

The Equity Issue
Guest Edited by NOMA

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Location
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Project type
Replacement

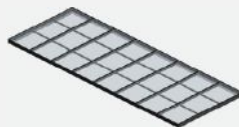
Year of construction
2017



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The Equity Issue



Guest edited by the National Organization of Minority Architects

Volume 110, number 07, October 2021.

On the cover: Power to the People, a mural by artist Hubert Massey painted on Woodward Avenue in photo by Joe Gall; courtesy Hubert Massey and Detroit Heals Detroit.

Below: Student artists from Detroit Heals Detroit and Detroit Public Schools Community District paint the mural on June 17, 2020; photo by Jim West.

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Luxury wellness design is changing. What's next?



THE IDEA THAT A HOME'S DESIGN CAN PROFOUNDLY IMPACT ITS RESIDENTS' HEALTH AND WELL-BEING IS NOTHING NEW: Designing for wellness has drawn increasing attention during the past decade. But that interest has understandably skyrocketed during the global COVID-19 pandemic, especially among high-end clients, who want their homes to protect and nurture their families' physical and mental health.

How will luxury residential design morph to create even healthier environments as a result of the pandemic? What existing trends will evolve to contribute to healthy homes?

Watch the on-demand webinar "Redefining the High-End Healthy Home," produced by Hanley Wood University and sponsored by Gaggenau. In this roundtable, recorded during a live virtual event in May 2021, facilitator Jennifer Castenson leads a discussion of the emerging and evolving trends in healthy home design. She's joined by a panel of residential architects.



Kevin Alter
Partner, Alterstudio



Danielle Tillman,
Managing Principal, bKL



Noah Walker
Principal, Walker Workshop



Takashi Yanai
Partner, EYRC

This webinar is approved for AIA and IDCEC continuing education credit. In addition, course registrants will gain access to a white paper on the same topic.

ON-DEMAND WEBINAR:

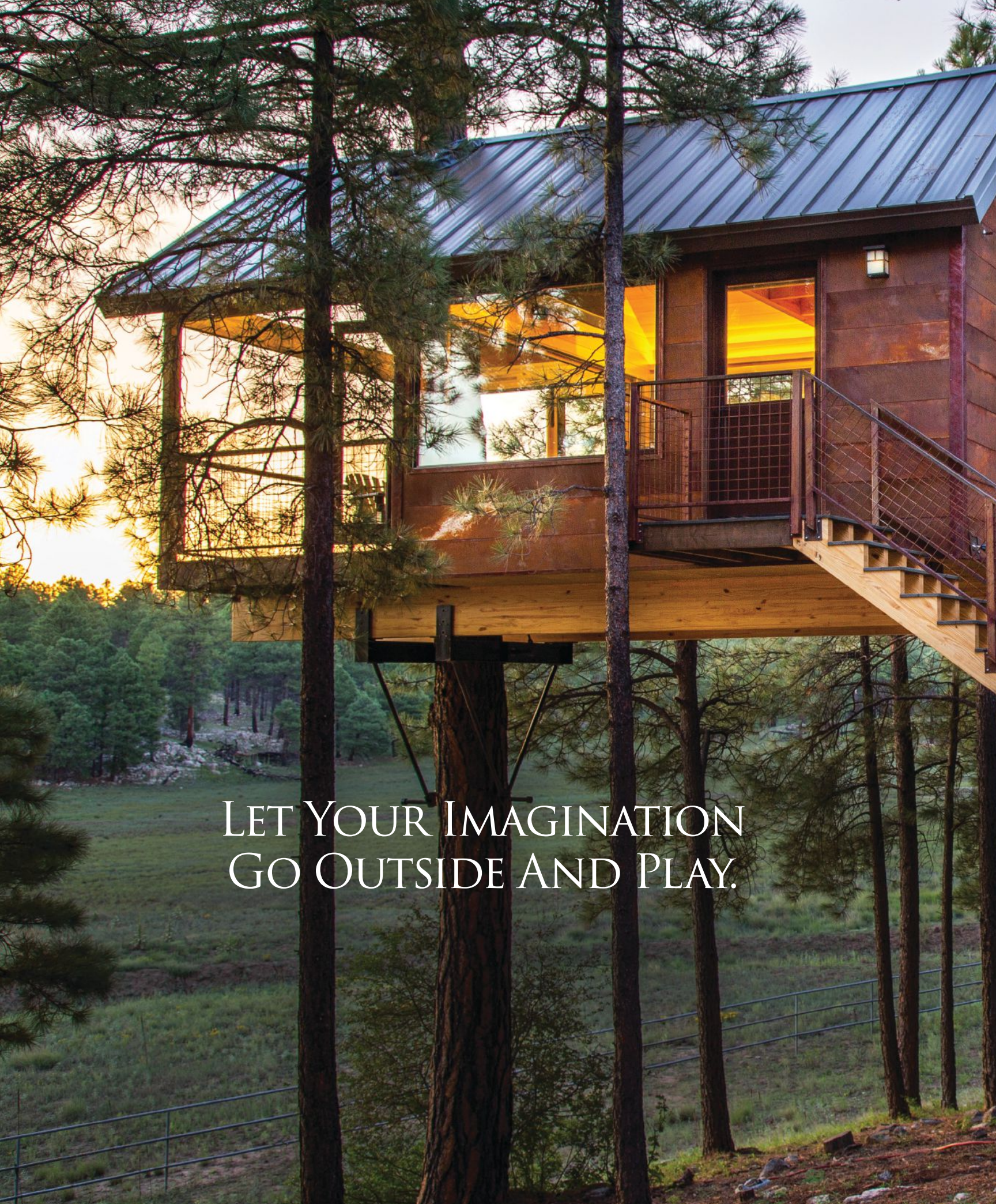
REDEFINING THE HIGH-END HEALTHY HOME

How luxury single- and multi-family residential design is responding to a post-pandemic need to maintain and improve the health of inhabitants.

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WHY EQUITY MATTERS

This issue of ARCHITECT was edited in partnership with the National Organization of Minority Architects to showcase the achievements of the broad and diverse design community. But it also serves as a call to action for practitioners to address the inequities that continue to plague architecture.

TEXT BY ARCHITECT AND NOMA STAFF
ART DIRECTION BY MICHAEL COLLETT

Architecture has a problem when it comes to representation. Of the more than 116,000 architects in the United States and its territories, 24% are women, 4% identify as Hispanic or Latino, and 2% identify as Black. Just 0.4% of licensed professionals—approximately 500—identify as Black women.

For 50 years, the National Organization of Minority Architects has been an advocate and leader for the creation of just, equitable, diverse, and inclusive outcomes in the built environment. In 1971, 12 African American architects from across the country met, some for the first time, at the AIA National Convention in Detroit. These professionals recognized the dire need for an organization dedicated to the development and advancement of designers of color—and Black architects in particular. This meeting set the foundation and vision for what would become NOMA.

Today, at nearly 3,000 members strong and with 117 professional and student chapters, the nonprofit organization continues to champion diversity in design through education, professional development, advocacy, and activism. And more in the profession are joining in.

The American Institute of Architects has taken steps to advance equity both in the profession at large and internally, examining its own operations, policies, initiatives, and more.

In 2009, AIA and NOMA signed their first Memorandum of Understanding to collaborate on efforts to increase the diversity of the profession. The MOU, which has been renewed several times since, remains in effect.

We have seen progress, starting with the design community's widespread—though belated—acknowledgment of systemic racism and discrimination. But we can do more faster and better together.

THE PURSUIT AND
PROMISE OF EQUITY
IN ARCHITECTURE



For Black Architects, This Is a Moment of Energy, Hope, and Caution.

TEXT BY ANJULIE RAO

EDITED BY WANDA LAU

TIMELINE BY PASCALE SABLAN, FAIA, NOMA;
SAUNDRA LITTLE, FAIA, NOMA; AMBER LACROIX,
NOMA ALLIED PROFESSIONAL; PAUL WELLINGTON;
MADELEINE D'ANGELO; WANDA LAU

R. Steven Lewis, FAIA, NOMAC, was privy to the challenges of being Black in architecture. His father was an architect, and Lewis himself grew up during the Civil Rights era. He heard no shortage of stories about obstacles—but also some about success. More than 40 years of practice later, he has seen excitement for justice, equity, diversity, and inclusion (JEDI) emerge and fade every 10 years or so.

The past 18 months have been no exception. The murder of George Floyd and extreme health inequities exposed by the pandemic have been coupled with ongoing civil unrest and calls to action by citizens and corporations. Lewis, a Los Angeles-based principal at ZGF, says his life experience “has allowed me to meet this moment ... with a lot of energy, hopefulness—and caution.”

Let's be clear: The awakening of our collective consciousness should never have taken the public execution of a Black man. But Lewis' hesitancy speaks to his understanding of what achieving equity in architecture will require.

According to the National Council of Architectural Registration Boards, 16% of licensed professionals are people of color; 2% are Black. In comparison, 42% of the country's general population identify as people of color and 12% as Black. But equity goes beyond aligning these numbers. The profession also needs to stop alienating, isolating, and marginalizing underrepresented designers.

To Lewis, corporate diversity initiatives represent the bare minimum of effort. “Your hiring and retention policies, promotional policy, recruitment policies—those are the low-hanging fruit,” he says. “Once you've exhausted those, the question [remains]: How do we realize the richness of lived experiences and cultural backgrounds in a design process and a design outcome?”

Civic leaders are starting to channel attention and funds into communities of color that, for generations, have been sacrificed for freeway construction and industrial development and disenfranchised through redlining and rampant demolition under the guise of “urban renewal.” Similarly, institutions and corporations are beginning to request or require diversity metrics for project teams and suppliers. The gears of market demand are turning.

Increasing diversity—and thus perspectives, experiences, and empathy—in architecture can better prepare clients to address current needs and future unknowns. Moreover, a representative profession won't benefit just one company, university, or city. Rather, its impact will radiate and weave into the fabric of our communities while dispersing the planning power held largely by wealthy white individuals and institutions.

To achieve representation—and, frankly, relevance—architects must do what they tell clients they do best: listen, research, ideate, and innovate. And they must go deep, starting with the acknowledgment of long-standing problems in every aspect of design, from the pipeline to retirement.

PRIMING THE PIPELINE

Many professional industries have so-called pipeline problems. When people are not introduced to a particular field, they are less likely to pursue careers in it. Design firms asked about their lack of staff diversity will sometimes cite the pool of available candidates. Given the fact that half of all new NCARB record holders are people of color, with gains made largely in Asian and Hispanic or Latino populations, that excuse may not hold water much longer.

Aligning the talent pool to our country's demographics will require changes at the pipeline's head: youth education. In 2006, the National Organization of Minority Architects began Project Pipeline, holding nationwide summer camps that bring middle- and high-schoolers of color together with architecture students and practitioners to learn design thinking, research, and technical skills.

Jason Pugh, AIA, NOMA, the 2021–2022 president of NOMA and a Chicago-based senior associate at Gensler, says recent alumni of Project Pipeline are often tapped as junior mentors or camp counselors while professional NOMA members serve as supervisors. “You can literally see the physical pipeline between students, high schoolers, college students, and young professionals,” he says.

Similarly, the ACE Mentor Program of America and Hip Hop Architecture Camp offer free programs to underserved high school students interested in the building and planning sector. Initiatives like these provide participants not only tangible skills, like drafting and model-making, but also skills to navigate difficult situations. Alumni may find themselves as the only person of color in their future workplace, says Krisann Rehbein, executive director of the Chicago chapter of ACE. After one to three years of participating in ACE, she says, “you have the confidence to be able to navigate that situation.”

Tracking students who go on to study and practice architecture is challenging, but necessary to measure the programs' effectiveness. Rehbein says ACE Chicago encourages participants to stay in touch by offering college scholarships and internship leads, as well as training on using LinkedIn for networking.

Pugh says NOMA is open to sharing its Project Pipeline data with other programs because students who catch the design bug often enroll in multiple camps and workshops. NOMA is also planning to rebrand Project Pipeline as an umbrella that includes any activity—scholarships, NOMA Students fellowships, and internship programs—that aims to increase the number of architects of color.

A multilevel support system is required to move students from youth interest to licensure, says Emily Grandstaff-Rice, FAIA, NOMA, who chaired AIA's 2015 Equity in Architecture Commission and is the Institute's 2022 vice president/president-elect. In January 2017, after 14 months of research and work, the commission presented 11 priority recommendations to increase diversity in the profession. Two specifically pertained to the pipeline: engaging children and families “within all demographic communities” in K–12 architecture programs and “advocating for a more accessible path” that bridges two- and four-year higher education institutions with degree programs approved by the National Architectural Accrediting Board. “Not everybody approaches college from the standard five-year bachelor's, or four-plus-two [graduate degree],” Grandstaff-Rice says.

Also in 2017, NOMA and the AIA Large Firm Roundtable began discussing strategies to increase the persistently low numbers of Black architects. Then someone suggested the group treat the issue in a manner similar to sustainability. In 2020, the organizations announced their joint 2030 Diversity Challenge, aiming to double the number of Black architects in 10 years. “If you reverse-engineer it, it's damn near impossible to even think how that can happen,” Lewis says, referring to architecture's lengthy licensing process, which averages upward of 11 years to complete. “But if you aim high and work toward it, a great deal of progress will be made.”

A HARD LOOK AT LICENSURE

While people of color make up half of NCARB's new record holders, their numbers begin declining at architecture's next milestones: garnering experience hours (known as the AXP) and successfully completing the Architect Registration Examination. In its September "Baseline on Belonging: Examination" report, NCARB found that white test-takers had higher pass rates across the six ARE 5.0 divisions than Black, Hispanic/Latino, and Asian candidates; respectively, the differences ranged from 27 to 38 percentage points, 24 to 32 percentage points, and 16 to 27 percentage points.

In 2019, Tiara Hughes, ASSOC. AIA, NOMA, passed three ARE 5.0 exams in six weeks. The Chicago-based senior associate urban designer and project manager at Skidmore, Owings & Merrill, who also works as a real estate broker, had planned a break after taking—and passing—her fourth exam in October 2019. Then George Floyd was murdered. "It was difficult for a person like myself, actively advocating for equity, to focus on exams last year," she says.

Still, Hughes believes the reasons for the lower pass rates run deeper and may include "who is creating the tests, how the questions are phrased, and who can relate to the content ... as well as the socioeconomic issues that [the different] groups deal with."

"Baseline of Belonging: Examination" digs into possible socioeconomic barriers, which NCARB studied with NOMA. Candidates of color surveyed in the study were more likely than white candidates to report that financial burdens—including family obligations and college debt—affected their ability to pay for the exams, which cost \$235 per division and offer no discount for retakes. A 2018 survey by the AIA San Francisco Equity by Design committee found that Black designers reported having nearly three times as much college debt as the average respondent.

NCARB's report also reveals that candidates of color, particularly women, receive less support from their workplaces in obtaining exam study materials and payment assistance. Latinas were the most likely group to spend \$500 or more on study materials—but they also felt the least confident of their ability to afford the AREs. Ultimately, though candidates of color make up 44% of test-takers, only 29% complete the exam process.

To move mountains, the industry must start somewhere. This summer, Hughes, based on conversations with other Black practitioners, proposed on social media that NCARB make tests free for Black emerging professionals. Some of her followers pushed back, saying the idea wouldn't yield higher pass rates. But Hughes says that wasn't her intention: "The point would be to bring more people to test in general and therefore take more tests."

A.L. Hu, AIA, NOMA, was also concerned attention to surveys and statistics was distracting from effecting real-world impact. The New York-based Enterprise Rose Fellow, who identifies as non-binary, became a member of NCARB's Re-Think Tank, which engages recently licensed practitioners to discuss concerns and ideas to update the path to licensure. Through this experience, they believe NCARB is grasping the importance of moving beyond data and into storytelling as a way to shed light on both structural and enigmatic barriers to equity.

THOUGH CANDIDATES
OF COLOR MAKE UP
44 PERCENT OF TEST-TAKERS,
ONLY 29 PERCENT COMPLETE
THE EXAM PROCESS.

—National Council of Architectural Registration Boards

Like many professionals in marginalized groups, Hu says getting licensed increased their chances of promotion. "As an Asian American person who reads as a woman in most professional spaces, I have to get licensed to be taken seriously," they say. Only after working last year at a nonprofit that maintained a strict 9–5 schedule, coupled with having projects postponed due to the pandemic, did Hu find time to prepare and get "the edge to pass all my exams. ... It's a whole other job to actually study for the exams." Without this time, Hu says they would have "kept failing exams [until] I finally learned the material."

Industry organizations are trying to help. NOMA has partnered with online test-prep company Black Spectacles in a 50x50 Challenge program to provide its members low-cost, high-quality study materials and resources.

Some NOMA chapters reimburse exam fees, which the Architects Foundation also does through its annual Jason Pettigrew Memorial Scholarship.

But relief is inconsistent. Many emerging designers of color won't land at a large firm that can connect them with study groups or reimbursements—much less offer a 40-hour workweek that enables study time. Hughes' proposition, to make exams free for Black designers, is a strategy for repair, but, as such, it opens the door for uncomfortable conversations about reparations.

BUILDING CONNECTIONS AND BUSINESSES

In this country, people of color consistently earn significantly less than their white peers. In architecture, the 2018 AIASF Equity by Design study found that white men reported the highest average salary—upward of 30% more than that of Black women around the 15- to 20-year career mark.

For architects of color, starting their own firm has been one way to gain agency in their career and grow professionally. But that first commission typically comes from connections—professional, familial, collegial, personal—with financial power. This alone can preclude one from making the leap.

Even so-called reparative avenues to bolster minority-owned firms may not be what they seem. In 1983, Roberta Washington, FAIA, NOMAC, started her eponymous firm after realizing that large, white-owned firms wouldn't allow her a path to principal or even associate. After setting up shop in New York's Harlem neighborhood, Washington began attending community board meetings to connect with the community and participating in programs designed to connect minority-owned businesses with civic projects. "They ... supposedly helped Black architects work with other architects to get ... experience in a particular area," Washington says.

Large, established firms would list Roberta Washington Architects as a part of their design team and get an edge in winning projects. But then, Washington says, her firm would rarely receive credit for its contributions—credit that was critical to obtaining future work. "No one would accept it," she says. "They would say, 'You were there for show, for window dressing.'"

She realized that the best way to be taken seriously on these teams was to secure a part of the project that could be identifiably hers.



TIMELINE

In 1971, 12 African American architects from across the country met during the AIA Convention in Detroit. What the professionals shared was a recognition of the need for an organization dedicated to the development and advancement of architects of color. They wanted underrepresented design professionals to work together to fight discriminatory policies that limited or barred architects like themselves from participating in design and construction projects and programs.

This became the founding of the National Organization of Minority Architects, which now has 37 professional chapters throughout the country and 80 NOMA Students chapters on college and university campuses. This year, NOMA celebrates 50 years of promoting the quality and excellence of design professionals of color.



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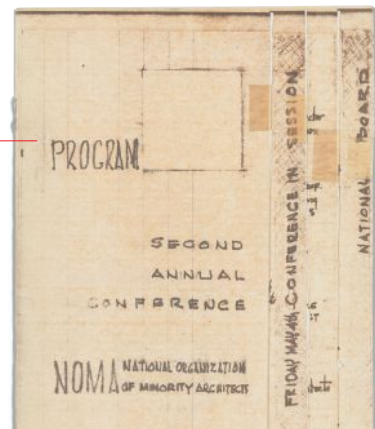


● Harold L. Williams
California

Robert Wilson ●
Florida



For his design of the font used in this story's headlines, pullquotes, and dates, *Tré Seals of Vocal Type* referenced the unique hand lettering on a program mock-up for NOMA's second annual conference in 1973, sourced from a collection donated by NOMA founder Harold Williams to the National Museum of African American History and Culture, in Washington, D.C.



LEGEND

- 📍# Location of #th NOMA national conference
- NOMA founder mention
- 👤 Name of new NOMA president inaugurated
- ★ AIA Whitney M. Young Jr. Award recipient
- + Notable project
- > Additional coverage available

1971

● The 12 future founders gather in person for the first time at the Detroit Urban League.

👤● NOMA founder **Wendell Campbell** becomes the organization's first president, a title he would hold through 1973.

● In Houston, the organization votes to change its name from the National Organization of Black Architects to NOMA.

📍1 NOMA's first national conference takes place in Nassau, Bahamas.

1972

★● **Robert Nash** receives the inaugural AIA Whitney M. Young Jr. Award.

📍2 Chicago

1973

+ **John Moutoussamy** completes the Johnson Publishing Building in Chicago. The project remains the only Chicago high-rise designed by an African American architect.

📍3 Chicago

1974

AIA hires **Robert T. Coles** as deputy vice president for minority affairs and asks him to develop "a master plan for minority awareness." Coles works with **Leon Bridges, FAIA, NOMAC,** and **Marshall Purnell, FAIA, NOMAC,** to establish the AIA Commission on Community Services.

●● **Leroy Campbell**

📍4 Washington, D.C.

In the mid-1990s, after a large design firm presented a modernization plan for Kings County Hospital Center in Brooklyn, N.Y., at a community board meeting, the audience—primarily Black residents—asked if Black architects were involved. Washington, who wasn't in the room, was told that the design firm replied, "No, there are no Black architects who specialize in hospital design."

But the audience knew otherwise, Washington says. "Somebody called somebody who called me and asked, 'Didn't you get a degree in hospital design?'"

She did, in fact—an M.Arch. from Columbia University with a specialty in health care design.

The large firm invited her to submit a proposal to them, and RWA was named an associate architect. For more than a year, Washington's firm worked on the project, with significant design oversight on the ambulatory care unit. Though the election of a new governor led to the premature termination of the commission for the entire team, Washington was happy for the experience on a mega project with the large firm—which wouldn't have known she existed save for her community.

Washington kept networking and making connections. She continued attending community board meetings and then joined the board for eight years. Over time, she became a design advocate for the entire neighborhood, advising on development issues and chairing and co-chairing Central Harlem's Housing Committee and Land Use Committee, respectively. "In local communities," she says, "if they know that you exist, there is power there."

Washington epitomizes how representation in the profession can radiate well beyond a single project through community connectivity. Still, the renowned architect continues to ask herself, "How many times have I gotten something by ... luck?"

Luck—like Hu's unexpected free time to study for the ARE—is not a practical or sustainable business tool. Instead, emerging firms need targeted initiatives to help them get off the ground and running.

At NOMA, Pugh is prioritizing the help firms need to grow. Next year, the organization will launch Leveraging Legacy, a program that will pair established firms of color with early- or mid-career professionals, with hopes that the latter group will begin to build legacies of their own. "It's important that we continue to focus the narrative and dialogue around entrepreneurship, encouraging folks to start their own practice and ... give [others] those first steps and tips to get them going," Pugh says.

NAVIGATING TRANSITIONS

Many of the minority-owned firms established around the same time as RWA "have not survived their founders," Pugh says. In fact, only a single firm started by one of the original 12 NOMA founders remains in business today: Sulton Campbell Britt & Associates, in Baltimore, which Leroy Campbell co-founded with John Sulton, FAIA, NOMA, as Sulton Campbell Architects in 1964.

Starting a minority-owned practice is hard enough, but sustaining it after the departure of the founders is crucial to maintaining diversity in architecture and firm ownership. Pugh says NOMA's Leveraging Legacy program will also broach the critical but often overlooked topic of succession planning.

Additionally, the mentor-mentee relationships Pugh hopes to foster through Leveraging Legacy can bridge different companies and institutions. Lewis has recruited a JEDI task force leader in each of ZGF's six locations to cultivate relationships with small, minority-owned firms across the country. "It has produced incredible results," Lewis says. Some relationships have evolved into project partnerships, where the smaller firms can bid on large-scale, culturally significant projects with ZGF—similar to Washington's experience with early collaboration initiatives but more organically derived.

One such project is an urban plan that reimagines the Minneapolis commercial corridor on which George Floyd was murdered. Led by Damaris Hollingsworth, AIA, NOMA, principal of local firm Design by Melo, the team will also consult with stakeholders in the neighborhood revitalization.

The collaboration enables a Black woman-owned practice to "touch a lightning rod of history and have a significant role in repurposing and redefining the future of those places," Lewis says.

In Chicago, Deon Lucas, AIA, NOMA, created a similar model with Beehyve, an architecture and engineering cooperative of solo practitioners and small businesses in the city's South Side neighborhood. As a group, Beehyve members can bid on larger-scale projects, but each member can still pursue its own projects.

Cooperative models, like those by ZGF and Beehyve, aren't new. In the early 1970s, Lewis says, a group of Black architects running small firms collaborated to bid on the AT&T Building in New York. Though Philip Johnson ultimately won the project and the group splintered thereafter, Lewis says the architects later reunited as NOMA members.

FINDING COMMUNITY

One unexpected benefit of our increasingly remote and socially conscious world is the emergence of grassroots organizations to meet the needs of practitioners of color and the communities they serve. The agile groups are able to tap into the ethos “Do what you can, with what you have, where you are.”

Hu calls this “bias toward action.” In large institutions, an individual or even a small group “couldn’t try to push action to happen,” they say. “It has to come down from the top.”

Along with NCARB’s Re-Think Tank, Hu is actively engaged in Design as Protest, a grassroots group of architects, designers, writers, and illustrators that is creating accountability in architecture education and practice and championing a radical vision for the design community at-large through virtual training, programs, and publications. Though NCARB and DAP are significantly different entities, Hu sees both as being crucial to moving the profession toward justice.

NOMA itself was started in response to what its founders perceived was lacking in AIA. According to Kimberly Dowdell, AIA, NOMAC, the 2019–2020 NOMA president and a Chicago-based marketing principal at HOK, the 12 founders bonded over their desire to support underrepresented architects. “Instead of trying to get AIA to contort to and serve the specific needs of Black architects at that time, they focused their energy on creating and using NOMA as a support system,” she says.

“IF DIVERSE TEAMS ARE
NOT FULLY ENGAGED AT THE
 TABLE, THEN WE ARE AT RISK
 OF REPEATING THE MISTAKES
 THAT DEVASTATED OUR
 COMMUNITIES DECADES AGO.”

—Jason Pugh, AIA, NOMA, president, NOMA, and senior associate, Gensler

Bias toward action has carried both DAP and NOMA forward, one at its infancy and the other at 50 years old. Their shared ethos has made for a long list of accomplishments, including the creation of welcoming and supportive communities for all designers. Working with DAP “feels like a different world,” Hu says. “You can be yourself. Everyone is accepted for who they are and what they bring to the space.”

Pugh and Dowdell both liken their involvement with NOMA as “being a part of a family.” Support and meaningful connections are critical to retention in any field—and they are frequently absent in design culture.

“Oftentimes, when you’re at a firm or an office, you may be the only person of color there,” Pugh says. “And you’re working on projects for clients or in communities or countries that you have no connection with. It’s easy to lose focus and forget about your passions and the things that pushed you toward architecture.”

Community is built on connection and longevity. And, done right, the communities architects build will not only sustain their careers but also outlive them and nurture generations to come.

DESTINATION: UNKNOWN

Architecture’s shift in demographics, particularly among emerging designers, addresses only the “D” of JEDI—the “low-hanging fruit,” as Lewis calls it. Achieving justice, equity, and inclusion will require not just number-crunching and one-off initiatives but collective and courageous commitment and action. “There’s an intense focus on channeling resources and development efforts in marginalized neighborhoods and Black and Brown communities,” Pugh says. But “if diverse teams and minority architects and planners are not fully engaged with a prominent seat at the table ... and having a hand in [design], then we are at serious risk of repeating the mistakes that devastated our communities decades ago.”

Playing the long game takes more than anticipating when the next generation of underserved and underrepresented youth are ready to enter the profession. It requires taking down barriers practitioners of color face today.



— Roberta Washington, **FAIA, NOMAC**, principal, Roberta Washington Architects

1975

+ The Pacific Design Center in Los Angeles, designed by César Pelli and **Norma Merrick Sklarek** for Gruen Associates, is completed.

●● John Chase

■5 Washington, D.C.

1976

● McAfee3 Architects founder **Charles McAfee, FAIA, NOMAC**

●● Wendall Campbell

■6 Kansas City, Kan.

1977

●● Kenneth Groggs

■7 Location unknown

1978

● Chicago-based Heard & Associates founder **Andrew Heard**

William J. Stanley III, FAIA, NOMAC, and **Ivenue Love-Stanley, FAIA, NOMA**, establish Stanley, Love-Stanley, an architectural practice in Atlanta. The firm will



grow into one of the largest African American-owned practices in the country, concentrating in architecture, planning, program management, and interior design throughout the U.S. and abroad.

■8 Washington, D.C.

1980

●● Leroy Campbell

Norma Merrick Sklarek, who in 1962 was the first Black woman to become a licensed architect, becomes the first Black woman elevated to the AIA College of Fellows.

+ **J. Max Bond Jr.** completes the Schomburg Center for Research in Black Culture, in New York.

■9 Washington, D.C.

1981

● **Leon Bridges**, the first registered African American architect in Maryland

● Robert Coles

■10 Detroit

1982

●● Harold Williams

●● John Chase

Curtis Moody, FAIA, NOMA, opens Moody and Associates in Columbus, Ohio.

