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# ARCHITECT

THE MAGAZINE OF THE AMERICAN INSTITUTE OF ARCHITECTS



ZUMTHOR'S LACMA

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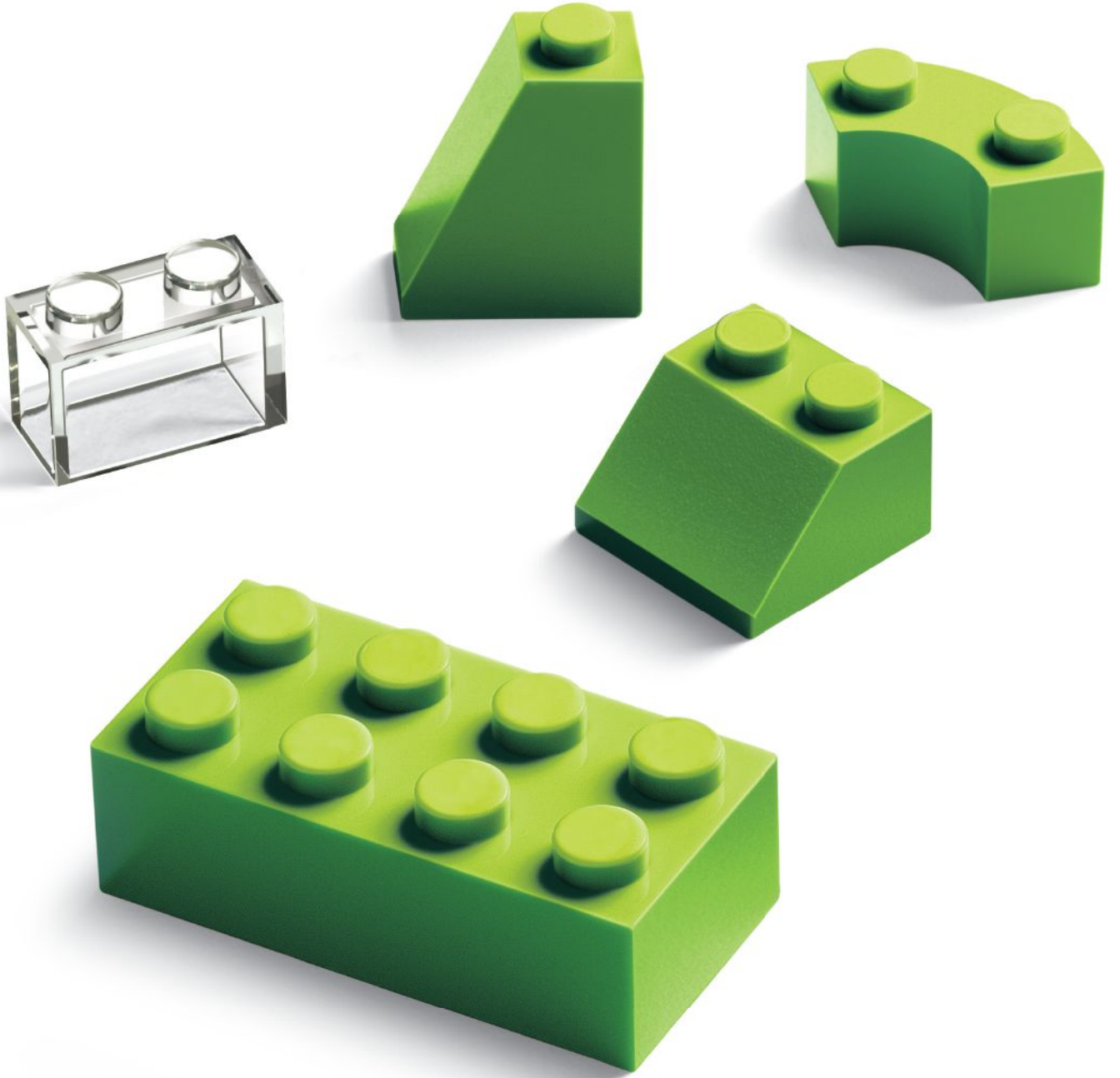
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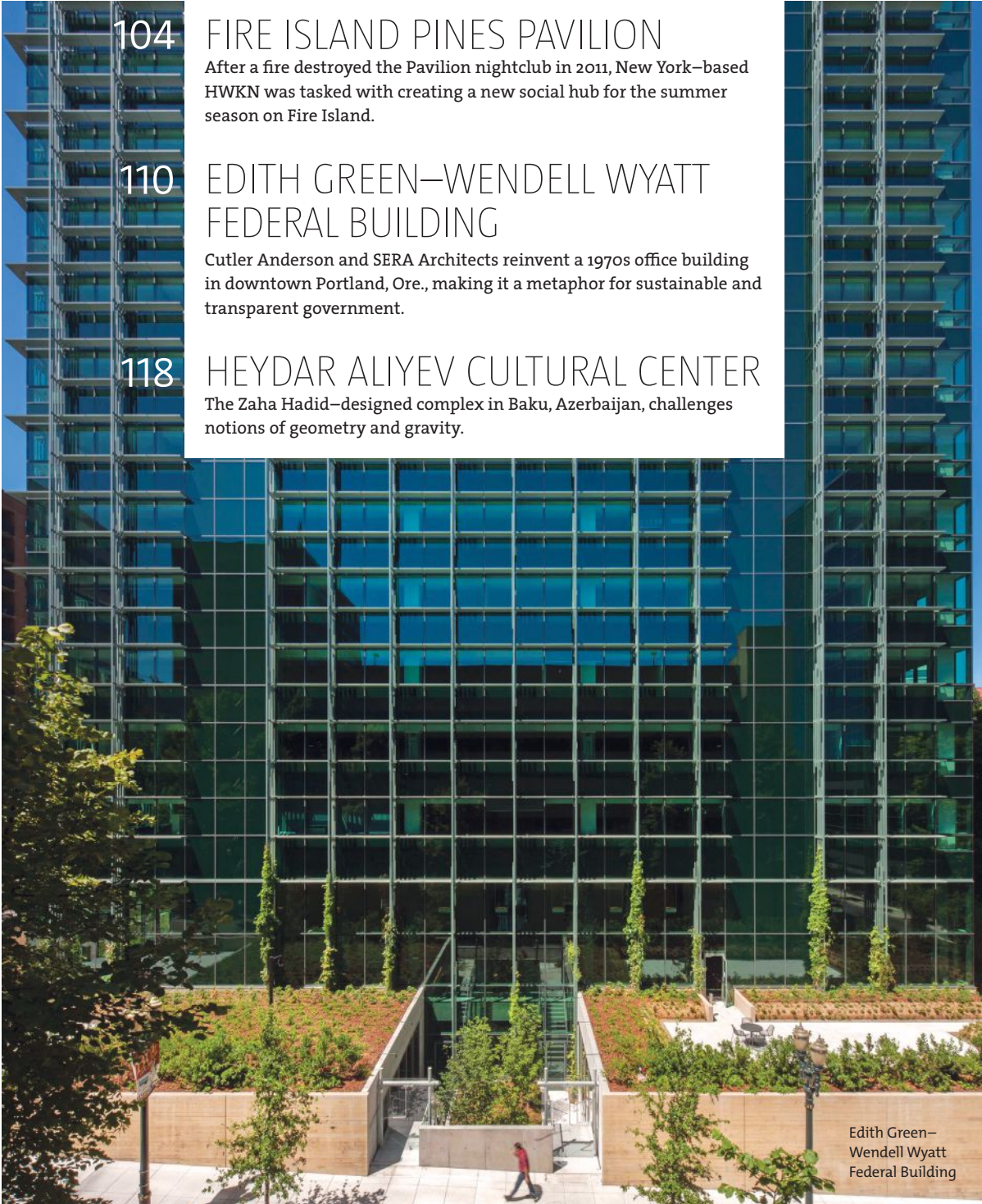
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### ON THE COVER

A model of Peter Zumthor's proposal for LACMA on display at the museum in Los Angeles.

Photo by Bruce Damonte



Edith Green–  
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# REFLECTING PRESENCE



As the only building officially on memorial grounds, the **National September 11 Memorial Museum Pavilion** must echo the somber dignity of its WTC environs while admitting thousands of visitors to its exhibits each day. To achieve these diverse goals, **Snøhetta** teamed with consultant **Front Inc.** to design an enclosure that both maximizes the building's security and mirrors its placid surroundings. Through the changing days and seasons, it offers museumgoers a setting for reflection on the past while looking to the future.

## Transforming design into reality

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# SLANT



Columbia University's new field house, the **Campbell Sports Center** by **Steven Holl Architects**, is designed to be a team player with facilities that foster balance between the minds and bodies of student athletes in a range of sports. Inspired by the slanting lines of field-play diagrams, the building's design relies on point foundations and a lightweight steel structure to achieve its diverse program on a sloped site. The university's first new athletics building since the mid-1970s, Campbell forms a gateway to the revitalized Baker Athletics Complex, and a new game plan for sports at Columbia.

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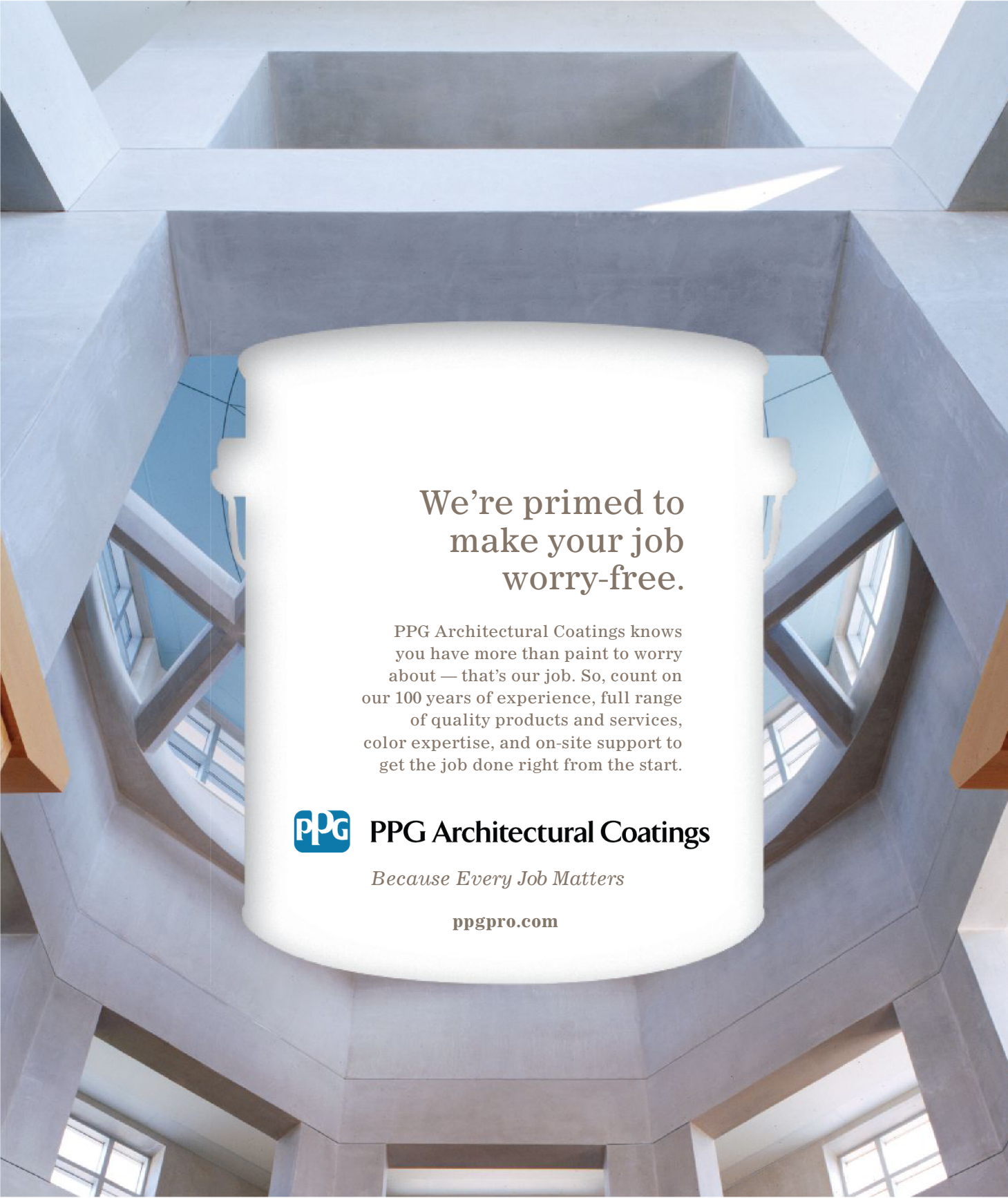
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## LILLIPUTIANS AND THE PICTURESQUE

OR, HOW I SPENT MY SUMMER VACATION.

