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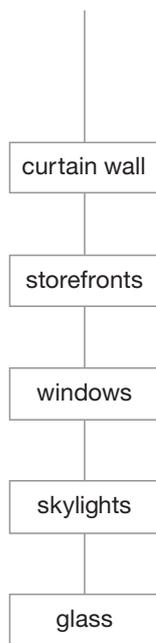
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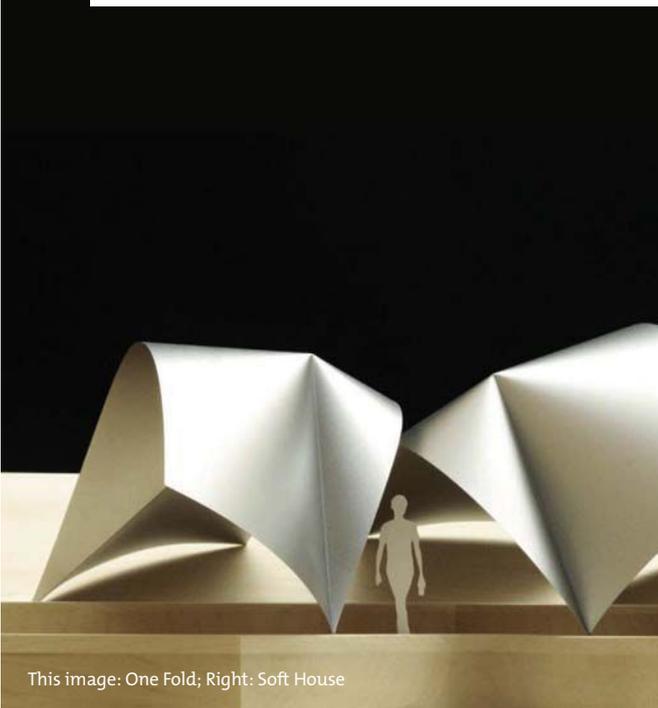
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The jury for our eighth annual R+D Awards celebrate nine innovative projects, products, and processes that can advance building technology as we know it. **GIDEON FINK SHAPIRO**

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This image: One Fold; Right: Soft House



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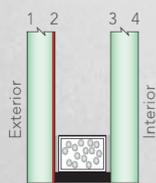
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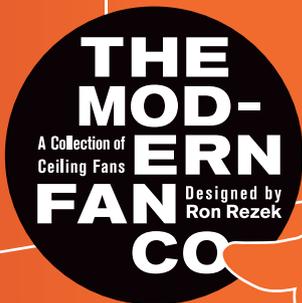
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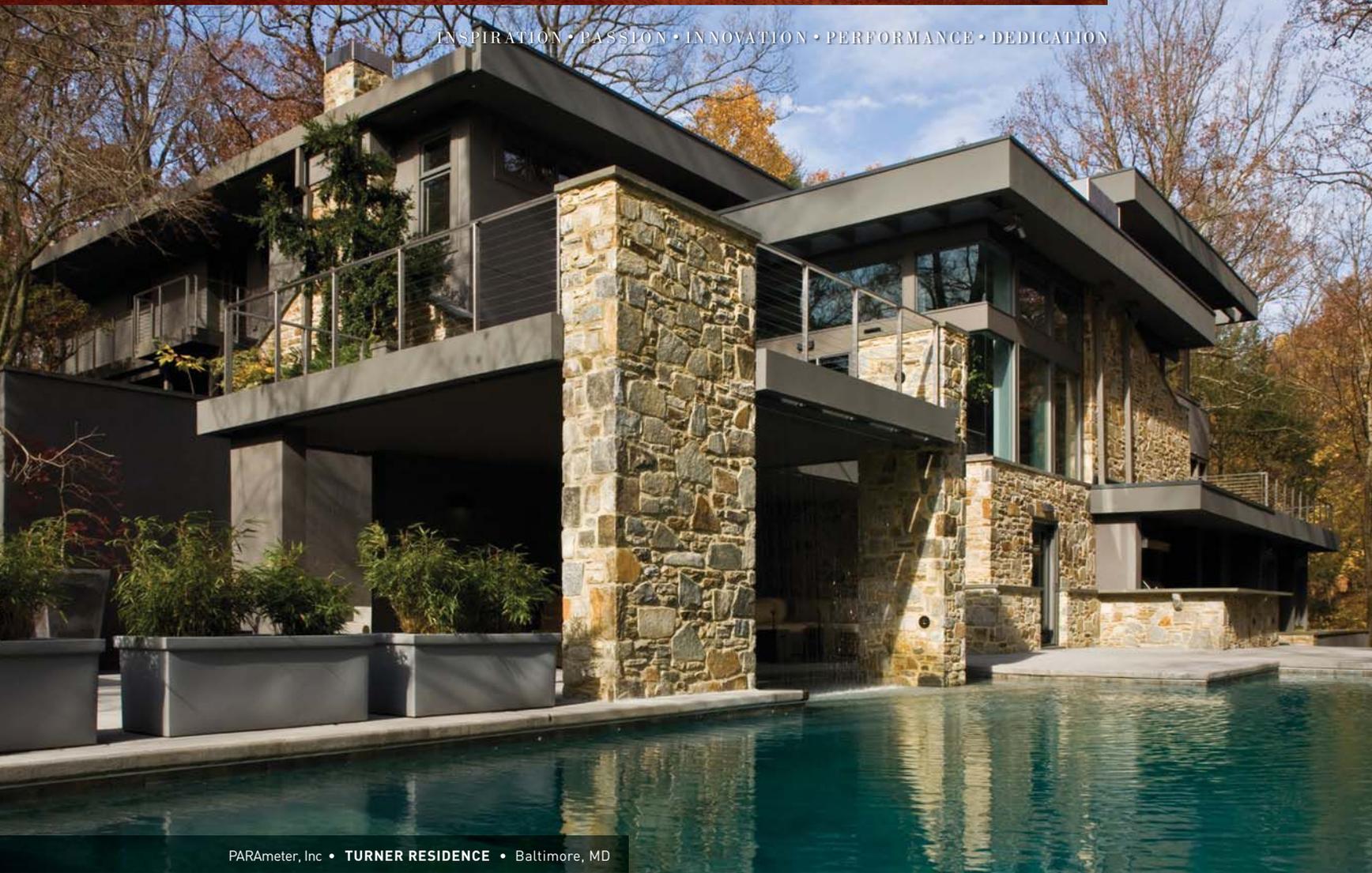
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INSIDE OUT



Want to know what goes on at the **New School**? Passersby need only glance at the institution's new **University Center** in Greenwich Village to understand that progressive design education happens here. The building by **Skidmore, Owings & Merrill** expresses the school's interdisciplinary approach through a brass-shingled facade crisscrossed by a series of glass-enclosed stairways that highlight a vivid tableau of students circulating within. The unique system encourages collaboration—and a new dialogue between campus and community that is sure to be conversation for decades to come.

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NEW

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The new ideas that poured into Lower Manhattan's rebuilding resulted in a stronger infrastructure—and some architectural gems. A key piece in the undertaking is **Pelli Clarke Pelli's** new **Pavilion at Brookfield Place**, a public space serving the 35,000 commuters who use the PATH system daily. Because the system's track network runs underneath, the pavilion's soaring roof and hanging glass curtain wall could only be supported at two points. **Thornton Tomasetti** met the challenge with a pair of 54-foot-tall "basket" columns, each gathering its loads in an expressive weave of lightweight, brightly painted twisting steel tubing that spirals down to plaza level in an ever-tightening array. It is innovative design, with a twist.

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THE AIA IS REVAMPING ITS BOARD, SHRINKING THE ROSTER FROM ABOUT 50 PEOPLE TO NO MORE THAN 16. AND THAT'S JUST THE BEGINNING.

I'M STILL kind of in shock, but in a good way. At the AIA Convention in Chicago last month, delegates voted overwhelmingly to overhaul the Institute's national governing structure. The vote is majorly significant, and I don't just say so because I'm the editor of the official AIA publication. The existing, roughly 50-person board is being reduced to a group of no more than 16. As a result, the AIA stands to act much more nimbly on behalf of the profession.

As with any healthy diet, it will take some time for the board to slenderize. The obsolete positions—notably the 35 regional directorships and four vice presidencies—won't be filled when the current holders' terms are up, a process of attrition that the AIA speculates could last as long as three years. "The board showed tremendous leadership. We have more work to do putting the new structure into place, but the overwhelming support tells me we have a mandate to move forward," says AIA President Helene Combs Dreiling, FAIA. "This is the new AIA, and I'm so proud to be a member."

The regions get seats on a new advisory body called the strategic council. The board's 11-person executive committee will also disband, which is no great loss because the revamped board is basically a judicious reworking of it:

1. Four officers elected by the delegates at the annual convention, namely the **president** and **first vice president/president-elect**, both for one-year terms, and the **secretary** and **treasurer**, both for two-year terms;
2. Up to **eight at-large directors**, three elected by the delegates and three more elected by the strategic council, all for three-year terms, plus as many as two selected by the president (subject to board approval) for terms that expire when hers or his does;
3. An **associate director** with a two-year term, a **Council of Architectural Component Executives (CACE) director** with a one-year term, and a **student director**; and
4. The AIA's **Executive Vice President/Chief Executive Officer (EVP/CEO)**, who can't vote.

According to the official AIA statement, "the strategic council's role will be to advise (but not bind) the board" on "goals and objectives," "public policy," and "operation plans and budgets." Moreover, "it can form committees and ad hoc work groups (subject to board approval), and will determine its own leadership structure." The council is limited to 60 representatives:

1. From the board, the **president, first vice president/president-elect, secretary, treasurer**, and the **EVP/CEO**, as well as the **immediate past president**;
2. Approximately **35 representatives selected by region** for staggered three-year terms and an **international region rep** with a three-year term;
3. **Associate, student, and CACE reps** for terms to be determined by the board; and
4. **Ten at-large reps**, chosen by the council to serve staggered two-year terms.

The at-large board directors and at-large council representatives can be architects, associates, students, CACE reps, or members of the public. Now read the preceding sentence again, and do the math. If the reduced size of the board doesn't strike you as noteworthy, this should: Within three years, a majority of AIA board members could be unlicensed.

I'm not saying it's likely from a political perspective, but, apparently, it's possible. And the possibility alone suggests that a tectonic shift is occurring at the AIA. Its leaders seem to be inviting a new relationship with associate members, architectural interns, and former practitioners who, for too long, have felt like second-class professional citizens. With so many of our colleagues questioning the value of licensure and the narrow way that the title of "architect" is currently ordained, the AIA is sending them an incredibly positive message by making its governance more inclusive.

Neil Crane

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NATE BERG is a journalist based in Los Angeles who covers cities, architecture, design, and technology. He was a staff writer at *The Atlantic Cities*, now called *CityLab*, and he was previously an editor at the urban planning news website *Planetizen*. His work has appeared in a wide variety of outlets, including *The New York Times*, *The Guardian*, *Wired*, and *99% Invisible*. He is a longtime contributor to *ARCHITECT*, and has covered business and design extensively for this magazine.

Berg was a finalist for the 2013 Livingston Awards for Young Journalists for his *Next City* feature article on HafenCity, a neighborhood being built from scratch in Hamburg, Germany. His recent reporting has included driving an electric car (which ran out of batteries) and riding an electric bike (which did not), and he has various other projects in the works exploring new architecture and weird infrastructure.

➔ Read Berg's Up and Running story on how new architecture firms should establish their markets, on page 28.

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FRONT



A LESS BRUTAL READING

A NEW PAUL RUDOLPH MONOGRAPH OFFERS A FRESH TAKE ON THE ARCHITECT'S CONCRETE PROJECTS

THERE'S ONE in every group. A nonbeliever, that is. Most of the people attending a recent Saturday afternoon tour of Paul Rudolph's Government Service Center (1971) in Boston are already convinced there is something to see here. We listen as Timothy M. Rohan, author of the first complete monograph of Rudolph's work, talks about the theatrical, even therapeutic, components of the Mental Health Building. A middle-aged man in a plaid shirt is having none of it. His body language and increasingly aggressive mutterings point to just one question: "You like this stuff?"

After too many such outbursts, he had to be asked to leave. But I had him in mind as I read Rohan's *The Architecture of Paul Rudolph* (Yale University Press, 2014). Could such a book—well-argued, well-illustrated, well-edited—convince him of Rudolph's worth in a way the tour did not? It's a timely publication, as the architect has become a central character in present-day discussions of how, why, and when to preserve Brutalist buildings. Rohan's book offers important context for those works, and new insight into Rudolph's conflicted personality. That personality—obsessive, aggressive, vulnerable—took him from early life as a solitary minister's son in Alabama to the Harvard Graduate School of Design, from building experimental seaside cottages in Sarasota,

Fla., to creating concrete campuses in the Northeast.

One of Rohan's key insights is his emphasis on Rudolph's interest in interiors. From his first house in Auburn, Ala., in 1940, Rudolph was intimately involved with the art, colors, textiles, and furnishings. This is something we should have known from the architectural fragments and orange carpet at his Yale Art & Architecture Building (1963), but given the episodic nature of his career, his later New York residential projects and his middle-period concrete works have rarely been considered as a continuum. But Rohan returns to this theme and cracks open a discussion yet to be had about art, color, and ornament in Brutalism and beyond.

Rohan keeps Rudolph in context in a way many monographs forget to do. I don't think of Rudolph's work as similar to that of Edward Durell Stone, Minoru Yamasaki, and Philip Johnson. But, indeed, critic Reyner Banham lumped them together as the "Ballet School," its members more interested in ornament and aesthetics than the ethics of the British incarnation of New Brutalism.

Every believer will have favorite Rudolph projects that get short shrift. I missed the spectacular Milam residence (1961) and the Rudolph-does-preservation First Church in Boston (1968). But it is a sign of a good monograph that it does not exhaust your interest.

ALEXANDRA LANGE



Above: Timothy Rohan, an associate professor of art history at the University of Massachusetts at Amherst, has written the first in-depth scholarly assessment of Rudolph's work.

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FROM THE
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Ingels reaches a dead end.

Q+A: BJARKE INGELS

THE FOUNDING PARTNER OF DENMARK-BASED BJARKE INGELS GROUP (BIG) CHATS WITH ARCHITECT INSIDE HIS NEW MAZE FOR WASHINGTON, D.C.'S NATIONAL BUILDING MUSEUM.

WASHINGTON, D.C., has a new funhouse for the summer: a roughly 60-foot-square maze designed by Bjarke Ingels Group (BIG). Located in the neoclassical atrium of the city's National Building Museum, the "BIG Maze" was designed geometrically as though an inverted cone was subtracted from a cube, producing 18-foot walls at the corners that slope down toward the center. At a press preview of the installation, founding partner Bjarke Ingels shared his vision for the project. SARA JOHNSON

What's the basic concept?

The idea here is that when you go through the maze, you enter into a very narrow crack, almost like a canyon, with very, very tall walls around you, a very tight space, the proportions are very vertical. Then as you move around, the proportions of the space you find yourself in changes. ... [When] you arrive at the center, you get this great reveal. The reward for completing the maze is that you get a complete overview of all the walls around you.

What's different about designing a maze?

The biggest anxiety was definitely that we couldn't really predict if it was going to be difficult enough. ... Of course, we could look at different mazes. We could also theoretically make it [so you] spend all of the time getting in, and then it is very easy to

get out. But it could also be that it would be totally easy to get it—that you wouldn't get lost.

What made you decide on these materials?

I think the beauty of the wood is that you don't need to paint it, because it already looks nice. And then the atrium has these warm colors, and somehow the maze, especially when you are standing in here, feels like it was always meant to be. It almost has the same texture as the marble—the fake marble on the columns. ... But honestly, it was the cheapest and simplest material to work with.

Have you gotten lost?

Definitely. Much more than I could have hoped for, actually.

"BIG Maze" runs through Sept. 1 at the National Building Museum. nbm.org.

➔ Watch a video of our interview with Ingels at architectmagazine.com.

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UP AND RUNNING: HOW TO DRAFT A POSITION STATEMENT

In order to structure your practice, you first need to be clear about your position in the marketplace. "Positioning is the crux of strategy, because everything falls from a position statement," says Jean Leathers, whose firm Practice Clarity advises architects on building business. **NATE BERG**

MY ARCHITECTURE
FIRM IS
WE DO
FOR
TO

TIP 1: Leathers says the statement should be a precise description of who you are as an architectural practice, what you do, for whom, and to what benefit. In one or two sentences you should be able to encapsulate the core idea.

TIP 2: For firms without a sense of identity, Leathers suggests reviewing three to five years of work to identify the common denominators. A common mistake her clients make is insisting that they're one type of firm when most of their work is in a completely different sector.

TIP 3: More firms should take the time for a little self-reflection, she argues: "What are we doing that we love, what are we doing really well, who are the clients that we're serving that treat us well, that respect us, that allow us to do our best work, that pay us on time."

TIP 4: By embracing who you are as a firm, you'll be able stay off what Leathers calls "the RFP hamster wheel." She says: "Positioning lets you become very selective about where you pursue work and how you build your business."

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DETAIL: CREDIT VALLEY HOSPITAL

FARROW PARTNERSHIP ARCHITECTS CREATED AN INDOOR FOREST BEFORE DIGITAL FABRICATION CAME OF AGE.

➔ Learn more about the design and fabrication of the timber trees in Credit Valley Hospital's Peel Regional Cancer Center atrium at architectmagazine.com. The Detail series of innovative material-assembly solutions is proudly supported by reThink Wood.

THE IDEA for the grove of timber trees flourishing in the atrium of Credit Valley Hospital's Carlo Fidani Peel Regional Cancer Center, in Mississauga, Ontario, grew out of visits by Toronto-based architect Tye Farrow, Intl. Assoc. AIA, to 30 cancer centers in North America and Europe. Patients told him they wanted fewer hotel-like amenities and more reasons to feel hopeful.

"We decided to create an environment that appeared to be alive and growing," says Farrow, a senior partner at

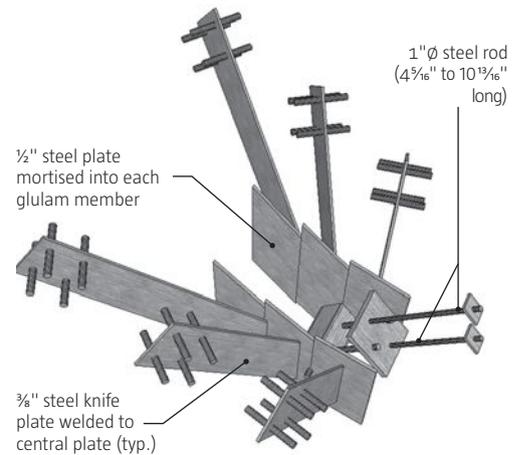
Farrow Partnership Architects. He made a few sketches and foamcore models for the 11,500-square-foot space before creating a triangular floor plan centered on four sprawling columns comprising Douglas fir glulam (glue-laminated) members.

The massive engineered timbers curve 44 feet 6 inches up to the beams that support the atrium roof. Like trees, the structural columns sprout almost seamlessly into glulam branches that further support the roof frame.

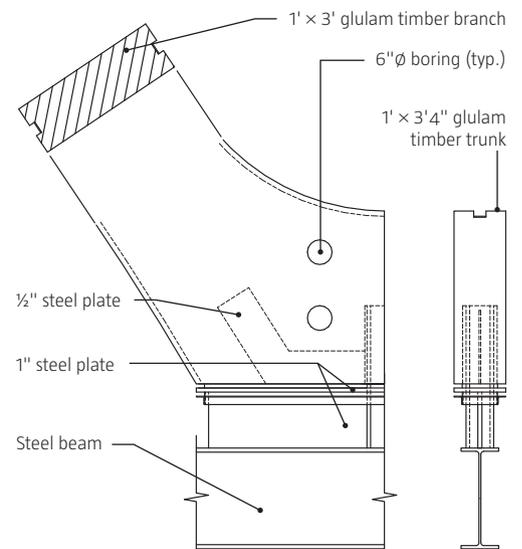
Designed in 2003, the project precedes today's advanced 3D modeling software and fabrication technologies. Early in the design process, Farrow and his team began a steady dialogue with manufacturing and installation partner Timber Systems to detail the complex geometry.

This May, Farrow visited the center to see the project 10 years after its completion. "It looks as good as it did when it opened," the architect says. "Maybe even better, thanks to the patina it has picked up."

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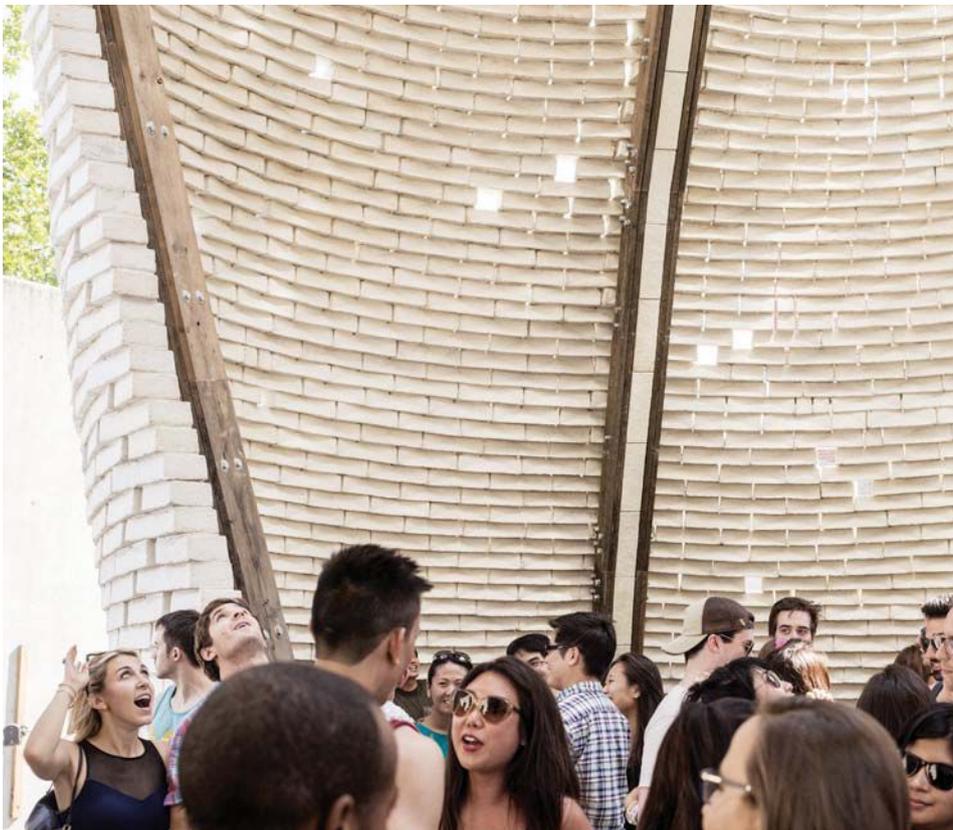
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THE HY LIFE

June 27 was a good day for David Benjamin. His Hy-Fi installation, the latest iteration in the Young Architects Program, the annual collaboration between the Museum of Modern Art and MoMA PS1, opened at MoMA PS1's courtyard in Long Island City, N.Y. The compostable structure (shown in these photos) is made of two types of organic bricks. And to top everything off, Benjamin's experimental design studio, The Living, was acquired by Autodesk for an unnamed sum the same day.



