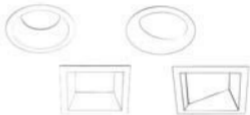




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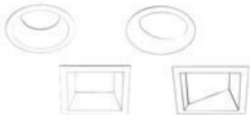
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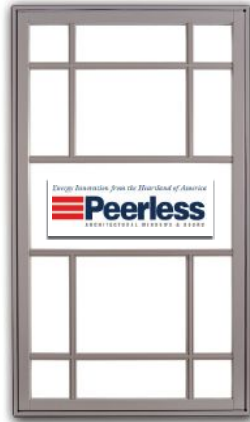


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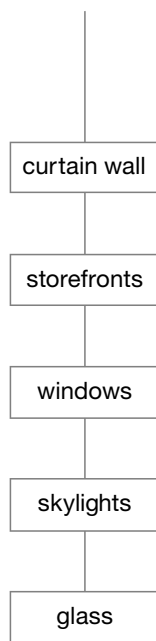


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U.S. Land Port of Entry in Van Buren, Maine, designed by Julie Snow Architects. Photo by Paul Warchol.

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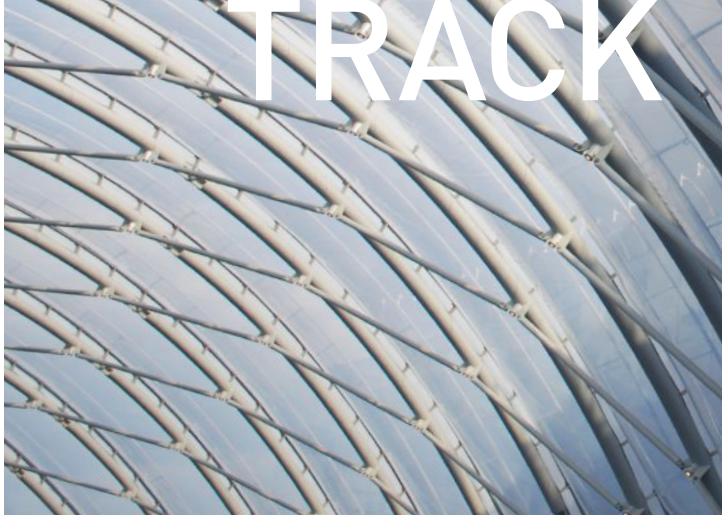
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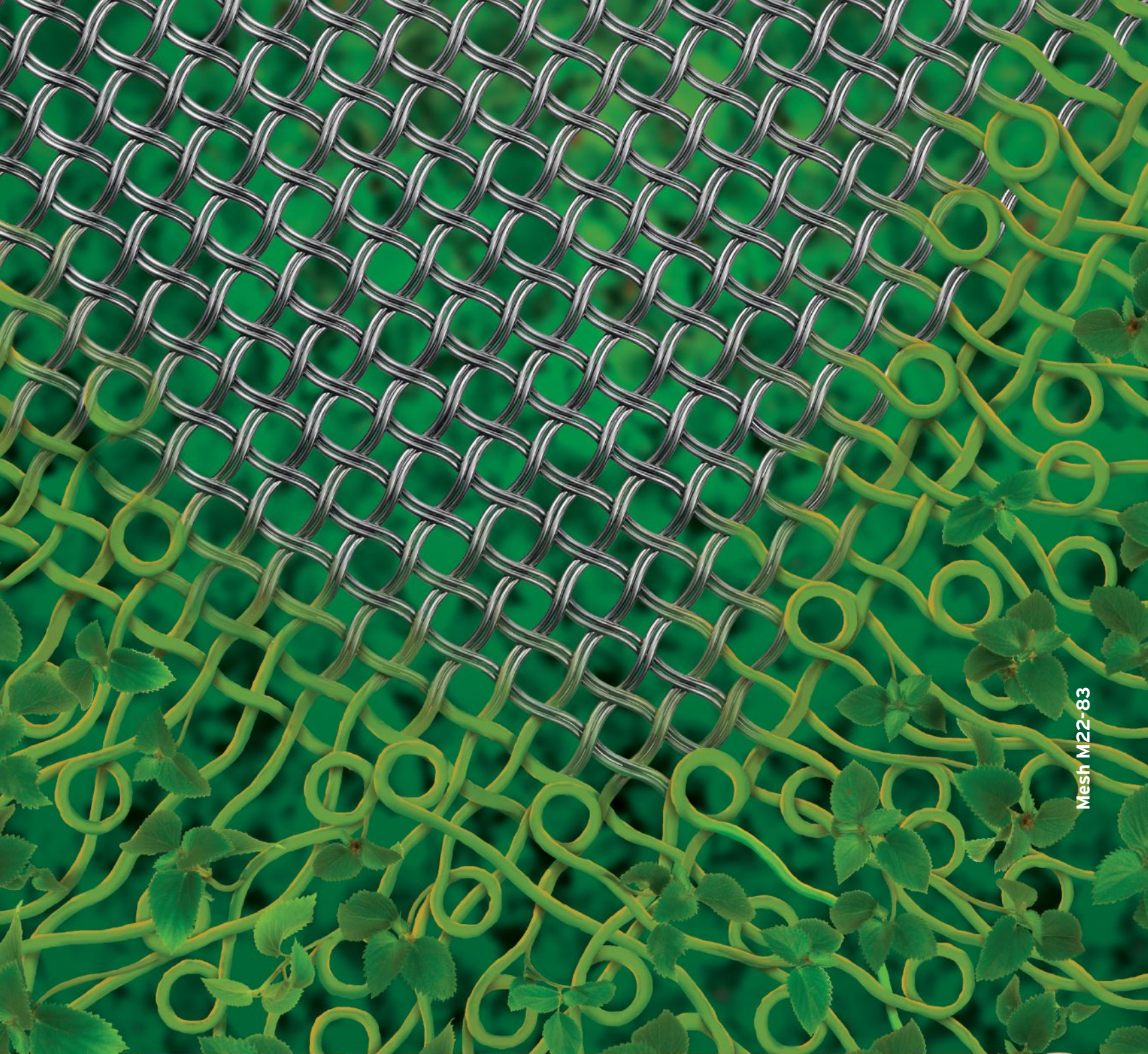
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## ADDING INSULT TO INJURY

BERTRAND GOLDBERG'S PRENTICE MEMORIAL HOSPITAL IS BEING TORN DOWN, AND THE PROPERTY'S OWNER, NORTHWESTERN UNIVERSITY, IS CONTINUING ITS ASSAULT ON ARCHITECTURE.

**AFTER A LENGTHY STRUGGLE**, the demolition of Bertrand Goldberg's Prentice Women's Hospital has begun. Yet the building's owner, Northwestern University, is proving a shockingly sore winner. Not content with its victory over preservationists, the university has imposed a two-year moratorium on the hiring of architects who publicly advocated saving Prentice. That includes dozens who signed a petition last year asking Chicago Mayor Rahm Emanuel to intercede on the building's behalf (see the news article on page 19).

The decision to tear down the Goldberg building exposed Northwestern to accusations of philistinism. Blacklisting those who protested the demolition is beyond the pale, an affront to the entire architecture profession. Moreover, the university is betraying its own academic values. Institutions of higher learning should embrace debate, not stifle it.

Three design teams are now competing over a plum commission from Northwestern, a biomedical research building on the downtown Chicago site of Prentice. It's tempting to suggest that these architects—and the architecture profession in general—should fight fire with fire, and organize a boycott of Northwestern.

At the end of the day, however, the point isn't to punish bad clients, it's to win them over. I suspect it is far better politics, and it is certainly more psychologically effective, to educate the decision makers at Northwestern about architecture's potential. The firms on the shortlist to replace Prentice have a tremendous opportunity—an obligation, even—to convert the university into an advocate for good design.

Chicago is an architecture-minded city, so there are many educational tools on hand: The university's board of trustees could take a Chicago Architecture Foundation river cruise, attend an AIA Chicago lecture, or visit the Art Institute's architecture and design galleries. In fact, the board members don't even need to leave campus. They could spend time at Northwestern's own Segal Design Institute, a program underwritten by Carole and Gordon Segal, co-founders of Crate & Barrel.

"We are very excited to make a contribution to Northwestern that will enhance its reputation as a leader in design," Gordon Segal said (apparently without irony) on the occasion of the institute's opening in 2007. "Design is probably the biggest competitive advantage the United States has in a rapidly changing and highly competitive world."

Segal should know—he and his wife got rich selling Marimekko table linens and the like to millions of American households. He also chairs the Northwestern board's educational properties committee, which affords him tremendous influence over the real-estate portfolio and the hiring of architects. Given his personal reputation as a design champion, perhaps Segal could steer the university toward more productive relationships with architects.

I would love to take the educational properties committee on a tour of other Chicago-area universities. Columbia College Chicago, the Illinois Institute of Technology, and the University of Chicago all recently have commissioned innovative architecture and adaptive reuse projects to change themselves for the better. There is absolutely no reason why Northwestern can't do the same on its campuses in downtown Chicago and in suburban Evanston, Ill.

You and I know that buildings have value far beyond the cost of their construction and the price of the land on which they sit. We know that an architect, engaged with an open mind, can offer much more than a transactional service. Architecture and architects have the power to embody and even shape an institution's ideals and aspirations.

Let's hope that's a lesson Northwestern is willing to learn.

*Neil Crane*



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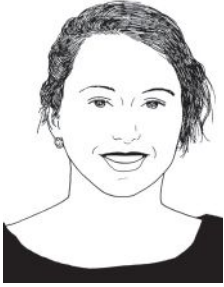
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# CONTRIBUTORS



HALLIE BUSTA

**HALLIE BUSTA** is an associate editor of products and technology at ARCHITECT. A native of Massillon, Ohio, Busta received a bachelor's degree in journalism and history in 2012 from Northwestern University in Evanston, Ill.

Her proximity to the city of Chicago fostered an awareness of the built environment's de facto role in delineating urban spaces along socioeconomic lines—as well as the forces that prevail when a large research university challenges the economic and aesthetic value of postwar design. Chicago also honed this Midwesterner's

opinions on the materiality of pizza and the use of the term “thundersnow.”

Before coming to ARCHITECT, Busta was an assistant editor at its sister publication, *ProSales*, where she reported on the residential building-material supply chain. Prior to that, she was an intern with ARCHITECT's parent company Hanley Wood.

Today, Busta lives in Washington, D.C., where she recently attained her LEED Green Associate credential. She continues to scheme up excuses to visit Chicago.

➔ See Hallie Busta's products coverage starting on page 41.

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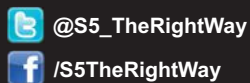
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# FRONT

## PRENTICE POLITICS STILL STING AT NORTHWESTERN

NORTHWESTERN UNIVERSITY IS BLACKLISTING FIRMS THAT PROTESTED THE DEMOLITION OF THE PRENTICE WOMEN'S HOSPITAL.

**IN THE WAKE** of the controversial demolition of the Bertrand Goldberg-designed Prentice Women's Hospital, Northwestern University has moved forward with the process for selecting an architecture firm to design the building's replacement. Firms that protested the demolition, however, have been excluded from consideration for designing the building's replacement—and may be blacklisted from working on other projects at Northwestern, at least for the near future.

Some 80 architects signed a September 2012 petition urging Chicago Mayor Rahm Emanuel to support historic landmark status for the 1975 building. As a result, none of those architects were considered in the competition to design the new biomedical research building.

"Certainly we look for architects who have worked with the university, and who are interested in the university's endeavors," says Bonnie Humphrey, director of design and construction for Northwestern's facilities management department. "There were architects who signed that petition, and we never wanted to put them in an awkward position. We didn't want to ask them to submit their qualifications."

Yet one architect who signed the petition, which was circulated by the Landmarks Preservation Council of Illinois, says the consequences go even further. "We are currently and have in the past done work for Northwestern," says the architect, who spoke on condition of anonymity. "We found out we've been blackballed for two years."

This architect says that a frequent client at Northwestern contacted the firm to ask why it had been frozen out for an upcoming project. The architect then went to Humphrey for clarification, and says that she indicated that Northwestern would not be soliciting the firm for work for at least two years. Humphrey declined to comment on the accusation.

"They were happy with what we're doing," says the architect.



"Early in the going, I was asked by someone at WBEZ what my feeling was, and I said I felt like it should be preserved," says Dirk Lohan, FAIA. "It wasn't a deep conviction I held, but my position was a very early one. Later I learned that Northwestern was very upset about that."

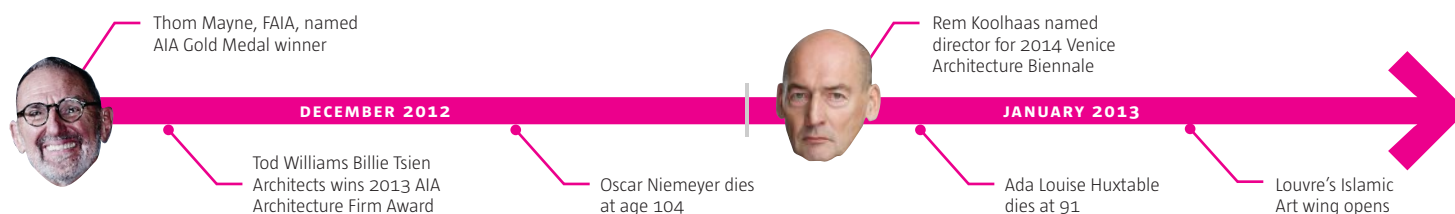
"We have not heard of a specific blacklist," says Lisa DiChiera, director of advocacy for Landmarks Illinois.

One architect signed the petition less in support of landmarking the building and more in favor of exploring possibilities beyond demolition. And Jeanne Gang, FAIA, a MacArthur Fellow, envisioned a reuse case for the building at the request of *The New York Times's* Michael Kimmelman.

Still another architect who signed the petition, Leonard Koroski, FAIA, is a principal at Goettsch Partners, a firm that (at press time) is in the running to design the project that will replace the Prentice. But both Michael F. Koffman, AIA, and James Goettsch, FAIA—who are partners at Goettsch—wrote letters to Mayor Emanuel arguing that the Goldberg-designed Prentice building should not be granted landmark status.

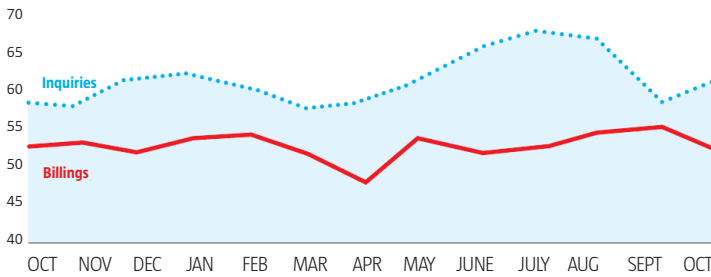
Eleven other architects, as well as Chicago advocacy groups, civic organizations, and medical institutions, challenged the proposal to grant landmark status for the Prentice. The decision was effectively settled when Mayor Emanuel weighed in to support the demolition in an October 2012 editorial published by the *Chicago Tribune*. KRISTON CAPPS

### The Year in Review

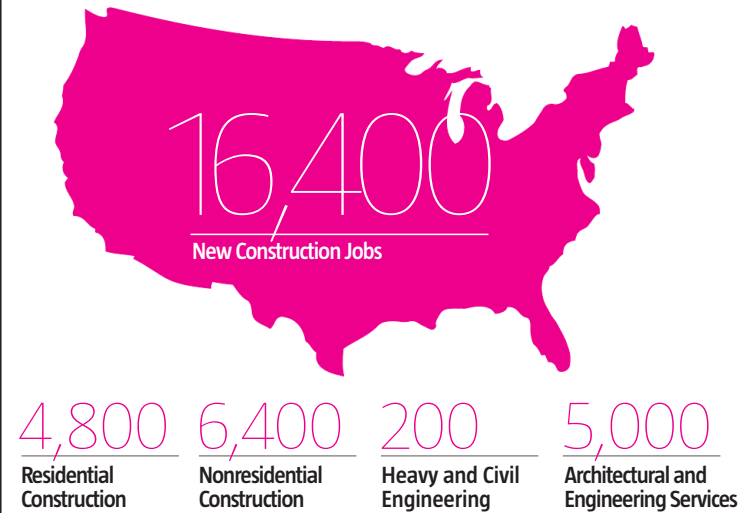


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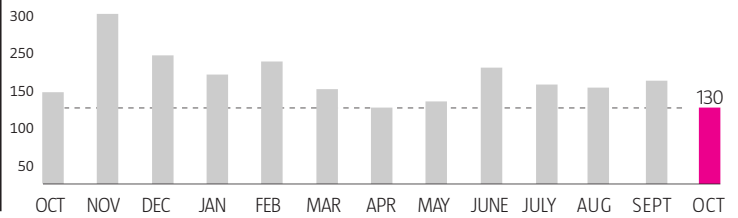
Architecture Billings Index



U.S. Department of Labor's Bureau of Labor Statistics



ADP National Job Growth (in Thousands)



STEP UP, STEP DOWN BIG MOVES ON THE CAREER LADDER

**Alex Bozиков**  
The Globe and Mail  
Architecture critic

↑

**Lloyd Meyer, AIA**  
Leo A Daly  
Vice president, managing principal

↓

**Alec Hathaway**  
Eli and Edythe Broad Art Museum  
Associate curator of architecture and design

↑

**Edward Shim**  
HIW International  
Director of architectural design, principal

↑

**George Kordaris**  
Humanscale  
Global director of research and design

↑

Although he rose to vice president of Knoll, Kordaris got his start at the company fixing chairs. From there, he went on to high-level positions at Vitra, Herman Miller, and Humanscale—where he served as president for more than eight years. Now, he is once again back with Humanscale. Along the way, Kordaris was named a fellow of the Royal Society of Arts—an honor for which he was nominated in 2004 by the legendary Humanscale designer Niels Diffrient.

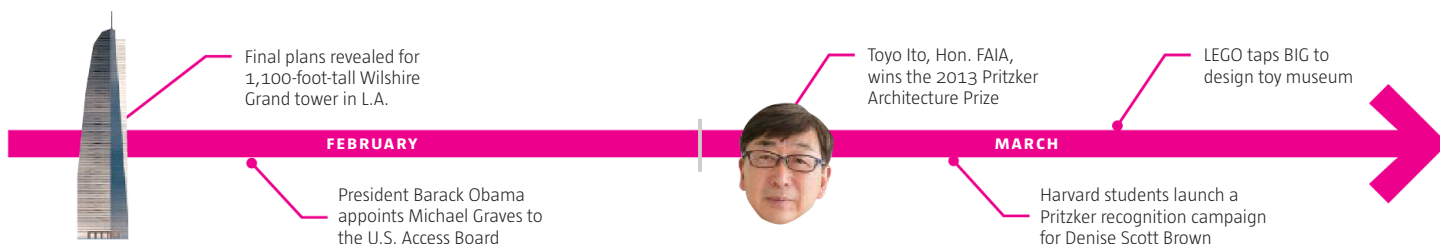
**J Mays**  
Ford Motor  
Chief creative officer

↓

The company's global design chief for more than 16 years, Mays made auto show stands that referenced architects such as Mies van der Rohe and Zaha Hadid. While his work has shown at the Museum of Contemporary Art in Los Angeles, Mays may be best known for designing the updated VW Beetle.

**Krista Phillips, AIA**  
RIM Architects  
Principal of marketing and human resources

↑







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## DILLER SCOFIDIO + RENFRO TO BRING “WILD URBANISM” TO RED SQUARE

WITH ZARYADYE PARK, THE NEW YORK-BASED FIRM WILL DESIGN THE FIRST NEW PARK FOR MOSCOW IN 50 YEARS—AND THE LARGEST PARK TO BE BUILT IN ANY MAJOR METROPOLIS SO FAR THIS CENTURY.

**LET'S HOPE THAT HISTORY** smiles more favorably on Diller Scofidio + Renfro than it did on poor Petrok Maly. That Italian-born architect designed the Kitay-gorod wall, one of the oldest markers in Moscow, back in the 16th century. Maly, who likely knew the location of every secret chamber built underneath the wall and its towers, disappeared from Russian history a year after the wall's construction.

Several centuries later, Diller Scofidio + Renfro is bringing something else to Zaryadye, a historic Moscow district once enclosed by the Kitay-gorod: transparency and walkability. A community raided by Tartars in the 14th century and razed by the Soviets in 1935, Zaryadye will return to its roots as a principal thoroughfare under the New York firm's plan.

Hardly daunted by the prospect of designing the first park for Moscow in 50 years—to say nothing of planning out a site once sacked by the Mongol Horde—Diller Scofidio + Renfro aim to imbue Zaryadye Park with the principle of “Wild Urbanism.” That's the firm's term for its hybrid landscape

philosophy for the park, incorporating elements of Russian tundra with Red Square cobblestone, for example.

The park is organized into overlapping landscape zones corresponding with Russia's major land types: tundra, steppe, forest, and marsh. Instead of adapting the park to Moscow's frigid temperatures, the architects intend to use sustainable technologies to encourage artificial microclimates throughout Zaryadye Park. Early renderings reveal a distinctive pavilion, an addition to the area's architecturally significant buildings that span five centuries of Russian and Soviet design.

The Moscow-based Strelka Institute announced Diller Scofidio + Renfro as the design competition winner over two other finalists, Rotterdam-based MVRDV and Moscow's own TPO Reserve, in November. Established by the order of Russian President Vladimir Putin, the 32-acre park is the largest to come online in any major world metropolis in the 21st century—so it is bound to be a prominent feature in Moscow's colorful urban history. *к.с.*

1365<sub>A.D.</sub>

Date of first chronicled Russian notice of Zaryadye, when the community was destroyed by a fire.

MoMA announces demolition of former American Folk Art Museum

Amsterdam's Rijksmuseum opens after decade-long renovation

MoMA reconsiders demolition of former American Folk Art Museum

George W. Bush Presidential Center opens



Paolo Soleri dies at 93



One World Trade Center tops out at 1,776 feet

James Turrell shows open in three cities





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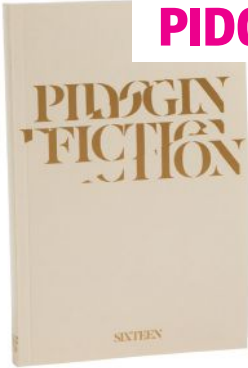
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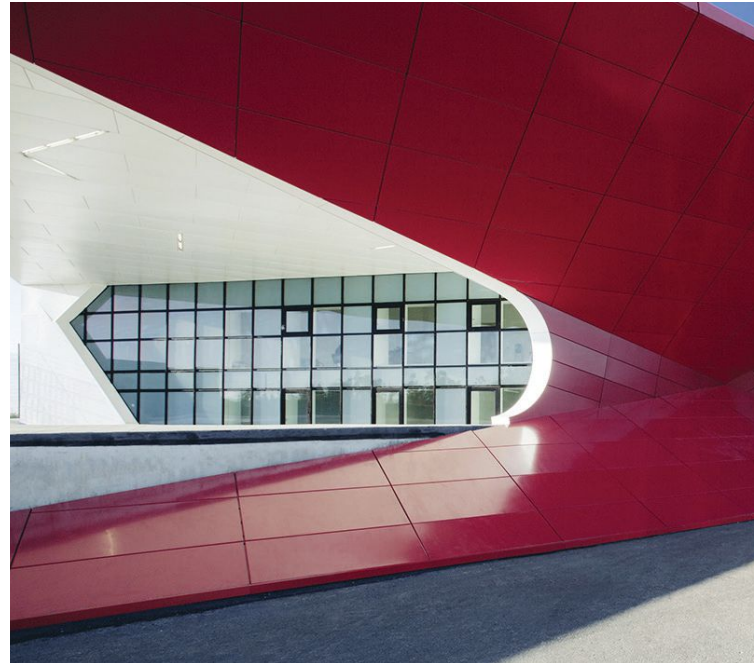
## PIDGIN VS CLOG



WHICH HIP ARCHITECTURE JOURNAL SHOULD YOU TOTE TO THE CAFÉ?



Fiction	Theme	Sci-Fi
Princeton University School of Architecture	Publisher	Independent
184 pages, 7.5 ounces, 7.5 x 5.0 x 0.5 inches	Numbers	157 pages, 10 ounces, 8.5 x 5.5 x 0.5 inches
"The Stories Bricks Tell Themselves," by Andrew Holder	Lead story	"Citizens of Earth, Cities of Heaven," by Nathaniel Robert Walker
Jürgen Mayer H.	Zany guest contributor	Jason Sapan ("Doctor Laser"), founder of Manhattan's Holographic Studios, the world's oldest gallery of holography
Chart demonstrating relationships between architecture faculty at various schools, from 1955 to present	Infographics	Chart demonstrating relative future dates depicted in science-fiction films, from <i>Metropolis</i> to <i>After Earth</i>
Enrique Ramirez, on mapping Iowa and <i>Naked Lunch</i>	Overlapping writers	Enrique Ramirez, on <i>Alien</i> and MOS Architects' Afterparty
"The fictional space that envelops the protagonist of [J.G. Ballard's] 1974 novel <i>Concrete Island</i> illustrates [...] the complex dystopian landscape of London's Docklands in the east."	What about Great Britain?	"Of all the amazing and wonderful things the TARDIS (Time and Relative Dimension in Space) of <i>Dr. Who</i> can do, invariably, the first thing that strikes anyone who enters it is the same: it is bigger on the inside."
Italo Calvino's <i>Invisible Cities</i>	You might also like ...	Ridley Scott's <i>Blade Runner</i>
Some nudity (rendered); a geometric analysis of "a litter of piglets suckling at the teats of a plump sow"	NSFW?	Many, many post-apocalyptic film stills (but mostly cityscapes)



### CONTINUING EDUCATION

## HOT UNITS

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Pritzker Prize committee denies honors for Denise Scott Brown



LACMA reveals Peter Zumthor design for new building

JUNE

SFMOMA closes for new addition by Snøhetta

Barry Bergdoll steps down as MoMA's chief architecture curator

JULY

Zaha Hadid, Hon. FAIA, buys London Design Museum building



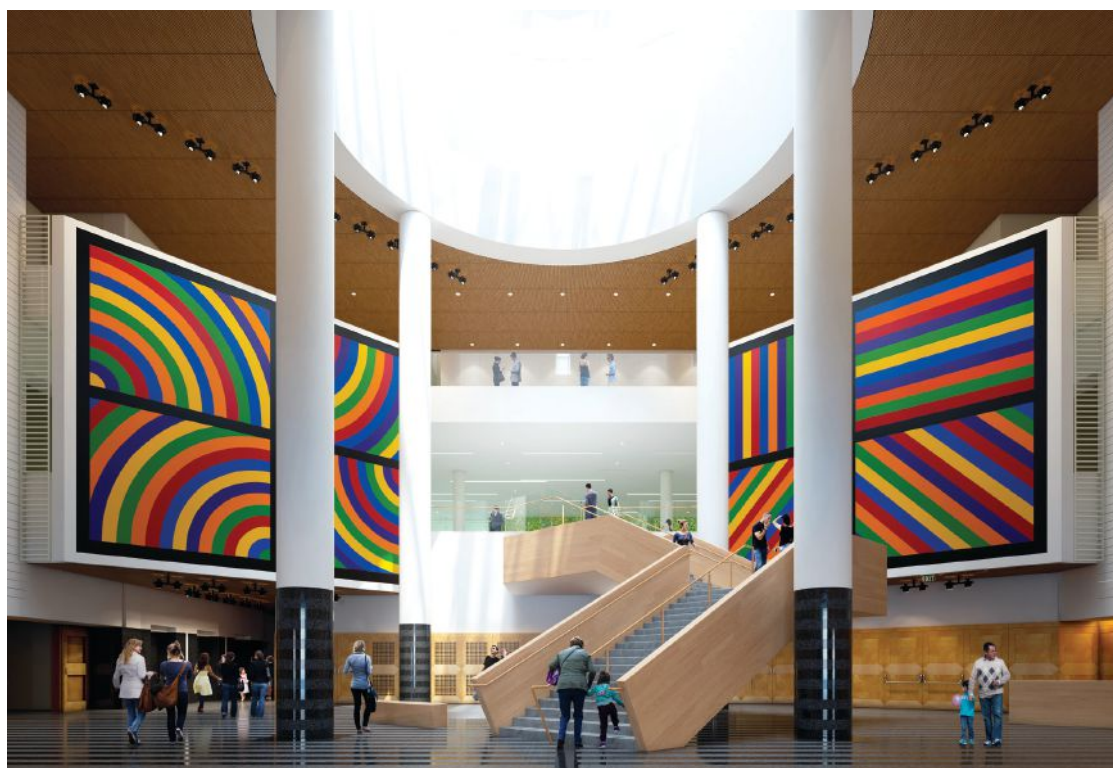
Laurie Olin, Hon. AIA, wins National Medal of Arts

ONLINE PORTFOLIO

# UNSTUDIO

**BEN VAN BERKEL AND CAROLINE BOS** founded United Network Studio (UNStudio) in 1988 with a focus on urban design and infrastructure. The firm has since expanded from Amsterdam, opening a satellite office in Shanghai in 2009, and its extended network of consultants has enabled it to tackle commissions in Taiwan, South Korea, Germany, the U.S., and elsewhere. For the Kutaisi International Airport (far left), completed in Georgia in 2013, UNStudio organized all of the airport's functions around two intersecting architectural details: the exterior detail, which acts as pavilion and gateway, and a transparent interior terminal space, which guides passenger flows. Singapore's Ardmore Residence (left), also finished this year, further demonstrates UNStudio's commitment to complex geometry: The organic façade references the landscape of the City in a Garden while interweaving design elements with structural features. K.C.