**WE USUALLY SPEND** our summer vacation on Fire Island, New York, where we stay in a midcentury-modern cottage near the new Pines Pavilion, designed by HWKN (see page 104). But this year, on the occasion of my partner's 45th birthday, we went farther afield and further back in time, to rural Buckinghamshire, about 75 miles north of London. For less per night than two rooms at a Holiday Inn, we and another couple rented an 18th-century Gothick folly on the grounds of Stowe House, one of the stateliest of England's many stately homes. Our trip was cheap, great fun, and surprisingly meaningful: Though I didn't know it until we arrived, Stowe was a landmark of my youth.

Over the course of three centuries, a who's-who of British architects such as John Vanbrugh, William Kent, Robert Adam, and John Soane expanded the original Elizabethan manor into a 480-foot-long neoclassical pile and erected more than a dozen follies in the Lancelot "Capability" Brown-designed landscape. During its heyday, the picturesque spectacle of Stowe was a kind of Disneyland for the affluent and intellectual: Jonathan Swift of *Gulliver's Travels*, French *philosophe* Jean-Jacques Rousseau, U.S. President John Adams, and Czar Alexander I of Russia all visited.

Our rental, named the Gothic Temple, is a miniature cathedral-cum-castle built in 1741 according to a triangular plan by James Gibbs; a waist-high railing separates it from occasional herds of curious tourists and indifferent, grazing sheep. I was surprised to find several works by the late English author T.H. White on a bookshelf in the vaulted-stone living room, including one of my childhood favorites, *Mistress Masham's Repose*. The bodice-ripping title belies a whimsical plot, wherein an orphan discovers a band of Lilliputians secretly living in the garden of her vast and ruinous ancestral home. Naturally, adventures ensue.

What particularly captivated me when I first read the book, at the age of 9 or 10, were White's descriptions of the estate's architecture and landscape, through which he tweaked pretensions of British history and culture.

One dusty parlour, for instance, contains a chair that Queen Victoria sat upon, "with a glass lid over the seat, to preserve the royal imprint." Monuments in the park celebrate dubious worthies such as Gen. John Burgoyne, who surrendered an army of 5,000 men to the Americans during the Revolutionary War.

Being a curious child, I looked up each unfamiliar reference in my grandfather's *Encyclopædia Britannica*; eventually I caught on to the joke. But at least one reference eluded my younger self: White's setting turns out to be a thinly veiled portrayal of Stowe. The house was converted into a boarding school in the 1920s, and White taught there for several years. (The school remains, the grounds are now owned by the National Trust, and bookings at the Gothic Temple are available through the Landmark Trust, a U.K. nonprofit that restores architecturally significant buildings as short-term vacation rentals.)

I used to pore over an illustrated map on the endpapers of *Mistress Masham's Repose*, which closely resembles the one in the National Trust's current Stowe pamphlet, minus a few irreverent additions such as an arrow pointing to a fictitious village called "Monk's Unmentionable." The illustration served as my first introduction to the English landscape garden, but until this summer I hadn't experienced a major example firsthand.

Wow. Capability and his collaborators positioned each structure to offer views of one, two, or three others through strategic breaks in topography and foliage. The paths between the eyecatchers are rarely laid on direct routes, so that a stroll through the grounds at Stowe becomes a voyage of discovery (and an agility course in the avoidance of sheep droppings). I didn't see a single Lilliputian, but no matter. The design alone was wondrous.

Neil Crane



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# LETTERS

## Block Party, August 2013

P.S.'s Party Wall manages to be both conceptual and phenomenal. In the woven façade, this happens at the same time, where one can see the façade as the lacy scrim that it is, understanding it phenomenologically, or, alternatively, understanding the cut/weave pattern as resembling a long-board-shaped void, and to begin to reconstruct the chain of events that must've occurred to produce this screen. What the writer calls "bland," I believe to be the consequence of a lengthy process of board-production and the architects' subsequent repurposing of the leftovers. [ONLINE COMMENT](#)

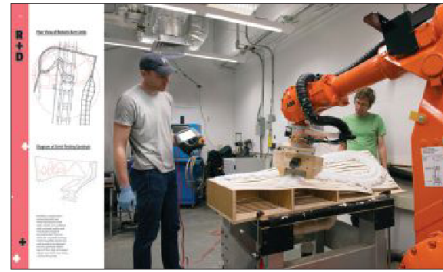
## Hipsters and a Billionaire, July 2013

(White) hipsters and billionaires and "trickle down" mentality is what will help Detroit? Read between the lines and you'll see that what's being said here is troubling. No one will face the real issue, which has everything to do with the demographics and the attitudes of people around the long-term issues. [ONLINE COMMENT](#)

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### Corrections:

*The July issue photograph above—which shows R+D Award recipients Joshua Bard and Steven Mankouche, and their variable profiler tool—was taken at Carnegie Mellon University's Digital Fabrication Lab. Bard is currently a professor at Carnegie Mellon University.*

*On page 26 in the August issue, Joan Blumenfeld's name was misspelled.*

*The August story "EcoHawks Research Facility" incorrectly cited the Hill Engineering Research & Development Center's LEED status. While the Center anticipates LEED Platinum certification, it has not yet received the official designation. ARCHITECT regrets the errors.*



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This delightful video on the ABCs of architecture animates iconic structures around the world [bit.ly/1qPJJMZ](http://bit.ly/1qPJJMZ)

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The average new apt in the US is larger than the avg new UK single family home via @architectmag

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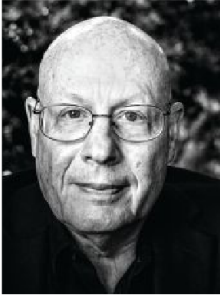
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# CONTRIBUTORS



**ROGER K. LEWIS**

**ROGER K. LEWIS, FAIA**, is an architect and urban planner, a professor emeritus of architecture at the University of Maryland at College Park, and an author and journalist.

After earning two architecture degrees at MIT and serving as a Peace Corps volunteer architect in Tunisia during the 1960s, Lewis helped start the architecture program at the University of Maryland School of Architecture, Planning and Preservation, where he taught architectural design from 1968 to 2006. A practitioner throughout his teaching career, his Washington-based architecture firm has designed or co-designed a wide range of award-winning projects.

In 1998, the U.S. General Services Administration

appointed Lewis to its Design Excellence National Peer Committee, which reviews the design of federal projects, and he serves periodically as a GSA design consultant. He is also a planning and architectural design consultant to other metropolitan Washington-area government agencies.

His columns and cartoons have received numerous awards and have been republished nationally and internationally. In 1984, Lewis launched his architecture-themed, illustrated column, "Shaping the City," in *The Washington Post*. He is the author or co-author of numerous journal articles and books, most recently the 2013 third edition of *Architect? A Candid Guide to the Profession*.

➔ Read Lewis's advice for young architects, starting on page 72.

## Millcreek Laser Cosmetic Center

Location: Salt Lake City, Utah  
Architect: LMK interior design



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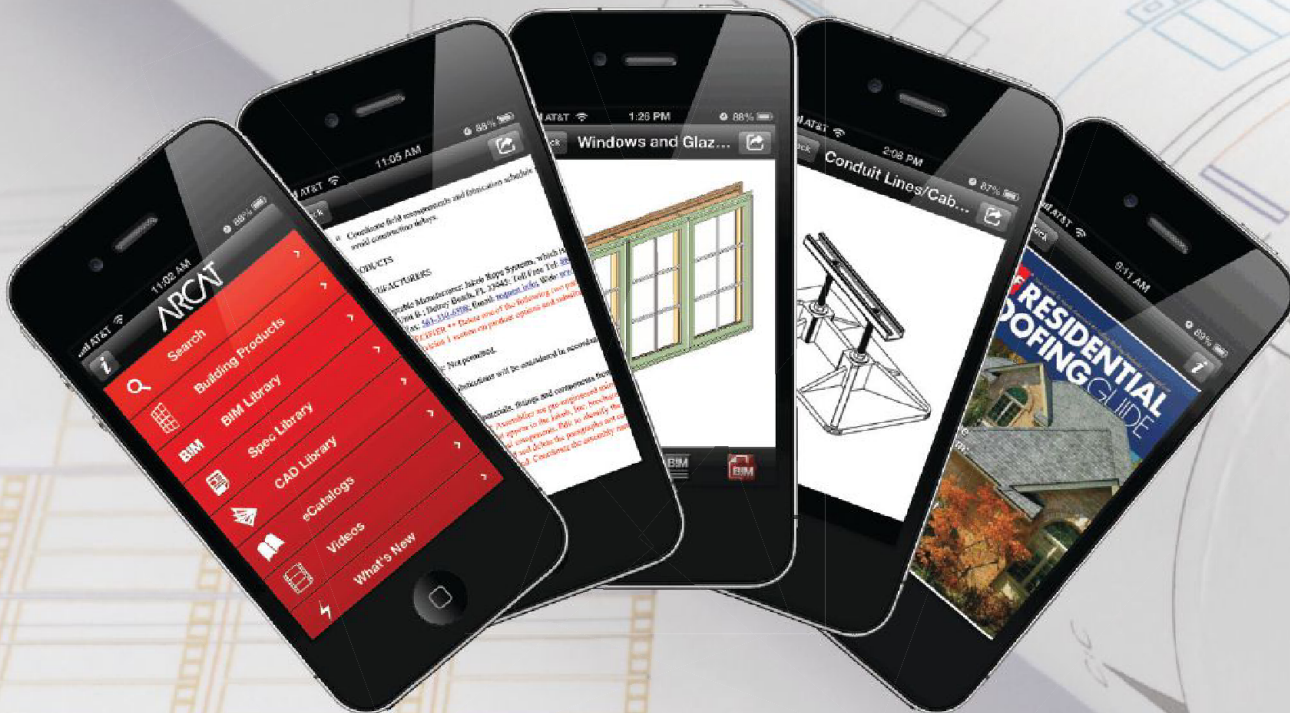
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# FRONT



## POST PRIME

IF JEFF BEZOS HOPES TO REVAMP 'THE WASHINGTON POST,' HE COULD START WITH THE NEWSPAPER'S NEXT HEADQUARTERS.

Late in August, the online everything store Amazon.com submitted a new proposal for offices in downtown Seattle, featuring three biomorphic, spherical buildings.

Yet the proposal—a refined draft from architects NBBJ highlighting a cluster of skeletal structures arranged like a water molecule—was far from the weirdest news to come out of Amazon HQ in August. That happened earlier in the month, when it was announced that Amazon CEO Jeff Bezos had purchased *The Washington Post* from the Graham family.

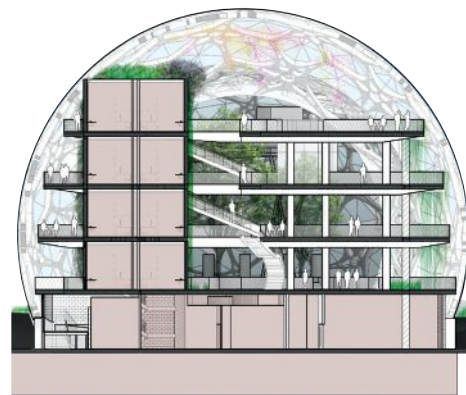
The same day that the *Post* announced the \$250 million sale, the newspaper also reported on a number of proposals from developers for its new office building. Gensler, HOK, and EE&K a Perkins Eastman Company are among the firms tapped by developers looking to bring on the *Post* as an anchor tenant.

Representatives from several of the firms involved in these bids declined to comment on what the sale means for any plans to move

*The Washington Post*—whose relocation was announced months prior. Most of the development schemes made public would take the region's paper of record from downtown, where its now-former parent company will retain offices, to a transitional neighborhood.

The contrast between the possibilities is stark. Whereas the proposal submitted to Seattle City Hall for Amazon pledges to “stretch the boundaries of architectural innovation,” the building designs for the *Post* are more restrained—in part by Washington's building regulations, but also by the diminished size of today's newsroom.

With any luck, the sale means an opportunity to rethink the newspaper's office, small though it may be. The dour newsroom is an almost built-in part of newspaper culture today. (Squat office buildings are a similarly regrettable feature of the nation's capital.) So long as Bezos is rethinking how newspapers work, perhaps he should start from the ground up. KRISTON CAPPS



The central element of NBBJ's proposal for Amazon's headquarters is a trio of conjoined Catalan-sphere modules, each built with a structural-steel skeleton. According to the proposal submitted in August, these spheres would range from 80 to 95 feet in height and contain five floors of office space. The rounded, pentagonal facets of the spheres would meet in starlike intersections.

