meditation.

between human health and the physical environment. An introduction to WELL v2 notes, “Thanks to an evolving evidence base, the design industry understands more about the relationship between the physical environment and human health than ever before. We know how to create spaces that enhance — rather than hinder — health and well-being. We can measure — and then improve — the quality of our air, water, and light. We can design environments that fuel our bodies, move us, keep us connected, inspire our best work, and facilitate a good night’s sleep.”

WELL is a performance-based system, so every WELL project is verified through on-site testing of building performance for various parameters such as air and water quality and light and sound levels. Performance verification ensures high-performing buildings and assists project teams in understanding the relationship between the buildings they design and human health.⁷ Like LEED, there are different levels of certification buildings can earn: Well Bronze, WELL Silver, WELL Gold, WELL Platinum, and WELL Health-Safety Rated.

10 CONCEPTS AND RELATED FEATURES

WELL is based on 10 Concepts, with related Features under each concept. The Concepts are:

- Air
- Water
- Nourishment
- Light
- Thermal comfort
- Materials
- Movement
- Sound
- Mind
- Community

Each concept consists of features with distinct health intents. Features are either preconditions or optimizations. All preconditions – including all parts within them – are mandatory for certification, while optimizations are optional pathways for projects to meet certification requirements in WELL. Project teams may select which optimizations to pursue and which parts to focus on within each optimization. Projects

may earn no more than 12 points per concept and no more than 100 points total across the ten concepts.⁸

The International Well Building Institute’s first Annual Report was released in May of 2022. The report notes that WELL saw exponential market growth in 2021, with more than 3 billion square feet of real estate enrolled in one or more WELL programs. This was across 30,000 locations of all space types in 109 countries or regions. Notably, they also introduced the WELL Health-Safety Rating in the summer of 2020 as a response to the COVID-19 crisis. This rating “created a new collection of strategies based on relevant WELL features to address acute health threats in indoor spaces — COVID-19 especially — through shifts in building operations and management and corporate policies. The new rating has supported organizations across the globe in responding to the COVID-19 crisis as well as addressing long-term health and safety needs. By the end of 2020, more than 600 million square feet of space was enrolled in the WELL Health-Safety Rating, representing thousands of buildings.”

In addition, a consumer awareness campaign was launched in January 2021 to raise awareness about the importance of the WELL Health-Safety Rating to “create a kind of trickle-up effect to empower teachers, parents, homebuyers, employees, shoppers, and travelers to ask that their health and safety be prioritized through science-based measures in building design and operations as well as organizational policy.”⁹ As you can see, the WELL Building Standard is only in its infancy and there is much to be learned, and gained, from improving the health and well-being of building occupants in buildings worldwide.

INTRODUCTION TO WELL CONCEPTS AND FEATURES

Interior and exterior hearth products such as fireplaces, fire pits, and fire features may not be the first thing that come to mind when seeking WELL certification, but it’s an interesting exercise to explore how the unique element of fire could benefit the well-being of occupants. When specifying hearth products in commercial buildings such as hotels and restaurants, designers may want to consider

GLOSSARY

Biophilic Design: The practice of connecting people and nature within built environments through design

Electric Fireplaces: Hearth products that deliver flames utilizing advanced and energy-efficient LED lighting to create realistic fire effects without fire or combustion

Direct-Vent Technology: A sealed combustion system that protects indoor air quality by drawing outside air for the fire and expelling 100 percent of combustion exhaust and byproducts outside the home.

Performance Verification: On-site testing of building performance for various parameters such as air and water quality and light and sound levels

Radiant Heat: The effect felt from the warmth of the sun, or a fireplace that’s across the room; it is considered the most comfortable and natural form of heat

WELL Building Standard: A performance-based vehicle for buildings and organizations to deliver more thoughtful and intentional spaces that enhance human health and well-being; WELL applies the science of physical and social environments to benefit the health, well-being, and performance of people

WELL Air Concept: This concept aims to achieve high levels of indoor air quality across a building’s lifetime through diverse strategies that include source elimination or reduction, active and passive building design and operation strategies, and human behavior intervention

WELL Light Concept: This concept aims to create lighting environments that promote visual, mental, and biological health by providing a lighting environment that reduces circadian phase disruption, improves sleep quality, and positively impacts mood and productivity.

WELL Mind Concept: This concept promotes mental health through policy, program, and design strategies that seek to address the diverse factors that influence cognitive and emotional well-being

WELL Thermal Comfort: This concept aims to promote human productivity and provide a maximum level of thermal comfort among all building users through improved HVAC system design and control and by meeting individual thermal preferences



Electric fireplaces are the perfect solution for buildings seeking WELL certification because they are powered by electricity and do not produce any harmful emissions or require venting.

how incorporating electric fireplaces may apply to several WELL concepts such as Air, Light, Thermal Comfort, and Mind.