■11 St. Louis

1983

● **Paul S. Devroux**, co-founder of Devroux & Purnell Architects Planners with **Marshall Purnell**

Roberta Washington, FAIA, NOMAC, opens Roberta Washington Architects in New York, which would become the largest continuously operated female-owned, African-American architecture firm in the country.

■12 Los Angeles

1985

● Marshall Purnell

■13 Location unknown



1986

■14 Chicago

1987

●● J. Max Bond Jr.

+ Hartman-Cox Architects and architect-of-record Smith, Sergeti, Tepper, McMahon & Harned complete 1001 Pennsylvania Ave. NW, in Washington. **Kathryn Tyler Prigmore, FAIA, NOMAC**, serves as project manager.

● (1987–1988) **Earl Kai Chann** is the organization's first non-Black president.

■15 Miami



1988

■16 Chicago

● (1989–1990) **Gerson-Overstreet Architects** co-founder **Harry Overstreet**

+ **William J. Bates, FAIA, NOMA**, completes the African Heritage Classroom at the University of Pittsburgh.

> See this project on page 32.

■17 San Francisco



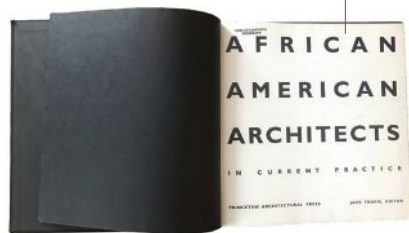
When Grandstaff-Rice presented the AIA Equity in Architecture Commission's priorities in 2017, some people expressed shock at the amount of work the recommendations required. They believed a solution could be had via K-12 education or more scholarships. The commission "knew that there was no one thing we could do that was going to fix it all, and that frustrated people," she says. "They were like, 'Are you kidding me?'"

Architecture does not need only more youth engagement, scholarships, research, individual storytelling, and changes to human resources. It needs all of it plus action toward addressing intersectional inequalities—like the racial wealth gap—and identity biases toward employee gender, citizenship status, and ability. This will require intercessory but also reparative work that acknowledges histories of oppression and corrects policies and structures.

The process will be earth-shattering, Lewis says: "For some, there's a fear in revealing what's unknown, because it'll threaten the foundation upon which their value structure and their pedagogy have been built." The air we breathe contains carbon and oxygen but also other elements that have enabled our survival, he continues. "One is the racist foundation of the United States, a country built on the concept of manifest destiny and of using human labor to create wealth that has extended and multiplied itself into where we stand today."

For many in this field, the air is not just toxic—it is suffocating. Let the ground shake. This is the only way to know what has long been in need of repair.

Anjolie Rao is a Chicago-based writer and journalist who focuses on the built environment, equitable design, architecture criticism, and public spaces.



1990

18 Detroit

1991

Bradford C. Grant, NOMA, and **Dennis Alan Mann** publish the first edition of the *Directory of African American Architects*, aiming to list every Black architect in the U.S.

(1991–1992)

William Stanley III

19 Atlanta

1992

• **Curtis Moody**

The Princeton Architectural Press publishes *African American Architects*, a collection of essays edited by **Jack Travis, FAIA, NOMAC**, that celebrates the projects and contributions of Black architects.

+ **J. Max Bond Jr.** completes the Birmingham Civil Rights Institute in Alabama.

20 NOMA's 20th national conference takes place in Washington. Students attend the conference with funding support from Howard University and Walt Disney Imagineering. NOMA Students is created.

1993

Big Fellows, Little Fellows program becomes the official NOMA Student Design Competition.

Rizzoli publishes *Paul R. Williams: A Legacy of Style*, a reflection by **Karen Hudson** on her grandfather's historic career as the first Black architect to join AIA (1923) and to be elected to AIA's College of Fellows (1957).

(1993–1994) **Robert Easter, FAIA, NOMAC**, is elected NOMA's 15th president. The co-founder of Kelso & Easter (now KEi Architects), in Richmond, Va., will become chair of Hampton University's department of architecture in 2008.

21 New York

1994

Robert Coles is elected as the first Black architect to serve as chancellor of the AIA College of Fellows.

22 Chicago

1995

• **Michael A. Rogers, AIA, NOMAC**, becomes NOMA's youngest president.

• **William Stanley III**

23 Los Angeles

1996

• NOMA elects its first female president, **Cheryl McAfee, FAIA, NOMAC**.

+ Stanley, Love-Stanley completes the Olympic Aquatic Center, in Atlanta, for the centennial Olympic Games.

> See this project on page 34.

24 Richmond, Va.

1997

• **Roberta Washington**

+ Sims-Varner and Associates, one of Michigan's oldest Black-owned architecture firms, completes the Charles H. Wright Museum of African American History, in Detroit.

25 Miami

1998

• **Ronald E. Garner, NOMAC**, co-owner of Chicago-based Group Design Associates

• **Leon Bridges**

26 Washington, D.C.

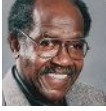
1999

• **William E. Davis Jr., AIA, NOMAC**. Davis was previously president of the New York Coalition of Black Architects, New York's NOMA chapter.

• **Charles McAfee**

27 Charlotte, N.C.





2000

■ 28 New Orleans

2001

● Paul L. Taylor Jr.,
AIA, NOMAC

■ 29 Las Vegas

2002

● Kenneth Martin,
AIA, NOMAC

■ 30 NOMA's 30th national conference takes place in Fort Lauderdale, Fla. NOMA's Project Pipeline comes to life when then-president Paul Taylor asks Drake Dillard, AIA, NOMAC, and David Kirk, AIA, NOMA, to plan a camp that would introduce students of color—and Black students in particular—to architecture in order to increase the number of Black architects.

✦ Robert P. Madison, FAIA, NOMA, the first registered Black architect in Ohio

2003

● Drake Dillard

■ 31 Chicago

2004

● (2004–2006) James Washington Jr., FAIA, NOMAC, co-founder of Hewitt & Washington in New Orleans

■ 32 New York

2005

✦ Stanford Britt, FAIA, NOMAC. The designer of one of Maryland's largest urban revitalization projects, Britt would become president of Sulton Campbell Britt & Associates, in Baltimore, the only remaining firm today with ties to an original NOMA founder.

■ 33 Birmingham, Ala.

2006

The first Project Pipeline camp is held in Cincinnati by the Southwest Ohio NOMA chapter. Today, dozens of Project Pipeline camps have taken place in more than 20 cities.

■ 34 San Francisco



2007

● (2007–2008) Carlton Smith, FAIA, NOMAC, principal of MWA Architects

✦ NOMA

✦ Arris Architects, then led by Rodney Leon, AIA, NOMA, and Nicole Hollant-Denis, AIA, NOMA, completes the African Burial Ground National Monument Memorial in New York.

■ 35 Orlando, Fla.

2008

Marshall Purnell becomes the first Black president of the American Institute of Architects.

✦ Norma Merrick Sklarek

■ 36 Washington, D.C. Kimberly Dowdell, AIA, NOMAC, initiates the NOMA Annual National Service Project.

2009

● (2009–2010)

R. Steven Lewis, FAIA, NOMAC

NOMA and AIA adopt the NOMA/AIA Memorandum of Understanding and the AIA Diversity Action Plan (active from 2009 to 2013). The organizations aim to expand the racial, ethnic, gender, and perspective diversity of the design professions to mirror the society that architects serve and to nurture emerging professionals.

✦ Allison Grace Williams, FAIA, NOMA, founder of AGWms_studio, completes the August Wilson Center for African American Culture, in Pittsburgh.

✦ J. Max Bond Jr., a partner at Davis Brody Bond, teams with the Freelon Group (led by architect Phil Freelon), Adjaye Associates (led by David Adjaye, Hon. FAIA), and SmithGroup to win the commission for the National Museum of African American History and Culture, in Washington, D.C.

■ 37 St. Louis

2010

■ 38 Boston

2011

● (2011–2012) Sanford Garner, AIA, NOMAC

✦ Sharon Egretta Sutton, FAIA, the 12th registered African American woman architect in the U.S.

■ 39 Atlanta

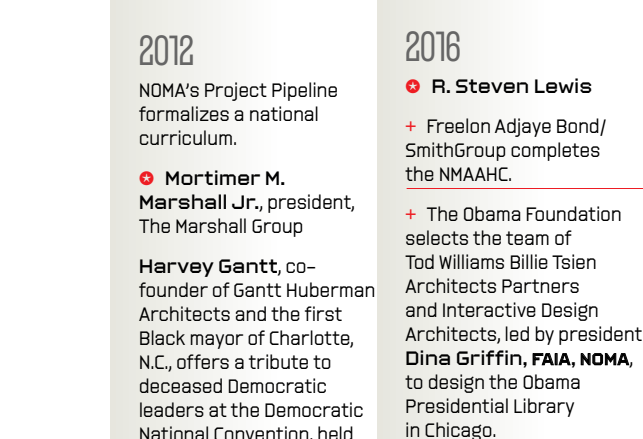


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2012

NOMA's Project Pipeline formalizes a national curriculum.

✦ **Mortimer M. Marshall Jr.**, president, The Marshall Group

Harvey Gantt, co-founder of Gantt Huberman Architects and the first Black mayor of Charlotte, N.C., offers a tribute to deceased Democratic leaders at the Democratic National Convention, held in Charlotte.

▣ 40 Detroit



2013

● (2013–2014) **Kathy Denise Dixon, FAIA, NOMAC**, founder of K. Dixon Architecture, in Largo, Md.

▣ 41 Indianapolis

2014

✦ **Ivenue Love-Stanley**, the first female Black architect in the Southeast

+ **Davis Brody Bond, Shohetta, Peter Walker, and Michael Arad** complete the National Sept. 11 Memorial Museum in New York.

The project's numerous accolades include an AIA Interior Architecture Award and an AIA New York Architecture Honor Award, both in 2015.

▣ 42 Philadelphia

2015

● (2015–2016) **Kevin Holland, FAIA, NOMAC**, managing principal, K. Michael Architects

▣ 43 New Orleans

2016

✦ **R. Steven Lewis**

+ **Freelon Adjaye Bond/SmithGroup** completes the NMAAHC.

+ The Obama Foundation selects the team of **Tod Williams Billie Tsien Architects Partners and Interactive Design Architects**, led by president **Dina Griffin, FAIA, NOMA**, to design the Obama Presidential Library in Chicago.

▣ 44 Los Angeles



2017

● (2017–2018) **Bryan Hudson, AIA, NOMAC**, principal of Chicago-based SOMA Design Consultants

AIA posthumously presents the AIA Gold Medal to **Paul Revere Williams**, the first African American architect to receive the award.



West 167th Street in New York is renamed **J. Max Bond Jr. Way**.



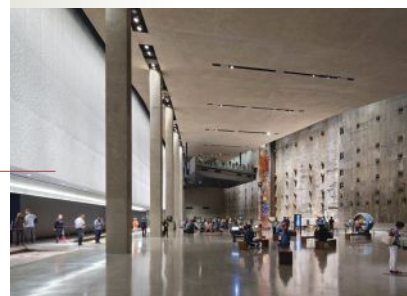
▣ 45 Houston

2018

Pascale Sablan, FAIA, NOMA, founder and executive director of Beyond the Built Environment, wins an AIA Young Architects Award. In 2020, she will be elected to become NOMA's 2023–2024 president.



▣ 46 Chicago





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2019

● (2019–2020) **Kimberly Dowdell**, marketing principal, HOK

William Bates becomes the second Black president of the American Institute of Architects.

+ Moody Nolan completes Phase II of the Cuyahoga Community College Westshore Campus, in Westlake, Ohio.

> See this project on page 36.

■ 47 New York

2020

NOMA releases its Public Statement Regarding Racial Injustice.

● **Gabrielle Bullock, FAIA, NOMAC**, principal and director of global diversity, Perkins&Will

The number of licensed Black female architects reaches 500.

Kimberly Dowdell wins an AIA Young Architects Award.

+ The Sycamore Hill Gateway Plaza in Greenville, N.C., led by Perkins&Will principal and managing director **Zena Howard, FAIA, NOMA**, is completed.

> See this project on page 38.

■ 48 Due to the COVID-19 pandemic, NOMA's 48th national conference takes place virtually and opens with record-breaking attendance.

2021

● (2021–2022) **Jason Pugh, AIA, NOMA**, a Chicago-based senior associate architect and urban designer at Gensler

● **Pascale Sablan**

● **Jeh Johnson**, the last surviving founder of NOMA, passes away.

■ 49 NOMA's 49th national conference is scheduled to take place both in Detroit and online, virtually, to celebrate the organization's 50th anniversary.



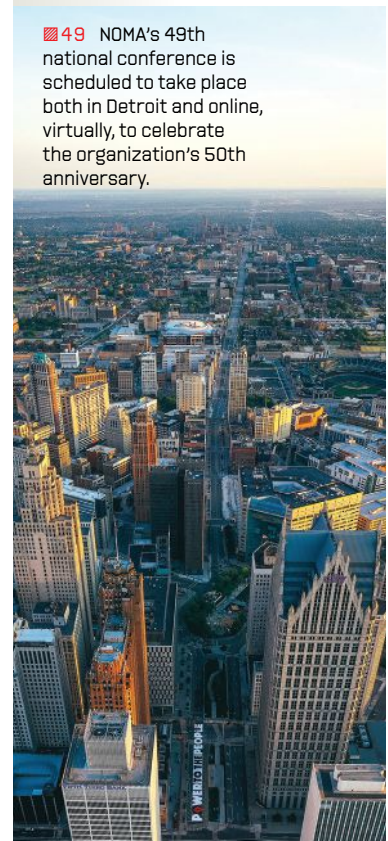
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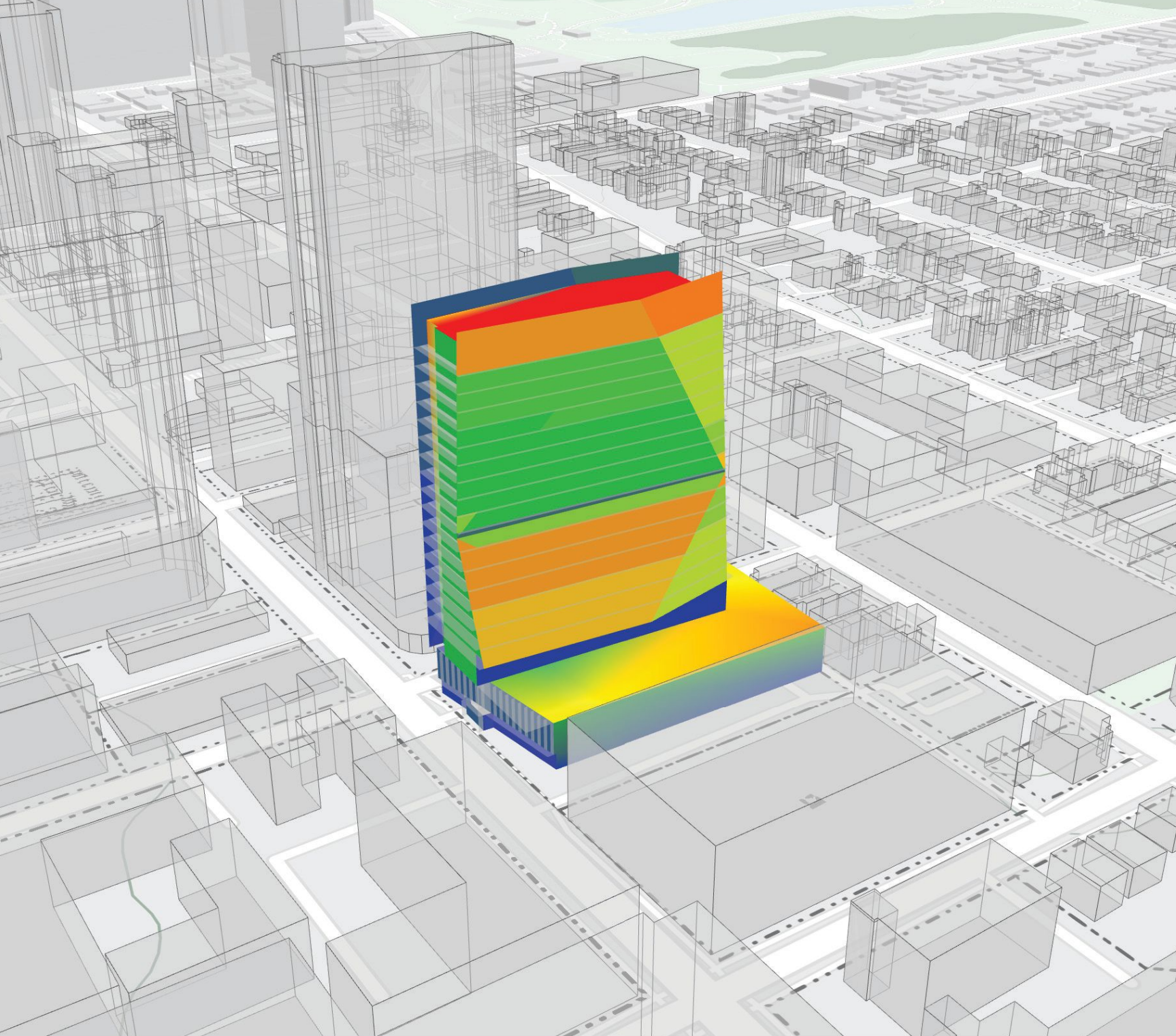


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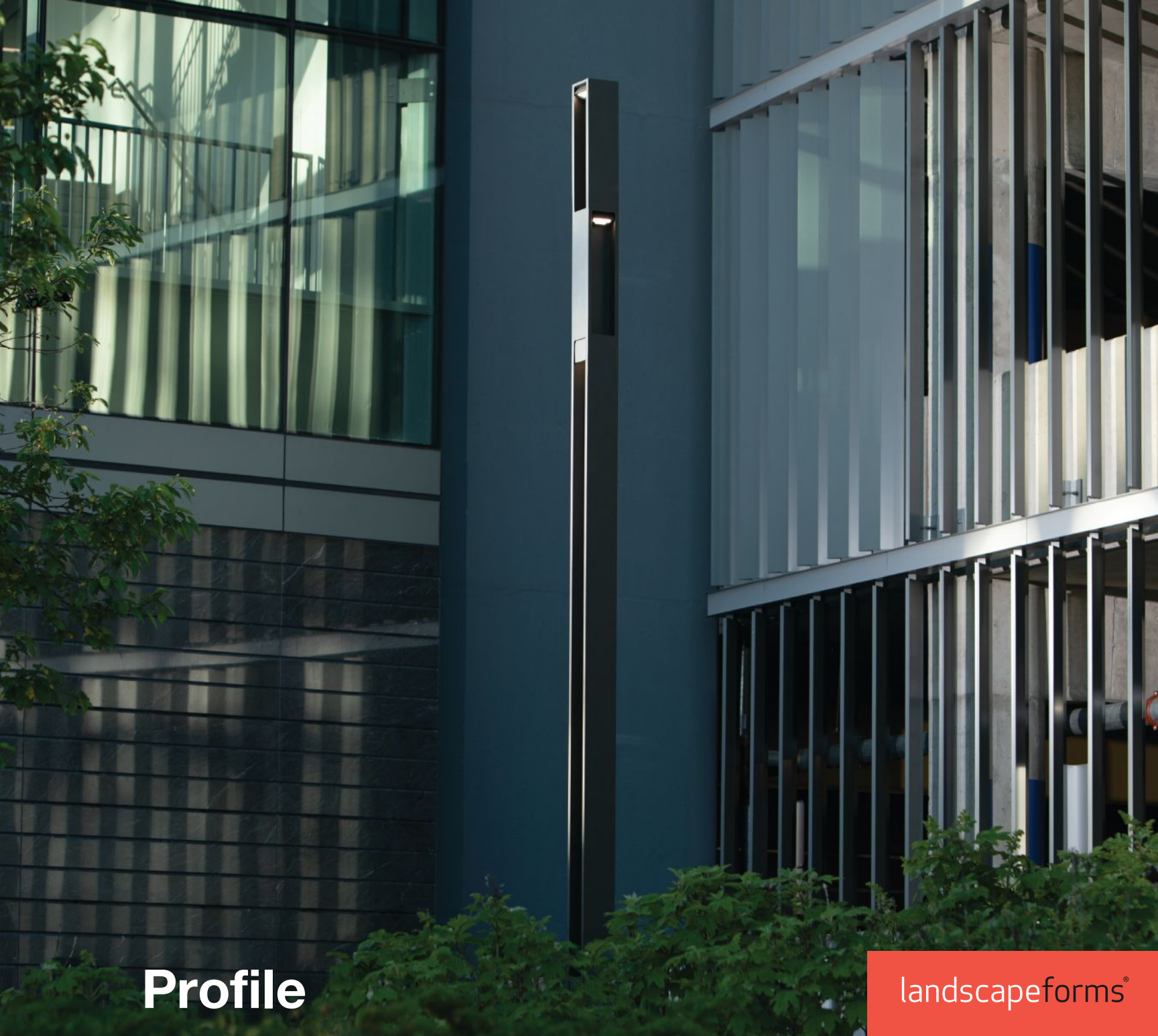
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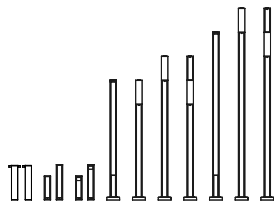


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DESIGN. CULTURE. CRAFT.

1989 African Heritage Classroom University of Pittsburgh, Pittsburgh

WILLIAM BATES

TEXT BY PAUL WELLINGTON



Located on the first and third floors of the 42-story Cathedral of Learning at the University of Pittsburgh, the Nationality Rooms present the culture and architecture of 31 nationalities as they existed prior to 1787, the year of the institution's founding. Interest in creating the African Heritage Classroom began around the 1930s but did not gain momentum until the 1972 formation of a committee comprising leaders from the city's Black community.

Due to space constraints, and in order to not favor a single country, the 680-square-foot room had to represent the entire African continent. The task of incorporating multiple African cultures into one classroom was awarded to local architect William Bates, FAIA, NOMA, who would become AIA's second Black president in 2019. For him, the project was an opportunity to connect a space to the past and not "replicate Eurocentric design."

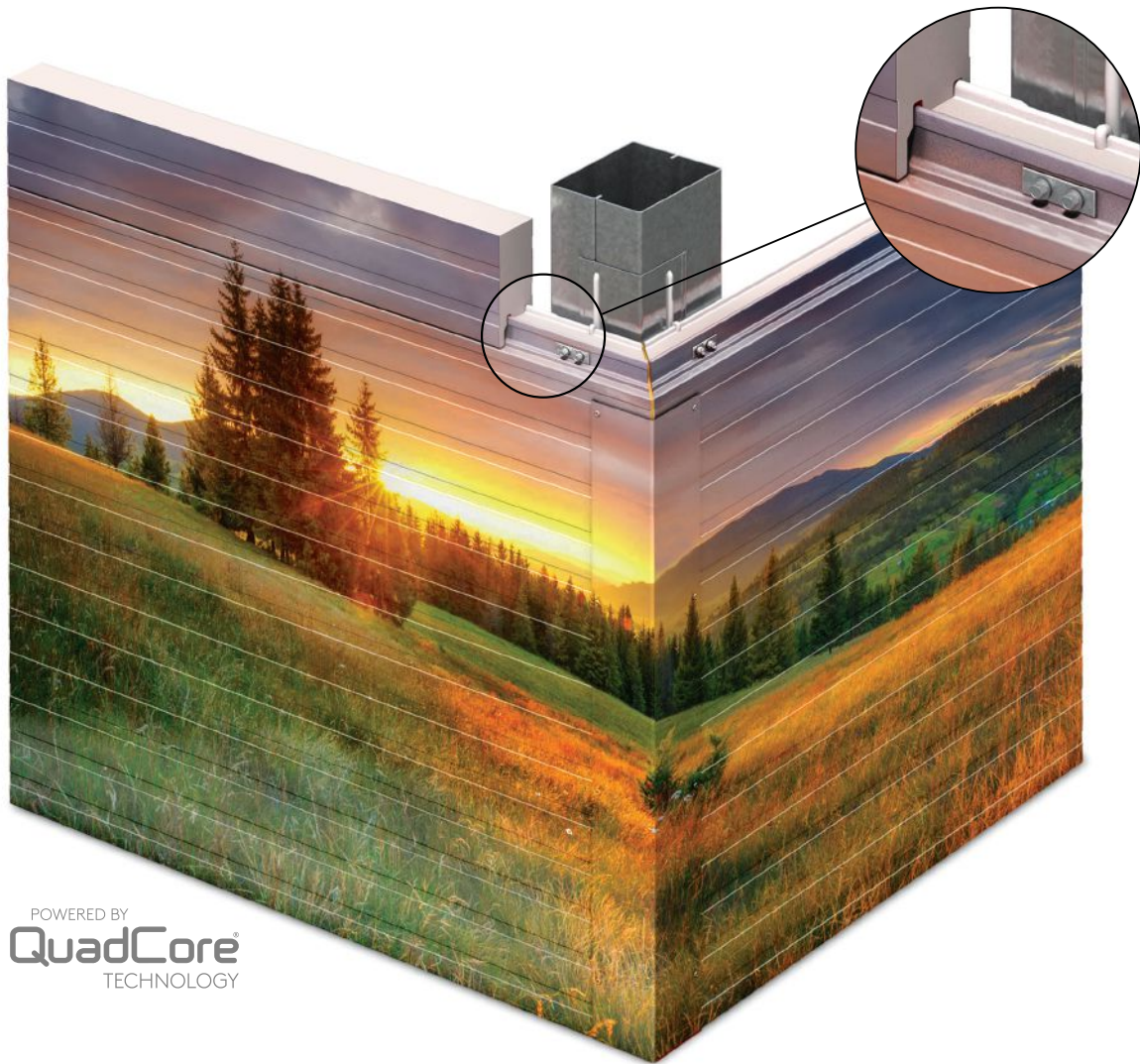
Along with photographs and documents, Bates called on the expertise of Laurence Glasco, a Pitt professor of African American history, who chose an 18th-century Asante Temple courtyard as the classroom's architectural focal point. While the Asante are located in Ghana, the courtyard style was a common archetype among many African tribes.

The room beautifully acknowledges several ancient African kingdoms; Bates recalls wanting to "draw a thread to the architecture of Africa." Nigerian sculptor Lamidi Olonade Fakeye crafted Yoruba-style door carvings, depicting cultures of Egypt, Nubia, Ethiopia, Benin, Kongo/Angola, Kuba, Mali, and Zimbabwe. Nods to African cultures also occur in friezes, an artifact display case, stairs, student benches, stools, and openwork screens.

Today, the classroom continues its mission of cultural education and helps fund \$5,000 scholarships for undergraduate students interested in studying abroad or working in Africa.

Paul Wellington is the Milwaukee-based author of Black Built: History and Architecture in the Black Community (2019) and co-founder of MKE Black.

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1996 Olympic Aquatic Center (McAuley Aquatic Center) Georgia Institute of Technology, Atlanta STANLEY, LOVE-STANLEY

TEXT BY PAUL WELLINGTON



During the planning process for the centennial Olympic Games, Georgia Tech strongly advocated for the Atlanta Committee for the Olympic Games to award construction and design contracts to people of color, propelling the local firm of Stanley, Love-Stanley into position to secure the Aquatic Center. The 14,900-seat outdoor stadium incorporated elements—including variable speed recirculation, a movable floor, wide gutters, and two bulkheads—to give swimmers a competitive edge in the pool, which remains one of the fastest in the world.

A sweeping roof supported by sloping trusses spanned the width of the Aquatic Center, creating

uninterrupted views for spectators and earning design praise.

For firm co-founders Ivenue Love-Stanley, FAIA, NOMA, and William Stanley III, FAIA, NOMAC, the project brought their careers full circle. In 1972, William Stanley was Georgia Tech's first African American architecture graduate. Five years later, Love-Stanley was the institute's first female African American architecture graduate. Their chance meeting on campus led to marriage and then the founding of Stanley, Love-Stanley in 1983, one of a handful of Black-owned architecture firms in the Southeast.

While the firm had prior experience designing natatoriums, the Aquatic Center presented an opportunity to design a high-profile, iconic structure and leave a physical mark on the co-founders' alma mater. "Seldomly, a firm like ours is involved to design a center of this magnitude," Stanley says. The firm's Olympic Games projects, which also included the Eighth Street Apartments for athletes, became a catalyst for more higher education commissions across the Southeast.

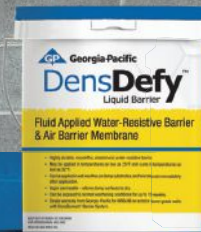
Following the Olympic Games, the Aquatic Center was remodeled and expanded to include a recreation facility, with additional space created by suspending a floor over the pool. By 2004, the center was fully enclosed and its seating capacity reduced to 1,950. It was also connected to Georgia Tech's Student Athletic Center. In 2016, the facility was renamed the Coach Herb McAuley Aquatic Center.

TOP: COURTESY STANLEY, LOVE-STANLEY; BOTTOM: COURTESY GEORGIA TECH



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2019 Cuyahoga Community College Westshore Campus
Westlake, Ohio
MOODY NOLAN

TEXT BY PAUL WELLINGTON



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In 2017, Tri-C selected Moody Nolan to complete Phase II of its Westshore Campus master plan, which would add the Liberal Arts and Technology Building, which would connect to the HCS Building and consolidate classes within the complex. Through meetings with project stakeholders, Moody Nolan refined “how the campus would grow, leveraging the land and nearby freeway,” says firm principal Jon Guldenzopf, AIA, who served as the project’s lead designer.