## July 2013

Architecture Billings Index

52.7

↑ 1.1 pts from June

54.2

Commercial ↑

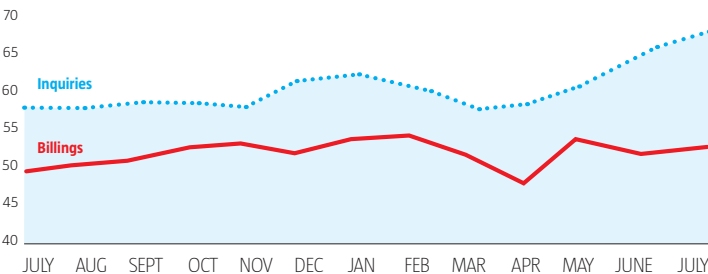
50.6

Institutional ↓

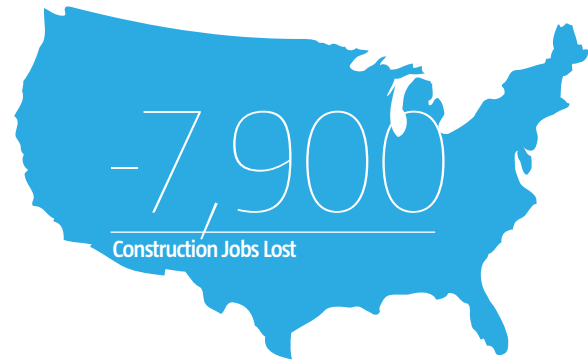
Mixed Practice ↑

56.9

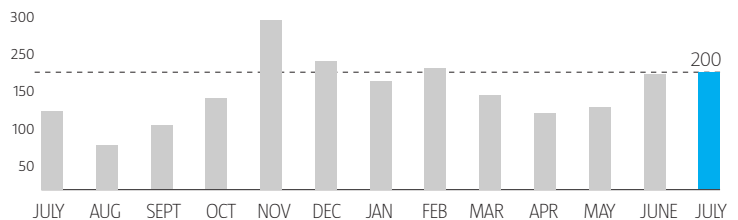
Multifamily Residential ↓



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



ADP National Job Growth (in Thousands)



**Top:** Bharati Research Station, India's third Antarctic outpost, completed in 2012.

**Above:** A rendering of South Korea's Jang Bogo Antarctic Research Station, designed for a site that is only 1,400 miles from the South Pole.

## ARCHITECTURE ON ICE

A NEW EXHIBITION SHOWCASES FIVE NEW DESIGNS FOR THE WORLD'S LEAST-FORGIVING LOCALE: THE ANTARCTIC CONTINENT.

As superstorms become more common, architects are designing more resilient buildings capable of resisting harsher environments. That building technology, which is designed to anticipate the imminent effects of climate change, is opening up one of the most inhospitable environments on Earth to more accommodating architecture.

A new exhibition at the Museum of Science and Industry (MOSI) in Manchester, United Kingdom, highlights five designs for structures near the South Pole. The exhibition, "Ice Lab: New Architecture and Science in Antarctica," now on view at the Lighthouse in Glasgow, Scotland, opens in October during the Manchester Science Festival as the second leg in an international tour.

The exhibition was commissioned by the British Council and the U.K. art organization, the Arts Catalyst. Vicky Richardson, the director for architecture, design, and fashion, at the British Council, notes in an email that the increasing research in Antarctica has produced "a new era" of construction on the continent.

"It's obviously uniquely challenging to build in such a harsh climate, but I think the projects show the potential of design in overcoming huge obstacles to make it possible for humans to inhabit extreme environments," she writes.

The featured projects include three built structures: the U.K.'s relocatable Halley VI (designed by Hugh Broughton Architects with AECOM), Belgium's zero-emission Princess Elisabeth Antarctica (International Polar Foundation), and India's Bharati Research Station (bof Architekten/IMS). A fourth project, South Korea's Jang Bogo Antarctic Research Station (Space Group), is slated to open by 2014. The exhibition also features a design by Denmark's David Garcia Studio (now Map Architects) called Iceberg Living Station—which would be carved directly out of an iceberg and would melt after 7 to 10 years. SARA JOHNSON

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# HERZOG & DE MEURON DOWN UNDER

HASSELL AND HERZOG & DE MEURON WILL RENOVATE MELBOURNE'S FLINDERS STREET RAIL-INTERCHANGE TERMINAL.

A unanimous jury has selected the proposal from firms Hassell and Herzog & de Meuron as the winner of the Flinders Street Station competition, which was organized by Major Projects Victoria to revitalize the Melbourne, Australia, rail-interchange terminal. The Victorian Coalition Government began soliciting entries in November 2011 for its competition to reimagine the Flinders Street Station. The jury picked the Hassell and Herzog & de Meuron entry from a field of six short-listed projects, which were judged based on transit functions, built form as it relates to cultural heritage and urban design, value spent during development delivery, and overall design.

Victorian Government Architect and jury chair Geoffrey London described the Hassell and Herzog & de Meuron proposal and its roof of latticed barrel vaults as "a beautiful and compelling integration of aspects of the original station design, strongly reinforcing its gateway status." These signature vaults, which are laid out one per track along the passenger concourse, were inspired by the never-realized features of the station's 1899 design by Fawcett and Ashworth, according to the proposal. The jury commended the design team for the vaulting, which it cited as being "robustly and cleverly detailed to provide shelter, light, and natural ventilation as well as an enjoyable, atmospheric, and highly memorable place." DEANE MADSEN

## CONTINUING EDUCATION

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New design and construction methods as well as changes in building codes are driving improved energy performance in new homes. (1 AIA)

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## BSD Launches Free Revit Objects Library

Autodesk Revit users scrolling futilely through the program's supplied-materials library to manually add custom materials and asset properties may soon get relief. Atlanta-based software developer Building Systems Design (BSD) has created two free resources to expand Revit 2013's catalog almost instantly.

This month, BSD is launching a library of nonproprietary Revit objects complete with material asset information at the annual Construct trade show. (Full disclosure: Construct is organized by Hanley Wood, ARCHITECT's parent organization.) The initial release will come as an RVT project file to permit sorting and searching, and contain 400 types of walls, doors, windows, floors, and ceilings. Plumbing, bath, and roofing objects will be added soon.

Any Revit user, regardless of whether they subscribe to BSD's programs, will be able to download this catalog. For BSD, providing this resource means that Revit users will be employing objects linked to specifications in its construction specifications program, SpecLink-E. Current SpecLink-E subscribers will be able to activate the associated specifications by using the objects in Revit.

When users apply one of the 1,600 materials in this catalog to a Revit element, the element will automatically link to the associated set of specifications in SpecLink-E. The library conforms to the 2004 edition of Construction Specifications Institute's (CSI's) MasterFormat and the CSI three-part specifications format. This library will also be compatible with Revit 2014. WANDA LAU

## STEP UP, STEP DOWN

## BIG MOVES ON THE CAREER LADDER

**Blakely Dunn, AIA**

President  
NCARB



**James P. Hackett**

CEO  
Steelcase



**Peter Ruggiero, AIA**

Design principal  
HOK



**Kate Nguyen**

Marketing coordinator  
JZA+D



**Nathan Miller**

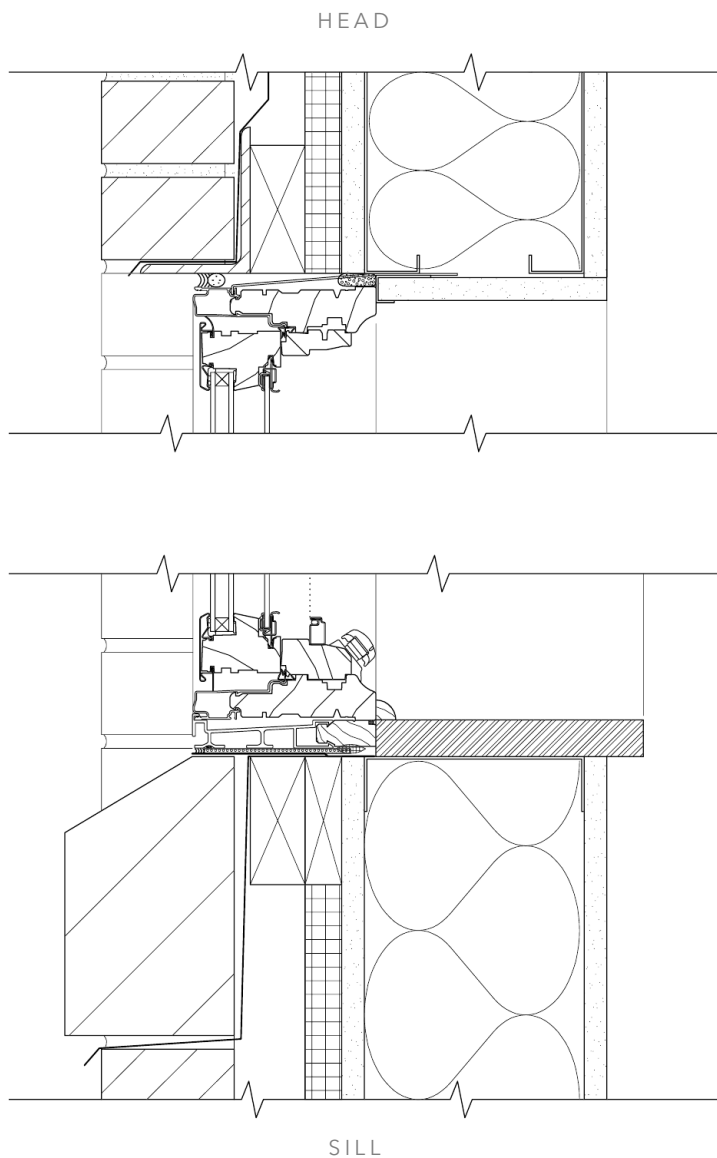
Associate partner  
Case



"Nate Miller Is an Associate Partner & Still Upping the Awesome at Case!" reads the headline in a press release from the New York-based firm. That's a follow-up to a 2012 announcement, when Miller joined Case as director of computational design: "Nathan Miller Ups the Awesome at Case!" While it's hard to say how much awesome Case can take, it sounds as though Miller—who will also serve as director of architecture and engineering services—had better bring it.

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COMMERCIAL  
SOLUTIONS

## Royal Institute of British Architects Urges Larger Homes

While American homes metastasized during the late 20th century, Britain's shrunk, and the country now has the smallest homes in Europe. "Battery hen Britain," the *Daily Mail* tabloid has declared.

The average size of all new dwellings in the U.K.—houses, townhouses, and apartments—was 818 square feet, per recent data. That's a scant third of the average new single-family home in the United States, and quite a bit smaller even than the average new U.S. apartment built that year (1,250 square feet). Today, after the recession, the average new apartment built in the U.S. is still 1,138 square feet.

Two years ago, the Royal Institute of British Architects (RIBA) began calling for more space and natural light in new U.K. homes. RIBA is now asking Parliament to adopt national minimum standards for space and light. London already has such standards for its housing, and RIBA recommends that these be rolled out across the U.K.

With Parliament's review imminent, the architects' association is pulling out all the stops for its campaign, called HomeWise, to build bigger. A policy proposal to make houses bigger? Backed by architects? To an American, it seems almost inconceivable. In the States, the pendulum is starting to swing the other way: The mayors of Boston and New York want to change their building regulations to allow microhousing, which is already a reality in cities such as Seattle.

People trade space for location or affordability all the time. But that's not what's happening in the U.K.—there simply aren't enough housing options. For its part, RIBA maintains that better standards will result in more flexible, comfortable homes that satisfy residents without adding to costs or red tape. AMANDA KOLSON HURLEY

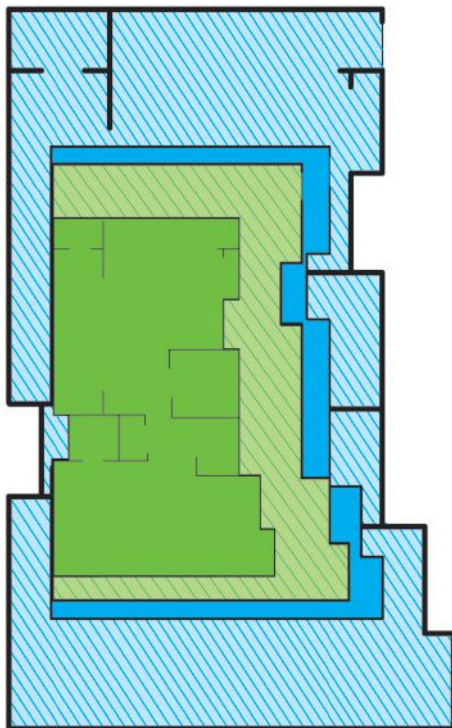
### U.S. vs. England, New Dwellings, 2009

● **2,438** /sq. ft.  
Average square footage of new single-family homes, U.S.