CONCEPT: AIR

As is often noted, people spend approximately 90% of their time in enclosed spaces such as their homes, offices, schools, or other building environments and surprisingly, “65% of exposure to outdoor air pollution occurs indoors.”¹⁰ During this time, exposure to outdoor and indoor air pollutants such as volatile organic compounds (VOCs), carbon monoxide, and ozone can lead to a variety of negative health outcomes ranging from eye, nose, and throat irritation to kidney, liver, lung, and central nervous system damage. The most common indoor air contaminants are combustion sources such as furnaces, stoves, candles, and wood-burning and non-vented gas fireplaces that release nitrogen dioxide, carbon monoxide, and small particles into the environment. VOCs are emitted into the indoor air from air fresheners, cleaning products, furnishing, fabrics, and buildings materials.¹¹ To combat these pollutants, “The WELL Air concept aims to achieve high levels of indoor air quality across a building’s lifetime through diverse strategies that include source elimination or reduction, active and passive building design and operation strategies, and human behavior intervention.”



This article continues on
<http://go.hw.net/AR10221>.

Go online to read the rest of the CEU course, complete the corresponding quiz for credit, and receive your certificate of completion.

QUIZ

1. GWI estimates that wellness real estate was a \$134.3 billion market in 2017, accounting for 1.5 percent of total annual global construction, and it is expected to grow ____ percent annually through 2022.
 - A. 2
 - B. 4
 - C. 6
 - D. 8
2. Which of the following is an important component of wellness architecture? Choose all that apply.
 - A. High performance materials
 - B. Superior lighting (both natural and artificial)
 - C. Optimized sound and air quality
 - D. Biophilic design principles
 - E. Integration of indoor and outdoor spaces
 - F. All of the above
3. According to the Living Well Index, ____ is the biggest single contributor to living better.
 - A. Adequate lighting
 - B. Thermal comfort
 - C. Better sleep
 - D. Indoor air quality
4. The use of wellness-oriented certifications, including the WELL Building Standard – which monitors factors like indoor air purification, natural light, and water quality – increased ____ from 2018 to 2020.
 - A. 47%
 - B. 76%
 - C. 176%
 - D. 476%
5. How many concepts are in the WELL v2 Standard?
 - A. 7
 - B. 9
 - C. 10
 - D. 12
6. Which types of hearth products are not permitted under WELL because they are combustion appliances?
 - A. Electric
 - B. Gas
 - C. Wood-burning
 - D. Both B and C
7. Although traditional gas and wood-burning fireplaces are not permitted under WELL because they are combustion appliances, fireplace manufacturers have integrated important technologies such as ____ into their products to improve the safety of combustion appliances.
 - A. Electric ignition
 - B. Direct-venting
 - C. Heat exchange
 - D. Zoning
8. Mental health conditions such as anxiety, depression, and substance abuse have become especially prevalent during the pandemic, with an estimated ____% of deaths worldwide attributable to mental health conditions.
 - A. 5.3
 - B. 8.3
 - C. 14.3
 - D. 18.3
9. Which WELL Feature requires the integration of nature and natural elements into the interior and exterior of the project, as well as the provision of nature views and nearby nature, such as green and blue spaces?
 - A. Feature M02: Nature and Place
 - B. Feature M07: Restorative Spaces
 - C. Feature M09: Enhanced Access to Nature
 - D. None of the above
10. ____ fireplaces are perfect for clients seeking a hearth feature where a gas line or venting is impossible, for spaces with minimal square footage or very narrow walls, or for those seeking WELL Certification.
 - A. Direct-vent
 - B. Indoor-outdoor
 - C. Wood-burning
 - D. Electric

SPONSOR INFORMATION

HEAT & GLO

Heat & Glo has been the fireplace industry leader in timeless design and innovative technology since its inception by brothers Ron and Dan Shimek in 1975. The brand pioneered direct-vent gas technology in 1987 and revolutionized the way fireplaces operate in the years that followed. Today, Heat & Glo continues to develop unmatched technologies, materials and designs in a full line of fireplaces, inserts and accessories. It has won more U.S. fireplace awards and been granted more patents than any hearth manufacturer. Heat & Glo is headquartered in Lakeville, Minnesota, and is a brand of Hearth and Home Technologies, Inc. For more information, please visit www.HeatnGlo.com.

Plug into Amazing Fireplace Ambiance



For your next project, add a SimpliFire Scion Electric Fireplace.

Electric fireplaces are on fire. For architects, they offer an easy way to add the year-round ambiance homeowners crave. No gas lines. No venting. They're a great fit also for an office, bedroom or bath. Browse our lineup at [heatnglo.com](https://www.heatnglo.com), with pro resources that make specifying easy.