The new, high-performance 91,200-square-foot addition creates a cohesive environment for its students and offers more than 30 classrooms, laboratories, a dance studio, faculty offices, and dining. Its curved appearance stems and diverges from the existing HCS Building and forms boundaries that frame the freeway and green space.

A promenade on the building’s north side defined by a recessed covered pathway supplies shaded space for studying and dining with views of nature. Continuous bands of glazing provide abundant daylight inside, minimizing the need for electric light. Interior wall textures, motifs, and colors also nod to nature.

Moody Nolan also renovated 17,000 square feet of the original 65,000-square-foot HCS Building, including offices, a library, labs, and tutoring spaces. The firm then created a seamless transition between the existing and new environments.

The project’s sustainability features include LED fixtures, efficient heating, cooling, and plumbing systems, on-site stormwater management, the use of local and recycled materials, and a “green cleaning” policy. The LAT Building earned LEED Silver certification, marking the seventh building on Tri-C’s campuses to achieve recognition from the U.S. Green Building Council’s LEED rating system.

As the largest postsecondary institution in greater Cleveland, Cuyahoga Community College enrolls approximately 60,000 students across four main campuses: Metropolitan, Eastern, Western, and Westshore. Known locally as Tri-C, the college recently refocused its efforts to provide a comprehensive educational experience to its students, 37% of whom identify as people of color. It also recognized in its latest sustainability plan “that its commitment to education and community includes a sense of responsibility to [the] environment.”

Located in the city’s outskirts, the Westshore Campus hosts Tri-C’s Health Careers and Sciences Building on its extensive green space, which has a large freeway presence. Within a few years of its 2011 completion, the campus had experienced significant growth and needed to enter the second phase of its three-phase master plan.

Columbus, Ohio–headquartered Moody Nolan not only focuses on achieving “diversity by design” but also exemplifies it through its staff members—42% are women and 31% people of color—and its ongoing support of underserved and diverse communities and institutions. By understanding Tri-C’s diverse needs and culture, the country’s largest African American–led design firm—also this year’s AIA Architecture Firm Award winner—was ideally suited for the institution’s project.



2020 Sycamore Hill Gateway Plaza
Greenville, N.C.
PERKINS&WILL

TEXT BY PAUL WELLINGTON



> To see more images and project credits for the Sycamore Hill Gateway Plaza by Perkins&Will, visit bit.ly/ARpgSHGP.

Until the mid-20th century, downtown Greenville, N.C., was home to a thriving, close-knit African American scene. Houses, schools, businesses, and churches lined the streets, creating a haven for its residents. Prominently located at its heart was Sycamore Hill Baptist Church, a religious and architectural landmark with a striking appearance.

Then the city's planning principles "destroyed, disenfranchised, and created inequity" for residents of color, says Perkins&Will principal Zena Howard, FAIA, NOMA. In the 1960s, the city adopted urban renewal tactics for a planned town common that would dismantle its thriving African American community. Homes and businesses were razed, structures were set ablaze, and the Sycamore Hill Baptist Church, which had been in service from 1865 to 1968, burned in a suspected arson. The church and its parishioners relocated to the town's outskirts, but many were unable to recover from their displacement.

Nearly 50 years later, during an update to the town common master plan in 2016, Greenville residents advocated for the commemoration of the former African American neighborhood. Howard says she realized that "partnering with the community to mine for stories" would help achieve a process of healing that would be essential to the project's success.

Through intimate conversations with Black leaders and former central city residents, Perkins&Will discovered a strong desire and need for a place of preservation. Many former residents remained deeply connected to the neighborhood and expressed a wish to have their stories permanently integrated there. Community, spirituality, and history became the guiding design principles of a memorial.

Today, residents and tourists can find the site of the former Baptist church by visiting the Sycamore Hill Gateway Plaza, completed in August

2020. Soaring concrete walls and stained-glass panels hark back to the original church walls and bell tower, accurately preserving the structure's footprint. Text and photographs on display throughout the space take visitors back in time. Park benches recall the former church pews, creating a contemplative and spiritual space. In conjunction with the town common's greenery, the plaza invites the community to use the past to move forward. For Howard, who served as the project's engagement lead, the memorial is "a lever for profound change."

Public memorial spaces present an opportunity to heal, empathize, and support affected communities. As architects face the challenge of addressing social ills, a participatory process with impacted residents provides for better design and more successful spaces. Though it took 50 years for Greenville to honor its historic African American community, many of its former residents have expressed satisfaction with the design and realization of the Sycamore Hill Gateway Plaza.



Destination Crenshaw Los Angeles

PERKINS&WILL

TEXT BY UTKARSHA LAHARIA



Of the community, by the community, and for the community—that's what defines Destination Crenshaw, a project that will trace a portion of Los Angeles' Crenshaw Boulevard. The project began in 2014, when the city broke ground on an 8.5-mile-long metro rail extension. Parts of the rail line running through LA's Crenshaw District were at grade, threatening access to—and ultimately the viability of—local businesses.

The community, along with design firm Perkins&Will, decided to turn the at-grade condition into a celebration of African American contributions to

world culture. Set to complete in 2022, the 1.3-mile-long stretch of art and culture will include 10 pocket parks, hundreds of newly planted trees, 100-plus commissioned works of art, and an array of permanent and rotating art installations. Perkins&Will also plans to leverage existing neighborhood assets to avoid cultural erasure.

"Our work on Destination Crenshaw has always centered on the theme 'Grow Where You're Planted,' which is inspired by African giant star grass," says LA-based managing principal Gabrielle Bullock, FAIA, NOMAC. "Known to thrive in inhospitable

environments, the grass reminds us of the history and resiliency of Black LA, whose deep community roots have strengthened over the decades despite facing years of root shock."

"Destination Crenshaw has been entirely driven by the community and honors not just the neighborhood as a creative hub, but also Black LA's impact on popular culture and social change," adds Durham, N.C.-based principal and art curator Zena Howard, FAIA, NOMA. "Our role as architects is to translate—through design—the very real, very significant voices and energy of Black LA."

Jefferson Union High School District Office and Adult School Daly City, Calif.

HKIT ARCHITECTS

TEXT BY UTKARSHA LAHARIA



HKIT Architects was charged with updating and adding a new district office and adult school to the Jefferson Union High School District in Daly City, Calif. However, the Oakland, Calif.-based firm is setting its sights higher. It plans to excel environmentally by designing the forthcoming two-story, 30,000-square-foot office building and 39,000-square-foot classroom building to be net-zero energy.

The district wanted “a facility that is timeless,” says HKIT principal architect Jeff Evans, AIA, NOMA. The existing facility was a “1970s-era school with no windows, limited daylighting, an open

plan, infill walls with rooms, and topper rooms.” Using efficient daylighting and passive design techniques, HKIT intends to achieve high indoor air quality and minimize outside air infiltration for the building renovation and expansion.

Evans says that a tight building envelope will help ensure a low energy use intensity while roof-mounted photovoltaic panels will make the project operationally carbon neutral. “Use of photovoltaics is a consistent theme,” adds HKIT director of design Rod Henmi, FAIA, NOMA. “The two buildings—the district office and

adult education—have their roofs slope in the same direction and at the same slope in order to capitalize on the daylighting and the photovoltaic panels. South-facing roofs work extremely well for photovoltaics.”

Set to begin construction next summer, the JUHSD renovation and expansion also introduces co-use spaces to the site. A publicly accessible portion of the property will include green space, a children’s playground, a basketball court, a walking path with seating areas, community gathering places, and electric vehicle-charging stations.

Utkarsha Laharia is a Philadelphia-based arts journalist who currently works at BKP Architects.

Core City
Detroit
EC3

TEXT BY MADELEINE D'ANGELO



In 2017, the Los Angeles-based firm EC3 completed True North in Detroit's Core City neighborhood. Following the project's success, local developers Prince Concepts and Ferlito Group tasked EC3 with designing a market-rate multifamily rental scheme a block north. Here, 15 duplexes totaling 21,330 square feet will occupy a 1.1-acre site across multiple lots while preserving existing trees.

EC3 looked to China's residential streets (*hutong*) for inspiration, admiring how individuals forge relationships across narrow alleys. "If you develop them and give them a human scale, it becomes a community spine that can tie the whole thing

together," says founder and creative director Edwin Chan, NOMA.

Hoping to nurture a similar form of community within a "green urbanism" framework that complements the landscape, EC3 organized the 15 one-, two-, and three-story free-standing structures along an open-air central spine. Each of the 30 residential units has ample access to daylight and the outdoors. "The central corridor becomes an outdoor street that can create a landscape to tie the units together into a coherent community," Chan says. Instead of formal courtyards, EC3 arranged structures around existing trees and vegetation, which will become "a green

sculpture for these galleries." With an eye to cost, the design uses off-the-shelf materials—"no custom doors or windows," Chan says. White stucco will clad the buildings while colorful, painted walls will highlight the outdoor galleries. "The colors are introduced to complete the picture," he says. "You may have a blue that would counterbalance the green of a tree."

With permitting underway and construction estimated to begin this year, Chan hopes that the project, when completed, will blend into Detroit's urban landscape: "We want it to feel like we haven't disturbed anything on the lots, and the units just landed there in a casual way."



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Asamoah's Eden Ghana

ROODZA PIERRELUS

TEXT BY UTKARSHA LAHARIA



When Tuskegee University architecture student Roodza Pierrelus, AIAS, NOMAS, designed Asamoah's Eden as part of her third-year design studio, led by professor Amma Asamoah, she drew inspiration from two Adinkra (Ghanaian) symbols: *mate masie*, which translates to "what I hear I keep," and *nea onnim no sua a, ohu*, or "he who does not know, can know from learning." The resulting multifamily proposal offers a solution for cultural preservation and rediscovery.

Asamoah had been named the current steward of a plot of land in Ghana by her father on his deathbed in February 2018. She incorporated that

site into her studio theme, tasking her students to explore the land's potential using pictures that she had taken during her visit at the end of 2019. Her design brief asked students to plan a three-story condominium for U.S. residents of Ghanaian heritage who are returning to the country to live and experience its culture again.

Pierrelus, now a fifth-year student minoring in historic preservation at the university, located in Tuskegee, Ala., believes that cultural preservation—a component of historic preservation—is often neglected. "My goal was to take some significant aspects of the Ghanaian culture and add them to my

project," she says. For example, she drew inspiration from the Kente cloth, which is handmade in Ghana using a wooden machine, also made by hand, to create detailed patterns and colors on her building design. "I wanted to find a way to represent [the culture], while also making it architectural and practical," she says.

Pierrelus herself grew up in Haiti and connects the artistry of building by hand through her experience of learning to sew from her grandmother. Though Pierrelus completed her studio project in the spring 2020, the real-site project in Ghana is awaiting grants to move forward.



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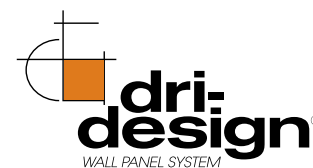
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Aloft/Element Hotel – Austin, TX
Architect: HKS – Dallas, TX

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HOW HBCUS BENEFIT ARCHITECTS AND ARCHITECTURE

TEXT BY KATHERINE WILLIAMS, AIA, NOMA

Historically Black colleges and universities have always been a part of my life. Several family members are alums, and I frequently attended local campus activities, including middle school summer camps. There, I had my first glimpse of being in a classroom led by Black teachers and surrounded by other Black students all vying to be the smartest.

The number of HBCUs, which includes the category of schools that were founded after 1965—when the Higher Education Act was signed into law—and called predominantly Black institutions, peaked at 121. According to the Center for the Study of HBCUs at Virginia Union University, HBCUs enroll approximately 3% of all students in U.S. postsecondary institutions (300,000 students) and graduate 25% of all African American students.

Of the 101 HBCUs that remain today, seven offer National Architectural Accrediting Board–accredited degree programs: Florida A&M University in Tallahassee, Fla.; Hampton University in Hampton, Va.; Howard University in Washington; Morgan State University in Baltimore; Prairie View A&M University in Prairie View, Texas; Tuskegee University in Tuskegee, Ala.; and the University of the District of Columbia. In his 2020 article “Where Are My People? Black In Architecture,” Kendall Nicholson, ASSOC. AIA, NOMA, director of research and information at the Association of Collegiate Schools of Architecture, noted these seven HBCUs represent 5% of the 139

NAAB-accredited schools, but enroll one of every three Black architecture students. Each of the remaining 132 schools graduates two Black students, on average, annually.

WHY STUDENTS SELECT HBCUS

“Long before the murder of George Floyd, HBCUs were committed to equity and inclusion. While companies, educational institutions, and others created JEDI committees and task forces, justice, equity, diversity, and inclusion were at the core” of these institutions, says Andrew Chin, NOMA, an associate dean and associate professor at FAMU.

Key reasons students choose to attend HBCUs are accessibility, affinity, and affirmation. When schools were segregated, HBCUs provided an accessible path to education. For architects now nearing or at retirement age, predominantly white institutions were just opening to nonwhite

WE The 7: A Conversation with the African Diaspora, an exhibition curated by Morgan State University School of Architecture and Planning assistant professor Coleman A. Jordan, on display at the 2021 Venice Architecture Biennale's ArchiAfrika Pavilion



students as they were finishing high school. Today, HBCUs remain accessible to a wide swath of students.

Students also choose to attend HBCUs to reduce their likelihood of experiencing on-campus animosity and racism and of being labeled as "other." As a Howard University alum, I can attest that having professors who looked like me was important and helped me better understand the history of which I was a part.

Parents also influence their offspring's college choice. Angela King, AIA, NOMA, principal architect for the city of Cincinnati, encouraged her son to enroll at Howard to "immerse himself in a welcoming culture that affirms and elevates his identity as a young Black man." Antoine Medley, in Raleigh, N.C., whose daughter studies architecture at Tuskegee, believes the program will "help her build a network of support and encouragement."

Many architects in practice reflect on their studio years as being toxic, but those who matriculated at HBCUs often regale with experiences of belonging, both in studio and on campus. HBCUs also provide affirmation. Architecture education has centered traditionally on Eurocentric design and identities. Many HBCU alumni recount their education going beyond these ideas. Washington-based E3 Connections founder R. Denise Everson, ASSOC. AIA, chose Hampton University "knowing that I was wanted [there] and that I could positively contribute to its legacy." When students know that their culture is valued and their presence and ideas matter, they thrive.

PROFESSIONAL CONNECTIONS

Architecture, like many professions, suffers from nepotism in the recruiting and hiring process. Last year, NOMA started its Foundation Fellowship program, which places HBCU students at firms that are members of the AIA Large Firm Roundtable or NOMA's President's Circle. The companies' leadership is oftentimes unfamiliar

with HBCUs and their graduates. In turn, the Foundation Fellows can offer firms insight on topics such as the history of urban design's relationship to social justice.

Continuing "the legacy of stewardship [is] deeply important," says Howard alum Marcell Snodgrass, ASSOC. AIA, NOMA, a San Francisco-based designer at David Baker Architects. Giving students firm experience also prepares them for licensure and leadership. Of the 2,432 people listed in the Directory of African American Architects at the time of publication, 27% graduated from an HBCU.

OBSTACLES TO OUTLAST

In 2019, 5% of the 5,985 graduates with NAAB-accredited degrees identified as Black, Nicholson says—a rate that remains stubbornly low. Numerous challenges continue to plague the surviving seven programs at HBCUs. In his book *The Crisis of the African-American Architect* (iUniverse, 2002), Washington-based architect and former university administrator Melvin Mitchell, FAIA, NOMA, writes that many programs face "issues of high relative cost, low (or no) funded research grants, sparse evidence of (recent or current) professional achievement, dwindling enrollment, low licensure rates, [and] few formations of new viable practices" Architecture programs are expensive for any institution to maintain, and HBCUs typically have significantly lower endowments than peer institutions.

To avoid the fate of Southern University's B.Arch. program, which was terminated in 2013, the remaining seven degree programs must be valued. More people, alumni groups, firms, and institutions need to donate funds, as well as time and talent in the form of internship opportunities, guest lectures, and studio reviews. For 42 years, Tuskegee's architecture alumni have organized to support its program financially and professionally. Since 2010, architecture staff and students

Number of Black architects by state and U.S. territory as listed in the Directory of African American Architects (as of September 2021)

AL	35
AK	2
AZ	13
AR	8
CA	249
CO	18
CT	20
DC	183
DE	3
FL	125
GA	212
HI	1
ID	0
IL	126
IN	22
IA	2
KS	11
KY	7
LA	28
ME	0
MD	157
MA	38
MI	77
MN	22
MS	11
MO	45
MT	1
NE	4
NV	9
NH	0
NJ	82
NM	4
NY	313
NC	72
ND	2
OH	66
OK	6
OR	4
PA	51
PR	1
RI	2
SC	21
SD	1
TN	29
TX	154
UT	2
VT	0
VI	19
VA	102
WA	28
WV	1
WI	9
WY	0

have assembled annually at the HBCU Architecture Forum to commiserate and share ideas and research.

BEYOND NECESSITY

Despite the challenges HBCUs face, their future can be secured. "We need to operate in the mindset of plenty," Everson says. "There are plenty of funds to support all HBCUs. We need to leverage our collective capital, power, and influence to have a say in the operations of schools of architecture." Importantly, the service these institutions provide—cultivating and championing a range of voices in the design of our environments—is invaluable. "The profession is getting younger and more diverse," says Thomas Allen, AIA, NOMA, principal at Ta² Design and an FAMU alum. "HBCUs are a key part of the profession's longevity and sustainability."

Katherine Williams, AIA, NOMA, is a senior project manager for construction at a university in Washington, D.C. She was editor of NOMA Magazine from 2009 to 2014.



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GIVING TO THE PROFESSION CAN ALSO BE PERSONALLY FULFILLING.

TEXT BY ASHLEIGH WALTON, AIA, NOMA

Varying in shape, size, reach, and impact, industry organizations offer a vital path for becoming engaged at a local to national level. AIA, for example, “is a group of professionals who are banding together to be of service to society but also to protect the profession, our craft, and its interests,” says Kevin Holland, FAIA, NOMAC, a 16-year member of the national association who was recently elected to its board of directors.

The size and stature of national organizations initially might seem overwhelming to those interested in serving. A nudge from a peer can help. “I served because someone asked me,” says Holland, who is also the managing principal of Los Angeles-based K. Michael Architects and a past president of the National Organization of Minority Architects.

Holland’s sentiment is echoed by Angella Dariah, NOMA, vice president of NOMAPGH, the Pittsburgh chapter of NOMA. On her first day in the local office of AE Works, another

“Mentoring students is the perfect training ground for future leadership.”

—Diana Eidenshink, ACE Mentor Program of America president

NOMAPGH member drew her into membership. Dariah, who had served as the student representative for the NOMA Students chapter at Hampton University, sees the organization

as a place to build camaraderie, friendship, and confidence. “As young professionals, we don’t always get to see [our designs] get built and change the world,” she says. By volunteering for NOMA’s Project Pipeline, which teaches middle and high school students about architecture through camps and workshops, she feels “a sense of fulfillment.”

Opportunities to mentor can spark inspiration at any career stage. “Even when a student thinks they know what an architect does, they usually don’t,” says Diana Eidenshink, president of ACE Mentor Program of America, a free, after-school initiative designed to attract underserved high school students to careers in architecture, construction, and engineering through mentorships and hands-on leadership training. “Most of our mentors are emerging professionals,” she says. “Skills to be a good leader are the same skills needed to be a good mentor. Mentoring students is the perfect training ground for future leadership.”

Local organizations also allow professionals to target their expertise toward advocacy and apply their skills in new ways. “Working with different communities allows me to shine a spotlight on what’s important to them and to help protect, preserve, and elevate the narrative of communities that aren’t able to do it themselves,” says Preservation Pittsburgh president Matthew Falcone.

Matt Galluzzo, president and chief executive officer of Riverlife,

a community organization that is reimagining Pittsburgh’s waterfronts, became interested in addressing systemic challenges that neighborhood-level organizations face when trying to effect changes regarding land use and infrastructure. “We have architects as part of the design review committee and board of directors,” he says. “Anytime you’re working in space and place, having an architectural lens is critical.”

Though my professional work takes me across the country, my involvement in community organizations keeps me connected to my current hometown of Pittsburgh. My seat on the board of Preservation Pittsburgh immerses me in the city’s architectural history. As one of the design review committee members of Riverlife, I have an impact in my neighborhood, located a block from the Allegheny River. Through AIA Pittsburgh’s Leadership Institute, I connect with designers throughout the region. And by volunteering with NOMAPGH and Project Pipeline, I help students discover the world of design.

Regardless of whether you become involved in organizations to make connections, inspire the next generation of architects, or leverage your skills to benefit communities, service can provide grounding in your professional and personal aspirations.

Ashleigh Walton, AIA, NOMA, is a Pittsburgh-based architect, urban designer, and project manager at Urban Design Associates.

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THE MIRACLE OF HAYWARD HALL

The \$270 million renovation of the University of Oregon's hallowed Hayward Field includes a medal-worthy finish.

Looking up at the mesmerizing play of sinewy aluminum beams gliding across the expansive ceiling, one might think this captivating homage to athletic movement and precision took months—perhaps years—to accomplish from concept to fabrication to completion.

Welcome to Hayward Hall, a new 4,000 square-foot museum under the east end of University of Oregon's Hayward Field, the hallowed

shrine of American track and field. The new exhibition hall is part of a \$270 million top-to-bottom renovation of the entire athletic facility. The reimagined stadium is now a state-of-the-art facility specifically designed for viewing and celebrating Oregon's athletics and, in particular, its track and field legacy.

Getting the ceiling aesthetic right for a space destined to host prominent athletes and public figures from around the world was an imperative.

NINETY DAYS

Daana Denzel wasn't aware of any of this when her phone rang in August 2019. It was the ceiling installation subcontractor with an urgent plea: We need a custom ceiling application fabricated and delivered—and it must be in our hands within 90 days. Three months is a highly compressed timetable for a completely custom metal ceiling.

Denzel is a manufacturer's representative specializing in ceiling and acoustics. Her company, Denzel Northwest, is no stranger to pulling together a general contractor, subcontractors, and a manufacturer to address a challenging condition. But this project, given the stakes, design intent, and hyper-compressed timetable, went beyond that. Denzel's blunt assignments were twofold: guarantee design execution and guarantee a November delivery.



© Mitchell Stier

PLAN B

The actual ceiling solution was not part of the original design plan.

"It was discovered late in the game the designated ceiling manufacturer couldn't do the curve style the architect wanted after all. That's when WPI, the subcontractor, scrambled to call me," Denzel recalls. "'No problem,' I replied. 'We can do that.'"

Denzel knew shop drawings alone can take up to six weeks, half of her allotted

time. Yet she felt confident she could pull off Plan B provided all the players stayed in constant communication.

The other reason for her confidence: Plan B involved CertainTeed Architectural, a ceiling manufacturer she had worked with on other projects. Denzel knew she could trust their custom engineering capabilities, technical support, and customer service to meet all requirements.

CAN-DO SPIRIT

"Curved beams are always custom. There's a different fabrication setup for every extruded aluminum piece," Denzel explains. "Parts are coded in a precise choreography."

Denzel gives all credit to CertainTeed Architectural, the company audacious enough to take on the project. Its High Profile Series Horizontally Curved Baffles in a natural finish proved to be a near-perfect interpretation of the design intent. The versatile baffle system allows for combinations of curve arcs and radii, as well as baffle heights and profiles.

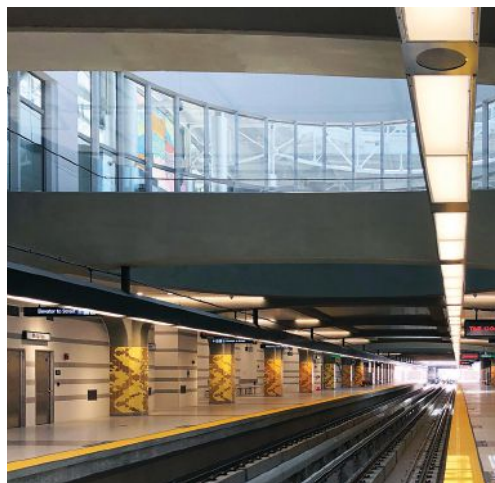
DREAM OUTCOME

"The WPI team was thrilled. Everything arrived on time and came together exactly as detailed," Denzel says. Hayward Hall and Hayward Field opened this past spring.

Denzel won't easily forget the lessons of this project, especially the power of teamwork. Not so different from the sport the Hayward Hall ceiling celebrates.

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ARCHITECT INTEL



THE MAGIC OF THE MILPITAS TRANSIT CENTER

Natural light can transform nearly any setting. Even a \$125 million BART station.

As a University of California, Berkeley architectural student many years ago, Eli Naor never imagined that his work would help transform Bay Area communities.

Fate carries you in surprising directions in this profession. For Naor, his long design journey most recently led him to a BART (Bay Area Rapid Transit) station in Milpitas, Calif.

“Good design is symphonic. You bring many instruments into the room and work hard to imagine how they all sound together. But you’re never quite sure. You have to stand in the middle and experience it for yourself,” Naor observes.

20-YEAR SYMPHONY

The \$125 million, 68,800-square-foot Milpitas Transit Center is an intermodal facility and Naor’s final symphony. The Oakland-based architect recently retired as a vice president of STV, a full-service architectural and engineering firm with over 40 offices across the U.S. The station opened in June 2020 and links bus lines, light rail, and the BART system to Silicon Valley, a long-sought transit goal in the region.

Naor was introduced to the project in 2001. It took the better part of two decades to pass rigorous review by local, state, and federal authorities, which scrutinized every aspect of the station’s performance, aesthetics, and life safety systems. “You have to be of stout stuff to survive,” Naor says.

SHINING JEWEL

As the project progressed, the surrounding community also underwent a transformation. “The site was originally a trucking and warehouse district. Now the station is surrounded by high density housing,” Naor says, a reflection on the project’s community impact.

“It may not be Grand Central Station, but for Milpitas it’s a shining little jewel. Train stations still have a very important place in people’s lives,” the architect says. “That’s where I can make a contribution.”

Shining little jewel is an apt metaphor. The facility is awash in natural light, creating a welcome openness and transparency. “We wanted the concourse to be very bright, very airy, and open,” Naor says. “We wanted to bring as much daylight as possible down to the tracks. Passengers entering the station can immediately see whether the train is in or not.”

TRANSPARENT WALL

The challenge was that the BART tracks run in a below-grade trench. How do you extend natural light down to the track level?

Why not a fire-rated *transparent* light well?

“Most people think of fire-rated treatments as a one- or two-hour rated wall. Now you can have a transparent wall system to separate passengers from flame. Vertical glass is the most critical part of the installation. It shields

against high heat and smoke. It’s all about life safety,” says Naor.

THREAD THE NEEDLE

He adds that fire-rated glass had to thread a needle for size, transparency, availability, structural support, butt glazing, and seismic requirements. Oh, and one other differentiator: budget.

The investigation by the architects led to a solution that met all requirements: ASTM E-119/UL 263 rated fire resistive SuperLite II-XLB 60 glass panels with GPX Architectural Series framing. To ensure maximum transparency, SuperLite II-XLB 60 was used in a butt-glazed application to eliminate vertical mullions. The glass panels were stacked on top of each other using horizontal mullions, and structural steel was placed behind the butt-glazed lites to provide additional support. The system’s flexibility accommodated the circular light-well design, which meant that the architects did not have to compromise their design aesthetic to meet fire-rated code requirements. The fire-rated system is manufactured by California-based Safti-First.

Naor’s final symphony was complete. “When you put together the skylights, the fire-rated glass, the art treatments, the floor, and the passengers, it just works. It’s magical.”

Learn how a fire-rated transparent wall system can enhance your next project at [Safti.com](https://www.safti.com).

Emerging professionals
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stated norms.

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

SOFT-FIRM TAKES AN INFORMAL AND INVENTIVE APPROACH TO DESIGN.

EDITED BY PAUL MAKOVSKY

LOCATION: New York
YEAR FOUNDED: 2018



FIRM LEADERSHIP:
Talitha Liu and Lexi Tsien, co-founders

FIRM SIZE:
Three.

EXPERIENCE:
Liu: Alda Ly Architecture, Rockwell Group, Neri&Hu Design
Tsien: Barkow Leibinger, Diller Scofidio + Renfro, Davies Toews Architecture, Bernard Tschumi Architects

EDUCATION:
Liu: M.Arch., Yale University; B.A., Washington University in St. Louis
Tsien: M.Arch., Yale University; B.A., Columbia University

ORIGIN OF FIRM NAME:

We'd been collaborating on projects since graduate school and kept running into the issue of how to credit ourselves. We kept thinking "firm, firm, firm," and then suddenly "soft" came to mind. It pokes fun at the self-seriousness of firms. It reflects how we think of architecture at the nexus of culture and built infrastructure. It also reminds us of tofu and mattresses, which fit us too.