● **1,227** /sq. ft.  
Average square footage of new multifamily homes, U.S.

● **1,029** /sq. ft.  
Average square footage of new single-family homes, England

● **653** /sq. ft.  
Average square footage of new multifamily homes, England



### PORTFOLIO

# SHoP ARCHITECTS

**Eight sold-out Jay Z shows** to inaugurate the Barclays Center: How are you supposed to top that? As the Brooklyn Nets prepare for their second season in the Brooklyn, N.Y., arena, its designers, SHoP Architects, are looking to leave an even bigger mark on the borough.

In March, the New York firm released its master plan for the redevelopment of a former Domino Sugar factory site in Brooklyn, including five towers along the waterfront—one of them an O-shaped building that retains Brooklyn–Manhattan sight lines. The Municipal Art Society tapped the firm for a contest to rethink New York's Penn Station. See SHoP Architects' latest work in ARCHITECT's online Firm Profile. K.C.



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# A TALK WITH ...

BARRY BERGDOLL, WHO IS STEPPING DOWN AS CHIEF CURATOR OF ARCHITECTURE AND DESIGN AT THE MUSEUM OF MODERN ART TO FOCUS ON TEACHING AT COLUMBIA UNIVERSITY.



## What changed during your six-and-a-half years at MoMA?

I arrived at a very strange moment, it turned out. It felt like the world fell apart right when I arrived. We're in a new normal, and it's not the same as the normal when I was in discussions [to join the museum] in 2006. By the time we opened "Home Delivery," my first show, in 2008—when that show opened, Lehman Brothers had collapsed, and architects were being laid off left, right, and center.

## How did you approach your tenure as chief architecture curator?

My first major decision was that my first exhibition was not going to be a monograph of an individual. I felt it was a critique of the phenomenon of the star architect, without being a critique of the starchitects themselves, most of whom are phenomenally talented.

## Is that phenomenon still a problem?

Now I see problems in the new emerging culture. The pendulum has almost swung too far. There's a real tendency to embrace spontaneous processes, a notion that every intervention is an act of architecture. The baby that must not be thrown out with the bathwater is expertise.

## What was your role in MoMA's early decision to raze the former American Folk Art Museum—before the museum reconsidered?

I didn't have a major role in that process in the beginning. That curators are involved with the real-estate decisions—how do people imagine that? I was very involved with discussions on the selection of Diller Scofidio + Renfro, and we're talking about a whole range of possibilities. At least through the fall, I will be part of those discussions—at least until a successor is named. K.C.

➔ Full interview at [architectmagazine.com](http://architectmagazine.com)



ESTO GALLERY: WHITNEY MUSEUM OF AMERICAN ART

Esto photographer Jeff Goldberg has been tracking the progress of the new Whitney Museum of American Art's construction in New York's Meatpacking District. Designed by Renzo Piano Building Workshop, the museum will be located alongside the High Line—a mere 4 miles from its original, Central Park-adjacent home, which was the work of Marcel Breuer. D.M.

# William Pereira, Modernist Maverick

AN EXHIBITION AT THE NEVADA MUSEUM OF ART INVESTIGATES THE ARCHITECT'S LEGACY.

**Peter Zumthor's proposal** to raze and replace architect William L. Pereira's original Los Angeles County Museum of Art (LACMA) campus has received praise—from most quarters, anyway. (See Christopher Hawthorne's take on page 62.) A new exhibit at the Nevada Museum of Art will no doubt help to illuminate Pereira's role in Los Angeles history.

Since Pereira designed the core LACMA buildings—the Bing Theater, the Hammer Building, and the Ahmanson Building—which opened in 1965, the museum's campus has become an often-criticized hodgepodge of add-ons by a slew of different architects. Even when it opened, as Elizabeth A.T. Smith notes in the show catalog, "the architecture of the LACMA complex was harshly criticized for its heavy-handedness, decorative fussiness, and compromised conditions for presenting art."

If Pereira's LACMA builds Zumthor's "black flower," the impact on Pereira's legacy would be significant—but not catastrophic. The Nevada Museum of Art exhibition, which runs through Oct. 13, explores several of Pereira's other iconic projects: the 1961 Theme Building at Los Angeles International Airport and San Francisco's 1972 Transamerica Pyramid among them.

The exhibition also includes several commissioned and vintage models, including a 48-foot-tall sculpture of the Transamerica Pyramid by Ball-Nogues Studio.

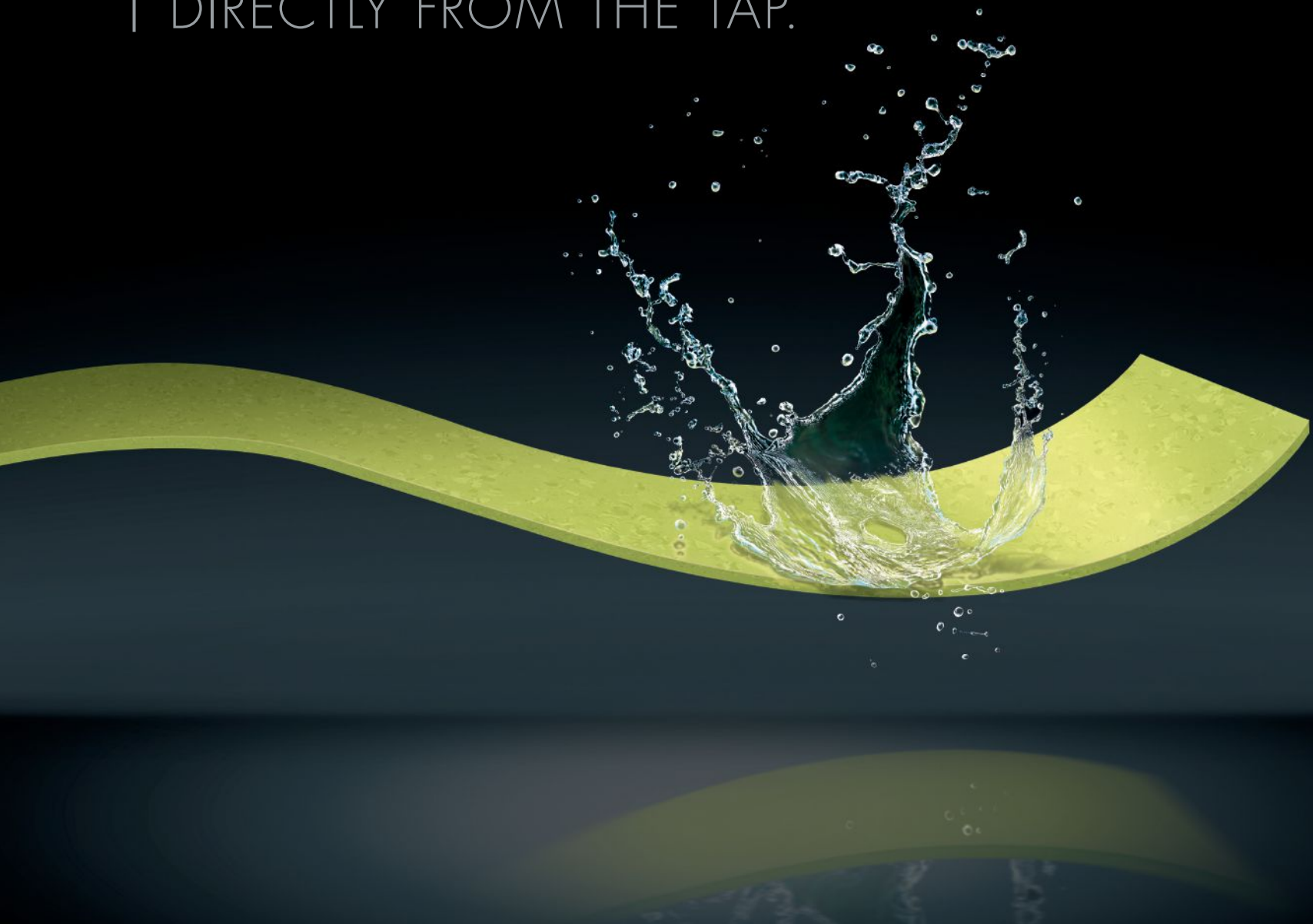
In addition to his better-known projects, Pereira designed scads of commercial buildings around Los Angeles. Curator Colin M. Robertson explains that the exhibition encourages visitors to examine why they might be less familiar with Pereira—who died in 1985—than his contemporaries, such as Richard Neutra or Charles and Ray Eames.

"It would be a shame for buildings or places he designed or planned to disappear without the kind of public dialogue about historic preservation and architectural heritage simply because he and his work were overlooked in late 20th century histories of modernist architecture," Robertson writes in an email.

As to LACMA's outcome, he says that the timing was "a pure serendipitous accident," noting that neither the Nevada Museum of Art nor the show takes an official position on the question. "We will leave it for others to decide merits." S.J.



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## AIA VOICES

SOLAR FLARE | EXPORTING THE SOLAR DECATHLON

*Richard King directs the U.S. Department of Energy Solar Decathlon competition, which launched, after more than a decade of planning, in 2002. Since then, the Solar Decathlon has spread to other continents—two European versions have been held in Madrid (2010 and 2012) and at Versailles, France (2014), and the first Chinese Solar Decathlon occurred last month in Datong, China. “It gives me a sense of real hope to see all of these teams from dozens of countries competing to build a better and cleaner future,” King says.*

**I NEVER EXPECTED A COMPETITION OF HOUSES TO SPARK SO MUCH** interest. It wasn’t until I formulated 10 different ways to judge and measure the houses that I felt more confident we were on to something. The challenge has always been to design attractive, healthy places to live, and make all the energy systems reliably work together. Judging for design excellence and measuring end-use energy challenges young architects and engineers to think creatively. It also compels the schools of architecture and engineering to work together, many for the first time. The arguments between teammates are sometimes heated and passionate, but the collaboration ultimately transforms ideas into reality.

Many of the houses end up as living laboratories elsewhere after the competitions. Missouri University of Science & Technology designed and built four competition houses—all of which have

been placed permanently, side-by-side, on campus. The houses are being used for student housing, but they are also constantly being monitored for energy performance. As can be expected, the university is gaining valuable information. Competition houses are also used as public demonstrations. I recently visited the Science Museum of Virginia in Richmond with my family. When we got out of the car, something caught the corner of my eye—and I turned around to find Virginia Tech’s Solar Decathlon house from 2009 on display in front of the museum.

My wife and I built a zero-net-energy solar house in 2008. It is a highly energy efficient house that includes a 6-kilowatt solar photovoltaic system and a passive design. The house produces barely any carbon emissions. It’s all electric, yet we have not paid an electric bill in five years. We realized, though, that we’ve reduced our carbon footprint by only half because we have two cars in the driveway. I bring this up as a way of saying that the Department of Energy is considering expanding the 2015 competition’s scope to consider transportation: How do you “get around” emissions-free and also live in a home that’s emissions-free? Integrating the parts of our lives—not just our homes—to be energy efficient is the next step. And I think we can get there. —As told to William Richards **AIA**

➔ Learn more about the 2013 Solar Decathlon (Oct. 3–13) at [solardecathlon.gov](http://solardecathlon.gov).