➔ *Want to see your portfolio featured in ARCHITECT Magazine? publish yourself at [architectmagazine.com/projects](http://architectmagazine.com/projects)*



## SFMOMA

The San Francisco Museum of Modern Art (SFMOMA) released renderings of Snøhetta's design for a grand staircase that will connect the institution's existing building to its 235,000-square-foot expansion. Designed by New York- and Oslo-based Snøhetta with local firm EHDD, the project expands upon the museum's existing Mario Botta building, which was completed in 1995. The wood, glass, and terrazzo staircase will be located in the atrium of the Botta-designed building and lead to the galleries in the new Snøhetta expansion: a melding of the two structures. The museum, currently closed for construction, is expected to reopen in 2016. SARA JOHNSON

NASA tests a 3D-printed rocket engine

AUGUST

#SharkitectWeek



The last tuition-free class enrolls at Cooper Union



David Chipperfield, Hon. FAIA, wins Japan's Praemium Imperiale

SEPTEMBER

The glare off of Rafael Viñoly tower in London melts a parked car

Stanley Tigerman, FAIA, receives a lifetime achievement award



# A TALK WITH ...

MATT MILLER, HUMANITARIAN DESIGN ACTIVIST AND SUBJECT OF THE NEW DOCUMENTARY, *IF YOU BUILD IT*.



**You have architecture degrees from the University of Tennessee and Cranbrook Academy of Art. Why not follow a more typical career path?**

I tried the traditional path. I worked in Jackson Hole, Wyo., but designing houses for super-rich clients just wasn't fulfilling. My work shifted from focusing on those who can afford architectural services to those who absolutely cannot. People who can't afford architecture can still benefit from good design.

**What was the goal in teaching design/build construction to 11th graders in one of North Carolina's poorer districts?**

To go as deep as possible into design education. Our students aren't making cutting boards to give to their moms. We want to make a difference in the community at large. I've taught at the Rhode Island School of Design. At that level, students are too focused on their academic pursuits to worry about what's happening around them. I love high school students because they have this built-in connection. They are the community.

**How important is the hands-on aspect?**

Personally, what set the hook for me—why I became an architect—was getting to build my own designs. Construction offers a physical outlet that a lot of these kids are missing in their day-to-day routine. High schoolers are society's ultimate consumers. They're being fed product information 24/7 with no concept that they have the agency to design and make things themselves. Seeing an idea that started in their head take shape gives them enormous pride. It drives them to make something else. They start to believe in themselves and, in the best-case scenario, their ability to improve their community. We're empowering them to do and not just react to. **LOGAN WARD**



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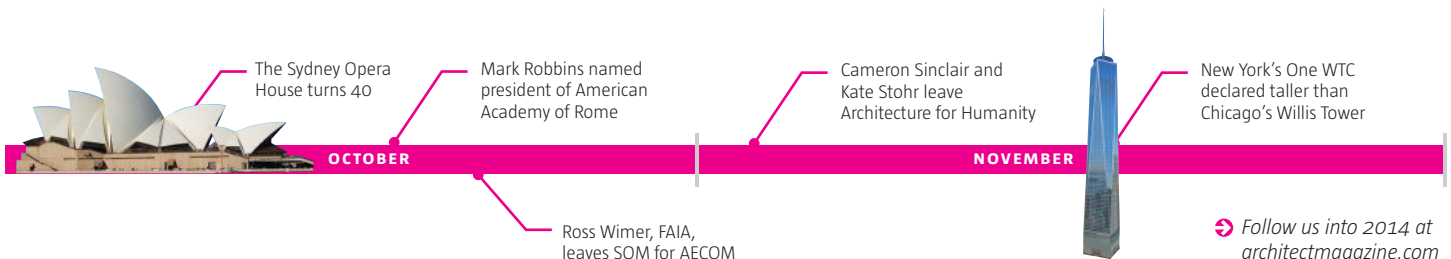
**WITH ITS VAST** information technology infrastructure and the planet's most effective supply chain strategy, Walmart can offer most any product at a competitive price. Now, the world's largest retailer wants to tackle a new market: 3D printing.

By 2020, 3D printing, including software, design, and scanning, may be an \$8.41 billion business, according to a recent market research report. Digital manufacturing may one day drive the retail supply chain. While specialty retailers may offer 3D printing for products in niche markets, Walmart could sell all of those products—and at a reduced cost.

Even though some 90 percent of people in the United States live within 15 minutes of a Walmart, the corporation has been expanding to other platforms to make its products even more convenient for customers to purchase. Incorporating digital manufacturing into its expanded mobile presence could help Walmart in its battle with online retail outlets.

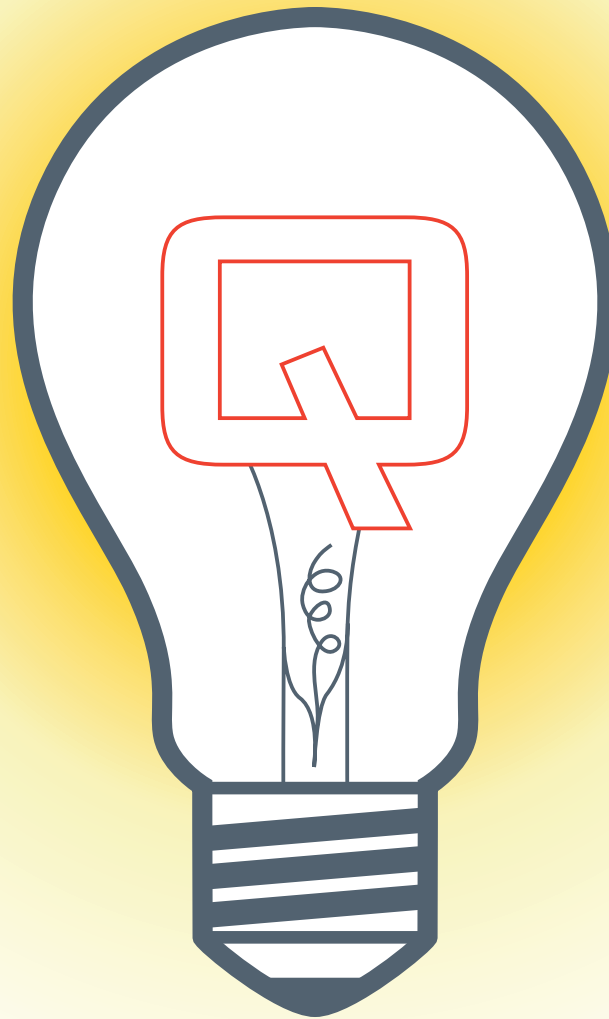
Amazon.com, for example, has subjected Walmart to the downfalls of "showrooming"—wherein a consumer inspects a product in-store but purchases the item online. If production could happen on site, it's conceivable that consumers would view those products from their mobile devices and make the purchase in-store—reversing the concept of "showrooming."

One test currently underway demonstrates one of the great benefits of 3D printing: manufacturing instantaneously as close as possible to the place of demand. In the York, England, store of Walmart's U.K. affiliate, Asda, the retailer is testing new digital scanning and printing services. Customers themselves have the opportunity to be scanned and transformed into a digital model and converted into an 8-inch ceramic figurine in about two minutes. **CAROLINE MASSIE**



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PHOTO: VINCENT RICARDEL

## AIA VOICES

NEW OPPORTUNITIES | DIVERSITY IN BUSINESS AND PRACTICE

*In 2011, Paola Moya, Assoc. AIA, and Michael Marshall, AIA, formed Marshall Moya Design (MMD) in Washington, D.C. Their partnership represents a combined 35 years of experience. MMD's 15 employees hail from six countries on three continents, a level of diversity that Moya and Marshall call "accidental, but advantageous." In 2012, MMD launched inNuevo, a product design company that complements its architecture practice and has opened the door to new opportunities.*

**WE HAVE BEEN OPEN TO HIRING ARCHITECTS FROM DIVERSE** backgrounds all along, but the present state of our office occurred organically. Everyone is comfortable here. There aren't that many African-American architects or women architects, and so we want to be able to mentor people from all sorts of backgrounds—to challenge ourselves and challenge them to do great work. Background aside, you know intuitively who is a good designer and who isn't. I think we've assembled a wonderful team here. And it's a small team, which allows us to turn on a dime and adapt to the market.

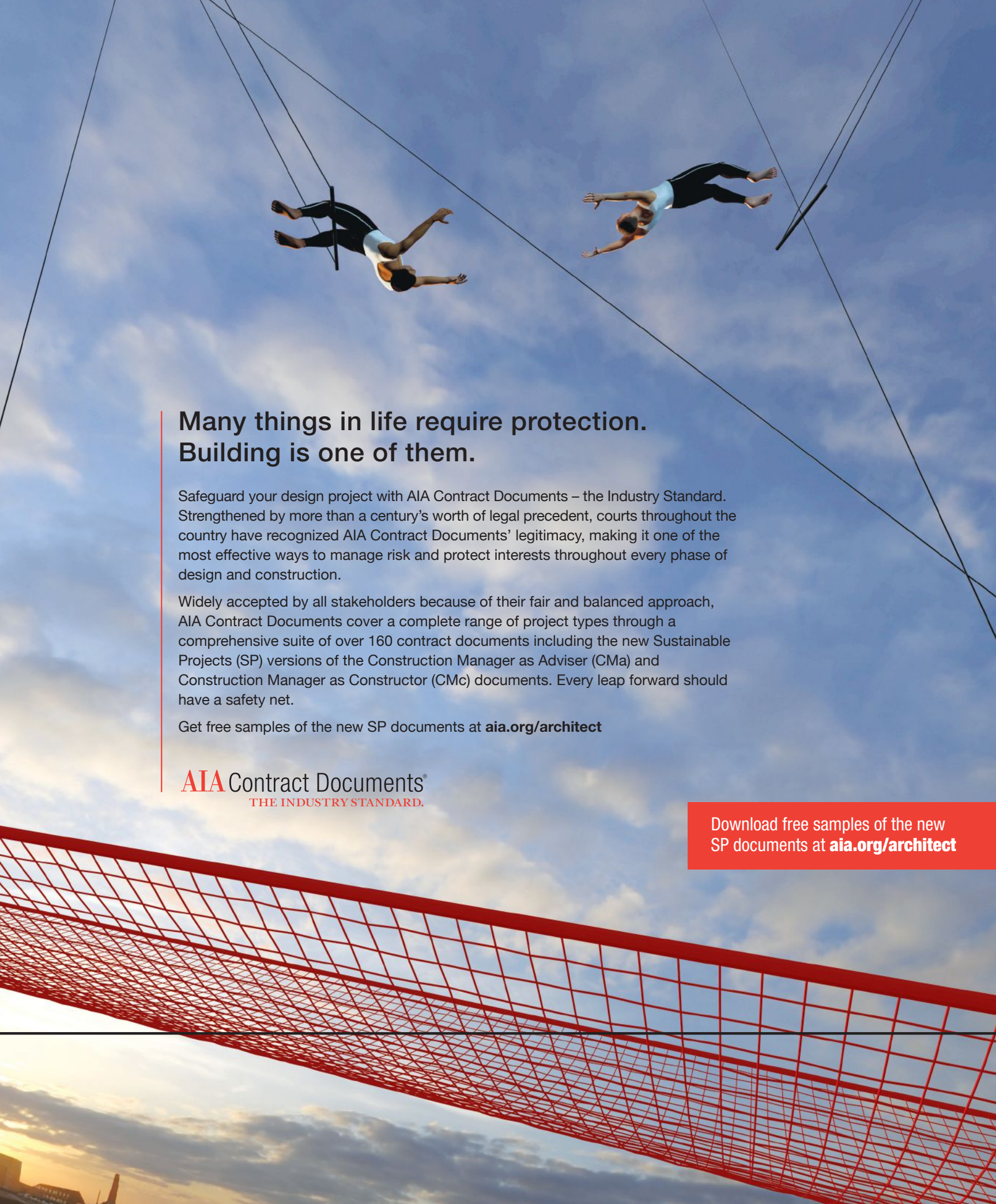
Collaboration is central to our work. Being a small local firm, we get to team up with larger firms—from concept to construction. But, on our own, we work across architecture, product design, and graphic design as a way to leverage the process of design to create a diversified business.

As an example, right now we've got two public schools that we're working on for the District of Columbia. Seeing as more and more schools like these are utilizing iPads rather than books, our challenge is to create an environment that can accommodate that technology shift. So, outside of traditional design services and through our product design company inNuevo, we designed DOCKr—a mass-produced docking station that allows students to blur the distinction between a tablet and a laptop.

DOCKr is also a consumer product that we sell, and that marketplace is a very different kind of situation. To go from concept to schematics to development to production to marketing, we had to consider a broader client base beyond students. And to make it work on the money side, we launched a Kickstarter campaign and drew resources from our architecture firm, MMD. D.C. Public Schools wanted to see a high level of technology in their classrooms, and DOCKr gave us the chance to push ourselves as a design firm. The experience keyed us in to the national conversation about K-12 environments and, now, it's a conversation to which we are contributing. —As told to William Richards **AIA**

➔ [Learn more at marshallmoya.com.](http://marshallmoya.com)





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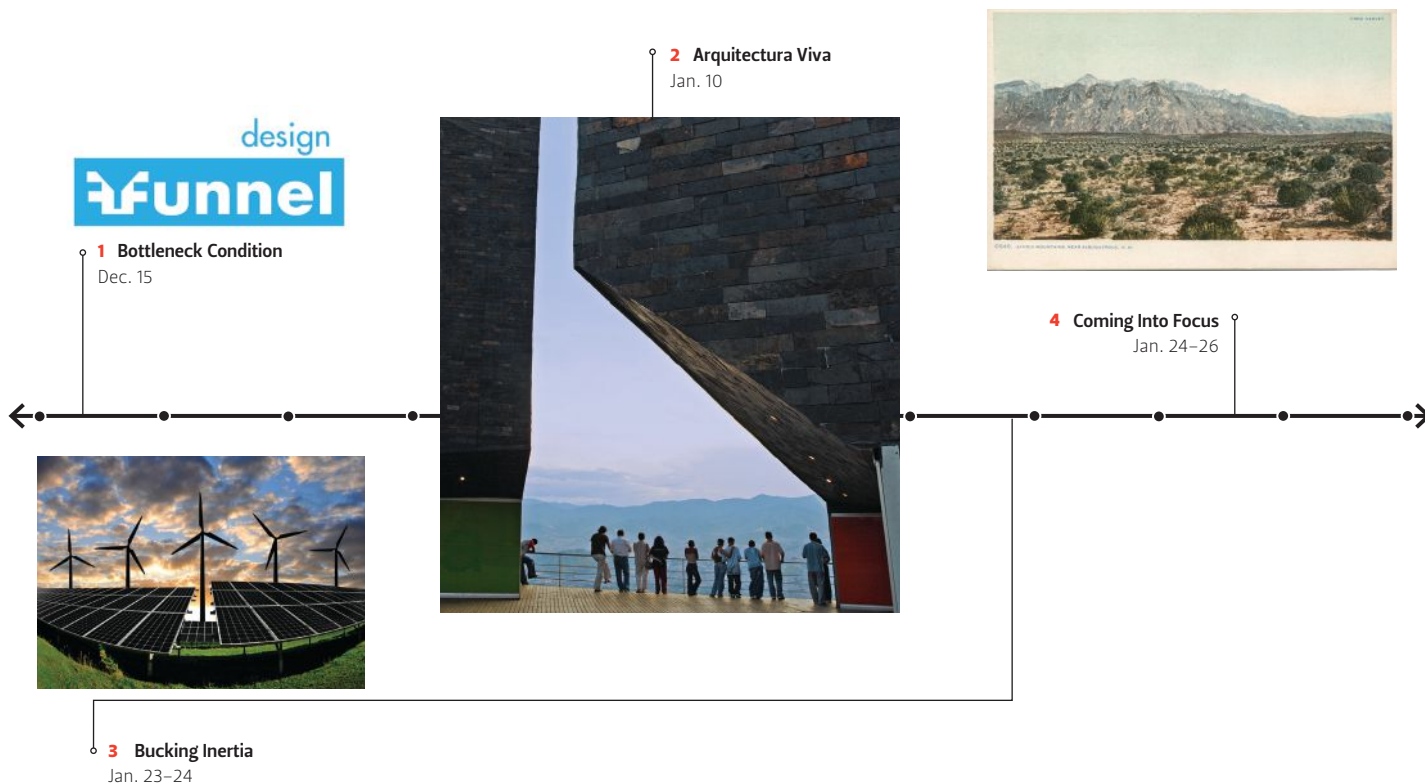
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# AIA NOW

ACROSS THE INSTITUTE

Compiled by William Richards



**1 Bottleneck Condition.** Design Ffunnel (yes, with two F's, pronounced "FUH-funnel"), a self-described "virtual community of design enthusiasts," is an events clearinghouse that draws together calendar items for architects, interior designers, engineers, and contractors—and it's fast becoming a hub of AIA chapter activity. So far AIA Northern Virginia, AIA New Mexico, AIA Las Vegas, AIA Albuquerque, AIA Oklahoma City, AIA Fort Worth, and AIA Kentucky have joined in the first weeks of the site's launch. "The localized geographic aspect is really key to this endeavor, and working with AIA chapters has been essential to understanding regional developments," says Libby O'Malley, former executive director of AIA San Diego, who founded Design Ffunnel this year. "Market to market, we're trying to be as inclusive as possible, and this site intends to be a real bridge, connecting the entire built environment community in a way that hasn't been done before," she says. O'Malley aims to cover the top 50 U.S. architecture markets by the end of 2014.

➔ Learn more at [www.ffunnel.com](http://www.ffunnel.com).

**2. *Arquitectura Viva.*** Colombia is home to more than 47 million people—the third most-populous country in Latin America. And the country's architectural output has grown in the last decade to match the scope of its growing housing needs. Recognizing both of these things, Architecture Center Houston and AIA Houston's exhibition "Colombia: Transformed/Architecture = Politics" examines 11 contemporary projects around the country that address community and migrant rights, racial justice, and social improvement through public housing. The exhibition is currently on view and closes Jan. 10.

➔ Learn more at [aiahouston.org](http://aiahouston.org).

**3 *Bucking Inertia.*** For the past two years, the University of Pennsylvania School of Design has sponsored a series of conferences, lectures, and publications centered on the topic of how architectural systems can manage energy production and consumption in the built environment. Next month, the school will host "Energy Accounts: Designing the Future" (Jan. 23–24), which will build on 2013's investigation into how climates and regions influence each other and 2012's coverage of how a building's performance can determine its looks.

➔ Learn more at [architectureandenergy.com](http://architectureandenergy.com).

**4 *Coming Into Focus.*** Navigating the early years of architectural practice isn't easy. Some paths—through licensure or through internships, to name two—are clearly marked. But there are plenty of other variables that influence how architects are educated, trained, and tested on the macro scale (take, for instance, the economy's recessionary hangover) as well as on the micro scale (such as balancing work and family, not to mention carving out a couple hundred hours to study for the Architect Registration Exam). On Jan. 24–26, the AIA, the American Institute of Architecture Students, the Association of Collegiate Schools of Architecture, the National Architectural Accrediting Board, and the National Council of Architectural Registration Boards will hold an Emerging Professionals Summit in Albuquerque, N.M., to devise better ways to support more than 37,000 associate members and newly licensed members.

➔ Learn more at [aia.org/professionals](http://aia.org/professionals).





# Intrinsic Values



## Archiving your work in the Digital Age.

BY CATHERINE GAVIN

**ARCHITECTURAL LIBRARIES AND ARCHIVES ARE CONFRONTING** myriad technological challenges as digital-born files increasingly comprise the essential stories of buildings. Gone are the days of organizing paper—flat files of sketches, drawings, and correspondence—while also trying to preserve deteriorating wood models. These concerns are now coupled with the acquisition of hard drives stocked full of three-dimensional computer-aided design (CAD) models, two-dimensional drawing files, building information modeling (BIM) files, digital photographs, videos, emails, reports, and marketing materials. Accepting, processing, maintaining, and storing all of this information, and making it accessible on a long-term basis, is a mind-boggling task.

The proprietary nature of the software programs that architects use on a daily basis often arises as a serious obstacle. “We set up a suite of old computers to begin to read and appraise the files from Minoru Yamasaki’s records,” says Tawny Ryan Nelb, co-author of *Architectural Records: Managing Design and Construction Records*. The rescue effort by the Archives of Michigan of the digital portion of Yamasaki’s papers (which totaled 4 TBs) will require re-creating the original software and hardware environments. Nelb notes that even when archives are capable of this feat, many of the files from the 1980s and ’90s will simply be lost due to storage media degradation, obsolescence of hardware and software, the sheer quantity of files, the lack of financial resources, and the lack of file organization.

The Alexander Architectural Archive at the University of Texas at Austin recently acquired the collection of prominent Texas architect Frank Welch, FAIA, and decided to include his digital files at a later date. “Digital records are far more demanding than analog in that they require new technical expertise outside of our walls,” says Donna Coates, a curatorial assistant for technical services at the





University of Texas. “File maintenance, cataloging, and preservation for future migration and access all factor into this decision.” Coates adds that digital archiving is a fairly new profession, and the various and highly complex files of architectural records present a challenge for all archives.

For any type of archiving, the goal is to capture the story of the building, everything from the design process to the exchanges between the client and contractors. If an archive receives only finished drawings, it is difficult to uncover a project’s true breadth and depth.

“Documentation of the creative process is fundamental to an architectural archive,” says Coates. “We have sketches on paper napkins that are very important.”

The Historic American Building Survey (HABS) relies on CAD, laser scanning technologies, and photogrammetry to record and document the country’s architectural heritage. However, Catherine Lavoie, chief of HABS, emphasizes that the repository contains only archival-quality printed drawings, reports, field notes, and

photographs; it does not store digital-born archives.

“HABS documentation must comply with the secretary of the interior’s standards for long-term permanence. So far, a solution to the difficulties surrounding the maintenance of digital materials has not presented itself,” says Lavoie. “We are waiting to see how the discussion evolves in the world of architectural archives.”

The conversation is shifting, however. Archivists no longer expect firms to print everything for posterity. Projects such as the Art Institute of Chicago Digital Archive for Architecture (DAArch) and MIT’s Future-Proofing Architectural Computer-Aided Design (FACADE) project have helped identify strategies and solutions for curators and archivists. Using projects by a variety of firms, both DAArch and FACADE set out to create stable, curated digital environments for recent projects with a multitude of file types. They promote maintaining the native files, using emulation software to re-create the original environments and creating derivative versions that are migrated onto current readable formats (which are largely PDFs, JPGs, and TIFFs).



## AIAFEATURE

Columbia University's Avery Architectural & Fine Arts Library is engaging in an experiment, similar to DAArch and FACADE, based on the projects planned for the Manhattanville mixed-academic center on a 17-acre site to the north of the university's historic Morningside Heights campus.

As archivists continue to refine best practices for an array of assets—whether these assets were born digital or not—that process of refinement has emerged as a clear bridge between architecture's practice and its academy. "An ideal situation would be a collaborative one amongst archivists and architectural firms," notes Inés Zalduendo, special

collections archivist for the Harvard University Graduate School of Design's Frances Loeb Library.

Many firms are optimizing project file storage, both as efforts to plan for their legacies as well as part of new business strategies. These firms often rely on in-house knowledge managers, archivists, and information technology experts to organize and catalog the files.

Robert A.M. Stern Architects employs two full-time archivists who have already donated hundreds of work files to the Yale Architectural Archive. Stern, the dean of the Yale School of Architecture, notes that he has kept almost everything, including early drafts of articles, and that, at this point, the firm has processed and transferred drawings, sketches, correspondence, and other work through 1990. "I also have stuff from my childhood," says Stern. "I un-embarrassedly stuck that in there."