SimpliFire[®]
Fire Made Simple

HEAT & GLO[®]

Specifying Fenestration Products for Occupant Health and Well-Being

Sponsored By:



Architect: square three architecture. Photo: Bernard Andre Photography.

A WINDOW INTO HISTORY

Windows and doors have long been used to allow building occupants access to light, fresh air, and views to the outside. The noun window is derived from Middle English windoge, a borrowing from Old Norse vindauga, which literally means wind's eye (vindr = wind + auga = eye).^{1,2} The earliest windows had no glass and were therefore just very narrow, open slits in the wall that provided "the ability to see things coming from outside the home while still remaining sheltered inside."³ The next iteration of windows were constructed of wood and were still relatively very small due to limitations in the size of glass. Windows with divided lites allowed the same small glass panes to be used but expanded the size of the window itself with the incorporation of mullions.

Thanks to engineer Henry Bessemer, an early version of float glass was invented in 1843 and later improved by glass manufacturer Pilkington in the mid-20th century, which made modern floor-to-ceiling windows and doors possible.⁴

While buildings of the past naturally "breathed" due to poor insulation and let's face it — inferior windows and doors — this also allowed more frequent air exchanges that helped to eliminate toxins in a building. Early energy efficiency measures for fenestration products included weatherstripping, storm windows, and shutters. Now, double- and triple-glazed windows, thermally broken frames, specialty glass coatings, and dynamic glazing are used to significantly increase the energy efficiency of windows, control the amount of sunlight and glare, and improve

LEARNING OBJECTIVES

1. Examine the importance of fenestration in building design and how windows and doors can improve occupant health and well-being.
2. Explore the WELL Building Standard and Concepts where windows may help projects earn points.
3. Identify operable fenestration products that may contribute to WELL by providing natural ventilation and thermal comfort.
4. Identify oversized fenestration products that may contribute to WELL by providing enhanced access to daylight and nature.

CONTINUING EDUCATION

This course is approved for AIA AIA Continuing Education Provider and GBCI Learning Unit Credits. 

Use the learning objectives to focus your study as you read this article. For details on the learning units or credit information, and to earn credit and obtain a certificate of completion, visit <http://go.hw.net/AR10223> to view the entire CEU and complete the quiz. If you are new to Hanley Wood University, CEU courses are free of charge once you create a new learner account; returning users log in as usual.

acoustic comfort in a building. In the past two decades, building and energy codes have become so stringent, and buildings buttoned up so tightly, that it had the unintended effect of poorer indoor air quality in some scenarios.

Codes are not going to go backwards, particularly with the growing knowledge of how important energy efficiency and occupant comfort is for sustainable design, but the industry has been attempting a balancing act to improve indoor air quality, thermal comfort, and connection with nature while maintaining energy efficient building design. Today's windows are high-performing, energy efficient works of art that really do maximize the amount of natural light entering a home, manage solar heat gain, integrate buildings with nature and, when operable, provide natural ventilation and improve indoor air quality.



The A/E/D community has typically focused on the energy and thermal efficiency of windows and doors but is increasingly looking for ways to minimize the use of active heating and cooling systems via operable windows and doors.

FENESTRATION IMPROVES OCCUPANT HEALTH AND WELL-BEING

Let's delve a little deeper into how fenestration products can significantly improve occupant health and well-being, a growing priority in the building industry, particularly with the advent of the WELL Building Standard, which we will discuss in more detail later in the course. In pursuing sustainable design goals in relation to fenestration design, the A/E/D community has typically focused on the energy and thermal efficiency of windows and doors but is increasingly looking for ways to minimize the use of active heating and cooling systems via operable windows and doors that can create cross ventilation and induced natural ventilation, which both allow fresh air to flow freely throughout a building.

Cross ventilation "occurs when openings in a building are deliberately arranged on opposite or adjacent walls to encourage air to enter and exit, bringing in fresh air as well as managing interior temperatures."⁵ Induced natural ventilation, also called buoyancy-driven stack ventilation, facilitates air cooling by positioning vented openings close to the ground so that cold air enters, then pushes warm air up and out higher windows such as operable clerestories. While not practical

in all climates, it is indeed "possible to effectively design for natural airflow through the built environment by means of passive systems, especially if considered during the schematic design stage." These strategies not only improve energy efficiency (if the HVAC system is turned off), but also have the potential to improve indoor air quality and enhance occupants' connection to the outdoor environment. This passive ventilation, used alongside strategic solar shading and innovative glazing technologies, is not only more sustainable but improves occupant well-being."⁶