FIRM MISSION:

We view the office as a brain trust—less a formal practice, more a supportive space to expand hunches, glitches, and inside jokes into architectural ideas, spaces, and artifacts. We are founding members but don't see ourselves as "principals," per se. We are interested in a methodology that is open-ended and nonhierarchical, allowing us to pursue the projects we find interesting and stay open to new collaborations and avenues of research.

DEFINING PROJECT:

We won the competition for the 13th annual Love in Times Square Design Competition. Our proposal came together in five days. Designing a public beacon of love and solidarity during the time of COVID and Black Lives Matter was very meaningful for us.

ANOTHER IMPORTANT PROJECT:

Generation House was a self-initiated gut renovation of a Brooklyn, N.Y., brownstone. As developer, client, and architect, it's been a testing ground—

to live in our own experiment—as a multi-generational home and now workspace for a series of collaborators.

DEFINING STUDIO CHARACTERISTIC:

As two anthropologists-turned-architects, we're interested in Chinatowns as globalized phenomena. They are viral, inventive, and adaptable ... spatial hacks on the urban scale. Also, we like to surf.

SUCCINCT PRACTICE DESCRIPTION:

We are intentionally scrappy, flexible, and informal.

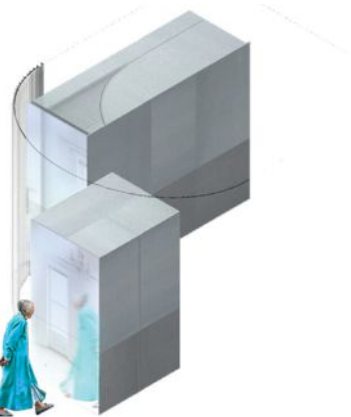
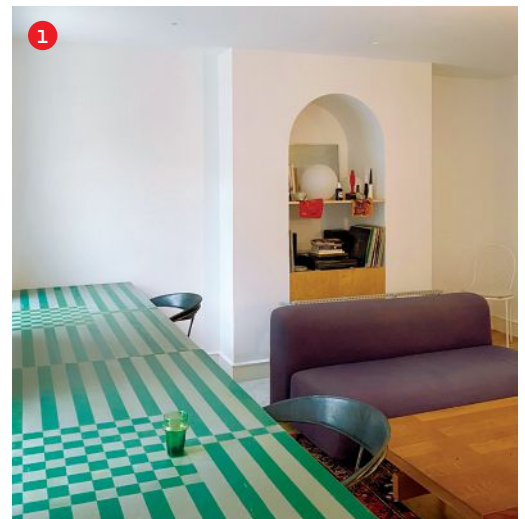
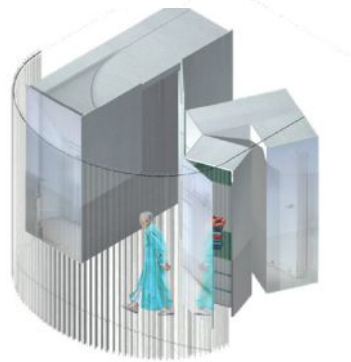
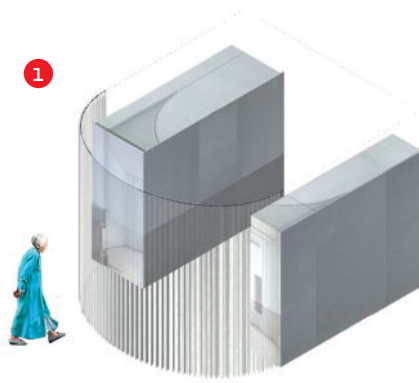
KEY MENTORS:

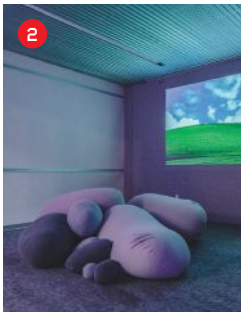
Adam Yarinsky, FAIA, at ARO has modeled humor, humility, and integrity as a friend and mentor. Sunil Bald, AIA, has advocated for us in academia and practice ever since we were partners in his urban design studio at Yale. The mentorship and mutual aid models of Dark Matter University and Office Hours organized by Esther Choi have been a bright spot. They have made us think deeply about the intersection of activism and practice.

BIGGEST CHALLENGE FACING ARCHITECTS TODAY:

Putting in the work for lasting change. The historical exclusion of people from the profession and the hierarchical structure of the industry make access inequitable. Representation among designers is incredibly important to make sure our physical spaces consider all kinds of people.

Soft-Firm





1. Generation House. Soft-Firm transformed and reconfigured this landmarked brownstone in Stuyvesant Heights, Brooklyn, N.Y., from a single-family dwelling to a three-unit co-living space designed to accommodate a range of family structures, workspaces, and organizing efforts. Originally conceived to house three generations of Soft-Firm co-founder Lexi Tsien's family in current and future iterations, the renovation currently supports Tsien and a group of women of color all engaged in creative labor and community activism.

2. Out of Office: Evolving the 9-5. This site-specific and live interactive exhibition (in collaboration with Tortuga Living and Alex Gilbert) was at A/D/O by MINI, an interdisciplinary creative space in Greenpoint, Brooklyn. The exhibition explored thematic connections among office concepts, objects, and technology in an active collaboration space, prompting the designers to expand their role in the creation of new, humanistic formats for work. Soft-Firm designed and coordinated the fabrication of custom millwork, collaborated with Studio TheGreenEyl on graphic design, and commissioned original digital content by Channel Studio.

3. Love Letters. The 2021 winner of the 13th annual Love in Times Square Design Competition, *Love Letters* is a riff off of New York's building façades, using plywood as a material of public engagement to mimic a scrolling storefront. The installation winds across Duffy Square in the heart of Times Square to create four integrated spaces—the soapbox, loveseat, chapel, and wishing well—in one folding surface, forming the shape of two interlocked hearts.



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It's an idea that's been around for thousands of years – think gardens of Babylon – and yet the way it contributes to our health and well-being in modern construction and manufacturing is being emphasized like never before. As architects and designers work on new ways to connect the outdoors with the indoors, new window and door innovations are emerging to support the Biophilic Design approach.

Making more and better use of light. Designers continually discover new ways natural light improves our lives, indoors and outdoors. The changing color of sunlight throughout the day affects our mood, our stress levels, our sleep patterns and even our physical health. Knowing this should lead to an increase in the use of glass and wide open spaces in our built environments. When done right, the approach is beautiful, energy-smart, and beneficial for all.

Creating spaces that invite more of the outside, inside. Opening up spaces to connect with nature and living systems (one of the key tenets of biophilia) delivers amazing benefits to our health and well-being. Studies have also shown slight changes in airflow keep us refreshed and invigorated, more productive, relaxed and generally better off. Large timber curtain walls and door openings that turn entire walls into moving masterpieces are merging the outdoors and indoors in new, forward-thinking ways.

Appreciating the natural benefits of wood. Wood is one of nature's perfect building blocks. It holds extraordinary thermal properties, and its grain and texture create a rich, visual connection with nature. At Sierra Pacific, the use of wood in our products goes beyond aesthetics. By replanting and growing trees in a responsible way, we also support biophilia by renewing the earth's resources, creating oxygen, sequestering carbon dioxide and reducing waste and carbon emissions.



Sierra Pacific roots growing ever stronger. From planting more trees than we harvest and generating energy with leftover waste to designing windows and doors that make more and better use of space and light, we'll help you integrate Biophilic Design ideas into your own designs. As we strive to reach net zero carbon emissions, our focus on progressive and healthful design puts us in a unique position as a window and door manufacturer, one we're proud to keep building on.



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AN ARCHITECTURAL LIGHTING DESIGNER CONFRONTS THE LEGACY OF INEQUITY.

TEXT BY LAUREN DANDRIDGE, NOMA, AS TOLD TO WANDA LAU

It took the intense, tragic events of 2020 for everyone to take a hard look at what we're accepting, the emotional cost of how we're working, and what we can do better. That was a hard pivot for me—I realized I was not doing enough. I said to my husband, "I'm not a doctor, a civil rights leader, or a politician. Most of the time, people don't even understand what I do. I can't stop Black men from being killed by police." Those feelings of powerlessness combined with serious reflection made me realize that while I could not have saved any of the lives lost, I can make a difference in the lives of people of color with something I know well: lighting.

I co-founded Chromatic with Nick Albert, NOMA, to examine how the lighting community can question and confront the legacy of inequity, which trickles throughout societal decisions and systems, including infrastructure. Is lighting equitable or equally accessible? How does the quality of lighting differ between communities of color and predominantly white communities? How does the intersection of race and income line up with lighting? How can we activate underserved areas and encourage outside investment?

The best part of our practice is that a Black woman and a white man can sit down and have honest, in-depth conversations about things that make everyone uncomfortable. Addressing ideas of equity and accessibility seems to be distinguishing us in the



Lauren Dandridge (center) with University of Southern California School of Architecture students

field. We're good at detailing and recognizing darkness and the quality of light—every lighting designer should be doing that.

But what I don't hear the lighting design industry saying is, "How are we going beyond sustainability and tying it to the structural racism that is affecting communities of color?" Chromatic can be that voice. We're happy to step into that role and say, "We have a mission here beyond how many watts can we save." We can look at how neighborhoods with a 30-foot-tall mast arm and huge LED fixtures sending light in all directions feel compared with neighborhoods with beautiful lantern lights and whose

residents can still see stars. What implicit or unspoken biases led to these disparate conditions?

Equally important, our firm is exemplifying true allyship. It doesn't matter how many people of color say, "This is what we need, this is what we're asking for," if others can't understand or even acknowledge that racism exists. We began Light Privilege, a research project to study the intersection of light quality and racial and income demographics of different Los Angeles neighborhoods. To date, we have reviewed studies on how outdoor light quality, placement, and usage at night differ based on who needs the light.

I am also teaching students about the lighting profession. "Here's an industry you may not know about," I tell them. "And it needs you because we're not incredibly diverse." We can cast an extremely wide net into the talent pool because lighting designers can achieve success through a variety of educational paths, unlike architects and engineers.

Lighting is about more than physically seeing things. It's about giving visibility from a contextual standpoint to different neighborhoods, businesses, and people. Everyone deserves to have access to quality design, architecture, lighting, landscaping, engineering services, and comfort.

Lauren Dandridge, NOMA, is co-founder and principal of Chromatic, in Los Angeles.

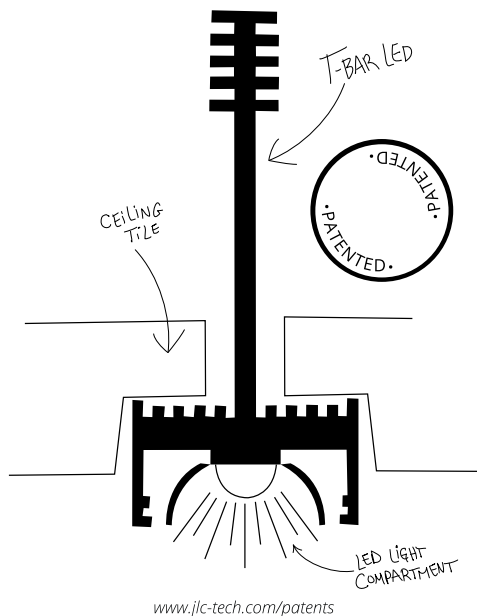


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MANUFACTURERS AND DESIGNERS OF COLOR MAKE AN IMPACT.

TEXT BY MADELEINE D'ANGELO

From sculptural lighting fixtures to curated paint colors, these five products from designers and manufacturers of color can inspire joy, beauty, and design excellence in the built environment—and diversify your supplier list.



1. Interior Paint and Paint Prep

Clare Paint

Aiming to streamline the traditional—and sometimes tedious—process of paint shopping, Nicole Gibbons, an interior designer whose work has appeared in the likes of HGTV and Elle Decor, launched Clare Paint in 2018. Her New York-based company offers VOC-free, Greenguard Gold-certified, and ultra low-odor paints in designer-curated shades that include the creamy on point (pictured above) and pale greige penthouse. In addition to the hues, Clare offers painting supplies, a multisurface primer, a flat white ceiling paint, and a mess-free, at-home trial process that enables prospective customers to test looks with peel-and-stick color swatches. clare.com

2. Architectural Metal Panel Systems

BÖK Modern

An elegant range of architectural metal wallscreen and rainscreen panel systems from the firm started by partners Heddie Chu and Russ Naylor in 2009 encompasses guardrails, façade cladding, shades, and fencing, all laser-cut with intricate geometric patterning. The largely prefabricated systems—designed to streamline installation and reduce environmental waste—are available in aluminum, cold rolled steel, hot rolled steel, stainless steel, and Cor-Ten steel, often eliminating the need for secondary structural steel systems. Designed for interior and exterior applications, BÖK Modern products are available in powder coating, Kynar, and an anodize finish from clear to dark bronze. bokmodern.com

4. Bloom Senarius

Studio PGRB

Founded by Priti Gandhi and Raymond Barberousse, who earned his B.Arch. from Howard University and entered the lighting world in 2012, after a decade in architecture practice, this Miami-based firm is known for timeless, handcrafted lighting fixtures that range from quirky sconces to chandeliers inspired by molecular geometry. The studio's Bloom Senarius pendant evokes a flower in bloom with its cast brass, six-armed design, and white frosted globe LED bulbs. With a maximum power consumption of 40 watts and a standard finish of satin brass, the fixture is also available in natural brass, brushed pewter, satin nickel, polished nickel, and matte black. studiopgrb.com

3. So Good Collection

Me and General Design, Wolf-Gordon

Cristina Casañas-Judd and General Judd, the couple behind the New York firm Me and General Design, collaborated with Wolf-Gordon to develop a new collection of whimsical, digitally printed wallcoverings. Drawing on their sensitive design ethos and knowledge of architecture, music, and art, the duo created four wallpaper offerings—Vista, Perch, Nouveau, and Echo—that feature rhythmic cityscapes, Art Deco, geometric patterns, and kinetic lines. Each style is available in a range of colorways, including blush, dusk, and smokey. wolfgordon.com

5. Traction Avenue Collection

Shimoda Design Group by Mannington Commercial

For this carpet tile collection, Mannington Commercial vice president of commercial design Roby Isaac continued his strategy of engaging independent artists and designers, this time collaborating with the Los Angeles-based Shimoda Design Group to translate the city's streetscape into three styles of 12"×48" modular carpet planks: Tread Hex (pictured), Spatial Fade, and Soft Tread. The collection of subtle yet dynamic colors is available in a range of colors suitable for corporate, retail, higher education, and hospitality spaces. manningtoncommercial.com



THE DESIGN SOLUTION TRANSFORMING KENTUCKY EDUCATION

This architecture firm helps school districts turn utility bills into income.

The sight of slide 35 generally produces an audible gasp.

After all, what school board member expects to see a monthly utility bill converted into a five-figure income? Income that can translate into funds to hire staff, increase salaries, or make capital improvements that are sensitive to the environment.

Welcome to the world of architect Kenny Stanfield. His firm, Lexington, Ky.-based Sherman Carter Barnhart Architects, is helping transform Kentucky K-12 education through zero energy design and construction. Their burgeoning portfolio of zero energy-compliant, -ready, and -emerging schools now numbers 18 and counting.

73 VS. 17.5 EUI

Take Jennings Creek Elementary School in Warren County. The 88,469-square-foot facility is home to 750 pre-K to fifth-grade students. The expected EUI (energy use intensity) for a typical 72,000-square-foot elementary school in climate zone 4 is 73. Jennings Creek? Just 17.5 with payback in 7.5 years.

What that 17.5 EUI represents to the kids, parents, taxpayers, faculty, staff, school district, and, of course, environment is a side of the net zero story not told enough.

"We designed the nation's first net-zero school back in 2010," Stanfield explains. "Today we apply net-zero principles to every school we design. Nearly every design decision is tested against those principles. We constantly challenge ourselves with 'How low can we go?'"

Many of those principles are well-established, like north-south building orientation, building size, daylighting, photovoltaic panel arrays, geothermal HVAC, and careful power consumption. Even the school kitchen gets an eco-friendly makeover.

STAR PERFORMER

But all those measures pale before the true star of Kentucky education's energy success story: the composition of the building envelope.

For that, Stanfield credits their decision in 2005 to build elementary schools with insulated concrete forms. ICF is a wall system formed by stacking foam-framed blocks Lego-style to create a cast-in-place concrete



wall. The resulting envelope was quickly recognized as the essential first step in achieving net-zero compliance.

That net-zero mandatory proved to be the first in a series of ICF advantages:

- **Construction speed.** "We cut several months off a traditional construction schedule," Stanfield says.
- **Budget.** Jennings Creek Elementary including a 42.84-kilowatt photovoltaic array came in at \$201.17 per square foot. Compare that with an average Kentucky elementary school cost without solar at \$221 per square foot.
- **Design.** "ICF is actually very easy to work with. The spans are about the same as are the veneer systems. We do curves with ICF. There's really no design limitation," Stanfield reports.
- **Resilience.** All newly constructed Kentucky schools must have an area to shelter-in-place the entire school population from a direct tornado strike, a considerable expense in traditional school construction. That resilience is baked in with ICF. "There's no safer place than an ICF school," Stanfield says.
- **Project Pipeline.** The firm's rapidly expanding portfolio speaks to the power of slide 35 and the firm's overall net-zero design experience.

"I specify ICF anywhere it makes sense," Stanfield says. "It's a great story to tell owners."

Learn more about how ICF can help achieve your firm's carbon neutral and business development goals at <https://buildwithstrength.com>.

ARCHITECT INTEL



PEACE OF MIND DELIVERED BY MERGING AESTHETICS AND BUILT-IN PRIVACY

Put your visitors at ease in the washroom with the Integrated Privacy system.

It's a problem that's all too common for people while they navigate public spaces: the unmet need for complete privacy when using a stall in a public bathroom. And, for many, the concern goes even deeper.

Cyrus Boatwalla, director of marketing at ASI Group, explains: "Our built-in need for privacy is laid bare in public washrooms, most of which are designed for multiple users and simultaneous use. Today, more than ever, our need to feel safe is paramount, and this can cause public washrooms to bring out deep-rooted fears, which may manifest in a visceral response. While some people may be mildly bothered by the thought of using a public washroom, others are paralyzed by the prospect—to the point that they cannot use the washroom while others occupy it."

Unless perfectly installed, most metal bathroom stalls have gaps at the latch or hinge side, creating sightlines into the stall. Some building owners and operators have taken note and committed to a retrofitting privacy strips, components that can close the gaps between the door and pilasters. This solution is an afterthought, creating an added expense while greatly lowering the aesthetic quality of the washroom—retro-fitted strips often don't match the color or material of the original partition.

Now there's a solution to address privacy concerns without sacrificing the aesthetics of the partitions and the washroom overall: the Integrated Privacy system for metal partitions.



Integrated Privacy System Patent-Pending

This patent-pending solution, offered exclusively by ASI Group, is engineered to provide complete privacy. The doors can be manufactured and delivered to your doorstep with built-in, color-matched privacy components, getting rid of the need for field retrofitting. The guiding principles of this unique system are to meet an occupant's need for complete privacy while being more aesthetically pleasing than retrofitted strips.

The Integrated Privacy system eliminates sightlines

into the stall at both the latch and hinge side of the door, while the color-matched privacy components create a sense of continuity from the partition door to the pilasters. And an occupancy indicator latch is now standard to provide even more peace of mind for the stall's occupant.

Privacy in public spaces should not be optional—it should be the standard. So for building owners, tenants, and architects, providing complete privacy to building occupants should never be an afterthought. It should be at the forefront of design, especially considering how privacy in the washroom directly enhances or detracts from people's experience in the building and their satisfaction with the business or organization they are visiting.

The Integrated Privacy system is central to that effort and goes a long way toward bringing peace of mind in the washroom.

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AIA Architect



CREDIT: COLLAGATE

The Power of Collective Decisions

Architects must be connected to their building's end users.

Bryan C. Lee Jr. is the founder and design principal at Colloqate, a New Orleans-based nonprofit firm focused on social, civic, and cultural spaces. In 2018, he was the driving force behind the Design Justice Summit, an AIA-sponsored event that recognized the need to dismantle existing power structures in architecture and bring design back to the community level. Today, Lee is heartened by the continued resonance of “design justice,” a term he coined after years of pondering, in his words, “what it might look like to practice in a field that has historically ignored the opinions of people like me.”

As told to Steve Cimino

By the time we got to 2018, we were a decade into the thought process around what design justice looked like. There was already a grassroots effort to think about socially motivated practice. You started to hear a lot of similar terminologies: social impact design, public interest design. But those frameworks lacked a fervent or an

adamant consideration for justice. Both of those intended to appease systems of power. And design justice actively didn't, and does not, seek to appease institutional power or political power. It only seeks to engage in a people's power, a community power.

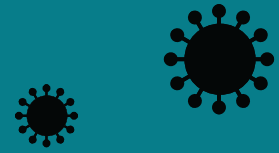
Back in 2014, I left a firm that I truly loved, Eskew+Dumez+Ripple. Very soon after, I realized that you have so little connection to real people, the people your work impacts, when you are in an architecture practice. You're just so far removed. The grind of that work doesn't provide the opportunity to build real, cogent relationships. Sometimes we fool ourselves into thinking that we're making progress or having truthful relationships, just by participating in a 1% program or bringing young kids into the office. Now, those are great programs and everyone should do them; they're just the bare minimum one can do.

It's frightening for a profession that has such an outsize impact on the patterns

of people in cities and towns across the world. It should be a warning sign to all of us. The more we are disconnected, the more negative ramifications will come from the spaces and places we design.

Because architects often don't initiate projects themselves, we can become conduits for the power of developers and clients. Because our margins are so thin, because we rely on clients with cash to build but little connection to communities, we end up being complicit in harmful acts. And we spend a lot of time justifying them to put food on the table.

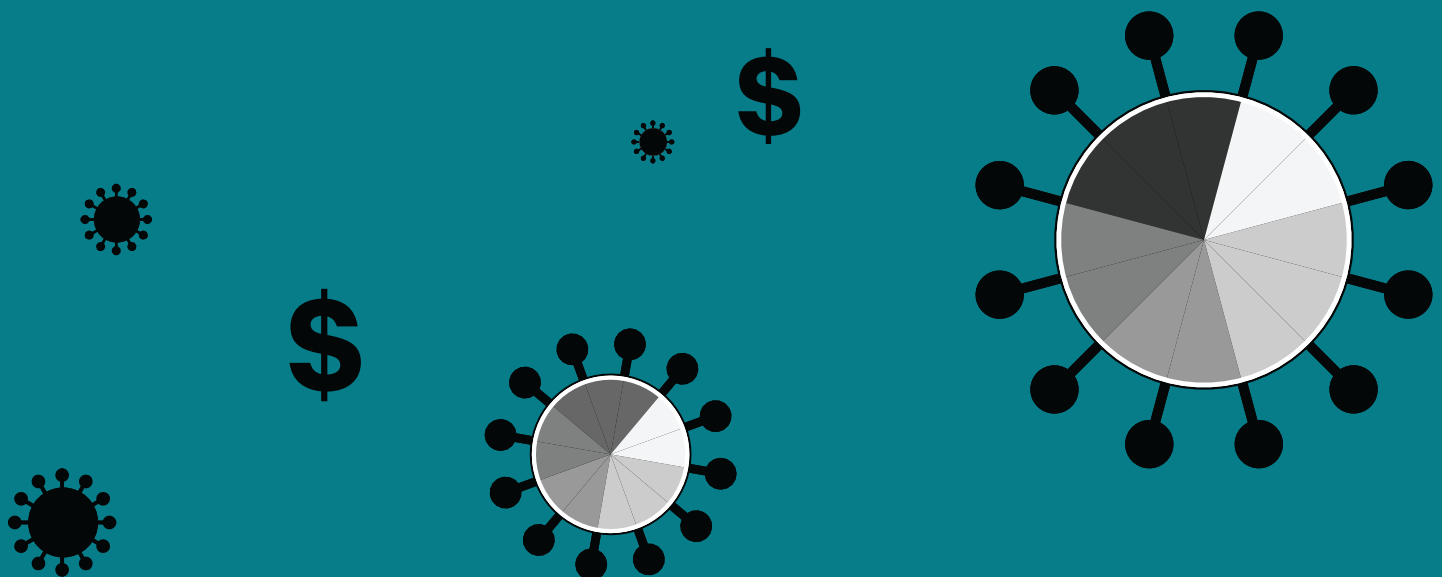
There is a tsunami coming; from the Northwest over, you are going to start to see the expectations for RFPs and RFQs subtly and then robustly change over the next five to 10 years. A lot of firms are going to lose out; they don't have the sociability as a practice to be in the room anymore. And we'll be better off for it; we'll be able to make better decisions for our public spaces when we make them as a collective. **AIA**



See how your firm stacks up.

The AIA Compensation Report 2021, the industry's most comprehensive report on compensation trends, reveals the pandemic's impact on salaries and how benefits have shifted.

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CREDIT: RACHEL KAPISAK JONES



More Firms Implement Flexible Work

By Michele Russo

Seventy-two percent of architecture firms offered full-time or nearly full-time remote working options to their employees in 2020, up from only 13% in 2019, pointing to the significant impact the pandemic had on workplace flexibility. Firms also added part-time remote work options. Other benefits that increased over the past two years: paid parental leave (47%, up from 41%), paid philanthropic

leave to volunteer during business hours (31%, up from 26%), and paid family leave beyond parental leave (21%, up from 16%). The latter excluded mandated COVID-related leave. **AIA**

Source: 2021 AIA Compensation Survey Report (aia.org/compensation)



CREDIT: GAC

In collaboration with Kate Spade New York's On Purpose program, nonprofit General Architecture Collaborative (GAC) designed a workspace for the Abahizi Dushyigikirane Cooperative in Rwanda.

Justice's Three Jobs

The word justice is everywhere, but it's surprisingly hard for its advocates in architecture and education to pin down.

By William Richards

In July, when *New York* magazine asked 25 local notables how the post-pandemic city can be more “livable, prosperous, and just,” nearly all of the respondents specified a new law, policy, or initiative that New York City should enact or explore, ranging from free subway rides four days a week, to establishing a basic income for artists, to banning private cars from Manhattan. The point of the roundup was that the promise of correcting systemic injustice—whether environmental, racial, or social—must be a function of the system itself. While our society's enforcement of laws may be in the name of justice, the laws themselves may not always represent just aims.

Justice advocates in architecture pursue a range of solutions under the banners of environmental, racial, or social justice to identify their particular fight, but all of them are united in their reproach of the systems that support injustice.

Architecture, broadly conceived, is a big world with power centers that determine its shape and the career prospects of those who work within it. But when you consider that its interconnectedness can make those power centers accountable to each other, that big world starts to look a little smaller. When the Association of Collegiate Schools of Architecture released a statement on racial

injustice in June 2020, it joined other collateral organizations in committing to a comprehensive review of “policies, programs, and procedural norms.” More importantly, ACSA committed to a reckoning within the system of architectural training and practice—a system that, at worst, has weaponized design against the disenfranchised and, at best, has neutralized design to be a passive agent of privilege. “We understand,” the statement says, “that architectural education has for too long accepted white privilege as the norm, limiting diverse voices and marginalizing the discipline's impact on society.”

In 2020, ACSA's Director of Research and Information, Kendall Nicholson, ASSOC. AIA, launched "Where Are My People," a series that explores diversity and representation within architecture based on data about those who identify as Black; Latinx and Hispanic; Asian American, Native Hawaiian, and Pacific Islander; Native and Indigenous; and Middle Eastern and North African. It's the first time, he says, that such data have been collected in a focused way.

By being more granular in establishing the names and numbers associated with these groups, Nicholson's project does two jobs when it comes to establishing a baseline of racial diversity within architecture: self-identification and statistical representation. Unifying thematic terms like "design justice" or "racial justice" also have two jobs, he says: They must coalesce people around a goal, and they must help those goal seekers see the systemic and historical reality of the problem.

"When you say you want to increase the number of Black Americans in architecture schools, that's about representation. You can't claim that as a goal unless you understand the underlying root cause that jeopardizes it," he says. "In this case, one of the root causes of their absence is that Black men are disproportionately incarcerated in the United States."

Equity Is Fine, but Persistent Equality Is Better

The term equity is often used interchangeably with "fairness" to refer to the principle that two or more things are held in balance. The term equality refers to the real circumstance when two or more things are balanced, according to the Annie E. Casey Foundation, a Baltimore-based charitable organization that advocates for children. In this rubric, for instance, pay equity is the principle that two people doing identical work (or who are identically titled) will receive the same compensation. Pay equality is when that's actually happening in an architecture firm's accounting ledgers. Racial equality is when the systems that govern our relationships as workers and our advancement as individuals—like education, infrastructure, or criminal justice—are structured to treat everyone the same regardless of race. Racial equity, then, is when everyone is fairly and equitably treated—which may mean adding benefits for certain groups to address historic inequities.

Looking back 60 years, however, Civil



GAC's Sports + Learning Center in Masoro, Rwanda is a rural community center which combines spaces for play and learning for children and adults.