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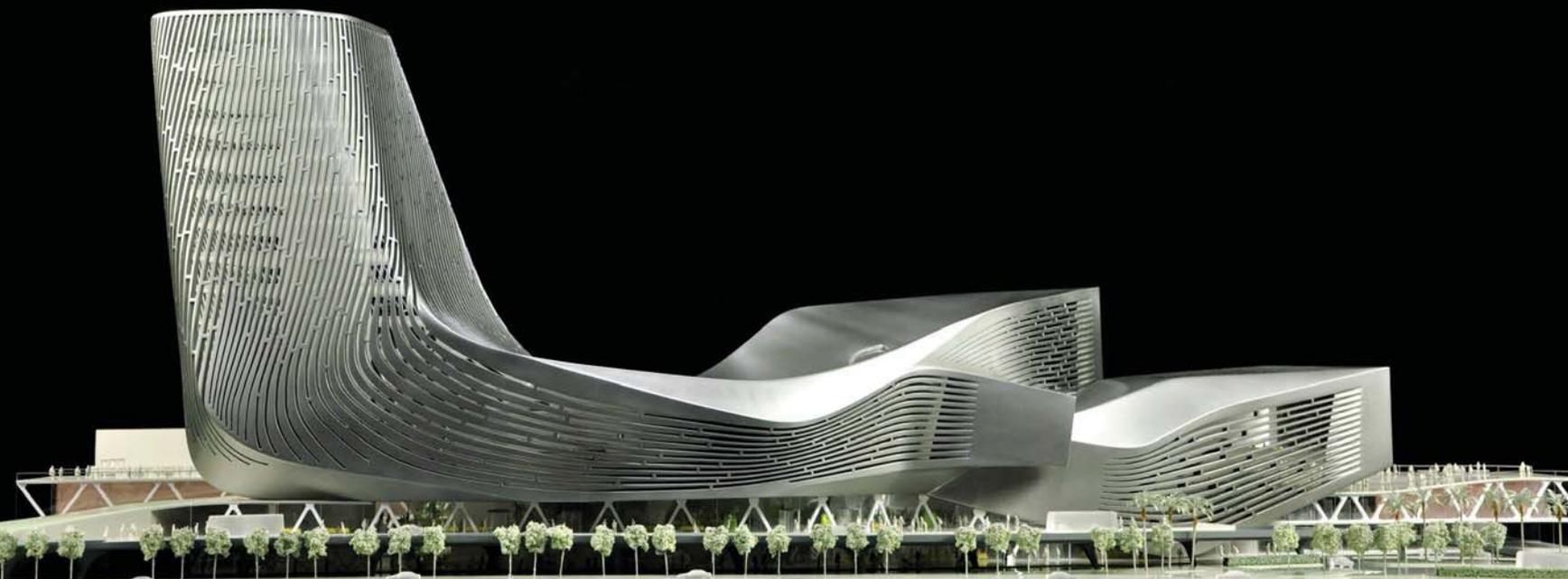
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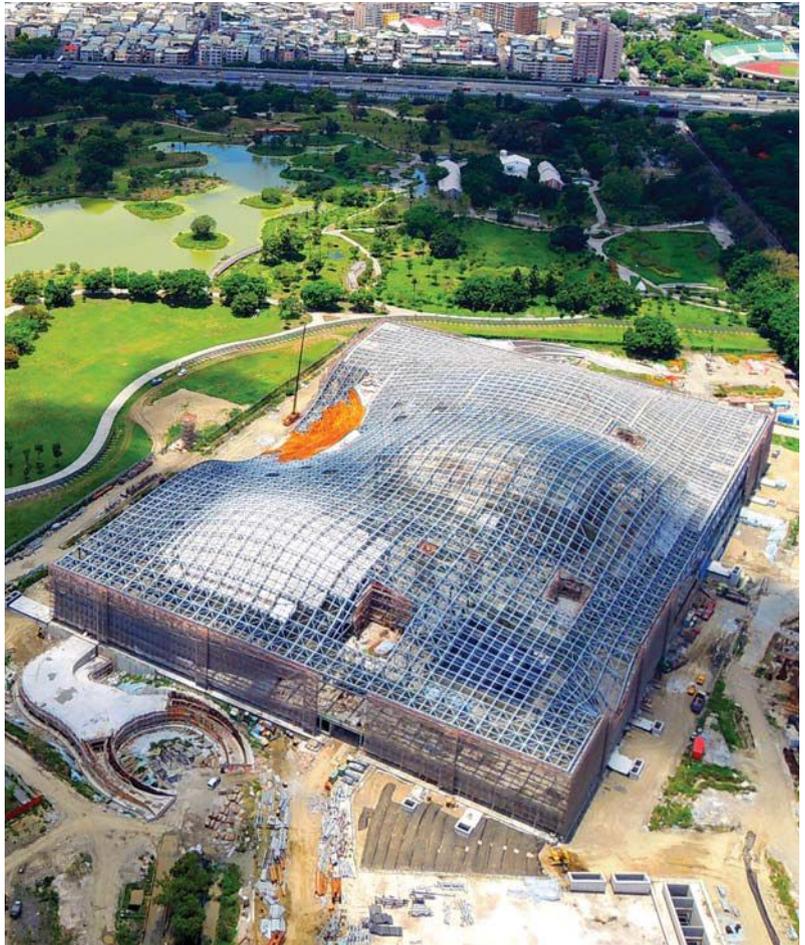
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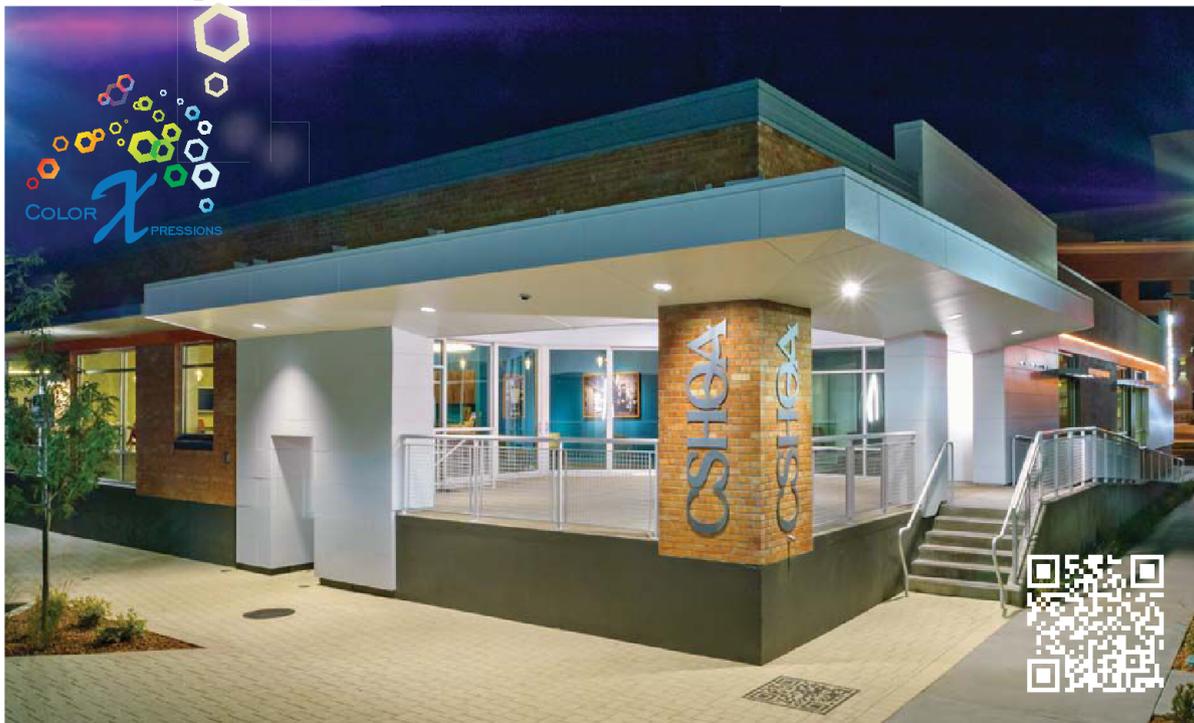
Latest News: In May, Mecanoo won the commission for the University of Manchester's new engineering campus in the U.K. More locally, Mecanoo also won a competition to redesign Ludwig Mies van der Rohe's Martin Luther King Jr. Memorial Library in Washington, D.C.

Recent Work: La Llotja Theatre and Conference Centre, Lleida, Spain (top); Wei-Wu-Ying Center for the Arts, Kaohsiung, Taiwan (right); Dudley Municipal Center, Boston (below)

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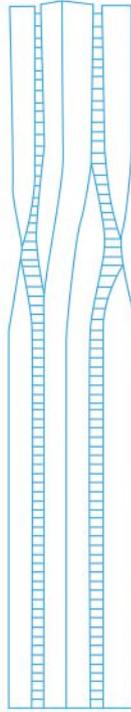
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REACH FOR THE STARS

Skidmore, Owings & Merrill (SOM) has won the competition to design what will be the tallest building in Scandinavia: Polstjärnan (the Polestar Tower) in Gothenburg, Sweden, will top out at just under 755 feet tall. Working with Copenhagen-based firm Entasis and consulting group COWI, the SOM team's scheme beat out four other shortlisted projects. The residential tower will include a public restaurant and observation deck, and the commission also involves a master plan for a 1.5-million-square-foot mixed-use surrounding neighborhood. The Polestar Tower is expected to be completed by 2019.



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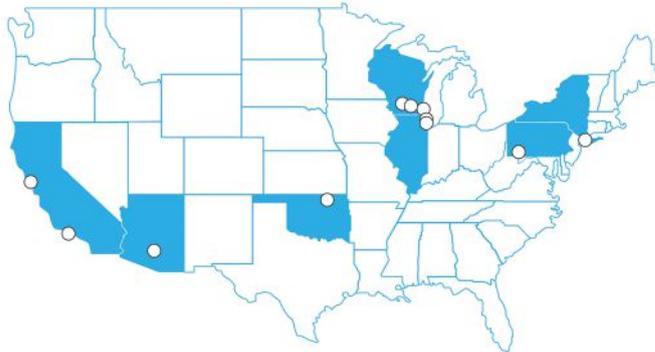
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ADP NATIONAL JOB GROWTH IN THOUSANDS

**The Wright World Heritage Sites**

The U.S. Department of the Interior submitted this list of 11 buildings designed by Frank Lloyd Wright to UNESCO as a serial nomination to be a single World Heritage site.

Unity Temple, Oak Park, Ill.
 Frederick C. Robie House, Chicago
 Hollyhock House, Los Angeles
 Taliesin, Spring Green, Wis.
 Fallingwater, Mill Run, Pa.
 Herbert and Katherine Jacobs First House, Madison, Wis.

Taliesin West, Scottsdale, Ariz.
 Price Tower, Bartlesville, Okla.
 Solomon R. Guggenheim Museum, New York
 S.C. Johnson & Son Administration Building and Research Tower, Racine, Wis.
 Marin County Civic Center, San Rafael, Calif.

May Jobs Report

New construction jobs reported by the U.S. Department of Labor's Bureau of Labor Statistics

**STEP UP**

The results of this year's AIA elections:

Russell A. Davidson, FAIA

2015 AIA First Vice President
 2016 AIA President-Elect

At AIA Convention 2014 in Chicago in June, Davidson, president and managing principal at KG&D Architects in Mount Kisco, N.Y., won the election to become the 2015 AIA first vice president and, subsequently, the 2016 AIA president. Earlier in that month, Davidson spoke with ARCHITECT about his hopes for making the Institute more relevant to the public. "I still feel passionately about elevating public awareness issues," he said. "That's the reason I originally got involved and it's exciting that this is starting to happen now at the national level."

Davidson faced challengers Don Brown, FAIA, from AIA Montgomery, and Gabriel Durand-Hollis, FAIA, from AIA San Antonio.

William J. Bates, AIA

2015–2016 AIA Vice President

Bates, from AIA Pittsburgh, was elected as one of the 2015–2016 AIA vice presidents. A current AIA National Board member, he is a former president of AIA Pittsburgh and two-time former president of AIA Pennsylvania. When asked about the future of the profession, he told us, "There's a great opportunity for young professionals, and we have to get through to them and help them understand that there's a place for them, that licensure is important, and that they have to be creative about what they do in their careers."

Francis M. Pitts, FAIA

2015–2016 AIA Vice President

Pitts, from AIA Eastern New York, was also elected 2015–2016 AIA vice president. He has served his home chapter as secretary, treasurer, and president, as well as president of AIA New York State in 2010. When we asked Pitts about what he would pursue upon election, he said, "We have a tendency to celebrate the famous few architects at the expense of having a serious conversation about the successes that are happening in every community in this country. ... We'd be better off if we had serious conversations that celebrated the ways that architects are making differences locally."

Bates and Pitts were up against Ed Vance, FAIA, from AIA Las Vegas for the office.

John A. Padilla, AIA

2015–2016 AIA Secretary

Padilla, from AIA Santa Fe, was elected 2015–2016 AIA secretary. He served as AIA Santa Fe president in 2002, AIA New Mexico president in 2004, Western Mountain Region treasurer in 2005–2006, AIA National Board regional director in 2007–2009, and as a AIA vice president in 2011–2012. In discussing his new role, he said one of the things "the secretary does is to look at possible reduction in dues. With the economic hard times that we've had, a number of our members have been unemployed or underemployed, and there is a process allowed for members to appeal for a dues waiver."

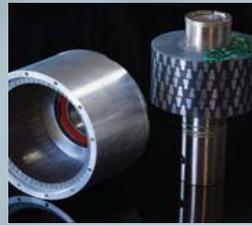
Padilla faced Jerry Eben, AIA, of AIA New Jersey.



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PHOTO: VINCENT RICARDEL

AIA VOICES

REINTRODUCING ARCHITECTURE | NEW DIRECTIONS FOR AIAF

In February, the AIA Foundation (AIAF) appointed Sherry-Lea Bloodworth Botoy as its executive director to revitalize the nonprofit's public outreach, philanthropy, and advocacy initiatives. Bloodworth Botoy, a 2014 White House Innovation Fellow, joins AIAF from Architecture for Humanity, where she served as senior adviser and director of strategic development. "The public is everyone," she says, "and if I can get people to understand how architects impact their individual lives, then it's a productive day."

FOR ME, THE VALUE OF ARCHITECTS AND ARCHITECTURE IS VERY personal. When I worked for Architecture for Humanity, I made a commitment to more than 900 people who I evacuated from the Gulf Coast after Hurricane Katrina—I told them I'd help them return home. And I couldn't have kept that promise without architects.

Most people know the word "architect," and some think they design only skyscrapers. Obviously, the explanation is much fuller than that; a good architect can make our lives better. I believe that, and I think it's the core of the AIAF as well, which is committed to educating our communities about the central role of architecture.

One of the projects that the AIAF is focused on right now is a national resilience program, which will have its start in Newark, N.J. It's part of a partnership with the Clinton Global Initiative, the Rockefeller Foundation's 100 Resilient Cities Program, Architecture for Humanity, and Public Architecture—and it will consist of five regional studios that will work with local, state, and federal partners,

NGOs, architecture firms, universities, and other organizations. The goal for each studio is to raise important issues surrounding resilience but also to find and implement solutions to strengthen communities. I'm also excited to announce that the AIAF will launch a national Designing Health initiative that capitalizes on the work undertaken by the AIA's Design+Health team centering on social equity, sensory environments, access to nature, and other improvement tactics.

But you can't talk about resilience in the larger sense without talking about stewardship of our historic buildings. In addition to public outreach and fundraising, the AIAF is the steward of the Octagon. The Octagon is the gateway to the AIA and our intention is to fortify it—through restoration, through exhibitions, and through public-facing programming. Coming to work each day keeps me focused on preservation's importance to this small corner of Washington, D.C., as well as all the corners in this country enriched by older buildings. It's about introducing the elements of stewardship to the public—a building's value, how the building contributed to historic events, how the building continues to contribute to the everyday lives of the people who live and work there.

And, then, hopefully, people begin to see how a continuum of architecture—old and new—is fundamental to the quality of their lives. —As told to William Richards **AIA**

Read Sara Johnson's Q+A with Bloodworth Botoy at bit.ly/1jRGXzp.

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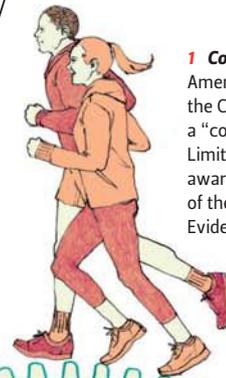
ACROSS THE INSTITUTE

By William Richards



2 Outdoorsy. This isn't the first time we've rapidly urbanized. Industrialization and immigration 150 years ago grew cities, sanitation efforts, and mass transit systems. It was also the birth of the American parks and rec movement. In the spirit of that legacy, the National Recreation and Park Association's 2014 Congress (Oct. 14–16) focuses on wellness and social equity.

➔ Learn more at nrpa.org.



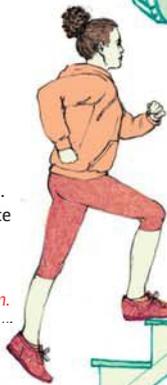
1 Counter Weights. Today 93 million Americans struggle with obesity, which the Center for Disease Control qualifies as a "common, serious, and costly" trend. Limited access to treatment, poor prevention awareness, and weight bias are only some of the hurdles that face affected individuals. Evidence-based reformers like the Obesity Action Coalition hope to reverse these trends, notably, through design, at its third annual Your Weight Matters National Convention in Orlando (Sept. 25–28).

➔ Learn more at obesityaction.org.

3 Great Lakes Green.

AIA Michigan's Green Health Summit centers on how design can encourage better individual health and elevate the quality of public health. Speakers include UCLA's Dr. Richard Jackson; Municipal Art Society of New York's Margaret Newman, FAIA; and AIA Design and Health's Bill Roschen, FAIA. "Making the Healthy Choice the Easy Choice" will be held in Lansing on Sept. 8.

➔ Learn more at aiami.com.



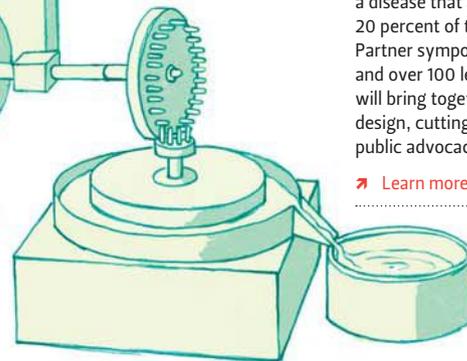
5 Improvement and Equity. Science contributes to wellness, but public wellness isn't just science. It's about hard-fought social, economic, and design battles undertaken by physicians, legislators, city planners, and architects. To that end, the American Public Health Association's platform is simple: Improve public health and achieve equity in health status. Its annual meeting and expo (New Orleans, Nov. 15–19) offers more than 5,000 papers, full- and half-day workshops, and a film festival to marry quantitative data and qualitative advocacy.

➔ Learn more at apha.org.



4 A Week of Outreach. Obesity Week (Nov. 2–7, Boston) is a chance for the American Society for Metabolic and Bariatric Surgery and the Obesity Society to meet. It's also a chance to raise awareness about a disease that affects more than 20 percent of the U.S. population. Partner symposia, video sessions, and over 100 learning-track events will bring together evidence-based design, cutting-edge research, and public advocacy.

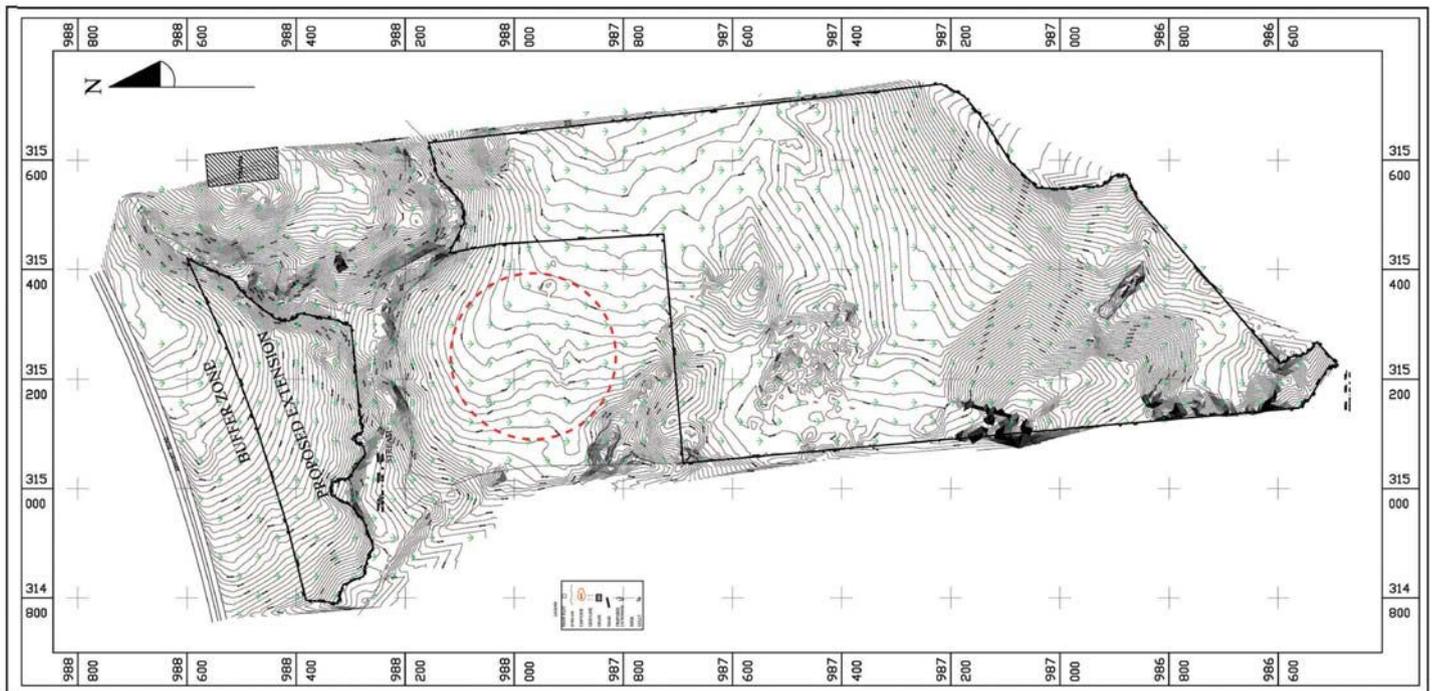
➔ Learn more at obesityweek.com.





Future Islands

TWO WORLDS AND TWO COMMUNITY HEALTH NEEDS



MICHAEL GRAVES, FAIA, HAS A DISTINCT INTEREST IN UPGRADING the spaces, equipment, and patient experience in the average healthcare project. “I was paralyzed 10 years ago, and as I went from hospital to hospital—eight of them, actually, and four rehab centers—I realized that it wasn’t exactly Third World but it wasn’t much better,” he told the audience at the ribbon-cutting earlier this year for his firm’s Shore Orthopaedic Group building, in Somers Point, N.J. Graves is well-regarded as an advocate for smart healthcare spaces and more ergonomic and intuitive products, having been named by *Healthcare Design* magazine as one of the field’s most influential figures in 2010. The following year, he was featured as a TEDMED speaker and, in 2013, President Barack Obama appointed Graves to the U.S. Access Board.

But what about the Third World that Graves mentioned? Patient services, consistent healthcare, and reliably sterile environments are greater struggles in Central and South America, India, and many African nations than they are in the United States. Good design (along with proper practices) could solve a lot of those issues.

Design’s solution is often tempered by macroeconomic challenges that have to do with fundamental shortages. If you have a lot of ailing people, you need to have a lot of doctors—one doctor for every 1,000 people, at a minimum, according to the World Health Organization.

Above: RKTB/Perkins Eastman’s plan for a 200-acre healthcare complex in Abuja, Nigeria. “It’s a weird landscape,” says RKTB principal Carmi Bee, “unlike any you’d see in this part of the world.”

In the United States, the ratio is 1:330. In Third World countries, on the other hand, it can be closer to 1:4,000.

“As the saying goes, a healthy nation is a wealthy nation,” says Dr. Ifeanyi Obiakor, a Nigerian national, U.S.-trained obstetrician and gynecologist. The naked ratios are clearly against poorer nations, Obiakor points out, but there is also severe brain drain. Although Nigeria’s economy is Africa’s largest, about 40 percent of Nigerian physicians practice outside of the country—and many of the best are among the 30,000 (including Obiakor) who live in the U.S.

It’s not only a matter of treatment, but also a matter of creating a human and technological infrastructure in which that treatment can occur: doctors, incentivized to practice in their home countries, with access to the tools they need to do their jobs. To that end, Obiakor sees anchor hospitals as nodal keys to improving public health in Nigeria’s capital, Abuja. In 2005, Obiakor partnered with the Federal Government of Nigeria and enlisted Rothzeit Kaiserman Thomson & Bee (RKTB) and Perkins Eastman to design the American Hospital, a series of treatment centers that establish a healthcare system.

In 2013, RKTB/Perkins Eastman completed the first component of the plan, a satellite clinic in downtown Abuja dedicated to reducing infant and maternal mortality. The second phase will be a larger American Specialist Hospital for Women and Children, to be installed in an existing building in Abuja, in late 2015.

The plan's third phase, the American Hospital, itself, will come last: a 70-bed, 205,200-square-foot hospital designed by RKTB/Perkins Eastman near Abuja's airport. Expected to be completed in 2017, it will provide fee-for-service specialist care and will concentrate on the four deadliest, non-communicable diseases: diabetes, hypertension, cardiovascular and cerebrovascular conditions, and cancer.

The design follows a radial-symmetrical plan centered around the southwest side of a working reservoir, with clinical and support spaces on the central arc and patient rooms on spoke-shaped wings radiating to the rear. The 200-acre site, donated by the government, is "a weird landscape, to say the least, with a geological formation which is unlike any you'd see in this part of the world," says RKTB principal Carmi Bee, FAIA, who cites Alvar Aalto's Paimio Sanatorium in Finland as an inspiration for the kind of healing environment he's aiming to create.

Ultimately, the hospital campus will include treatment facilities, classroom space for the American-Nigerian University of Medical and Environmental Sciences and Research, and a residential area for doctors and family members visiting long-term patients. But the *Field of Dreams* adage—"If you build it, they will come"—is a little more complicated in Nigeria. First, it costs money to build a healthcare system, let alone a hospital; and Abuja's poorest and ailing citizens certainly won't come if they can't afford the services.

"The hook, if you will, to capturing a wealthier population as the target demographic for the hospital is to say, 'Look, our medical staff is American- or British-trained,'" says Joseph Shein, AIA, a healthcare design specialist and principal at Perkins Eastman who believes the first step is to lure back Nigerian doctors trained abroad. Then lure the nation's wealthiest patients—who commonly fly to Europe or the Middle East to treat everything from the a cold to cancer.

Reversing the flow of medical tourism should put the hospital in a strong position for the project's final phase: a dedicated medical university that Obiakor predicts will turn out 1,000 doctors and 24,000 allied health personnel each year. But the RKTB/Perkins Eastman team has a few challenges to address first. Abuja's energy grid is unreliable, for one, but Bee's team is working to find ways for the hospital to generate up to 70 percent of its own power through waste-heat recapture. Photovoltaic arrays will also capture something that seems to be abundant in Nigeria—sunlight.

Another challenge is political instability. "There've been three changes of administration since we started," says Peter Bafitis, AIA, another RKTB principal, "and it's a whole new ballgame [each time]

when new people are in town." Still, Bafitis notes, the hospital project has a great deal of momentum behind it, from the likes of General Electric as well as French and Dutch financiers—although nobody is wagering heavily on precise timetables.

It seems fair to wonder—as the U.S. medical system is itself undergoing self-appraisal and restructuring—whether the American healthcare model is the optimal choice for Nigeria (rather than, say, Britain's, with its universal coverage and deeper cultural ties to the country). Obiakor observes a distinction between healthcare financing and healthcare itself in American access and cost barriers, in spite of advanced American medical technologies.

However, healthcare's physical footprint is just as important as its operational details. When an architect in the U.S. like Michael Graves treats efficiency and sustainability as equal partners, a new future for regional or local clinic-based healthcare starts to emerge. Shore Ortho, a small rehabilitation clinic located along a strip-mall-and-chain-motel arterial road, may seem like an unlikely client for Graves's firm, Michael Graves & Associates (MGA), or its sister company, Michael Graves Design Group (MGDG). Somers Point is, after all, where the 1980s shore band B-movie *Eddie and the Cruisers* was shot. (Eddie: "We ain't great. We're just some guys from Jersey.") You get the idea.

But because an increasing number of Americans receive treatment from small local specialty clinics like Shore Ortho, the design of the patient's experience is central to the success of a medical business.