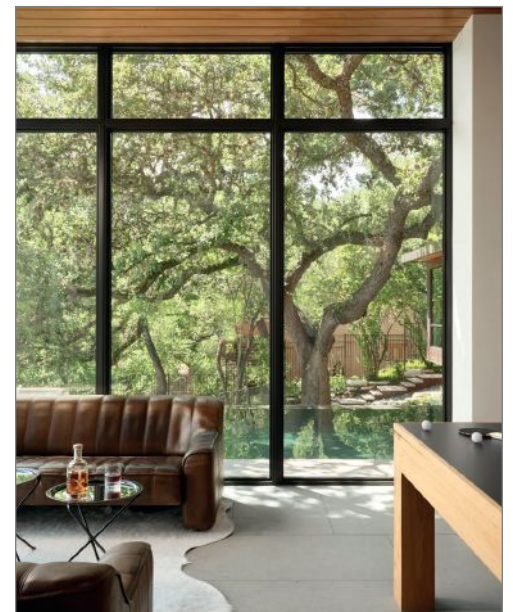
Designing with natural airflow such as this has multiple benefits for the comfort of the occupants, as it moderates internal temperatures and humidity, replenishes oxygen levels, reduces contaminants, and creates air movement.⁷ Of course, the type of fenestration product specified will have a large influence on how effectively these measures work. Products that open fully, such as casements and awnings, help to reach thermal equilibrium quicker (when heat stops flowing and temperatures balance out)⁸ because they promote more active airflow and exchange more air than products such as vertical sliding windows and doors that only open halfway.

Specifying operable windows and doors not only has the potential to improve energy efficiency, but also indoor air quality (IAQ). IAQ has been an important design factor for decades in relation to chemicals and volatile organic compounds (VOCs) that are pervasive in building materials and furnishings, but it has become an even greater concern since the COVID-19 pandemic brought to light how quickly disease can spread in poorly ventilated spaces. When building occupants have the option to open windows and doors, whether manually or electronically, they may feel more in control of their environment.

Based on all of these factors, you can see how important it is to specify fenestration products from manufacturers that use innovative glazing and weatherproofing technologies that allow light transmission and ventilation while optimizing thermal comfort and minimizing outside noise.

INTRODUCTION TO THE WELL BUILDING STANDARD

The WELL Building Standard v1.0 was launched in 2014 by the International WELL Building Institute, and the number of projects seeking WELL Certification grows



It's important to specify fenestration products from manufacturers that use innovative glazing and weatherproofing technologies that allow light transmission and ventilation while optimizing thermal comfort and minimizing outside noise. Architect: LaRue Architects. Photo: Casey Dunn Photography.



Access to appropriate levels of light in indoor environments can be achieved through building design, space layout, and lighting design; windows, atriums, and skylights are design features that can be utilized to increase daylight in a space. Architect: RKB Construction Studio. Photo: Studio Trejo.

significantly every year. With an increased focus on occupant health and well-being,⁹ it was a natural progression from the well-established LEED Rating System, which focuses more on the impact of buildings on the environment versus occupants. Now in its second iteration, “The WELL Building Standard™ version 2 (WELL v2™) is a vehicle for buildings and organizations to deliver more thoughtful and intentional spaces that enhance human health and well-being.” WELL is based on ten concepts, with each concept consisting of several features that are either preconditions or optimizations with various parts. Optimizations are optional pathways to meet WELL certification requirements. Project teams choose which to pursue and which parts to focus on, with the goal to achieve as many optimizations as possible.¹⁰

WELL Certification sets standards for light, air, thermal comfort, mental health, materials, and sound in addition to five other concepts, all aimed to improve occupant health and wellness. Like LEED, there are different levels of certification that buildings can earn with point-based scoring:

- WELL Bronze
- WELL Silver
- WELL Gold
- WELL Platinum

Let’s discuss each of the WELL Concepts just mentioned and how fenestration design may help projects earn points.

LIGHT CONCEPT

Light is the main driver of our visual and circadian systems, so the WELL Light concept promotes exposure to light and aims to create lighting environments that are optimal for visual, mental, and biological health. This is very important because humans spend so much time indoors and insufficient illumination, both artificial and natural, can disrupt the circadian rhythm, which is stimulated by light and regulates hormone levels and the sleep-wake cycle.¹¹ WELL notes, “Integrating daylight and electric light to create lighting strategies focused on human health, along with traditional requirements for visual acuity and comfort, can lead to healthier and more productive environments.”

Light Exposure and Education – Feature L01

The Light Exposure and Education feature requires projects to ensure appropriate light exposure in indoor environments by using daylighting or electric lighting strategies. To encourage users to seek light exposure on their own, projects are required to provide users with education about the importance of light for health.