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CONVENTION CENTRE WEST, VANCOUVER; DESIGN ARCHITECT: LMN ARCHITECTS; PHOTO: DAN BARNES

## **ACADEMY OF ARCHITECTURE FOR JUSTICE FALL CONFERENCE**

Academy of Architecture for Justice  
and Project Delivery  
September 18-21 | Portland, Ore

## **ORIGINS OF MODERNISM**

Committee on Design Fall Conference  
September 22-27 | Berlin  
with Potsdam add-on through September 28

## **DESIGN + HISTORY: THE AIA TALIESIN COLLOQUIUM ON THE PRACTICE OF HISTORIC ARCHITECTURE**

Historic Resources Committee  
October 18-19 | Scottsdale, Ariz

## **FOREFRONT: ARCHITECTS AS COLLABORATIVE LEADERS**

Technology in Architecture Practice  
and Project Delivery  
October 24-25 | Salt Lake City

## **2013 LEADINGAGE ANNUAL MEETING & EXPO**

Design for Aging  
October 27-30 | Dallas

## **DESIGN THINKING & CREATIVITY: ENVISIONING THE NEXT GENERATION OF LEARNING ENVIRONMENTS**

Committee on Architecture for Education  
November 7-9 | San Francisco

## **HEALTHCARE DESIGN .13**

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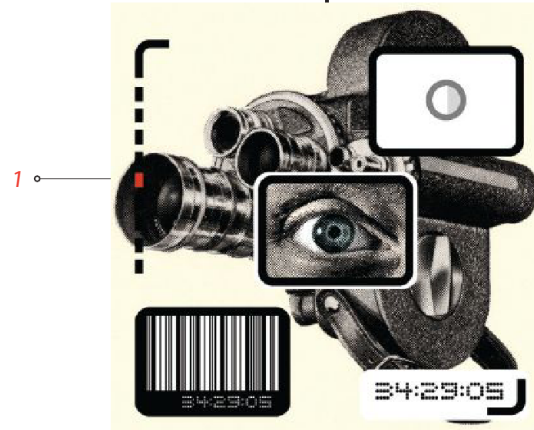
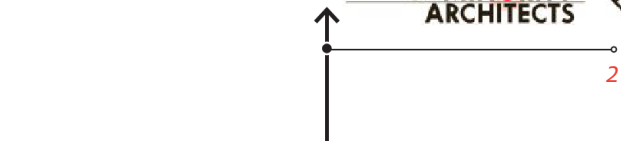
Compiled by William Richards



PHOTO 3: ©MATTHEW WRIGHT

**1. Afternoon Matinee.** Some days it seems like “infrastructure” or “systems” surpass even de rigueur “sustainability” as buzzwords. The people of Rotterdam know this all too well—the origin of their city centered on an 11th-century dam on the Rotte River. It seems fitting, then, that next month’s Time Machine, an architecture film festival, is taking place there. On deck are movies about cities, movies about other things (but really about cities), Drop Cities, dying cities, and, most of all, how buildings and cities share reciprocal systems that govern how we live, work, play—and do things like go to film festivals. Architecture Film Festival Rotterdam runs Oct. 10–13.

➔ To learn more, visit [affr.nl](http://affr.nl).



4

**2 The Next 40 Years.** The National Organization of Minority Architects (NOMA) marked four decades last year by holding its annual meeting in Detroit, where, in 1971, 12 African-American architects met at the AIA National Convention to advance minority voices in the profession. What will the next 40 years hold for NOMA? Find out at the 41st Annual NOMA Conference in Indianapolis, Oct. 3–5.

➔ Learn more at [noma.net](http://noma.net).

**4 Phoenix Summit.** In 2009, the Boston Society of Architects' Women Principals Group launched the first AIA Women's Leadership Summit. Four years later, the event has grown to address the challenges and opportunities of practice for women beyond the head office—interns, associates, educators, owners, and innovators. This year's summit will take place in Phoenix, Oct. 24–26, with workshops, conversations, and featured speakers Monica Ponce de Leon, Marilyn Taylor, and Billie Tsien, AIA.

➔ Learn more and register at [aia.org/diversity](http://aia.org/diversity).



3

**3 Getting Frisky.** It's fine to look at buildings, but the DesignPhiladelphia festival organizers want you to touch them, hear them, smell them, and—yes—taste them. This year's festival theme EXPERIENCEdesign! will showcase new and old architecture in the Quaker City, but it will also demonstrate how design influences every part of our lives and each of our five senses. DesignPhiladelphia, the signature event of the Philadelphia Center for Architecture, takes place Oct. 10–18.

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

**5 Growing Pains.** As we begin to emphasize preventative medicine as much as we emphasize palliative care, the healthcare industry will generate upwards of 5.6 million new jobs by 2020, according to researchers at Georgetown University. So the question is not about how big the healthcare design sector will grow—the sky seems to be the limit—but how sustainably it will grow. Join the Center for Health Design and the AIA Academy of Architecture for Health at the Healthcare Design Conference 2013 in Orlando, Fla., Nov. 16–19.

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



5



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# AIAPRACTICE

AN ETHICAL INQUIRY, PART II | DON'T BE FRIGHTENED



ILLUSTRATION: VIKTOR KOEN

**NOBODY EVER DIED FROM ARCHITECTURE. BAD ENGINEERING? YES.** But, not from architecture. Yet, by basing state registration laws for architects on the same public protection rationale as the ones for engineers, the profession relies on the fear of unsafe structures to promote or enforce the hiring of architects. A more successful marketing strategy would be reality-based, not fear-based. The reality is that architects, of course, do protect the public, and they do that in their role as engineering generalists coordinating engineering specialists. But it is the science, not the art, that does the protecting.

The confusion arose about 150 years ago when the AIA's founding principles promoted "architectural science," its admission standards required expertise in "architectural science," and its national campaign for registration laws focused on regulating "architectural science." This scientific focus was quite logical because objective, measurable fields are naturally compatible with regulation. Unfortunately, somewhere along the way, the crucial word "science" was dropped from the legal effort. This historical accident leaves the false impression that governments can regulate the entire artistic enterprise of architecture.

It is no accident, of course, that the legal legitimacy of professions—just like their ethical legitimacy—rests on their objective ability to protect human survival. Medicine protects health, law protects justice, and engineering protects safety. A lapse in any of these three can take human life, and therefore, governments grant the professions that protect the citizenry special monopoly privileges to practice.

Napoleon Bonaparte believed that all accidents are just fate

misnamed. It would be a tragic fate indeed for architects to allow the very narrow (though important) description that law and ethics dictate for the profession of architecture to limit the very broad and generous reality of the discipline as a whole. Yet architects make this mistake all the time. They justify their artistic choices to clients and communities on purely scientific grounds.

Once in a while, an example of this misleading behavior even rises to the level of the AIA National Ethics Council, which, in 2006, heard the case of an architect who testified to the local zoning board that she needed to raise the elevation of a flat, multiacre suburban home site by several feet because of its peculiar drainage characteristics. Turns out the clients just had an aesthetic preference for living on a hill. All the months of earthmoving resulted in neighborhood flooding and property damage, all because of a made-up scientific argument to get artistic results.

While this architect's ruse was egregious, it still points to a pervasive fear many practitioners share: a fear of the legitimacy of aesthetics. Aesthetics covers the multitudes of design choices that are not engineering choices—the *utilitas* and *venustas*, if not the *firmitas*. For architects to hide two-thirds of their work under the legitimacy of the other one-third is a frustrating and unprofitable exercise at best—especially if that two-thirds is the part they care more about and that distinguishes them from other professionals.

An accident of history has seduced architects into an easy reliance on their narrow and misleading legal legitimacy. But accidents can become the best opportunities, and architecture's fate is not sealed. —Victoria Beach, AIA **AIA**



# Value Proposition

## A snapshot of architectural education today.

BY SUZANNE MCGEE

**IN JUNE, FORBES LABELED THE MASTER OF ARCHITECTURE** degree as tied (with political science) for the ninth worst master's program that a student can pursue. True, the M.Arch. fared better than library science or education, but it wasn't nearly as appealing as a Master of Business Administration degree in terms of how well a student will be compensated in the years following graduation.

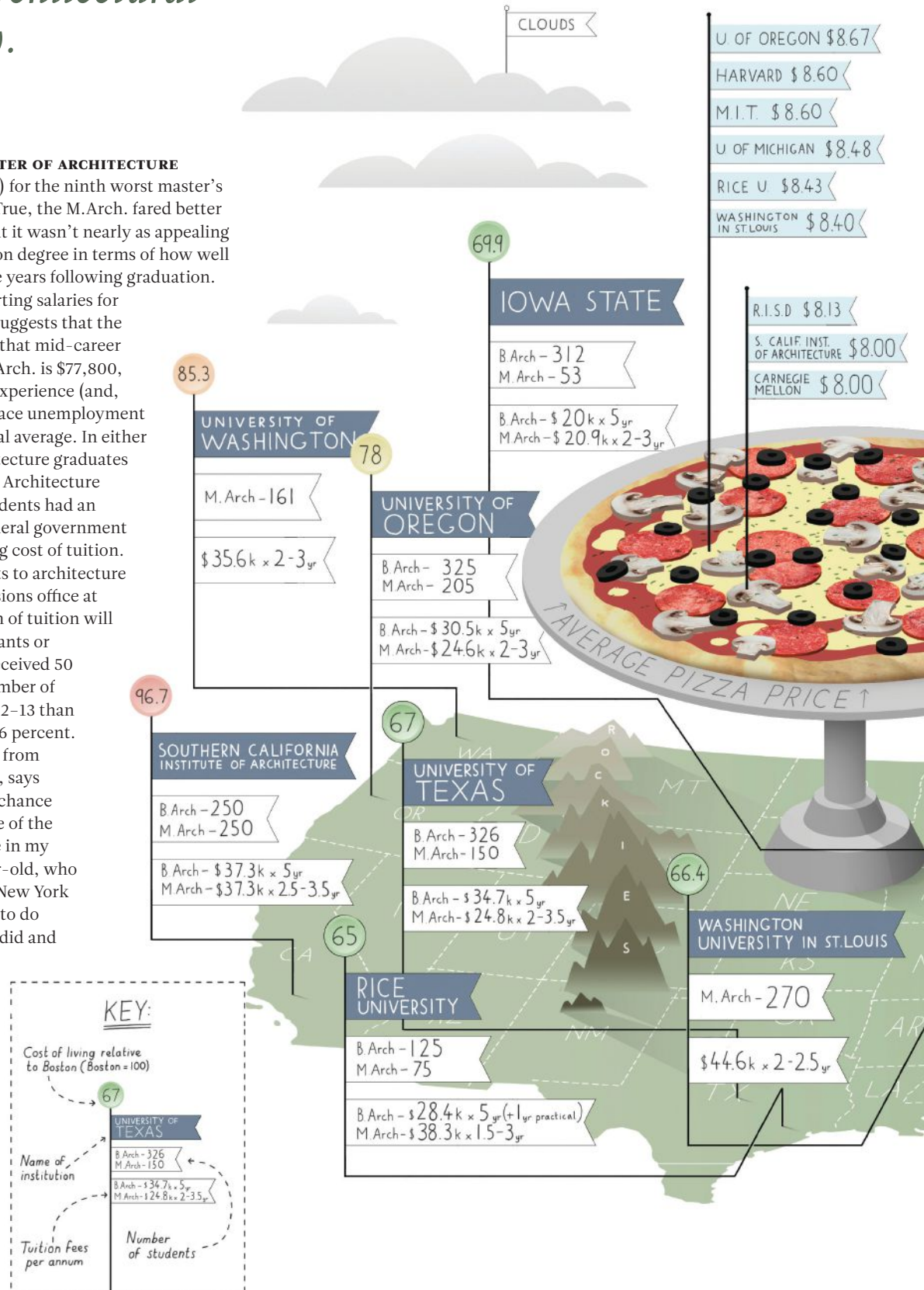
Indeed, the data available on starting salaries for graduates of architecture programs suggests that the outlook isn't that rosy. *Forbes* noted that mid-career median pay for someone with an M.Arch. is \$77,800, and those with a B.Arch. and some experience (and, presumably, less student debt) still face unemployment rates that are higher than the national average. In either case, the student debt load for architecture graduates is lofty: A 2012 American Institute of Architecture Students survey showed that respondents had an average of \$72,000 in private and federal government student loans to cover the ever-rising cost of tuition.