"Our goal was to enhance the orthopedic patient experience and include as many evidence-based design elements as possible. You may ask how much evidence-based design can be utilized in a 10,000-square-foot building outpatient facility," says MGA project architect James Wisniewski, AIA, who notes that Shore Ortho is certainly not the first healthcare project to implement evidence-based design. "MGA approaches every project both aesthetically and empathetically—how the space impacts the individual is just as important as how it looks. During programming, we considered the unique populations that would be using the building and how they would move within the building. All design decisions were made through that lens."

MGA managing principal Karen Nichols, FAIA, says that the MGA team began with what she calls a "patients first" approach. Before floor plans, fenestration, or furniture, says Nichols, "We considered solutions to relevant issues faced by patients and their caregivers. We took our cues from research for a transport chair we designed, where the relevant problems were infection control, tripping and falling hazards, the difficult process of getting in and out of a wheelchair, and back strain for clinicians—whose rate of strain-related injuries is double that of construction workers."

"These were critical design drivers for the design of an outpatient rehabilitation project where most patients would be in wheelchairs," adds Wisniewski.

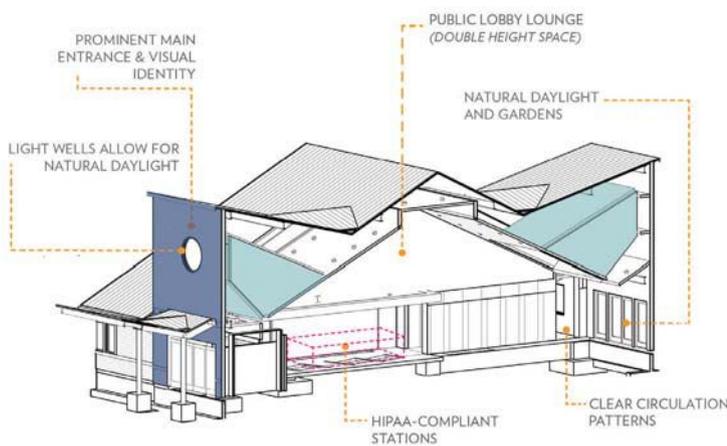
To minimize fomites (objects that harbor and transmit germs), surfaces throughout Shore Ortho are mostly hard and easily cleaned: vinyl flooring, white Corian, and, where it's used in high-traffic areas, making sure that any carpeting is composed of antimicrobial material and segmented into removable tiles.

MGA and MGDG redesigned chairs and over-bed tables for Stryker Medical to ease patient movements. They also replaced so-called “groping and hoping” position controls on chairs with specially designed arms, and tables with handles and levers positioned in more-intuitive places. “Michael has tremendous firsthand insight and tried out all of the features as they were being developed,” says Nichols. “He was like our guinea pig.”

Since studies correlate healing with daylight and natural views, the Shore Ortho building was designed to maximize the amount of light reaching the interior spaces with low transparent internal partitions, a pergola allowing outdoor physical therapy when seasonable, and rear contemplative gardens for both patients and staff. Corridors throughout the complex are at least 5 feet wide, easing movement for the wheelchair-bound. Radial floor plans are organized in what Wisniewski calls “service pods” to help doctors and nurses move quickly from hubs to individual patient areas.

Workspace dimensions allow staff to converse outside patients' earshot, combining compliance to Health Insurance Portability and Accountability Act (HIPAA) privacy regulations with a regard for the disturbing effects of overheard information. Administrative areas are clustered at the rear to easily accommodate expansion and growth. When Shore Ortho one day decides to add a wing, demolition of those spaces can proceed inexpensively without disrupting clinical activities. As environmental performance becomes more important in the energy-hungry healthcare sector, notes Wisniewski, and passive-sustainability strategies here achieve LEED-equivalent results without the formal LEED accreditation process and cost.

The short take on Shore Ortho is that it's a handsome and highly functional building. But MGA faced tight budget requirements and these sorts of regional and local healthcare projects represent the backbone of delivering convenient, comprehensive care to people where they live—two facts that, in-and-of-themselves, make Shore Ortho a candidate to replicate in other communities. —Bill Millard **AIA**



PUBLIC LOBBY FEATURES

Above: MGA's Shore Orthopaedic maximizes the amount of the outside brought inside through a series of gestures in the façade that strengthen building's visual identity.

AI AKNOWLEDGE

BID REVIEW

NEW AIA DESIGN/BUILD RESOURCES FOR A NEW PRACTICE LANDSCAPE.

MORE AND MORE ARCHITECTS ARE CONSIDERING DESIGN/BUILD AS an opportunity for increasing both design excellence and profitability. The benefits for an architect to engage in design/build include a longer engagement period with the client, greater involvement with the construction phase, and more revenue per project. The downside? Traditional contractor-led design/build may limit the role of the architect and, in architect-led design/build, the financial risks can be substantial.

On June 26, AIA Contract Documents launched the next generation of design/build agreements that reflect the delivery method's legacy as well as the current practice landscape. Of course, the previous iteration of design/build contract documents (ending in -2004) will still be available in tandem to the new ones (ending in -2014) until December 2015.

The latest edition of AIA's *The Architects Handbook of Professional Practice, 15th edition* (Wiley 2013) includes both time-tested and timely knowledge about design/build. The new Handbook also provides information about the design/build family of AIA Contract Documents. Design/build and other project delivery methods are described in Chapter 9 of the Handbook, which can be purchased separately through the AIA Bookstore

Today the most common method of design/build is **contractor-led design/build (CLDB)**. As design and construction became increasingly separate in the 20th century, design/build was largely relegated to industrial facilities at one end of the scale and small residential projects on the other. Until the late 1970s, it was considered unethical for AIA members to participate in design/build due to the erosion of the architect's role as owner-advocate and the potential for conflict of interest. As a result of this and other factors, design/build methods developed that relied on the constructor to take the primary role, with the architect working as a subcontractor.

Although the 2012 AIA Firm Survey reported that less than 5 percent of AIA members are engaging in **architect-led design/build (ALDB)**, anecdotal evidence shows that it is growing quickly. Related closely to construction management at risk (CMc), the architect takes on the primary responsibility for delivering the design and construction, usually providing a guaranteed maximum price, hiring subcontractors, and managing the entire process. Some states will require the establishment of a design/build or construction management division that is wholly separate from an architect's design firm. If you form a design/build entity, AIA Document A142-2004, Standard Form of Agreement Between Design-Builder and Contractor, together with its exhibits, can be used to retain construction services for the project.

Joint ventures can also provide a structure for participating in design/build. Architects may partner with a contractor to form a legal entity to construct one project. Joint venture agreements can be crafted by starting with AIA Document C101-1993, Joint Venture Agreement for Professional Services. This document provides for the mutual rights and obligations of two or more parties who, once they have established a joint venture, will enter into a project agreement with the owner. It addresses the issues most commonly encountered in structuring a joint venture. —Rena Klein, FAIA **AIA**

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AIAPERPECTIVE

DESIGN, AN RX FOR HEALTH



PHOTO: WILLIAM STEWART

LET'S TRY A QUICK WORD ASSOCIATION: "ARCHITECTURE" AND "health." For the public, the likely answer would be that buildings like hospitals and clinics connect the two words. And they'd be half right. There have been wonderful advances in patient care, and research supports the argument that design can promote healing and make the work of healthcare providers more efficient.

But—as I said to a group of physicians, policymakers, and architects at the AIA Design and Health Summit held in Washington, D.C., in April—an effective strategy to rein in the mounting cost of healthcare is not better treatment when we're sick (although architects play a major role in promoting the delivery of excellent healthcare), it's to keep us well and out of the hospital in the first place. This is also a role for design—a role that goes beyond bricks and mortar. It embraces how we shape the places and spaces in which we live. This is precisely what acting U.S. surgeon general Boris Lushniak had in mind at the summit when he said, "If you're an architect, you are a public health worker."

Expanding the scope of what architects do opens new lines of communication in talking about the value of the services we provide. In far too many discussions (many of which are, if we're candid, led by us), we focus on a narrow concept of an architectural program. We talk about a project as if it existed in a vacuum—a colorful, sculptural foreground image floating in an abstract frame with only a hint of context.

That's not how design works. Like a stone thrown into a pond, architecture initiates ever-widening ripples. Architecture influences how people move; how they are stimulated by light, sound, and color; their sense of security and mental well-being; and how connected they feel toward one another. And architecture does all this over the course of a lifespan that, ideally, lasts generations.

But the responsibility falls on architects to make that case. We need friends, of course—experts like Lushniak and the physicians and policymakers in attendance at the AIA Design and Health Summit. We need powerful allies like the Clinton Global Initiative and research universities, with which the AIA has strong ties. We also need each other to continue the conversation that links design and health in our everyday lives.

And now we can make a better case about design and health's relationship than ever before, with the McGraw-Hill Construction SmartMarket Report survey, released last month at the 2014 AIA National Convention in Chicago. The report, which you may download at aia.org/smartmarket, documents the positive economic impact of investing in the design and construction of healthier buildings from the perspective of owners, architects, and human resources professionals. Such data is driving, and will increasingly drive, future investment.

The challenge for each of us is not to leave this report on the shelf, but to use it to inform our work for clients, shape the way we advocate to policymakers, and reinforce the way we talk about architecture to the public. The AIA's role is to support and expand research that makes an evidence-based argument for design. Our collective role as architects is to use this information to convey how our work promotes health and well-being. Architecture has always been about more than bricks and mortar. **AIA**

*Helene Combs Dreiling, FAIA
2014 President*

Learn more about the SmartMarket Report produced by McGraw-Hill Construction and commissioned by the AIA at aia.org/smartmarket.

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Rem Koolhaas, the curator of the 14th International Architectural Exhibition in Venice, Italy, inspired a less-than-glowing critical reception for his "Elements of Architecture" pavilion.

LETTER FROM GROUND ZERO

DELIRIOUS WORLD TRADE

DESPITE THE OPENING OF THE SEPT. 11 MUSEUM, GROUND ZERO REMAINS A SITE CONFLICTED IN ITS AMBITIONS AND EXECUTION.

Text by **Karrie Jacobs**
Photo by **Fran Parente**

A DECADE AGO, about a year after Daniel Libeskind, AIA, was appointed master planner of the World Trade Center site, I asked him a question: “In 10 years’ time, will this place look like New York City?” His charming and evasive reply: “When the famous portrait of Gertrude Stein was painted by Picasso, she said to him, ‘It’s a beautiful portrait, but it doesn’t look like me.’ And he said, ‘But it will.’”

Picasso’s iconic portrait, of course, cast Stein as a cubist Mona Lisa. And Libeskind, something of a cubist himself, seemed to have the idea that he was remaking not just the 16 acres nominally under his command, but New York City itself, dragging the wounded, architecturally recalcitrant metropolis into the 21st century.

Today, I’m still trying to answer the same question. Every time I’ve visited the National September 11 Memorial, since it opened in 2011, I ask myself: What is this place and who is it for?

The site continues to grow and change as many of the components lurch toward completion, but what I find here isn’t exactly New York. It lacks the energy typical of the city’s best public places. That’s to be expected in a site dominated by a memorial, but it isn’t well suited to contemplation either. There are too many visitors, tourists mostly. There are endless rules: no demonstrations, no rallies, no third-party vending. No sports. No loitering, littering, or smoking. No throwing anything into the pools. No animals. But all those injunctions don’t add up to tranquility. If there is peace to be had on this memorial plaza, I have yet to experience it.

Nor is the site exactly Libeskind’s. His influence quickly waned as his grandest symbolic gestures encountered the turbulence with which New York City customarily confronts newcomers. His Wedge of Light, for instance, a plaza that Libeskind claimed would be bathed in sunlight during the morning hours each Sept. 11, was revealed as a fiction by Eli Attia, the architect of the neighboring Millennium Hilton. This shouldn’t have been a

View of 1 World Trade Center from the 57th-floor terrace of Fumihiko Maki’s 4 World Trade Center

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surprise given that the sun rises in the east and the World Trade Center (WTC) is located at what used to be the western edge of Manhattan.

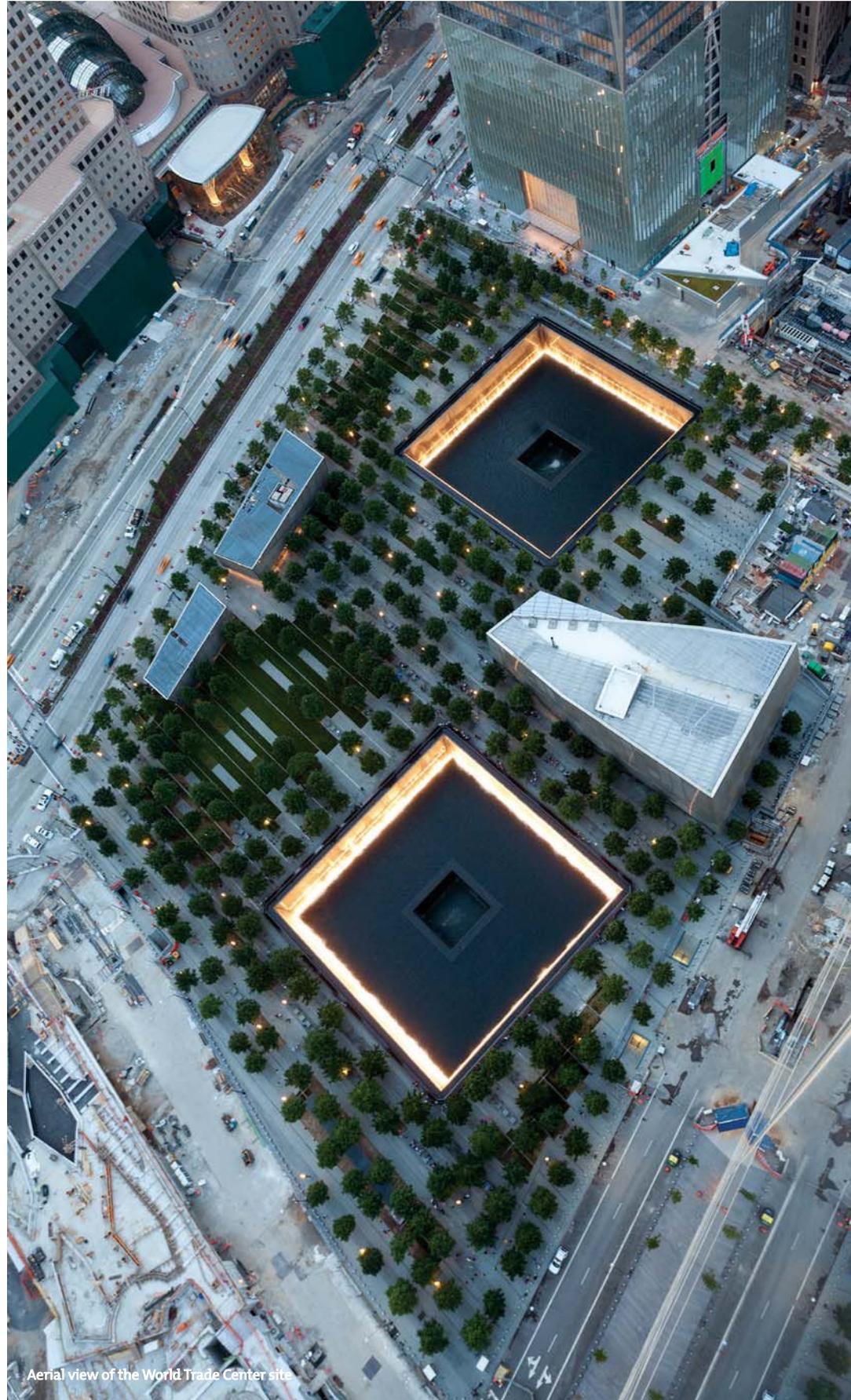
Then Libeskind's 1,776-foot-tall Freedom Tower, which was supposed to be an abstract homage to the Statue of Liberty—robes swirling and torch held aloft—got whittled into a far more normative tower, with corners neatly chamfered by David Childs, FAIA, of Skidmore, Owings & Merrill (SOM). The tower was further reined in by the New York Police Department's demands for maximum blast protection at street level. And, finally, developer Douglas Durst (who bought a stake in the building in 2010) de-chamfered the corners at the base and rid the antenna at the top of the tower of its distinctive sculptural sheathing. And now the former Freedom Tower looks a lot like something you might find in any second-tier Asian city.

But more damning, perhaps, than Libeskind's poetry being pummeled into prose, was the fact that a new, rather spectacular New York began sprouting up elsewhere, most notably in West Chelsea, where the innovation spurred by the High Line has begun to merge with the 26-acre Hudson Yards, a project that promises to mix high-end office space, residential towers, and cultural venues to create a lively new part of Midtown.

The WTC that finally emerged from behind its security fence this spring is certainly not the old place—where 1960s ideas about radically reshaping cities reached some sort of apotheosis—but it also isn't the best example of 21st-century urban design in New York. It is a development shaped—and restrained—by too many forces and driven by very powerful conflicting desires: to commemorate the horrific thing that happened and to render the evidence of that cataclysm invisible.

ON THE OTHER HAND, I'm sometimes surprised by the quality of the architecture on—and near—the site: The best building is still 7 WTC. SOM, working closely with glass specialist James Carpenter, designed the 52-story tower, clad in a low-iron water white glass, for the north side of Vesey Street. A replacement for a clunky 1980s granite-covered building that fell on Sept. 11, it was built quickly, completed in late 2005, with no scrutiny from the site's "stakeholders" because Consolidated Edison badly needed the power substations that were at the base of the old 7 WTC. The result is a sensually pleasing tower that channels Lever House without imitating it. And the Jenny Holzer installation behind the reception desk remains one of the smartest, most eye-catching artworks I've ever seen in an office-building lobby.

While 7 WTC snuck up on me, I watched 4 WTC, designed by Fumihiko Maki, Hon. FAIA,



Aerial view of the World Trade Center site



4 WTC as seen from across one of the two memorial fountains



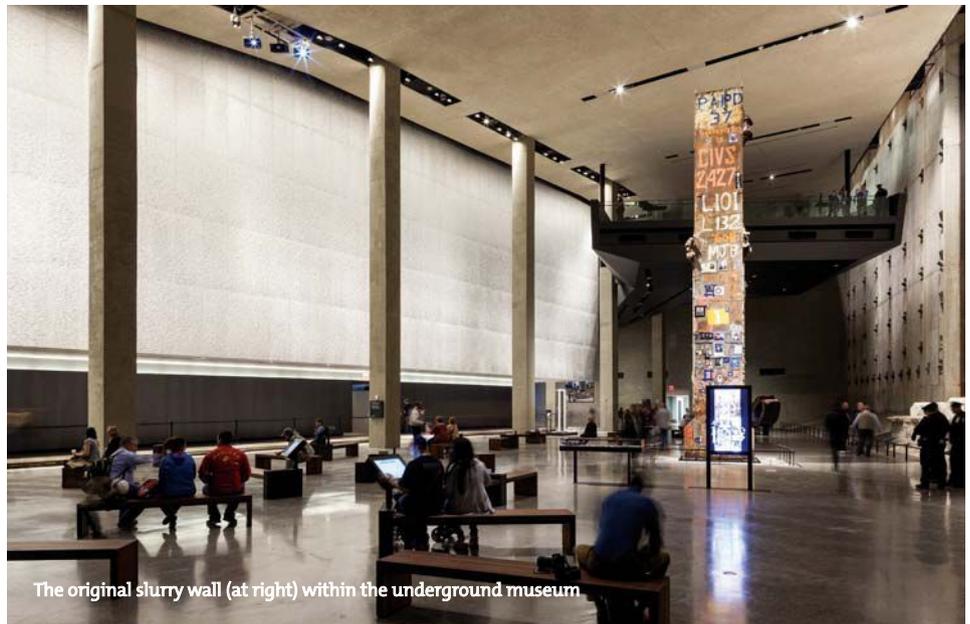
The perimeter of one of the memorial fountains



Jenny Holzer installation in the lobby of SOM's 7 WTC



Museum lobby with structure from the old WTC



The original slurry wall (at right) within the underground museum

as it was being built and wrote it off as dull work of architecture, cheapened by the intense reflectivity of the glass. But suddenly, on completion, it has emerged as something rather different. It's restrained, in a Japanese way, and not boring at all. Off the white marble lobby is a trio of elevator corridors, each lined with shiny brown African anigre wood, each culminating in a video installation—wind, trees, sky—accompanied by a Philip Glass composition. From the higher floors, the views south and west are astounding, and from the 57th-floor terrace, 1 WTC looks somewhat as its various architects imagined—slender and angular—rather than the clunky, value-engineered bunker you currently see at street level. And the effect of the façade mirroring the sky on a sunny day is positively cinematic.

While I've come to admire 4 WTC, my misgivings about the memorial have only intensified since its completion. Maybe this is because the one piece of Libeskind's plan that always resonated with me was his vision of the slurry wall as heroic object. Originally built to keep the Hudson River out of the Twin Towers' excavation site, the wall was, after all, the last remaining artifact that conveyed any of the monumental nature of the old WTC. Although the towers fell, the slurry wall stood, and prevented the river from inundating Lower Manhattan. Libeskind's winning proposal for the site was built around the wall's symbolic beauty. His drawings showed a series of towers, stair-stepped in height and arranged around a greensward, sheltered by the top 30 feet of what could have become New York's Wailing Wall.

But, of course, a memorial in which you could see the slurry wall would have to be set below grade, and the site's nearest residential neighbors, the good people of Battery Park City, rebelled against the idea: too sad, too much of an impediment to their ability to cut across the site on their way to work. (I can't imagine that the site's commercial interests warmed to a depressed memorial, either.) And so Libeskind's most powerful concept evaporated, replaced by Michael Arad, AIA's massive, square fountains. In theory, I like Arad's idea of commemorating the two footprints, but there's something about the execution, particularly the way the fountains are framed by heavy ribbons of bronze into which the names of those who died on Sept. 11 have been inscribed, that feels wrong to me. The memorial's aesthetic reads like a rebuke of the deceptive lightness of Minoru Yamasaki's vision.

And it strikes me as almost immoral that, above ground at the memorial, there is nothing left of the old WTC except for a single tree, a callery pear pulled from the rubble, replanted, and named the Survivor Tree. Visitors, hungry

for some connection to what was once there, crowd around the tree and take pictures.

MANY VISITORS to the memorial, myself among them, used to press their noses to the glass of Snøhetta's asymmetrical entry pavilion, completed years before the National September 11 Memorial & Museum opened its doors in May, to see the remnant of the WTC visible within, a pair of the complex's familiar steel tridents. So it was exciting to finally go inside and see the tridents accompanied with a large photo that showed them in context at the base of the Twin Towers.

Much has been made of the museum's gaffes—appalling products on sale at the gift shop (the cheese board!), a capsule history of Jihad that some Muslims found offensive—but in truth, the museum does what it's supposed to do, diligently and surprisingly well, with a level of detail so conscientious that it's overwhelming. What I realized as I made my way through the multimedia re-creation of Sept. 11 is that most events of great historic significance are far enough in the past that the amount of related ephemera has been winnowed by time. Not so Sept. 11. It seems like the museum has every sad missing poster, every victims' artifact, and countless objects like dry cleaner hangers commemorating the first responders. There is simply too much. The onslaught, after a while, is numbing.

Some aspects of the panoramic documentation of that day are genuinely stunning. There are alcoves where you can sit down and listen to first-person accounts from people who were in the towers, with schematic diagrams pinpointing their locations. The simple graphics and the fact that you actually have to stop and focus on one story at a time makes these displays unusually powerful.

Aside from Snøhetta's crystalline pavilion, the impact of which is undermined by the airport-style security maze you must negotiate to get inside, the museum has two defining architectural gestures. Davis Brody Bond (DBB), the firm that designed the underground portion of the building, created a series of ramps that lead you downward, 70 feet into the earth, to the spots where the old towers met bedrock. Access to bedrock is, in fact, one of the highlights of the museum. The bases of the buildings' box beams and other elements of the foundations are treated as if they were archaeological finds, remnants of some lost civilization—which, arguably, they are.

But DBB's best architectural moment is what's known as the Foundation Hall. It is a compelling open space, where Libeskind's 68-foot-tall slurry wall actually fulfils its symbolic destiny. At first, you see the wall,

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Calatrava's West Concourse of the WTC Transportation Hub

rough and conspicuously undesigned, from a balcony at the end of one of the long ramps. Then, after you walk further downhill, you reach the hall itself. I spent a long time sitting on a bench looking up at this powerful object, something I wish it was possible to do above ground. In the Foundation Hall, I was reminded of a meeting I attended years ago where people came to discuss their responses to design proposals for the memorial. I remember listening to a man who had lost his wife in the attacks. He said that what he was hoping to find was a design that had the power of a cathedral, a place where “you don’t have to think.”

Architecturally and emotionally, the Foundation Hall is the strongest component of the museum. It’s a dramatic space, one that borders on sacred. It could be the place where you “don’t have to think,” if only the curators had left out the interactive information display that is projected on adjacent walls. I found myself wishing the museum would, occasionally, pull back on its programming and give visitors room to simply reflect.

STRANGELY, THOUGH, the most powerful experience I had during my recent visits to the WTC was not in the expected places. It wasn’t at the memorial or in the museum, but in a newly opened underground passageway called the West Concourse. All white, with a dramatically ribbed ceiling, it made me feel as if I had walked into one of Santiago Calatrava, FAIA’s renderings of the WTC Transportation

Hub—which, pretty much, I had. The concourse, connecting the existing temporary commuter rail station with Brookfield Place (formerly the World Financial Center) across West Street from the WTC, is the first bit of Calatrava-designed space to be completed. While it may get crowded at rush hour (or next year, when 1 WTC fills up with Condé Nast employees), I walked through in mid-afternoon and found it lovely, serene, and slightly spooky. Maybe because there is something about Calatrava’s modernism that resurrects the feeling of Yamasaki’s, it allowed me to sense a connection to the old WTC that eludes me elsewhere.

The Transportation Hub is notorious for cost overruns—its \$4 billion budget is double the original projection—and it’s weirdly impractical (the mechanical systems are housed in the completed floors of the adjacent, stalled, 3 WTC). It’s had nothing but bad press for years. But for the first time in a long time, I was eagerly anticipating the hub’s full unveiling. With its Stegosaurus spikes and crazy grandeur, Calatrava’s station might turn out to be the transcendent space that the WTC badly needs.