GLOSSARY

Bi-Fold Doors: Also called accordion doors, they consist of multiple panels that fold open, creating a dramatic large opening

Clerestory: Windows set high up in walls near the roofline to capture mid-day natural light, visually break up the space between wall and ceiling, or highlight different levels of a space in an open plan

Cross Ventilation: Occurs when openings in a building are deliberately arranged on opposite or adjacent walls to encourage air to enter and exit, bringing in fresh air as well as managing interior temperatures

Indoor Air Quality (IAQ): Refers to the air quality within and around buildings and structures, especially as it relates to the health and comfort of building occupants

Induced Natural Ventilation: Also called buoyancy-driven stack this type of ventilation facilitates air cooling by positioning vented openings close to the ground so that cold air enters, then pushes warm air up and out higher windows such as operable clerestories

Multislide Doors: Doors that have three or more panels that slide open and stack against each other

Solar Heat Gain Coefficient (SHGC): The fraction of solar radiation admitted through a window, door, or skylight — either transmitted directly and/or absorbed, and subsequently released as heat inside a home; the lower the SHGC, the less solar heat it transmits and the greater its shading ability

Roto Gear Hardware: Hardware typically used to open and close an awning or casement window; when the roto is turned in one direction, the closed awning/casement will open, and when it’s turned in the other direction the window closes; a roto gear operator will hold the sash at any position in its operating radius

Spatial Daylight Autonomy (sDa): Assesses whether a space receives sufficient daylight on a work plane during standard operating hours on an annual basis

Timber Curtain Wall: Wood framing that is attached to the building structure and does not carry the floor or roof loads of the building; the wind and gravity loads of the curtain wall are transferred to the building structure, typically at the floor line

Criteria related to fenestration:*Part 1, Ensure Indoor Light Exposure*

allows designers to choose between providing daylight in all spaces or daylight in common spaces. When providing daylight in all spaces, projects must meet at least one of the following requirements:¹²

A. Achieve Spatial Daylight Autonomy of $sDA_{200,40\%}$ for at least 30% of regularly occupied space.

B. 30% of all workstations must be within 6 m [20 ft] of transparent envelope glazing. The visible light transmittance (VLT) of transparent glazing must be greater than 40%.

C. The transparent envelope glazing area should be no less than 7% of the floor area for each floor level. The VLT of envelope glazing must be greater than 40%.

If attempting to earn points with this feature by providing daylight in common spaces, "Regular occupants must have unrestricted access to indoor common spaces with unassigned seating that accommodates at least 15% of regular occupants at any given time." These spaces must meet at least one of the following requirements:

A. Transparent envelope glazing area should be no less than 10% of gross internal floor area of the space. Visible Light Transmittance (VLT) of envelope glazing must be greater than 40%.

B. Achieve Spatial Daylight Autonomy of $sDA_{300,50\%}$ for at least 70% of the space.

C. 70% of all seating in the space should be within 5 m [16 ft] of transparent envelope glazing with views to the exterior. Visible light Transmittance (VLT) of envelope glazing should be greater than 40%.

As you can see, "Access to appropriate levels of light in indoor environments can be achieved through building design, space layout, and lighting design. Windows, atriums, and skylights are design features that can be utilized to increase daylight in a space."¹³

QUIZ

- Which of the following passive ventilation systems facilitates air cooling by positioning vented openings close to the ground so that cold air enters, then pushes warm air up and out higher windows such as operable clerestories?**
 - A. Cross ventilation
 - B. Induced natural ventilation
 - C. Buoyancy-driven stack
 - D. Both B and C
- Which of the following is a benefit of designing with natural airflow?**
 - A. Moderates internal temperature and humidity
 - B. Replenishes oxygen levels
 - C. Reduces contaminants
 - D. Creates air movement
 - E. All of the above
- Under the Light Exposure and Education feature, the Visible Light Transmittance (VLT) of envelope glazing must be greater than _____ percent.**
 - A. 20
 - B. 30
 - C. 40
 - D. 50
- Under the Enhanced Daylight Access feature Part 3, Ensure Views, all spaces must have transparent envelope glazing that provides access to views for at least _____ percent of regular occupants.**
 - A. 20
 - B. 30
 - C. 40
 - D. 50
- Which WELL concept requires the integration of nature into the project's interior and exterior through design elements that support direct access with nature using plants, water, light and views, and indirect access to nature using natural materials, patterns, colors, or images?**
 - A. Light
 - B. Air
 - C. Thermal comfort
 - D. Mind
 - E. Sound
- Which type of window opens fully to provide maximum ventilation and natural light while also providing one of the highest thermal performance ratings of any operating window style?**
 - A. Casement
 - B. Double-hung sash
 - C. Picture
 - D. Operable clerestory
- Which type of windows are set high up in walls near the roofline to capture mid-day natural light, visually break up the space between wall and ceiling, or highlight different levels of a space in an open plan?**
 - A. Awning
 - B. Clerestory
 - C. Skylight
 - D. Atrium
- Which type of door has three or more panels that slide open and stack against each other?**
 - A. Timber curtain wall
 - B. Multislide
 - C. Liftslide
 - D. Bifold
- Which tree species is North America's most plentiful softwood species and the strongest and most durable of all softwoods?**
 - A. Coastal Douglas fir
 - B. Honduran mahogany
 - C. White oak
 - D. African mahogany
- The highest quality coatings will meet the specifications of the American Architectural Manufacturers Association (AAMA). _____ with a 705 Kynar finish.**
 - A. 611
 - B. 2603
 - C. 2604
 - D. 2605

SPONSOR INFORMATION

This article continues on
<http://go.hw.net/AR10223>.