Rights leaders marched behind banners for equality rather than equity, the latter of which has historically been associated with finance rather than social justice. In his 1968 AIA Convention speech, Whitney Young spoke about equality, not equity, as the great paradox of the architectural profession. The 19th Amendment, passed in 1919, is something we celebrate on "Women's Equality Day," which has been recognized on August 26 since 1973, not "Women's Equity Day," which might be mistaken for a celebration of shareholders. Still, equity has ascended in the parlance of architecture's justice quest. If terms like equity and equality have two jobs, as ACSA's Nicholson points out, then the evolution of how we use these terms suggests a third job for justice advocates: being persistent in uprooting the problem.

Anthony Schuman says these jobs don't represent a crisis of imagination but the burden of actualization that makes design justice, environmental justice, or equity difficult for architects to define.

"Take housing," says Schuman, professor of architecture at the Hillier College of Architecture and Design at the New Jersey Institute of Technology. "The Housing Act of 1949 established as a goal a decent home and suitable living environment. Year after year they didn't meet the goal. Why? Because housing wasn't considered a right. Housing as a right has never been federal policy."

Schuman has long advocated for what he calls "architecture's social vocation," as a co-founder of The Architects' Resistance in 1969 as an M.Arch. student at Columbia

University, as past chair of the New York City chapter of Architects/Designers/Planners for Social Responsibility, and as past president of ACSA. He says that the vocabulary of architecture's social vocation isn't as important as what it fundamentally points to, and the built evidence of architecture as a vocation isn't as compelling as what it can do to improve people's everyday lives. Writing in 1991 at the peak of Deconstructivism, Schuman said that design's objective should be the "good society," not the "perfect" building.

"Architecture is the framework of existence that society creates for itself, according to Anatole Kopp, and we know what architecture looks like, but what does justice look like?" he asks. "That's why we have to define it through a series of smaller lenses based on a series of real actions."

Making Justice Accountable and Actionable

The textbook definition of justice is the administration of laws, and laws reflect what we, as a society, have decided is right, wrong, and enforceable. Justice and law are often conflated in conversation, which is understandable since justice is (in an ideal world) enshrined by laws, and when laws are enforced, we often say justice is served. It's also understandable to conflate them because each has always existed for the benefit of the other.

If advocates seek justice as the administration of laws, then there is an inherent flaw in lawmaking. This flaw



The buildings that compose the Masoro Health Center in Rwanda house curative services, administrative functions, preventative care, and maternity services.

raises two possibilities: that justice is unassailable, but as a society, we're sometimes bad at making laws, or that laws are fallible because justice is imperfectly administered. Yet, both of these possibilities are unacceptable. On one hand, being bad at making laws is putatively reckless and, on the other hand, passively blaming an imperfect administrative system is lazy.

There is a third possibility: that our laws are fallible because our concept of justice is unattainable. If we can translate justice into everyday terms like representation, fairness, or the reallocation of resources, rather than as an administrative framework, then it might improve the systems constructed by laws. The concepts "design justice," "environmental justice," and equity pose an agenda for architecture that seems to unite individuals in practice and the academy and, for some architecture firms, define their business strategies, too.

Leighton Beaman is an associate professor of practice at Cornell University's College of Human Ecology. In 2008, he founded General Architecture Collaborative (GAC) with Yukata Sho and James Setzler, which began as a for-profit architecture firm that they converted, in 2011, to a nonprofit. To date, GAC has completed eight projects in Masoro, Rwanda, and other towns outside of Kigali, including a sports center, a health center, a community center that doubles as a housing prototype, a workshop for

local artisans, and a playground. In 2021, *Architect's Newspaper* named the firm the Small Firm of the Year.

"Instead of doing a little pro bono work on the side, we wondered if we could reverse it and make it the main focus of the firm. We started by asking how we can work for people who are always overlooked, who aren't part of any discussion, and who need the most help," says Beaman, who noted that the practicality of splitting time between two countries and operating as a nonprofit is still a work in progress, but something they've successfully managed for a decade now.

Setzler manages projects on-site in Kigali working with two architecture school graduates from The School of Architecture and Built Environment at the University of Rwanda (now operating out of a new building designed by Patrick Schweitzer & Associés). Beaman and the other partners including Sho, an associate professor of architecture at Syracuse University, and Zaneta Hong, an assistant professor in landscape architecture at Cornell University, split their time between teaching and GAC.

"It's not a coincidence that we all work and teach at the same time, which allows us to earn money and live," he says, "but it also allows us to be more selective and pursue environmental- and design-justice ends in the work we do."

Through grants and fundraising, GAC

obtains the capital for projects, serving as designer and owner. The project is completed by local workers under the supervision of GAC, which then turns over ownership and management to Rwandan entities. Even if GAC is registered as a nonprofit in the United States, its principals still have all the same challenges as in a for-profit firm, from the mundane, like wrangling InDesign layers, to the profound, like being nimble about staffing to respond to an unpredictable workflow or the Rwandan political climate. But, as a nonprofit, GAC has the benefit of being able to allocate funds on-site in ways that directly benefit workers, such as healthcare or on-the-job training. It's the kind of accountability that justice, in its best possible version, represents. Still, Beaman resists defining terms like design justice, environmental justice, and equity in part because they're inseparable and in part because they're too laconic.

"I teach a course on sustainability and the first lesson is that it's not a thing. Sustainability is a practice. Equity is like that, too," he says. "Equity is a practice that you do, and you do again, and you learn from, and you keep doing it. So, all these terms come down to an act of doing rather than a handbook or glossary. It doesn't mean I don't care about the space or form or materials. That interest coexists with equity for me." **AIA**



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In New Orleans, Designs for a More Just Future

Racial and economic inequities create real imbalances of political possibility.

By Chris Daemmrich

In late August, Hurricane Ida battered much of the Louisiana coast. Nearly 1 million people in the state were still without power days after the storm first made landfall, with loss of life and damage to property yet unknown. The storm's rapid intensification complicated evacuation plans for many. This is the new climate reality that our country is facing—and one that disproportionately affects communities of color, especially in places like south Louisiana.

While New Orleans' levees held, demonstrating the benefits of \$14 billion in post-Katrina upgrades to the city's flood protection system, neighboring unprotected communities were hit hard. Subdivisions in LaPlace, La., home to many Black and Latinx families priced out of the city, flooded with several feet of water. By failing to challenge inequities built into present practices, architects will only contribute to the creation of what U.N. special rapporteur

Philip Alston, in a 2019 report, called "climate apartheid."

"When you read histories of the Home Owners' Loan Corporation and the Federal Housing Administration from the New Deal," says Darien Alexander Williams, planner and disaster researcher at MIT's Department of Urban Studies and Planning (DUSP) in Boston, "these projects were started with 'good intentions,' and they ended up creating segregation where there hadn't been segregation before."

In the summer of 2020, white-led U.S. architectural firms, schools, and institutions committed themselves in written statements to "listen, learn, and change" in response to demands for racial justice by Black Americans. By recognizing that without racial justice, there is no climate justice, practitioners—particularly the 85% who are white—can take these commitments seriously.

Maddison Wells is an architectural designer in New Orleans and a 2021 Tulane School of Architecture graduate with a master's in real estate development. She studies Black New Orleanians' experiences with home-elevation programs funded by FEMA that raise houses above increasingly flooded ground.

"Who is this program accessible to?" Wells asks. "Not the elderly Black people who've lived here their whole lives. [Studying home elevation programs] has taught me a lot about inaccessible, inconsiderate, and simply ignorant policy and planning."

In early 2020, Wells organized Living Without Water, an interactive exhibit and resource fair, at the House on Claiborne. Located in Uptown New Orleans on former swampland, in a neighborhood whose original racist covenants prohibited Black property ownership, the ranch-style house

is the only Black-owned property on its block today. Developer Brittany Lindsey, an educator and social worker, invited Wells to engage communities of friends, colleagues, and neighbors around the challenges of adaptation.

Through her organization, the HUEman Development Project, Lindsey has developed the House on Claiborne as a “safehouse” offering culturally competent education and supportive housing to communities often denied both. “This is a place to create moments of reprieve for Black kids and Black people,” Lindsey says. “It’s a community space [with] access that flows through human networks and connections.”

The completion of a 30-by-10-foot underground canal by the Army Corps of Engineers in 2016 left Lindsey looking up at the pavement of South Claiborne Avenue from her living-room window. After years of worsening floods, an early-morning rainstorm in July 2019 flooded the house with 8 inches of dirty, brown water.

The morning after, Lindsey woke up to a call from FEMA. An application she’d put in months earlier for a Repetitive Loss Hazard Mitigation Assistance home elevation grant had been approved.

“The flood traumatized us,” Lindsey says. “I never had time to grieve [what we lost]. The grant process was a challenge. I spent so much time in fluorescent conference rooms, interviewing contractors, meeting with FEMA and the City [of New Orleans, which administers the federal grant money]. Many times, I was disrespected as a Black woman.

“This process is not accessible to, or set up for, people without professional jobs. Most people can’t take hours off work for all these meetings.”

Lindsey says all six elevation contracting teams she interviewed as prospects for her project were white. The architect and landscape architect hired by the contractor she selected were white and primarily experienced with affluent white clients. In a 2% Black and 0.3% Black female profession, in a nation that is 14.1% Black and 6.2% Black women, the design challenges of home elevation, like any other project, are rarely handled by professionals with competency in the needs of Black communities.

The AIA collects resources on hazard mitigation for architects, but no mention is made of racial equity, environmental justice, or cultural competency. Wells sees much work to be done.

“People associate sustainability and response to climate change with building

performance, but it should go beyond that,” she says. “Sustainability is not just about the building but about people and existing infrastructure that supports those people. Both design and policy should frame sustainability as creating self-sufficient communities that are resilient over time.

“Justice has become a buzzword. Justice for whom, by whom? The only true justice would be reparations.”

A Green New Deal, on Whose Terms?

Federal investment is no silver bullet. Racial inequities in Road Home, the federally funded, state of Louisiana-administered rebuilding program for homeowners created after Katrina and the floods of 2005, have been well-documented for more than a decade. This year, NPR’s reporting has demonstrated how FEMA responses to disasters systematically privilege wealthy and white communities and withhold needed investment from Black and poor communities. Disparities in COVID-19 response by states further demonstrate how politics impact disaster management. D. Williams explains how these realities complicate Green New Deal advocates’ hopes.

“I’ve been thinking a lot about federalism, as many people have since the pandemic,” Alexander Williams says. “Even if resources become available at the federal level, a handful of people at the state and local levels can refuse. People who’ve never lived in or grown up in a state with a tyrannical conservative governor or legislature think that federal legislative or administrative action is enough to effect progressive proposals.

“Even if the most crystallized form of various Green New Deal ideations was passed tomorrow, they could easily be compromised and sabotaged by people who profit from [the status quo].”

In New Orleans, urban designer and landscape architect Aron Chang works on projects associated with the Gentilly Resilience District (GRD). The result of New Orleans’ victory in an Obama-era HUD-funded competition, the GRD is a \$141 million prototype urban stormwater infrastructure and community adaptation project in a levee-protected neighborhood 4 to 6 feet below sea level.

“Neoliberalism thoroughly structures these projects,” Chang says. “The government doesn’t build capacity [because] every project is farmed out to a contractor. [National design and planning firms] do their work, but the city departments who have

to implement it don’t know what’s going on because the effort is never put in to co-create interventions.

“There’s no actual democratic process and the unspoken argument is you can’t afford to go public about this. Plans and designs [are] produced in hyperrational and technocratic modes. [Representation] issues endemic to architecture and planning play a role. These firms are lily-white in their staffing and strategy.”

Perspective and Power

Chang praises the work of contracted engagement practitioners, like New Orleans-based Water Block, which surfaces Native, Maroon and Black histories within the landscape. “For a virtual event about plantings and signage at the Dillard Wetland, Atianna [Cordova, principal of Water Block] invited [Black New Orleans historian] Leon Waters to speak about wetlands in the context of Black liberation. Things like this make white climate planners uncomfortable. And these perspectives aren’t centered in the process, because [white project leads] determine how the story is told.”

Design for a just future requires understanding our racist past and racial capitalist inequity in the present. Architects, designers, and planners must educate themselves about these conditions, remembering that racial and economic inequities create real imbalances of political possibility.

“There’s an awkward, very white acknowledgment,” Alexander Williams says, “within Green New Deal spaces, that certain policies of the New Deal exacerbated racial inequality. So people promise to ‘center equity’ within the Green New Deal, but what does that mean? [Especially] without the power to enforce it?”

The Bottom

Ujiji Davis Williams, an urban designer and landscape architect originally from Brooklyn and recipient of the 2019 American Society of Landscape Architects (ASLA) Bradford Williams Medal of Excellence, sees the crisis facing Black New Orleans as deeply historical and broadly shared across Black American geographies. In her essay “The Bottom: The Emergence and Erasure of Black American Urban Landscapes,” Davis Williams describes an urban typology that “possesses a distinct vulnerability when confronted with American planning protocols and inequitable power structures

that deprioritize—and destroy—the presence and importance of these communities.”

“The Bottom is a place for Black people to live, based on where there were safe places to be,” Davis Williams says. “Runaways and maroons stayed [there] to avoid recapture. During the Great Migration, laws separated Black migrants from white ethnic immigrants moving across the country for industrial work. Oftentimes Bottoms were low-lying areas, along rivers, and coastal.”

An increase in economic valuation, as neighborhoods once dominated by docks become desirable for their proximity to new waterfront leisure and cultural facilities, threatens many Bottoms. Racist violence—physical and infrastructural—runs through these histories.

“There was a Black community [on the Chattahoochee River, northeast of] Atlanta. A Black person was accused of doing something to a white person,” Davis Williams says. A white mob chased the residents away. Lake Lanier was built on

the land [in 1956], a recreation area only open to white people. A whole community was sacrificed and enjoyment of the space became exclusive.”

In Detroit, the largest U.S. city with a majority-Black population, increasingly severe summer storms complicate challenges facing residents. “We have 50-year rain events every couple of years,” says planner and landscape designer Matthew Williams, a native of the city’s West Side. “Highways [built in trenches below grade] are shut down, people lose cars and basements flood, particularly along the Detroit River and across the East Side.”

In his work for the city of Detroit’s Planning Department, Williams says, he frequently receives requests for home-repair grants. “Many [Detroiters] are below median income [\$28,000 a year]. People on limited incomes can’t waterproof their basement or replace their connections to city water mains.”

“It’s above a neighborhood’s ability to execute. The City is considering a

\$15 million allocation to improve sewerage infrastructure, but this has less to do with design than with infrastructural quality. Just throw enough money at it for better equipment. You don’t need a plan to tell you rusted pipes will leak.”

Davis Williams connects these issues to regional power structures. “Detroit’s sewer system is connected to the outflow of adjacent suburbs’ systems. So we’re handling Detroit’s water challenges and Southfield’s and Ferndale’s. It puts a lot of stress on a system that can barely handle what’s happening in Detroit.”

“From a budget standpoint, the city of Detroit is more strapped than surrounding areas that may experience flooding,” Davis Williams says. “Flooding is one of many outcomes related to larger cycles of disinvestment and misalignment between cities and counties. It’s not because the city [of Detroit] doesn’t care.”

“Biden administration infrastructure funds and FEMA money [made available due to the 2021 floods] are a big deal.” **AIA**

AIA PERSPECTIVE

Listen Before Acting, Understand Before Prevailing

By Peter Exley, FAIA, 2021 AIA President

Prejudice is pernicious. If you have been on the receiving end of it, then you know how true this can be. If you have sailed through your life so far, then you know how lucky you are based on prejudice’s ubiquity.

Bias, as a noun, is a form of prejudice that you will hear a lot about this fall from the AIA. What you’ll also hear about are the dimensions of bias that make it not only pernicious and ubiquitous but also consequential—and it’s those consequences that create and sustain the very systems that perpetuate prejudice in society, in the workplace, and in spaces and places we design for all people.

I’m comfortable enough being uncomfortable to say that many of us in power and of privilege who wish to see positive change are hypocrites. We all want change, but we are all complicit in a system that disenfranchises tens of thousands of students and architects each year. We are complicit in a system that has disenfranchised hundreds of thousands of students and architects since 1857, never

mind the untold numbers who never had the chance to matriculate in schools or gain admission to the profession in the first place.

As the AIA’s current president, I represent a continuum of leaders who are united in their volunteerism, often over many years and decades, to represent the interests of architects. I have also had the chance to speak to dozens and dozens of different kinds of architects, and often I have spoken about a “continuum of agency.” A continuum of agency is when there is no material difference in our vocations, in our stations of life, in our professional outlooks, or even in the titles we give ourselves, whether it’s principal or president, co-founder or intern, student or dean, or board member or member.

This continuum means that it’s incumbent upon all of us to champion fairness, understand the dimensions of privilege, extend equitability from the scale of our compensation to the scale of our environment, and use our training as architects to lead by example.

Someone asked me recently if it was hard to be in a leadership position last year in the wake of George Floyd’s murder. The truth is I didn’t know what to do or what to say. So, I started to listen and listen more carefully than I ever had before to anyone else. But, this time, I was listening to everyone else—everyone who had been pulled over in their cars because of the color of their skin, everyone who had been threatened with a gun stuck in their ribs when they were teenagers, everyone who had been graded lower in architecture school than a white peer for no apparent reason.

Prejudice (and its subordinate concept of bias) is at the heart of all of this. But, if we can start to make our way back from complicity and hypocritical behavior, and especially if we can start to listen as urgently as we vow to act to gain real understanding, then our actions will be far more effective in ending systemic injustice. **AIA**



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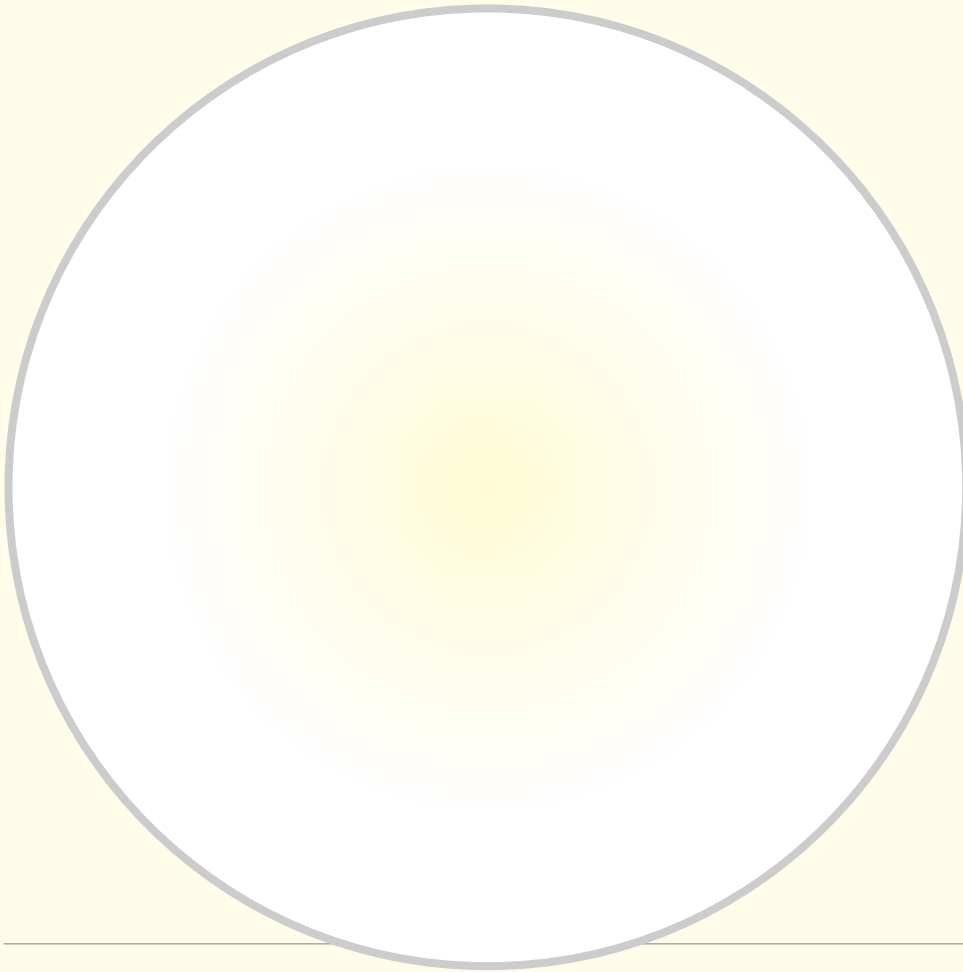
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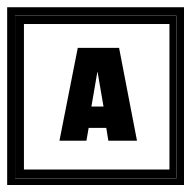
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INTRODUCTION

With each passing month of living and working in entirely new ways due to the COVID-19 pandemic, architects, designers, and the public at large are introduced to new solutions promising to solve nearly every problem. While many of these innovations are credible and critical to the way we pivot and continue to thrive as a society, the best ones are often rooted in modernist principles from nearly a century ago. “Much of modernist architecture can be understood as a consequence of the fear of disease, a desire to eradicate dark rooms and dusty corners where bacteria lurk,” says Kyle Chayka, author of “The Longing for Less: Living with Minimalism” and contributing writer for *The New Yorker*. He goes on to draw a comparison with what people seek

in buildings today: “In recent months, we have arrived at a new juncture of disease and architecture, where fear of contamination again controls what kind of spaces we want to be in. As tuberculosis shaped modernism, so has COVID-19 and our collective experience of staying inside for months on end will influence architecture’s near future.”

Without question, early modernist architects such as Charles Édouard Jeanneret-Gris (better known as Le Corbusier), Ludwig Mies van der Rohe, Marcel Breuer, and Adolf Loos all sought to ensure the best possible function in their spaces, including the desire for cleanliness and connections to nature that improve health and lift the spirit. The same sensibilities apply to contemporary architectural goals of today by way of efforts, such as biophilia (bringing the outdoors in),

and natural materials that strive to boost one’s sense of well-being.

Today’s challenges also bring a unique twist: the monumental shift of the workplace, from nearly full-time, at-office to hybrid or even fully remote scenarios. As video conferencing for work—and remote learning—becomes increasingly common, open floor plans and limited options for privacy and quality acoustics at home will need to be addressed. Offices will need to change by way of features such as physical or virtual walls, flexibility for the possibility of hybrid work, and mechanical and natural ventilation.

Despite needs for distance and definition, however, the pandemic also taught us that people require connection. As Chayka also notes, with credit to a pandemic manifesto by architect Steven Holl, spaces can teach people the value of codependence: “Buildings can make us more aware of the ways we are globally connected—the pathways that spread the coronavirus but can also help us fight it, collectively.”²

Many architectural features, including windows and doors, are playing an essential role in nearly every solution. It’s important to note the ways contemporary fenestration is rooted in modern architecture yet continues to evolve thanks to innovations in material and new assembly configurations.

ARCHITECTURE AND DESIGN GIVEN CURRENT EVENTS, INCLUDING FENESTRATION MOVING FORWARD

Continuous evolution and innovation have always been an integral part of design. But the global pandemic has produced a seismic shift in how people live and work. Along with rising concerns surrounding climate change, the events of today are significantly influencing the way architects and designers plan.

How Design Is Changing Based on the Global Pandemic and Climate Concerns

COVID-19 has forced the world to adapt in countless ways, many of which will affect the future of the built environment. Perhaps the most dramatic change is the expected move of many people away from large city offices and toward remote working, which will lead to a need to reimagine building functions within central business districts. Mid-2020 research by Nicholas Bloom, a work-from-home expert and economics professor at Stanford University, found that 1 in 3 American workers plan to keep working from home in some capacity after the pandemic. That would amount to employees spending 22% of all workdays at home, quadruple the amount of time compared to before the pandemic and a massive shift away from the office.³

Richard Florida, professor at the University of Toronto’s School of Cities and Rotman School of Management, sees the challenge as a tremendous opportunity: “Given their strategic locations at the very center of major metro



areas, central business districts are perfectly positioned to be remade as more vibrant neighborhoods where people can live and play as well as work—as a leading-edge example of what many urbanists are now calling 15-minute neighborhoods. And with conscious and intentional action ... these [central business districts] CBDs can be rebuilt in ways that are more inclusive and affordable.”⁴

Within and outside of central business districts, offices and other commercial facilities, as well as residential spaces, will likely become more flexible, with the ability to be quickly modified in the event of a future pandemic. The Australian architectural firm Woods Bagot, has even developed a series of flexible walls and screens to transform an open floor plan into more defined spaces.

Along with these changes in how and where people work will come a decrease in reliance on cars and city parking lots and structures, and an increase in adaptive reuse—two ideas that architects are bringing together. The architecture and design firm Gensler, has reimagined the potential of large city parking garages as multi-family housing and park space.

Modular construction and lightweight architecture, including shipping containers, are gaining momentum, due in part to the demand and urgent need for

healthcare facilities as a result of the pandemic. These options provide fast and flexible building solutions, and they produce less waste compared with traditional construction techniques.

COVID-19 is also changing the business side of architecture and design. This includes branding and demonstrating architecture’s value in improving the quality of people’s lives—something that existed well before the pandemic but that’s been reinforced in recent months. Key talking points for architects recommended by the AIA include:

1. Architects are in a unique position to align human health, climate health, and design thinking to help improve lives.
2. The profession is critical to the economic recovery of cities, states, and nations.
3. Architects will play a vital role in forging a new era of public health awareness and risk mitigation.⁵

Materials and the specification of innovative products will become increasingly important for architects and designers. In particular, durability, flexibility, and reliability will be qualities that clients seek. Sourcing timeliness has also risen as a key focus during the pandemic, as many supply chains have slowed down and lead times have grown. On this front, the AIA notes that architects and designers should:

1. Remain flexible in materials sourced by specifying multiple options, allowing proposed substitutions, and viewing “the unexpected” as an opportunity.
2. Stay in contact with suppliers on updates for products and materials, and find creative ways to compromise.
3. Prioritize locally manufactured products and materials versus sourcing from overseas.

The pandemic is also reshaping a number of methods and structural makeups of architectural and design practices. This includes increased digital services and interactions with clients as they become more comfortable with digital creation—and, with that, clients who increasingly welcome virtual design services from architects and designers beyond their local areas. In some cases, a physical office may no longer even be essential to an architectural firm, notes Phil Bernstein, FAIA, associate dean and senior lecturer at the Yale School of Architecture and former vice president at Autodesk. “A new generation of younger, digitally facile practices, with workers and talent distributed globally will emerge to compete with traditional incumbents. They’ll be lithe, flexible, less subject to economic dynamics, and won’t know each other as well. The design version of the ‘gig’ economy may emerge, focused less on full projects and more on discrete tasks.”⁶

Along similar lines, as workforces become more geographically dispersed, the potential to diversify talent grows. Location no longer needs to be a recruitment barrier, especially as higher engagement and satisfaction rates for remote workers are widely reported. Today’s students, in particular, “will watch carefully from the academic sidelines, preparing themselves for the new realities of the recovery and demanding from their educators what they think is important to prepare them for the workplace,” Bernstein notes. “The survivors will define that talent agenda, which is likely to be a heady mix of technological prowess, ability to collaborate directly and remotely, and flexible work style and technique.”⁷

The pandemic isn’t the only force having a profound effect on architecture and design. Climate change—and the need for buildings and communities to adapt—presents a significant new set of challenges and opportunities, especially as the frequency, intensity, and duration of extreme weather events are expected to increase. Specifically, architects and engineers need to design buildings differently, with an eye not only on current but also future climate conditions. Designing for resiliency will help ensure buildings stand the test of time, even as climate extremes intensify. It’s an idea being put into practice in landscape design now by the Minnesota Department of Natural

Resources, which is proactively planting trees and grasses that thrive in warmer climates to ensure they’ll survive in the future.

The same idea extends to buildings, both in response to previous natural disasters and in anticipation of future ones. After Hurricane Sandy, the Federal Emergency Management Agency (FEMA) evaluated buildings in New York and New Jersey to assess damage and develop recommended changes to engineering codes and standards to prevent or minimize future damage. These recommendations included elevating buildings above base flood elevation and “wet floodproofing,” which allows floodwater to enter a structure without causing damage. Both approaches are now used in buildings throughout the region, according to Nicholas Rajkovich, assistant professor of architecture at the University at Buffalo. But the work doesn’t stop there, he noted, pointing to research that shows the U.S. building stock may not be prepared for future climate-change-related storms and flooding. Architects will play a critical role, and it’s a tall order, he says. “Professional architecture and engineering organizations need to modify policies that don’t currently reflect the realities of climate change. ... Leadership from the professions can help convert recent research on climate change and the building sector into badly needed action.”⁸

GLOSSARY

Air leakage: One of four National Fenestration Rating Council (NFRC) metrics listed on the NFRC label, it indicates how much air will enter a room. Ratings come in at under 0.3; the lower the number, the better the product is at reducing drafts.

Contemporary: Design that does not refer to a specific time period but, rather, is ever-evolving to reflect what’s popular in the present.

Modern/modernism: Design from the early to mid-20th century time period; a precursor to what’s now called contemporary design.

Mulled: Connected, as in windows attached to each other, typically for installations of window walls.

NFRC: The National Fenestration Rating Council (NFRC) operates a voluntary program that tests, certifies, and labels windows, doors, and skylights based on their energy performance ratings.

Outdoor/indoor transmission class (OITC): A rating that assesses the transmission of low- and mid-frequency noises between indoors and outdoors.

Solar Heat Gain Coefficient: An NFRC metric that indicates resistance to unwanted heat gain, which is especially meaningful during summer. Ratings range from 0 to 1; the lower the number, the less is spent on cooling.