While the architects who designed the towers dialed down their formalist impulses in deference to the memorial, Calatrava didn’t. If anything, he cranked them up. I am starting to think that Calatrava had it right, that the commuters who ride the PATH trains back and forth to New Jersey every day may enjoy the one place at Ground Zero that possesses some of the boldness of the old WTC, that has the audacity to look like New York.



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BEST PRACTICES

BEHIND THE CURTAIN

AMERICAN FIRMS ARE INCREASINGLY TARGETING MARKETS IN THE FORMER SOVIET UNION. HERE ARE THE CHALLENGES—AND REWARDS.

Introduction by **Alex Hoyt**

Illustrations by **Peter Arkle**

OVER THE PAST CENTURY, Russian architectural traditions have subsumed each other like matryoshka dolls—the futuristic, Revolution-inspired ethos of Constructivism, the grim and grand monuments of Stalinism, the concrete blocks of Brutalism. Now, a quarter century after the thaw of the Cold War, foreign architects have started infiltrating the former Eastern Bloc, infusing the region with sustainable practices and dynamic designs.

In April, three American architects convened at the Trespa Design Centre New York to discuss the phenomenon: Henry Myerberg, FAIA, whose firm, HMA2 Architects, designed

the campus for the American University of Central Asia, in Bishkek, Kyrgyzstan; Dan Kaplan, FAIA, of FXFowle Architects, who designed the Qala Alti Hotel Spa on a mountainside in Shabran, Azerbaijan; and Lee Skolnick, FAIA, of Lee H. Skolnick Architecture + Design Partnership (LHSA+DP), which designed Muzeiko, a children's museum in Sofia, Bulgaria.

They discussed the region's challenges and opportunities, and spoke of a new style of post-Soviet design—open, transparent, antithetical to the region's often oppressive politics—that might be the architectural equivalent of Mikhail Gorbachev's glasnost.



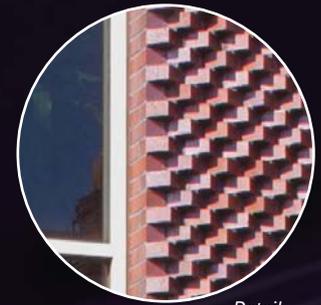


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HENRY MYERBERG, FAIA
 PRINCIPAL AND FOUNDER, HMA2 ARCHITECTS
 AMERICAN UNIVERSITY OF CENTRAL ASIA, BISHKEK, KYRGYZSTAN

The site: Kyrgyzstan is where the former Soviet Union meets the Silk Road. We're on the outskirts of Bishkek [the capital], in a valley 1,000 meters above sea level amid these alpine mountains. It's a highly seismic area, with strict rules about structural design—highly complex building codes that are vestiges of the Soviet era.

The design concept: We designed our campus to be open and visible, inviting students and faculty to collaborate. The old campus occupied post-Stalinist office buildings that were imposing and monumental, but also abuzz with activity. They weren't quite big enough, so people had to share space—the hallways were grand bazaars. We wanted to preserve that sense of interactivity.

During construction: The language barriers were a challenge. Four languages were spoken on site: Russian, Kyrgyz, Turkish, and German—a German drilling company built the geothermal system, the first in the entire region. Everything was made on site. Nothing came from a factory. All the steel was raw—cleaned, formed, and welded on site. All the ductwork came in rolls of sheet metal. The steelworkers set up a factory shop in the classroom and lived there for six months—it was their hotel.

And above all: Be open to what the place tells you. Don't impose a vision of what the place should be. Architecture is a dialogue, not a soliloquy.



LEE SKOLNICK, FAIA
 PRINCIPAL, LHS&DP
 MUZEIKO: AMERICA FOR BULGARIA
 CHILDREN'S MUSEUM, SOFIA, BULGARIA

First timers: Design expertise is extremely important in Bulgaria—our client was very conscious that they did not have local expertise in designing children's museums. It's a particularly American skill—we have over 300 of them. In the former Eastern Bloc, you have to find the right client. Bulgaria is the poorest country in the EU, and is known to be among the most corrupt in terms of business. Firms need to tread carefully—be part of the right design and engineering team, find the right local contacts, make sure you have a protective client. Big firms can go in and protect themselves, but firms our size and young architects need the right liaisons.



DAN KAPLAN, FAIA
 SENIOR PARTNER, FXFOWLE ARCHITECTS
 QALA ALTI HOTEL SPA,
 SHABRAN, AZERBAIJAN

Landing the commission: We won it the old fashioned way: from a client that liked what we had done for them and recommended us. Renaissance Construction in Istanbul was starting a venture in Azerbaijan and brought us in to help them in a quasi design/build situation. The ultimate client is a local Azeri developer. Since we were working directly with Renaissance's design and construction department, we were insulated from the myriad day-to-day issues.

Largest challenge: It was dialogue with the client, on issues of program as well as standards and norms. Architects [working in the region] must have a high tolerance for ambiguity.

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WATERSHED DESIGN

MADE STUDIO IS APPLYING ITS DATA-DRIVEN APPROACH TO DETROIT, REVEALING WAYS THAT THE REGION'S WATER SYSTEMS CAN INFLUENCE URBAN PLANNING.



Text by **Elizabeth Evitts Dickinson**
Portrait by **Brian Kelly**

DETROIT, AMERICA'S POSTER CHILD for the post-industrial shrinking city, may suffer from a paucity of residents and resources, but it's a boomtown of urban theory. There is no shortage of clever schemes aimed at repopulating vacant houses and vacant land. Jen Maigret, AIA, and María Arquer de Alarcón, co-founders of Ann Arbor, Mich.-based MAde Studio, have a slightly different perspective: What if you look at Detroit not in isolation, but as a regional system defined by its watershed? How would that change planning? "We are interested in different scales," Arquer says. "And we are not interested in only focusing on the metropolitan area."

Maigret, 41, a trained biologist, and Arquer, 41, who's licensed in Spain, began a detailed analysis of the region's water systems in 2011 through a grant from the Graham Sustainability Institute at the University of Michigan. Their award-winning project, Liquid Planning Detroit, considered how watershed data might inform the future planning of the city, looking at ground cover, stormwater, and imperviousness, among other things. Forget existing grids and boundaries; the watershed should serve as a lens through which future planning decisions can be made. "This was an amazing opportunity to work on our analytic techniques," Maigret says. "But the thing we're always the most motivated by is how that data plays out in the built environment, in material, and in habitable, experiential space."

María Arquer de Alarcón (left) and Jen Maigret near the site of their speculative project that proposes to connect Detroit's Eastern Market to the Dequindre Cut, an abandoned railway that's being turned into a public greenway.

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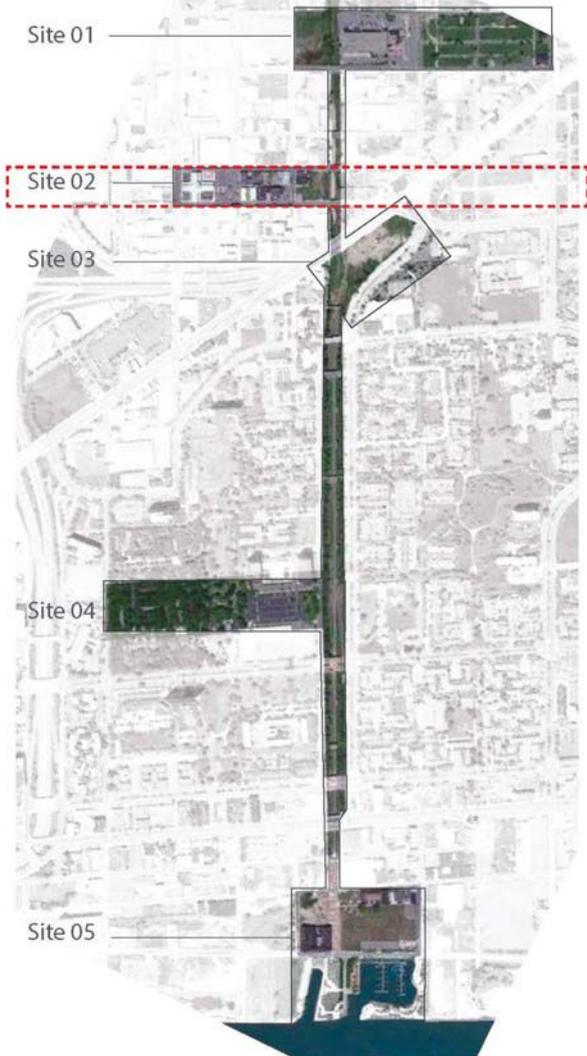


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Liquid Planning Detroit Rendering

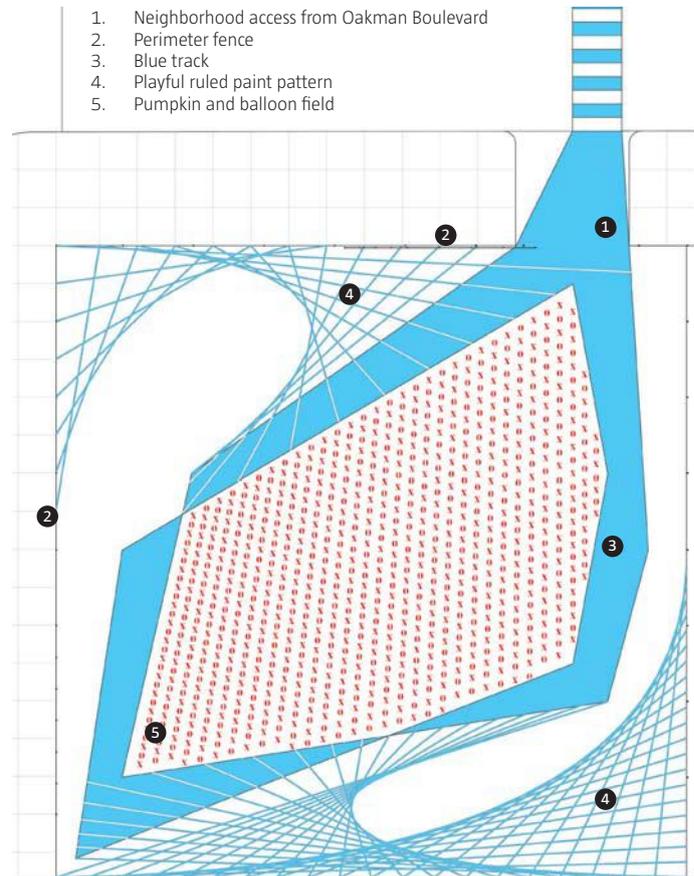


Liquid Planning Detroit Site Plan



Dream Up! Plan

- 1. Neighborhood access from Oakman Boulevard
- 2. Perimeter fence
- 3. Blue track
- 4. Playful ruled paint pattern
- 5. Pumpkin and balloon field



This page, top: A rendering of the new walkway and water garden that would connect Detroit’s Eastern Market and the Dequindre Cut, an abandoned railroad that’s being turned into a public greenway. **Opposite:** A rendering of Playful Horizons, a playground currently being constructed for the First Congregational Church of Battle Creek in Michigan.

By 2013, the firm's research had culminated in plans for several sites around the city, including a design for an ecological and pedestrian infrastructure linking the popular Eastern Market to the Dequindre Cut, an abandoned railway that's slowly being turned into a public greenway. In June, when Liquid Planning Detroit earned a 2014 AIA Michigan Design Award in the unbuilt category, the jury said that they were impressed by the "fine-grained analysis that underlies the urban designs."

MAIGRET AND ARQUERO are masters of marrying analysis with transformative urban architecture. The two met at the University of Michigan, where they are both assistant professors at the Taubman College of Architecture and Urban Planning. Their shared penchant for data mining compelled them to start their firm in 2010. Though their research-heavy approach could keep their design work cloistered in the realm of academic theory, it is their ability to visualize and communicate complex ideas, and to work with both their students and Detroit residents and organizations, that has given their young firm so much traction. Four years in and MAde Studio has developed a transdisciplinary practice working in architecture, landscape architecture, urban design, and urban planning.

John Callewaert is the integrated assessment program director for the Graham Sustainability Institute. He remembers how impressed people were when Maigret and Arquero presented their findings and designs for the Liquid Planning Detroit project. "There's a real depth of analysis behind their work," he says. "A lot of people can make a pretty map, but their ability to visualize regional data has a level of sophistication that is rare. People are always wowed by their graphics, and the integrity of their process is impressive."

Callewaert says people are also impressed by the architects' ability to collaborate with community. "They invest time into individual meetings and to showing their partners the different possibilities that exist, instead of coming in and saying: 'Here it is! We're done!'"

MAde Studio received a second Graham Sustainability Institute grant in 2012 to work with the Hope Village Initiative, a project supporting an area of Detroit suffering from violence, poverty, and a deteriorating housing stock. As part of the grant, Maigret and Arquero designed a playful open space on a vacant and fenced-off parking lot near the community's library. Last fall, the firm tore down the fence and hosted Dream Up!, turning the lot into a temporary pumpkin patch and inviting residents to discuss making it into a permanent open space for the community.

Now under construction, the Hope Village open space considers both the ecology of the site and residents' desires. The space makes visible the flow of rainwater through clever interactive water surfaces. There are "rooms" defined by trees and sunken gardens, as well as a jungle gym resembling an abstract sculpture.

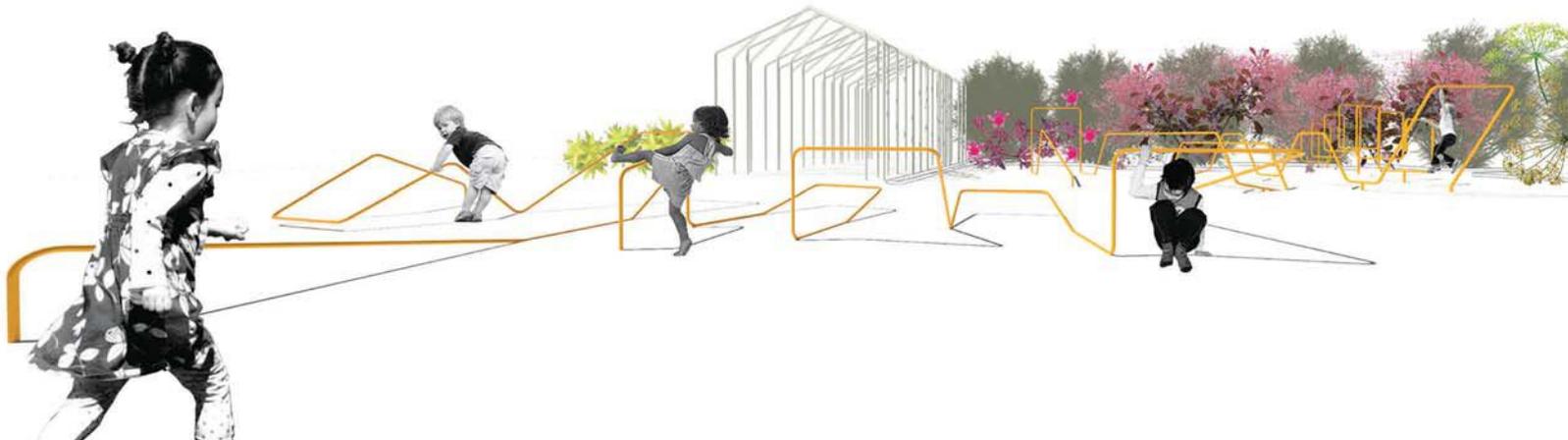
With Hope Village, MAde Studio employed yet another lens through which community rebuilding might happen: play. "Detroit had a history of linking playgrounds to the way that neighborhoods developed," Maigret says. "Today, in a city strapped for cash, Detroit is always looking to do more with less, and playgrounds are an excellent opportunity to look at issues of water, but also to explore solutions for public space. Playgrounds allow us to think about a material process and an optimistic approach to open space."

In the firm's projects, you can see the influence of pioneers like Aldo van Eyck, the Dutch architect who used playground design to help rebuild Amsterdam after World War II, and Isamu Noguchi, who designed sculptural

playscapes. For MAde's Playful Horizons project, which is now under construction for the First Congregational Church of Battle Creek in Michigan, Maigret and Arquero designed a massive jungle gym for a daycare center out of bright orange bars. Unlike a proscriptive environment with single-minded items (think of the ubiquity of flip-able, oversized Tic Tac Toe boards, for example), Playful Horizons hopes to engage the curiosity and creativity of children through more abstract structures. "We really wanted pared-down elements that allow for open-ended play," Maigret says. "This is why we use the word 'horizons.'"

Here, a maze of tall and short bright orange bars invites children to climb, to hang, to invent. The architects designed the variant sections of the jungle gym at different heights to accommodate toddlers as well as older children, and engineered the ground underneath to be soft enough for safe climbing. The whole structure is meant to look of-a-piece. "We wanted the different sections to feel uniform, so that the younger kids don't feel relegated to the kid's table, so to speak, when they climb on the lower-height bars," Maigret says.

MAde Studio may champion new planning tools in thinking about Detroit's future, but it certainly doesn't ignore the city's past. History and place play an important role in the firm's design process. In the next five years, as the studio plans on moving into more projects outside of Michigan, the history and specificity of place—coupled with the rigors of research—will continue to inform its work. "Our practice engages in places where we can dig in deep and understand the history, the people, and why the physical expression of the place is what it is," Maigret says. "History is a tool for helping people to understand that a place has always undergone change. It's never static. It's in yet another moment of transformation."



CRITIQUE

THE CULT OF KOOLHAAS

REM KOOLHAAS'S OWN EXHIBITIONS AT THE 14TH INTERNATIONAL ARCHITECTURE EXHIBITION AT THE VENICE BIENNALE MAY HAVE MISSED THE MARK, BUT HIS INFLUENCE AS CHIEF CURATOR BROUGHT OUT THE BEST IN THE NATIONAL PAVILIONS.



Text by **Ian Volner**

“REM IS LIKE a great journalist of architecture,” said Ricardo Bofill Jr., sitting downstairs in Venice’s Palazzo Bembo on the third day of the 2014 Architecture Biennale. Two flights up, the peripheral exhibition “Time Space Existence” included a sampling of recent work from Bofill’s (and his famous father’s) eponymous office in Barcelona, Spain, alongside a surprisingly vast array of installations from firms around the world. The Bofills have seen more than their fair share of Biennales—including the seminal 1980 “Strada Novissima” show, in which the elder designer played an important role—and for Bofill the Younger, the 2014 installment seemed like it could mark yet another key inflection point for the field, a credit to curator Rem Koolhaas, Hon. FAIA, and his ability to weave history and design into a compelling narrative—ostensibly unified by his title, “Fundamentals.” “For Rem, it all comes back to telling a story,” Bofill says.

But what exactly Koolhaas thinks the next chapter in that story is meant to be was difficult to discern, at least judging from his particular contributions to the current Biennale. The Bembo show (organized by the independent Global Art Affairs Foundation) was altogether a more comprehensive view of contemporary practice than either Koolhaas’s technically minded “Elements of Architecture” exhibition at the Central Pavilion or his “Monditalia” show at the Arsenale. In many ways, the leading man in the Biennale drama appeared to have departed from his own script.

The emerging consensus during the preview (consensuses during the Biennale having a tendency to fade in and out somewhat) was that the real action was taking place in the national pavilions. Clogging the paths and courtyards of the Giardini, Prosecco-tipping design fans flocked to see the opening of the Belgian Pavilion (a spare, cerebral investigation of interior space),

Visitors arrive at the Arsenale in Venice for the 14th International Architecture Exhibition, curated by Rem Koolhaas. Exhibits are housed not only in the Arsenale, which is the city’s former shipyards, but also in the national pavilions and Central Pavilion in the nearby Giardini park.



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The Austrian Pavilion's exhibition "Plenum. Places of Power," conceived and designed by Christian Kühn and Harald Trapp, featured 200 1:500 scale models of parliament buildings from around the world.



the Israeli Pavilion (an offbeat examination of the country's urbanism using sand-sifting digital fabricators), and the Austrian Pavilion (wall-mounted models of the national capitol buildings of over 200 countries). For the first time at an Architecture Biennale, the chief curator had tasked all of the national pavilions with a single overarching theme: "Absorbing Modernity: 1914–2014." Far from being a limiting agent, this guideline seemed to inspire many participants to reach further and think deeper.

It's surprising, in fact, that the Architecture Biennale had to wait till the arrival of Koolhaas for someone to impose some sense of conceptual order on the unruly Giardini. As an exhibition environment, the rambling walkways and waterways at Venice's eastern end remain a curious place—one part public space, one part artsy theme park—with the feeling that sometimes it is a necropolis populated by unusually extravagant tombs. "I like some of the older

pavilion buildings, just for what they are," says architect John Denton of Denton Corker Marshall, an Australian firm tasked with the daunting commission of creating a new space for their native country. When it's completed later this year, the new Australian Pavilion—a simple, black granite volume with what Denton describes as a "very Melbourne" character—will not only be the latest addition to the Biennale fairgrounds, but perhaps the last: Preservationist-minded Venetians are staunchly opposed to any further construction, and only a bureaucratic loophole allowed the Australians to move forward with this project.

In the meantime, "Absorbing Modernity" did seem to breathe some new and much-needed life into the faintly funereal exhibition grounds—a sharp contrast with Koolhaas's own shows, in which the organizing theme was conspicuous in its absence. The Arsenale show was especially perplexing. In room after room of the vast complex, Koolhaas's assorted

collaborators investigated built culture in the home country of the Biennale, using media as varied as film, dance, and archival material to uncover the assorted complexities and contradictions of Italy today. There was much to like in the show, not the least of which was the documents and public programming of Beatriz Colomina's "Radical Pedagogies: Action-Reaction-Interaction" installation, as well as the 82 movie clips on display throughout the space showing how Hollywood has taken on the Italian landscape. But if there was a thesis at work, it was difficult to make out, and the Italian Pavilion just around the corner covered much the same material with greater concision and curatorial flare, especially with its full-scale model of Milan complete with digital projections showing urban networks and planning proposals over the centuries.

Koolhaas's "Elements" only threw the thematic center of gravity even further off-kilter, with the Central Pavilion given



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over to a strangely rote presentation of building components like elevators, stairs, and fireplaces. “It was like an industry expo,” snarked one visitor.

On the other hand, the Biennale’s overlords did not err when it came time to dole out the honorary Lions. Winning the gold was the Korean Pavilion, which showcased a riveting series of videos and images exploring the vexed relationship between North and South, in particular the quasi-hidden history of urbanism and building in the autocratic Hermit Kingdom. And the Chilean Pavilion walked away with a well-deserved silver: For a look back at the country’s troubled past, the organizers carted in a thick concrete wall, originally built as part of a Soviet-backed social housing program created by the socialist Allende government. Production team member José Hernandez showed where the “o” was still visible from the signature Salvador Allende had scrawled on it more than 40 years ago, and explained the challenges in moving the

The Koolhaas-curated “Monditalia” exhibition in the Arsenale is a collaboration between architecture and Venice’s other biennales, for dance, music, theater, and film.

ANNUAL DESIGN REVIEW

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ARCHITECT's Annual Design Review is a juried competition of the best U.S. architecture completed in the past 12 months. Judging is blind, to give every project an equal opportunity to win, and awards are given in six project-type categories.

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Winners in each category (selected by a jury) will be published in the December 2014 issue of ARCHITECT.

CATEGORIES

WORK Office, Government, and Commercial Mixed-Use

PLAY Sports, Hospitality, and Retail

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DEADLINES

September 5, 2014: regular entry deadline

September 10, 2014: late entry deadline
(additional fee required)

FEES

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Late entries: \$50 additional fee per entry
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- FLAGSHIP

by Joao Araujo Sousa, Joana Silver, Architects
Joao Araujo Sousa, Arquitecto, Portugal

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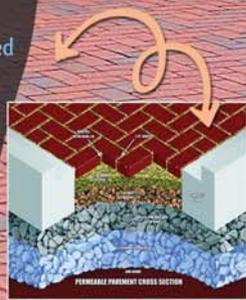
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Top: In the Central Pavilion, the Koolhaas-directed “Elements of Architecture” exhibition is the culmination of a two-year research studio at the Harvard Graduate School of Design. The concept is a microscopic look at the history of some of the most ubiquitous tools in an architect’s kit, but the display left some viewers cold. **Bottom:** The homey installation of the Golden Lion–winning Korean Pavilion belies the seriousness of the content. “Crow’s Eye View: The Korean Peninsula,” curated by Minsuk Cho, Hyungmin Pai, Changmo Ahn, and Jihoi Lee, examines the architecture of North and South Korea through photos and video, in an effort to imagine the built environment of a unified country.

Who knew a retention pond could have such a pretty face

With a BMP installation, you can have a traditional clay paver hardscape and storm water storage too. StormPave permeable clay pavers have been independently tested to have an infiltration rate of 720 inches per hour. From the base storage, storm water can dissipate back into the soil or be routed to underground tanks to be used for landscape irrigation. Either way, you don't have to give up valuable real estate for a retention pond.



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massive hunk from Chile to Italy. "We got a very nice grant from a marine transport company," he said.

Only slightly less daunting maritime logistics faced attendees leaving the Biennale on Sunday, as a boat race shut down the Grand Canal. The night before, as word of the impending closure started making the rounds of a launch party for design journal *Clog* (their new issue devoted, naturally, to Koolhaas), attendees discussed possible alternative routes to the airport. "We could always swim across the lagoon," said one wag. "Yeah," said another, "but if we were Rem, we could just walk on it."

Sarcasm aside, this Biennale did seem to confirm one of the peculiar aspects of the Koolhaas Effect in architecture today: The Dutch dynamo was less important for what he built himself than for how his ideas forced every other designer in attendance to react. When this Biennale is viewed in years to come, however, its signal lesson may be just this: Do as Koolhaas says, designers, but perhaps not as he does.

The Silver Lion for National Participation went to Chile for "Monolith Controversies," which includes a concrete panel from one of the first prefabricated housing units donated by the Soviet Union to Salvador Allende's government, in 1972. Such units became central in the political upheaval that ensued in the South American nation.