Go online to read the rest of the CEU course, complete the corresponding quiz for credit, and receive your certificate of completion.



Loewen is the leading manufacturer of premium windows and doors for the luxury architectural market in North America and abroad. In addition to proudly handcrafting enduring products that enhance beautiful architecture, Loewen is also an innovative, design-driven, technologically advanced company of the twenty-first century.

ARCHITECT

Content Licensing for Every Marketing Strategy



Marketing solutions fit for:

Outdoor | Direct Mail | Print Advertising | Tradeshow/POP Displays
Social Media | Radio & TV

Leverage branded content from Architect to create a more powerful and sophisticated statement about your product, service, or company in your next marketing campaign. Contact Wright's Media to find out more about how we can customize your acknowledgements and recognitions to enhance your marketing strategies.

Call Wright's Media at 877.652.5295, visit our website at info.wrightsmmedia.com/zonda-licensing-permissions or email us at zonda@wrightsmmedia.com

ARCHITECT

United States Postal Service
STATEMENT OF OWNERSHIP, MANAGEMENT, and CIRCULATION
Required by 39 USC 3685

1. Publication Title: ARCHITECT
2. Publication Number: 1055-3444
3. Filing Date: 9/30/22
4. Issue of Frequency: Monthly except combined issues in Jan/Feb, May/June, July/Aug and Nov/Dec.
5. Number of Issues Published Annually: 8
6. Annual Subscription Price: \$59
7. Complete Mailing Address of Known Office of Publication (Not Printer): Hanley Wood Media, Inc. dba Zonda Media, 1152 15th St. NW, Suite 850, Washington, DC 20005
8. Complete Mailing Address of Headquarters or General Business Office of Publisher (Not Printer): Hanley Wood Media, Inc. dba Zonda Media, 1152 15th St. NW, Suite 850, Washington DC 20005
9. Full Names and Complete Mailing Addresses of Publisher, Editor, and Managing Editor. Publisher: Jennifer Pearce, 1152 15th St. NW, Suite 850, Washington DC 20005; Editor: Paul Makovsky, 1152 15th St. NW, Suite 850, Washington DC 20005; Managing Editor: Laurie Elden, 1152 15th St. NW, Suite 850, Washington DC 20005
10. Owner - Full name: Hanley Wood Media, Inc. dba Zonda Media; HW Holdco, LLC., 1152 15th St. NW, Suite 850, Washington, DC 20005
11. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages or Other Securities: None
12. Publication Title: ARCHITECT
13. Issue Date for Circulation Data Below: September 2022

	Average No. Copies Each Issue During Preceding 12 Months	No. Copies of Single Issue Published Nearest to Filing Date
15. Extent and Nature of Circulation		
a. Total Number of Copies (Net press run)	53,059	52,528
b. Legitimate Paid and/or Requested Distribution		
(1) Outside County Paid/Requested Mail subscriptions stated on PS Form 3541.	50,946	50,874
(2) In-County Paid/Requested Mail Subscriptions stated on PS Form 3541.	0	0
(3) Sales Through Dealers and Carriers, Street Vendors, Counter Sales, and Other Paid or Requested Distribution Outside USPS ®	106	99
(4) Requested Copies Distributed by Other Mail Classes Through the USPS	0	0
c. Total Paid and/or Requested Circulation [Sum of 15b 1, 2, 3 & 4]	51,052	50,973
d. Nonrequested Distribution		
(1) Outside Country Nonrequested Copies Stated on PS Form 3541	660	589
(2) In-Country Nonrequested Copies Stated on PS Form 3541	0	0
(3) Nonrequested Copies Distributed Through the USPS by Other Classes of Mail	0	0
(4) Nonrequested Copies Distributed Outside the Mail	141	16
e. Total Nonrequested Distribution (Sum of 15d (1), (2), (3), and (4))	801	605
f. Total Distribution (Sum of 15c and 15e)	51,853	51,578
g. Copies not Distributed	1,206	950
h. Total (Sum of 15f and 15g)	53,059	52,528
i. Percent Paid and/or Requested Circulation	98.5%	98.8%
16. Electronic Copy Circulation		
a. Requested and Paid Electronic Copies	5,099	5,095
b. Total Requested and Paid Print Copies (Line 15C) + Requested/Paid Electronic Copies	56,151	56,068
c. Total Requested Copy Distribution (Line 15F) + Requested/Paid Electronic Copies	56,952	56,673
d. Percent Paid and/or Requested Circulation (Both Print and Electronic Copies)	98.6%	98.9%
17. Publication of Statement of Ownership for a Requester Publication is required and will be printed in the October 2022 issue of this publication.		
18. I certify that all information furnished on this form is true and complete. Signature and title of Editor, Publisher, Business Manager, or Owner - Jennifer Pearce, Executive Vice President, Chief Content Officer, 9/30/22		