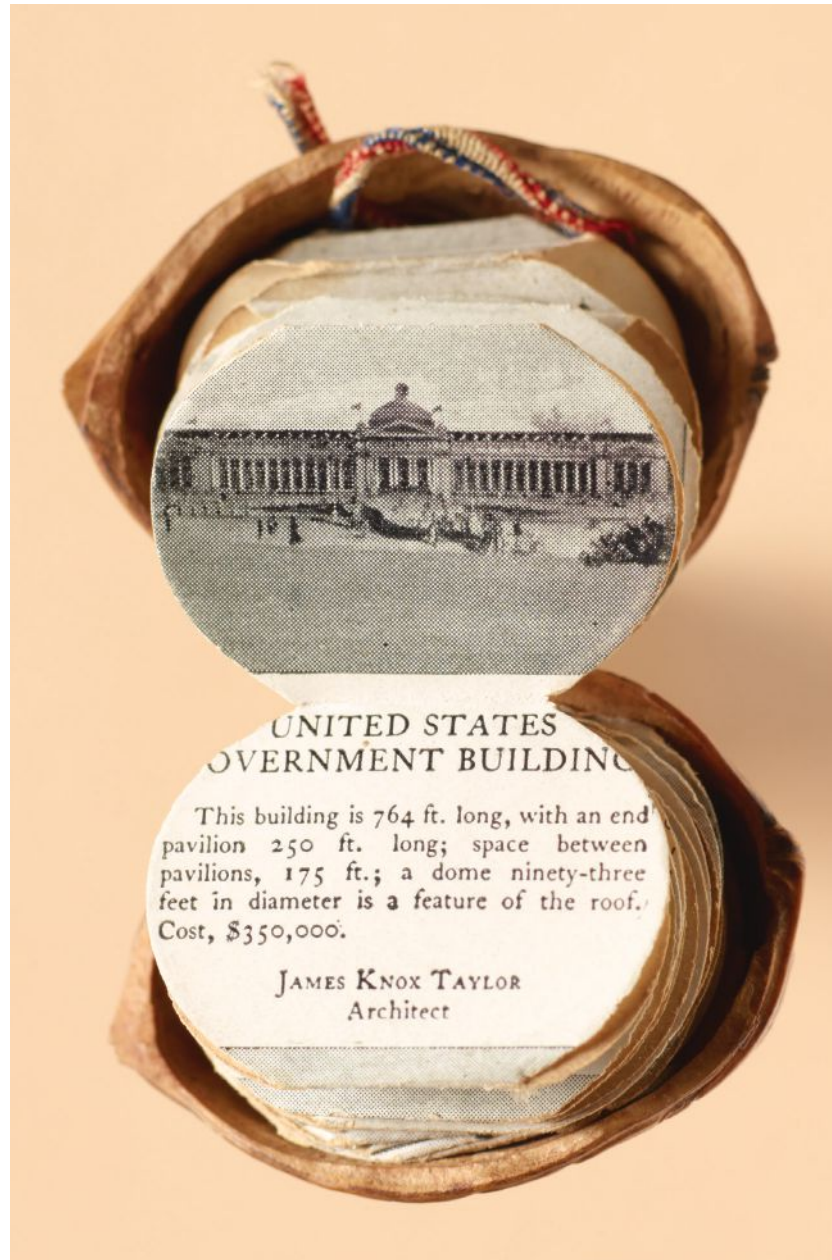
Gensler's archival team has developed a two-tiered system that includes an archive and a digital library. The archive comprises older project files stored on hard drives or on magnetic tape, paper files, and models. Newer projects live in cloud storage. This repository is complemented by a digital library accessible by the

entire firm. Any employee can search the digital library to learn about projects by location, client, building typology, materials, and other search filters.

"We are optimizing the digital library for our use," says Eric McKinney, AIA, director of firm-wide applications. "It is about getting new work, serving our clients, and sharing information across offices." Jennifer Faist, Gensler's firm-wide knowledge manager, emphasizes that their next goal is to create a culture of curation so that the project team is thinking creatively about how its files will be used and cross-referenced.

What survives of these first decades of the so-called "Digital Age" will offer future historians and curators a lesson in how rapidly corporate and institutional cultures can evolve in the face of technological change. And that process of reflection has already begun. The Canadian Centre for Architecture's (CCA) exhibit "Archaeology of the Digital" in Montreal examined the influence of computers on design during the late 1980s and early '90s—a time when digital design applications became more accessible (and more affordable) to architecture firms. The CCA's exhibit wrapped in October after a six-month run.

Like digital design itself, having a strategy to archive personal or firm-wide assets concerns everyone. Now is the time for architects and firms to think about the longevity of their files—as they create them. Present-day strategies will have a dramatic effect on future legacies. **AIA**



IMAGES: Avery Architectural and Fine Arts Library, Columbia University. Nutshell Novelty Company, Louis Exposition [in a nutshell] / Nutshell Novelty Co. Chicago: The Company, c1904.

Catherine Gavin is the editor-in-chief of *Texas Architect*, published by Texas Society AIA.

➔ Learn more at [texasarchitects.org](http://texasarchitects.org).





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# AIAPERSPECTIVE

MAKING A DIFFERENCE



PHOTO: WILLIAM STEWART

**I ALWAYS WANTED TO BE AN ARCHITECT. EVER SINCE I CAN REMEMBER,** I have had this fascination with the allure of architecture. I still chuckle when I think about how I used to take photos of buildings with my Kodak Pocket Instamatic camera and then, on my hands and knees, tape the pictures together on our basement floor to make a collage of the entire façade. But growing up in the predominantly blue-collar city of Windsor, Ontario, Canada, did not provide much opportunity for access down that less-traveled road to a future in architecture.

Then I met Don Hancock, my high school drafting teacher, who recognized that I had a unique interest. Mr. Hancock taught me how to draw; more importantly, he showed me the passion of how lines on the paper could form beautiful images. It was in his class that I saw my first architecture magazine. At that moment I knew I had found my calling, down a road with a whole new world of possibilities.

Mr. Hancock was the first of many people who crossed my path on the journey to fulfill a dream. There have been many of these mentors since, all, in some way, having an influence on my decisions and my choices down this chosen road. We have all had these special people in our lives, and, even though their guidance may have touched us long ago, their influence lasts a lifetime.

It is our responsibility to do the same. Our profession faces enormous challenges as we move into a new era. We are entrusted with the obligation to do our part, to help those entering the profession develop into the leaders who will take us far beyond where we have been before. It's amazing how the smallest of gestures—something you say, a little encouragement, or a thoughtful action—can have such a great impact and inspire someone to chase his or her dreams.

The investment that we need to make to see prosperity in architecture's future is to challenge and empower emerging professionals to lead the process of creating solutions to issues that look beyond the obvious and heighten public awareness of the importance that design plays in improving the quality of life.

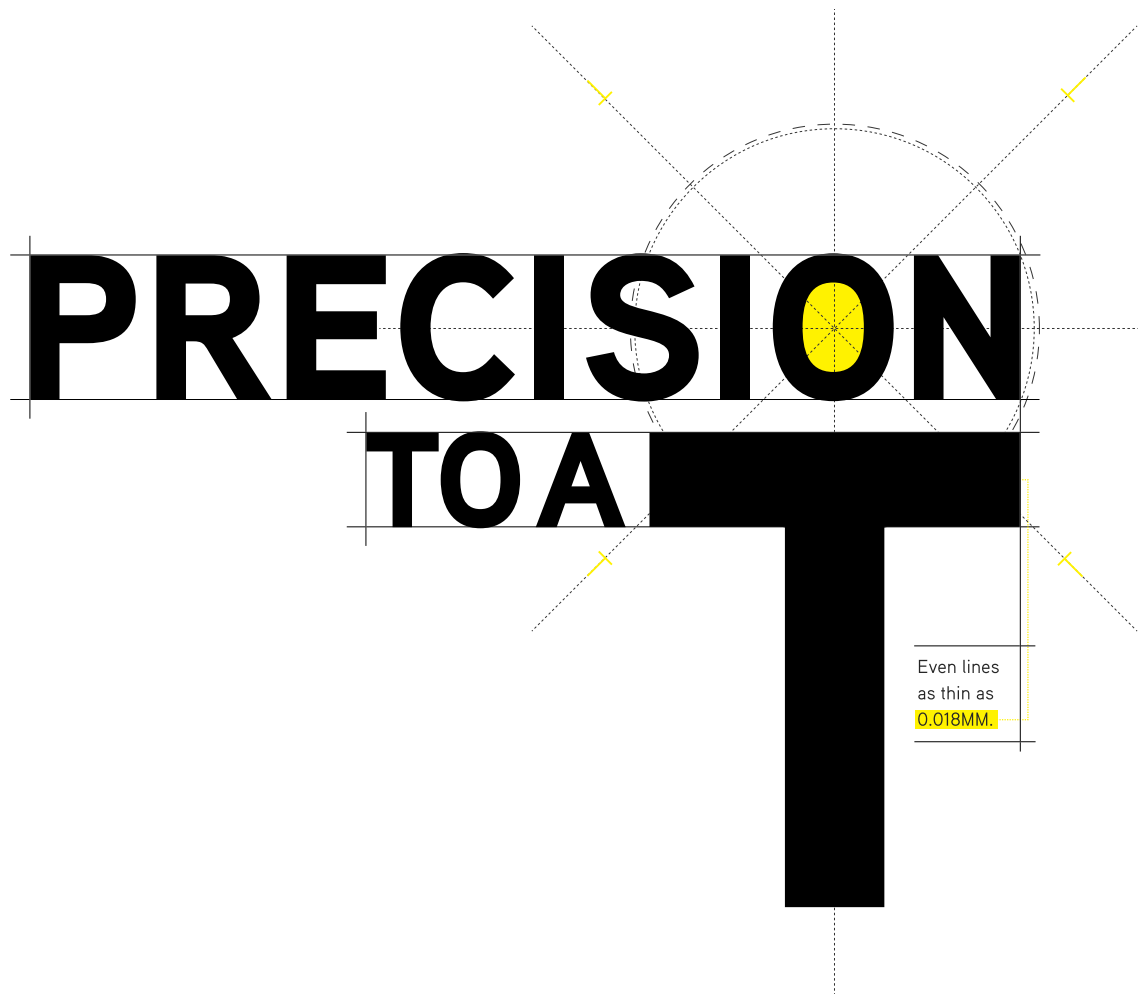
I was reminded of this during a recent visit to Chicago to see Walter Sobel, FAIA. Walter, a respected and revered mentor, was celebrating his 100th birthday and his 80th year in architecture. He talked at great length about how our legacy is not the buildings we design, but rather the influence we impart on the public, our clients, our colleagues, and the young people who will inherit the responsibility to lead the profession. He asked me what I was doing to further this concept of "building leaders."

Walter's concern for the future of architecture illustrates the significance of the passion we all have as stewards of the profession. Although there has been much discussion in the media recently about how architecture is not a desirable profession, Walter reminded me that it has always been a good time to be an architect. His words made me thankful for all the people in my life who had a small, or large, part in guiding a young man—who at one time thought his future consisted of driving a delivery truck—to achieve his dream of becoming an architect, and who even ended up having the incredible honor to serve as the president of the American Institute of Architects.

It has been an amazing journey. It couldn't have happened without all the mentors who encouraged me to dare to take what the poet Robert Frost called the road less traveled by. And, as he said, that has made all the difference. **AI**

*Mickey Jacob, FAIA, 2013 President*





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**BY SCOT HORST**  
*Senior Vice President, LEED,  
U.S. Green Building Council*

A building is a collection of systems that creates a whole. It is an organism. Similar to the human body, each system has a different role, but they all must work together so that the body can perform. One system cannot operate properly without the other. By honoring these interconnections, buildings can be built and operated in a more sustainable and efficient way. By bringing the right people to the table, decisions can be made that position the building for excellence in operational performance.

This November, LEED v4 will launch as the newest update to the LEED green building program. At its core, LEED v4 is a sophisticated way of looking at buildings' systems and finding the synergies that not only help us do less bad on a scale unmatched by any previous versions of the rating system, but do so in manner that makes things more efficient for the teams implementing these projects.

By addressing integrative process, LEED v4 puts project teams on the path to better understand the interconnectivity that exists throughout building systems and the phases of building design and construction. From that point, the LEED credits work with one another to push for greater transformation throughout the built environment, from the buildings themselves to the products and materials that are used to build them, from designing new buildings, to operating those that already exist.

## TRANSFORMATION ON A LARGER SCALE

The mission of LEED remains the beneficial transformation of design, construction, operations and maintenance of buildings, not just for some, but for all. To that end, a critical part of LEED v4 has been making sure that it is flexible enough to be applicable on a wide scale that is not limited by location or building type.

### ONE GLOBAL LEED

LEED has become a common language of best practices in buildings around the world. In the new rating system, project teams will find greater recognition of regional context with the incorporation of regional and local equivalent standards or programs usable to achieve the same credit intent. Project teams will also see that metric units have been included in all tools and resources.

Today, LEED projects can be found in over 140 countries and territories.

### NEW MARKET SECTORS

The building industry now uses the LEED rating system on a wider variety of project types than ever before. From stadiums to convention centers, commercial offices to hospitals, each space type has unique needs and challenges when using LEED. LEED v4 addresses 21 different market sector adaptations - each reviewed by market leaders either owning or designing or operating those space types - to identify and address the unique needs of each market. LEED v4 provides new solutions for the following sectors:

- existing schools
- existing retail
- data centers (new and existing)
- warehouses and distribution centers (new and existing)
- hospitality
- mid-rise residential



## USING LEED V4

Building a better LEED user experience means a new approach to documentation, reference guides and education. LEED v4 builds documentation requirements based on lessons learned from previous versions of the system that are designed to save project teams time while creating tools and resources that focus on the needs of those who use them. It also means testing the new program to ensure that it functions as it was designed to. Think of it as a commissioning process for LEED itself. USGBC has worked with over 100 projects testing LEED v4 through the LEED v4 Beta Program to refine the program tools and resources. When LEED v4 launches, the building community will notice several key updates.

### DOCUMENTATION

For most, paperwork is necessary but not relished. With this in mind, USGBC focused on simplifying the work for project teams so they can focus on achieving credits rather than documenting them. The documentation forms have gone through over a year of development and several rounds of review to ensure that the documentation process does not create unnecessary burden for project teams. Fields within forms have been minimized wherever possible, and are more focused on industry standard documentation, reducing the need to create documents simply for LEED certification.

1. **Combined forms for prerequisites and credits.** Reduces the amount of overlap and duplicative work.
2. **Downloadable calculators.** Increased transparency to provide LEED users a better understanding of the equations behind the calculations.
3. **Less documentation needed.** There are many instances where industry standard documentation provides all of the information needed to confirm credit compliance and submittal documents have been modified to reflect that.

### REFERENCE GUIDES

When project teams have a question about LEED requirements, they reach for the reference guide. Completely redesigned for LEED v4, the reference guides have been restructured to focus on the most useful information for project teams.

First the guides were evaluated to determine ways to make them function better as full guides, instead of a collection of separate credit-specific explanations. To support this, USGBC added the following:

**Getting Started section:** This new segment at the beginning of each guide goes beyond what's found in the introduction and includes a work-plan framework that guides project teams through the steps leading up to certification.

**Navigation tools:** Information is only helpful if you can find it. Throughout the guides, we've identified connections—so when there is one credit that connects to another, we let you know. If a credit references information in the *Getting Started* section, we let you know that too. Using icons and other wayfinders, we point out relationships so that project teams can benefit from the full picture.

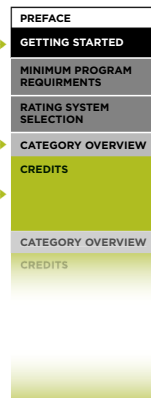
## REFERENCE GUIDE OVERVIEW

### GUIDE STRUCTURE

**GETTING STARTED** provides a recommended process for achieving certification and addresses issues that cut across the entire rating system.

**CATEGORY OVERVIEWS** emphasize sustainability topics, market factors, and credit relationships that are specific to a single credit category and information that is applicable to multiple credits within that category.

**CREDITS** contain content that is specific to the achievement of that credit.



### CREDIT STRUCTURE

each credit category begins with an overview that discusses sustainability and market factors specific to the category. For each prerequisite and credit, readers will then find the following sections:

**INTENT & REQUIREMENTS** outlines the rating system requirements for achieving the prerequisite or credit. They were approved through the rating system development process and can also be found on the USGBC website.

**BEHIND THE INTENT** connects credit achievement with larger sustainability issues and provides information on how the credit requirements meet the intent stated in the rating system.

**STEP-BY-STEP GUIDANCE** suggests the implementation and documentation steps that can be used by most projects, as well as generally applicable tips and examples.

**REQUIRED DOCUMENTATION** lists the items that must be submitted for certification review.

**FURTHER EXPLANATION** provides guidance for lengthy calculations or for special project situations, such as tips for nonstandard project types or different credit approaches. It includes a *Campus* section and, sometimes, an *International Tips* section.

**RELATED CREDIT TIPS** identifies other credits that may affect a project team's decisions and strategies for the credit in question; the relationships between credits may imply synergies or trade-offs.

**CHANGES FROM LEED 2009** is a quick reference of changes from the previous version of LEED.

**REFERENCED STANDARDS** lists the technical standards related to the credit and offers weblinks to find them.

**EXEMPLARY PERFORMANCE** identifies the threshold that must be met to earn an exemplary performance point, if available.

**DEFINITIONS** gives the meaning of terms used in the credit.

**ICONS THAT MAY APPEAR WITHIN EACH CREDIT REFER THE USER TO FOLLOWING SECTIONS:**

Getting Started (beginning of book)

Further Explanation (within same credit)

At the credit level, the focus is on clarity, making sure project teams can quickly and easily see what each credit requires and how to achieve it. Supporting that goal are several new sections within each credit.

In addition to the traditional digital and hard copy versions, a web-based version of the LEED v4 reference guides that is built into the credit library will be available for purchase. This new format combines all of the information that's available in the traditional versions of the guides with all of the benefits of the fully searchable credit library. It will also give project teams access to a new set of modules developed specifically to supplement the reference guide content, including interactive videos, tutorials, presentations and documents.

Over time, USGBC will continue to add content to the web-based reference guides, creating a continually growing body of knowledge in one convenient location.

LEED has become a marketplace standard of best practice in designing, building, operating and maintaining buildings around the world. v4 is the LEED of the future, where we challenge the marketplace of shelter to go further, to make the next great leap toward better, cleaner, healthier buildings.

When LEED v4 launches this November at the Greenbuild International Expo and Conference and Expo, teams will be able to register their projects under the new system and access the tools and suite of resources that support it.



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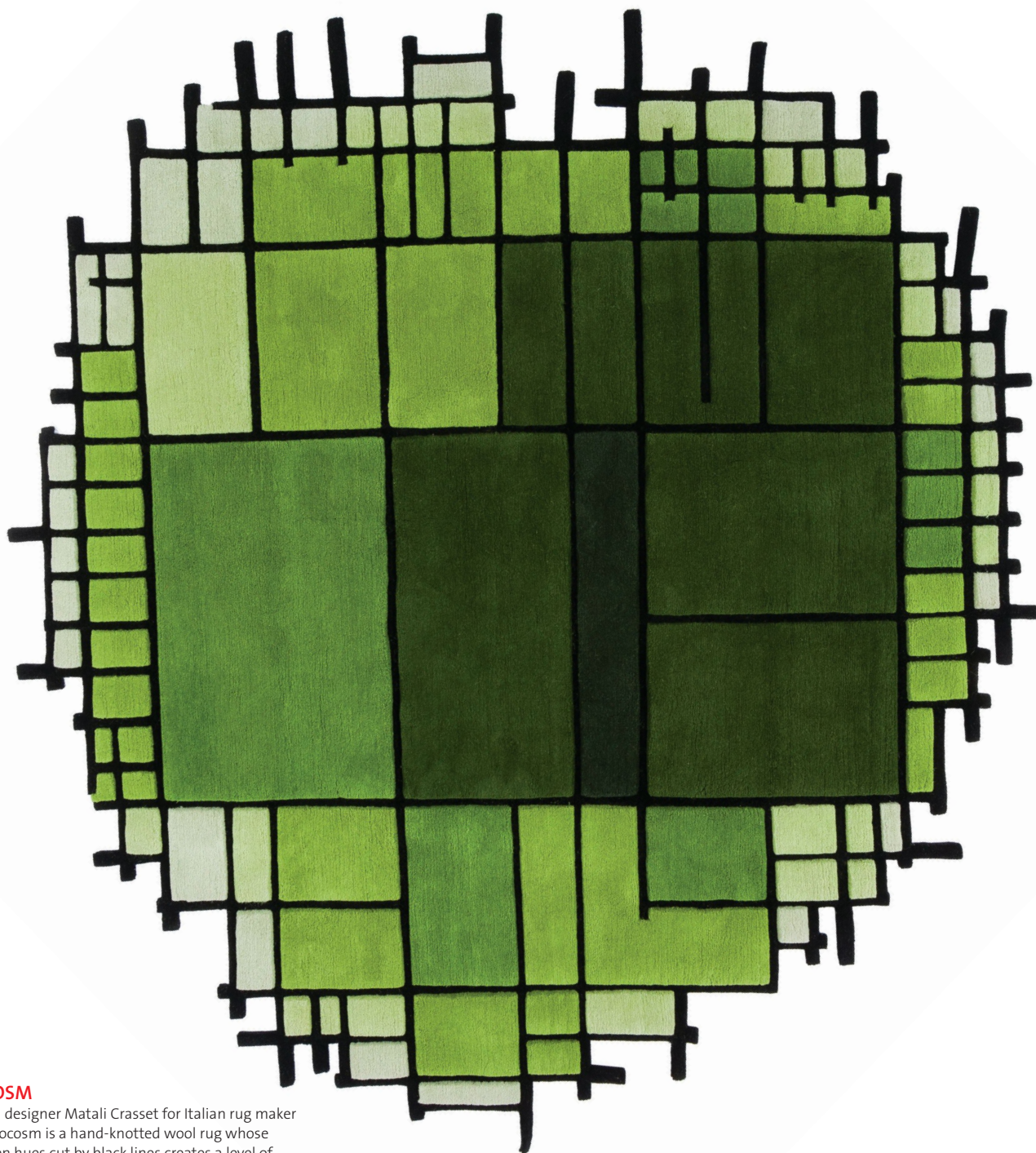
clean + simple



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# PRODUCTS

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## MICROCOSM

From French designer Matali Crasset for Italian rug maker **Nodus**, Microcosm is a hand-knotted wool rug whose array of green hues cut by black lines creates a level of abstraction that leaves room for interpretation. Crasset's other rug designs for Nodus include a red floral burst and a historical ethnographic map of Chicago's late Maxwell Street Market neighborhood. [nodusrug.it](http://nodusrug.it) Circle 100





Text by **Hallie Busta** and **Jennifer Brite**  
 Edited by **Wanda Lau**

### JUMPSEAT WALL

In healthcare settings, patient traffic ebbs and flows depending on the time of day and the day of the week. A folding mechanism allows **Sedia Systems'** JumpSeat Wall to cantilever from the wall when it is needed and to spring back flush with the wall when it is not. The unit is fitted with a fixed, 1"-thick upholstered cushion, and it is made of 100% pre-consumer recycled plywood. [sediastystems.com](http://sediastystems.com) Circle 101

### BLACKBURN

Pawtucket, R.I.-based lighting designer **Tracy Glover's** blown-glass Blackburn pendant offers a luxe aesthetic with the subtle material variations of a craftsman piece. Offered with five diffuser shapes (globe, shown) and in eight patterns. Also available as a multi-lamp fixture (shown). [tracygloverstudio.com](http://tracygloverstudio.com) Circle 102



### GOLD STANDARD

**DesignTex's** Gold Standard upholstery collection—which comprises the textile maker's Concept (shown), Pop Art, and Precision designs—is made entirely from post-consumer recycled polyester. The upholstery, which is low in VOCs and free of topical finishes, can be cleaned with water-based solvents. [designtex.com](http://designtex.com) Circle 103







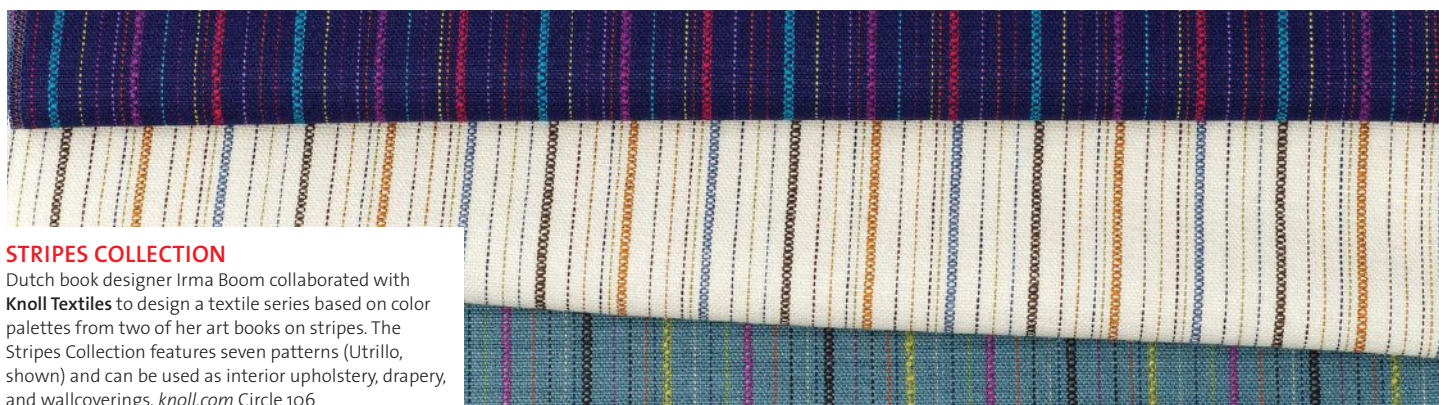
### SLAM BEAM

With a form that is optimized to eliminate excess material, Slam Beam from **Leland International** takes a minimalist approach to bench seating. Available in two-, three-, and four-seat arrangements, the arm or armless seating collection comes in wood or polypropylene finishes and three base colors. Tables can flank the bench or be interspersed between the seats. [lelandinternational.com](http://lelandinternational.com) Circle 104



### TRANQUILITY

Greenguard-certified and made from 96% recycled content, Tranquility bays from **Krug** are designed to reduce the environmental stress associated with infusion treatments and renal dialysis. Movable privacy screens and media stations that can house a television and a magazine rack give patients a sense of control over their environments without hampering the medical staff's ability to work efficiently. [krug.ca](http://krug.ca) Circle 105



### STRIPES COLLECTION

Dutch book designer Irma Boom collaborated with **Knoll Textiles** to design a textile series based on color palettes from two of her art books on stripes. The Stripes Collection features seven patterns (Utrillo, shown) and can be used as interior upholstery, drapery, and wallcoverings. [knoll.com](http://knoll.com) Circle 106




ARCHITECTS' CHOICE

# In the InterBIM

Text by **Brian Libby**

Illustrations by **Peter Arkle**

The growing use of building information modeling (BIM) means that design and construction teams need to access project files from anywhere, anytime. Software developers have responded by creating apps for mobile devices and, in particular, for the tablet, which Tyler Goss, of New York-based Case Design, calls the “most disruptive tool” in the industry. “A lot of really robust information can be pushed through them,” he says. We asked Goss and three other tech experts to weigh in on three mobile apps designed to handle BIM in the field.