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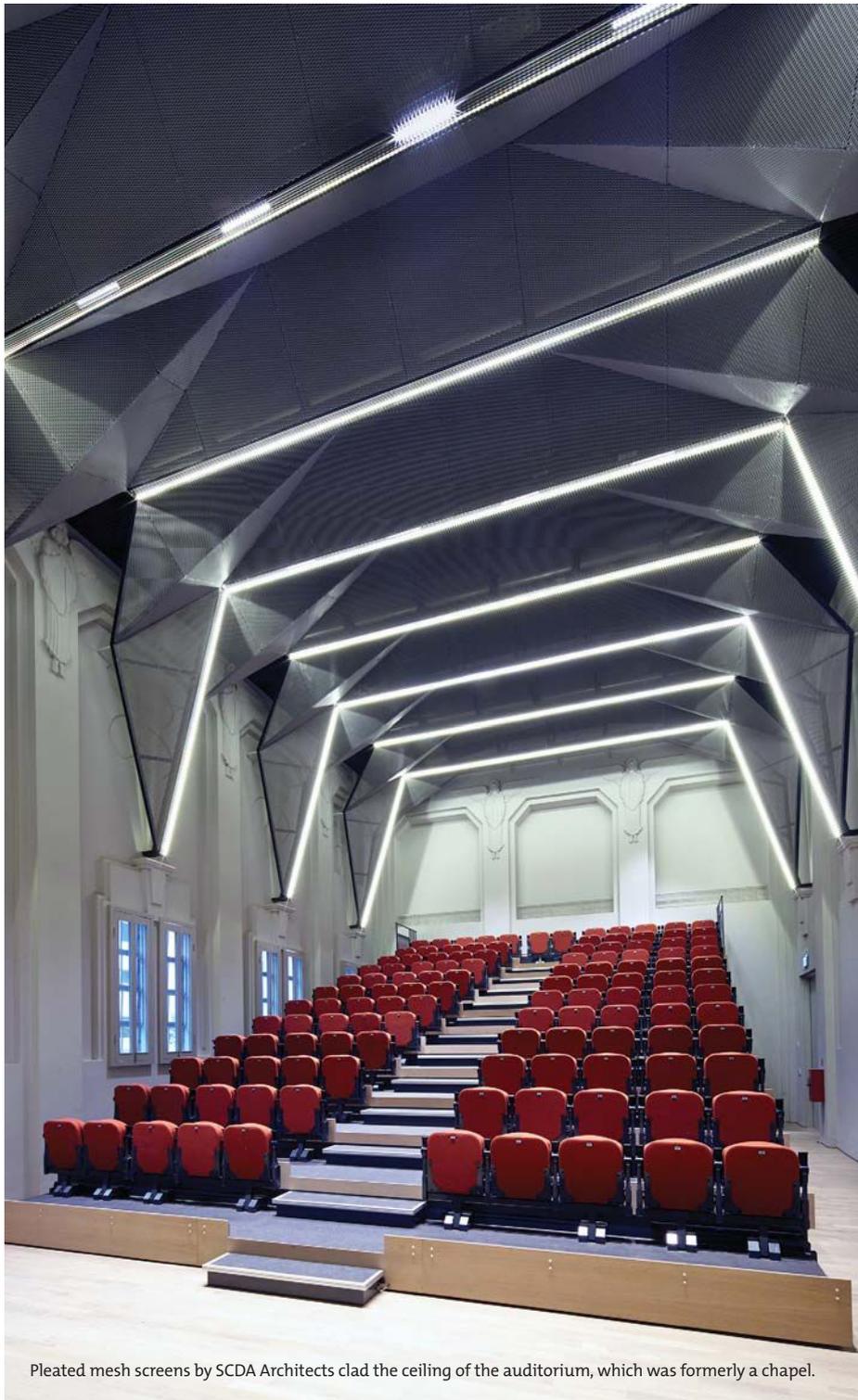
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DETAIL

IN THE FOLD

FOR SINGAPORE'S NATIONAL DESIGN CENTER, SCDA ARCHITECTS CRAFTED AN ALUMINUM-MESH SKIN TO BOOST THE LOOK AND PERFORMANCE OF THE EXISTING SPACE.



Pleated mesh screens by SCDA Architects clad the ceiling of the auditorium, which was formerly a chapel.

Text by **Shonquis Moreno**

SINGAPORE'S NATIONAL Design Center is finally living up to its name. In the city-state's cultural district of Bras Basah Bugis, SCDA Architects recently restored and converted a group of three prewar Art Deco buildings and one postwar modern building that now serves as the home of the center, which is a promoter and incubator of the region's burgeoning design culture.

Once a convent school, the complex has been adapted to contain lecture rooms and galleries, offices, classrooms, and basic design and prototyping facilities. One of the most poetic displays of complexity spans the breadth of the formal, 46-foot-by-30-foot chapel, which SCDA founder Soo K. Chan, Intl. Assoc. AIA, turned into an auditorium. Above visitors' heads, a creased aluminum-mesh skin envelops the chapel's 29.5-foot-tall ceiling, providing visual interest that is simultaneously sculptural, industrial, and abstracted.

The pleated mesh panels fold together like an origami screen. The triangular surfaces dip and rise almost 2 feet, framing historical details such as the restored religious reliefs that ring the upper walls and former altar, and hiding the mechanical, electrical, and audiovisual services.

Chan and his team designed the ceiling using Trimble SketchUp, Autodesk 3ds Max, AutoCAD, and other programs. Extensive on-site discussions and adjustments were required to ensure the mesh would fit the existing building like a glove. The screens anchor into a steel portal frame, which is subsequently bolted to concrete ceiling beams. The connectors allow the screens, which are also pinned to each other, to move as the building settles

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irregularly on its foundation, as it has since its completion in 1929.

The most challenging aspect of building the auditorium, which took 18 months, was the need to accommodate the grid-based framework within walls that were not parallel. All steel framing had to be carefully assembled on-site to ensure that the support structure would not appear off-grid. So the team mounted the framework diagonally to create the illusion that both sides of the room run parallel — “an illusion that everything aligns,” says SCDA designer Darren Yio.

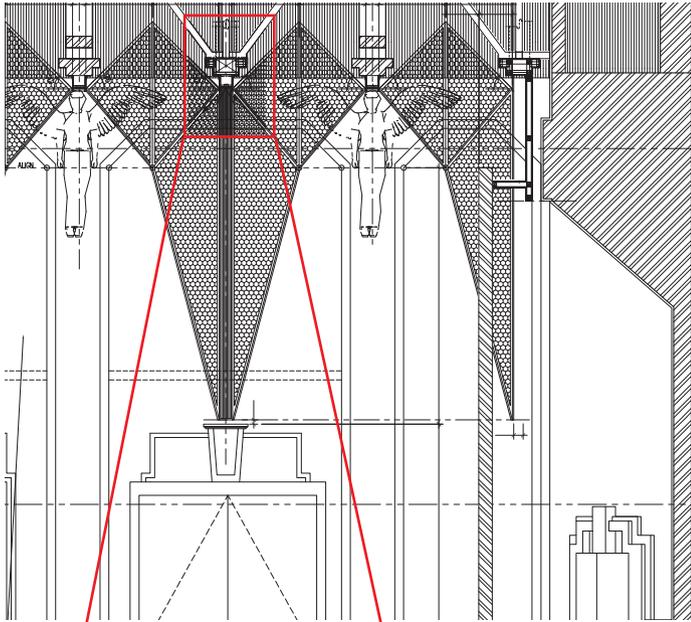
Local contractor Lai Yew Seng used off-the-shelf, 100-millimeter-by-100-millimeter and 200-millimeter-by-100-millimeter steel

square hollow sections (SHS), wide-flanged beams, 50-millimeter-by-50-millimeter angles and powdercoated, expanded aluminum mesh screens with 40-millimeter-wide-by-10-millimeter-tall hexagonal openings. The screens were custom cut on-site into the triangular pattern to fit the existing conditions of the historical building, and are between approximately 24 and 95 inches tall, and up to 24 inches wide.

LED strips affix to the standard steel channels within the framework. Though the designers specified the mesh to allow air to circulate from the mechanical infrastructure at the ceiling, Chan says, the finish also boosts the auditorium’s acoustics.

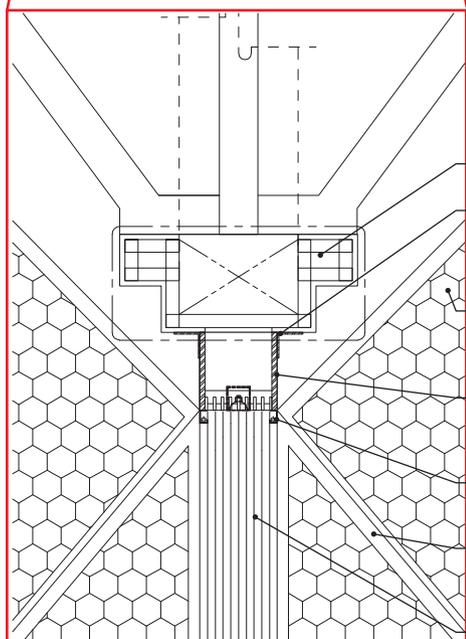
The aluminum mesh screens were sized and cut on-site to ensure its grid-based support framing looked in line with the existing space’s non-parallel sidewalls.

Mesh Ceiling Finish



0 4 8

Mesh Connection Detail



- Ductwork and housing
- Steel angle support
- Aluminium mesh screen with 40mm x 10mm hexagonal openings
- Steel plate with painted finish
- LED strips (3000K color temperature)
- Bolt connections (not drawn) to support framework spaced 300mm o.c.
- HVAC grille

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Text by **Hallie Busta**

Photos by **Mike Basher**



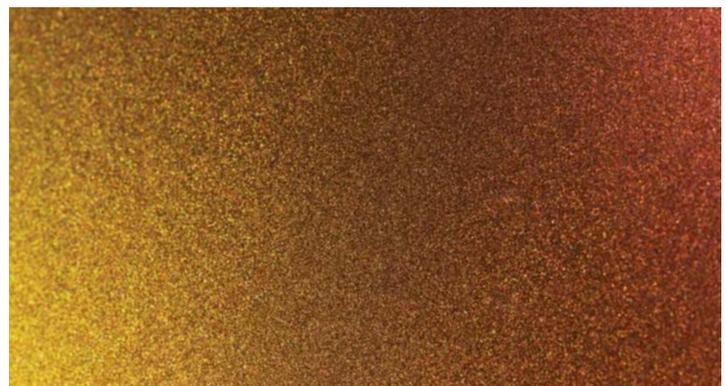
HIGH PROFILE SERIES CEILING SYSTEM, HOK PRODUCT DESIGN AND HUNTER DOUGLAS

In collaboration with Hunter Douglas, HOK senior designer Chris Anderson, AIA, crafted a baffled ceiling system to mask the HVAC and M/E/P systems of high-performance buildings; it can also be used with chilled beams. The High Profile Series Ceiling System offers extruded aluminum profiles in custom shapes and materials. Each baffle measures 1.5" wide and 6.35" tall and can span lengths of up to 20'. hokproductdesign.com Circle 100



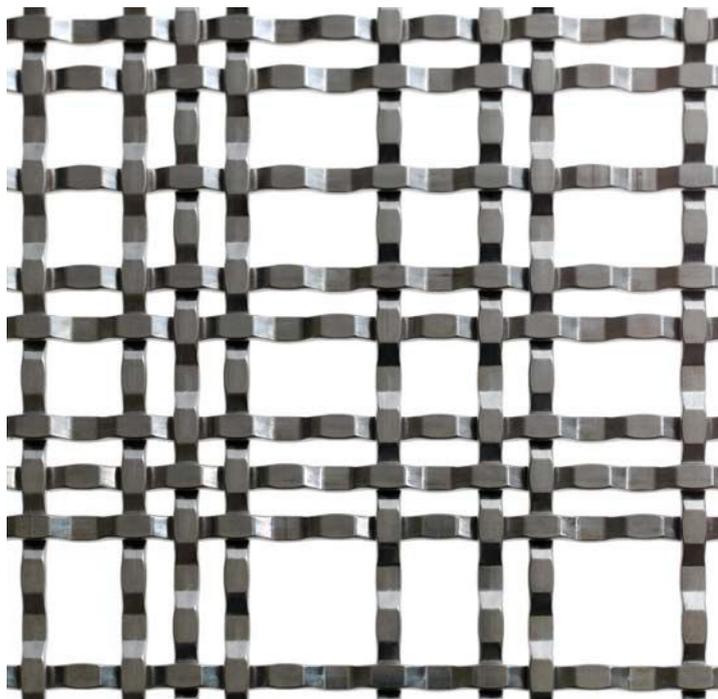
ACROPON, VALSPAR

Busy commercial spaces such as storefronts are subject to continual foot traffic and cleaning chemicals. So Valspar developed a coating for pretreated aluminum extrusions and panels that can withstand abuse while providing a high-gloss finish. Applied in two coats, one clear and one colored, Acropon meets the American Architectural Manufacturers Association's 2605-13 voluntary specification for organic coatings on aluminum extrusions and panels. valsparcoilextrusion.com Circle 101



PRISMFX, ALCOA ARCHITECTURAL PRODUCTS

Formulated to respond to the ever-changing levels of daylight, the PrismFX coating introduces a dynamic element into an otherwise static construction. For use with the company's Reynobond composite and Reynolux metal panels, the finish changes sun-exposed surfaces from muted blue, green, or silver hues in the morning to a bolder copper, violet, or gold palette in the afternoon. The coating is offered in nine colorways and resists abrasion, humidity, impact, and salt spray. alcoa.com Circle 102



HASHTAG, CAMBRIDGE ARCHITECTURAL

Crimped and crossed lines add visual depth to this rigid, stainless steel architectural mesh. Intended for use as interior panels and exterior cladding, the 0.102"-thick Hashtag can span widths of up to 96". The mesh is 45% open and weighs 1.36 lbs. per square foot. It can be bent to conceal attachments and welded to a U-binding frame for mitered corners. cambridgearchitectural.com Circle 103



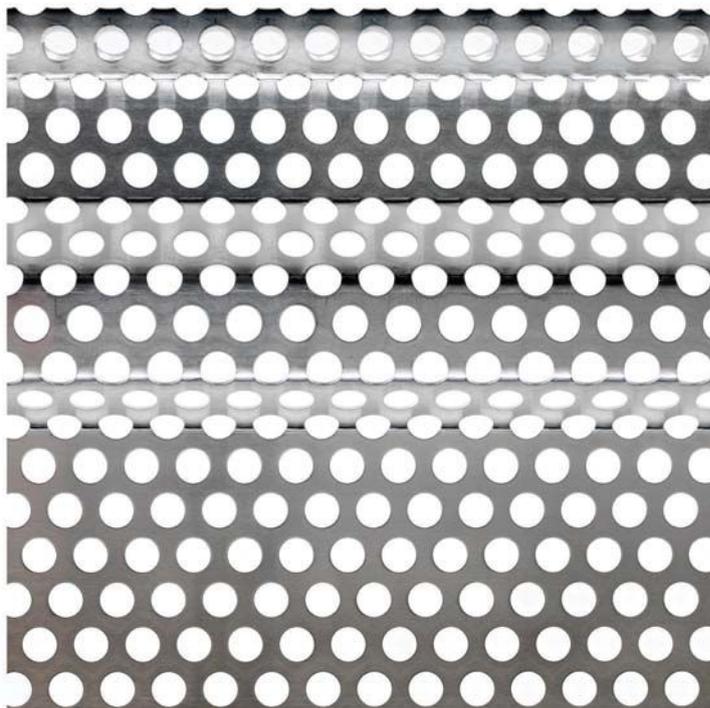
SILENTMESH, GKD METAL FABRICS

Best known for its architectural façade finishes, GKD Metal Fabrics makes a foray indoors with Silentmesh. The multilayer ceiling system backs the company's metal fabric with a sound-absorbing underlayment. Available in large-format panels, it can create a monolithic effect via clamped or lay-in mounts. Multiple mesh fabrics, including the Omega 1520 PC (shown), are available in stainless steel and aluminum. gkdmetailfabrics.com Circle 104



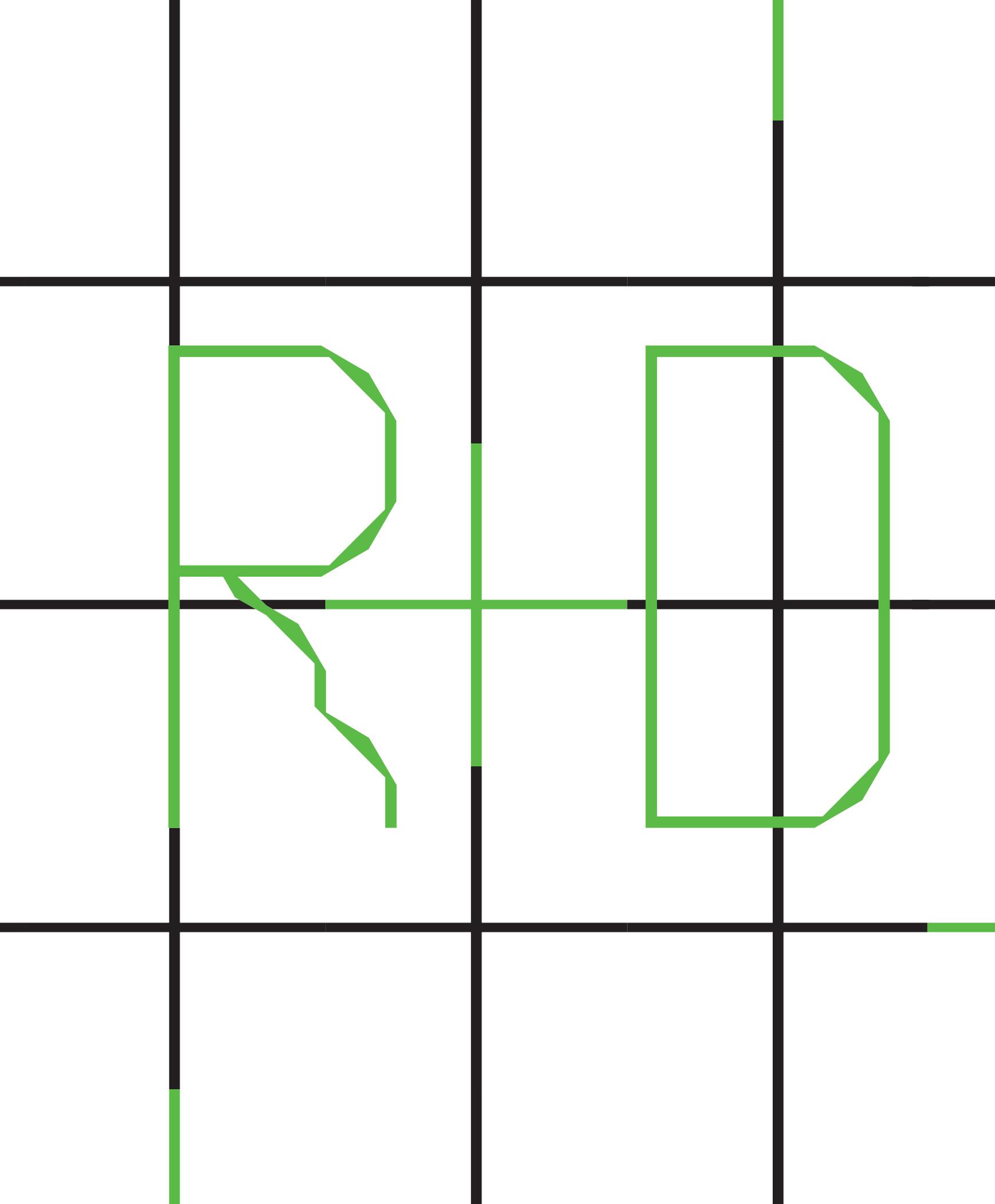
FORMAWALL GRAPHIX SERIES, CENTRIA

The latest addition to Centria's stock of insulated architectural metal panels combines four different reveal patterns in a single-component wall system. Offered in horizontal and vertical orientations, the Formawall Graphix Series patterns—horizontal, vertical, diagonal, and running-bond—can be mixed and matched. The panels incorporate the company's thermal and moisture protection technology. centriaperformance.com Circle 105



PERFORATED UNA-CLAD DELTA CONCEALED FASTENER PANELS, FIRESTONE BUILDING PRODUCTS

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8TH ANNUAL R+D AWARDS

Intro by **Wanda Lau**
Text by **Gideon Fink Shapiro**

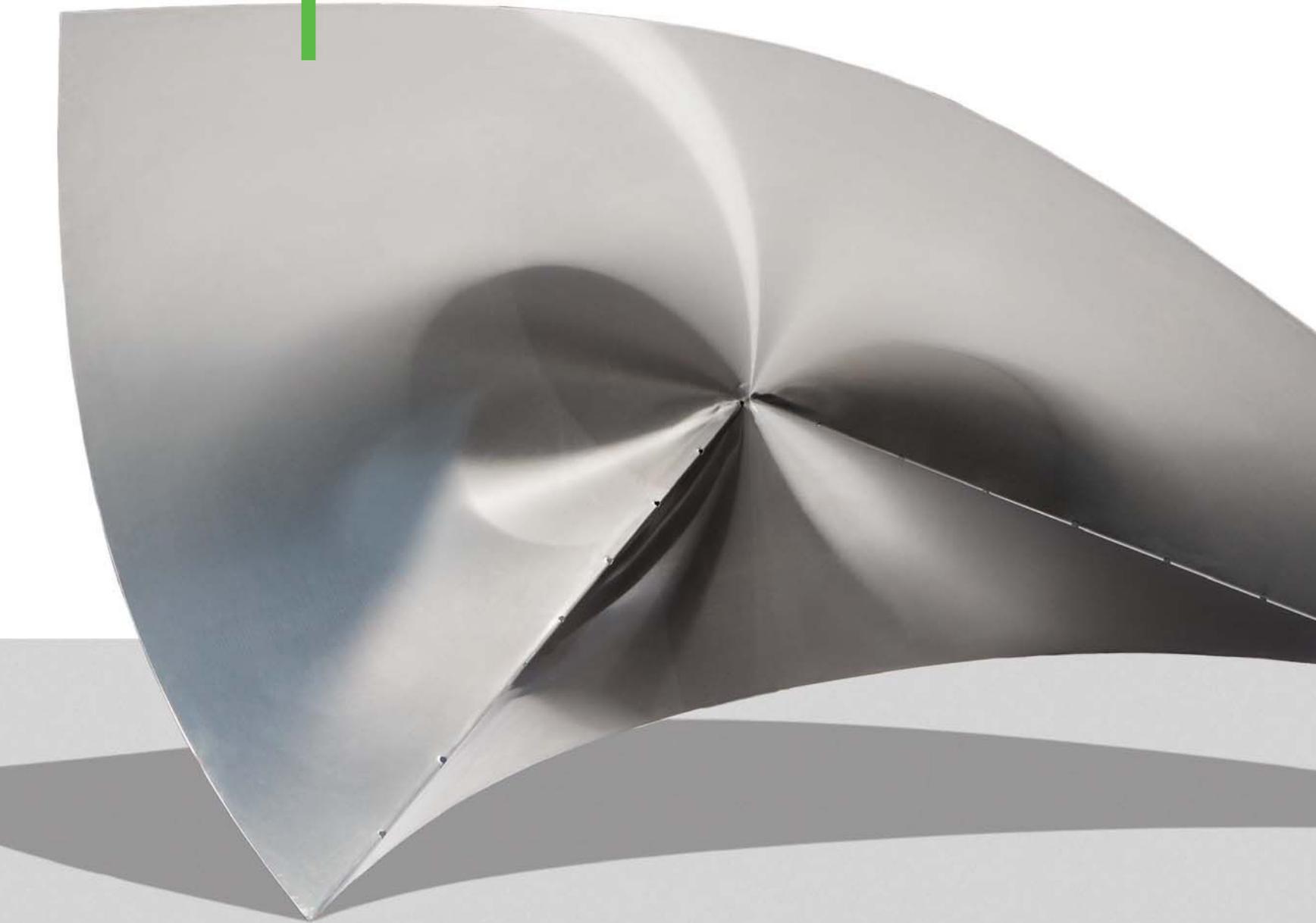
WE LIVE IN AN ERA of making. If the proliferation of digital fabrication labs and 3D-printed goods hasn't made it obvious, then the following nine winning projects in this year's R+D Awards will show how craftsmanship is evolving and thriving in the computer age.

The entrants' desire to innovate and captivate an often stoic design community was not lost on jurors Gerardo Salinas, AIA, Mimi Love, and Bill Kreysler (see their bios on page 96), who culled the winners from more than 100 submissions. But exploiting today's increasingly advanced and accessible technologies can only go so far without a greater purpose.

The six awards, two citations, and one honorable mention stood out for their potential to inject architecture with intelligence, upgrade longstanding manufacturing and construction methods, and overhaul entire streetscapes and cities. "They weren't only about making things," Love says of the winning projects. "They were also about solving human-scale problems."

See project credits on page 104

The largest application that Patkau Architects envisions for One Fold thus far is a hillside pavilion made of three freestanding units. Beyond One Fold's seamless surface is the inherent spatial potential it offers, says John Patkau.

AWARD

One Fold

PATKAU ARCHITECTS CREATES SHELTER FROM SHEET METAL IN ONE ELEGANT MOVE.

Exploring the notion of architecture without joints, Patkau Architects wanted to create a freestanding structure from a single sheet of stainless steel. By folding and bending pieces of increasingly large sizes, says John Patkau, AIA, co-founder of the Vancouver, British Columbia-based firm, “we were able to get remarkably robust structures that were also quite beautiful in their forms.”

The firm began its One Fold experiment by studying the radically minimal origami work of paper artist Paul Jackson. One move in particular caught the firm’s attention: A sheet of paper folded once can then be forced to buckle along that crease to create a freestanding object.