Advertiser	Page
All Weather Insulated Panels	52
Aluflam North America LLC	50
American Institute of Architects	54, 59
ARCAT, Inc.	Cover 3
Architect Live	6
Architect Online	17
Architecture & Interiors Awards	30
ASI Group	10
CertainTeed Architectural	64-67
CornellCookson, LLC	19
DeepStream Designs, Inc.	18
Doug Mockett & Co. Inc.	8
Eldorado Stone	27
GAF	29
Glazing Vision Inc.	51
Hanover Architectural Products	16
Hawa Group Americas Inc.	2
Heat and Glo	68-73
IAPMO	18
Kingspan	31
Light & Architecture Design Awards	30
Loewen Windows	74-77
Masonite	25
Modernfold, Inc.	5
ModularArts, Inc.	16
NanaWall Systems	23
Nucor Corporation	Cover 4
Petersen Aluminum	15
Plastpro	28
Rulon International	14
SAFTI FIRST	3
Sierra Pacific Windows	16a-d
Sloan Global Holdings, LLC	9
TCP Lighting	63
The Airolite Company, LLC	7
Uline	50
Vitro Architectural Glass	Cover 2-1



To be a part of the next

ARCHITECT MAGAZINE

special advertising section,

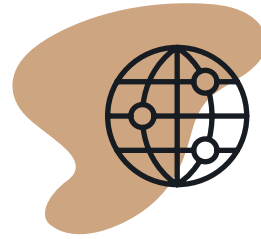
Contact:

John Tatusko

617.359.8619

jtatusko@zondahome.com

Editorial: The Road to Permanent Resilience



TEXT BY PAUL MAKOVSKY

Climate change is having a huge impact on how we live. Our relationship with nature is an integral part of the natural world that will help lead us to a more resilient planet. Climate change affects the world's food system and is a leading cause of growing rates of hunger. Balancing equitable access to water for everyone with conservation of our water resources is paramount. And conserving our forests also plays an important role in making us resilient. We know all of this.

Enter Youssef Nassef. An expert with more than 30 years of experience in diplomacy and international environmental policy, he is the director of the United Nations Framework Convention on Climate Change adaptation workstreams. In 2019, Nassef created the Resilience Frontiers Initiative, a global cross-agency, forward-thinking endeavor that applies foresight and future studies for attaining post-2030 resilience. He points out that the world is not very well equipped to handle global problems since the primary responsibility of state governments is to serve their populations; elevating the discourse around climate change and resilience must go beyond local governmental thinking.

At the Resilience Frontiers five-day brainstorming conference in 2019 in Songdo, South Korea, for example, 100 visionary thinkers and thought leaders joined together from all walks of life, from nonprofit, private, and research bodies from all over the world. At that event, they envisioned how emerging soft

and hard technologies—such as artificial intelligence and biotechnology, as well as social trends about sustainability and the role of ancient and indigenous knowledge for nature regeneration—are evolving. Out of this, they visualized desirable futures for climate resilience and how emerging technologies and social trends could enhance our world population to meet basic needs like water, food, and access to nature.

And, at the 2021 COP26 conference in Glasgow, Scotland, the UN initiative organized a Resilience Lab on shaping the future that went beyond gloom-and-doom climate thinking and instead looked for new paradigms of a more desirable future. By bringing together thinkers and interdisciplinary thought leaders including artists and scientists to envision climate-resilient futures, the workshop enabled participants to examine what types of new systems could be activated to produce a better world outcome. Based on its vision, the organization approaches transformation in a holistic way by exploring eight pathways into a future of permanent resilience, and challenges everyone to change their mindsets and imagine a better world, beyond 2030.

Architects and designers can't do it alone. We're all on the front line of the climate crisis, and we need to find new ways to look at the problem and find creative solutions in a climate-resilient way. The Resilience Frontiers initiative is a game-changing model that offers much hope for a more desirable future.

The eight pathways



1 Transforming humanity's interface with nature, building on indigenous values.



3 Ensuring universal equitable coverage of, and open access to, big data and information, and related benefits to human well-being.