Sound transmission class (STC): A rating that indicates how much noise materials, including windows, can block, with a system that follows a logarithmic pattern much like the Richter scale. STC ratings, in decibels, range from 18 to 38; the higher the rating, the more efficient the material is at reducing unwanted noise.

U-Factor: An NFRC metric that indicates how well a product prevents heat from escaping from inside a room. Ratings range from 0.20 to 1.20; the lower the number, the better the performance.

Visible Transmittance: An NFRC metric that indicates a window or door’s ability to effectively transmit natural light into a home, reducing the need for artificial lighting. Ratings range from 0 to 1; the higher the number, the more a product lets in natural light.

Wet floodproofing: A recommended Federal Emergency Management Agency (FEMA) change to engineering codes and standards to prevent or minimize damage from hurricanes and flooding, it allows floodwater to enter a structure without causing damage.

Indeed, hurricanes and flooding represent the top threats of climate change. But wildfires, tornadoes, heavier rain and snow, and more extreme heat—requiring more or less insulation, depending on location, as well as better venting solutions—are making a mark on building requirements, too. On a more regionally specific level, cities such as Seattle are experiencing a particularly wide swing in temperatures, including long stretches of record-breaking heat in 2021. Texas and the southeast coast are seeing ever-stronger storms, so much so that High Velocity Hurricane Zone (HVHZ) building codes in Florida, in particular, require products, including windows and doors, be put through stringent tests. And in California and the west, longer and more intense wildfire seasons year after year have accelerated the use of fire-resistant exterior building materials.

Climate change has also led to advances in sustainable and environmentally friendly practices in buildings, including a more widespread adoption of solar roofing panels—in some cases, helping make net zero homes possible—and electric cars. More and more, architects and designers will need to incorporate these capabilities into their designs. Doing so will help the industry reinforce its problem-solving abilities and commitment to building a more sustainable future.



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QUIZ

- According to research, 1 in 3 U.S. workers plans to keep working from home in some capacity after the pandemic. That would quadruple the amount of time employees spend at home to _____ of all workdays versus before the pandemic.
 - 6%
 - 10%
 - 17%
 - 22%
- Which of the following AIA talking points discussed in the course demonstrate architecture's value in improving the quality of people's lives?
 - Architects are in a unique position to align human health, climate change, and design thinking to improve lives
 - The profession is critical to the economic recovery of cities, states, and nations
 - Architects will play a vital role in forging a new era of public health awareness and risk mitigation
 - All of the above
- Hurricanes and flooding represent the top threats of climate change making a mark on building requirements. Others include all of the following, EXCEPT:
 - Wildfires
 - Volcanoes
 - Tornadoes
 - More extreme heat
- According to the course, modernist architects saw windows as everything EXCEPT:
 - A means to bring in daylight and fresh air
 - Utilitarian, similar to how they functioned in factories
 - Opportunities to introduce decorative mullions
 - Elements that kept trim simple or eliminated it altogether
- Which of the following architects discussed in the course are most closely associated with the international modern style?
 - Le Corbusier
 - Ludwig Mies van der Rohe
 - Marcel Breuer
 - Eero Saarinen
- Notable Miesian modern style buildings include all the following, EXCEPT:
 - Farnsworth House in Plano, Illinois
 - Johnson House in New Canaan, Connecticut
 - Villa Savoye in France
 - Seagram Building in New York
- According to the course, contemporary architecture trends and influences shaped in part by the pandemic include:
 - More adaptable floor plans
 - Stronger outdoor connections
 - Sound control
 - All of the above
- Factors that contribute to a window or door's sound transmission class (STC) and outdoor/indoor transmission class (OITC) ratings include all of the following, EXCEPT:
 - Number of panes of glass
 - Gas fill type (e.g., argon)
 - Window or door placement
 - Glass thickness
- The National Fenestration Rating Council (NFRC) label rates four aspects of which type of performance?
 - Acoustic
 - Thermal
 - Structural
 - Water
- The U-Factor measures how well a product prevents heat from escaping from inside a room. Which of the following ratings represents the best performance?
 - 0.20
 - 0.50
 - 1.00
 - 1.20

Cultivating Successful Collaboration

Presented By:

GAGGENAU


Photo Credit: Getty Images

INTRODUCTION: THE IMPORTANCE OF COLLABORATION IN ARCHITECTURE

Architecture has always involved some form of collaboration—and the process begins with the client. Whether working with a developer, an institution, a family, or an individual, clients help determine everything from the location to the budget and often weigh in on form and function. In addition to clients, other stakeholders include engineers, builders, interior designers, and consultants. Often overlooked, however, are the collaborative efforts between architects—sometimes from different firms—and interdisciplinary teams that result in groundbreaking, innovative structures.

Andrew Pressman, FAIA, professor emeritus, and author of *Designing Relationships: The Art of Collaboration in*

Architecture, maintains, “A great collaborative team could be characterized as one big, unhappy, dysfunctional family. That speaks to diversity in team composition, and that would apply to experiences, background, culture, worldviews, and areas of expertise.” However, Pressman also notes that collaboration can “improve design and productivity. [...] The more diverse the team and the more potential for creative tensions, the more likely there will be innovative ideas.”¹

Embracing Diversity and Foregoing the Ego

Pressman stresses the importance of having diverse skillsets and experiences on a team—a theory that has been scientifically proven. Writing for *Scientific American*, Katherine W. Phillips cites numerous studies that have

LEARNING OBJECTIVES

1. Examine the benefits and difficulties of collaboration in architecture, as well as the role of the ego and the value of diversity.
2. Assess methods of collaboration and the ways in which they are relevant to the architecture, engineering, and construction professions.
3. Analyze case studies, including a historical example, that illustrate collaborative efforts.
4. Explore how collaboration can help address issues such as climate change and sustainability.

CONTINUING EDUCATION

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determined that “a group of people with diverse individual expertise would be better than a homogeneous group at solving complex, nonroutine problems.” This, Phillips continues, is primarily because “people with different backgrounds bring new information. Simply interacting with individuals who are different forces group members to prepare better, to anticipate alternative viewpoints, and expect that reaching consensus will take effort.”²

Pressman notes that some architects might be “inherently non-collaborative” because architecture schools “have promoted a subculture in which graduates spend their careers working as heroic, solitary, isolated designers.” The design-bid-build project delivery

method can also inhibit collaboration, creating scenarios where “architect and contractor are natural adversaries.” However, if architects can take the lead early on in a project by setting goals, aligning values, and assigning tasks, not only will the team become more collaborative by sharing the same objectives, architects will be freed up to engage in higher level topics, “such as the influence of construction logistics in deriving design solutions.”³

Tapping into different areas of expertise, innovation, problem-solving, and even firm growth are all reasons for architects to strive towards more effective collaboration. Richard Voss, director at Ignite Architects, maintains, “Great architecture is not born solely out of creative impulses, but also from the sustained teamwork of architects, interior designers, landscape designers, engineers, contractors, and specialist suppliers. Furthermore, successful architecture stems from meaningful collaboration between designers and their clients.” Considering input from all stakeholders, including clients, and ensuring that everyone’s goals and values are aligned can help “creative impulses” become award-winning, memorable structures. Voss emphasizes the role of the client throughout the creative process, stating, “The reasons for

collaboration across and within practices are beneficial if clients appreciate the context for which this is happening, understand the risks, and promote the ingredients for success.”⁴

Catering to the Client While Maintaining Artistic Integrity

An example of successful collaboration, with large input from clients, is Stuart Hacker & Julie Cohen Architects. For more than 30

years, the husband and wife team “attribute their success to balancing talents and keeping a client-first perspective.” They have adopted a mission where the homes they design “reflect not only their shared ideas, but also the client’s aspirations.”⁵ These goals are evident in a project they completed in the suburbs of Chicago on the edge of a wooded ravine. The architects, who strive to achieve “a delicate handling of the



Photo Credit: Kevin Scott & Montalba Architects

GLOSSARY

Accountability—potential problem with collaborative leadership; assigning roles can help avoid “grey areas” and ensure each team member takes responsibility for their part in a project.

Buy-in—inspires ownership; if the primary stakeholders on a team are involved in decision-making and problem-solving, there will be a group commitment to common values and goals. Team members will also be more likely to implement solutions to problems because they helped to devise those solutions and feel more of a responsibility to carry them out.

Characteristics of Collaborative Leaders—includes ability to be neutral, to relate to diverse groups and individuals, to facilitate a meeting, and to foster and develop new leadership.

Collaborative Leadership—ensures that stakeholders’ voices are heard and seeks to find common ground for achieving goals, which helps to establish trust. Because collaborative leadership is a transparent, open process, trust is further established through team meetings, discussion, and dialogue.

Conflict—whether one person is facilitating the collaborative process or whether people are taking turns in leadership roles depending on their areas of expertise, that person must mediate conflict, help quieter voices be heard, and ensure that louder voices and opinions don’t stifle the rest.

Leadership as a Collaborative Effort—“leadership may shift, by group decision, from one person to another as different talents or abilities are called for, or (more often) leadership is permanently shared by all, or several, members of the group. Here, there is no one leader: the group functions as a true collaborative and guides itself.”

Leadership of a Collaborative Effort—“a leadership role in a coalition, organization, or other enterprise where everyone is on an equal footing and working together to solve a problem, create something new, or run an organization or initiative. The leader is not in control of the group but has responsibility for guiding and coordinating the process by which the group decides upon and carries out actions to accomplish its goals.”

Leading the Process—arranging meetings, assigning responsibilities, and potentially even devising guidelines for discussion fall into this category. It is also important to engage all members of the team in discussion, mediate conflict, and, if necessary, introduce techniques that generate ideas such as brainstorming or presenting research.

Powerhouse—“represents a collaboration in the development of climate buildings”

Time—when a large number of people are involved, problem-solving and decision-making might take longer. Additionally, while the diversity of views may result in a better solution, it takes time to “engage stakeholders, capture inputs, and agree on an outcome.”

intersection between traditional principles and modern sensibilities” as well as cater to the “environmental, historical, and social contexts inherent in each project,” were faced with interesting challenges.⁶

The architects state the client was “an interesting guy who owns a telecommunications company and collects English Arts and Crafts furniture.” They felt the project had to “find the intersection of this dynamic duality” as well as reflect their own ideas. A design for the bathroom illustrates the innovation that came from Hacker and Cohen’s knowledge and the client’s desires. Wanting the sunlight from the bathroom to filter into the master bedroom, the architects proposed two interior windows. Originally, they wanted to include shades in the design; however, the client instead suggested “a liquid crystal that changes obscurity with the introduction of an electrical current.”⁷ At the

6 STEPS TO GROW YOUR FIRM THROUGH COLLABORATION

A major advantage to collaboration is the potential for smaller practices to grow by collaborating with larger firms. Working with larger, more experienced firms can allow smaller practices “to work on bigger projects or expand into other architectural sectors.” The Royal Institute of British Architects (RIBA) provides several steps for architects looking to break in to different sectors and partner with larger firms:

- 1. Remind yourself of existing connections.** Consider college classmates or people within your firm who might be able to facilitate an introduction to whomever you would like to partner or land a contract with.
- 2. Teach.** Teaching can allow you to effortlessly meet a variety of people. Colleagues will have connections to different people, and even students might go on to open their own firms.
- 3. Attend conferences.** Conferences provide a natural setting to strike up a conversation and meet potential new collaborators.
- 4. Organize an event.** Hosting an event at your firm can attract outside audiences. One firm in London turned the roof of their building into an edible garden for the London Festival of Architecture.
- 5. Identify your strengths.** By recognizing what your firm is best at, you can make better pitches to other practices, identifying the ways in which your respective strengths can complement one another. This can range anywhere from materials expertise to a specific design sensibility or beyond.
- 6. Consider the competition.** Before you bid on a project, consider teaming up with your competition.

Working together could increase your chances of getting shortlisted or winning a project.¹⁰

In the end, RIBA maintains that once a firm has established itself, “other collaborators will start knocking on your door.” Many large firms actively look to partner with smaller firms, particularly for their “fresh thinking.”¹¹

THE ARCHITECT AND THE CLIENT: FRANK LLOYD WRIGHT AND EDGAR KAUFMANN

One of the most famous architect-client relationships was between Frank Lloyd Wright and Edgar Kaufmann, the man who commissioned what is arguably Wright’s most famous house, Fallingwater. Kaufmann ran his family’s large, upscale department store, Kaufmann’s, in Pittsburgh and was an early advocate of interdisciplinary relationships. For example, he led a contingent of department store merchants and spokespeople from the University of Pittsburgh and the Mellon Institute, which later became Carnegie Mellon University, to found the Research Bureau for Retail Training in 1918 and ultimately received an honorary doctorate from the University of Pittsburgh in 1943 in recognition of his achievements.¹²

A lifelong interest in architecture, as well as his son’s apprenticeship at Wright’s Taliesin Fellowship in Wisconsin, led to Kaufmann meeting Wright in 1934 and commissioning him for a country house on property the family owned a few hours outside of Pittsburgh. At the time Wright was commissioned, he was approaching 67 years old, and many of his peers believed he was in the twilight of his career. The commission for Fallingwater also came in the midst of the Great Depression when the majority of architects were struggling to get well-paying jobs. Originally priced at \$30,000, the Fallingwater project ballooned first to \$70,000, and then, when the guest house, furnishings, and other add-ons were completed, ended up at \$155,000—the equivalent of \$2.9 million today.

When designing Fallingwater, Wright took into account the needs of the Kaufmann family, as well as their personal tastes. Kaufmann was “a constant advocate of Modernism in style and technology and in merchandising good design,” and commissioning Wright was part of Kaufmann’s ongoing goal “to promote good design in Pittsburgh.” On a personal level, Kaufmann’s relationship with his wife was strained, and many of Wright’s designs at Fallingwater “had a recurring role in keeping harmony within the family.”¹³

The home epitomizes harmony. Wright, a proponent of “organic architecture,” already believed that structures and people should be in harmony

with nature, not dominate it. To achieve this concept at Fallingwater, Wright, to the initial dismay of the Kaufmanns, insisted on cantilevering the home directly over a waterfall on their property rather than building it at a distance where the waterfall could be seen. This created a more thorough integration with nature, where the waterfall was not merely seen, but felt, as peaceful sounds of rushing water fill the home and stone steps in the living room lead directly to the waterfall below. Jutting out at the floor of the hearth are boulders that originated at the site and were left in place, literally bringing elements of the waterfall into the living area.

Nearby natural rock ledges are further imitated “in a stacked grouping of cantilevered concrete ‘trays,’ each anchored to a central stone chimney.”¹⁴ The chimney itself is made from Pottsville stone sourced from a local quarry, and the hearth symbolically serves to represent “the core of domestic life, with low ceilings and built-in furnishings that contribute to a sense of shelter and refuge.”¹⁵ The low ceilings also prompt occupants to look outwards toward nature, as do the mosaic-like stone floors that transition seamlessly from interior living spaces to outdoor terraces. Even the light ochre and “Cherokee red” color palette used throughout the residence “create a unified and organic composition.”¹⁶

Ultimately, Fallingwater is the result of one of the most successful architect-client relationships in history. Without Kaufmann’s open-mindedness and passion for art and architecture, as well as the land he already owned, Wright may never have been inspired to build a home directly overtop a waterfall. Wright also had the ability to cater to his client’s needs even if it meant innovating in unexpected—and initially unwanted—ways. Wright’s and Kaufmann’s “mutual passion for new ideas, aesthetic beauty, and the relationship between man and the natural world” not only “changed the course of Wright’s life and career” but “modern architecture itself.”¹⁷

flip of a switch, the light-emitting windows turn from transparent to opaque, allowing for a greater sense of privacy and adding a unique dimension to both rooms.

In addition to advocating for both client participation and teamwork, Voss of Ignite Architects espouses the benefits of collaboration between different architectural firms. Collaboration across firms, similarly to diversity within teams, can allow architects to rise outside of the potentially isolating pocket of a project to tackle broader concerns. In the case of successful partnership between firms, a recent example is a collaboration between The Miller Hull Partnership and Runberg Architecture Group on 8th and Republican, a multifamily project. Both firms already had similar values that stressed the importance of sustainability, but each firm had its own area of expertise. Miller Hull typically designed civic, municipal, and community structures whereas Runberg was known for multifamily projects.



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QUIZ

- The Royal Institute of British Architects (RIBA) provides several steps for architects looking to break in to different sectors and partner with larger firms. Which of the following is the first step?
 - Attend conferences
 - Teach
 - Remind yourself of existing connections
 - Consider the competition
- Edgar Kaufmann met Frank Lloyd Wright in _____ and commissioned him to build Fallingwater.
 - 1934
 - 1967
 - 1918
 - 1943
- According to the course, Kaufmann was an advocate of which style?
 - Medieval
 - Modernism
 - Renaissance
 - Arts and Crafts
- Which of the following is a potential disadvantage of collaborative leadership?
 - Time
 - Conflict
 - Accountability
 - All of the above
- According to the course materials, collaborative leadership should be used:
 - When tackling complex problems
 - When there a number of stakeholders with varied interests
 - When an issue affects a community
 - All of the above
- Collaborative leadership as defined within this course:
 - Ensures that stakeholders' voices are heard to find common ground for achieving goals
 - Is a transparent, open process building trust
 - Encourages buy-in inspiring ownership
 - All of the above
- Specific to the case study featuring 8th and Republican, Wechsler stated that collaboration:
 - Caused too much unnecessary planning
 - Allowed [the team] the ability to focus on details and divide up the scope of the design work enabling end product
 - Creating extra project preparation time and delayed the build
 - None of the above
- Minimizing _____ was a major concern for the Pacific Palisades project.
 - Light pollution
 - Carbon emissions
 - Concrete usage
 - The use of technology
- According to the course materials, which project delivery method can inhibit collaboration?
 - Construction manager at risk
 - Design-bid-build
 - Design-build
 - Integrated project delivery
- To help creative impulses become award-winning, memorable structures, the collaborative team should:
 - Considering input from all stakeholders, including clients
 - Ensuring that all stakeholder goals and values are aligned
 - Pushing for as little communication with clients as possible
 - Both A & B

Specifying Low-VOC Architectural and Industrial Maintenance Coatings to Meet Air Quality Standards

Presented By:



WHAT ARE VOLATILE ORGANIC COMPOUNDS?

Volatile organic compounds (VOCs) are chemicals emitted as gases from certain solids and liquids. They vaporize at room temperature and are the leading cause of ground-level air pollution.¹ Indoors, they also cause significant air pollution and have a greater potential to adversely impact the health of people that are exposed to them. In fact, concentrations of many VOCs are up to ten times higher indoors than outdoors. “Common sources of VOC emission include car exhaust, gasoline-powered lawn and garden equipment, gasoline dispensing stations, industrial coatings, inks, printing shops, paints, household chemicals, and building and furnishing materials.”² Indoors, VOC sources include paints and paint strippers, aerosol cleaner or disinfectant sprays, air fresheners, cigarette smoke, and even office printers, as well as many other

consumer products. For the scope of this course, we will focus on architectural and industrial maintenance coatings.

VOC Exemptions

In the United States, the Environmental Protection Agency (EPA) regulates emissions of VOCs to the outdoors primarily to prevent the formation of ozone, a constituent of photochemical smog.³ Some VOC emissions react slowly (low photochemical reactivity) or form less ozone and therefore have a limited effect on ozone pollution. For certain regulatory purposes they may be excluded from the VOC definition and are commonly referred to as VOC Exemptions. “VOCs that are non-reactive or of negligible reactivity to form ozone are exempted from the definition of VOCs used by EPA in its regulation (i.e. they make a negligible contribution to ground-level ozone formation). Since first establishing the list of exempt compounds

LEARNING OBJECTIVES

1. Examine what volatile organic compounds (VOCs) are and how they impact indoor air quality.
2. Understand the importance of indoor air quality, and green building standards that aim to improve occupant health and wellness through better air quality.
3. Review how VOCs are regulated at both the federal and state level.
4. Explore coating technologies that meet strict VOC standards through several case studies.

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EPA DEFINITION OF VOC

“Volatile organic compounds (VOC) means any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions.”

– EPA Title 40, Code of Federal Regulations (40 CFR) Part 51.100(s)

in 1977, the EPA has added several to the list, and frequently has several petitions for additional compounds undergoing review. In addition, some states have their own definitions and lists of exempted compounds.” Exemption of a compound from the EPA’s VOC definition in 40 CFR 51.100(s) does not exempt it from other regulation, such as its toxicity level, greenhouse gas formation potential, etc.⁴

VOC Classification

When discussing indoor environments, all organic chemical compounds that can volatilize under normal indoor atmospheric conditions of temperature and pressure are considered VOCs. VOCs are classified as Very Volatile Organic Compound (VVOC), Volatile Organic Compound (VOC) and Semi-Volatile Organic Compound (SVOC). While the line between these classifications is somewhat arbitrary,

DID YOU KNOW:

VOCs are also generated from several natural sources such as lightning, trees and other vegetation, farmed animals (CO₂ and methane), and natural decomposition of biomass (CO₂ and methane).^{6,7}

it shows the wide range of volatility among organic compounds. The three classifications are all important to indoor air, and are all considered to fall within the broad definition of indoor volatile organic compounds.⁵

IMPORTANCE OF INDOOR AIR QUALITY AND VOC⁸

Indoor air quality has become an increasingly important topic in building design over the past decade, particularly because we



Building materials and furnishings that emit VOCs can include older asbestos-based materials, new flooring, carpeting, and upholstery, cabinetry made of pressed wood products, and paints, among many others.

GLOSSARY

Architectural and Industrial Maintenance (AIM) Coatings Rule—Addresses definitions, labeling requirements, record keeping, reporting requirements, category limits and exceedance fees for Architectural Coatings; the rule limits the amount of VOCs that manufacturers and importers of architectural coatings can put into their products and has container labeling requirements for architectural coatings

Architectural Coating—A coating recommended for field application to stationary structures and their appurtenances, to portable buildings, to pavements, or to curbs

California Air Resources Board (CARB)—Oversees all air pollution control efforts in California, but also sets the standard for air and climate programs worldwide; CARB partners with the U.S. EPA and thirty-five local air pollution control districts that regulate emissions from businesses and facilities

Exempt VOC—VOCs that are non-reactive or of negligible reactivity to form ozone (i.e. they make a negligible contribution to ground-level ozone formation) and are therefore exempted from the definition of VOCs used by EPA in its regulation

One-Component (1K) Plant-Based Acrylic Resin—A line of waterborne resins that allows paint formulators to create wall, trim, and wood floor paints and coatings down to zero VOC with bio-based content in the 32–52% range

Ozone Transport Commission (OTC)—A multi-state organization created under the Clean Air Act to develop and implement regional solutions to the ground-level ozone problem in the Northeast and Mid-Atlantic regions

Polyaspartics—Coatings that enhance the use of conventional two-component aliphatic polyurethane technology by providing faster dry times and higher film builds, translating into a rapid return to service and high film build make it possible to reduce the number of coats in a paint system while maintaining the same overall thickness

South Coast Air Quality Management District (SCAQMD)—The regulatory agency responsible for improving air quality in Los Angeles, Orange County, Riverside, and San Bernardino counties of California; SCAQMD has the strictest pollution control requirements in the nation

Two-Component Waterborne Polyurethane Coating—A water-based, breathable, aliphatic polyurethane coating that provides the performance characteristics of solvent-based systems with the ease of application and low odor associated with water-based systems

Volatile Organic Compounds (VOCs)—Chemicals emitted as gases from certain solids and liquids that vaporize at room temperature and are the leading cause of ground-level air pollution

spend approximately 90% of our time indoors. According to the U.S. Environmental Protection Agency (EPA), "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." Poor indoor air quality can have dire consequences on human health, both short-term and long-term. Immediate effects that can happen after a single exposure include eye, nose, and throat irritation, dizziness, headaches, and fatigue. Asthma can also worsen. Long-term effects, that can show up after years of repeated exposure, and long after exposure has occurred, are respiratory disease, heart disease, and cancer. In addition to health concerns, the EPA estimates that "net avoidable costs associated with indoor air pollution amount to well over \$100 billion annually with 45% of those costs attributable to avoidable deaths from radon and environmental tobacco smoke, about 45% from lost productivity, and about 10% from avoidable respiratory diseases."⁹

Furnishings and building materials can release gases, particulates, and chemicals that lead to indoor air pollution. Poor ventilation, inadequate air exchange, high temperatures, and humidity can all increase concentrations of these pollutants. Tightly sealed buildings constructed to meet today's stringent energy and green building standards often exacerbate this issue. While they are more energy efficient, the low air exchange rate prevents pollutants from escaping, leading to higher indoor pollutant levels.¹⁰ Building materials and furnishings that emit pollutants can include older asbestos-based materials, new flooring, carpeting, and upholstery, cabinetry made of pressed wood products, and paints, among many others. EPA studies have found that "levels of several organics average 2 to 5 times higher indoors than outdoors. During and for several hours immediately after certain activities, such as paint stripping, levels may be 1,000 times background outdoor levels."¹¹

Because people respond so differently when exposed to indoor air pollutants, it is difficult to determine what a safe level of exposure is, or what levels of volatile organic compounds and other indoor air

pollutants should be permissible. But, many organizations, municipalities, and scientists are trying to crack this code and there are new regulations on the horizon that you should be aware of. Dave Darling, vice president of Health, Safety and Environmental Affairs at the American Coatings Association (ACA) notes, "VOC regulations are very complicated, not to mention the difficulty of tracking all the Federal, State and local VOC regulations, green building standards, and building codes." Let's break down how VOCs in architectural and industrial maintenance coatings are regulated at both the federal and state level, as they have great bearing on indoor air quality.

FEDERAL VOC REGULATIONS AND ARCHITECTURAL AND INDUSTRIAL MAINTENANCE (AIM) COATINGS RULE

Since 1998 the EPA has regulated VOCs at the Federal level in 40 CFR 59, the National Volatile Organic Compound Emission Standards For Consumer And Commercial Products, a rule limiting emissions from VOCs pursuant with the Clean Air Act. The purpose of this rule was based on the EPA's determination that VOC emissions from the use of coatings had the potential to contribute to ozone levels.¹² The intent is to regulate those who produce, package,

repackage, or import coatings and other consumer products for sale or distribution in the U.S.

VOC controls for products are typically based on the application of products, such as:

- Aerosol Coatings
- Architectural Coatings
- Automobile Refinish Coatings
- Consumer Products

Definitions, labeling requirements, record keeping, reporting requirements, category limits, and exceedance fees for architectural coatings are addressed in 40 CFR 59 Subpart D, the Architectural and Industrial Maintenance (AIM) Coatings Rule. AIM defines an Architectural Coating as "a coating recommended for field application to stationary structures and their appurtenances, to portable buildings, to pavements, or to curbs." This rule required products manufactured on or after the implementation date (Sept 13, 1999) to meet the VOC limits for the defined AIM coating categories.¹³ This rule limits the amount of volatile organic compounds that manufacturers and importers of architectural coatings can put into their products. The rule also has container labeling requirements for architectural coatings. There are different options for complying with the VOC limits, including exemptions for products that may be hard to reformulate.



VOC regulations are very complicated, not to mention the difficulty of tracking all the Federal, State and local VOC regulations, green building standards, and building codes. But, many organizations, municipalities, and scientists are trying to crack this code and there are new regulations on the horizon that you should be aware of.

"The VOC content for Architectural Coatings is calculated in grams of VOC per liter of coating minus water and exempts (as per 40 CFR 59.406), and the VOC content limit by actual Architectural Coating category is found in Table 1 of the Subpart. There are tonnage exemptions and exceedance fee exemptions which may apply, but even in these cases record keeping and reporting is still required."¹⁴

The final Architectural Coatings rule "is estimated to reduce VOC emissions by 103,000 megagrams per year (Mg/yr) (113,500 tons per year [tpy]) by requiring manufacturers and importers to limit the VOC content of architectural coatings."¹⁵

Consumer Products, covered in 40 CFR 59 Subpart C, may apply to building materials as well. Consumer Products are defined as "any household or institutional product (including paints, coatings, and solvents) or substance, or article (including any container or packaging) held by any person, where the use, consumption, storage, disposal, destruction, or decomposition of which may result in the release of VOC." The VOC content for Consumer Products is calculated by weight percentage for most of its categories.¹⁶



This article continues on
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SPONSOR INFORMATION



As an innovation leader in the development of high performance coating and sealant raw material technologies, Covestro, LLC enables architects, designers and building owners by providing real world solutions for built environment challenges. Covestro, LLC develops coating and sealant solutions for flooring, interior and exterior walls and trim, and roofing and waterproofing with high performance and sustainability in mind.