	<b>GRAPHISOFT BIMX</b>	<b>BENTLEY SYSTEMS PASSPORT</b>	<b>AUTODESK BIM 360 FIELD AND AUTODESK BIM 360 GLUE</b>
<b>WHAT IT IS</b>	BIMx allows users to open and explore 3D BIM models created in ArchiCAD. Its add-on app, BIMx Docs, lets users navigate and view related construction documents.	Passport gives users access to hybrid platforms, including: servers, such as Bentley's ProjectWise Integration Server; desktop software, such as Bentley Navigator; and mobile apps, such as Field Supervisor.	BIM 360 Field lets users create and update project issues, and access construction documents from the jobsite. BIM 360 Glue lets users access and connect project information across multidisciplinary 3D models.
<b>HIGHLIGHTS</b>	Allows users to flip from plans and elevations to 3D models. Fisher says that “ArchiCAD has long had the ability to quickly section your model to the parts you care about. [Graphisoft has translated] that well into the mobile platform.”	Added control and security thanks to Bentley's platform; the cloud, where the 3D model is stored, can be hosted on-premise. The apps in Passport also allow for round-tripping, Berger says. “You put a comment in from the field, and it automatically links that into the Web-based version and the model.”	Goss says Field and Glue “are more about the workflow of design” whereas Bentley and Graphisoft apps focus on “document control and management in the field.” Autodesk apps “mirror how an engineer thinks about coordination, constructability, or quality control.”
<b>PROS</b>	“Easy to navigate on site,” able to render “very quickly,” and reasonably priced, while eliminating the need to print 2D plans, Fisher says. Also includes gravity and egress recognition and the ability to trace 2D drawings over the 3D model.	Field Supervisor allows you to “create personal views of what you want,” Mauti says. The same content can then be viewed in Navigator. “It maintains data as well as graphics from the model. ... They say, ‘We know you’ll do some work in [Autodesk] Revit, some in Bentley. We’ll pull all these together.’”	Field provides “a better picture of potential constraints, and allows a better understanding of jobsite productivity,” Goss says, while Glue’s hyperlink generator tracks each action taken in the 3D model, making “communication with non-expert users a simple matter.”
<b>CONS</b>	Mauti says the app has been known to lose some “info from the source software” when opening files created in programs by other software companies.	Though Bentley's mobile apps “have done well handling large models, the graphics aren’t as beautiful as what you get out of Autodesk,” Berger says.	Design data on the cloud is hosted by Autodesk—which clients with top-secret projects may oppose, Berger says.
<b>REMOTE BIM EDITING</b>	Yes	No, but anticipated with the 2014 Navigator Mobile release	No
<b>COMPATIBILITY</b>	 Compatible with Bentley and Autodesk files if imported through ArchiCAD	 Model information from Autodesk files accessible through i-models	 Glue can manage 50+ file types, which the app can then use
<b>COST</b>	Free	\$72 per year; mobile apps are free with the Passport subscription	App is free, but full functionality requires Glue purchase (price varies)



**ANDREW FISHER**  
BIM Applications Specialist  
DPR Construction



**TYLER GOSS**  
Director of Construction Solutions  
Case Design

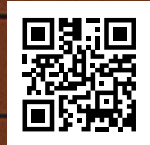


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Director of Design Technology  
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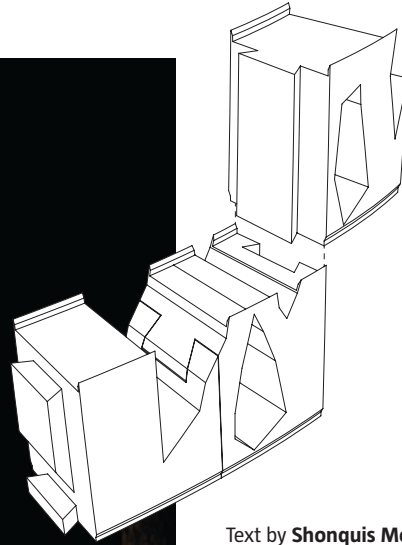
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DETAIL

# Build by Number



Smith|Allen designed a paneled, snap-fit connection to create each block, a dovetail joint in the lateral direction between neighboring blocks, and a pin-socket mortar base between courses. As a result, the structure had to be assembled from inside the structure, and from left to right.

Text by **Shonquis Moreno**

**FABRICATION HAS ENTERED** the forest. In August, Bryan Allen, Assoc. AIA, and Stephanie Smith of Oakland, Calif.-based design firm Smith|Allen completed what was then one of the world's largest installations of 3D-printed micro-architecture. Conceptualized during a four-week residency with arts incubator Project 387, Echoviren is a sculptural, 8-foot-tall, 8-foot-wide pavilion tucked into the center of a 150-acre redwood forest in Gualala, Calif.

Allen and Smith enlisted the software programs Rhino and Grasshopper to generate the overall form of the structure—which echoes the grove's textures and forms—and to define the connection details for each printed component. For 60 straight days, continuing up to the very end of construction, seven Type A Machines Series 1 printers churned out 500 unique, branch-shaped blocks out of 140 pounds of sugarcane-based polylactic acid. Limited in size by the printers' output capacity, the blocks range from 6 by 9 by 0.5 inches to 8 by 9 by 6 inches. The print times for each component varied, depending on its complexity and required strength. The blocks at the base, for example, took about 14 hours each, while blocks at the oculus required only four.

Each block was numbered based on its location in the structure to aid construction. Still, assembly took Smith and Allen four days, starting with a foundation dug 7 inches below grade.

For the next half-century, Echoviren will biodegrade, the colonizer slowly colonized by its host. Mosses, fungi, birds, and spiders began taking up residence even as the designers assembled Echoviren on site.

"We wanted the piece to be a place of contemplation within the landscape and about the landscape—a conceptual and physical echo of its surroundings," Smith says. In the shadow of the giants around it, Echoviren glows like a lantern at night, thanks to LEDs rooted into its earthen floor. With permission from Project 387, it is open 24 hours a day to people and nature, alike.

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MIND &amp; MATTER

# Paper or Plastic?

AUSTRALIAN COMPANY ZEOFORM HAS CREATED A BIODEGRADABLE PLASTIC WITH NOTHING MORE THAN RECYCLED PAPER WASTE AND WATER. SOMEDAY IT MAY CLAD ONE OF YOUR PROJECTS.



Text by **Blaine Brownell, AIA**

**CELLULOSE IS THE** most pervasive natural polymer on the planet. As the primary structural material in plants, it is essentially a long chain of connected sugars. We encounter cellulose in consumer goods such as textiles and wood pulp, in the form of paper. However, the Australian company Zeoform has figured out how to turn the soft, fibrous material into a hard plastic.

Made from nothing but cellulose fibers and water, Zeoform is promoted by its namesake company as “the world’s new plastic”—a nontoxic, compostable, and environmentally favorable alternative to petroleum-based plastics. The tagline is not to suggest that Zeoform may someday usurp its fossil fuel-derived counterpart. Rather, it’s intended to embody the broader meaning of plastic—namely, a substance that can be shaped and molded.

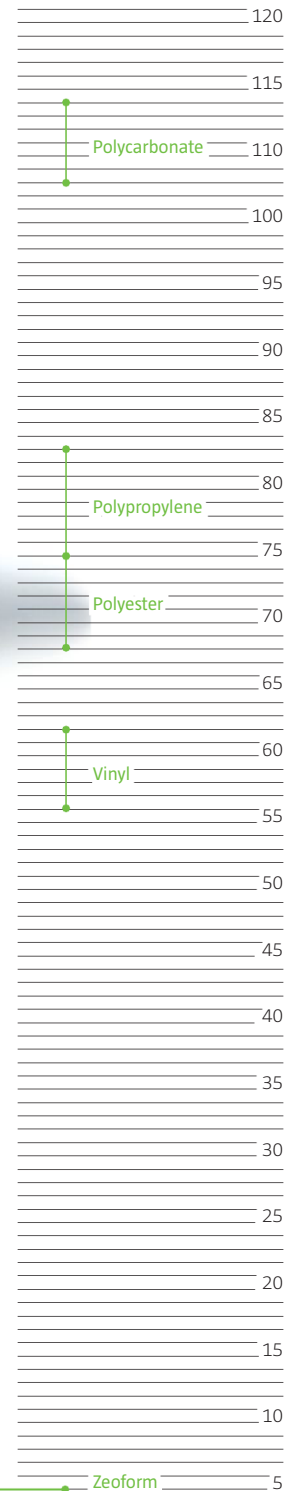
Sourced from the fibers of recycled waste paper, Zeoform exhibits characteristics of plastic and wood. It can be spray-molded, compression-molded, pressed, poured, and sculpted like plastic. After it dries, it can be sanded, routed, engraved, and laser-cut like wood. At its prototyping facility in New South Wales, the company

employs its patented methods of steam explosion and enzymatic processing to transform waste paper into pulp, and then into furniture, housewares, jewelry, industrial parts, musical instruments, and building cladding. According to CEO Alf Wheeler, Zeoform derives its strength and durability from “a combination of fiber entanglement and hydroxyl bonding.” Like wood, it requires added protection from the elements; otherwise, it will biodegrade within a year or so.

Zeoform faces steep competition from conventional plastics, which are inexpensive and ubiquitous commodities. The company has plans to build a manufacturing and education center, but an initial fundraising effort through the crowdsourcing website Indiegogo yielded only 5 percent of its \$1 million goal. The tepid public response may be due to the material’s novelty and a lack of demonstrated performance: The notion of a biodegradable chair will take a cultural readjustment. Nevertheless, Zeoform may transform our perception of plastic as an artificial and environmentally persistent compound to a biocompatible substance with significant ecological benefit.

## Embodied energy (MJ/kg)

SOURCE: MATERIALS AND THE ENVIRONMENT  
BY MICHAEL ASHBY  
(BUTTERWORTH-HEINEMANN, 2012)







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# CENTER

Preservation **Hawthorne on the Fate of the Astrodome 52** Next Progressives **Skylar Tibbits Pioneers 4D Printing 58**  
Sustainability **Rethinking Water on the L.A. Aqueduct's 100th Anniversary 62** Books **Adaptive Reuse, Illustrated 68**



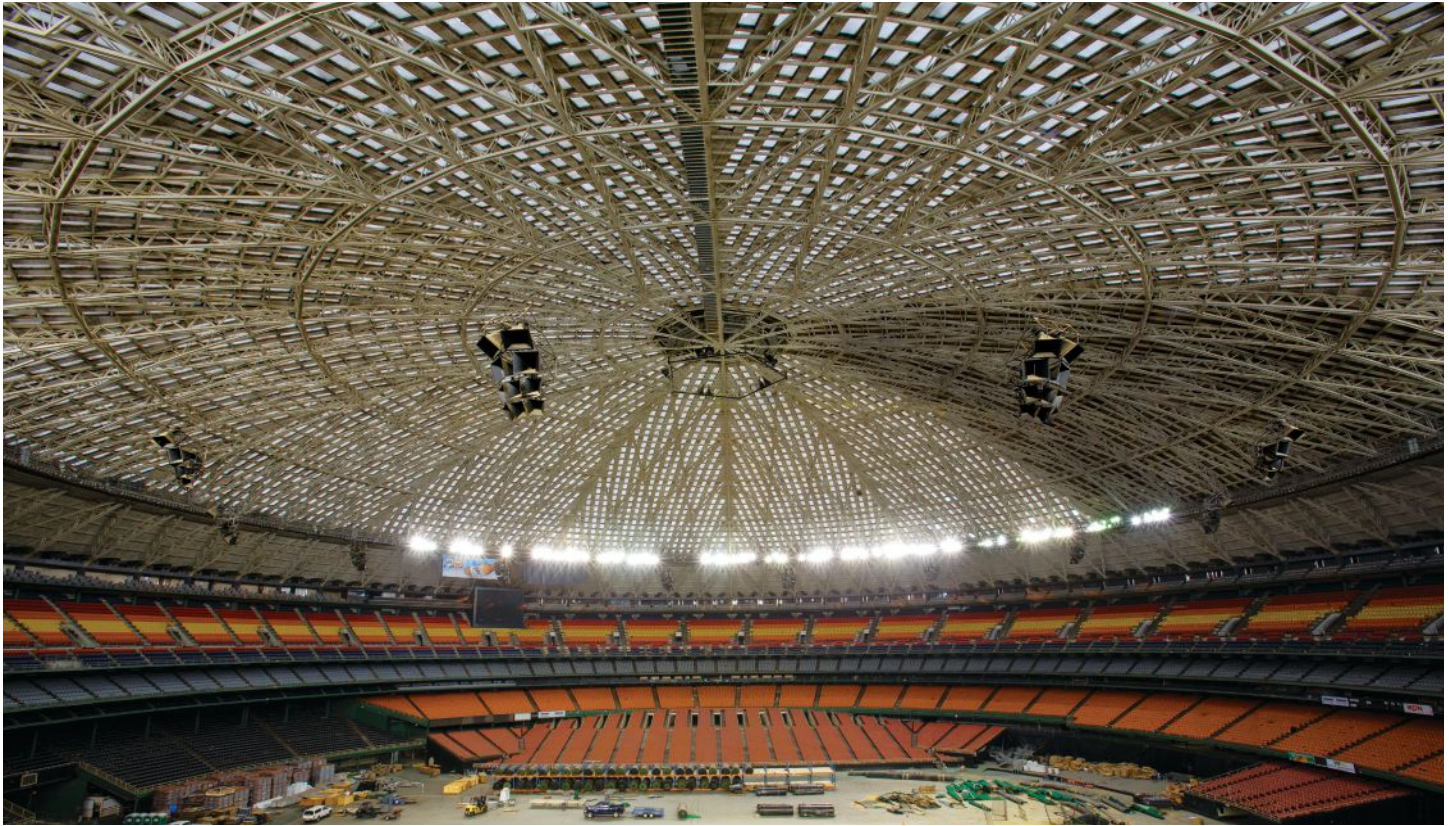
A close-up of some of the 350 spheres that Skylar Tibbits placed inside a 200-gallon fish tank for his Fluid Crystallization project. The spheres, modeled after carbon atoms, self-assemble into intermolecular structures.



## PRESERVATION

# RAZING THE ROOF

HOUSTON VOTERS REJECTED A PLAN TO FINANCE THE ASTRODOME'S REDEVELOPMENT, BUT NOT BEFORE SNAPPING UP STADIUM MEMORABILIA AT A FIRESALE. WILL THIS MIDCENTURY ICON ESCAPE DEMOLITION?



Text by **Christopher Hawthorne**  
Photos by **Nathan Lindstrom**

**THE PARKING LOT** of the giant Reliant Park complex, which is located 5 miles south of downtown Houston and includes both the famed Astrodome and hulking Reliant Stadium, home of the National Football League's (NFL's) Texans, opened at 6 a.m., while it was still dark out. People started lining up soon after outside a large hangar-like conference center next to the two stadiums. And by 8 a.m., with a substantial queue already snaking along the corridors, one of the more peculiar yard sales in American history was underway.

The available merchandise included squares of AstroTurf, bright orange seats, sections of scoreboard, and other objects recently removed from inside the Astrodome, which opened as the world's first domed stadium, a marvel of engineering muscle and perfect climate control, in 1965. Even the

record player and stacks of vinyl once used by the dome's DJ were up for sale. Larger items, including turnstiles and dugout benches, had been set aside for a live auction later in the day.

Voters in Harris County, which includes Houston, were on that clear November morning just three days away from deciding the fate of Proposition 2, a bond measure seeking to save the Astrodome by raising \$217 million to turn the stadium into a multipurpose event space. Houston firm Kirksey Architecture had produced preliminary designs for something called "The New Dome Experience"; renderings showed the seats taken out and the interior of the stadium remade as the setting for skateboard competitions, trade shows, and other gatherings.

Proposition 2 had attracted intense media coverage in Houston, where many voters think of the stadium—which was once home to Major League Baseball's Astros and the NFL's Oilers, but has been empty and unused since 2009—in



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nostalgic terms. “I remember skipping school to be an extra in a *Bad News Bears* movie being filmed inside the dome,” a woman named Kris Thompson told me as she waited in line to register for the sale. “That was a big deal—my parents never let me out of school!”

The “Astrodome Yard Sale and Live Auction,” as the event was billed, had a faintly macabre feel, as if buyers were picking over a few choice bones of a carcass before it was clear whether the body itself would survive. But for the most part, fans of the Astrodome who’d gathered for the sale were optimistic about the vote. The most recent polling had Proposition 2 leading by a comfortable margin, roughly 55 percent to 45 percent.

Out in the parking lot, a similar good cheer was evident inside a 26-foot-long truck that had been rented by the group Preservation Houston and remade as a “Dome Mobile.” Its exterior was plastered with signs in support of the ballot measure and renderings of “The New Dome Experience.” Inside, visitors were asked to write their memories of the Astrodome on Post-its and stick them on the wall, where they created a collage of postwar Houston sports and pop culture, filled with references to Oilers running back Earl Campbell, Astros pitcher J.R. Richard, and concerts by Selena and Garth Brooks.

Greeting the truck’s visitors was a group of preservation advocates, including Beth Wiedower, a senior field officer with the National Trust for Historic Preservation. The Trust issues an annual list of America’s “most endangered historic places,” and this year added the Astrodome, alongside the Worldport at JFK Airport and the Gay Head Lighthouse in Aquinnah, Mass., to the list. The Astrodome, the Trust said, was “designed to embody Houston’s innovative, entrepreneurial, and space-age development as a major U.S. city.” But “without a viable reuse plan,” the group warned, “the Astrodome will likely succumb to calls for demolition.”

**THE ASTRODOME’S IMPORTANCE**, as a piece of both architectural and cultural history, would be hard to overstate. It was designed in the early 1960s as the brainchild of a colorful county judge and former Houston mayor named Roy Hofheinz, who’d helped spearhead the effort to bring a major league baseball franchise to Houston. The team joined the league in 1962 as the Houston Colt .45s, in honor of the famed Texas firearm.

The construction of a new domed stadium for the team was part of Hofheinz’s pitch to major league baseball. While the Astrodome was being built south of downtown, the Colt .45s played in a temporary open-air structure, Colt Stadium, next door to the construction site.

For many Houstonians, residents of a place known as “Bayou City,” the experience of sitting outside during summertime games that first season summed up precisely why a dome was necessary: days were sweltering, nights humid and buggy. Along with hot dogs and beer, the concession stands sold fly swatters.

Hofheinz hired the Houston architects Hermon Lloyd and W.B. Morgan, in collaboration with local firm Wilson, Morris, Crain and Anderson, to design the dome. He also consulted with Buckminster Fuller, whose geodesic dome experiments were an inspiration for the shape of the new stadium. The result was a perfectly symmetrical stadium wrapped in slender concrete columns, its exterior daubed with light decoration in the form of a concrete lattice.

It was the mid-1960s, after all; the architects to watch were Edward Durrell Stone, Minoru Yamasaki, and William Pereira. The Astrodome incorporated the same late-modern taste for modest ornamentation that they were adding to skylines across the country. The playing field was sunk 30 feet below grade, giving the dome, despite its broad shoulders, a relatively modest silhouette. Inside was the biggest single room in architectural history: a vast column-free space 200 feet high at the apex of the dome and stretching more than 600 feet across.

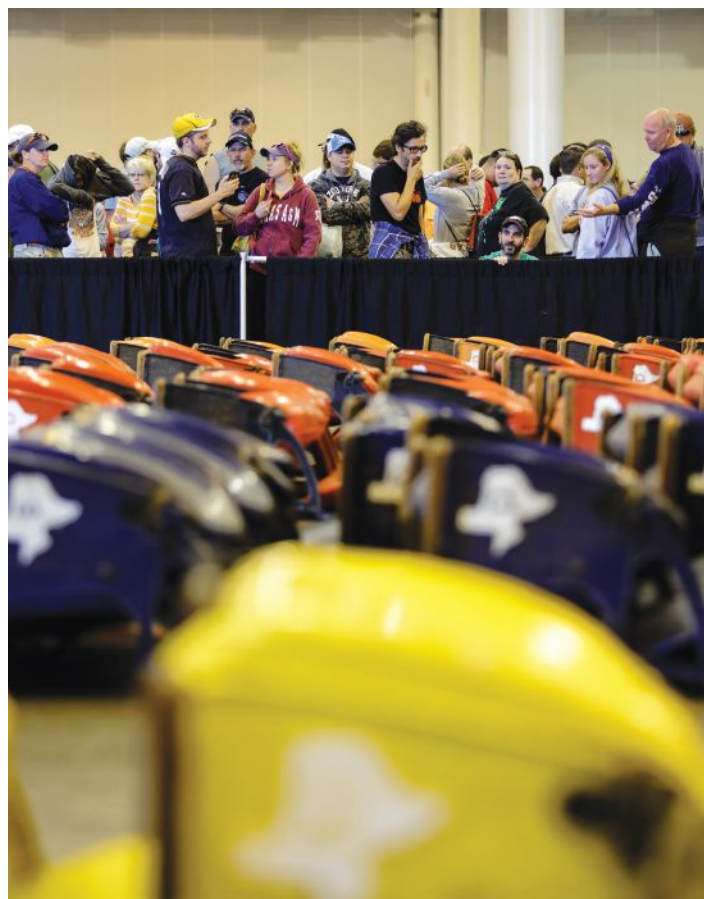
When the dome was ready, in time for the 1965 season, it was officially named the Astrodome, a nod to Houston’s growing role in the American space program. The Colt .45s became the Astros. The team’s groundskeepers wore astronaut suits. The female ushers were known as “Spacettes.” “Bayou City” was reinventing itself as “Space City,” and the dome was the emblem of the new identity.

The Oilers joined the Astros as dome tenants in 1968. The dome hosted the second “Battle of the Sexes” tennis match between Bobby Riggs and Billie Jean King in 1973 and the Republican National Convention in 1992, where it was the backdrop for George H.W. Bush’s “thousand points of light” speech.

But what really makes the Astrodome important, and worth saving, is how perfectly and powerfully it sums up a moment, and an attitude, in postwar U.S. culture. There is no other American building that suggests so strongly how ambitious, confident, and blithely ignorant of environmental limits—or limits of any kind, really—this country was in the 1960s. The dome suggested that nature was more nuisance than threat, something that could be kept comfortably and completely at bay. As Douglas Pegues Harvey wrote about the Astrodome in 1990, the simple notion of playing games inside, in a climate-controlled







In early November, 10,000 people gathered at the Astrodome for an auction and sale of stadium memorabilia. Items included space helmets worn by the original grounds crew members (top left) as well as stadium seats (top right). A message scrawled on the exterior (bottom) reveals the nostalgic attachment many residents have for the stadium.



## CENTER



The Astrodome has a relatively modest silhouette, because the playing field inside was sunk 30 feet below grade.

and entirely modern dome, had the profound effect of freeing sports from their “dependency on Nature’s caprice and God’s sky.”

Now, of course, that attitude seems both quaint and horribly naive. These days the architectural symbols of our relationship with the environment suggest a culture full of anxiety about global warming and other threats; there is no sense of trying to dominate nature, only a hope of producing buildings and cities flexible enough to survive its substantial and seemingly growing wrath. Nature’s caprice looks much darker to us now than it did when Harvey wrote that piece in 1990, to say nothing of the attitude in 1965.

The Astrodome—and domed architecture more broadly—stands right at the pivot point of this transition. After Hurricane Katrina hit New Orleans in 2005, tearing parts of the roof off the Superdome, a 1975 building designed as a bigger and bolder copy of Houston’s stadium, hurricane victims were bussed west to Texas. Hundreds took shelter on cots inside the Astrodome. Roy Hofheinz’s chickens had come home to roost. Pictures of those two domes in the weeks after Katrina put to rest for good the idea that architecture could ever perfectly seal itself off from natural and environmental threats.

For its part, the Astrodome had already lost much of its luster by 2005. Outclassed by new venues, left behind in the 1990s by the idea that baseball should be played in its own custom-designed stadiums, preferably in the center of a city, the dome saw the Oilers move to Nashville and become the Tennessee Titans in 1997. The Astros left for a new ballpark in downtown Houston two years later. When the NFL gave Houston a replacement franchise in 2002, the

team built its new home, Reliant Stadium, not just next door to the Astrodome but so close that it seemed to be shoving the older building out of the way. The dome, for so long known as the Eighth Wonder of the World, was not just figuratively but literally overshadowed by its new neighbor.

**BY EARLY EVENING** on election day, Nov. 5, supporters of Proposition 2 were starting to get nervous. The first returns were coming in, and they suggested voters had soured on the measure. Houston and Harris County are well-known as bastions of free-market economics, where distrust of government runs high; tax raises and bond measures are notoriously difficult to get passed. Astrodome supporters hoped that nostalgia for the stadium and its role in Houston history would outweigh voters’ concerns about debt. But as more votes were counted it became clear that the proposition was doomed. The final tally was 128,616 votes against and 112,087 for, a margin of 53.5 percent to 46.5.

Almost immediately the finger-pointing began. The Proposition 2 campaign had been unfocused and underfunded, some fans of the Astrodome said. It was unclear how a revived Astrodome would support itself over the long haul: Were there really that many skateboard competitions and trade shows waiting to fill its revamped interior? It made little sense, others said, to put the measure to voters on a year without congressional or presidential races on the ballot, when voting would likely be light and skew toward older, more fiscally conservative residents. Turnout on Nov. 5 in Harris County was a paltry 13 percent.

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It was possible, though, to spin the election results in a positive direction. Given the vagueness of “The New Dome Experience” plan and the light turnout, getting 47 percent of the vote for a bond measure supporting preservation in Harris County was perhaps something for supporters of the dome to rally around. And, indeed, in the weeks following the vote a fragile conventional wisdom seemed to be emerging that the city and county would find some way to save the Astrodome. Since Harris County owns and operates all of Reliant Park, including the dome, county officials had spearheaded efforts to get Proposition 2 on the ballot. But recently there’s been a push among city officials to get involved.

*The Houston Chronicle* published an editorial on Nov. 22 praising the city’s Archaeological and Historical Commission for beginning the process of giving the dome landmark status. That wouldn’t be enough to lend the building full protection, but it would put a 90-day delay in place for any planned demolition. In a larger sense, the editorial suggested that the wheels were beginning to turn at City Hall on the dome’s behalf—and that the vote on Proposition 2, even if it hadn’t gone preservationists’ way, might perhaps be a prelude to other efforts to keep the dome standing.

One option—simpler and cheaper than “The New Dome Experience”—is to lobby the Texans and the NFL to help pay to turn the stadium into a kind of glorified anteroom or entry hall, capable of holding fan festivals, public practices, and other events, for Reliant Stadium next door. The Texans will be hosting the Super Bowl in 2017, offering an obvious

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THERE IS NO OTHER BUILDING THAT SUGGESTS SO STRONGLY HOW AMBITIOUS, CONFIDENT, AND BLITHELY IGNORANT OF ENVIRONMENTAL LIMITS AMERICA WAS IN THE 1960S.

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and attractive deadline to get some minimum restoration work done on the Astrodome.

“The first installment of the Save the Dome drama was a disappointment,” the *Chronicle* editorial concluded. “We’re hoping for a sequel.”

**THE DECLINE AND POTENTIAL DEMISE** of the Astrodome is a story that reveals a good deal about the ironies and complexities of present-day Houston. A city built on oil and cheap energy is ready to demolish its most famous building, which was always an energy hog, and cart the rubble off to a landfill somewhere. Houston is a churning place of continual reinvention; this is one of the qualities that makes it so fascinating and open to innovation and, at the same, time so ripe for lazy stereotype. (Culturally, it just might be America’s most underrated city.) But it certainly doesn’t make it a place that takes very good care of its monuments, since they undermine Houston’s self-image as a place unburdened by the past.

Still, there is a change happening in Houston, as the city confronts the idea that its most important pieces of architecture have not just local but national significance. Transitions of this kind often require the sacrifice of important structures, though, and the Astrodome, still hanging in the balance, may sadly prove to be the necessary martyr, the East Texas version of New York’s Penn Station or Irving Gill’s Dodge House in L.A., the building whose destruction helps give Houston a new and clear-eyed view of itself.

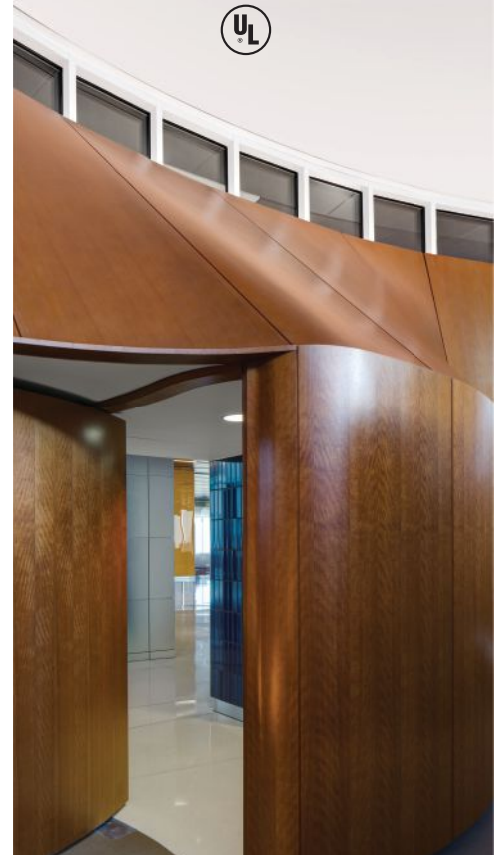
That’s the final irony here: Authentic preservation movements often can’t gain cultural traction until a really important building is razed. They feed on rubble.