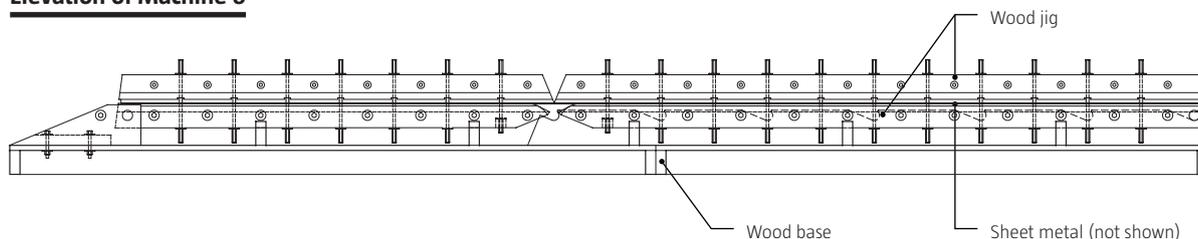
Patkau wanted to attempt the same procedure on steel. It worked well enough on 2-foot-square sheets of galvanized steel, pre-drilled with a hole to create a point of weakness, and then bent and folded with a hand-powered device resembling a brake made from wood.

But the team wanted to scale up to a sheet of stainless steel large enough to form an architectural enclosure. Unfortunately, larger and thicker sheets of steel do not

behave like paper. The fold, once made, was “virtually impossible” to break, Patkau says. Local steel fabricators said they couldn’t help, so the architects went into craftsmen mode. “We had to invent the machine to do it,” Patkau says. The firm developed a series of fold-and-bend machines that could manipulate progressively larger sheets. Juror Mimi Love was impressed that the prototype was “purely the result of some ingenuity and a low-tech press made out of wood.”

By version six, Patkau could crinkle a 123-pound, 5-foot-by-12-foot sheet of stainless steel—the largest size available in Vancouver—into a self-supporting “broken vault” defined by complex curves. The secret to manipulating large sheets? Combining the steps of folding and bending into one mechanical motion. “Although it’s not any kind of technological breakthrough, it’s a reminder of the role of craftsmanship in contemporary design and construction,” juror Bill Kreysler said. “By understanding how these forces can be applied, you can create shapes that nobody’s seen before.” Juror Gerardo Salinas thought the piece was “very well executed and very elegant.”

Elevation of Machine 6



FXFowle Architects proposes adding several practical and creative applications and functions to the now-underutilized telephone booth, which juror Mimi Love called a "dead piece of street furniture."

AWARD

Piezometric pressure plates to harvest energy

Sound curtain

LED strip

Charging station

Touchscreen interface

Emergency mode call buttons



NYC Loop

FXFOWLE ARCHITECTS REINVENTS THE PHONE BOOTH FOR THE 21ST CENTURY.

In the age of cellphones, telephone booths have become obsolete. Yet during 2012's Superstorm Sandy, the anachronistic infrastructure was one of the few communication systems that remained operational in Manhattan, thanks to its independent network of copper lines.

In 2013, New York City held a Reinvent Payphones Design Challenge to elicit ideas for a 21st-century phone booth. FXFowle Architects answered the call with NYC Loop, a piece of urban furniture brimming with features. Juror Bill Kreysler saw great value in its "practical day-to-day applications."

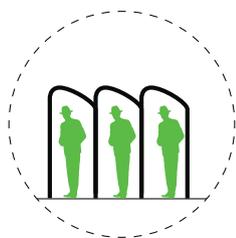
The proposed NYC Loop comes equipped with a Wi-Fi hub, touchscreens for maps and weather, a Bluetooth connection, a cellphone charging station, and a bench for people-watching. The open-air structure has a frequency-specific system to mask ambient street noise, creating an oasis of relative quiet beneath its canopy. "We have investigated using a similar technology in the design of open office plans," says Guy Geier, FAIA, managing partner at FXFowle.

The Loop could also host bicycle parking, electric-car charging, tables for short meetings, a garden wall, a photo booth, and even a performance or art space. "I like the flexibility of the system," juror Gerardo Salinas said. "You can add more things to it—you could put in a swing." "Any background you want for your selfie," Kreysler chimed in.

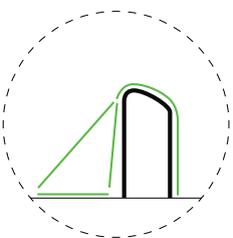
The Loop would likely tie into the city's power grid, but it would generate and store some of its own power with photovoltaic panels and batteries, as well as piezoelectric plates embedded in the adjacent pavement that would convert the kinetic energy of pedestrian footsteps into electricity. In the event of widespread power failure, basic communications functions and LED light strips would have enough on-board power to work.

At press time, FXFowle was in discussions with potential partners about participating in the city's official RFP, which covers everything from design to fabrication, maintenance, and operation. Geier says that the firm has also received inquiries from municipalities and universities around the world that are intrigued with the NYC Loop's potential. Perhaps the phone booth can be saved after all.

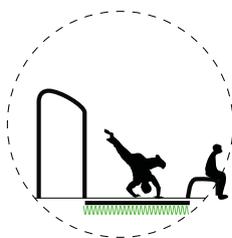
Proposed Applications and Features



Scalable



Interactive image projector



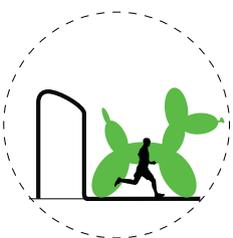
Performance venue



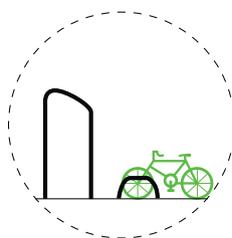
Bench and garden wall



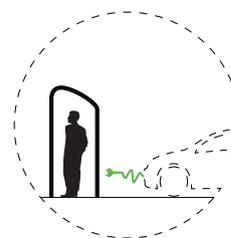
Photo booth



Art space



Bicycle parking



Electric-car charging station

Building Bytes

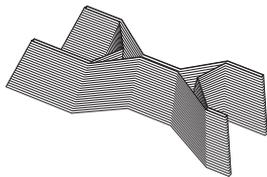
DESIGNLABWORKSHOP FOUNDER BRIAN PETERS BRINGS THE SIMPLE BRICK INTO THE AGE OF DIGITAL MODELING AND PARAMETRIC SCRIPTING.

Three-dimensional printing has proven useful at model scale, but what about at building scale? Brian Peters, an assistant professor at Kent State University and the founder of DesignLabWorkshop, in Kent, Ohio, is tackling full-scale printing one clay brick at a time with a desktop 3D printer. Building Bytes is a project that goes beyond using new tools to make old products. Instead, it follows the additive logic of the printing path—rather than the conventional molding or extrusion process—to make bricks that are otherwise impractical or impossible to make.

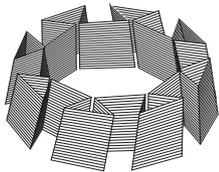
On his conventional fused deposition modeling (FDM) printer, Peters replaced its plastic extrusion system, or print head, with an air-pressure nozzle that delivers a homemade liquid clay mixture stored in reusable plastic cartridges. Layer by layer, a brick emerges from a linear bead. Each brick takes about 15 to 20 minutes to print, a day to air dry, and then 12 hours to fire in a kiln at roughly 2,000 F. To date, Peters has designed and printed four types of bricks: honeycomb, interlocking, ribbed, and x-bricks. Like all craftsmen, he continues to finesse his work to account for the performance of the material in reality.

The jurors were enthralled by the potential of Building Bytes' process though juror Bill Kreysler was initially skeptical of the project's innovation since "clay has been extruded through a die for hundreds of years." Yet, he said, the project "does allow for objects that are refreshingly new, based on an understanding of the material. And that's important because the more informed designers are about material properties, the more they can open doors to new ideas."

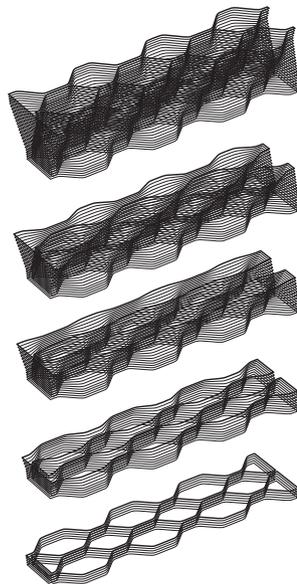
Printing Paths



X-brick

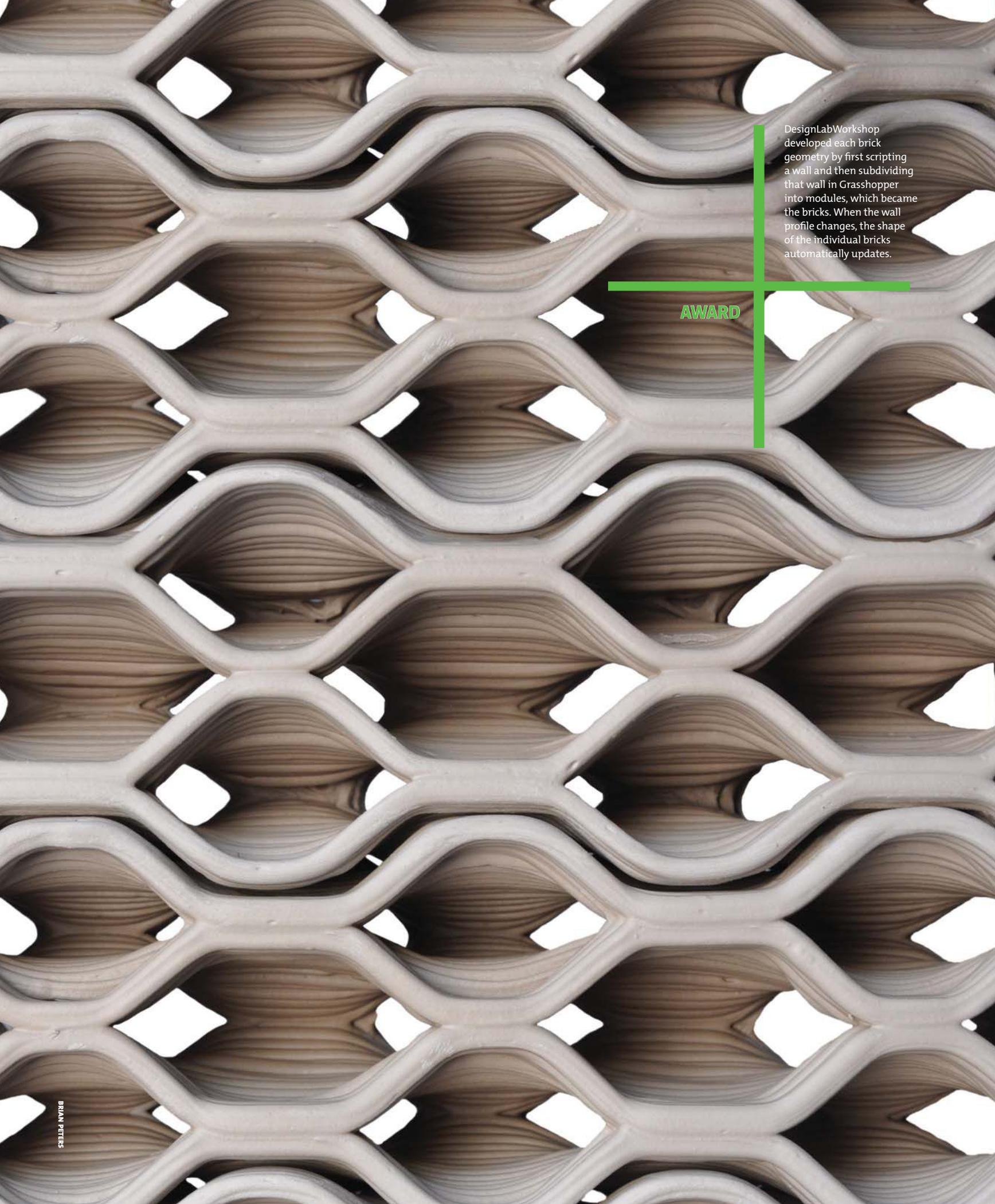


Ribbed brick



Honeycomb brick wall



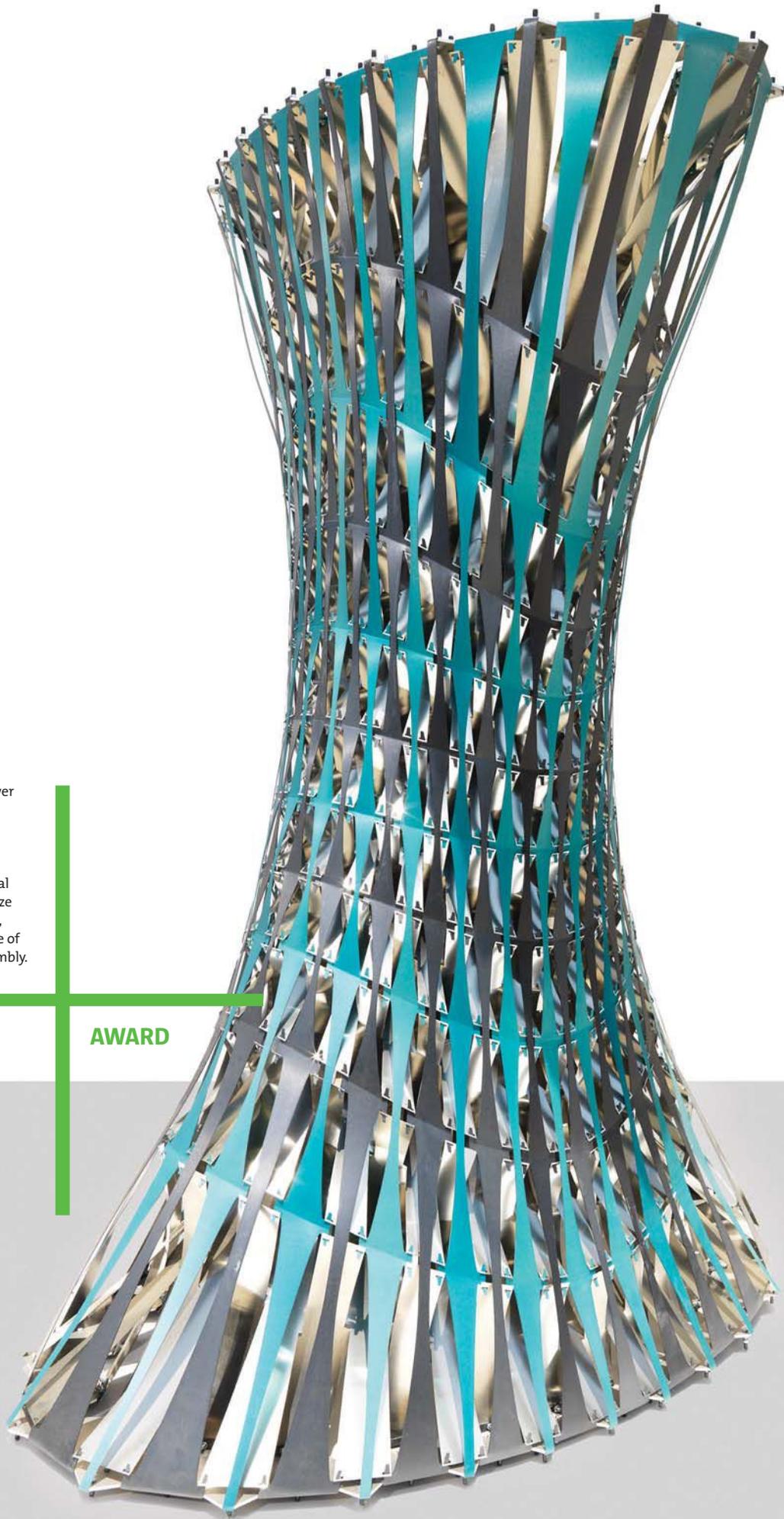


DesignLabWorkshop developed each brick geometry by first scripting a wall and then subdividing that wall in Grasshopper into modules, which became the bricks. When the wall profile changes, the shape of the individual bricks automatically updates.

AWARD

The Exo Structural Tower was built based on intuition and physical mock-ups, but Do|Su Studio Architecture hopes to develop digital data models to optimize the material thickness, dimensions, and shape of each piece in the assembly.

AWARD



Exo Structural Tower

DO|SU STUDIO ARCHITECTURE FOUNDER DORIS SUNG AIMS TO CREATE SMART ARCHITECTURE THAT CAN SELF-ASSEMBLE.

Doris Sung, Assoc. AIA, envisions a future in which architecture is more than just smart—it also responds intelligently to its environment. A smart building “is not just about having a Nest-type thermostat,” she says. “That’s a smart gadget, not smart architecture.”

Over the past seven years, the founder of Do|Su Studio Architecture and assistant professor at the University of Southern California has explored the smart potential of thermobimetals: laminated sheets of two metals with different coefficients of thermal expansion. When heated, one side expands faster than the other, causing the material to curl, a property long exploited by thermostats as well as Sung’s Bloom installation—a 2012 ARCHITECT R+D Honorable Mention recipient—in Los Angeles.

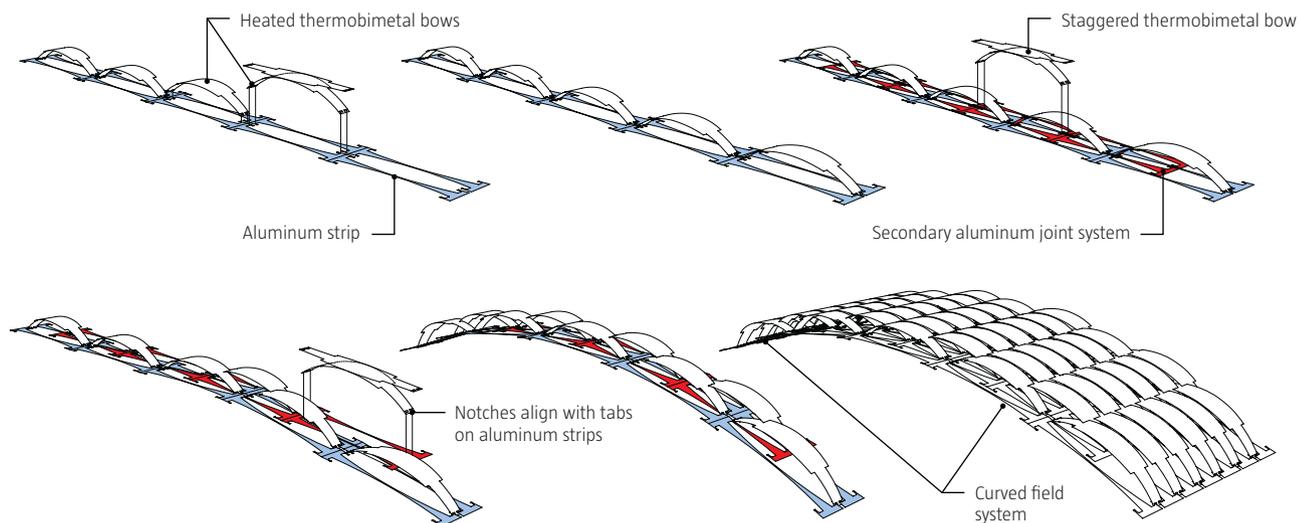
Sung’s latest prototype, Exo Structural Tower, harnesses this curling behavior to achieve fastener-free construction of a lightweight structural shell, or exoskeleton, that essentially self-assembles. Just one or two people equipped with an oven, a pair of welder’s gloves, and a ladder can build the 8-foot-tall Exo tower, Sung says. First, the thermobimetal strips, which are laser-cut with notched

ends, are heated to 350 F. At this temperature, the two laminated alloys of nickel, iron, and manganese curl into a C-shape. Meanwhile, 100-inch-long strips of anodized aluminum are hung from a 6-foot-by-4-foot elliptical ring, forming a vertical tube.

Each of the 336 curled thermobimetal strips are then inserted, via their end tabs, into a predetermined slot in the aluminum strips, following a numeric system printed on each component. Within 30 seconds, the strips cool and straighten out, locking into place and forming a pre-tensioned beam, like an archer’s bow. The tower, which Sung estimates can bear a load of 1 ton, can only be taken apart when reheated to a high temperature.

“The structure is doing its work in the most efficient place—the outer shell,” said juror Bill Kreysler. He was also impressed that the structural components could be assembled with “no welders, no saws, and virtually no energy.” Juror Gerardo Salinas said, “I like that it can be on a building scale, or on an object scale. I wonder if this could turn into a real skyscraper.” Indeed, Do|Su envisions Exo as just one tier of a multi-tiered tower.

Construction Sequence



Afterhouse

A TASK FORCE RECOMMENDED THAT THE CITY OF DETROIT DEMOLISH 40,000 DILAPIDATED HOUSES TO STAVE OFF CONTINUING BLIGHT. **ARCHOLAB** HAS A BETTER AND MORE COST-EFFICIENT PLAN.

The sight of Detroit's thousands of neglected residential lots, spread across hundreds of sparsely occupied blocks, has become infamous, thanks to artists and the media. Now imagine these properties brimming with ripening figs, pistachios, mangos, and citrus. In the winter.

This is the vision of Afterhouse, a project conceived by Abigail Murray and Steven Mankouche of the Ann Arbor, Mich.-based research and design collaborative Archolab. The process is simple and inexpensive: Repurpose the concrete foundation of a derelict house to build a sunken greenhouse that stays warm through solar heat gain and the insulation of the earth to grow subtropical crops.

Juror Mimi Love noted, "This is a clever and hopeful submission, considering the number of neighborhoods in Detroit with which nobody knows what to do but turn out the lights and walk away."

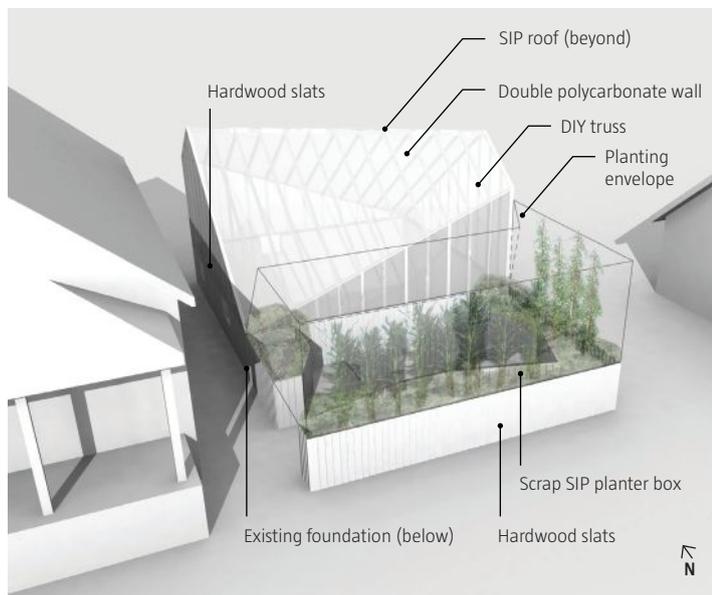
The test site is an abandoned, fire-damaged house in the Detroit-embedded city of Hamtramck. An insulated greenhouse shed will rise out of the existing 25-foot-square foundation. The south side of the shed's gable roof will comprise transparent, twin-wall polycarbonate panels, supported by trusses built from standard 2x4s, steel strapping, pipe, and cable. The other half of the

roof, as well as much of the building envelope, will comprise structural insulated panels (SIPs) donated by building supplier Insulspan. Hardwood cut-offs and slats donated by local sawmill Hardwoods of Michigan will become an exterior rainscreen and the interior decking, while reclaimed corrugated steel siding will clad the end walls.

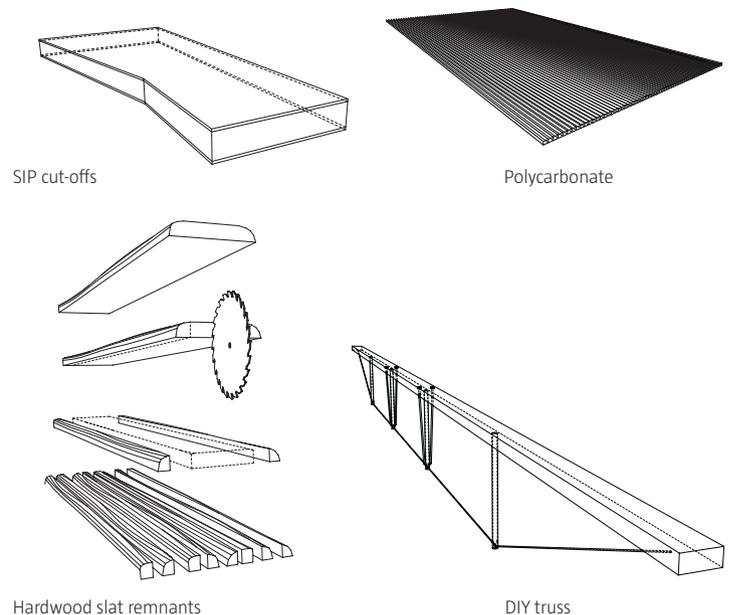
Archolab strategically twisted the roof 30 degrees off the local street grid to orient due south. The structure's base still fits the original foundation, so it is the walls that will take on irregular shapes. A similar twist-and-tweak operation could be performed on future Afterhouses, regardless of each lot's orientation.

At the front of the building, "where the house meets the street," says Mankouche, an associate professor of architecture at the University of Michigan, the team will establish a raised open-air planter for summer crops. Like a conventional porch, the elevated garden will function as a welcoming threshold, a protective fence, and a shading device. In the winter, the living screen of plants will vanish just when the greenhouse behind it requires direct sunlight. "It's very low tech, very inexpensive, but very clever," juror Gerardo Salinas said.

Design Concept



Ingredients





Scheduled to open this winter, the first Afterhouse will be owned and operated by its neighbor, Burnside Farm. The converted hothouse, which is situated mostly below the frostline, will extend the farm's productive season.