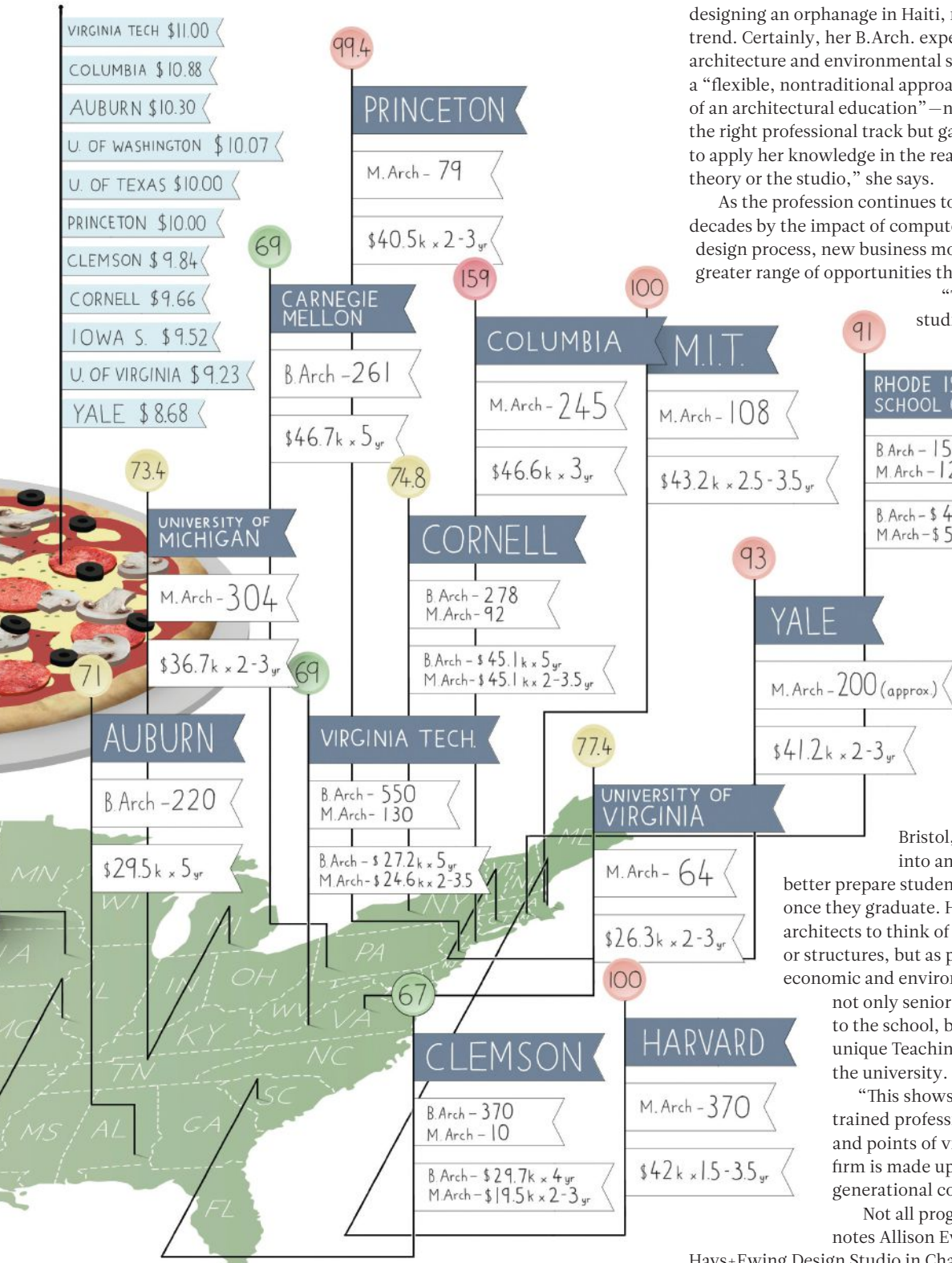
Is it worth it? Certainly applicants to architecture schools seem to think so. The admissions office at Yale University (where a year's worth of tuition will set a student back \$41,225, before grants or scholarships), reported that it had received 50 more applications for the limited number of places in its M.Arch. program for 2012-13 than for 2011-12, which is a gain of about 6 percent.

Tegan Bukowski, who graduated from Yale's M.Arch. program this summer, says she can understand why. "I had the chance to meet, talk to, and work with some of the most interesting and talented people in my chosen profession," says the 25-year-old, who has been working since June for the New York firm Leroy Street Studio. "I was able to do advanced studios with both Zaha Hadid and Peter Eisenman."

Bukowski admits that even with the best education, finding a job and earning enough to repay a hefty student debt can be a tall order. "People who have a double major or a strong secondary interest seem to stand out a bit more from the crowd," she says.

Bukowski, who launched her own art and architecture nonprofit organization, ArtistsActivists.org, while still an undergraduate at Washington University in St. Louis, and who is spending her free time





ILLUSTRATIONS: MICHAEL KIRKHAM

designing an orphanage in Haiti, may well have benefited from that trend. Certainly, her B.Arch. experience at Wash U.—a dual major in architecture and environmental studies with what she described as a “flexible, nontraditional approach to what a student wants to make of an architectural education”—not only confirmed that she was on the right professional track but gave her the freedom to explore ways to apply her knowledge in the real world. “It wasn’t just about design theory or the studio,” she says.

As the profession continues to evolve, altered forever in recent decades by the impact of computers and digital fabrication on the design process, new business models have followed that allow for a greater range of opportunities than ever before.

“The sole proprietor with the drafting studio who does design-bid-build model isn’t the only

model and may become even less relevant,” suggests Eric Reid Hoffman, AIA, associate design architect at Trivers Associates in St. Louis, and a recipient of a 2013 AIA Young

Architects Award. Hoffman, who is also a professor of practice at Washington University, says the school is adding courses and programs in response to these changes.

Stephen White, AIA, dean of the School of Architecture, Art, and Historic Preservation at Roger Williams University in Bristol, R.I., is also rethinking what goes into an architectural education and how to better prepare students for the world they’ll encounter once they graduate. His ideas include teaching fledgling architects to think of buildings not as “neutral” designs or structures, but as part of a “broader cultural and economic and environmental setting,” and bringing not only senior members of architectural firms to the school, but teams from a single firm in a unique Teaching Firm in Residence program at the university.

“This shows the students how skilled and trained professionals manage multiple inputs and points of view,” says White, “and that a firm is made up of architects of all ages with a generational continuum.”

Not all programs have the same emphasis, notes Allison Ewing, AIA, co-founder of Hays+Ewing Design Studio in Charlottesville, Va. “In some programs, the focus is on practical problem solving rather than development of a design concept as the foundation for more creative solutions,” she says, noting that in her days at Yale in the late 1980s the emphasis on tiny sketch models forced her to break away from her preconceptions



## AIA FEATURE

of functional space requirements and instead focus on exploring ideas. “In other programs, I’ve found that the students can get too caught up in solving the practical in conventional terms—for instance, jumping up in scale requirements before the distillation of a concept,” she adds. “There is plenty of time to learn how to lay out a bathroom in the office setting.”

Tom Cole, a newly minted M.Arch. graduate from the University of Washington, notes that his 18 months as a new employee at Seattle-based b9 Architects have opened his eyes to the importance of the business side. “For an architect to have influence over the project, knowledge of the development and business side is very significant,” he says.

Cole’s current boss and former teacher, Bradley Khouri, AIA, b9’s owner and a lecturer at the University of Washington, agrees—but only somewhat. “What an architecture student needs to learn is something more intangible: how to think critically about core design problems,” he argues. Looking back on his own education, he recalls burning the midnight oil at Harvard University’s design studios amongst his fellow students. “Those are the people you’re with between classes and at 2:00 in the morning, discussing ideas and exploring what works and what doesn’t.”

So is an architectural education today worth spending \$50,000 a year to obtain?

“I don’t know. I really don’t know,” admits Khouri. “Certainly, the price tag is making it really challenging.”

*Our students hopefully finish their programs understanding that buildings aren't neutral; they are part of a cultural and environmental setting*

—Stephen White, AIA,  
Bristol, Rhode Island

*The most important thing is the quality of the other students; those are the people you're with between classes and until two in the morning.*

—Bradley Khouri, AIA,  
Seattle, Washington

### Survey of Architecture Schools

What follows are highlights from a limited survey I conducted of certain elements that influence how prospective students choose an architecture school: total enrollment, time to graduation, tuition, cost of living, and average cost of a pizza locally.

The range of tuition fees varies greatly, from as much as \$50,000 per year for an M.Arch. student at Rhode Island School of Design to as little as \$19,536 for an out-of-state student in Clemson University’s M.Arch. program. Similarly, the ability and willingness of institutions to award grants and scholarships also varies greatly. Washington University in St. Louis, for instance, can cover up to half of its \$44,640 annual M.Arch. tuition bill for students and, according to Hoffman,

*In school you're learning the art of architecture; in practice, the building side. Over the course of a career you're trying to bring the two into ever closer alignment.*

—Allison Ewing, AIA,  
Charlottesville, Virginia

*The most important element in any architectural education is the ability to think critically. It's not about learning a process or a particular style.*

—Eric Hoffman, AIA,  
St. Louis, Missouri

95 percent of its students receive some kind of scholarship aid. Some programs with outsize tuitions can appear far more costly than they really are, thanks to generous grants, while seemingly less expensive programs may require students to foot a larger part of the bill through savings or by taking on debt.

Then, too, there’s the cost of living to consider. Compare B.Arch. programs at the Rhode Island School of Design and Carnegie Mellon: They both cost about the same in tuition, but monthly rent of a one-bedroom apartment in Pittsburgh ranges from \$887 to \$1,479, according to ApartmentRatings.com, compared to \$1,340 to \$1,823 in Providence. Which costs more, the M.Arch. program at MIT or Columbia? Well, if you head to New York, you pay nearly \$11 for a pizza, a 25 percent premium, but that’s the tip of the iceberg: Overall, the cost of living in the Big Apple is almost 60 percent higher than in Cambridge, Mass.

In spite of the ugly realities of stagnant salaries, soaring debt loads, and the long, hard slog to licensure, the appetite for architectural education just seems to increase—owing, in some part, to increased community activities undertaken by architects and architecture students in the past decade.

Take Catherine Smith, a Clemson M.Arch. graduate who this fall will begin passing on skills honed in her own Greenville, S.C., practice to students at a local magnet school, the Fine Arts Center. “It reminds me of the Clemson space, where all the arts programs are clustered together and housed in one space,” she says. “Now we’ll make sure that these students can think of architecture as one of a number of ways that they can pursue their interest in art and creativity.”

That, for Washington University’s Hoffman, is how it should be. At the end of the day, he says, providing an architectural education is about balancing a student’s innate creativity and a curriculum’s rigor.

“The responsibility we have is to expose a new generation to new ways of thinking to ensure they realize where their talents lie and how they can employ that ability to think critically,” he says. That may mean working in a traditional architecture firm, working with Architecture for Humanity or for the U.S. Army Corps of Engineers, consulting on sustainable development, or even designing sets in Hollywood. “If they walk out with an ability to think critically,” says Hoffman, “their options are limitless.” **AIA**

# AI KNOWLEDGE

LOAN ME A DIME (X 250,000) | STUDENT LOANS AT A CROSSROADS



ILLUSTRATION: SARAH HANSON

**DEBT IS A FACT OF LIFE. CONSUMER CREDIT LINES, MORTGAGES,** and that 50 bucks you borrowed from a friend are the touch points of every monthly budget. If you went to architecture school, you've probably got some loan burdens, which fall under the "good debt" category—as opposed to "bad" credit card debt, for instance. But whether you've just started your first internship or hung your first shingle as a licensed architect, there are things you can do to manage your student debt so that amortization doesn't have to mean indentured servitude.

According to the Federal Reserve Bank of New York, 66 percent (or \$505 billion) of student debt in the U.S. is held by adults under the age of 40. This translates to hundreds of dollars of monthly loan payments for recent (and not-so-recent) graduates. Outside of the basic costs of living, that fact can also make it difficult for debtors to free up capital or access adequate credit for mortgages and business loans.

Last year, the American Institute of Architecture Students reported that the average undergraduate architecture student leaves college with \$40,000 in loan debt—to say nothing of the debt they may have accrued in graduate school or pursuing licensure. A new survey conducted this summer by AIA Government and Community Relations paints a broader picture. When you include M.Arch. recipients in the mix, 61 percent of all graduates vault past the \$40k mark. Compare that with \$26,600 average loan debt of nonarchitecture college graduates, according to the nonprofit Project on Student Debt, and it's clear that the architecture profession has a major problem on its hands.

Why are architecture undergraduates carrying more debt? Well, a five-year B.Arch. is 20 percent more expensive than a four-year B.S. or B.A. The other factor? Cost of materials. Whether you're a B.Arch. or an M.Arch. candidate, you have a slim chance of avoiding the costs

of Mylar, software, hardware, chipboard, drafting tape, and even a used copy of Christopher Alexander's *A Pattern Language* (for retro street cred)—and you're likely to spend hundreds or thousands of dollars a year just to have the right tools to do your job.

## What is an intern to do?

Federal loan regulations enacted in 2012 allow recent loan borrowers to enter into a new "pay as you earn" fulfillment plan, which builds on pre-existing "income-based repayment" and "income-contingent repayment" plans. You may also be able to take advantage of a "graduated repayment schedule" (or some equivalent) in which your monthly burden starts relatively small and grows over time, or a "standard repayment schedule," which is a single payment amount, month to month.

But whether your loans are serviced by the government or private lenders, consolidation is another way to address your burden. By bundling your debt piles, you'll likely get a lower interest rate for everything, rather than different rates for separate loans.