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NEXT PROGRESSIVES

# THE NEXT DIMENSION

A FISH TANK WITH SELF-ORGANIZING STRUCTURES. 4D PRINTING. THE PROJECTS IN SKYLAR TIBBITS'S MIT LAB ARE PUSHING THE BOUNDARIES OF CONSTRUCTION.



Text by **Wanda Lau**  
Photo by **Noah Kalina**

**TIME IS ON** Skylar Tibbits's side. And it's not just because at an age when many students are finishing M.Arch. programs or experimenting with career paths, Tibbits, 28, is directing his own research group, the Self-Assembly Lab, at the Massachusetts Institute of Technology (MIT). If you've heard about 4D printing, it's likely due to Tibbits, who coined and popularized it with numerous TED Talks. The fourth dimension? Time, of course.

Tibbits has built the practice he founded, SJET, around generative design, digital fabrication, and robotics. It was during a 2006 stint at the office of Zaha Hadid, Hon. FAIA, that he found his calling. "That was the first time I saw someone writing code to generate architecture. I was just like, 'Whoa, OK,' and then I started teaching myself how to write code."

He earned dual M.S. degrees in architecture and computer science at MIT in 2010, the same year that NADAAA principal Nader Tehrani became head of the school's architecture department. A proponent of emerging digital and fabrication technologies, Tehrani offered Tibbits a faculty position, a rare opportunity for a newly minted graduate.

Tibbits belongs to the new class of designers whose projects span multiple disciplines and include more lab work than site work. His frustration with the laborious construction process is what led him to pursue the fourth dimension of printing: programming objects with the ability to self-transform over time. "Architects should be ... using their skill sets and the ability to think radically, and push the boundaries of what's possible," he says. "It's a really vital time because in almost every field—synthetic biology, chemistry, physics, material science—there's a boom around design tools and software."

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Cross-laminated timber (CLT) can be used for an entire building or any combination of wall, floor/ceiling and roof applications. Photo: KK Law, courtesy naturallywood.com

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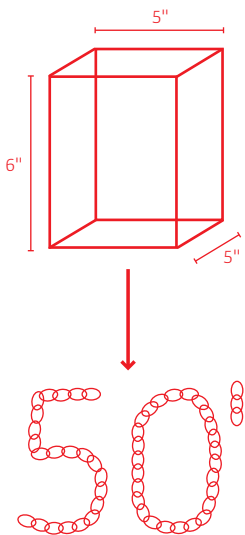
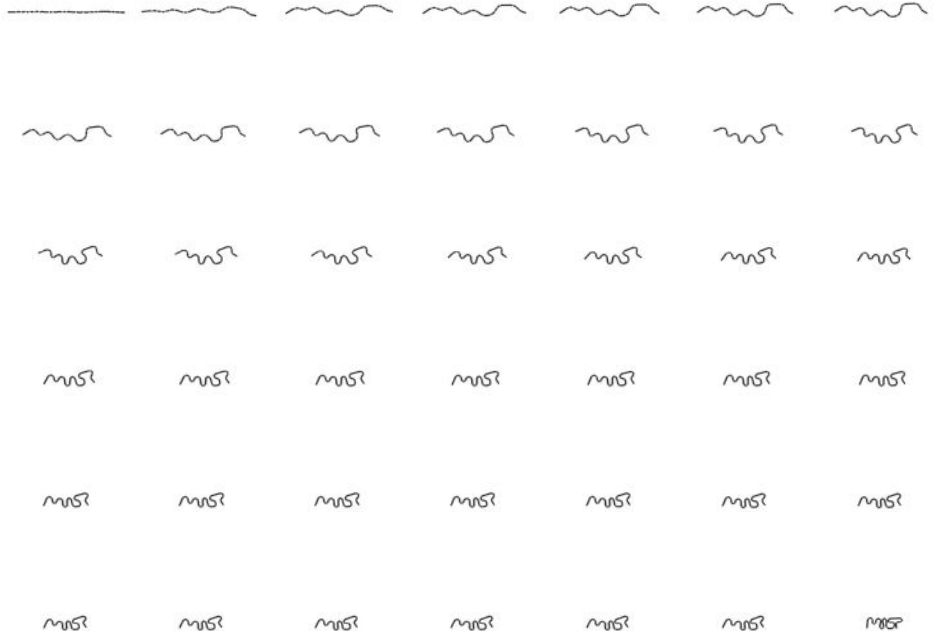
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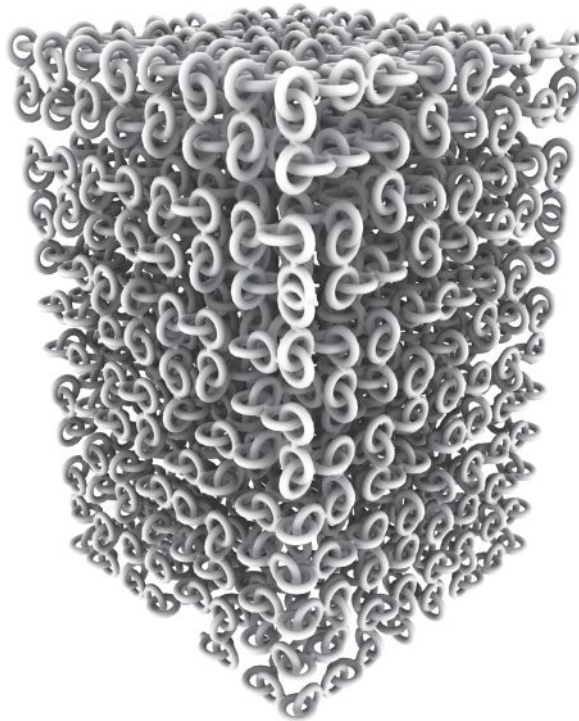


In a chance meeting at a coffee shop near MIT, Tibbits asked a 3D-printer company representative why the structures he printed couldn't fold on their own. And the idea for 4D printing was born. Strands are a common theme in Tibbits's work. 1D printing results in linear strands, a shape commonly found in building components such as cables and beams. Transitioning to 2D printing is straightforward, he says: "It's either grids of 1D elements, or it's filled-in surfaces" such as a sheet. 3D printing begins to enter the realm of self-assembly, where components with fixed properties and shapes can come together to form new objects if given an energy input.

Objects that are 4D printed have the capability to transform themselves over time. These smart materials are embedded with programmed behavior and combined in a multi-material structure. For instance, the multi-material strand on the right comprises a rigid material that provides shape, and a polymer that expands 150 percent in water, providing the transformation capability. In 15 or 20 minutes, the linear strand placed in hot water self-folds into the acronym "MIT." Tibbits, who is collaborating with Stratasy and Autodesk on the project, envisions that such materials can tackle inefficiencies in construction and design. He is currently working with Geosyntec Consultants to design flexible pipes that can expand, contract, or undulate to vary flow rate as needed.



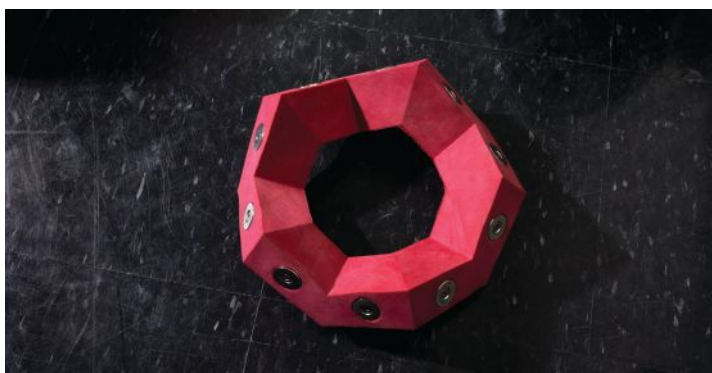
In Hyperform, Tibbits printed a 50-foot-long strand, as well as a chandelier that ultimately expanded to eight times the volume of the standard print bed.



3D printing is becoming cheaper and more precise, but to become a serious contender in manufacturing, it must be able to print large, human-scale objects. Tibbits sees three potential solutions. The first solution is to make bigger printers, which he dismisses. "If you want to build a skyscraper, you don't want to have to build a skyscraper-size machine." The second is to employ multiple printers. But "not everyone has access to lots of printers," he says, and assembly remains an issue.

The third solution is to displace density, or strategically compress a large-scale object to fit into the small volume of current print beds. In Hyperform, Tibbits and his collaborators Marcelo Coelho and Formlabs investigate ways to maximize what can be printed through digital folding. First, a given object is broken down into a linear strand of individual units connected by universal joints notched at preset angles, which will later guide assembly. The chain is then folded into a super-dense 3D Hilbert curve to fit within the bed size and printed. Then, it is unraveled and assembled. Through this technique, Tibbits has printed a 50-foot-long strand and a chandelier fixture with a final volume eight times that of the 5-inch-by-5-inch-by-6-inch print bed. Admittedly, the assembly process could borrow some lessons from the 4D-printing realm, Tibbits says. "Although there is a lot of clicking, it has the coding [embedded in the printed joints] so there's no decision-making in the assembly process," he says. "It's like if you couldn't fail Ikea."





Self-Assembly Line (above and middle left) builds on an earlier project in which a 3D-printed model of a virus capsid could be shaken apart or together in a laboratory flask (bottom left), and enlarges the scale to that of furniture. “The vision here is ... to program things to come together in nonrandom ways, even with random energy,” Tibbits says. (His collaborators include Seed Media Group, TED Conferences, Autodesk, and Arthur Olson, director of the Molecular Graphics Laboratory at the Scripps Research Institute.) The disorderly parts would come together “to build an ordered, precise structure using noisy, cheap energy.”

Self-Assembly Line combines a discrete set of module components with a universal geometry and is outfitted with attraction mechanisms, or magnets, inside a larger container. With the addition of an energy input via a stochastic, or random, rotation—in this case, rolling the container along the plaza—the units contact each other and self-align into predetermined configurations. By varying external conditions and forces, unit geometries and quantities, and the attraction forces—here, the polarization of the magnets—Tibbits sees many potential applications for programmable self-assembly in architecture, such as the construction of multistory structures activated by wave undercurrent energy. It can also apply at the other end of the life cycle, where products can self-disassemble for recycling.



## SUSTAINABILITY

# WATERSHED MOMENT

THE L.A. AQUEDUCT USHERED IN THE ERA OF BIG WATER INFRASTRUCTURE IN THE WEST. NOW HADLEY AND PETER ARNOLD AT WOODBURY'S ARID LANDS INSTITUTE ARE TRYING TO MAP A NEW COURSE.

Text by **Reed Karaim**

Aerial photos by **Michael Light**

Portrait by **Andy J. Scott**

**EVERY GREAT CITY** has its defining mythology and its pantheon of local gods. In Los Angeles, no figure looms larger than William Mulholland. One hundred years ago, Mulholland, a self-taught Irish immigrant and former ditch cleaner who rose to head the Los Angeles water department through unstinting work and sheer force of personality, stood at the bottom of the brand new Los Angeles aqueduct. The aqueduct, a marvel of both engineering and political manipulation, had been built to bring the young city a plentiful supply of water from the Owens Valley, set against the Sierra Nevada Mountains 220 miles to the north. More than anyone else, Mulholland had made this happen. On Nov. 5, 1913, a crowd had gathered to celebrate the aqueduct's opening. It had already been a long day full of speeches when Mulholland rose to address them. All he did was gesture to the water flowing from the aqueduct. "There it is," he said. "Take it."

With those five words, Mulholland wrote the history of the American West for the next century. As the region filled with millions of people, water would be moved, stored, stolen, used, and reused through a massive remaking of the landscape that may be without equal in human history. Dams larger than any attempted before would be built, canals would stretch hundreds of miles to reach cities such as Phoenix, rivers would be dredged, straightened, and even made to run backwards. Whole communities would be submerged beneath huge reservoirs. All this to create an illusion in the largely arid land that extends west from the Great Plains that water was as plentiful as it was in the East—you didn't have to think about it, you could just take it.

Home building and landscape and urban design throughout much of the West have proceeded from the idea implicit in

Mulholland's proclamation. But on the 100th anniversary of the aqueduct that started it all, Peter and Hadley Arnold, who founded the Arid Lands Institute at Woodbury University in Burbank, Calif., are proposing an alternate vision for the future. They're calling their initiative "Divining LA: Drylands City Design for the Next 100 Years," and it seeks to fundamentally change the way western cities view water. The Arnolds hope to gather experts from a variety of disciplines, including the sciences, architecture, landscape architecture, and urban planning, to rethink how we design our buildings, neighborhoods, and cities. As climate change and continued growth squeeze the West's water infrastructure, "Divining LA" stands in opposition to the fantasy of limitless freshwater flowing from some distant source. "It's a paradigm shift," says Peter Arnold. "Given the excessive demand on our imported water supply, it's really looking at how we can better manage and locate water locally."

The effort asks architects to think more carefully about how buildings fit into a larger







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picture: the mostly unnoticed passage of water as it falls on, moves across, and sinks into the ground. “We first have to break through the invisibility of water systems,” says Hadley Arnold, “the idea that water is just something that shows up in a pipe.”

**THE HYDROLOGY OF ANY CITY**, or even neighborhood, can be complicated. As a case study, the Arnolds have worked out a series of detailed maps of the San Fernando Valley, where Burbank is located. One map traces the path of rain runoff through the valley, showing how it moves, where it settles. Combined with maps of the aquifer, including areas where groundwater is unsuitable for consumption because of past contamination, the study reveals a complicated hydrological system, and how every acre of the valley fits into it. The effort is intensive, requiring careful study of soil types, land contours, the built environment, and the history of previous development. “The idea is we really want to capture as much water as possible,” says Peter, “but we also need to capture it in the right places.” The combined maps show “us the best places for water infiltration.”

In fact, the rain lost to runoff in much of the urban West is the difference between a never-ending search for water and largely sustainable communities. “Local water provided by water recycling and stormwater capture could provide 82 percent of Los Angeles’s current needs,” says Peter. “That’s not [our statistic]; that’s from the Metropolitan Water District.”

The implications are profound for designers. First, rooftop water capture becomes much more significant when you realize the importance of precipitation in arid or semi-arid regions. In the 85 percent of Los Angeles now impermeable to water, “a whole lot of that area is a whole lot of roofs,” says Hadley.

Second, understanding local hydrology provides a roadmap to sustainable design. Lots in natural infiltration areas should be designed to hold water, while streets or parking lots should be permeable or built to capture and channel water into the ground. Above contaminated parts of the local aquifer, water needs to be carried away to a spot where it can be safely captured. “Architects like to look at the object in the field,” Peter says. “Our approach is to look at the field of objects.” Hadley notes that a benefit is communities built to “a specificity of place” that escapes the homogeneity of so many western cities built in defiance of their actual location and climate.

The Arid Lands Institute, which operates as an independent education and research center, works closely with Woodbury’s architecture school. Among the institute’s programs is a graduate degree in Drylands Design open to





Big water infrastructure in L.A. dates back to the opening of the aqueduct in 1913. To increase its water supply, the city also constructed a second aqueduct, completed in 1970. **Opposite top:** The cascades near Sylmar, Calif., where both aqueducts terminate. When the nearby hydroelectric plants are offline, the water flows down the cascades before entering the Van Norman Reservoir. **Opposite bottom:** The Tujunga Wash, a tributary of the Los Angeles River. **Left:** The Yarnell Debris Basin, located between the Upper Van Normal and Lower Van Normal Lakes in Granda Hills, Calif., captures soil runoff and diverts stormwater to the Santa Monica Bay.

applications who hold a first professional degree in architecture or landscape architecture. Student research explores the implications of working with sustainable water use in building and landscape design. “Divining LA” hopes to take that exploration even further, bringing scholars and others together to broaden the understanding of how the built environment, landscape, and changing climate interact. If the modern West was built on water, then many designers across the region are starting to take a fresh look at that foundation.

**THE WATER THAT FIRST FLOWED** down the L.A. aqueduct in 1913 was a tumbling blue cascade that looked good enough to drink right from the chute. But there was nothing pure about the way the city had wrestled control of it from the farmers and towns in the Owens Valley. As outlined in *Cadillac Desert*, Marc Reisner’s definitive history of western water battles: “Los Angeles employed chicanery, subterfuge, spies, bribery, a campaign of divide-and-conquer, and a strategy of lies to get the water it needed. In the end, it milked the valley bone-dry.”

Today, Owens Lake, once the heart of a rich agricultural valley, is largely an arid alkaline

flat. Los Angeles has to use 30 million gallons per year to keep down the dust in the valley, enough water to meet the needs of the entire city of San Francisco. The story of the Owens Valley is the story of the West in miniature: a bitter struggle over a scarce resource with the biggest players—usually cities and large-scale agriculture—winning out over the less powerful.

The irony of this history is that even in the desert Southwest, most communities do almost nothing to capture what precipitation they get. Because rain rarely falls, cities were often built without drainage systems. In Tucson, Ariz., annual rainfall measures only 11 inches or so, but much of it comes during torrential summer monsoons, flooding streets and washes before running off into the surrounding Sonoran Desert too quickly to do much good.

Yet even in Tucson, a local water guru named Brad Lancaster has become famous in sustainability circles for living almost completely on the water that falls on his small urban lot. He captures and stores rainfall from his roof, recycles wastewater, and has carefully contoured his yard so that the city’s scant precipitation feeds a verdant garden. Ron Stoltz, a professor of landscape architecture at the

University of Arizona in Tucson, says what Lancaster has accomplished isn’t an illusion. “There’s enough water that falls in Tucson that if we used it all, we wouldn’t need to import water,” he says. Capturing every drop of precipitation is “an engineering impossibility,” Stoltz adds, “but, obviously, the more we can capture and use, the less we need to import.”

In 2007, when the University of Arizona’s Department of Architecture, Planning, and Landscape Architecture built a major addition to its building, it decided to make the structure and grounds a model of intelligent water use. “We claim that this is the most integrated landscape and structure in the arid Southwest,” says Stoltz. “The building is a classroom.”

The new addition, designed by Jones Studio in Phoenix, captures rain from the roof and condensate from air-conditioning units, storing it all in an 11,600-gallon storage tank integrated into the structure. The rooftop yields about 85,000 gallons per year, while the air conditioners provide another 95,000 gallons. “We get more water from condensate than anything else,” Stoltz says. An additional 45,000 gallons comes from water back-flushed from drinking fountains.

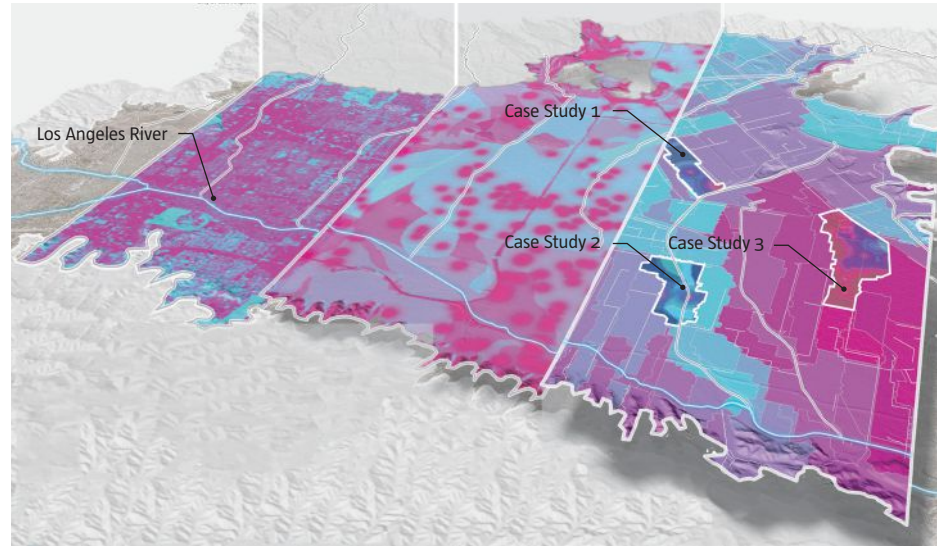
The water is used to irrigate the 1.2-acre Underwood Family Sonoran Landscape Laboratory on the building's grounds. The Underwood Garden, as it's known, includes an 8,000-gallon pond fed by captured water that functions as a desert wetlands, complete with a stock of local fish and amphibians. The wetlands is one of five different Sonoran habitats incorporated into the garden, which has been designed to illustrate how landscapes can be contoured to control runoff and allow for maximum infiltration. In a heavy rain, the pond floods other parts of the garden in a sequence that allows water to pool and soak into the soil efficiently. Microbasins in the landscape capture an additional 10,000 gallons a year.

The result is a desert oasis, rich with native vegetation, which is almost completely self-sustaining. The project required close collaboration between Jones Studio and the firm that designed the landscape, Austin-based Ten Eyck Landscape Architects. Stoltz believes this approach will become more common in the future. "Every student that leaves here is drilled with water sustainability as one of the core values," he says. "We didn't invent this stuff," he adds. "The Native Americans were doing it first. The early settlers were doing it."

**PETER ARNOLD FIRST FELL IN LOVE** with the mysteries of the western landscape growing up in Lakewood, Colo. He was fascinated by the way dams and other manmade water management features in the countryside were so taken for granted by residents that they went largely unnoticed. He and Hadley, who both attended the Southern California Institute of Architecture in Los Angeles, took long trips through the region so he could photograph this infrastructure and its relationship to the natural terrain. Hadley says she realized that if she was going to be out roughing it with her husband, she might as well learn something in the process. When you look closely, she says, "the land offers up its own set of lessons, and those lessons connect back to the native peoples."

The Puebloan peoples in Southwest, who date back hundreds if not thousands of years, were masters of shaping the earth to capture and channel rainfall, allowing them to grow hardy, indigenous crops in the desert. The Arnolds regularly take groups of students on extended trips into the American outback to study how the land was shaped by native cultures and the modern water infrastructure on which we now depend. Philip Burkhardt, a research fellow at the institute in 2011, remembers a field trip to New Mexico vividly. He was struck by the applicability of many ancient practices, which couldn't depend on pumps or electrical energy, but used "gravity, rocks, and whatever was there"

### Stormwater Retention in the San Fernando Valley



for water management. "There's a local mind-set to the way the pre-Columbian civilizations had to deal with water. ... When you start talking about collecting water on a neighborhood scale those kinds of technologies become really interesting," he says.

Students at the institute also study how other western cultures integrated an awareness of water's scarcity and value into building. The original Trevi Fountain, for example, wasn't just an object of beauty to the Romans, it also conveyed information about the volume of water flowing down the 21-kilometer Virgo aqueduct, one of 11 aqueducts that brought water into the city.

By relearning these values, Hadley imagines a future in which the interplay between place and water is more transparent and widely appreciated. "For example, your eyes would register that a particular spot is a capture zone because of the green space you'd see and the other material used there to hold water and help it infiltrate," she says.

Architecture would also incorporate water systems in such a way that they become part of the beauty of a building while imparting information to occupants. "I'm always dreaming of a house where the roof would capture the water and then you'd store it in a way that it would be visible in the walls," she says. "An awareness of the whole system from the sky to the earth would be part of how we build."

A century ago, William Mulholland gave expression to the western notion that an endless bounty of water waits just over the next mountain. If "Divining LA" is successful, the next century may be marked by a recognition that answers to the West's water needs, like all the best solutions, are found close to home.

The Arnolds created a stormwater runoff model based on 30-year precipitation data, assessed soil types and ground surface impermeability, and analyzed zones contaminated with chemicals to pinpoint areas in the valley best suited for stormwater infiltration and capture. Case studies explore areas that have extensive contamination, sites that are well suited to infiltration, and sites that are a combination of the two.



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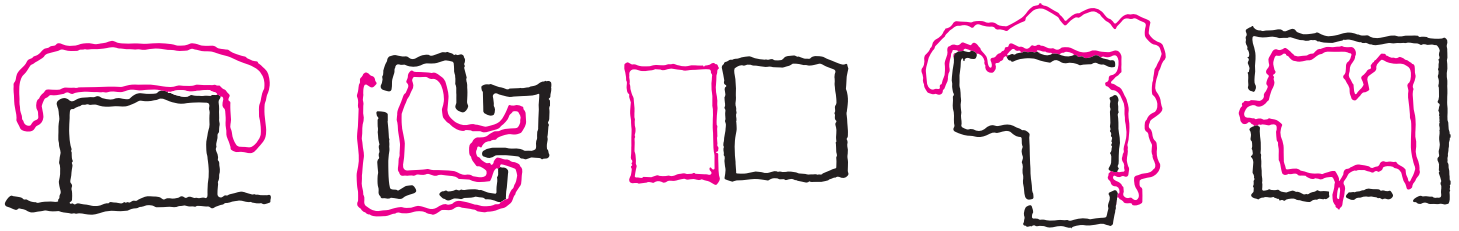
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Text by **Amanda Kolson Hurley**

**A FEW WEEKS INTO** my first year of college in St. Andrews, Scotland, I told a new acquaintance that I was studying history. He smiled archly and said: “Naturally you’ve come here to study history. America doesn’t have any history.”

This conversation happened yards from a ruined 12th-century cathedral, on a street where no building was less than 250 years old. Every stone seemed to lend silent authority to his point—which made it hard for me to argue, being 18, awkward, and foreign. Eventually I switched majors, but not before hearing the same pronouncement a few more times.

If America has a long history of anything, it’s of acute self-consciousness at our relative youth as a country (see the works of James, Henry). The result is a certain zealotry in our approach to historic preservation. Lacking an abundance of old, distinguished buildings, we cling to the few we have and try to consecrate them.

This explains why touring Mt. Vernon is a more religious experience than going

to church. Here are the relics: George Washington’s bedstead, sword, and dentures. Here is the original, inviolate view, protected from the philistines who would dare live or build on the opposite bank of the river. The mission statement of the Mt. Vernon Ladies Association, which maintains the property, likens progress to desecration and implores, “Let one spot in this grand country of ours be saved from change.”

But the preservation movement itself is changing, and no longer stands athwart history yelling, “Stop.” The misguided school of re-creation that gave us Colonial Williamsburg may be headed for extinction. Several years ago, during the restoration of James Madison’s home, Montpelier, the decision to tear down the “inauthentic” 20th-century rooms sparked controversy—a sign of progress in a movement where originalism holds such sway. The time-capsule approach of demolishing the additions, said eminent preservation scholar Daniel Bluestone, cut the house off from the full sweep of its history. “Do you take your preservation in layers?” has become the central question, Bluestone observed.

In her book *Old Buildings, New Forms*, Françoise Bollack divides adaptive reuse projects into five categories, and created a diagram to illustrate each (from left to right): wraps, weavings, juxtapositions, parasites, and insertions.





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**Wrap:** Santa Caterina Market in Barcelona (top), designed by Enric Miralles & Benedetta Tagliabue Architects, reused part of the existing 1848 market building and enclosed the structure with a distinctive and colorful roof. **Juxtaposition:** Empty Nest (middle) in Newtown, Mass., a 2002 project by Della Valle + Bernheimer, merged an addition covered in zinc tiles with an existing clapboard-covered house. **Parasite:** Rucksack House (bottom), a portable cube designed by Stefan Eberstadt, was attached to this former cotton mill building in Leipzig, Germany, in 2004. The cube adds about 100 square feet of extra space to an existing unit.