QUIZ

- VOCs that _____ are exempt from EPA regulation.
 - Have low toxicity levels
 - Have low greenhouse gas formation potential
 - Are non-reactive or of negligible reactivity to form ozone
 - No VOCs are exempt
- VOCs are generated from which of the following natural sources?
 - Lightning
 - Trees and vegetation
 - Farmed animals
 - Decomposition of biomass
 - All of the above
- Definitions, labeling requirements, record keeping, reporting requirements, category limits and exceedance fees for _____ are addressed in 40 CFR 59 Subpart D, the AIM Coatings Rule.
 - Aerosol coatings
 - Architectural coatings
 - Automobile refinishing coatings
 - Consumer products
- _____ is a multi-state organization created under the Clean Air Act to develop and implement regional solutions to the ground-level ozone problem in the Northeast and Mid-Atlantic regions of the U.S.
 - OTC
 - CARB
 - SCAQMD
 - LADCO
- _____ oversees all air pollution control efforts in California, partnering with the U.S. EPA and thirty-five local air pollution control districts that regulate emissions from businesses and facilities.
 - OTC
 - CARB
 - SCAQMD
 - LADCO
- Manufacturers of coatings, adhesives, sealants, and other consumer products use _____ solvents to meet VOC levels, but in the next year or two some of these _____ solvents will be de-listed, making it harder for manufacturers to meet VOC standards.
 - Low-VOC
 - Exempt
 - Water-based
 - Low-solids
- Two-component waterborne polyurethane coatings have which of the following characteristics?
 - Very low odor
 - High chemical, scratch, and stain resistance
 - Can be used as a colorcoat, clearcoat, or penetrating sealer over concrete and wood floors
 - All of the above
- _____ coatings tend to have higher VOC levels.
 - Solventborne
 - Waterborne
 - High-solids
 - Exempt
- Coatings made with _____ technology can be applied at air and substrate temperatures below 50°F, which is desirable for sites in the Northern regions that need to push coating application into the cooler Spring or Fall shoulder seasons due to project delays or timing.
 - Two-component waterborne polyurethane
 - One-component acrylic
 - Two-component acrylic
 - Polyaspartic
- Which of the following are considered waterborne resins that allows paint formulators to create wall, trim, and wood floor paints and coatings down to zero VOC with bio-based content in the 32-52% range?
 - Two-component waterborne polyurethanes
 - One-component plant-based acrylic resins
 - Two-component acrylics
 - Polyaspartics

Handcrafted Windows and Doors for the Luxury Architectural Market

SAFETY, PERFORMANCE, AND SUSTAINABILITY

Presented By:



INTRODUCTION: CRAFTSMANSHIP AND AUTHENTICITY AS A DESIGN TREND

Authenticity allows for stronger connections—to one another, to brands, to architecture. Tied in with recent trends of authenticity is the idea of the handcrafted, non-mass-produced object. Everything from small batch distilleries and breweries to handsewn clothing and designer bags to paintings and furniture picked up at arts festivals are celebrated and prized for being crafted by artisans. Craftsmanship, particularly in design, can lend itself to authenticity and help to create unique, timeless structures and pieces that resonate emotionally with those who own or interact with them.

As consumers look for authenticity and well-made items, the prioritization is on

quality rather than quantity. In an article for *Forbes*, Maiden Home founder Nidhi Kapur comments that the desire for quality over quantity is “about design-forward details, expert craftsmanship, and adding touches of luxury.” Consumers are ultimately choosing “fewer but better things, and [their] hearts are set on pieces with artistic touches that nod to the natural world [...]. It’s all about adding livable luxuries—from iconic silhouettes to plush, design-forward fabrics.”¹

Post-pandemic, homeowners and tenants are reevaluating their homes in terms of form and function, especially as many continue to work remotely. Inherent in this reevaluation and search for well-made, authentic items is the concept of biophilic design and a desire for wellbeing. Biophilia,

LEARNING OBJECTIVES

1. Explore the origins of the Arts and Crafts Movement, including the influence of John Ruskin, William Morris, Frank Lloyd Wright, and others, its return as a modern trend, and how it advocated for the wellbeing of homeowners and occupants through material selection and design.
2. Assess the impact of Industrial and Technological Revolutions and the ways in which they influence consumers' desires for handcrafted goods, authenticity, and connectedness, particularly in the luxury market.
3. Discover how luxury handcrafted windows provide higher performing, more sustainable fenestration solutions for discerning architects and their clients.
4. Describe the important elements of handcrafted windows; how they are manufactured for safety, performance, and durability; and how they can be incorporated into the luxury architectural market.

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or human beings' innate connection with nature, is often exhibited in design through the use of natural materials and patterns, views and sounds of nature, and the use of water and light. Incorporating nature into design has been shown to “reduce stress, blood pressure levels, and heart rates, whilst

increasing productivity, creativity, and self-reported rates of wellbeing.”²

While biophilia and the blend of authenticity and craftsmanship are currently trending across industries, they have long been present in design. In particular, they echo the 19th century’s Arts and Crafts Movement. Originating in the England in the mid-19th century, the Arts and Crafts Movement found popularity in the U.S. in the late 19th and early 20th centuries. The Metropolitan Museum of Art notes that at the time the Arts and Crafts Movement emerged, England was the most industrialized country in the world, and “anxieties about industrial life fueled a positive reevaluation of handcraftsmanship and precapitalist forms of culture and society. Arts and Crafts designers sought to improve standards of decorative design, believed to have been debased by mechanization, and to create environments in which beautiful and fine workmanship governed.”³

The result was “the advancement of the designer as craftsman,” an emphasis on connecting designers and manufacturers with one another, and a focus on “nature and simplicity of form.” Today, these trends and desires are returning.

HOW THE INDUSTRIAL AND TECHNOLOGICAL REVOLUTIONS INFLUENCED CONSUMER’S DESIRE FOR CRAFTSMANSHIP

A variety of crafts movements, influencers, and trends have shaped contemporary consumers’ desire for craftsmanship and in turn impacted the design of mass-produced products.

Influencers of the Arts and Crafts Movement

The Arts and Crafts Movement took its name from the Arts and Crafts Exhibition Society, founded in 1888 in England, and “initially responded to Victorian mass-production and inappropriate ornamentation by celebrating the simpler forms of traditional decorative arts and reasserting the value of hand craftsmanship. Through its evolution and dissemination to wider Europe, America, and its reverberations in Japan, the Arts and Crafts Movement affected the decorative arts, interior design, and architecture over several decades.” Both the Movement and the style it espoused “promoted ideals

of craftsmanship, individualism, and the integration of art into everyday life.”⁴ John Ruskin (1819–1900), William Morris (1834–1896), Gustav Stickley (1858–1942), and Frank Lloyd Wright (1867–1959) all played major roles in advocating for and popularizing the Arts and Crafts Movement.

John Ruskin

Ruskin’s interests were vast: he wrote essays, poems, treatises, manuals, and travel guides on everything from literature, botany, and politics to architecture, ornithology, and the economy. All of his writing was connected by his focus on the relationships between “nature, art, and society,” and today, his work is often related to “environmentalism, sustainability, and craft.”⁵ In architecture, Ruskin believed medieval structures could serve as a model for “honest craftsmanship and quality materials” and consistently advocated for craftsmen and artisans.⁶ He further believed that “beauty of form is revealed in organisms which have developed perfectly according to their laws of growth, and so give [...] ‘the appearance of felicitous fulfillment of function.’” Many influential architects, including Le Corbusier, Louis Sullivan, Frank Lloyd Wright, and Walter Gropius “acknowledged their debt” to Ruskin.⁷

William Morris

Like Ruskin, Morris’s interests were diverse; he was a “poet, decorative artist, translator, romance writer, calligrapher, book designer, preservationist, journalist, political leader, and theorist of socialism and the decorative arts.” In his work, much of which was influenced by Ruskin, he exhibited a “beauty, interconnectedness, and farsightedness” as well as “efforts to live up to radical ideas of social justice.” Early in his career, he was apprenticed to the Gothic revival architect G.B. Street and went on to co-found a company dedicated to designing furniture, carpets, stained glass, wallpaper, and other products for the home. His company also became renowned for stained glass and eventually became “the leading English interior decorating firm and supplier of stained-glass church windows.”⁸

Ultimately, Morris “strove to unite all the arts within the decoration of the home, emphasizing nature and the simplicity of form.”⁹ He went on to give and publish lectures “on subjects as diverse as pattern design, dyeing techniques, and the social role of art [and] reached a wide international audience. His visual style and his views on materials, hand-making, and the value of craft were highly influential. He is considered a

GLOSSARY

Arts and Crafts Movement—“initially responded to Victorian mass-production and inappropriate ornamentation by celebrating the simpler forms of traditional decorative arts and reasserting the value of hand craftsmanship”; “Arts and Crafts designers sought to improve standards of decorative design, believed to have been debased by mechanization, and to create environments in which beautiful and fine workmanship governed.”

Authenticity—genuine in origin; reliable; accurate; in terms of philosophy, relating to a responsible, purposive way of life; creates value.

Biophilia—humans’ innate connection with nature.

Craftsmanship—skill in a particular field; the quality shown in something made by hand; denotes artistry.

Effort—many people relate “effort” to being human; there is a perception that the greater the effort, the greater the value.

Handcrafted—made by hand, skillfully.

Handcrafted Movement—includes “a renewed focus on biophilic design, interest in craftsman and artisan-made furnishings and finishings, and a turn towards intentional, utilitarian decorating;” emphasis on patterns from nature, wood building elements, simple silhouettes, functional design, and timelessness.

Intention—when a customer feels as though an item was chosen expressly for them by another human being.

Luxury Good—“usually defined by three characteristics: it is made of the highest quality materials, it comes in a limited quantity, and it is created by a company or individual that publicly values craftsmanship.”

Prairie School—originated in the U.S.; focus on horizontal lines, low-pitched roofs, and overhanging eaves.

founder of the Arts and Crafts Movement, and his mark can be seen everywhere from the Bauhaus Movement to the works of twenty-first-century artists and craftspeople.¹⁰

Gustav Stickley

Born in Osceola, Wisconsin, Stickley apprenticed at a relative's chair factory when he was 18 years old. He soon opened a furniture manufacturing company where he, in part, "emulated Morris's production"¹¹ to create furniture characterized by "sturdy materials, rectilinear forms, sparse ornamentation, and evident or 'honest' construction." He further adopted Morris's motto "*Als ik kan*," meaning "If I can," as he embraced the Arts and Crafts Movement and "bridged the high ideals of the great theorists of artistic reform," particularly those of Ruskin and Morris, "with the contingencies and processes of the mass market."¹² Believing mass-produced furniture to be "poorly constructed and overly complicated in design," he "set out to improve American taste" through craftsmanship. He advocated for building in harmony with nature by utilizing natural materials, and creating high-quality, mass-produced furniture for middle-class Americans.¹³

Frank Lloyd Wright

Wright pioneered theories on "organic architecture" and created the Prairie School of architecture, which was characterized "by low-pitched roofs, open interiors, and horizontal lines that reflected the prairie landscape." He advocated for the use of natural materials such as stone, wood, and clay, integrating his buildings into the landscape and often specifying materials that were locally sourced. He drew inspiration from the Arts and Crafts Movement, and his style, including "plain surfaces with minimal decorative embellishments," were "suited to incorporating the machine, resulting in furniture with intense rectilinearity and natural surfaces."¹⁴ Wright ultimately believed "that art has a humane and noble task to serve man in harmony with his natural surroundings,"¹⁵ and his work, like Ruskin's, Morris's, and Stickley's, "responded to the challenges of modernity, technological advance, and social change."¹⁶

THE SHAKERS

Developing in parallel to the Arts and Crafts Movement were the Shakers, a small sect of English Quakers that settled in the U.S. in 1774. They established a total of 18 communities at their height, located primarily along the east coast from Maine to Kentucky. Guided by principles of "honesty, utility, and simplicity," their beliefs found expression in the furniture and household objects they created. The group became "renowned for their minimalist design and unstinting quality. Rejecting excessive ornament because it ostensibly encouraged the sin of pride, Shaker furniture makers focused on overall form and proportions, developing creative solutions such as asymmetrical drawer arrangements and multipurpose forms to add visual interest without resorting to pure decoration." They also believed that manufactured goods "should be honest in construction and appearance," rejecting "'deceitful'" designs like veneers, inlays, and carvings. They also preferred to source materials locally, using American woods like pine and cherry, including for knobs and drawer pulls.¹⁷

In order to support themselves, many Shakers sold furniture and household items to neighboring communities. They marketed their items to the general public by touting "their attention to detail and quality" when much of middle-class America associated "mass-produced furniture" with "shoddy construction."¹⁸ By the early 20th century, however, Shaker communities began to close, lacking new members as their "ascetic lifestyle and fervent spirituality proved no match for the pull of modern life."¹⁹ Currently, despite there being only three registered, active Shaker members in the U.S., many designers praise their timeless "nonaesthetic," and their ability to create "useful," "beautiful," and "humble" items that speak to a "purity that comes from skill and practice."²⁰

Impact of the Influencers

All of the innovators discussed above resulted in new, widely spread ideas for how homes should be built and decorated. Popular publications at the time, including *Ladies Home Journal*, *House Beautiful*, and Stickley's own *The Craftsman*, propounded beliefs that the ideal home should have "an open-planned interior shaped by a color palette that reflected the natural environment." The magazines further gave subscribers "decorating suggestions, including the use of colors, type of furniture, and decorative accessories, such as rugs and pottery."

Technological Revolutions

For some, the end of the Arts and Crafts Movement was brought about by the continued rise of urban development and a relentless push for industrialization and new technologies in the mid-20th century. Industrialization itself can be divided into different phases with different focal points, the first of which ranged from the end of the 18th century to the beginning of the 19th and spurred the Arts and Crafts Movement as a response against it.

The Second Industrial Revolution, beginning around 1870, saw the development of new sources of energy, such as electricity, gas, and oil. Transportation and communication

both became easier with the invention of the internal combustion engine, telegraph, and telephone. Later in this second stage, the automobile and airplane were invented, and steel also began to be in high demand. The Third Industrial Revolution occurred in the second half of the 20th century with the rise of electronics and computers. Nuclear energy, space expeditions, biotechnology, and high-level automation characterize this era. The Fourth Industrial Revolution is largely centered around the internet and includes advances such as the Internet of Things, robotics, blockchain, augmented reality, and artificial intelligence.²¹

Many see the coming of a Fifth Industrial Revolution that stands in contrast to "dehumanizing trends in the Fourth Revolution" and predict that the Fifth Revolution will "bend back toward the service of humanity" and involve "innovation best practices" by connecting innovation to purpose and inclusivity.²² These predictions further correspond to modern consumers' desires for handcrafted, well-made items that promote a sense of wellbeing.

WHAT TODAY'S LUXURY CONSUMERS WANT

Just as Ruskin and Morris responded to a growing sense of disillusionment and dislike of industrialization, "one consequence of the digital age and the push toward mass

production is that demand for handmade products has increased.” An article in the *Harvard Business Review* discusses the desire people have for handmade products and credits the value placed on human-to-human interaction. For example, research has shown that when “people think of what it means to be human, they typically consider two fundamental capacities: conscious experience (i.e., the capacity to feel) and agency (i.e., having thought and intentions).” In other words, much of what it means to be human is relating to one another. Architects, interior designers, and other professionals that focus their efforts on making connections with people have the “opportunity to create enormous social and economic value.”²³

Recognizing the value of “human touch” can further drive consumer demand. For instance, researchers maintain that “a human touch also imbues experiences and products with special significance and so increases people’s perception of the value of those experiences and products.” Not only that, but the modern consumer equally has a desire for experiences or objects that speak to their individuality and sets them apart from others. Rather than automating services or disconnecting from people and products, organizations that recognize the need for human connection and place value on well-made or handcrafted items are able to resonate with consumers.



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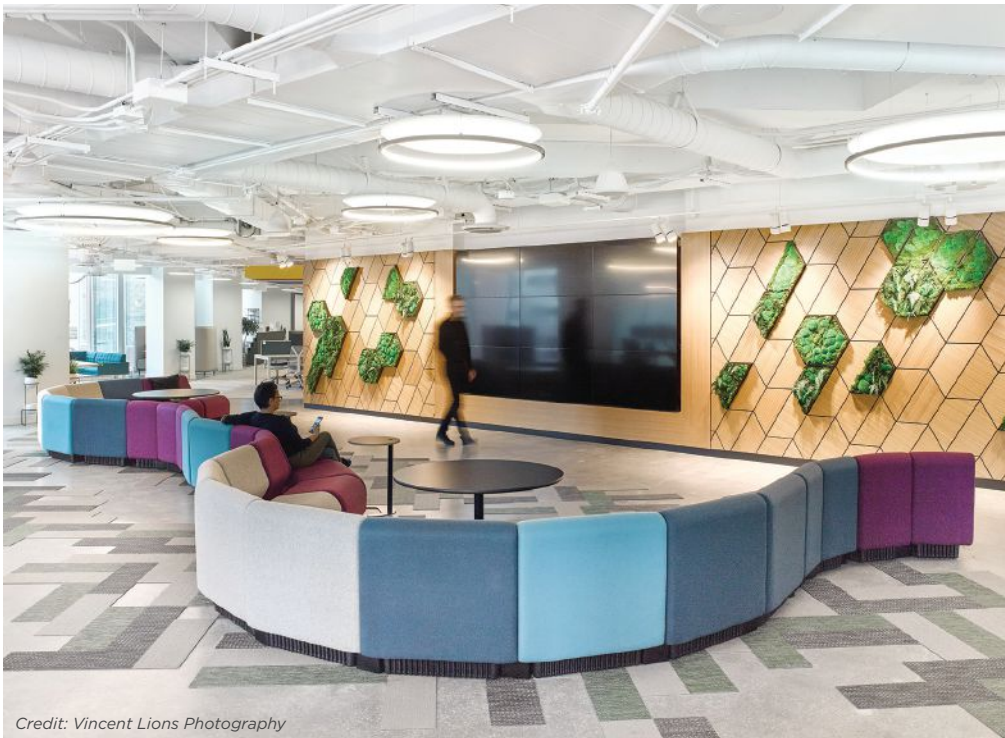
Loewen is the leading manufacturer of premium windows and doors for the luxury architectural market in North America and abroad. In addition to proudly handcrafting enduring products that enhance beautiful architecture, Loewen is also an innovative, design-driven, technologically advanced company of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

QUIZ

- The Arts and Crafts Movement first began in _____.
 - U.S.
 - England
 - France
 - Japan
- According to the course, which influencer believed medieval structures could serve as a model for “honest craftsmanship and quality materials?”
 - John Ruskin
 - William Morris
 - Gustav Stickley
 - Frank Lloyd Wright
- According to the course, which founder of the Arts and Crafts Movement sought to combine social justice with design, striving to “to unite all the arts within the decoration of the home, emphasizing nature and the simplicity of form?”
 - John Ruskin
 - William Morris
 - Gustav Stickley
 - Frank Lloyd Wright
- Which historical figure mentioned in the course is considered the founder of the Prairie School of architecture?
 - John Ruskin
 - William Morris
 - Gustav Stickley
 - Frank Lloyd Wright
- Who “set out to improve American taste” through craftsmanship and advocated for building in harmony with nature by utilizing natural materials, and creating high-quality, mass-produced furniture for middle-class Americans?
 - John Ruskin
 - William Morris
 - Gustav Stickley
 - Frank Lloyd Wright
- Luxury market research conducted by 360 Market Reach notes that _____ of people feel that “online stores can provide a unique and fulfilling buying experience for artisanal goods.”
 - 25%
 - 38%
 - 79%
 - 87%
- According to the course, ideal woods for fenestration include _____.
 - White Oak
 - Coastal Douglas Fir
 - Accoya
 - All of the above
- As noted in the course, some luxury manufacturers sustainably source as much as _____ of the wood used for their windows.
 - 100%
 - 89%
 - 75%
 - 45%
- When specifying extruded aluminum cladding, which of the following benefits are applicable?
 - Allow intricate extrusion detailing
 - Withstand serious impact without sustaining damage
 - Provide the malleability necessary to clad many sizes and shapes
 - Deliver unequaled environmental durability
 - All of the above
- A _____ built into the sash helps dissipate condensation/moisture (if it should occur) resulting in long unit life.
 - Venting channel
 - Moisture exterior piping
 - Mirrored glass
 - Laminated safety glass

In Pursuit of Acoustical Equity

Presented By:



Credit: Vincent Lions Photography

By Viken Koukounian, Ph.D., PEng., and Niklas Moeller

Given the intense focus on health and safety, as well as the changes in work/life balance precipitated by the COVID-19 outbreak, it is not surprising that the pandemic has accelerated the healthy-building movement and “people-first” mindset spearheaded by standards such as WELL and Fitwel. There is burgeoning consensus that buildings need to be designed with deep commitment to the well-being of their occupants.

Effective acoustics are key to healthy buildings. After all, noise is known to provoke physiological stress responses that can negatively impact occupants. The World Health Organization describes it as an “underestimated threat” that contributes to

stress, high blood pressure, cardiovascular disease, dementia, and diabetes. Hence, WELL and Fitwel take acoustics into consideration; however, it remains a poorly understood Indoor Environmental Quality (IEQ) parameter, and the lowest rated.¹

RETURNING TO THE WORKPLACE

Low ratings have added significance in today’s climate. Many employees found a silver lining in the ways in which stay-at-home orders enriched their family lives, even as the scope of their work and social lives contracted. As companies start to bring—or attempt to draw—they back to the office, occupant satisfaction is more important than ever.

LEARNING OBJECTIVES

1. Introduce the concept of acoustical equity
2. Discuss the role acoustical privacy plays in achieving acoustical equity
3. Describe the need to control the temporal, spatial, and spectral qualities of background sound within the built environment
4. Explain the importance of tuning minimum background sound to meet a masking spectrum

CONTINUING EDUCATION

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Organizations need to implement strategies that not only keep staff safe and healthy but also happy and productive enough within their working environment that they actually want to come in.

Among the architecture and design community, there is growing conviction that these goals must be achieved through concern with *equity*—and applied to “real-world” needs such as acoustical privacy, rather than amenities like pool tables, private chefs, and other perks; in other words, that it is more a matter of how employees are treated than what they are being treated to.²

Firms such as Gensler point out that although employees are enjoying benefits

(e.g., more time with family and less spent commuting) while working from home, many are also struggling with less-than-ideal conditions (e.g., poor internet connectivity, shared workspace with children and other family members, noisy neighbors and neighborhoods) that negatively impact their engagement and productivity. Whether an organization wants their office to be occupied full time post-pandemic or to serve as a critical part of a hybrid working model, it has the potential to act as a “great equalizer”—a shared facility that is specifically designed to support employees’ work and overall well-being.³

According to the *2020 Gensler Work from Home Survey*, 88 percent of employees would like to return to the workplace in some capacity. One of the primary reasons the 2,300+ participants cite is the need for a quiet, distraction-free environment—a desire echoed by the 32,000+ people polled during studies Steelcase conducted across 10 countries.⁴ It is clear that acoustics matter and, hence, are vital to ensuring that employees not only enjoy equal access to the facility itself but to the IEQ parameters needed to work comfortably and effectively.

But what is *acoustical equity*? And how does one achieve it?

THE SOUND THAT ACTUALLY EXISTS

En route to answering these questions, one must first consider the traditional approach to acoustics, which relies on “categorization” and “acceptable-level” schemes prevalent throughout building standards and codes. The former specifies sound-rating values [e.g., sound transmission class (STC), noise isolation class (NIC), impact isolation class (IIC), ceiling attenuation class (CAC)] for the boundaries of a room or building envelope, while the latter uses noise-rating values [e.g., noise criteria (NC), noise rating (NR), room criteria (RC)] to set maximum limits for noise, such as that generated by building systems, services, and utilities. However, neither offers insight into the *actual acoustics* (i.e., the sound actually present) within a space or occupant experience of it.

In order to improve results—a goal that one can, with a broad brushstroke, call “better acoustics”—and fulfill the objective of

designing with occupants in mind, one must turn their attention to the sound actually present in a space and look at it through the lens of both architectural acoustics (i.e., the study of sound and its behavior in and due to a space) and psychoacoustics (i.e., the study of the psychological and physiological effects of sound and its perception). Indeed, one cannot be separated from the other, as psychoacoustical evaluation of a space considers the outcome of the combined performance of all acoustical features.

ACOUSTICAL PRIVACY IS KEY

The reactions of building occupants are captured using psychoacoustic metrics,

some of which are subjective (e.g., surveys evaluating comfort, distraction, perceived productivity) and others that are objective (e.g., intelligibility, audibility).

Research shows that our overall acoustical satisfaction is strongly correlated with acoustical privacy, a concept with clear ties to the workplace but one that is also relevant to other environments; for example, surveys of multi-unit residences demonstrate links between acoustical privacy and annoyance, fatigue, and sleeping problems (e.g., due to noise from traffic and neighbors).⁵ In other words, although people tend to equate acoustical privacy with speech privacy, the former is not limited

GLOSSARY

ABC Rule—Refers to the strategies required to achieve effective acoustics within the workplace. ‘A’ is for ‘absorption,’ ‘B’ is for ‘blocking’ and ‘C’ stands for ‘control,’ which involves establishing an appropriate minimum background sound level and spectrum using a sound masking system.

Articulation Index—A measure of the intelligibility of speech, the articulation index (AI) is rated from 0.00 (no intelligibility) to 1.00 (perfect intelligibility). The range is divided into four qualitative privacy categories, including Confidential (0.00 to 0.05), Normal (0.05 to 0.20), Marginal (0.20 to 0.30), and None (0.30 to 1.00).

A-Weighted Sound Level—The standard measure of the sound pressure level that approximates the sensitivity of the human ear at moderate sound levels. A-weighted sound level (dBA) de-emphasizes high and low frequencies because the ear poorly perceives these.

dBA—The standard measure of the sound pressure level that approximates the sensitivity of the human ear at moderate sound levels. A-weighted sound level (dBA) de-emphasizes high and low frequencies because the ear poorly perceives these.

Masking Spectrum—A masking spectrum—also called a ‘curve’—is engineered to balance effective acoustical control and comfort, and forms the basis for the synthesis of masking sound. When a masking system’s measured output is professionally-tuned to meet this spectrum from 100 to 10,000 Hz, occupants’ perception of the final product may be described as ‘quiet’ and ‘comfortable.’

Pink Noise—Pink noise is similar to white noise, but rather than being constant in volume, it decreases at a steady rate as frequency increases (3 dB per octave); however, because these decreases are offset by the increases created by the doubling of frequencies in each octave, pink noise is constant in volume per octave. Pink noise is less hissy than white noise, but due to the relatively louder low frequency volumes tends to have a rumbling characteristic similar to that of a waterfall.

Psychoacoustics—The study of the psychological and physiological effects of sound and its perception.

Signal-to-Noise Ratio—The ratio of the desired or undesired sound to background sound levels.

Sound Masking System—An acoustical technology consisting of a series of loudspeakers installed in a grid-like pattern in the ceiling that distribute a background sound most often compared to that of softly blowing air. By raising the background sound level within a space, masking obscures conversations and noises that are lower in volume and reduces the disruptive impact of those that are higher by minimizing the degree of change perceived by listeners, improving privacy and productivity.

Sound Transmission Class—A sound transmission class (STC) rating indicates how well a building partition (e.g., walls, ceilings, floors, doors, windows) attenuates airborne sound. The higher the rating, the better the sound isolation; however, lab-tested results often differ from those performed in the field.

White Noise—A term often used interchangeably—but mistakenly—with ‘sound masking.’ This type of sound has a wide frequency range (typically from 20 to 20,000 Hz) generally randomly produced, with equal volume across the entire range. Occupants perceive it as ‘static’ with an uncomfortable, hissing quality.

to the intrusion of speech content; it also considers the audibility of unintelligible speech and other types of noise.

That said, it is challenging to use acoustical privacy as a starting point for a conversation about acoustical equity. The science around acoustical privacy is not sufficiently nuanced; it is not yet addressed by a standardized metric or even a proposed methodology.

Speech privacy, on the other hand, is both well-defined and measurable (e.g., using articulation index or speech privacy class). Therefore, it is a psychoacoustic metric that can be used in both theoretical (i.e., to illustrate the concept of acoustical equity) and practical ways (i.e., to set expectations during design and estimate occupants' subjective impression of the built space). In this case, evaluation of acoustical privacy is effectively a review of the signal-to-noise ratio; it considers an intruding "signal" (speech) and its level relative to the background "noise" (or, rather, sound) in the receiving space.

By way of example, let us turn our attention to the rooms—and occupants—shown in Figure 1:

- Room 1: The red arrows depict an elevated level of intruding noise, compared with the green arrows. This case represents a well-designed space

where the combination of the insulating properties of the wall (STC-45) and the constant background sound level of 40 A-weighted decibels (dBA) ensures the noise is not intelligible and/or audible.

- Room 2: The green arrows depict a lower level of intruding noise. This case represents a space that fails to consider occupant needs and/or expectations. The combination of the insulating properties of the wall (still STC-45) and the existing background sound level (30 dBA or less) in the receiving room is insufficient to ensure acoustical privacy. Although the intruding level of the green source is lower than the red example, it remains intelligible and/or audible.

Now, let us assume that the red and green signals are people speaking. The red talker's voice carries into Room 1; however, it is masked by the background sound. The listener in that room cannot identify and/or understand speech and the red talker enjoys speech privacy. The green talker's voice is carried into Room 2; however, it is not masked by the background sound and the listener can identify and/or understand speech. The green talker does not have speech privacy.