The AIA is also working with members of the 113th Congress to sponsor the National Design Services Act—an architecture student loan bill written to help current and recent architecture graduates. If it passes and you're eligible, you'll be able to contribute design services in your local city in exchange for student loan assistance by tracking your hours through a designated community design center. Underperforming and at-risk communities get access to your skills, you'll learn a thing or two about your community, and you can dial back your debt load.

The process of becoming a licensed architect is hard enough, after all. It's time you had some help. —William Richards **AIA**

➤ Learn more about the National Design Services Act at [aia.org/advocacy](http://aia.org/advocacy).

# AIAPERPECTIVE

PEER TO PEER



PHOTO: WILLIAM STEWART

**I WORRY ABOUT THE YOUNG MEN AND WOMEN ENROLLING IN** architecture school. No longer is keeping up grades the most pressing challenge; now it's the cost of education. I was lucky—I had a scholarship to pay tuition, but I still struggled to find ways to earn money to make ends meet. Nevertheless, by comparison to what today's student is expected to pay, my education was a bargain; and when I received my diplomas, they didn't come wrapped in the IOUs of crushing student loans.

We're in danger of making cost an insurmountable barrier to pursuing a college education. Couple that with the challenge of finding employment upon graduation, along with the recent irresponsible articles on architecture as an undesirable degree, and we could be facing a crisis in attracting creative young people to the profession. It's in this context that the growing phenomenon of MOOCs (Massive Open Online Courses) appears to be a creative response to rising tuition costs. Yet, leaving aside the question of how applicable this flexible, low-cost teaching model is to the discipline of architecture, it appears to have little room for the magic of inspired mentorship and the spirit of the studio culture that makes our profession unique.

I only have to think back to the AIA Convention in Denver when I listened to the eloquent acceptance speech of dean Robert Greenstreet, Intl. Assoc. AIA, of the School of Architecture and Urban Planning at the University of Wisconsin-Milwaukee, this year's recipient of the AIA/ACSA Topaz Medallion for Excellence in Architecture Education. I envied his students. I wanted to be in his class, or be involved in one of his community projects, or even have a beer with him at a local pub. More than even knowledge of his field, the way he lived his values reminded me why I became an architect. It made me think about those professors whose mentoring had such a positive effect on me when I was at the University of Detroit.

We talk a lot about mentoring, as if it were solely a bridge between different generations. Yet, in the end, isn't the peer-to-peer mentoring of our fellow students what ultimately has the greatest impact? This peer-to-peer interaction and bonding beyond the studio develops the collaboration skillsets that are not taught in classrooms but are necessary to transform independent-thinking students into a community of professionals. How do we make sure succeeding generations continue to have access to this kind of mentoring, which shapes not only careers but lives? This is what's at risk if we allow a college education to be priced beyond the reach of those who hold the key to our future not only as a profession, but as a nation.

I'm aware that cost is not the only hurdle facing those who pursue a career in architecture. There are the challenges of sitting for the ARE, as well as the rigors of the Intern Development Program, as they all the while try to earn a living. These are issues the AIA is working on with our collateral partners in the academy, NCARB, and state licensing boards. We are making progress here to improve the process—and it's about time we did.

But the cost of an education that financially burdens young people beyond graduation and far into their careers is a larger issue. It transcends any single discipline. It demands a quality of national leadership that recognizes the risk of failure to act. To address this problem head-on is our responsibility as citizens. If we don't, then we will not attract the dynamic individuals who will lead the creative, sustainable, and diverse future we aspire to. That's a cost this nation cannot afford. **AIA**

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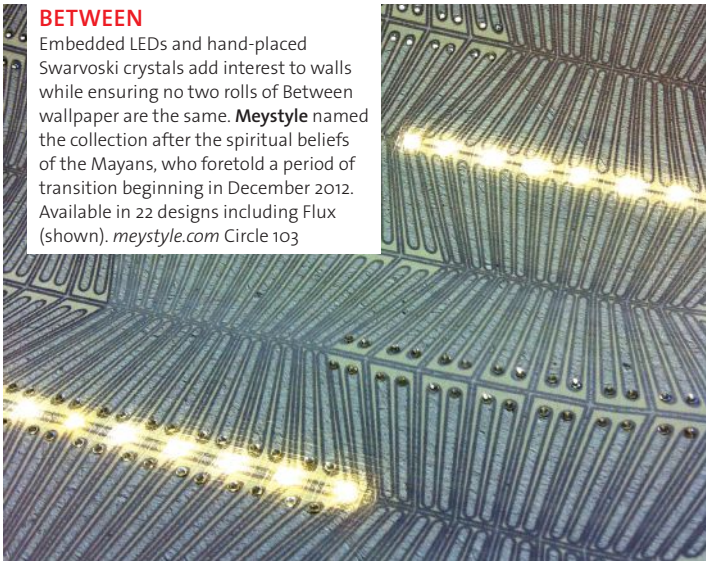
Text by **Jennifer Brite**  
Edited by **Hallie Busta**

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**BETWEEN**

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Starlight by Cooper Joseph Studio filled a literal and figurative void in the Museum of the City of New York. The installation of more than 10,000 LEDs suspends from the dome ceiling of the building's rotunda.

DETAIL

## Star Power

THE MUSEUM OF THE CITY OF NEW YORK WANTED ITS BUILDING TO ENGAGE THE PUBLIC. COOPER JOSEPH STUDIO GRANTED ITS WISH.

Text by **Logan Ward**

**IT WAS A HIGH-WIRE ACT** of a commission: small in budget, lofty in ambition, and vague in program. After a period of decline, the Museum of the City of New York was attempting a heroic comeback with a \$90-million restoration and expansion of its landmark building. Yet the space still lacked a certain *je ne sais quoi*, or what the British designer and author Christopher Alexander called the “quality without a name.”

The museum directors turned to Wendy Evans Joseph, FAIA, and Chris Cooper, AIA, of Manhattan-based Cooper Joseph Studio, who observed that most visitors entering the museum shot straight for the elevators, ignoring what was arguably the best architectural feature: a marble rotunda and sweeping circular staircase that leads to a reception hall overlooking Central Park's Conservatory Garden. The grand staircase

and the negative space it frames should become the heart of the museum, they decided. What was missing was a focal point.

To help the Colonial Revival building engage a digital-age audience, Cooper Joseph envisioned Starlight, a celestial array of 10,486 brilliant LEDs suspended from the dome ceiling of the rotunda that appears to shoot starbursts in all directions for viewers spiraling the staircase. The optical illusion foregoes flashy colors or high-tech gadgetry for something simpler: the moiré effect.

For the illusion to succeed, the three-dimensional grid of lights “had to be detailed within an inch of its life,” Joseph says. “We quickly realized the goal was the phenomenon,” Cooper adds. “Our agenda was to minimize, minimize, to try to remove the appearance of

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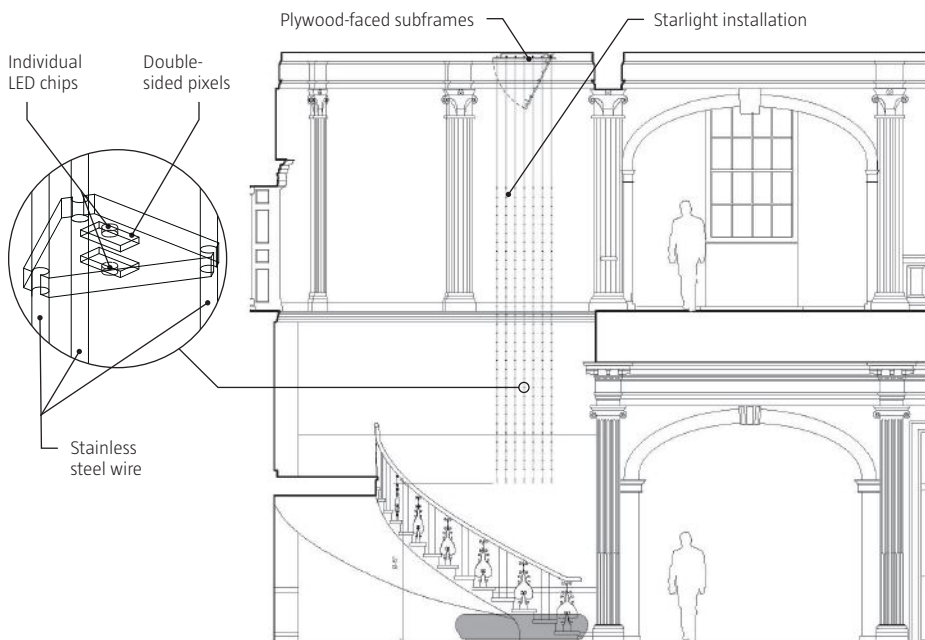
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As viewers spiral the rotunda's marble staircase, the installation appears to shoot star bursts in all directions due to the designers' strategic use of the moiré effect. Starlight comprises 219 strands of wires, or vines, that total 3 miles in length.



### Pixel Detail and Interior Section



design from the different pieces until all that was left was a profound moment."

On the whole, the mass of 219 suspended wires—which the designers called "vines"—forms a rectangular box, 22 feet 6 inches tall, 14 feet 9 inches wide, and 3 feet deep. The LEDs are arranged on the vines in the shape of a horizontal cylinder with a width (or diameter) and depth equal to those of the rectangle. Visitors looking straight on at Starlight see a circle of lights. From other vantage points, the circle melts into an abstract mass of lights brought to life by the moiré effect.

Achieving that degree of precision was painstaking. Working in Rhino and Autodesk 3ds Max, the designers created computer simulations—lots of them—and hand-built scale models out of three-sided boxes. They collaborated with lighting designer Kenzan Tsutakawa-Chinn of Studio 1Thousand, in New York, to design clear, plastic circuit boards resembling guitar picks. LEDs mounted on both the boards' top and bottom surfaces merge visually to form one pixel of light. Each corner of these triangular chips is connected to a low-voltage, stainless-steel wire, three per board. A fabrication crew from Rush Designs in Brooklyn soldered the points one by one, using a jig to maintain 5/8-inch vertical spacing between each chip along a strand. Despite making more than 15,000 solder joints on 3 miles of wire, the crew met the chip's stringent spacing tolerance of 0.012 inch.

Installing the completed vines took four days. The crew removed an existing Colonial Revival chandelier and mounted a rectangular frame made from 1-inch-square tubular steel to the building's steel frame with Lindapter clamps. Three subframes, each faced with plywood panels, are hinged side by side to the steel frame. The vines feed through a grid of CNC-routed holes in the plywood. Silver cylindrical counterweights hold each vine taut and stop 8 feet 8 inches above the floor, allowing visitors to circulate freely below.

Since its completion in April, Cooper says that Starlight has exceeded the expectations of the museum director, who calls the installation "the miracle on Fifth Avenue." Visitors now head straight for the rotunda to marvel at the installation, often lying on benches, gazing upward, and snapping pictures with their smartphones. They ascend the staircase to hang out at a new café, whose design and placement support the firm's strategy for activating the core of the museum.

The sculpture also engages the public beyond the museum's red-brick walls. "You can see the light from down the street," Cooper says. "It draws people inside and up the stairs, since the only way to understand it is through exploration."



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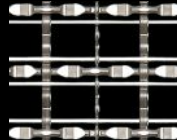
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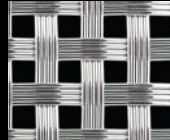
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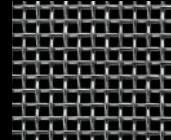
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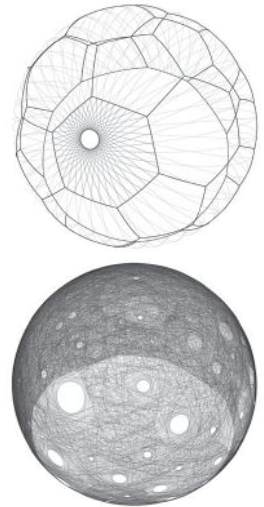


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MIND &amp; MATTER

# Going Rogue

DESIGNERS WHO ESCHEW THE CONVENTIONAL USES OF BUILDING MATERIALS CAN END UP AT THE FOREFRONT OF INNOVATION.



**IN ARCHITECTURAL EDUCATION** and practice, the notion of appropriateness drives material selection. Louis Kahn's parable of the brick embodies this presumption: By insisting it is used in an arch rather than in a lintel, the brick tacitly rebukes the application of a material beyond its original and arguably best intent.

Unfortunately, this approach limits innovation. Although Kahn was an innovator, his parable reinforces standard construction methods. Yet history is replete with buildings celebrated for exhibiting unexpected uses of materials. Take Gordon Bunshaft's stone windows in the Beinecke Library, in New Haven, Conn., or the paper tube columns of Shigeru Ban, Hon. FAIA.