Increasingly, we do, and we prefer it with a twist rather than straight. Adaptive reuse has beguiled us. Fifteen years ago, we shopped in converted historic buildings when we were on vacation; then we got used to working in them; now we're clamoring to live in them. Since its inception in 1976, the federal historic tax credit has spurred more than \$60 billion in private investment in 38,000 properties. Last year, a full 40 percent of projects claiming the credit were being repurposed from their original uses.

The recent outcry over plans to tear down midcentury landmarks, such as the Houston Astrodome and Prentice Women's Hospital in Chicago, highlights our troubling blind spot for important buildings in their middle age—too old to be au courant and in perfect working order, too young to be seen as properly historic, either by the public or by the guardians of the National Register of Historic Places. Nevertheless, the preservation movement has made extraordinary gains since the fall of Penn Station and has succeeded in changing public sentiment. The market now, by and large, recognizes that a historic structure, even a non-landmark, is worth more than a cleared site. This was the key battle, and the preservationists won it.

Given this victory, and the rise of adaptive reuse, it's strange that we still talk about these projects in such flat, limited terms. Addition, expansion, renovation: Can't we do better? A large, ever-growing body of work deserves a real critical taxonomy, and that is what Françoise Astorg Bollack, AIA, assays in *Old Buildings, New Forms*. Bollack, an architect based in New York, gathers 28 exemplary projects of recent vintage and classifies them by type, as insertions, parasites, wraps, juxtapositions, and weavings. Much of the best work is happening in Europe, where the sheer number of old buildings forestalls any preciousness about them, and where debates like the one over Montpelier played out back in the Victorian era.

Bollack's point is not to establish an ironclad system—she readily admits that some projects straddle categories—but to have a framework for understanding the ideas behind these buildings and the traditions to which they belong. The interplay of new and old varies greatly from a totalizing wrap (Enric Miralles's Santa Caterina Market in Barcelona, blanketed by a roof of colorful tiles) to an opportunistic parasite (the glass ribbon grafted onto a fire and police station in Berlin by Sauerbruch Hutton). Even within the same category, differences emerge: One parasite-building surrounds and hides its host, while another, the 100-square-foot Rucksack House, perches lightly on the side of any host-building from which it's slung.

Bollack believes that all of these approaches are legitimate, so long as the end result is both



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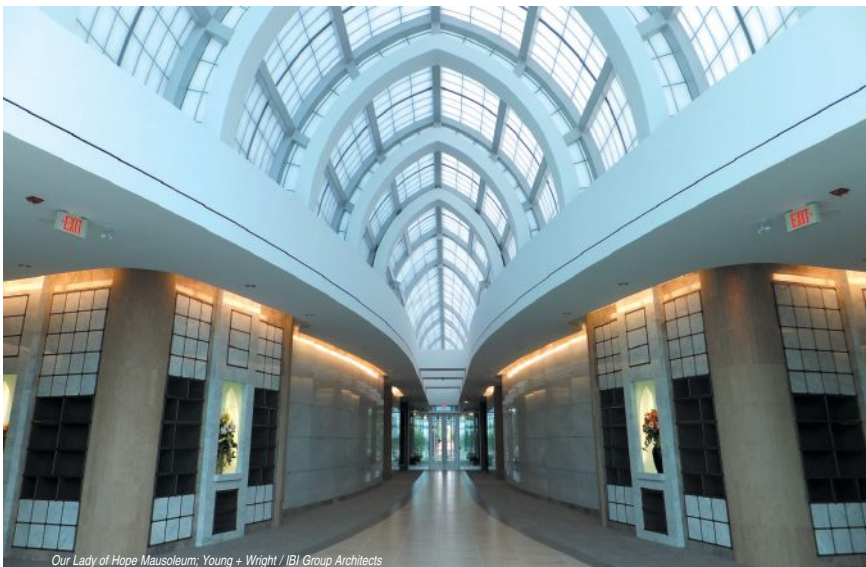
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**Insertion:** A crane dropped a new shell of weather-resistant plywood inside a 200-year-old abandoned pigsty in Rheinland-Pfalz, Germany, a 2004 project by FNP Architekten (left). The “house within a house” is now used as an occasional showroom and meeting place. **Parasite:** Will Alsop's Sharp Center for Design (right), a 2004 addition to the Ontario College of Art and Design, rises 85 feet above the Toronto streetscape on multicolored chopstick-style supports.



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beautiful and useful. *Old Buildings, New Forms* is about “the creative possibilities of preservation,” she writes, a topic that needs to be understood by the public at large, but especially by “review commissions, patrons, and preservationists, who are often made uncomfortable by [this architecture] and ... oscillate between total approval and total rejection.”

The best projects in the book would be hard to reject on any grounds. Mass MoCA by Bruner/Cott Architects and Planners, Bernard Khoury's La Centrale Restaurant in Beirut, and Berlin's Neues Museum by David Chipperfield Architects spin thrilling architecture out of their complex negotiations with the past. Other projects raise unsettling questions. Does the massive roof that Bernard Tschumi, FAIA, designed over a historic leisure-park complex in Le Fresnoy, France, protect the old structures or trivialize them? Or both?

In her essays, Bollack uses muscular language that emphasizes the agency of the designer, who might thread, stitch, weave, knit, or patch new material to the old. She also squares up to the ambiguities of the architecture. Le Fresnoy turns the original buildings into objects under an umbrella, and was driven by political branding as much as by the programmatic need for more space, she admits. Will Alsop Architect's Sharp Center for Design, hoisted 85 feet above a Toronto street on giant chopsticks, is “impossible to describe

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in the usual architectural and urban design terms," Bollack writes. "One would expect such a huge, levitating box to be threatening and oppressive. It is not. One would expect such an obviously out-of-scale, non-contextual design to be, literally, a blockbuster. It is not."

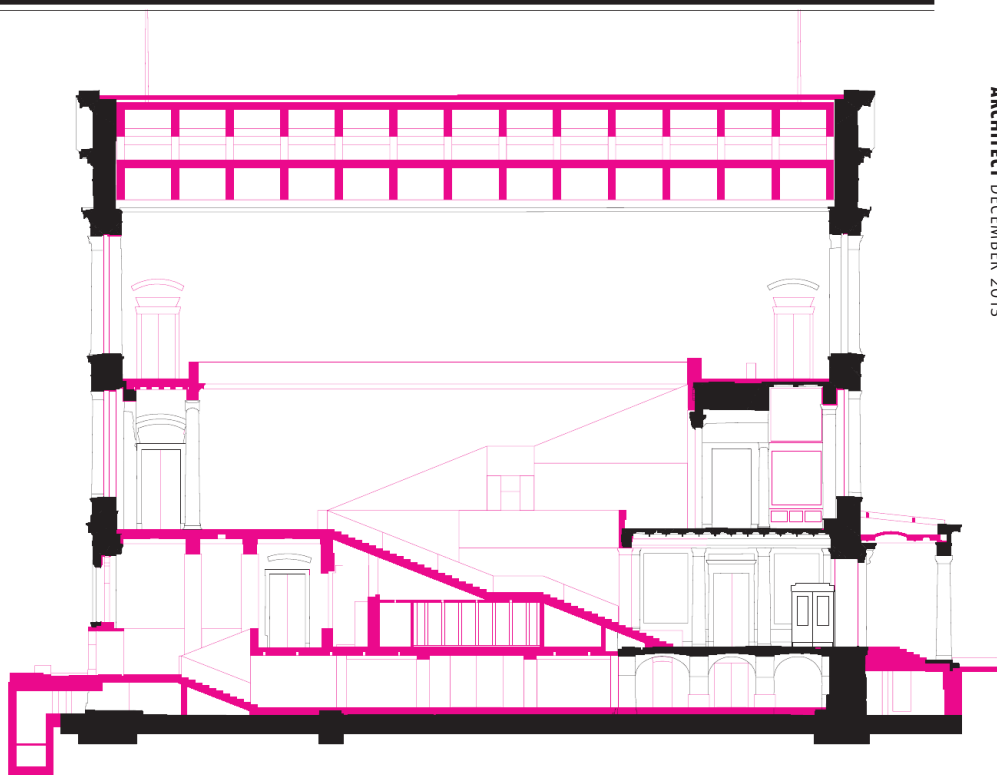
Smaller, less familiar projects are also here and are fun to discover. Della Valle + Bernheimer hitched a zinc pod (Empty Nest) to a suburban Massachusetts house like an Airstream trailer to an SUV. In a German forest, FNP Architekten inserted a plywood box into a ruined pigsty, creating a folly that scrambles definitions of temporary and permanent, liner and shell.

Bollack locates the common source of all these design strategies in the 1950s and '60s, when conceptual art sparked an interest in found objects and conditions, collages and juxtapositions, and when Jane Jacobs and Robert Venturi prompted a rethink of strict modernist consistency and an appreciation for the diversity of historical styles and the vernacular. "Conceptual art ... provides the richest inspiration for the recent architectural designs that are the subject of this book," Bollack writes. She quotes Sol LeWitt: "The idea becomes the machine that makes the art."

In support of her argument, the architects included here cite Venturi, Gordon Matta Clark, and Eva Hesse as influences. But reading this work as scaled-up conceptual art seems overdetermined. One architect describes his approach as "reverse archaeology," and surely the influence of that field is just as important for designers who recover fragments, shore up ruins, and make palimpsests legible.

In Bollack's opinion, new-old architecture is where design innovation is happening, as opposed to the merely new, which has gone stale with vacuous form-making. Limitations liberate. The judges of this year's Stirling Prize would no doubt agree, having given top honors to Astley Castle, a dilapidated 16th-century English manor house brilliantly restored for the Landmark Trust. The prize jury commented that the winning firm, London-based Witherford Watson Mann Architects, "has dealt with Astley's ruins with intelligence and practicality, while adding to them with a contemporary architecture that is rich, visually beautiful and tactile."

Lest the Brits get too smug, I will point out that *Old Buildings, New Forms* includes 11 projects in the United States and none in Britain (though I do wish Bollack had included Rick Mather's gorgeous reworking of the Ashmolean Museum in Oxford). The American projects show considerable sophistication, plumbing layers of time, bridging its gaps, and exploiting its ruptures. Not bad for a country with no history.



**Weaving:** A section detail of the Neues Museum in Berlin, completed in 2009. David Chipperfield Architects, in collaboration with Julian Harrap, incorporated what remained of the original 1855 structure, badly damaged during World War II, into their design. New construction is marked in magenta.

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# Improving the Mind and Body with Wall Protection

## UNDERSTANDING THE IMPACT OF IMAGERY AND TEXTURES IN WALL PROTECTION



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### LEARNING OBJECTIVES

After reading this article you will be able to:

1. Explain the importance of wall protection in heavily trafficked areas.
2. Compare the basic attributes of wall protection types, styles, and designs.
3. List the benefits of introducing art and positive imagery into hospitals, transit stations, and educational facilities.
4. Understand how choosing wall protection that incorporates art and positive imagery can enhance the building environment and improve occupants wellbeing.

### CONTINUING EDUCATION

**CREDIT:** AIA/CES 1 hr

Use the learning objectives above to focus your study as you read this article.

To earn credit and obtain a certificate of completion, visit <http://go.hw.net/AR1213Course1> and complete the corresponding quiz. If you are new to ArchitectCEUniversity, create a free learner account; returning users log in as usual.



Left: Airports are locations where wall protection is critical to help guard the structure from accidental damage and reduce high maintenance costs. Photo courtesy of Construction Specialties.

By Andrew A. Hunt

Whether we are aware of it or not, everyone experiences the mental effects of images, colors, and textures on a daily basis. Visual stimuli can create psychological impulses that can either direct us emotionally to a state of anxiety and action or draw us peacefully into a more meditative and calming state of mind.

It is no accident that some restaurants use wide splashes of yellow or red in their logos, as these warm colors tend to increase the appetite. Likewise, neutral colors like tan can encourage a more relaxed attitude and help people focus on the task at hand.

Psychological studies have shown that the use of images, colors, and natural textures in hospitals, transportation terminals, and educational facilities can improve the overall health, learning potential, and mental well-being of patients, passengers, and students. Historically, designers

of these buildings have been challenged when trying to incorporate pleasing visual images into the design because the demands of heavily trafficked areas often require wall protection to minimize damage to the structure.

Today, new technology allows for the printing of imagery on traditionally drab wall protection products, specifically rigid sheets. By combining the positive elements of attractive imagery with the durability and healthful attributes of wall protection, designers can enhance the built environment and improve client satisfaction while creating a safer and more healthful indoor environment for everyone.

#### SECTION 1: WHAT IS WALL PROTECTION?

In general, the term wall protection refers to additional materials securely fastened to a building's interior to help buffer, deflect, or

absorb potentially damaging impacts. Wall protection is an essential design element in heavily trafficked areas and helps reduce building maintenance costs. But well-designed, high quality wall protection can also contribute to a more sanitary and healthful environment for everyone who uses the building.

Corners, doors, and walls are the most vulnerable and often abused parts of a building's interior, and there are several types of wall protection products designed specifically to safeguard these areas.

Probably the most common form of wall protection is the corner guard. Corner guards are usually made of durable plastic or metal and protect corners from door knocks or accidental dings by passing users. In hospitals and transportation centers, corner guards help protect against the accidental damage caused



by heavy wheeled objects like food carts or luggage carriers.

Doors and door frames also need protection. In spaces where swinging doors are installed, kick plates are often attached to the bottom part of the door to mitigate damage by users who force the door open with carts. Doors can be covered on all sides with durable materials intended to prevent the scratching, peeling, and gouging that is expected with normal use.

In most commercial buildings of either steel or wood frame construction, interior walls are covered with standard drywall. While fast and economical to install, drywall can easily be damaged when struck with a heavy blow. Repairing drywall damage can be an expensive and time-consuming process that often requires repainting the entire wall surface. There are several types of wall protection designed specifically to protect the broad face of walls, eliminating the need for drywall patching and repair.

Wall protection materials such as crash rails and bumper guards are used to shield the face of walls that are frequently struck by carts, hospital beds, IV equipment, and other large objects. Usually mounted both near the floor and mid-way up the wall, they are often specified for high traffic and confined areas

such as those within medical facilities. These products are sometimes incorporated into handrail systems as well, which can allow them to be less noticeable yet still a functional part of the wall protection strategy.

For areas where wall protection is needed to cover larger areas, rigid sheet or wall panels are used. Sheet and panels can be installed either over the entire surface of the wall from floor to ceiling or only mid-way up at the traditional wainscoting level. These products are designed not only to cushion the force of direct impact to the wall but also protect against scratches and gouging from glancing blows.

Rigid wall protection sheets should not be confused with other wall coverings that are marketed as wall protection. Typically labeled "type II wall protection," there are some wall coverings on the market, similar to thick wallpaper, that protect from incidental scratches. Rigid wall sheets, by comparison, are specifically designed to withstand heavy direct impact. High quality rigid wall sheets can be installed over existing drywall, cement block, or backing material. The sheets are generally seamless up to 8' or 10' or have smooth transition points to reduce the chance of peeling and chipping of edges over time.

High quality wall protection products that function well are often unnoticed and blend seamlessly into a building's interior design. However, buildings without adequate wall protection can experience issues that affect occupants and visitors alike.

A building without wall protection will require more maintenance and replacement of materials. Door frames, latches, knobs, and locks that are damaged can frustrate users and can even create an unsafe environment. In commercial spaces, this can result in lower productivity and a frustrating work environment for employees, as well as allow for the potential of unwanted or unauthorized access to confidential areas.

First impressions of a building will often set the mood and comfort level of visitors and potential clients when they enter a building. Hallways and open spaces that look run-down or in need of repair can be perceived as a lack of professionalism or a business in financial crisis. In a hospital environment, scuffed or damaged doors and walls give patients and visiting family members the idea that the facility is unsanitary. For students evaluating potential colleges, scuffed walls and surfaces damaged from desks and chairs can project a "low quality" environment. With proper wall protection, a heavily trafficked space can remain a clean, attractive, productive environment. Safeguarding the interior of the building helps to protect the investment of interior design.

## SECTION 2: HOW TO CHOOSE HIGH QUALITY WALL PROTECTION

Historically, wall protection was intended to be a functional and practical part of the built environment and was designed with a more industrial look and feel. Today, manufacturers have created wall protection systems that come in a wide selection of colors, patterns, and styles. Modern wall protection systems that include corner guards, bumper guards, door coverings, rigid sheets, and wall panels can be color and design coordinated to create aesthetically pleasing interior spaces.

However, not all wall protection systems are created equally. Before specifying a wall protection type, it is important to understand the basic attributes and criteria for choosing a high quality, durable, and healthful wall protection product.

There are several key quality criteria used to evaluate wall protection systems. These include:



Wall protection can support a clean, safe, and productive work space while also reducing maintenance costs. Photo courtesy of Construction Specialties.

- Impact and abrasion resistance
- Bacterial and fungal resistance
- Environmental qualities

As an architect or interior designer, you should evaluate each of these criteria before making a selection to ensure that the product specified will satisfy the needs of the client today and in the future.

### Impact and abrasion resistance

Every manufacturer wants to claim that their product is durable. However, the type, thickness, and style of the wall protection material used will greatly impact how long the product will last.

When specifically looking at rigid sheet wall protection products, there is a wide variety of types available today. Thickness will greatly impact durability. Sheets can range from .040" to over .075" in depth. The thicker the material, the more durable the sheet should be.

But thickness is only one way to evaluate wall sheets. Fortunately, the American Society for Testing and Materials, (ASTM) (<http://www.astm.org/ABOUT/faqs.html>) has created a series of standards that can be used to evaluate how well different surfaces can be cleaned. The ASTM is a not-for-profit organization that provides a forum for the development and publication of international voluntary consensus standards for materials, products, systems, and services. The ASTM publishes standards that are often adopted by local governments for building codes.

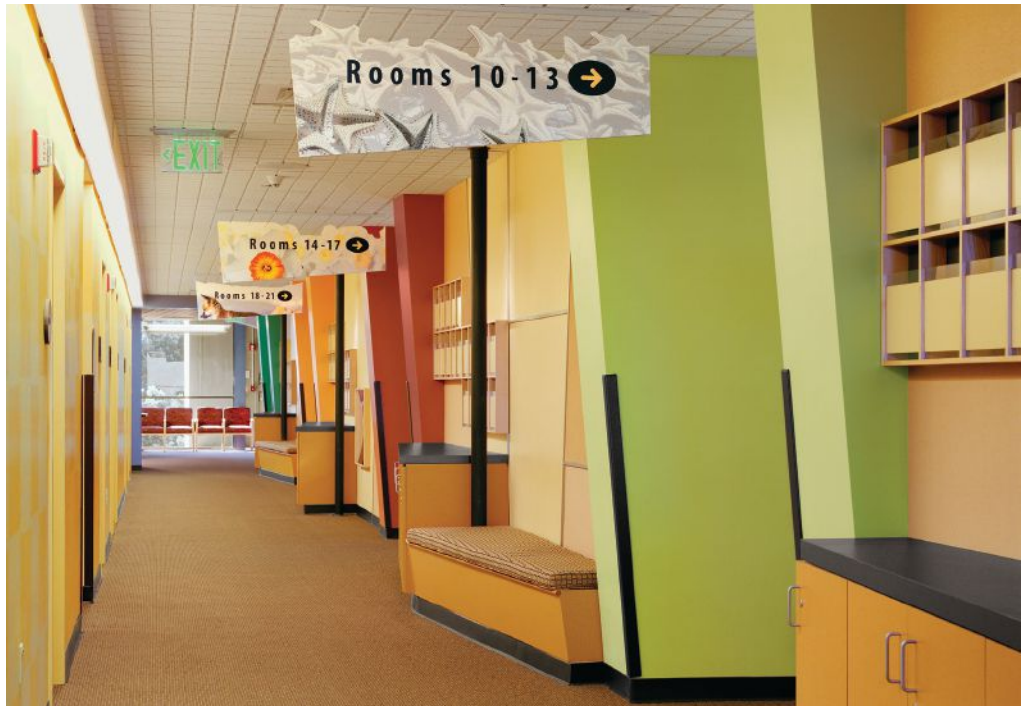
### PROTECTING THE WALLS

There are several types of products on the market that are specifically designed to prevent damage to the flat surface of walls:

*Type II* wall coverings are a type of heavy wallpaper typically installed from floor to ceiling. These products may help deflect the casual scuff and scratch but are rarely thick enough to withstand direct impact.

*Rigid sheet*, available in a variety of thicknesses, can be installed in spot areas as needed or on the entire wall surface from floor to ceiling. This product is designed for maximum protection and is offered in a wide variety of colors, designs, textures, and styles.

*Wall panels* typically have a solid core that is wrapped with a protective material. While some wall panel systems are designed for heavily trafficked areas, most are meant as a wall design feature used to enhance the look and feel of the space. Wall panels often have a natural looking wood grain finish. Because these products are decorative, they can be quite vulnerable to scratches and gouges. Look for a panel wrapped in rigid protective sheet for style and performance.



Interior wall protection systems are available in a wide range of colors and styles. However, making sure the materials and products are of high quality is as important as creating pleasing aesthetics. Photo courtesy of Construction Specialties.

The ASTM has developed a series of standards to help evaluate the durability of various materials used in wall protection. Included is ASTM D4060-07, *Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser* (<http://www.astm.org/Standards/D4060.htm>). This test uses a wheel with a friction material on it to evaluate how well the coatings and surface of a rigid sheet material handle basic scrapes.

Another standard is the ASTM F476-84 *Standard Test Methods for Security of Swinging Door Assemblies*. Although the standard suggests it is for doors only, in fact ASTM F476-84 covers a wide range of materials.

Materials that can pass the standard test are considered durable and of high enough quality to sustain common scratches and scrapes without becoming significantly damaged, marred, or in need of replacement.

### Bacterial & fungal resistance

How easily the surface can be cleaned is a very important aspect when evaluating different styles of wall protection. The texture of the surface will largely determine the amount of fungus, bacteria, dirt, and other pollutants that will cling to the surface and how easily they can be wiped away with regular cleaning. In

hospitals, schools, and transportation centers, having surfaces that promote a healthy environment rather than incubate potentially dangerous bacteria is of the utmost concern. Specifically, controlling and limiting the potential for hospital acquired infections (HAIs) is critical. According to the Center for Disease Control (CDC) <http://www.cdc.gov/hai/>, HAIs are infections that patients acquire during the course of receiving healthcare treatment for other conditions. Approximately one out of every 20 hospitalized patients will contract an HAI, but this number can be reduced through better sanitation practices.

When it comes to testing for bacterial resistance, ASTM created the Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi, also known as ASTM G21-09 (<http://www.astm.org/Standards/G21.htm>). This standard is used to evaluate how materials either attract or repel bacteria.

Other standards, like ASTM D543, Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents, and section ASTM G21-96 of Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi, are also helpful when evaluating wall protection.





Ensuring that wall protection can be easily cleaned to reduce transmission of bacteria and other contaminants is very critical in health facilities. Photo courtesy of Construction Specialties.

The important thing to understand about bacterial testing is that the ASTM standards will not specifically tell you how well a material performed, but rather if it has been tested and passed the expectations of the standard. Materials that do not pass the standard may not be acceptable materials for use in sensitive areas, like hospitals, that are prone to bacteria and other contaminants.

### Environmental responsibility

Increasingly, environmental concerns about the built environment and indoor air quality are becoming important to architects, designers, and facility managers. How the building functions, uses natural resources, and promotes a healthy environment for users are all part of the evaluation process when considering how “green” or sustainable the building project and final structure will be.

When selecting rigid wall sheets as part of a wall protection strategy, architects and designers can help contribute to the sustainable goals of the project by evaluating the environmental healthfulness of the products they specify.

During the construction of wall protection, certain adhesives are sometimes used that contain volatile organic compounds (VOCs) like formaldehyde. According to the U.S. Environmental Protection Agency (EPA)



Creating a healthful indoor environment starts by selecting building materials that have low VOCs and are environmentally responsible. Photo courtesy of Construction Specialties.

(<http://www.epa.gov/iaq/voc.html>), inhaling VOCs can lead to serious health risks that include: eye, nose, and throat irritation; headaches; loss of coordination; nausea; and damage to the liver, kidneys, and central nervous system. The ASTM D5116-06, *Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/ Products*, tests building products for the amount of volatile organic compounds (VOCs) that they contain. Checking to make sure the products pass the ASTM standard for low or no VOCs is the first step in creating a more healthful environment and better indoor air quality.

There are many other ways to ensure the wall protection specified is environmentally responsible. Some of the more common green building programs are Leadership in Energy and Environmental Design (LEED) and Green Globes Certification. These programs evaluate entire projects by looking at the materials used during construction and how the building will reduce consumption of energy and natural resources once built. Choosing building products that contribute to a green building designation is relatively easy, as most manufacturers will seek to label their products if they are LEED or Green Globe compliant. Other programs like Living Building Challenge (<http://living-future.org/lbc/certification>) and BREEAM (<http://www.breeam.org/>) are also progressive sustainable building certification programs.



Wall sheet, as part of a wall protection system, can either be installed at wainscoting height or cover the entire wall surface. Photo courtesy of Construction Specialties.

Going beyond certifications for buildings, architects and designers can seek out products that are individually certified as environmentally preferable based on the materials used to make them and how they will be recycled or reused after the natural life expectancy of the product. This analysis will provide a more complete picture of exactly how preferable the product is for human users and for the environment in general. One example of this sort of product-specific certification is done by organizations like the Cradle to Cradle Products Innovation Institute (<http://c2ccertified.org/>), which evaluates building products based on their component materials and the degree to which their disassembled parts can be recycled as biological or technical nutrients. *The Cradle to Cradle Certified<sup>CM</sup>* program takes a comprehensive approach to evaluating the design and manufacturing of a product by evaluating five categories: material health including low VOCs, material reutilization, renewable energy use, water stewardship, and social responsibility. This certification also provides insight about the manufacturer that may normally be withheld, such as labor practices and worker conditions. This allows architects and designers to have a more comprehensive understanding of the products they are choosing.


When selecting rigid wall sheets as part of a wall protection strategy, architects and designers can help contribute to the sustainable goals of the project by evaluating the environmental healthfulness of the products they specify.

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## 2013 ANNUAL DESIGN REVIEW

Look at any conference lineup, listen in on any conversation between industry wonks, or read any journal and it is evident that the 21st century focus in architecture has been technological innovation. But during the course of reviewing the nearly 250 entries in this year's Annual Design Review, the jury—David Dowell, AIA; Cathy Lang Ho; David Jameson, FAIA; and Sheila Kennedy, AIA—developed a different charge. It's time again, they said, to push the discourse about competency and design in the profession.

"We've come through this period where social justice, performative technologies, and sustainability have been dominant, but I would still argue that the projects that are more successful are the ones that are rooted in architectural discourse," Jameson said. "What we're looking for is meaning and layering, and the confluence of architectural ideas and proficiency."

Kennedy saw the charge as applying to the entire profession: "I think it's a challenge for all architects. Maybe the definition of competency needs to evolve," she said, noting that skill is important, but can be most effective when skill is "being used to push us architects into new places."