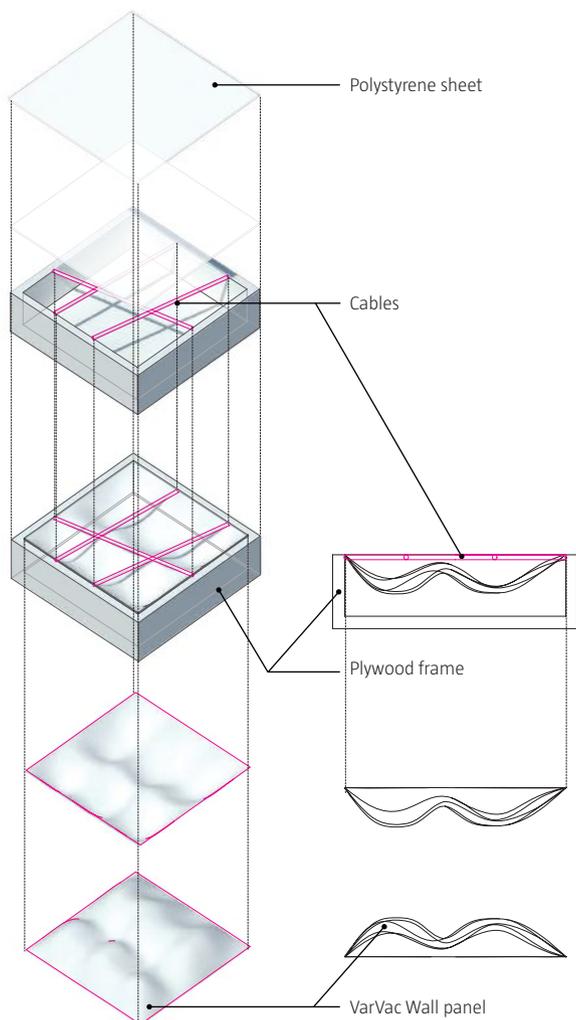
AWARD



To achieve the desired sound reflection or absorption across a panel surface, HouMinn Practice used a Grasshopper script to help determine the wire placement that would form the topography of the VarVac Wall panels.

AWARD

Varied Cable Mold



Breaking the Mold

HOUMINN PRACTICE CREATES ONE-OFF PANELS WITH MINIMAL WASTE, ENERGY, AND MATERIAL.

"Custom fabrication allows architects to overcome what some consider the scourge of repetition in building components. But it also can be wasteful. For instance, variable molding, which is used to make one-off architectural surfaces and finishes, conventionally requires a mold that is discarded after a single use. Blair Satterfield and Marc Swackhamer, principals of HouMinn (pronounced "human") Practice, located in Minneapolis and Vancouver, British Columbia, set out to streamline the technique, cut costs and waste, and still allow for "endless variation," Satterfield says. Along the way, something remarkable happened: They eliminated the need for a mold.

Juror Bill Kreysler was enthralled. "It's huge," he said. "Forty percent of the cost of making a panel is just creating the shape. Taking that whole issue of cost out of the equation is a big breakthrough."

HouMinn's efforts culminated in the VarVac Wall, an ornamental, acoustically absorptive wall installed at the University of Minnesota School of Architecture, where Swackhamer is an associate professor and director of the M.Arch. program. The white plastic panels have an undulating, non-repeating topography of mounds and bubbles, some of which are sliced to expose the underlying green, acoustical fabric.

Each 0.08-inch-thick panel was molded with just heat and gravity. First, HouMinn stretched wires across a plywood frame. Then they took a flat polystyrene sheet, heated it until it was pliable, and laid it across the cables, where it slumped into the voids. The resulting bubbles could be exaggerated with a heat lamp, while the rudimentary cable mold could be modified ad infinitum. "As we actively reduce the mold itself, the material becomes more of a voice in the conversation," says Satterfield, an assistant professor at the University of British Columbia.

Juror Gerardo Salinas saw larger applications for the firm's process. "There's potential to use this technology to wrap a whole building," he said. Kreysler added, "Forming a material builds into that material's inherent strength. There's nothing that says you can't create catenary arches."

New York City Streetlight

THE OFFICE FOR VISUAL INTERACTION, THOMAS PHIFER AND PARTNERS, AND WERNER SOBKE BRING BEAUTY AND EFFICIENCY TO A UBIQUITOUS FIXTURE.

A decade of development and prototyping has gone into New York City's quest to replace its high-pressure sodium (HPS) streetlights. Dotted highways across the U.S., these conventional cobra heads consume 250 watts each, which totals to roughly 60 million watts on the streets of New York alone. In 2004, a team made up of architecture firm Thomas Phifer and Partners, lighting design firm Office for Visual Interaction (OVI), and engineering firm Werner Sobek, all with offices in New York, won a city-sponsored competition with its New York City Streetlight design. It promised to cut energy consumption using LED technology—still experimental at the time—and to rethink the ubiquitous fixture completely.

In 2009, OVI and Werner Sobek completed the technical, optical, and structural design specifications for a prototype, for which it won an ARCHITECT R+D Award. In 2011, the city installed a series of units in New York's Tribeca neighborhood to undergo multiple performance tests and reviews by local agencies. Juror Bill Kreysler said, "The process of bringing a design to production with all the rules and regulations, the manufacturing constraints, and getting it to come out the other end still a beautiful object is really an achievement." Juror Mimi Love added, "This is an elegant design for a practical design problem."

The final production models, which the city will begin receiving this September and installing in Harlem later in the year, feature several upgrades from the 2011

prototype. Advances in solid-state technology—particularly in miniaturized small package chips—and in fabrication methods have brought down the luminaire's cost. The linear array of 80 1.7-watt LEDs, which total 136 watts, comes in five modules that can be swapped out as easily as an incandescent lamp. This modular system also allows the streetlights to keep pace with inevitable advances in LEDs. "It's important that we don't lock ourselves into a certain technology," says OVI principal Enrique Peiniger, Assoc. AIA.

The design team also streamlined the proportions of the streetlight's 30-foot-tall tapered mast and its arched arm, which cantilevers 8 feet and measures 4 inches wide. The arm is cast in three pieces—producing a savings in manufacturing costs over the earlier iteration—and then bolted and welded together, ground flush, and painted for a seamless appearance.

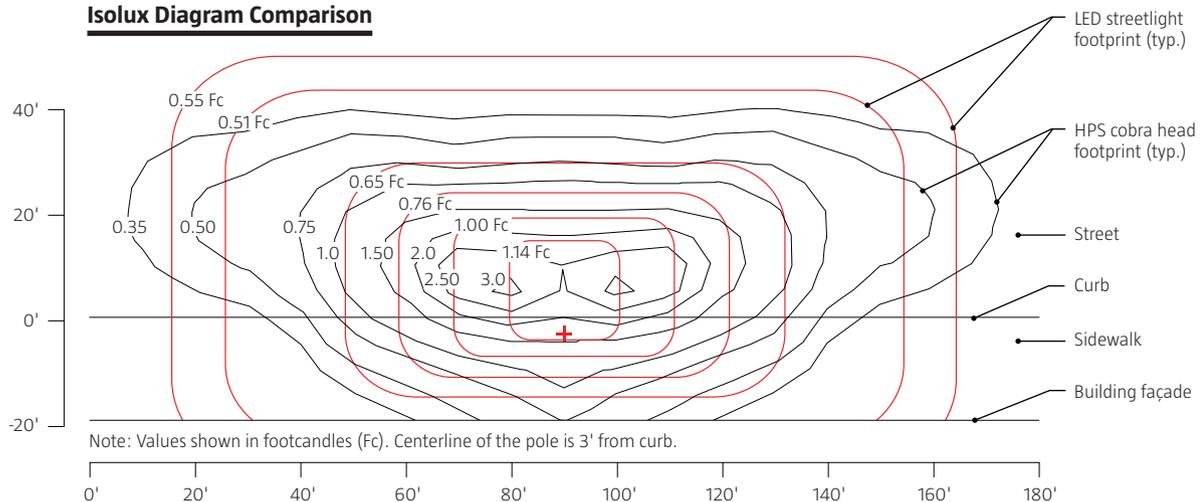
To improve the luminaire's light distribution, OVI developed multi-lens optics in lieu of the earlier bent metal reflectors in order to "spread the light very wide, like a fan," Peiniger says. Hot spots and dim areas are minimized across the 125-foot-radius beam spread, and custom-molded lenses in each module provide a little overlap in case of individual LED failure.

Finally, the jurors were captivated by the fixture's arm, held taut by a pair of cables in a wishbone suspension. "Why can't all urban furniture look as good?" asked jury member Gerardo Salinas.

Model of Luminaire Arm



Isolux Diagram Comparison



After a decade in the making, the NYC streetlight is scheduled to be phased in throughout the city by 2017, according to a plan announced by former Mayor Michael R. Bloomberg in 2013.

CITATION

C-Lith

AREA EXPLORES THE POTENTIAL OF THE LIGHTWEIGHT, HIGH-STRENGTH MATERIAL.

Carbon fiber has unparalleled strength and lightness, but it is one of those sexy modern materials whose cost stymies its usefulness in architecture. That cost barrier could begin to disappear if architects become strategic in its use.

Anca Trandafirescu and her husband Glenn Wilcox—both assistant professors of architecture at University of Michigan and principals of Area in Ann Arbor, Mich.—took this approach by developing carbon fiber architectural units that can be joined to form structural framing, scaffolding, and lightweight construction. They observe that, by weight, carbon fiber is 18 percent stronger than aluminum and 14 percent stronger than steel.

Standing 14 feet tall and 8 feet wide at the base, their C-Lith prototype is a semi-cylindrical, hollow structure composed of 143 interlocking carbon fiber modules that vary in shape and size. Each unit measures about 2 feet in its longest dimension and weighs about 3.5 ounces.

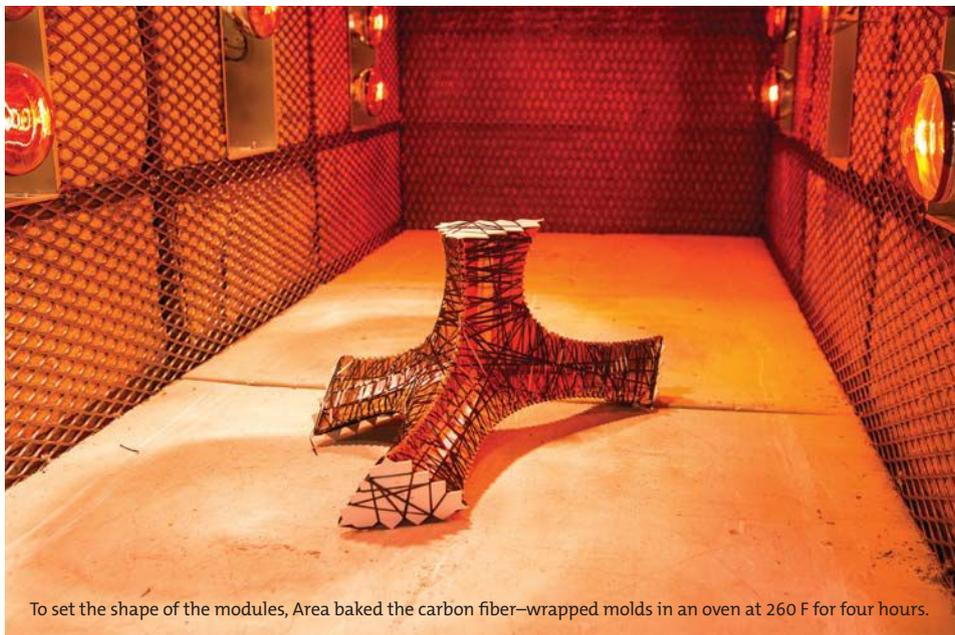
“Lightness has been more of a technical question for Glenn,” Trandafirescu says, “but for me it is also a question of cheapness.”

To make C-Lith, the designers worked with spools of prepreg, or carbon fiber filament pre-impregnated with epoxy resin to stay malleable and sticky until baked. However, prepreg must be wrapped around something to give it form prior to curing. In lieu of the metal molds that other carbon

fiber researchers have used, Wilcox and Trandafirescu opted for inexpensive cardboard molds. They derived the molds’ form, along with that of the C-Lith structure, from a packed tetrahedral base geometry. A computer script translated each four-sided tetrahedron into a four-pronged unit, which they cut and joined out of cardboard to make the molds.

Of course, the cardboard molds would ignite in a regular kiln, so Area built an elementary oven powered by 18 infrared heat lamps that max out at a relatively cool 260 F. After baking for four hours, the hardened carbon fiber pieces are soaked in water to remove the molds. Meanwhile, a parallel set of cardboard pieces are formed into a mock-up tower, or dummy jig. These are then swapped, one by one, for the carbon fiber components. Glued-on node plates and cotter pins connect the components, which can be quickly disassembled and reassembled.

The jurors were pleased by Area’s material exploration but wanted a greater sense of purpose and refinement. “This opens the possibility of what you can do with carbon fiber, but I don’t think it does anything more than be a sculpture right now,” juror Gerardo Salinas said. Juror Bill Kreysler said, “This technique, which is fundamentally sound and reliable and potentially economical, could evolve into things that become more complete. And less [visually] scary.”



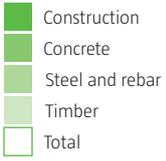
To set the shape of the modules, Area baked the carbon fiber-wrapped molds in an oven at 260 F for four hours.



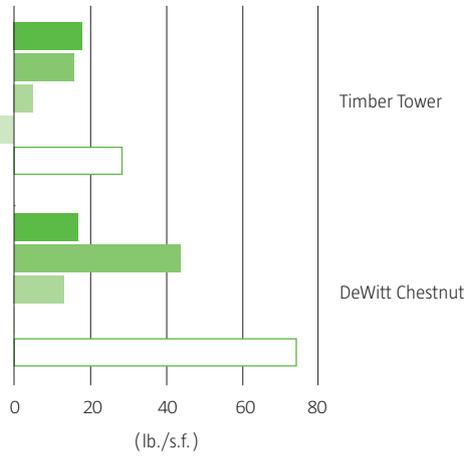
CITATION

Area sculpted the 14-foot-tall, 8-foot-wide, and 31-pound C-Lith installation from carbon fiber pre-impregnated with epoxy resin. The structure's form was derived from a packed tetrahedral base geometry.

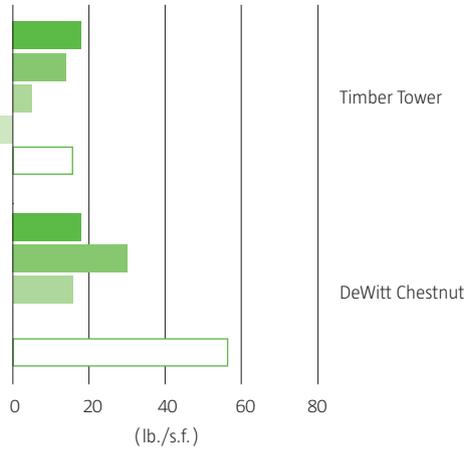
Embodied Carbon Footprint Comparisons



Standard Materials



Sustainable Material Options (60% cement replacement in concrete; air-dried timber)



Timber Tower vs. DeWitt Chestnut



78% lower carbon emissions



60–75% smaller embodied carbon footprint



6,000 more cubic feet of materials



55% lighter building weight

Timber Tower Research Project

SKIDMORE, OWINGS & MERRILL BELIEVES THAT A HIGH-RISE MADE OF ENGINEERED WOOD WOULD BE BETTER FOR THE ENVIRONMENT. NOW THEY HAVE TO CONVINCE EVERYONE ELSE.

In a world where reinforced concrete and steel-framed buildings dominate in commercial construction, a timber tower may sound like an architectural oddity. But to Skidmore, Owings & Merrill (SOM), it represents a new type of high-rise that has a 60 to 75 percent smaller embodied carbon footprint than conventional structures. The Timber Tower Research Project, spearheaded by associate and engineer Benton Johnson, lays out a preliminary structural design of a hypothetical 42-story tower built of mass timber columns and panels alongside reinforced concrete wall joints, spandrel beams, and link beams. "It's an engineering tour de force," juror Bill Kreysler said. "With wood, you can select shapes that are optimized for the structure."

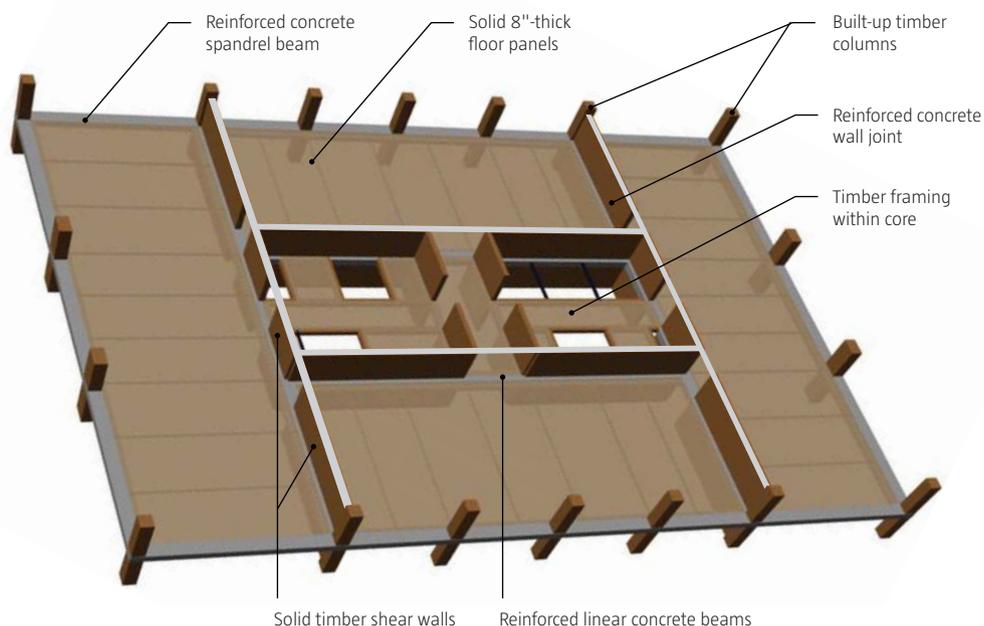
Johnson contends that manufactured timber products such as cross-laminated timber (CLT) and glued laminated timber (glulam) are roughly as strong as reinforced concrete, provided that the timber is loaded correctly and used in conjunction with concrete or steel joints. "Wood is strongest when it's loaded in compression, parallel to the grain," he says.

The payoff is that timber is a more sustainable building material than the alternatives. It absorbs carbon while

growing, takes significantly less energy to manufacture than concrete or steel, and it can be responsibly harvested and replenished. To underscore the point, Johnson modeled and estimated that the hypothetical timber tower would be 55 percent lighter and emit 78 percent less carbon than a comparable 42-story, conventionally constructed tower modeled after Chicago's Dewitt Chestnut Apartments, also designed by SOM. Now called the Plaza on Dewitt, the concrete-tube structure was a benchmark of efficient construction at its 1965 completion.

Juror Mimi Love said the Timber Tower Research Project was a "strong proposal based on sustainable performance." But, like the other jurors, she felt that the submission needed to address the crucial issue of fire safety and building codes. Jonson acknowledges that he is no fire engineer, but he believes that a timber tower could be designed to be sufficiently fire resistant. When exposed to fire, timber, unlike wood, chars on its surface and forms an insulating layer around the core material, retaining some structural integrity. In other words, he says, the timber structure wouldn't even need an applied coat of fireproofing.

Floor System Model



HONORABLE MENTION

SOM associate and engineer Benton Johnson estimates that a 42-story timber tower would be 55 percent lighter and emit 78 percent less carbon than its concrete-tube constructed counterpart.

Judges



GERARDO SALINAS

Gerardo Salinas, AIA, is a partner at Mexico City-based Rojkind Arquitectos, a firm that delves into the relationship among materials, structure, and geography. His projects include the National Film Archive and Film Institute of Mexico, for which he carved a multi-use public space out of a dense urban landscape, and the Liverpool Department Store expansion (covered in ARCHITECT's June issue), whose perforated honeycombed façade interacts with Mexico City's streetscape.

Salinas previously worked at Anderson Mason Dale Architects in Denver, and Ellerbe Becket (now an AECOM company) in Washington, D.C. In 2008, he was named Young Architect of the Year by the AIA Denver chapter. He has an M.Arch. from the University of Maryland.

BILL KREYSLER

In 1982, Bill Kreysler left his job as an executive at a sailboat manufacturer and established the building-focused Kreysler & Associates in American Canyon, Calif. The digital fabrication studio specializes in the manufacture of architectural components, such as façade panels, from fiber-reinforced polymers and composites. The company's projects include the sail-like acoustical panels that line Ennead Architects' Bing Concert Hall at Stanford University.

Kreysler has lectured at Stanford; the University of California, San Diego; and the U.S. Military Academy at West Point. He is a founding member and president of the Digital Fabrication Network, in San Francisco. He holds degrees in history and English from San Diego State University.

MIMI LOVE

Mimi Love is a principal at Utile, in Boston. Her work reflects the breadth of the studio's design/build and urban-planning portfolio. Love is currently managing the construction of the Boston Conservatory Studio Building. She also oversaw the design and construction of the Boston Harbor Islands Pavilion, with its sculptural, cast-in-place canopies; the project garnered accolades such as a 2011 Honor Award for Design Excellence from the Boston Society of Architects.

Before joining Utile, Love was an associate at Machado and Silvetti Associates, where she led the design for the renovation of the Getty Villa in Pacific Palisades, Calif. A member of the Boston Preservation Alliance, Love holds a B.Arch. from the University of Texas at Austin.

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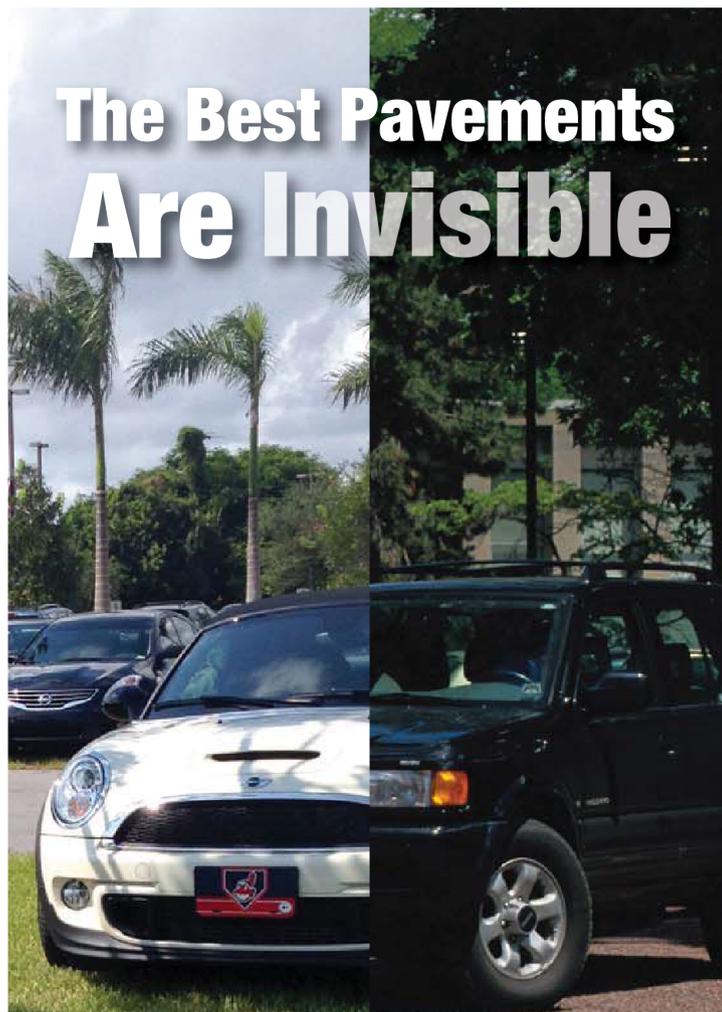
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RESIDENTIAL



SOFT HOUSE

THIS COMPLEX OF FOUR PERFORMATIVE ROW HOUSES IN HAMBURG, GERMANY, DESIGNED BY KENNEDY & VIOLICH ARCHITECTURE, BUILDS ON YEARS OF RESEARCH, INCLUDING AN R+D AWARD-WINNING PROTOTYPE.

Text by **Katie Gerfen**
 Photos by **Michael Moser**

IT IS RARE that a theoretical research project gets a shot in the arm years later, but for Boston-based Kennedy & Violich Architecture (KVA), that is the story of the Soft House. The prototype—a single-family residence where hard surfaces were replaced with soft ones that not only harvested, but distributed solar energy and ambient light—won one of the first R+D Awards in 2007. Though that project never got built, the ideas remained. So when KVA was invited to take part in a competition for the Internationale Bauausstellung IBA Hamburg to design a multifamily residence that redefines sustainable living, the Soft House was reborn.

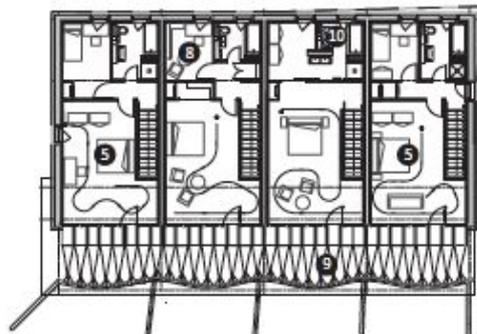
KVA—working with Buro Happold Engineering, Knippers Helbig Advanced Engineering, and a local wood builder—designed a series of four attached row houses along a canal in the city's Wilhelmsburg quarter. Each unit is 2,411 square feet on three stories and incorporates three separate entrances so the bottom floor can be used as a stand-alone workspace or rental property.

The team wanted to use a wood structure because of the material's carbon-sequestering attributes, but instead of a conventional frame the team turned to *brettstapel*, a German technique. "It is a very smart way of joining wood," says Sheila Kennedy, AIA, a principal at KVA. Stacks of fir planks were connected by hardwood dowels that expand with humidity, creating a solid frame. The building was then clad in layers of mineral wool insulation, a water barrier, and a larch wood rainscreen. Photovoltaic ribbons form a canopy on the south side of the structure, moving and flexing with the sun to capture the most energy possible. The *brettstapel* timber structure is exposed on the interior floors, walls, and ceilings. "People who visited the house during the exhibition period commented on the smell of the wood," Kennedy says, calling the result "incredibly peaceful."