5 Managing transboundary considerations equitably.



7 Mainstreaming regenerative food production.



2 Applying lifelong learning for environmental stewardship.



4 Managing water and other natural resources in an equitable and participatory way.



6 Optimising future health and wellbeing using a holistic and ecosystem approach.

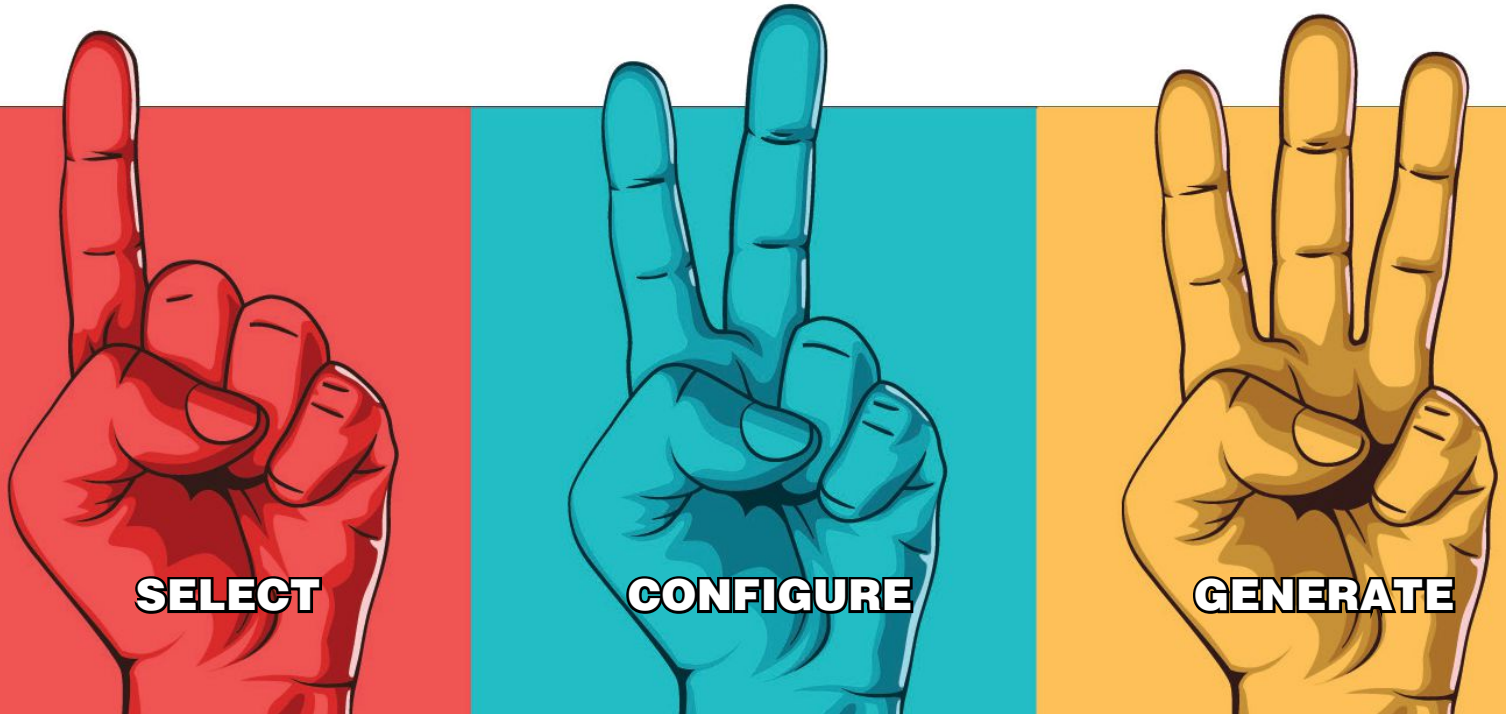


8 Developing transformative financial instruments

Resilience Frontiers has developed eight holistic pathways to help people create a more resilient future on Earth.

3 EASY STEPS!

and registration isn't one of them.



Select and configure a product fast and accurately, then automatically generate a complete CSI 3-Part Formatted spec.

1. **SELECT** the necessary product(s) for the project.
2. **CONFIGURE** those product(s) around the specific requirements of the project using drop-down menus and option boxes. (The built-in intelligence of SpecWizard prevents incompatible choices)
3. **GENERATE** the completed specification by choosing either USA or Canadian versions. The SpecWizard then edits the manufacturer's proprietary specification based on your selections, and within seconds, produces a finished CSI 3-Part Formatted specification in Word format.

that's it. that's SpecWizard®. only @arcat.com



A close-up portrait of Terri Meyer Boake, a woman with short dark hair, wearing round black-rimmed glasses and a dark blue turtleneck sweater. She is looking directly at the camera with a slight smile. The background is dark and out of focus.

NUCOR[®]
**MINDS
OF STEEL**

Terri Meyer Boake, LEED AP, Professor
University of Waterloo School of Architecture

She's written the book on architecturally exposed structural steel. Literally.

LEARN WHY THIS AUTHOR AND TEACHER IS INSPIRED BY STEEL DESIGN

nucor.com/observe