A renewed focus on design competency doesn't require a sacrifice of innovation; the Holy Grail, as Ho explained, is still "a process by which something managed to get realized in a surprising context." Yet the jury turned to an old source for inspiration: "I always go back to [Vitruvius's] firmness, commodity, and delight," Dowell said. "Good architecture has to hit them all. Not one, but all three."

The jurors identified 17 projects that answered their (and Vitruvius's) call for balance between design, technology, and human need. The projects hail from many corners of the world, and they address different scales, budgets, and programs. Moreover, the projects were all completed sometime between June 2012 and September 2013, and thus offer a snapshot of how architecture is evolving today. k.c.

**MOVE**







**AWARD**

**JULIE SNOW ARCHITECTS**  
**U.S. LAND PORT OF ENTRY**

VAN BUREN, MAINE

The U.S. Land Port of Entry in Van Buren, Maine, sits on a 21-acre site with an appropriately transit-related past: The former railyard now hosts the 32,741-square-foot station (not counting the nearly 14,000 square feet of canopies) that handles the bulk of the commercial traffic crossing the border between Maine and New Brunswick, Canada.

Taking its cue from the surrounding St. John River valley, the team at Minneapolis-based Julie Snow Architects created an envelope that maximizes transparency for monitoring traffic, but also shields areas where security is at a premium. Aluminum panels alternate with silk-screened glazing in a pattern that recalls the tree-lined environment. The building's Z-shaped form sits atop a field of geothermal wells in a water-conscious landscape. Bright orange interiors in the public-facing offices and checkpoints lend warmth to the structure, even during the long winter months.

Juror David Dowell found the holistic approach to site and structure compelling: "As a northern border crossing, where it is dark most of the time, I like the idea that lighting, landscape, and architecture are really working together to create a place that you might actually want to be," he said. "I think the key word here is ambition," juror Sheila Kennedy said. "I think that there is a striving to make something of this landscape."

Security is paramount in this American Recovery and Reinvestment Act-funded project (which won a Progressive Architecture award for its unbuilt design in 2011), and yet what struck the jury was how cleverly the design hid that from view. "Usually these areas are heavily surveilled high security zones," juror Cathy Lang Ho said, "but this still reads as very inviting." K.G.





AWARD

**STEVEN HOLL ARCHITECTS**  
**SLICED POROSITY BLOCK—CAPITALAND RAFFLES CITY**  
CHENGDU, CHINA

A 3-million-square-foot tower complex in China might not seem like the first candidate for a sensitive urban addition to a neighborhood, but New York–based Steven Holl Architects’ Sliced Porosity Block in Chengdu manages a degree of deference despite its scale. Mass has been carved and sliced from an initially solid block to create glazed internal voids in the complex’s five mixed-use towers, while allowing daylight to reach the lower-rise city surrounding it, as well as the site’s public plazas and thoroughways.

The complex comprises residential, office, and hotel programs along the edge of a block, with a raised plaza above a six-floor retail podium; three water gardens within the plaza double as skylights for the shopping center below. Three pavilions are framed within niches carved into the towers, including the Light Pavilion designed by the late Lebbeus Woods—an abstracted structural expression of movement with illuminated, nonlinear steel supports that defy the orthogonal geometry of the towers’ concrete exoskeleton. Vertical cuts through the tower bases reveal retail along the sides of ramps and thoroughways that connect the tower block to the rest of the city, prioritizing pedestrians and creating a system of pathways and circulation that forms a cityscape within a city that struck a chord with the jury.

Juror David Dowell responded to “choreography of movement through the building,” where built-in infrastructure becomes a way of organizing pedestrian flows vertically, laterally, and diagonally among the various levels of building and plaza. Juror Sheila Kennedy appreciated the podium level of the project, saying that “its landscape and circulatory infrastructure give grounding in the base,” and juror Cathy Lang Ho responded to the “interesting circulation” in what could have been simply “a superblock of office towers.” D.M.





**CITATION** / **WXY ARCHITECTURE + URBAN DESIGN**  
**EAST RIVER BLUEWAY PLAN**  
 NEW YORK

Across its 520 miles of waterfront, New York City has to negotiate competing pressures: Making these sites more publicly accessible and integrated into the urban fabric, while taking into account the threats posed by rising sea levels and storm surges. The master plan for the East River Blueway, designed by New York's WXY Architecture + Urban Design, takes on both challenges at once.

The site, which runs along Manhattan's East Side between Midtown and the Brooklyn Bridge, has long been a patchwork of different architectural and infrastructural scales and varying levels of accessibility. The components of the completed Blueway master plan will take years to build, but the plan itself aims to create more of a cohesive experience for the area. An esplanade will allow for continuous pedestrian and bicycling circulation. At East 14th Street, where a Con Ed power station remains vulnerable to flooding, WXY's design would raise the esplanade over the FDR Drive, stitching together what had been disjointed sections of public space and providing critical flood protection for the important energy infrastructure.

At different points along the Blueway design, the architects include sites that enhance recreational experience and encourage waterfront access. A Brooklyn Bridge beach, for example, would restore a natural beach beneath the iconic span while a floating dock off Stuyvesant Cove would introduce a park program and a launch for non-motorized boats. Throughout the site, landscape elements would attenuate wave action, restore wildlife habitat, and help to manage water runoff. J.G.



**WORK**



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**AWARD** / **WRNS STUDIO**  
**ADOBE UTAH CAMPUS**  
 LEHI, UTAH

When Adobe set out to build its new Utah campus, the digital media company turned to WRNS Studio, a San Francisco-based firm and the top firm in this year's ARCHITECT 50. Located in Lehi, just south of Salt Lake City, the 38-acre site was something of a challenge: long and narrow, it runs alongside Interstate 15 and is bisected by a four-lane public road.

As a way to negotiate this unusual site, WRNS designed the campus as a series of three long slabs, each one slightly angled in plan, as a way to break up the facilities into manageable units. The central building makes a 90-foot span of the intersecting road, allowing the campus to be experienced as a continuous landscape, despite the infrastructural intrusion. The team carried out design and construction on a speedy 27-month schedule.

The glass-clad buildings offer views to the surrounding mountain ranges and to Lake Utah, and they cut down on energy loads from artificial lighting. Ninety-three percent of the building's occupants have views to the outside, while the high-performance glazing further reduces the property's energy consumption. Adobe is participating in a post-occupancy analysis to maximize the efficiency of the building's mechanical and electrical systems; it expects to be certified LEED Gold.

Inside, there are offices, of course, but also plenty of amenities, including a basketball court, climbing wall, pool, gym, and cafeterias. "These campuses for technology companies—they're more grown-up now," observed juror Cathy Lang Ho. "It's beyond the play environments with coffee lounges and bean bags and all of that. It's just more grown-up."

The architects coordinated this diverse program on a challenging site with a carefully considered site plan that provides a bridge—literal and metaphorical—from one far end to the other. "It's a supremely skillful massing," juror Sheila Kennedy said. "It's a very simple diagram that's well executed throughout." J.G.



TIM GRIFFITH

AWARD

**NADAAA**

## **SAMSUNG MODEL HOME GALLERY**

SEOUL, SOUTH KOREA

In Seoul, buying a home is a little bit like shopping at Ikea: Instead of touring individual houses with a broker, a prospective buyer visits a model home gallery (usually run by one of the country's five major development corporations), and bases his or her purchase off of an apartment showroom. But these galleries not only showcase the apartments available in the dozens of towers under construction, they also serve as community gathering spaces.

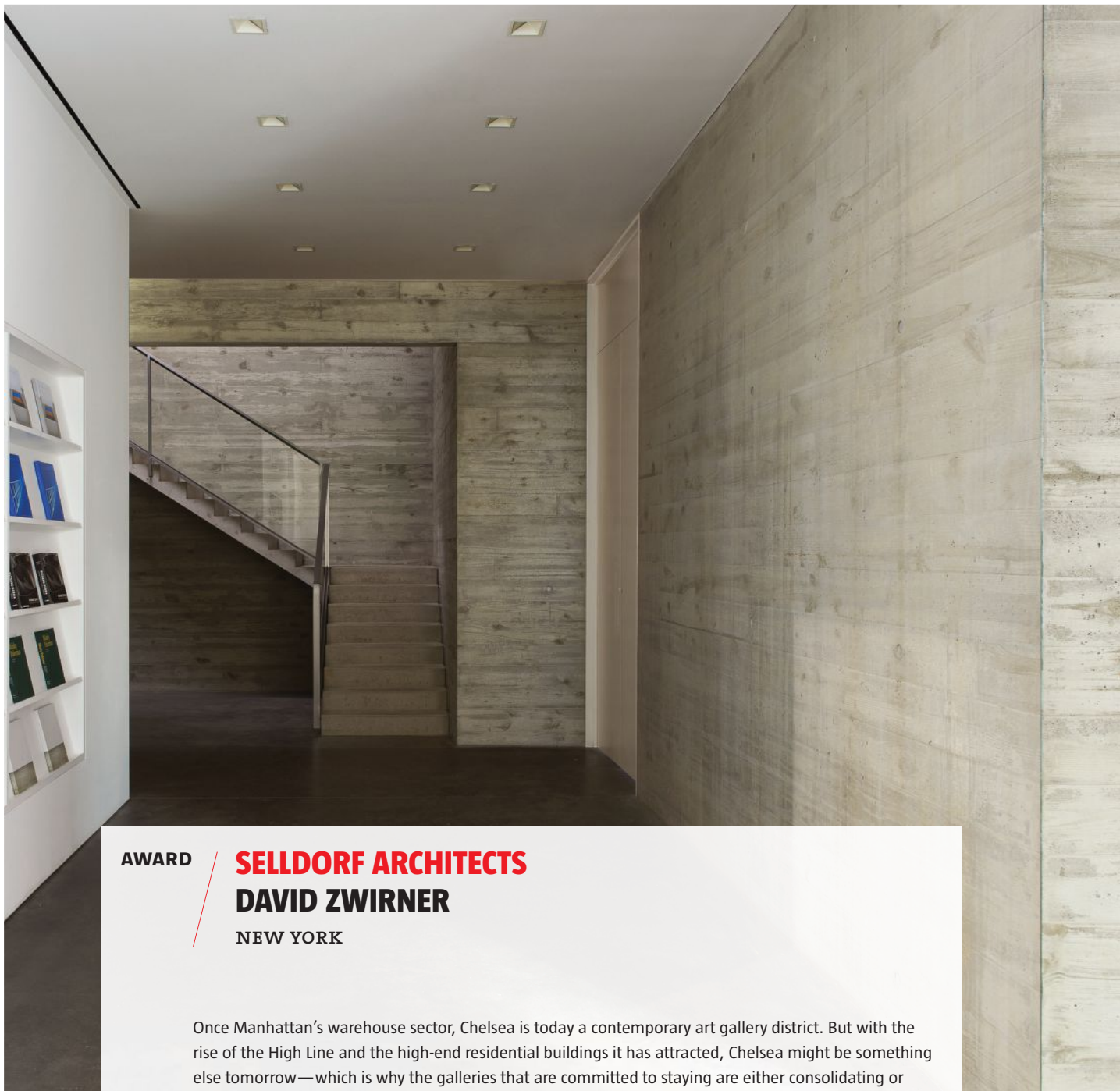
For the Samsung Model Home Gallery, Boston-based firm NADAAA created a 105,000-square-foot, high-design shell, with an aluminum-fin-clad volume to house the model apartments rising from a glazed base. "To me, the base is what's successful because of what it does," juror David Jameson said. "It's a supergraphic for a house."

The building's ground level features granite floors to echo the surrounding sidewalks. The creased ceiling plane echoes the geometry of the glazed base's roofline; it also integrates the lighting and mechanical fixtures. The ground-floor public spaces include an auditorium, a café, and a gallery, punctuated by a light well that brings daylight deep into the floor plate. The ceiling plane folds down to the floor in places, creating enclosures for the escalators that convey visitors to the apartment showcases above. "I like the plans; I think it's intelligently done," juror Sheila Kennedy said, noting "a sensitivity" in the approach to the project. What happens to the gallery after the homes have all been sold was a question that the jury raised, but, in the meantime, the public space makes the project a good neighbor. **K.G.**



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AWARD

## SELLDORF ARCHITECTS DAVID ZWIRNER

NEW YORK

Once Manhattan's warehouse sector, Chelsea is today a contemporary art gallery district. But with the rise of the High Line and the high-end residential buildings it has attracted, Chelsea might be something else tomorrow—which is why the galleries that are committed to staying are either consolidating or expanding. David Zwirner, one of New York's four mega-giant galleries, is leading the charge for more space with its new 30,000-square-foot gallery building.

Designed by local firm Selldorf Architects, the building's exposed concrete façade references the neighborhood's industrial past while also projecting its own modern program. The museum-quality (and museum-sized) exhibition space includes a column-free, 5,000-square-foot ground-floor gallery with a nearly 19-foot-high ceiling—built for showcasing a range of works by some of the world's most innovative artists. The concrete floors and sawtooth skylights in this gallery extend the industrial language of the façade into the primary program space.

A skylit stairwell rises all five levels of the building, connecting primary and secondary galleries with the building's other function: as a working office for art dealers, art handlers, artists, and art assistants. Selldorf's sliding teak system for the storefront engages both curious passersby and committed collectors, establishing an inviting portal into the neutral context of the white-cube space. The architects' selection of materials and textures balances the requirements for inward- and outward-facing spaces meant for private work and public exhibition alike. "Even in New York, where so many buildings are really background buildings, this fits in really well with what's going on in the street and avoids being just another drab gallery," juror Cathy Lang Ho said. K.C.





**AWARD**

**SKIDMORE, OWINGS & MERRILL  
UNITED STATES CONSULATE GENERAL**

GUANGZHOU, CHINA

For the jury, Skidmore, Owings & Merrill (SOM)'s new U.S. consulate in Guangzhou, China, sends an important message: "The consulate building is representative of a quality that we want to continue to see in foreign projects, where our soft culture can be embraced," juror Sheila Kennedy said.

The 150,000-square-foot building's unfussy massing and frank expression lent it a degree of candor and simplicity that propelled it to the top of the heap. Where so many diplomatic buildings abroad seem to deploy heavy-handed rhetoric, SOM's shoots for understatement, using local materials and brightly lit façades at either end of the tube-shaped main structure to give it a sense of warmth and welcome. The jurors also expressed their admiration for the building's "softening-edge component," the extensive use of wood and joinery that frame many of its interiors and that are visible here and there behind glass plates on the exterior.

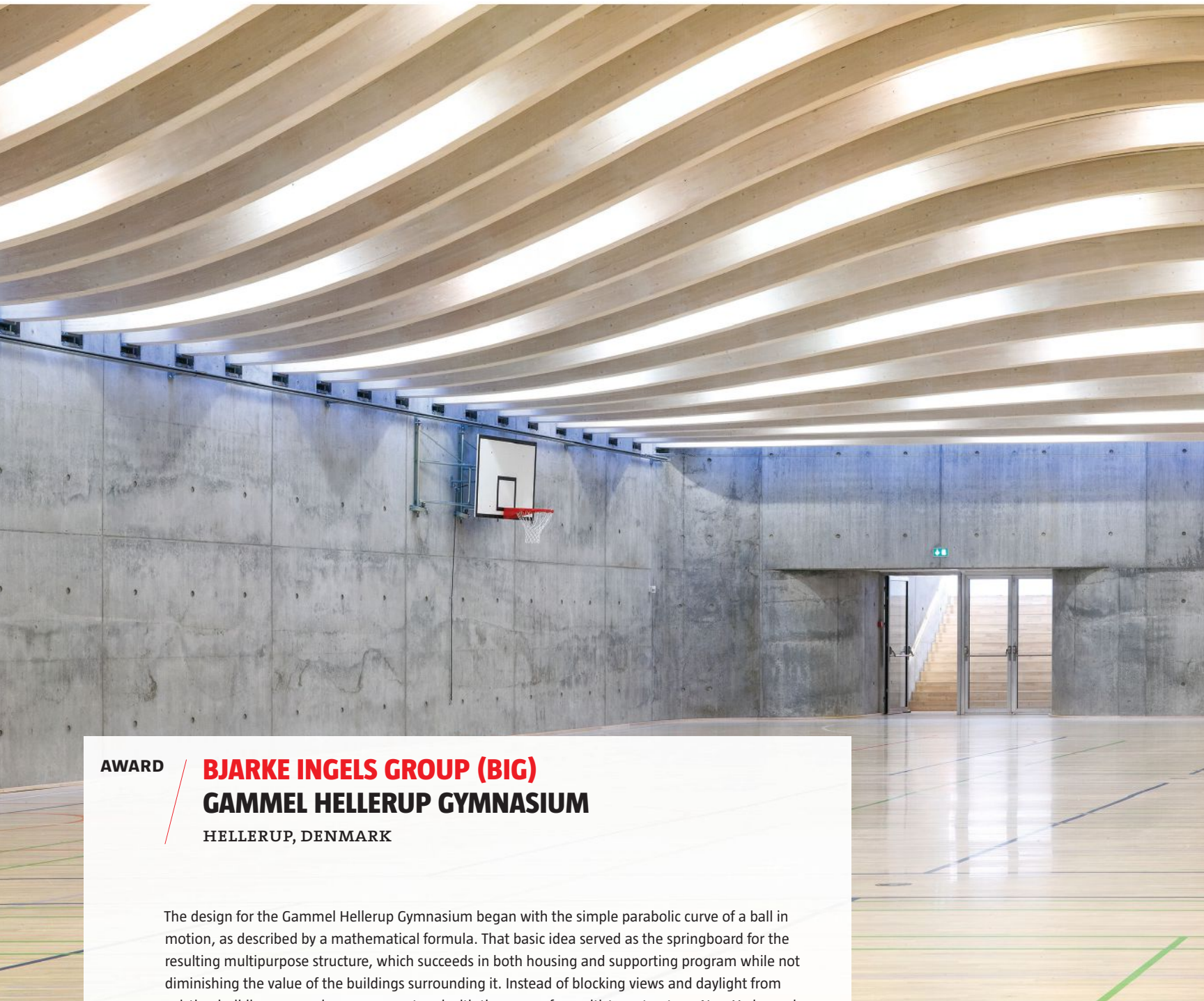
Occupying a 7.5-acre lot in the city's Pearl River New Town district, the project is as important for the extensive landscaping that surrounds it as for the building itself. Though the compound is necessarily separated from the surrounding streets by screening facilities—one of the rigors of the security-heavy brief—the gardens and paved areas are decidedly public in character, the pathways lined in a locally quarried stone that also clads the body of the consulate. Even the perimeter buildings, through which visitors must pass to enter the consulate area, are given a sensitive, urban character, each topped with a long green roof and a broad marquee that extends toward the sidewalk.

Kennedy praised the project further as an "idea-driven" workplace, one that brings "ideas about the public nature of the workplace into the site." The consulate, she concluded, is an office with "soul." I.V.









AWARD

## **BJARKE INGELS GROUP (BIG) GAMMEL HELLERUP GYMNASIUM**

HELLERUP, DENMARK

The design for the Gammel Hellerup Gymnasium began with the simple parabolic curve of a ball in motion, as described by a mathematical formula. That basic idea served as the springboard for the resulting multipurpose structure, which succeeds in both housing and supporting program while not diminishing the value of the buildings surrounding it. Instead of blocking views and daylight from existing buildings around an open courtyard with the mass of a multistory structure, New York- and Copenhagen-based BIG's design dug deep, excavating earth—which was then piled outside the ring of buildings to form a raised soccer field—and placing the bulk of the new high school sports hall below grade. The gently sloped roof—the curve of which is based on that original formula—provides an active public gathering space with integrated outdoor furniture.

Inside the 5,200-square-foot gym, glulam wood beams, with varied degrees of curvature, mark out regular intervals on the ceiling stretching over concrete retaining walls. Clerestory windows at the perimeter allow daylight to complement staggered fluorescent fixtures. At the courtyard level, the roof's lowest edge doubles as a bench; clad in wood decking, the whole roof surface can be occupied.

The jurors were impressed by the gymnasium's duality despite its singular design inspiration. "The mathematical formula reveals itself above," juror David Jameson said. "It shows pressure and counter-pressure, and there is a gestural component that is made both performative and structural." Juror Cathy Lang Ho also admired the flexibility of both interior and exterior spaces, noting that the single concept had been expanded to allow multiple possibilities. "This space is just so inspiring because it is open-ended," she said. "You could do anything on the roof—hang out, sit, play, and lounge." D.M.







**PLAY**







ALBERT VEČERKA/ESTO

**AWARD** / **WEISS/MANFREDI  
ARCHITECTURE/  
LANDSCAPE/URBANISM**  
**HUNTER'S POINT SOUTH  
WATERFRONT PARK**  
QUEENS, N.Y.

Two hundred years ago, Hunter's Point in Queens, N.Y., was no more than a swath of wetlands. But in the intervening years, the site's proximity to the water and to rail lines made it a perfect spot for industry, and nature was crowded out by warehouses, factories, and the like. With industry on the wane, New York firm Weiss/Manfredi sought to return a 9.5-acre parcel along the East River to its natural roots, creating a new public park with recreational facilities, gardens, a dog run, and an esplanade connecting the facilities to the disused beachfront.

Central to the project is a multi-use oval, which serves as a landscaped play field for most of the year, but can also serve as an overflow area for storm surge on the flood-prone site. Adjacent to the oval, a curved pavilion with a bent-steel canopy houses Parks Department offices as well as restrooms and a café. The structure is designed to withstand uplift in case of flooding, and its roof directs rainwater into bioswales that manage stormwater onsite.

The jury was impressed by the project's approach to both resilient design and urban planning. "It is modest, but I think it's a very compelling project on many levels," juror Sheila Kennedy said. "It's very well integrated, and it's inventive because this is creating a new urban beach where there was nothing." And, perhaps most importantly, the panel also appreciated how the project lends a sense of place to the site. "I like how it's a space that doesn't feel like it's imposing on any kind of behavior," juror Cathy Lang Ho said. "You can still go out there and hang out and play, but it is nicely structured." K.G.



## CITATION

## SHOP ARCHITECTS BARCLAYS CENTER AT ATLANTIC YARDS

BROOKLYN, N.Y.

This citation-winning project has hardly wanted for media exposure. Benefiting, among other things, from the patronage of rapper Jay-Z, SHoP's Barclays Center has turned out to be the biggest thing to hit Brooklyn since the bridge. "It's a transformative project," said juror David Jameson, echoing fellow jurist Cathy Lang Ho's assertion that the sports and entertainment arena has "completely changed the neighborhood."

Sitting atop the railyards for the Atlantic Terminal of the Long Island Railroad, the 675,000-square-foot project had a tortured development history (including an ill-fated proposal from Frank Gehry, FAIA) before being handed to SHoP and then opening, on time, last year. A giant Mobius strip marquee—which some residents have compared to the mouth of an enormous whale—greet visitors emerging from the subway, creating a moment of urban drama in the midst of the modest Brooklyn streetscape. With room for 18,000 guests to take in an anticipated 200 events per year, the building had to be efficient and durable, and it made the grade with a rugged weathered steel cladding and sustainability features that earned it a LEED Silver rating. Summing up the views of the awards committee, juror David Dowell, put it succinctly: "The Barclays Center has received so much attention," he said. "But I still think for what it represents—it's gold." I.V.



**ALLIED WORKS ARCHITECTURE**  
**SOKOL BLOSSER WINERY TASTING ROOM**

DAYTON, ORE.

Located amid the contours of the Dundee Hills in Dayton, Ore., a Pacific Northwest wine-growing appellation, this winery addition consists of three interconnected volumes with views of the Yamhill Valley. The 5,700-square-foot building, designed by Portland, Ore.– and New York–based Allied Works Architecture, is clad inside and out with striated wood that draws inspiration from the vineyard rows and the region’s vernacular buildings. The centerpiece is the tasting room, which includes a bar, outdoor terrace, sitting area and hearth, and is flanked by a library and kitchen. At the client’s request, the building is organized to accommodate a variety of tasting experiences in each distinct space, including a covered terrace and walled gardens that can be programmed for events.

The interior walls and ceilings are angled and cut in a sculptural fashion, enveloping visitors in a warm-toned setting that echoes the aesthetic of wine barrels. “I’m intrigued by the original idea of this thing—that we could have a project of such raw vigor, like we’re entering into a wine cask,” juror Sheila Kennedy said. “But the difficulty is that as this turned into a building, it conventionalized very quickly.” Yet, as juror David Dowell noted, “The concept is clear, and the plan is beautiful.” *v.m.*







**AWARD**

**ANDRE TCHELISTCHEFF ARCHITECTS**  
**HUDSON VALLEY SPA**

STAATSBURG, NEW YORK

Located on a 90-acre Hudson Valley estate among 19th century barns and a 1940s-era grand house, this modest spa designed by New York-based Andre Tchelistcheff Architects transforms an unused area into a pleasure ground. Housed in a minimalist rectangular box hidden by an existing retaining wall, the sauna replaces an old pool shed, and captures views of the nearby river and Catskill Mountains.

The 337-square-foot space is modeled on traditional Finnish saunas, with a cedar-clad interior heated by a wood-burning stove beneath an earthen roof planted with local wild grasses. An ipe rainscreen wraps the building, which is trimmed with unlacquered bronze at the overhang and window casings. A sunken entrance courtyard—which doubles as an outdoor shower—is paved in bluestone that was harvested on site. Inside, cedar slats form the benches and floor deck. Tongue-and-groove planks wrap around the interior walls and overhead, and two large windows frame the riverfront views. Soapstone floor slabs in the changing rooms double as heat shields around the electric and wood-burning stoves.

Jurors admired the sauna's unpretentious residential scale, noting how it eschews the luxury of oversized houses, "with all of their teak accents and hardwood floors and whatnot," Sheila Kennedy said. "It achieves its luxury in a space that is reduced to its minimum and integrated." She complimented the way the designers, using a very reduced palette, took everything they had at their disposal—for example, the drip edge above the windows—and clearly diagrammed where the material would be used. "It's extremely integrated," she said. Added juror Cathy Lang Ho: "It's like a little jewel." **V.M.**



LIVE



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AWARD

## LORCAN O'HERLIHY ARCHITECTS CLOVERDALE749

LOS ANGELES

Around the corner from the Los Angeles County Museum of Art, in L.A.'s Miracle Mile, local firm Lorcan O'Herlihy Architects (LOHA) outfitted a six-unit residential building with a recycled structural steel skin surrounded by muted stucco in what has quickly become a distinctive addition to the area.

But it's not just a matter of appearances: This permeable outer skin allows air to move between it and the enclosing walls, while protecting the units from sunny California's often intense heat gain. The skin also sets up a relationship between private spaces and the public street—openings in the skin reveal private porches overlooking the neighborhood. "The building becomes a veil," juror David Jameson said, "where it allows itself—like an instrument—to tune to a very dense, private component over the bedrooms and bathrooms. Then it starts to become more open as you get into the living areas."

The living units run the entire width of the building's footprint, partly in order to allow for cross-ventilation. LOHA pushed circulation to the exterior as a way to maximize the project's 10,500 square feet, and a roof deck provides even more usable outdoor space for the residents.

Though LOHA did create an aesthetically distinctive project, design, in this case, has less to do with just the look of things than with how the building performs—not only in terms of energy and spatial efficiency, but also as a human and urban experience. "There's this threshold zone in every unit that has a relationship to the street, which, in L.A., is a very interesting idea," juror Sheila Kennedy said. "There's a public life that's greater than what my bedroom or my kitchen looks like." J.G.



## HONORABLE MENTION

**ANMAHIAN WINTON  
ARCHITECTS  
RED ROCK HOUSE**

RED ROCK, N.Y.