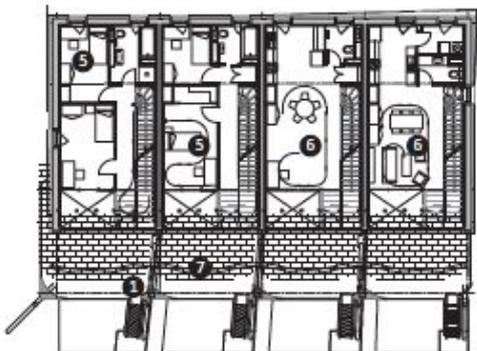
The living areas can be subdivided with a translucent curtain that runs along a curving track installed in the ceiling. The track is electrified by DC power, which offered a 15 percent energy savings overall because the power from the photovoltaic cells didn't have to be converted to AC. The curtain offers shade, but also ambient light, given off by LEDs sewn into the fabric. While the structure was designed to Passiv Haus standards as a part of the brief, it is also a very active house, Kennedy says, noting that the energy-harvesting systems integrated into the structure allow for large windows that are atypical in passive homes.

One unit is currently occupied, and two others are under contract. But Kennedy hopes that the complex will continue to push the envelope over time: "We realized that if we could use a simple architecture, then it would be the infrastructure that could be moveable, upgradable, and replaceable." The IBA will monitor the structure's performance and will share the data with the architects. And as for the ideas that spurred the project in the first place, the team is continuing their research, and is taking the lessons learned from the German model and applying them to a multifamily structure closer to home, in Boston.

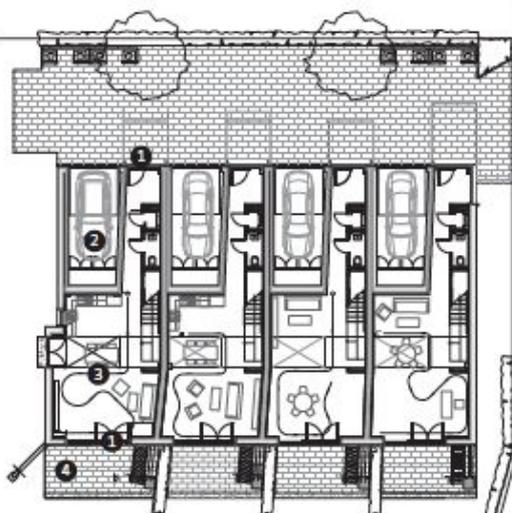
Third-Floor Plan



Second-Floor Plan



Ground-Floor Plan



- | | |
|--------------------|------------------------------|
| 1. Entrance | 6. Living area |
| 2. Garage | 7. Terrace |
| 3. Live-work space | 8. Office |
| 4. Garden | 9. Energy-harvesting ribbons |
| 5. Bedroom | 10. Bathroom |





Photovoltaic Ribbon Positioning



6:00



8:00



10:00



12:00



14:00



16:00



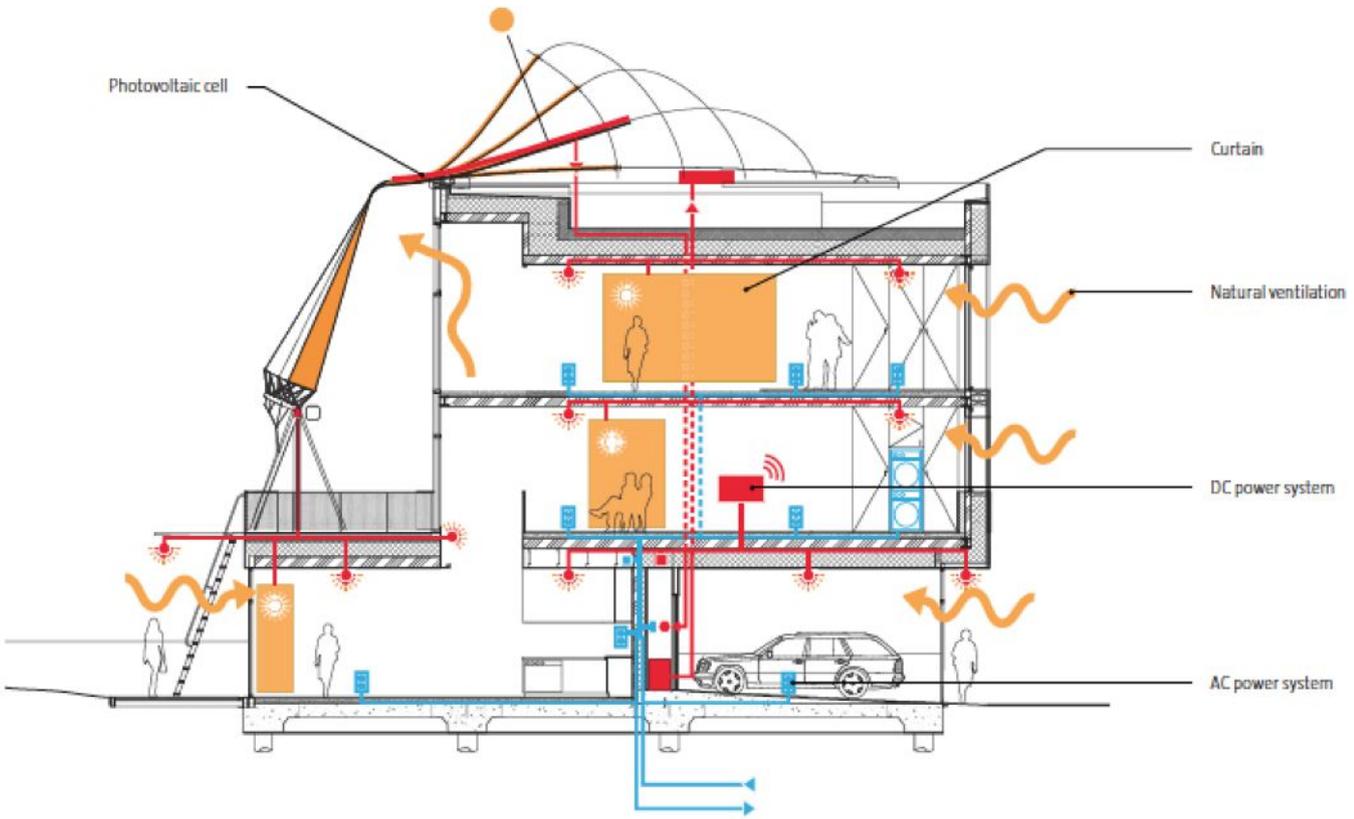
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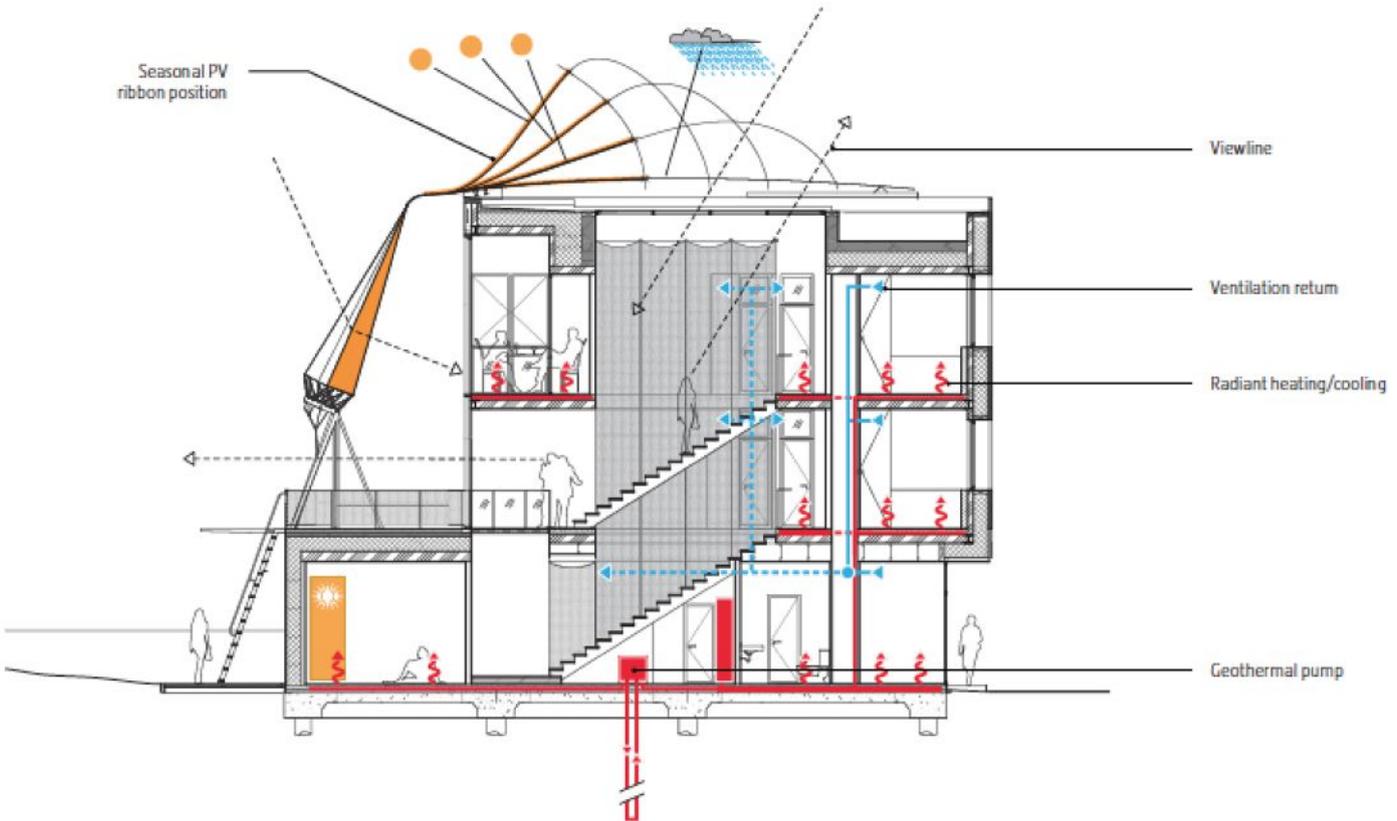
STORM

Opening page: The garden behind the four Soft House units is meant to be shared by residents. **Top:** Flexible photovoltaics are mounted on textile ribbons that form a canopy over terraces on the second floor. **Left:** The ribbons are attached to marine winches at the base of the roof, and are programmed to arch and twist with the angle of the sun. In a storm, the ribbons tighten to minimize wind damage.

Section Diagram



Section Diagram Through Stair





This image: A moveable curtain hooked into a DC-powered track provides ambient light to the interior via embedded LEDs. **Below:** The street facade of the Soft House is clad with a larch wood rainscreen over mineral wool insulation and a water barrier.



One Fold, PAGE 78**Project** One Fold**Design Firm and Drawings** Patkau Architects, Vancouver, British Columbia**Project Team** John Patkau, AIA, and Patricia Patkau, Hon. FAIA; with Tyler Brown, James Eidse, Tom Schroeder, Luke Stern, and Pete Wenger**Client** Patkau Architects (machines 1 to 6, application 2 Landscape Shelters); Comme des Garçons (application 1 Comme des Garçons module); Andrew Gruft and Claudia Beck (application 3 Garden Naum)**NYC Loop, PAGE 80****Project** NYC Loop**Design Firm** FXFowle, New York**Project Adviser** Guy Geier, FAIA (managing partner)**Project Team** Luis Bustamante, AIA, Christina Galati, Assoc. AIA, Emily Allii, Jack Coble, June Kim, Haley Cohen, Seiji Watanabe, Brandon Massey, Karen Bookatz, Mark Bearak**Fabricator** SOFTlab, SCRA Applied R&D**Special Thanks** Andrew Maier; Annette Miller; Sylvia Smith, FAIA; Kazuhiro Adachi; Miwa Fukui; Shaun Modi; Columbia University Laboratory for Applied Building Science**Building Bytes, PAGE 82****Project** Building Bytes**Design Firm** DesignLabWorkshop, Kent, Ohio**Primary Investigator/Project Team** Brian Peters**Client** Speculative Research**Fabricator** DesignLabWorkshop**Exo Structural Tower, PAGE 84****Project** Exo Structural Tower**Design Firm** Do|Su Studio Architecture, Rolling Hills, Calif.**Primary Investigator** Doris Sung, Assoc. AIA**Project Team** Hannah Woo, Dylan Wood**Consultants** Arup Engineering—Roel Schierbeek, Gregory Nielsen (structural engineers)**Client** MCA Santa Barbara**Fabricators** Neal Feay Co.; Engineered Materials Solutions**Funding** MCA Santa Barbara; Neal Feay Co.; and University of Southern California School of Architecture**Special Thanks** Miki Garcia and Alex Rasmussen**Afterhouse, PAGE 86****Project** Afterhouse**Architect** Abigail Murray and Steven Mankouche**Project Team** Kate Daughdrill, Andy Malone, Jono Sturt, Jamin Townsley, Travis Williams, Edward Sachs, Joseph Danelko, Daniel Sebaltd, Chance Heath, Matthew Schulte, Assoc. AIA, Joshua Bard, Andrew Thompson
Consultants Mary Darr; Douglas Kelbaugh, Assoc. AIA (professor, University of Michigan)**Funding** Private donations through Hatchfund.org; U.S. Economic Development Administration; Michigan State University; University of Michigan, Taubman College of Architecture and Urban Planning; University of Michigan Undergraduate Research Opportunity Program**Special Thanks** Insulspan, Hardwoods of Michigan**Breaking the Mold, PAGE 88****Project** Breaking the Mold: Variable Vacuum Forming**Design Firm** HouMinn Practice, Vancouver, British Columbia—Blair Satterfield, Marc Swackhamer (principals)**Primary Investigators** Blair Satterfield, assistant professor, University of British Columbia (UBC); Marc Swackhamer, associate professor, University of Minnesota (UMN)**Student Research Assistants** Ashley Eusebio (UBC), Philip Bussey, David Horner, Abigail Merlis, Assoc. AIA, Meggen Skilling (UMN)**Fabricator** Dave Hultman (Hex mold)**Client** University of Minnesota**Photography** Ryan Lodermeier**Special Thanks** Renée Cheng, AIA, professor and associate dean of research at UMN College of Design's School of Architecture for support and advocacy**New York City Streetlight, PAGE 90****Project** New York City Streetlight**Design Firm** Office for Visual Interaction, New York**Architect** Thomas Phifer and Partners, New York**Lighting Designer** Office for Visual Interaction**Structural Engineer** Werner Sobek**Electrical Engineer** Bodak-Cameron Engineering**Client** New York City Dept. of Design and Construction (DDC) and New York City Dept. of Transportation**Fabricator** Eaton's Cooper Lighting**Special Thanks** Michael R. Bloomberg (mayor, New York); Patricia Harris (first deputy mayor, New York); David Burney, FAIA (commissioner of the NYC DDC); Jackie Snyder (executive director of the NYC Public Design Commission); Amanda Burden (director of NYC Dept. of City Planning). *Titles held at time of project inception.***C-Lith, PAGE 92****Project** C-Lith**Design Firm and Fabricator** Area, Ann Arbor, Mich.**Primary Investigators** Glenn Wilcox, Anca Trandafirescu**Project Team** Megha Chandrasekhar, Troy Hillman, Secil Taskoparan, Rebecca Braun, Ryan Mason, Sam Seeger, Peter Choi, Chris Pine, John Larmour
Funding University of Michigan, Taubman College of Architecture and Urban Planning Research Through Making grant**Timber Tower Research Project, PAGE 94****Project** Timber Tower Research Project**Design Firm** Skidmore, Owings & Merrill**Primary Investigator** Benton Johnson**Project Team** Richard Tomlinson, FAIA, William Baker, David Horos, Joshua Schultz, Kevin Rodenkirch, AIA, Andrés Montaña, AIA, and My-Nga Lam, AIA**Client and Funding** Softwood Lumber Board**Special Thanks** Anthony Forest Products; American Wood Council; FPInnovations; Idaho Forest Group; Structurlam Products; Shen Milsom & Wilke; University of Queensland; WoodWorks; and Dr. Nick Isyumov**Soft House, PAGE 99****Project** Soft House**Client** Internationale Bauausstellung IBA Hamburg (City of Hamburg)**Design Firm** Kennedy & Violich Architecture, Boston**Design Team** Sheila Kennedy, AIA, and Frano Violich, FAIA (principals); Veit Kugel (senior associate); Kyle Altman, Jeremy Burke, Stephen Clipp, Iman Fayyad, Patricia Gruits, Katherine Heinrich, Heather Micka-Smith, Chris Popa, Shevy Rockcastle, Phillip Seaton, Alex Shelly, Nyima Smith, Sean Tang, Diana Tomova, Sasa Zivkovic**Project Developer** IBA Hamburg (IBA); Patrizia Projektentwicklung (Soft House)
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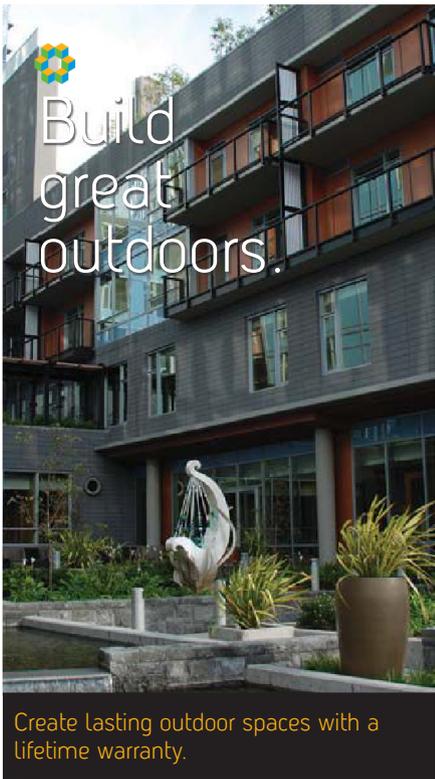


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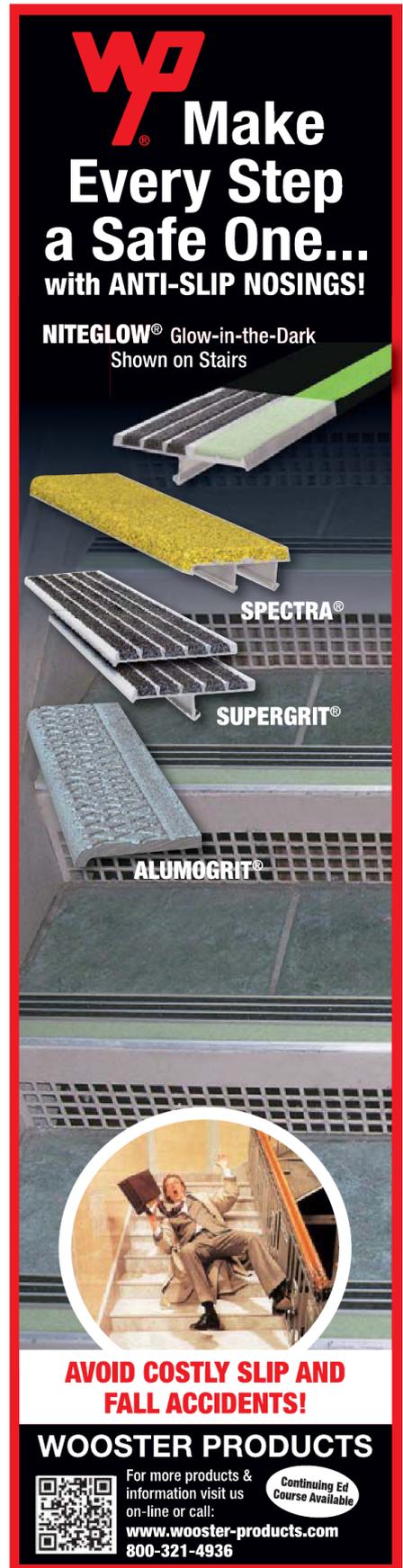
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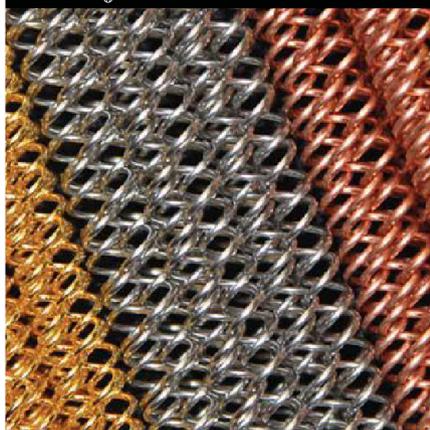
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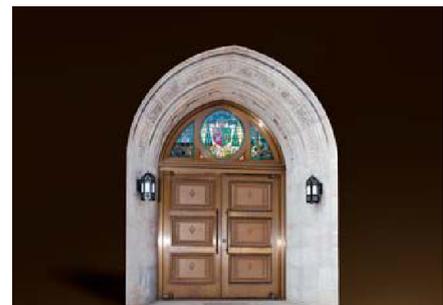
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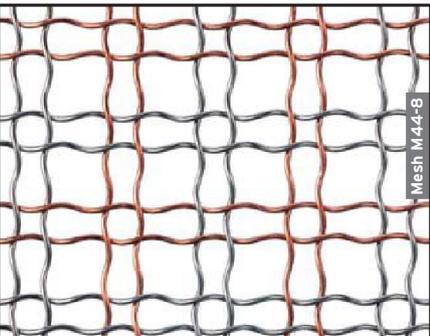
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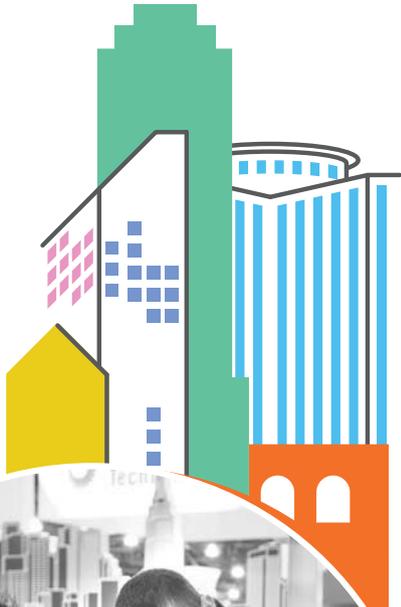
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Text by **John Morris Dixon, FAIA**

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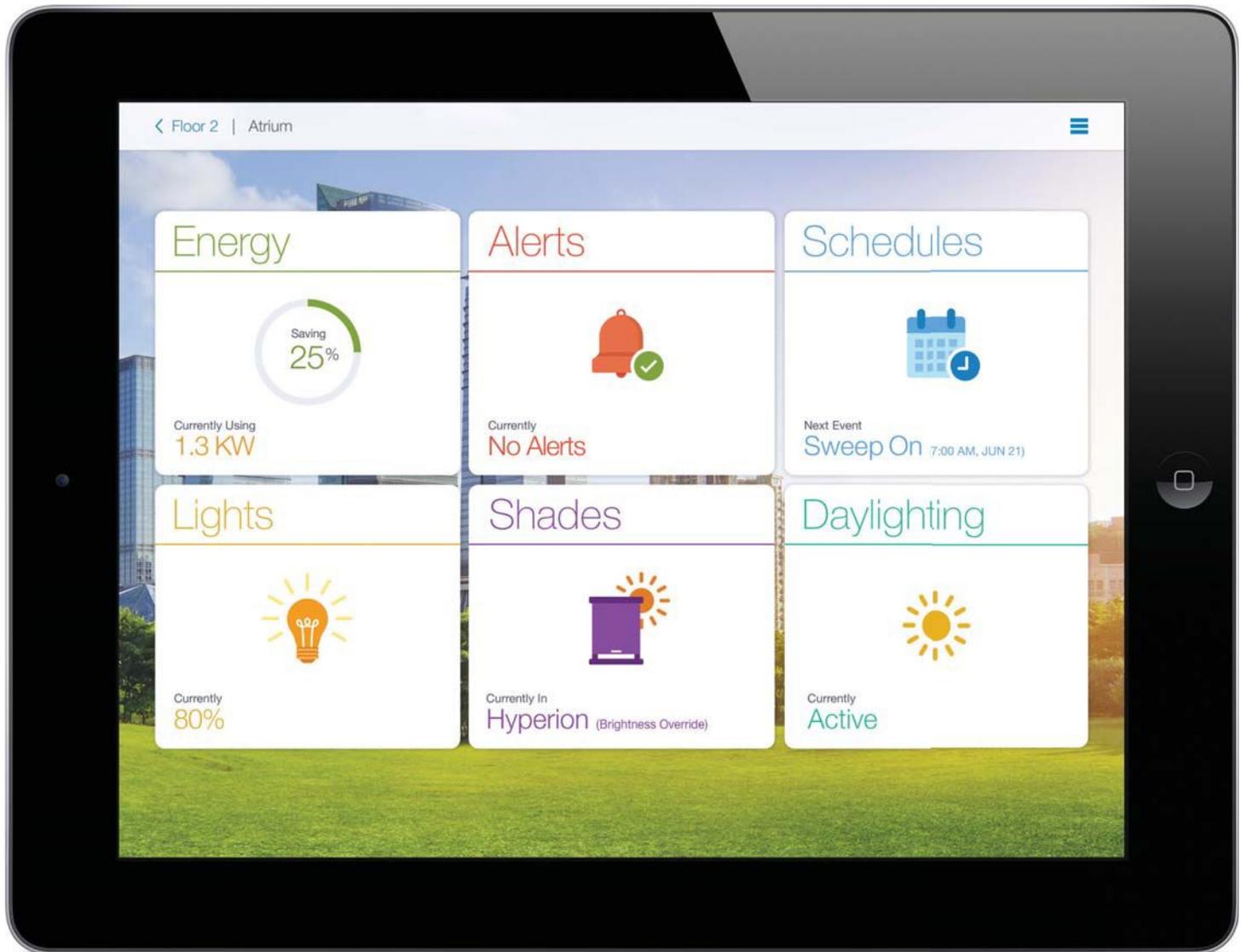


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