There are impacts beyond the one-way speech privacy. We accept that the red talker

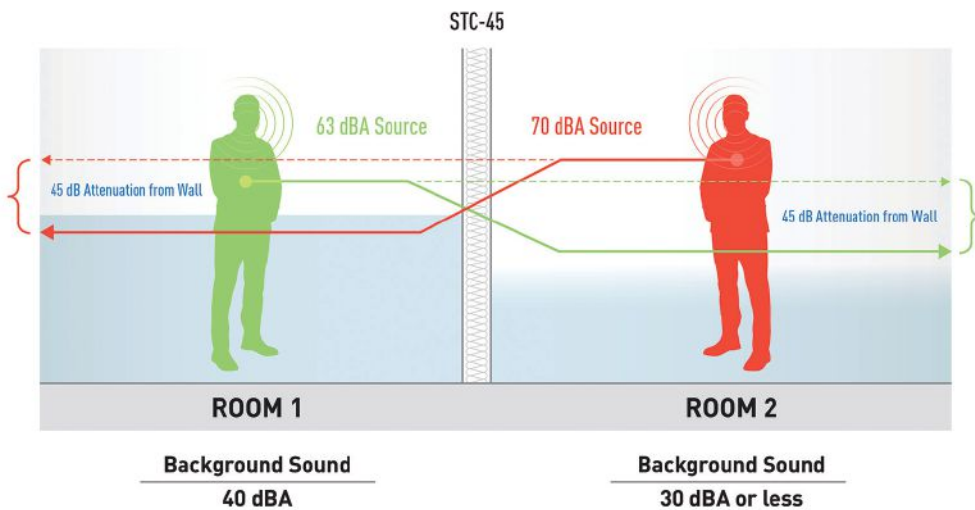
has speech privacy because the background sound in the adjoining room masks the received level of their voice. However, the red talker's *perception of privacy* is violated because they are able to hear the green talker. This discrepancy can cause reactive behavioral changes on the part of the red talker (e.g., lowering of voice, avoiding confidential topics). We also accept that the green talker does not have speech privacy because the background sound in the adjoining room does not mask the received level of their voice. However, the green talker has a false perception of privacy engendered by the fact that they are unable to hear the red talker. This discrepancy can result in breaches of confidentiality, the implications of which can run the gamut—or gauntlet, depending on the consequences—from embarrassment to legal proceedings.

UNDERSTANDING ACOUSTICAL EQUITY

One can appraise this situation using the basic dictionary definition of "equity" (i.e., fairness or justice in the way people are treated, per Merriam-Webster) and conclude that the occupants do not have acoustical equity simply by virtue of the fact that they do not enjoy equal levels of speech privacy, or even perceived privacy. However, there is more to the concept of equity.

According to conversations occurring in philanthropic circles, equity is also "about each of us getting what we need to survive or succeed—access to opportunity, networks, resources, and supports—based on where we are and where we want to go. Nonet Sykes, director of race equity and inclusion at the Annie E. Casey Foundation, thinks of it as each of us reaching our full potential."⁶ Because design impacts our well-being and level of functioning, it is one of the factors in our lives that—in the words of built-environment strategist Esther Greenhouse—has the "power to dis-able or enable."⁷ Greenhouse maintains that if there is a "poor fit between a person and their environment, the environment acts as a stressor, pressing down on their abilities, pushing them to an artificially low level of functioning."⁷

The need to provide a supportive environment highlights the importance of providing beneficial acoustical conditions



Credit: KR Moeller Associates Ltd

Figure 1: The person (green) in Room 1 speaks at a "Casual" level, while the person (red) in Room 2 uses a "Normal" level (i.e., per Pearsons). Despite the latter's elevated vocal effort, they enjoy speech privacy due to the higher and consistent background sound level within Room 1. The person in Room 1, on the other hand, does not have speech privacy due to the lower and variable nature of the background sound in Room 2; however, they believe they have privacy, by virtue of the fact that they cannot hear the person in Room 2.

throughout the workplace. While occupants can be impacted by acoustical design in myriad ways, let us continue with the example of speech privacy. Some might consider it a niche application only relevant to particular offices (e.g., law firms), healthcare, and military environments, but surveys such as those conducted by the Center for the Built Environment show that lack of speech privacy is the top workplace complaint, indicating that it is a broadly applicable concern.⁸ Furthermore, this deficiency is not only relevant to occupants of private offices but to those working within open plans. Although individuals within the latter group are more likely to characterize lowering speech intelligibility as “reducing distractions” rather than “improving speech privacy,” taking measures to achieve this goal means they will have an easier time concentrating on tasks, make fewer errors, and also suffer less stress and fatigue.



This article continues on

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QUIZ

- Psychoacoustics is the study of:
 - The impact of sound on occupants' hearing
 - Colors of sound (e.g., white, pink) and their influence on occupants' mental health
 - The psychological and physiological effects of sound and its perception
 - Occupants' reactions to noises
- Research shows that occupants' overall acoustical satisfaction is strongly correlated with:
 - Acoustical privacy
 - Acoustical comfort
 - Use of absorptive materials
 - Wearing headphones
- Speech privacy is a psychoacoustic metric that:
 - Is well-defined and measurable
 - Can be used to set expectations during design
 - Can be used to estimate occupants' subjective impression of the built space
 - All of the above
- Achieving acoustical equity involves:
 - Setting maximum limits for noise in both open and closed spaces
 - Ensuring the design provides beneficial acoustical conditions throughout the workplace in order to allow all occupants to function at the highest possible level, in accordance with the goals the spaces are designed to meet and help fulfill
 - Ensuring the design provides the same articulation index (AI) and/or speech privacy class (SPC) results for all occupants at all times
 - Selecting walls with the highest STC ratings
- The most important room variable affecting speech privacy is:
 - Room noise criteria
 - NC rating
 - Background sound
 - Dynamic range
- The “ABC rule” is used to:
 - Indicate the priority sequence that should be employed for acoustical treatments
 - Provide a memorable abbreviation that reinforces the need for a holistic approach to acoustical design
 - Analyze the effect of poor acoustics on occupants
 - Assess the temporal, spatial, and spectral properties of sound
- A sound-masking system can help control the following property of sound:
 - Temporal
 - Spatial
 - Spectral
 - All of the above
- Two sounds equal in overall level:
 - Will always be perceived as identical by occupants
 - Can sound perceptibly different, depending on their frequency content
 - Will provide equivalent masking of speech and noise
 - Are always impossible to distinguish from one another
- According to the experience of ASID and others, effective acoustics can positively impact employee:
 - Collaboration
 - Absenteeism
 - Productivity
 - All of the above
- To deliver effective masking sound, the technician needs to:
 - Install sound-masking equipment
 - Divide the facility into zones based on general categories, such as “open plan”
 - Tune the system's output to meet the required spectrum and level
 - Use downward-facing loudspeakers

Greater Heights and Innovative Design

A NEW GENERATION OF TILT-UP BUILDINGS

Presented By:



Spano Athletic Performance Center, UC San Diego. Photo: Darren Bradley

TILT-UP: IT'S NOT JUST FOR WAREHOUSES

Consider the curves of grand archways leading into a church; a nine-story-tall college dormitory with plenty of openings for fenestration in the façade; an office building with a façade of curtain walls; and a sports center with a textured, geometrically shaped exterior. All of these structures, from the Archangel Raphael Coptic Orthodox Church to the Florida International University's Biscayne Bay campus Bayview Student Living to the University of California San Diego's Alex G. Spanos Athletic Performance Center and East Campus Office Building, were constructed from tilt-up wall panels.

Once considered a method of construction suitable only to warehouses, tilt-up presents architects, developers, engineers, and contractors with the opportunity to create durable, aesthetically pleasing low- and mid-rise structures, including everything from office and residential buildings to commercial shopping centers, sports centers, schools, homes, and churches.

OVERVIEW OF THE TILT-UP CONSTRUCTION PROCESS

One of the earliest references to tilt-up comes from Thomas Edison in 1903, who stated, "Tilt-up construction eliminates the costly, cumbersome practice of erecting two

LEARNING OBJECTIVES

1. Understand the history, design, and construction concepts of tilt-up concrete.
2. Discover how tilt-up is being used for every building type, from traditional warehouses and distribution centers to multistory offices and multifamily residential buildings.
3. Examine case studies that detail the latest tilt-up building methods and achievements.
4. Assess the ways in which tilt-up construction provides cost-effective, energy-efficient, and resilient building solutions.

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wooden walls to get one concrete wall."² An early proponent of the method, he recognized the durability of concrete and the ease of tilt-up construction. In Union, New Jersey, in the early 1900s, he was indirectly involved in the creation of an entire village of tilt-up houses in an experimental attempt to provide affordable housing for factory workers. Many of the houses are still in use today.³

Edison, however, was not the inventor of tilt-up. He learned about the construction method from Robert Aiken, who is considered to be the father of the process. Aiken began experimenting with reinforced concrete retaining walls in Illinois. He poured the walls in panels that lay flat on the ground, much like

CASE STUDY: ARCHANGEL RAPHAEL COPTIC ORTHODOX CHURCH

Houston, Texas**Spiritual**

Size: 12,225 sq. ft.

General Contractor: Arch-Con Corp.

Architect: Castles Design Group

Engineer: ASA Dally Structural Engineers

Features: Curved panels (elevation-edge), Embedded items, Reveals, Shadow panels, Voids

Background

In 2017, when Hurricane Harvey hit the Texas coast, it became the first major hurricane to strike southern Texas since 1970 and caused a total of approximately \$125 billion in damage, dumping over 27 trillion gallons of rain over Texas.¹ Archangel Raphael Coptic Orthodox Church, located in southeast Houston, experienced significant flood damage and needed to be rebuilt.

The new Archangel Raphael Coptic Orthodox Church is a ground-up, 12,225-square-foot, tilt-wall sanctuary with an office for the priest, restrooms, and a cry room. The sanctuary holds 510 people and includes marble flooring; a barreled, standing-seam metal roof; fiberglass dome; and handmade, traditional Coptic Orthodox wooden entry doors sourced from Egypt. The new construction also added 2,680 sq. ft. of covered walkway, a new drive, and a parking lot.



Photo: Courtesy of Tilt-Up Concrete Association. Photo by Michael Craft

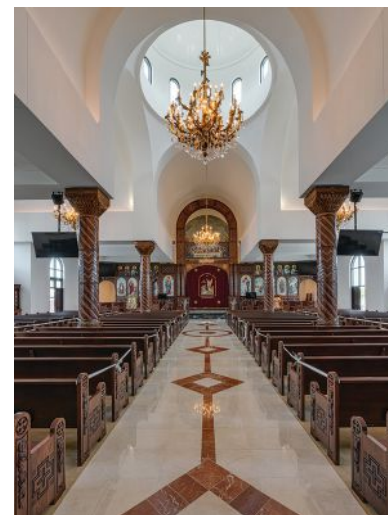


Photo: Courtesy of Tilt-Up Concrete Association. Photo by Michael Craft

Tilt-Up

Many of the tilt wall panels were up to 235,000 pounds each and needed a hydro-crane to lift them. The panels were large to create a more seamless aesthetic and laser cut to create decorative and tiered layers. Layering demanded a thicker, and therefore heavier, panel.

A barrel-vaulted ceiling was placed on top of the tilt-wall structure, and a fiberglass dome

was added. The barrel vault roof was made in two large pieces that were welded and built on site to form the correct radius. Archangel Raphael Coptic Orthodox Church is the only Coptic church serving southeast Houston and after construction was able to reopen its new doors to the community.

a sidewalk, and then “tilted the panels up onto a prepared foundation to form the walls. Steel rods were then used to anchor the walls to concrete footers.”⁴

After the success of the wall, Aiken was eager to continue experimenting and ultimately built the first tilt-up building in the world—a concrete factory—on his farm in Zion City, Illinois. To build it, he again poured the walls flat on the ground, this time with a bed of sand underneath, and used window and door frames to create openings in the concrete. Once the walls cured, he tilted them onto their foundation. Aiken went on to construct a church and a two-story ammunition and gun house. Ultimately, he “refined his methods to include a steel tipping table that was used in the construction of fifteen buildings in five different states.”⁵

As evidenced by Aiken’s early structures, tilt-up can be used to construct a variety of buildings, and since the 1940s (when

the mobile crane was developed), tilt-up has evolved to accommodate an array of functional and aesthetic needs, inspiring new generations of architects to create unique, durable, and iconic buildings.

The Basics of Tilt-Up

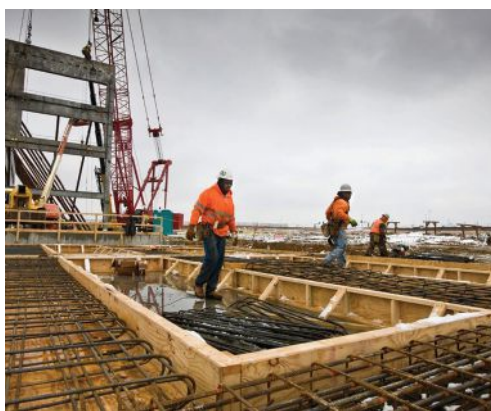
The American Concrete Institute (ACI), publisher of concrete codes like ACI 318 along with many guide and report documents such as ACI 551.1R, describes tilt-up as “a construction technique for casting concrete elements in a horizontal position at the job site and then tilting them to their final position in a structure.” This definition has been adopted through multiple committee and consensus development processes to establish a core idea for the method of creating a tilt-up concrete structure. Additionally, it is accepted that tilt-up is a form of precast construction both in ACI 318 and the International Building Code (IBC).

Based on these definitions and descriptions, tilt-up construction may best be understood as a form of creating concrete elements in a controlled environment other than in the final designed positions.

Tilt-up, in its most basic form, is a two-step process. First, slabs of concrete, which most often comprise the load-bearing sections of a building envelope or elevation, are cast horizontally on a concrete slab-on-ground. The slabs, referred to as panels, can also be formed and cast on nearby recyclable casting slabs. Dimensional lumber forms the edge of the panels, including openings; and steel reinforcement is dropped in, along with embedded items such as lifting inserts and connection plates. The majority of the time, panels are cast with their outside face down on the slab; the top face is the interior of the building.

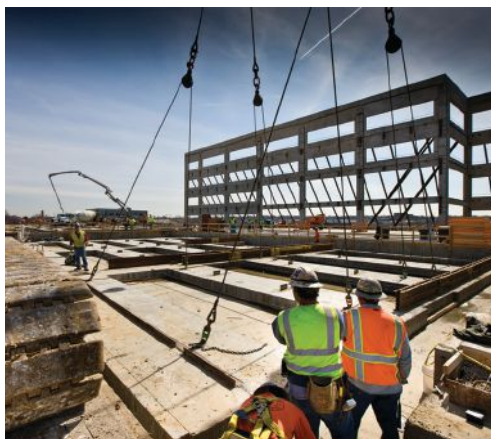
A series of cables is then connected to the lifting inserts, which allows each panel to be lifted. The floor slab is held back somewhat

from the foundation to form a pour strip or closure strip, which “is a section of concrete slab left open to control shrinkage and elastic shortening; it can also be utilized to provide access for stressing of post-tensioning tendons.”⁶ Typically left open for 30–60 days, pour strips are filled with concrete afterward and allow panels to be tied into the slab.



Items to be cast into the wall (reinforcement, embedded plates, reveal strips, etc) are placed prior to placing concrete. Photo: Courtesy of Tilt-up Concrete Association.

The second part of the process is lifting or “tilting” the panels. The panels are lifted with a crane after the concrete has reached sufficient strength. The crane sets the panels, most often in a vertical orientation, on prepared foundations, thus forming the desired wall line from a series of consecutive panels standing next to each other. Shim packs—a series of thin plastic elements—are then used to level and align panels prior to their final attachment.



A series of cables are connected to lifting inserts that were cast into the panel. Photo: Courtesy of Tilt-up Concrete Association.

Working Horizontally: The Benefits and Advantages of Tilt-Up

Tilt-up concrete can be considered a form of precast concrete and is generally referred to as “site precasting.” The greatest advantage of tilt-up construction over cast-in-place concrete is the ease and speed of construction. The number of laborers needed on site is greatly reduced, and less equipment, such as scaffolding, is needed. Expensive formwork is also eliminated. Other advantages include the following:

- **Size:** The size of a tilt-up panel can create numerous other benefits. For instance, large panels allow for speed of construction and greater height and width, but smaller, stacked panels can offer opportunities to create unique façades. Stacked panels can be efficient cladding panels that are cast on site, or they can become structural load-bearing panels. The widest panel on record is 89 feet wide in North Carolina, and the tallest is a 111-foot 9-inch panel in Florida.
- **Speed and fewer steps:** In just a few days, the poured concrete panels cure and are ready to be tilted into place. This allows other skilled laborers to begin work much more quickly than other building methods, in addition to leading to shorter overall project times. Having fewer steps also eliminates many of the problems inherent in coordinating different teams and deliveries for different materials.
- **Limited on-site storage:** When myriad products and building materials are used, more on-site storage, transportation, and people are needed. Tilt-up lends itself to smaller sites with limited storage space and reduces the number of deliveries and people on site.
- **Precision:** Because the majority of a designer’s focus will be on the tilt-up panels, they will have the opportunity to spend more time perfecting the panels, the sequence of their lift, and their placement in advance. Even brace layout and crane movement can be determined ahead of time.
- **Aesthetic variety/complexity** (fluidity and versatility of concrete): Tilt-up construction allows for a variety of exterior finishes, including colored concrete,

exposed aggregate, sandblasting, graphic painting, polished concrete, and form liner finishes. Round and curved walls, expressive edges, and abstract or complex geometric shapes are also possible. Bishop Gadsden Church in Charleston, South Carolina, for instance, had church members place oyster shells into the concrete bed, creating an individual aesthetic for the church and allowing its congregation to be part of the building process. Tilt-up can also make an ideal addition to an existing building, as concrete is versatile enough to replicate the aesthetic of the original building.

- **Sound attenuation and fire resistance:** Trades working inside a tilt-up structure, as well as future occupants, benefit from concrete’s natural sound attenuation. The concrete used in tilt-up construction is also specified to meet the most stringent

GLOSSARY

Robert Aiken: Began experimenting with reinforced concrete walls in Illinois in the early 1900s; considered the father of tilt-up.

Cast-in-place concrete: Also known as “poured in place”; construction method that uses formwork to shape concrete until it cures.

Cast-on-site concrete: Also known as “in-situ”; poured, molded, and cured on site.

Energy Policy Act of 1992: Mandates improved energy performance in commercial buildings and recognizes the effect thermal mass contributes to reducing heating and cooling loads.

Fire resistance: A material’s ability to withstand fire, often measured with tests.

Pour strip/closure strip: “A section of concrete slab left open to control shrinkage and elastic shortening; it can also be utilized to provide access for stressing of post-tensioning tendons.”

Precast concrete: Concrete is poured into a mold or form either on or off site and is then either tilted up or transported to a construction site.

Shim packs: A series of thin plastic elements used to level the bottom of a wall panel.

Sound attenuation: Reducing, scattering, or absorbing sound.

Tilt-up: “A construction technique for casting concrete elements in a horizontal position at the job site and then tilting them to their final position in a structure.”

fire safety regulations. Fire resistance of concrete can extend the building's life, plus tilt-up panels may be used for the interior fire walls, and buildings may be spaced closer together under many building codes.

• **Construction in extreme temperatures:**

Weather is less of a problem for tilt-up construction because the floor slab provides a stable work surface for the trades. Walls do not need to be covered with insulation to allow laborers to work. In freezing temperatures and high winds, temporary casting slabs can be placed below grade and embedded with heating hoses to help cure panels.

Mitch Bloomquist, executive director of the Tilt-Up Concrete Association, says, "Under current practice, concrete mixtures follow a performance design approach coupled with protection measures to achieve the maturity required for three specific stages. The first stage is achieving 500 psi prior to first freeze, as indicated by ACI 306R. The second stage is achieving the required modulus of rupture for the panel erection to begin. The third stage is achieving the final design strength as required by the project specifications. By adjusting cement type, water/cementitious material ratio, delivery temperature and placement timing, the concrete is able to achieve a benchmark of 500 psi in sub-zero temperatures. Further protection by means of maturity monitoring, radiant heating, blankets, auxiliary heating through tents, etc., have given contractors many tools by which they can invest in the appropriate system solutions necessary to plan for cold weather and ensure schedules are maintained."⁷



This article continues on
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QUIZ

- One of the earliest references to tilt-up is from Thomas Edison in _____.
a. 1875
b. 1890
c. 1900
d. 1903
- _____ is considered to be the "father of tilt-up."
a. Thomas Edison
b. Robert Aiken
c. Frank Lloyd Wright
d. Joseph Monier
- Tilt-up, in its most basic form, is a _____-step process.
a. two
b. three
c. four
d. five
- Advantages of tilt-up concrete include which of the following?
a. Size, safety, precision, and cost-effectiveness
b. Speed, fewer steps, and aesthetic variety
c. Sound attenuation, fire resistance, and low maintenance
d. All of the above
- Hurricane Harvey caused a total of _____ in damage.
a. \$125 million
b. \$125 billion
c. \$125 trillion
d. None of the above
- The tallest tilt-up panel is _____.
a. 50 feet 8 inches
b. 77 feet 4 inches
c. 89 feet 1 inch
d. 111 feet 9 inches
- The UCSD Spanos Athletic Performance Center ultimately achieved which LEED certification?
a. Certified
b. Silver
c. Gold
d. Platinum
- UCSD's East Campus Office Building exceeds California code energy savings by _____.
a. 5%
b. 8%
c. 10%
d. 16%
- Bayview Student Living on the FIU Biscayne Bay campus used _____ tons of recycled content during construction.
a. 301
b. 280
c. 195
d. 101
- Which of the following is the world's tallest tilt-up building?
a. UCSD East Campus Office Building
b. Bayview Student Living, FIU Biscayne Bay campus
c. UCSD Spanos Athletic Performance Center
d. Archangel Raphael Coptic Orthodox Church

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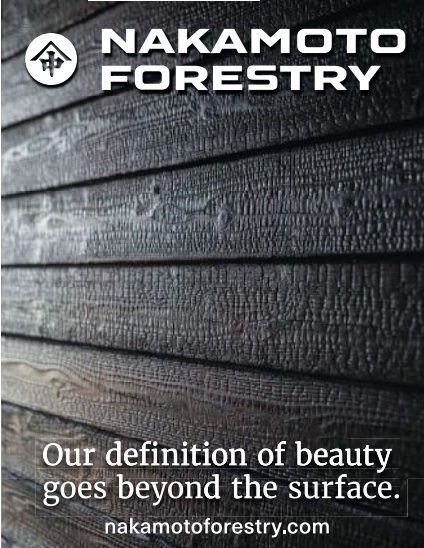


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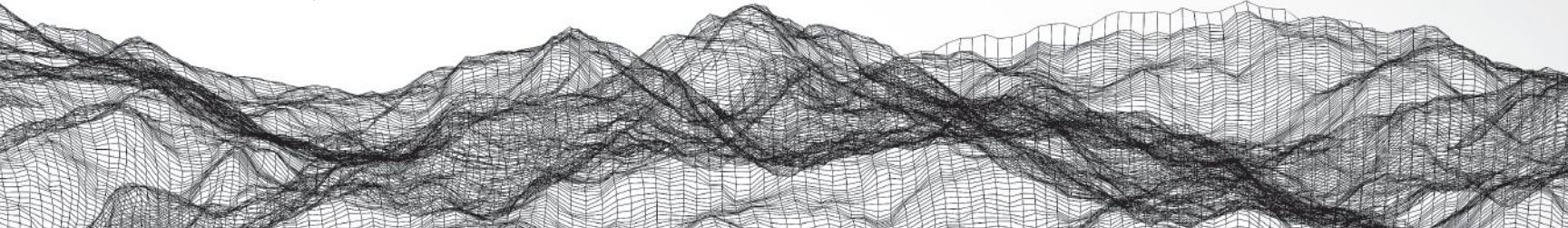
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What Does Diversity Have to Do With Architecture?

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ARCHITECT

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A RISING TIDE LIFTS ALL BOATS

TEXT BY PAUL MAKOVSKY

Jason Pugh, AIA, NOMA, is six hours into his 11-hour drive from Chicago to Washington when I call him. The National Organization of Minority Architects president had stepped up and volunteered to transport more than 140 laptops and monitors, donated by the Chicago office of Gensler (where he is also a senior associate) to several historically Black colleges and universities.

Our conversation turns to NOMA and how he feels the organization contributes to architecture. “NOMA brings a voice to the profession and the industry of where we want to be collectively—though we’re not there yet,” he says. “To its members, NOMA offers camaraderie and a family.”

Pugh speaks from his own experience. In NOMA, he sees the people who first supported him in his education and career, the people who mentored and wanted him to succeed before he knew what he wanted to do. “It was through this lineage that propelled me and a lot of people to strive for bigger and better things in our careers,” he says.

As 2021–2022 president, Pugh focused his platform on three pillars: education, elevation, and empowerment of the membership. That work has included rebranding NOMA’s Project Pipeline initiative, expanding it from architecture camps and workshops for youth to include programming that focuses on broader education initiatives for professional members to improve the licensure rate of emerging architects of color.

NOMA is also developing stronger resources and relationships with HBCUs. Pugh, who earned a bachelor’s degree from Howard University and a master’s from Columbia University, created an HBCU advisory group that meets regularly to strengthen the relationship between NOMA and HBCU faculty, alumni, and, importantly, students. In the past year, NOMA’s Foundation Fellowship placed HBCU students in internships to help increase their professional exposure and experience. “The students don’t get opportunities to engage with national or global firms, so they usually get internships back in their hometown

at smaller shops or through connections through their professors, working locally,” he says.

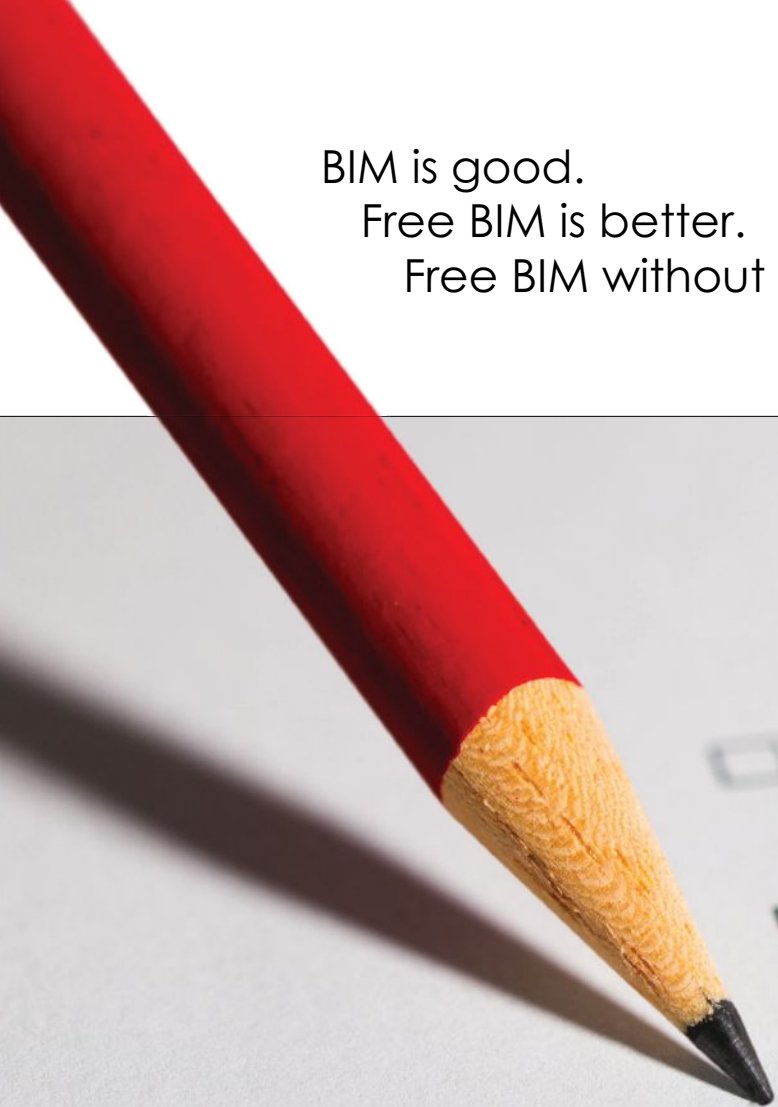
Ten months into his presidency, Pugh is thrilled to see the number of NOMA members nearing 3,000—“the largest number that we’ve ever had.” While he aims to carry on NOMA’s founding tenets, he is also strategizing on how the inclusive organization can grow. “How do we make sure that we keep the original mission of the 12 founders as our North Star, and offer support or advocacy for non–African American architects? How do we amplify and raise that pedestal for our members who are Brown, Latino, Asian, and even white to find an opportunity to find their voice and leverage the strong relationships and connections that we’ve built?” he says. “We want to find a way to partner and work with other affinity organizations to help them establish their position because we understand that some of the issues and challenges that they face within their communities, we face as well. It’s a pivotal moment for the industry in terms of expanding and diversifying the pipeline and the profession.”



Gensler Chicago donated computer equipment to NOMA and several HBCUs. “Simple donations like this go a long way and have a tremendous impact on both students and small architectural programs across the country,” says Jason Pugh (center), with Jerry Mosby, Howard University Department of Architecture computer support specialist (left), and NOMA recording secretary Julian Owens, NOMA (right).

COURTESY JASON PUGH

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