This one-bedroom main house and adjacent guest house are located on a steep, densely wooded, 16-acre site in the Berkshires. To navigate the difficult topography, the Cambridge, Mass.-based architects designed a 200-foot-long retaining wall, made out of board-formed concrete, to help create a level field for a garden and the two structures. The wood-clad, steel-framed, 6,400-square-foot main house sports a cantilevered deck that projects into the treetops to maximize views—but the exposed steel beams felt heavy and unresolved to the jury. Milled aluminum L-sections are used as detailing on the façade, and serve both as sunshades, and a means of framing the entry. Overall, the choice of materials, the program, and the level of craft suggested to juror Sheila Kennedy that “there’s a talented team there.” K.G.

## HONORABLE MENTION

**MOORE RUBLE YUDELL  
ARCHITECTS & PLANNERS  
2802 PICO HOUSING**

SANTA MONICA, CALIF.



The 2802 Pico Housing project brings affordable housing to a mixed commercial and residential zone near the Santa Monica College campus, just 2.5 miles from the beach. In the face of zoning constraints and neighborhood concerns, the locally based architects designed a 42,263-square-foot cluster of dwellings, retail, and community space surrounding a courtyard that benefits from westerly ocean breezes in a manner that showed “a will to transform a sometimes very tough and heartless typology,” juror Sheila Kennedy said. Interlocking bridges cross the central open area to provide access to 33 residential units along single-loaded corridors that relate to the area’s pedestrian scale, despite the fact that “this project was about a different kind of urban fabric, and community life,” juror Cathy Lang Ho said. D.M.



**BOND**



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TIMOTHY HURSELEY

## CITATION

**TRAHAN ARCHITECTS**  
**LOUISIANA SPORTS HALL OF FAME AND**  
**NORTHWEST LOUISIANA HISTORY MUSEUM**

NATCHITOCHEs, LA.

Mixed-use briefs are typical fare for architects nowadays, but New Orleans–based Trahan Architects was dealt an especially tricky hand in their latest commission. The Louisiana Sports Hall of Fame and Northwest Louisiana History Museum is an institutional project that’s actually two institutions in one—a new home for a history museum as well as for a museum of statewide sports memorabilia formerly housed on a nearby university campus. Squeezing both into a 28,000-square-foot structure in the rural town of Natchitoches took a bit of doing: putting objects like a football helmet side by side with a traditional Indian artifact would seem a bit improbable. So the design team had to find a way of making the programmatic combo work under one roof.

To find a formal starting point for their design solution, the team turned to the local landscape—specifically, to the adjacent Cane River Lake, the commercial and ecological lifeblood of the region. The structure takes its cue from the oxbows, curves, and divagations that mark the path of the narrow 32-mile-long lake, which was once a bustling steamboat corridor that connected to the Red River. These are expressed in a quasi-conical foyer that acts as the heart of the structure, with its twisted, sculpted interior (made of 1,100 cast stone panels) that was inspired by the convolutions of the waterway.

As juror David Jameson, put it, “If you think sports are about movement, it’s really interesting that this is a very kinetic building, and you feel like someone could be swimming through it or running through it.” The novel solution inside is complemented by a gently contextual exterior that also drew praise from the panel: Fellow judge Sheila Kennedy praised the building’s pleated copper cladding, meant to echo the clapboard siding of the historic buildings of the area, “as de rigueur” for Louisiana and “a nice offset to the discovery of what the space is like on the inside.” I.V.



CITATION

**CAPLES JEFFERSON ARCHITECTS**  
**WEEKSVILLE HERITAGE CENTER**

BROOKLYN, N.Y.

This museum in the heart of Brooklyn interprets the legacy of the mid-19th century African-American community of Weeksville and serves as the steward for four surviving historic houses that date from 1840 to 1883. The new 23,000-square-foot education and cultural arts building, designed by Long Island City, N.Y., firm Caples Jefferson Architects, provides space for exhibitions, performances, and lectures along with classrooms and a library. The site design defers to the houses, placing the new building opposite them, across a landscaped field that incorporates the vestiges of a historic road at the heart of Brooklyn. The center, which is L-shaped in plan, defines the edges of the site and conforms to the city grid. A glazed pergola links the main volumes of the center, which are clad in slate and horizontal ipe siding. Patterns derived from African origins appear in the stone-covered exterior walls, the bronze security screen at the entrance, and the cast-iron fencing around the site's perimeter.

While the jury had qualms about the use of too many materials and what they viewed as gratuitous details, they praised the effort to elevate a small community building to a high level. "The fact that they left so much of the site open showed a lot of restraint," said juror Cathy Lang Ho. "They could have used more of the site and chose not to—which leaves the houses more visible." **V.M.**



## DAVID DOWELL

David Dowell, AIA, is a principal at El Dorado in Kansas City, Mo., which won three architect Annual Design Review awards in 2012 as well as the AIA K.C. Firm Award in 2008. Dowell works within all six studios of the practice and oversees the firm's in-house metal fabrication shop. Armed with a B.Arch. from Washington University in St. Louis and an M.Arch. from UC Berkeley, Dowell also teaches a fifth-year design/build studio at Kansas State University that has yielded several built projects for the Girl Scouts, including the Trail Center at Camp Prairie Schooner, which won an award in the Play category last year.

## CATHY LANG HO

Founding editor-in-chief of *The Architect's Newspaper*, Cathy Lang Ho writes for many of the discipline's leading periodicals and serves on the board of directors for the New York-based Institute for Urban Design. Ho was lead curator of the U.S. Pavilion for the 2012 Venice Architecture Biennale, organizing the exhibition "Spontaneous Interventions," which became a traveling exhibition following the Biennale. (ARCHITECT was a media sponsor for the Biennale and editor-in-chief Ned Cramer was a co-curator.) Her consulting firm, CLH Office, currently oversees the Harvard University Graduate School of Design Wheelwright Prize.

## SHEILA KENNEDY

After receiving training from the École National Supérieure des Beaux-Arts in Paris and Harvard University's Graduate School of Design (GSD), Sheila Kennedy, AIA, won the Skidmore, Owings & Merrill National Traveling Fellowship. She founded Boston-based Kennedy & Violich Architecture (KVA) with Juan Franco Violich, FAIA, in 1990. She later returned to the GSD as director of its M.Arch. II program, and currently is professor of the practice at MIT. Kennedy also established MATx—a research lab within KVA that advances building-material technologies through collaboration with manufacturers and practitioners from related fields.

## DAVID JAMESON

Raised on Maryland's eastern shore with an appreciation for vernacular outbuilding architecture, David Jameson, FAIA, now lives and practices in Alexandria, Va. Upon graduation from Virginia Tech, Jameson got his start under Hugh Newell Jacobsen, FAIA, in the early 1990s before striking out on his own with modern additions to various Washington, D.C.—area houses. His practice, which focuses primarily on residential work, has received numerous national design awards. Jameson also serves as a peer reviewer for the U.S. General Services Administration's Design Excellence program.



## U.S. Land Port of Entry, Page 80

**Project** U.S. Land Port of Entry, Van Buren, Maine  
**Owner** U.S. General Services Administration; Public Building New England Regional Office, Boston  
**Architect** Julie Snow Architects, Minneapolis  
**Architect of Record** Robert Siegel Architects  
**Client Representative** Gianne P. Conard, AIA, Chief Architect, GSA Region 1  
**Structural Engineer** Meyer Borgman Johnson; Anastos Engineering Associates (design/build)  
**M/E/FP Engineer** Sebesta Blomberg  
**Civil Engineer** Jacobs Engineering  
**Landscape Architecture** Coen+Partners; Sasaki Associates (design/build)  
**Security** Global Defense Solutions  
**Cost Estimating** Faithful & Gould  
**Artist** Nina Katchuadourian  
**Civil and Building Engineer** Arup New York  
**Life Safety Consultant** Fire Risk Management  
**LEED Consultant** Steven Winter Associates  
**Design/Build Contractor** J & J Contractors  
**Size** 32,741 square feet (enclosed); 21-acre site  
**Cost** \$11.92 million

## Sliced Porosity Block, Page 82

**Project** Sliced Porosity Block—CapitalLand Raffles City, Chengdu, China  
**Client** CapitalLand Development  
**Architect** Steven Holl Architects, New York and Beijing  
**Associate Architects and Structural Engineer** China Academy of Building Research  
**M/E/P/FP Engineer and LEED Consultant** Arup  
**Lighting Consultant** L'Observatoire International  
**Quantity Surveyor** Davis Langdon & Seah (DLS)  
**Traffic Consultant** MVA  
**Size** 3,336,812 square feet

## East River Blueway Plan, Page 83

**Project** East River Blueway Plan, New York  
**Client** Manhattan Borough; New York State Department of State, Division of Coastal Resources  
**Architect** WXY Architecture + Urban Design, New York  
**Structural Engineering** Weidlinger Associates  
**Urban Landscape Architecture** Judith Heintz, S + M Studios  
**Permitting Outreach** AKRF  
**Infrastructure Engineering** ARCADIS  
**Lighting Design** Domingo Gonzalez Associates  
**Water Resources, Environment, and Ecology** eDesign Dynamics  
**Economics and Implementation Strategy** HR&A Advisors  
**Transportation Planning, Civil Engineering, Land Ownership, and Permitting** Philip Habib and Associates  
**Size** Approximately 4 miles of waterfront

## Adobe Utah Campus, Page 84

**Project** Adobe Systems Utah Campus, Lehi, Utah  
**Client** Adobe  
**Architect** WRNS Studio, San Francisco  
**Interior Design** Rapt Studio  
**Associate Architect** GSBS Architects  
**Structural Engineer** Dunn Associates  
**Mechanical Engineer** Colvin Engineering Associates  
**Electrical Engineer** Spectrum Engineers  
**Civil Engineer** Ensign Engineering and Land Surveying  
**Landscape** WRT  
**Audiovisual** Avidex  
**Food Services** Cini-Little  
**Security** Security by Design  
**General Contractor** Okland Construction  
**Size** 280,000 square feet  
**Cost** \$74 million

## Samsung Model Home Gallery, Page 86

**Project** Model Home Gallery, Seoul, South Korea  
**Client** Samsung Corp.  
**Architect** NADAAA, Boston  
**Local Architect** AandD  
**Mechanical and Electrical Engineer** Chungwoo Engineering  
**Structural Engineer** Yunwoo Structural  
**Civil Engineer** Daegyo  
**Landscape Architect** Dongshimwon  
**Lighting** Taewon Electrical  
**Exterior** Woojung  
**Curtainwall** Daemyung Gunyoung  
**Energy Consultant** Gunhwan  
**Traffic Consultant** KTS  
**Exhibition** A Works  
**Cost Estimator** Shinhwa Interior  
**Size** 105,000 square feet

## David Zwirner, Page 87

**Project** David Zwirner, New York  
**Client** David Zwirner  
**Architect** Selldorf Architects, New York  
**General Contractor** Eurostruct  
**Structural Engineer** DeSimone Consulting Engineers  
**M/E/P Engineer** AltieriSeborWieber  
**Concrete Consultant** Reginald Hough Associates  
**Geotechnical Engineer** Langan Engineering & Environmental Services  
**LEED/Sustainable Design Consultant** Atelier Ten  
**Lighting Designer** Renfro Design Group, Atelier Ten  
**Terrace Garden Designer** Piet Oudolf  
**Green Roof Consultant** Goode Green  
**Envelope Consultant** James R. Gainfort, AIA Consulting Architects  
**Environmental Engineer** Roux Associates  
**Acoustic Consultant** Shen Milsom Wilke  
**Elevator Consultant** IROS Elevator Design Services  
**Fire Alarm Consultant** Acotech Services  
**Expediter** Jam Consultants  
**Specifications Writer** Construction Specifications  
**Size** 30,000 square feet

## U.S. Consulate General, Page 88

**Project** U.S. Consulate General, Guangzhou, China  
**Client** U.S. Department of State  
**Architect** Skidmore, Owings & Merrill (SOM), San Francisco  
**Chinese Architect and Engineering Firm** Guangzhou Design Institute  
**Structural, Civil, and M/E/P Engineer, and Specifications** Skidmore, Owings & Merrill, Chicago  
**Landscape Architect** Tom Leader Studio  
**Geotechnical Consultant** Schnabel Engineering  
**Fire/Life Safety** Rolf Jensen & Associates  
**IT/Telecommunications** WSP—Flack + Kurtz  
**Blast Consultant** Weidlinger Associates  
**Food Service** Cini Little International  
**Vertical Transportation** Edgett Williams (EWCG)  
**Lighting** Claude R. Engle Lighting Consultants  
**Site Lighting** Archiluce International  
**Cost Estimation** Project Cost Government Service  
**Acoustics** Cerami & Associates  
**Audiovisual** Shen Milsom Wilke  
**Systems Furniture Integration** Maryland Office Interiors  
**General Contractors** BL Harbert International, China Huashi Enterprises Co.  
**Photographer** Bruce Damonte Photography  
**Size** 150,000 square feet

## Gammel Hellerup Gymnasium, Page 90

**Project** Gammel Hellerup Gymnasium, Hellerup, Denmark  
**Client** Gammel Hellerup High School  
**Architect** Bjarke Ingels Group, Copenhagen  
**Contractor and Landscape** CG Jensen  
**Engineering** EKI  
**Sustainability Consultant/Engineer** Grontmij  
**Furniture** BIG (design), Christian Langbjerg (builder)  
**Size** 11,840 square feet

## Hunter's Point South Waterfront Park, Page 92

**Project** Hunter's Point South Waterfront Park, New York  
**Client** Departments of the City of New York  
**Architect** Weiss/Manfredi Architecture/Landscape/Urbanism, New York  
**Collaborating Architect** Thomas Balsley Associates, New York  
**Prime Consultant, Civil and Structural Engineer, and Lighting Design** Arup  
**Ecological Systems** eDesign Dynamics  
**Marine Engineer** Halcrow  
**Public Art** Karyn Olivier  
**M/E/P/FP Engineer** A.G. Consulting Engineering  
**Environmental Engineer** Yu & Associates  
**Cost Estimator** VJ Associates  
**Traffic Engineer** B-A Engineering  
**Graphic Designer** Two Twelve  
**Historical Researcher** AKRF  
**Resident Engineer** The Liro Group  
**Size** 9.5 acres (park); 12,000 gross square feet (pavilion)



## Barclays Center at Atlantic Yards, Page 94

**Project** Barclays Center at Atlantic Yards, Brooklyn, N.Y.  
**Client** Forest City Ratner Companies  
**Architect** SHoP Architects, New York  
**Architect of Record** AECOM; Ellerbe Beckett  
**Design Builder** Hunt Construction Group  
**Structural Engineer** Thornton Tomasetti; Stantec (plaza)  
**M/E/P Engineer** WSP Flack + Kurtz  
**ADA Consultant** McGuire Associates  
**Acoustical Engineer** Acoustical Design Group  
**Audiovisual** Parsons; WJHW  
**Code Consultant** FP&C Consultants  
**Façade Consultant** ASI Limited; SHoP Construction  
**Façade Steel Monitoring** Admetco;  
 Dissimilar Metal Design  
**Geotechnical** Langan  
**Graphics/Signage/Wayfinding** Pentagram  
**LEED Consultant** e4  
**Lighting** Goldstick Lighting; Tillotson Design  
**Vertical Transportation** VDA/Lerch Bates  
**Size** 675,000 square feet  
**Cost** \$675 million

## Sokol Blosser Winery Tasting Room Page 95

**Project** Sokol Blosser Winery Tasting Room, Dayton, Ore.  
**Client** Sokol Blosser Winery  
**Architect** Allied Works Architecture, New York  
**Structural Engineer** KPFF Engineers  
**M/E/P Engineer** Glumac  
**Contractor** R&H Construction  
**Plants/Horticulture** Tom Fischer  
**Sustainability** Green Building Services  
**Interiors** Jennifer Fowler Interiors  
**Custom Furniture** Scott Roeder Woodworkers  
**Size** 5,700 square feet

## Hudson Valley Spa, Page 96

**Project** Hudson Valley Spa, Staatsburg, N.Y.  
**Client** Confidential  
**Architect** Andre Tchelistcheff Architects, New York  
**Structural Engineer** Robert Murray  
**Millwork** Eppley Building & Design  
**Size** 337 square feet

## Cloverdale749, Page 98

**Project** Cloverdale749, Los Angeles  
**Client** Papalian Capital  
**Architect** Lorcan O'Herlihy Architects, Los Angeles  
**Civil Engineer** Harvey A. Goodman Civil Engineer

**Structural Engineer** Labib and Associates  
**Electrical Engineer** Amelect  
**M/P Engineer** MNS Engineering  
**Landscape Architect** LINK Landscape  
**Contractor** Fortis17 (phase 1)  
**Size** 10,500 square feet  
**Cost** \$2.31 million

## Red Rock House, Page 99

**Project** Red Rock House, Red Rock, N.Y.  
**Client** Stephen Montifiore and Victoria DiNardo  
**Architect** Anmahian Winton Architects, Cambridge, Mass.  
**Contractor** Lou Boxer Builder  
**Structural Engineer** RSE Associates  
**Landscape Architect** Reed Hilderbrand  
**Size** 6,400 square feet  
**Cost** \$2.7 million

## 2802 Pico Housing, Page 99

**Project** 2802 Pico Housing, Santa Monica, Calif.  
**Client** Community Corp. of Santa Monica  
**Architect** Moore Ruble Yudell Architects & Planners, Santa Monica, Calif.  
**Landscape** Pamela Burton & Co. Landscape Architecture  
**Structural Engineer** C. W. Howe Partners  
**M/E/P and Lighting Engineer** Davidovich & Associates  
**Civil Engineer** VCA Engineers  
**Geotechnical Engineer** Grover Hollingsworth and Associates  
**Planning** City of Santa Monica  
**General Contractor** Morley Construction Co., Benchmark Contractors  
**Project Manager** J.S. Egan Design  
**Acoustics** Schaffer Acoustics  
**Waterproofing** Independent Roofing Consultants  
**Size** 42,263 gross square feet  
**Cost** \$12.5 million

## Louisiana Sports Hall of Fame and Northwest Louisiana History Museum, Page 100

**Project** Louisiana Sports Hall of Fame and Northwest Louisiana History Museum, Natchitoches, La.  
**Client** State of Louisiana, Office of Facility, Planning & Control  
**Architect** Trahan Architects, New Orleans  
**Interior Designer** Lauren Bombet Interiors  
**M/E/P/FP Engineer** Associated Design Group  
**Structural Engineer** LBYD  
**Civil Engineer** CSRS

**Geotechnical Engineer** GeoConsultants  
**General Contractor** VCC  
**Landscape Architect** Reed Hilderbrand Associates  
**BIM Manager and Technology Consultant** Case  
**Cast Stone Support Steel Geometry and Detailing** Method Design  
**Cast Stone Support Steel Engineer** David Kufferman  
**Acoustics** SH Acoustics  
**Waterproofing** Water Management Consultants & Testing  
**Size** 28,000 square feet  
**Cost** \$12.6 million

## Weeksville Heritage Center, Page 102

**Project** Weeksville Heritage Center, Brooklyn, N.Y.  
**Client** NYC Department of Design & Construction—David Burney, FAIA (director of design & capital improvement); NYC Department of Cultural Affairs—Victor Metoyer (deputy director of capital projects unit); Weeksville Heritage Center—Pamela Green (executive director)  
**Architect** Caples Jefferson Architects, Long Island City, N.Y.  
**M/E Engineer** Loring Consulting Engineers  
**Structural Engineer** Severud Associates  
**Civil and Geotechnical Engineer** Langan Engineering  
**Construction Manager** Hill International  
**General Contractor** Brickens Construction  
**Landscape Architect** Elizabeth Kennedy Landscape Architects  
**Lighting Designer** Berg-Howland Associates  
**Theatrical Lighting** Cline Bettridge Bernstein Lighting Design  
**Cost Estimating** Faithful & Gould  
**Building Department** Metropolis  
**Specifications** Heller + Metzger  
**Curtainwall** Gordon Smith Construction  
**Sustainable Design & Commissioning** Viridian  
**Security** Ducibella Venter & Santore  
**Museum Programming** Dial Associates  
**Size** 23,000 square feet (building); 41,000 square feet (landscape)  
**Cost** \$26 million

➔ For full project credits, visit [architectmagazine.com](http://architectmagazine.com)

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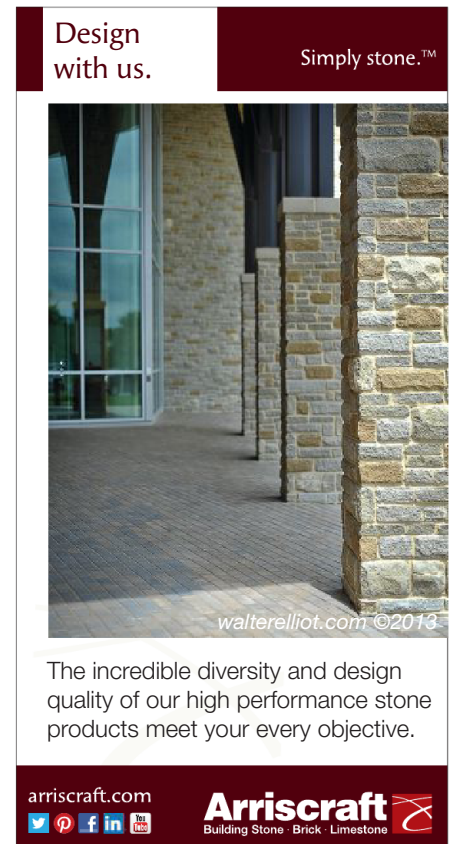
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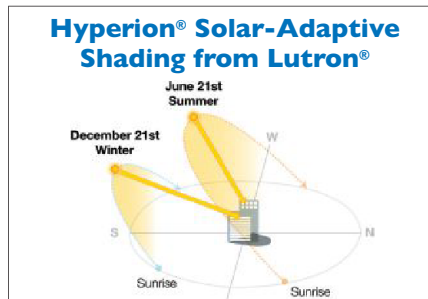
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## The Sleekness of the Silvers

HELMUT JAHN'S FIRST RECOGNITION IN THE P/A AWARDS PROGRAM CAME WITH A CHICAGO TOWER, EXPRESSIVE OF THE 1970S "SILVERS."

Text by **Thomas Fisher, Assoc. AIA**

**THE 1970S SAW** the rise of a group of architects dubbed the "Silvers," who sought a sleek, machine-like minimalism, and few towers expressed that aesthetic as clearly as the Xerox Center in Chicago, completed in 1980 by C.F. Murphy Associates, with Helmut Jahn, FAIA, as project principal. The 45-story office tower has an elegant form, with a rounded corner that culminates in a curving mechanical penthouse and a two-story street front that undulates inward to create a covered space at the building's two entrances. A flush curtainwall echoes the tower's simple form. Large, white, aluminum-and-glass panels extend from the sidewalk to the parapet, with half-height glazing on three sides and full-height windows facing the plaza across the street.

Jahn's design, though, challenged the tradition of a tower on pilotis in a plaza or park. Occupying only a quarter of the block, Jahn's tower holds the street edge along West Monroe Street and stands back only 20 feet from South Dearborn Street to reveal the corner of the landmark 1895 Marquette Building next door. The Xerox Center, now called 55 West Monroe, also echoes Skidmore, Owings & Merrill's 1957 Inland Steel Building, which sits catty-corner across the street. It too hugs the street and has a sleek, metallic curtainwall, serving as a precedent to the "Silvers" architecture of 20 years later.

Helmut Jahn has gone on to design much larger buildings and more sophisticated curtainwalls, but the Xerox Center foretells his later career, while showing the more restrained and minimalist character of his early work.

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#### 1978 P/A Awards Jury

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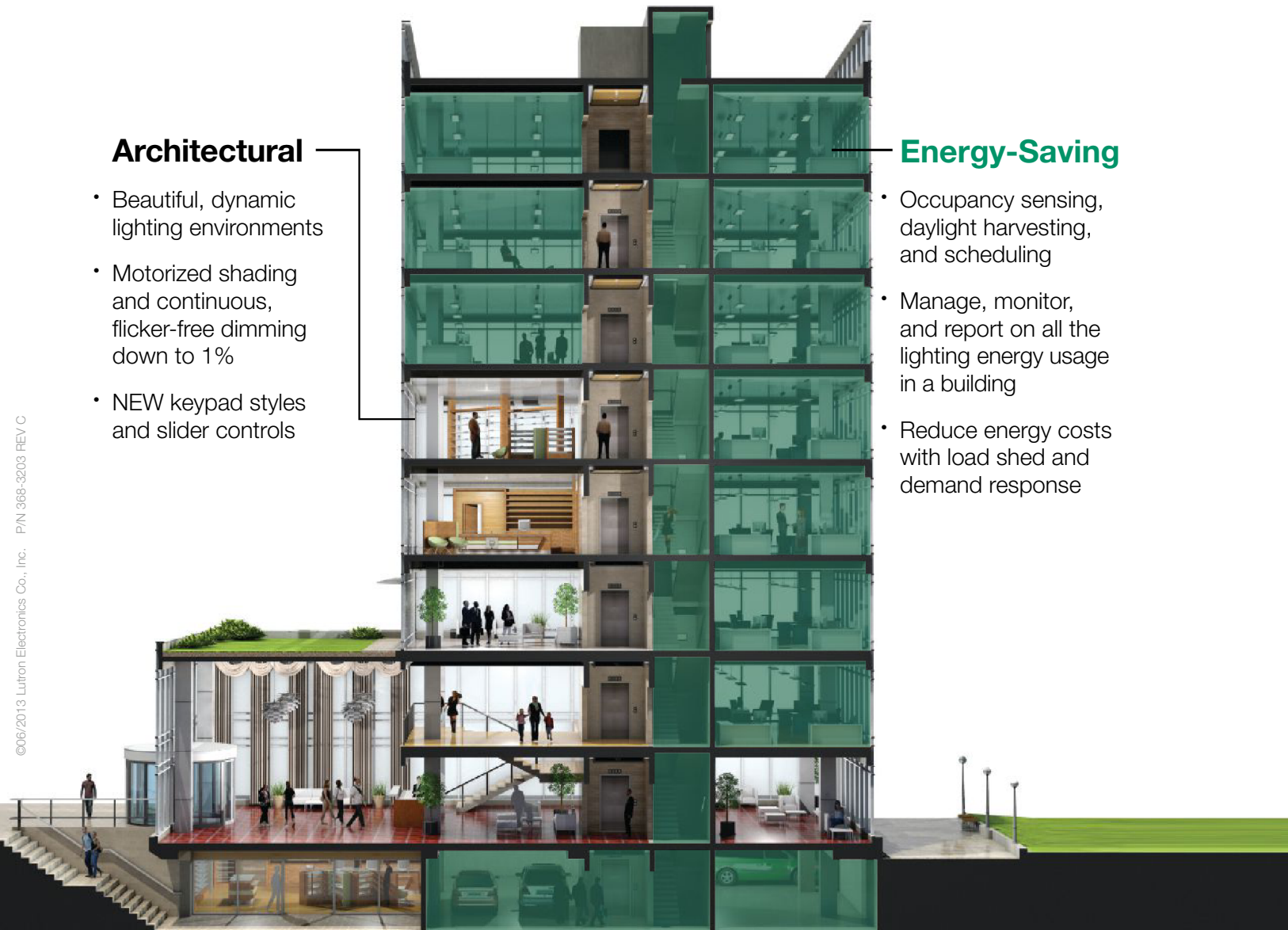
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