This strategy becomes more provocative when applied to mundane materials. For the undulating masonry walls of the Plinthos pavilion by Athens-based Mab Architects, bricks stand in shiner fashion, exposing their multicellular cores. LED torches behind the walls transmit the silhouettes of figures beyond, leading visitors to the realization that the solid wall they are approaching is largely void.

Designer Kouichi Okamoto's "Form of Light Force Transmission" installation shifts a material's intended application beyond recognition. Okamoto uses solder as a primary surfacing material rather than a connective medium. After heating solder in a container, he slowly and methodically dripped the molten metal on a wood

panel. Over time, the solder drips coalesced, creating a dappled, blurred mirror surface that Okamoto then peeled off the substrate and hung on wall panels. Finally, he used the metal skins to conduct electricity by clipping the installation's light fixtures and wires to them.

At the MIT Media Lab, the Silk Pavilion incorporates both an unconventional material and production process in design and construction. After project director and professor Neri Oxman and her team programmed a robotic arm to weave a panelized armature from silk threads based on the cocoon-building movements of silkworms, they then set 6,500 live caterpillars free atop the fibrous scaffolding to complete the structure with their own silk deposits. Thus, the insects contributed to the project's inspiration, material, and subcontracting services.

Experimental works do not face the same requirements of permanent structures, such as waterproofing or insulation. But they do require more research and development, and they provide a great bed for testing preliminary ideas. The misuse of materials can result in surprises and increase the resource efficiency between conventionally disparate material flows. As architectural critic and writer Reyner Banham advocated, "The greatest of all environmental powers is thought, and the usefulness of thought... is precisely that it dissolves what architecture has been made of to date: customary forms."

MIT Media Lab's Mediated Matters research group harnessed the natural production and construction skills of 6,500 silkworms for its Silk Pavilion installation. **Left:** View through the pavilion's apertures. **Right:** Twenty six CNC-fabricated polygonal panels form the pavilion's armature.



Text by **Blaine Brownell, AIA**  
Illustration by **Peter Arkle**



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# CENTER

Critique **Hawthorne Considers Zumthor's LACMA Proposal** 62 Books **Roger K. Lewis's Letter to Young Architects** 72  
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The Renzo Piano–  
 designed Lynda and  
 Stewart Resnick  
 Exhibition Pavilion at  
 LACMA. The museum's  
 ambitious new plans for  
 the campus, designed  
 by Peter Zumthor, are  
 generating controversy.

CRITIQUE

# ALPINE RETREAT

PETER ZUMTHOR IS BRINGING HIS SIZABLE TALENTS—HONED IN THE SWISS COUNTRYSIDE—TO L.A. WITH HIS CONTROVERSIAL LACMA PLAN. CHRISTOPHER HAWTHORNE VISITS THE ARCHITECT ON HIS HOME TURF.



Zumthor's two wood-framed houses in Leis, Switzerland, sit perched above a collection of other dwellings. The architect uses the houses as a vacation getaway from his studio and residence about an hour away.

## “HERE, YOU MIGHT NEED THIS.”

I was standing in Peter Zumthor's sunny, overstuffed studio in the small Swiss town of Haldenstein when the architect's assistant handed me a large paper bag. I peeked inside. It was filled with strawberries, milk, coffee beans, salami, two kinds of cheese, a baguette, and, naturally, a Swiss chocolate bar: Provisions for my overnight stay in one of the two wood-framed houses Zumthor completed four years ago in Leis, on a site perched atop an Alpine valley about 30 miles southwest of Haldenstein.

The houses represent Zumthor's restrained, elegant spin on a humble European wooden cottage—the Continental version of our log cabin—except with much bigger windows to frame vistas up and down the valley. (“Walking through the houses means moving from view to view,” Zumthor writes in the latest edition of his book *Thinking Architecture*.) The small houses, sparsely furnished with pedigreed modern furniture, contain all the qualities that Zumthor's work

has grown justifiably famous for, most of all an interest in craftsmanship and precision over novelty or form-making.

They also produce a profound loneliness, especially when Leis—which has its own 17th-century church, St. Jacob's Chapel—is empty, as it was when I visited. (There is a restaurant just down the hill, which serves mostly hikers walking from village to village, but it was closed tight the day I arrived.) To reach the houses by road requires driving up a series of tight switchbacks that are nerve-wracking even when the weather is perfect, as it was on the May afternoon I made the trip. During winter the drive is downright treacherous: Zumthor, who turned 70 earlier this year, told me the only time he's had the sense of cheating death is when he was heading up after a major snowstorm and felt his wheels begin to lose traction and slip downhill, sending his car nearly sliding off the side of the mountain.

Zumthor and his family rent out the pair of houses, and they are building a third next

➔ For more images of Zumthor's projects and LACMA's buildings, visit [architectmagazine.com](http://architectmagazine.com)



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## CENTER

door. But the architect also designed them as a vacation spot—as a getaway from his primary residence, which is located right next to his firm's offices. It's when you consider the houses in that context that you begin to get a sense of how Zumthor thinks and works—and the great change in his professional routine that was brought about by his decision, roughly five years ago, to accept an invitation from Michael Govan, then newly installed as the director of the Los Angeles County Museum of Art, to design a major new building for the museum on its Wilshire Boulevard campus.

The Leis houses suggest how deeply and happily local Zumthor's professional life has been up to this point, and how much that fidelity to place has shaped his architecture. This is an architect who seeks a break from his life in a small Alpine village by spending time in a weekend house in a slightly smaller (and higher) Alpine village about an hour's drive away.

Zumthor, who won the Pritzker Prize in 2009, is anything but provincial; he's a thoughtful, well-read architect, gregarious in a certain Swiss way, who has designed projects in London and Norway; has two superb art museums already to his credit; who studied at the Pratt Institute in Brooklyn and taught for a year, on the invitation of the L.A. architect Robert Mangurian, at SCI-Arc. Over the last five years he has been slowly enlarging his office (the staff now numbers about 30) and taking on a few foreign commissions.

But the fact remains that an architect who has spent his life and career solidifying his ties to one particular region in Central Europe is now at work on a project in Los Angeles, next to the La Brea Tar Pits and on the edge of the so-called Miracle Mile, that because of its size and prominent location is likely to serve as the capstone to his methodical and much-analyzed career.

Given that putting up a new Zumthor wing at LACMA will require demolishing four of the museum's existing buildings—three from 1965 by William Pereira, the well-known L.A. modernist, and a 1986 addition by New York firm Hardy Holzman Pfeiffer—the California project will also be a test for the American public's tolerance for grandly scaled museum design in a post-boom economy. In 2001, when LACMA commissioned a similar plan from Rem Koolhaas—abandoned two years later—the support among preservationists for Pereira's buildings was fairly restrained. This time around, Pereira seems to have many more fans. And already Zumthor's proposal for LACMA—for a huge undulating building of black concrete lifted 30 feet above a plaza—is drawing fire from Southern California architects and curators and from members of the public.

**THE TWO MEN** who have been conspiring to remake the architecture of L.A.'s biggest museum first met more than a decade ago, when Govan was heading the DIA Foundation for the Arts in New York. Zumthor at that point had completed the Kuntshaus Bregenz, a remarkable four-story box of a museum, with concrete floors and concrete walls inside and a skin of frosted-glass panels, next to Lake Constance in Austria. But he was still far from a household name, and still several years from winning the Pritzker.

Govan asked Zumthor to design a building on the campus of Dia:Beacon, in upstate New York, to house a single artwork: Walter de Maria's "360° I Ching." Zumthor proposed a white concrete box of a building with a waffled roof. Visitors would enter onto a small mezzanine overlooking the sculpture, laid out directly on the floor of the gallery like a minimalist strip of dominoes, and then descend to ground level to inspect the work up close.

After the plan was put on ice (Zumthor and Govan both say it may still be built), Govan accepted the LACMA directorship, and Zumthor finished a second art museum, the Kolumba in Cologne, Germany. Govan now says that placing a phone call to Zumthor was one of the first things he did after deciding to take the L.A. job.

The collaboration proceeded in fits and starts until last year, when Zumthor tossed out the preliminary sketches he'd made for Govan, some of which called for a scattered collection of pavilions in a lush Southern California landscape, and suddenly drew a confident, organic shape for a single large building, wrapped in black concrete and topped with solar panels, hovering over Wilshire Boulevard. The fluidity of that shape suggests a new formal approach for Zumthor, one that shows the influence both of the adjacent tar pits, which ooze up from underground just east of the museum campus, and of the late Brazilian architect Oscar Niemeyer.

To mark the unveiling of Zumthor's preliminary design for LACMA, Govan and curator Wendy Kaplan, head of the museum's Decorative Arts department, organized an exhibition called "The Presence of the Past: Peter Zumthor Reconsiders LACMA." As its title suggests, the show makes a point of looking not just at the architectural history of LACMA but the longer, geological history of the site where the museum sits. The opening room of the exhibition shows photographs of the first attempts to study and document the fossils trapped in the tar. Then we learn about the complicated architectural past at the museum, whose board nearly hired Mies van der Rohe to

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design the original 1965 campus, and since then has commissioned not only Pereira and HHPA but a Japanese Pavilion by Bruce Goff and, in the last five years, two gallery buildings by Piano. (The Goff and Piano wings will not be affected by Zumthor's new building.) The central section of the show includes a small retrospective of Zumthor's career and a series of large models of his plan for LACMA.

There is, to be sure, an appealingly muscular primitivism and free-flowing charisma in Zumthor's proposal for the museum. It would lift a single level of galleries one story up in the air; this hovering building, faced entirely in glass along its curving perimeter, would be connected to ground level by seven or eight legs, or "cores," each containing a staircase and an area for open storage. Each visitor will enter not through a massive punched-out opening in a towering façade but, presumably, through a regular-sized door leading to one of the staircases (or to a well-hidden elevator). You'll get to feel the weight and texture of the door handle in your palm, just as you do in most of Zumthor's best-known and most acclaimed projects.

The galleries themselves are the least developed part of the LACMA scheme; each of the cores will lead to a large gallery holding one of the prized objects in the museum's collection, a group that includes the Tony Smith Sculpture Smoke, Richard Serra's Band, and the



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## CENTER



**Previous page:** The Ahmanson Gallery, one of three buildings that William Pereira designed for LACMA in 1965.  
**This page, from top:** Visitors at LACMA's Resnick Exhibition Pavilion survey Peter Zumthor's proposed model for the museum campus; an aerial view of LACMA's existing campus, the core of which would need to be demolished to make way for Zumthor's proposal.

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## CENTER

16th-century Ardabil Carpet from Iran. Though early versions of the LACMA proposal showed a flat roof, more recent ones show a variety of gallery heights, suggesting a sort of jumbled skyline in section. A continuous walkway will run along the full perimeter of the new building, offering views of the Hollywood Hills, Wilshire Boulevard, the tar pits, and the rest of the LACMA campus to the west.

Already there is opposition to the proposal, driven in part by concerns about its cost—the museum hopes to raise \$650 million in total, with the building itself pegged at an estimated \$450 million. Govan says that the older buildings at LACMA need to be modernized, updated, and seismically beefed up, at a cost he estimates at \$250 million or \$300 million. In other words, he argues, the choice the museum faces isn't between paying nothing for the status quo or paying a heap of money for a new building. It's between paying a lot of money to update the old buildings or even more to build a new one designed by Peter Zumthor.

Still, Govan's decision to choose Zumthor on his own, without any kind of competition or other sustained selection process, has rubbed more than a few L.A. architects the wrong way. "I have grave misgivings about the process," one of those architects told me in an email over the summer. "It seems so arrogant for a single director to handpick his architect, and the two of them steamroll over everything else."

Nostalgia for the Pereira buildings may also prove to be an obstacle. Already, a Facebook page and petition have appeared calling on LACMA to drop the Zumthor plan and restore the 1965 campus instead. The architectural historian and critic Alan Hess, among others, has been outspoken in defending those buildings, calling them "part of the museum's permanent collection."

**IN LEIS, I WOKE UP EARLY.** I ground the beans packed in my paper bag, made a strong coffee in the absurdly complicated espresso machine sitting on the kitchen counter, and stood in front of the huge living-room windows sipping it, taking in the spectacular view down valley. After a short hike, I got behind the wheel of my rental car for the vertiginous drive back down the mountain. At that point, I was halfway through a six-day visit to nearly all of Zumthor's most celebrated projects, including the two museums, a pair of small chapels, and his thermal baths in Vals.

The trip hasn't changed my mind about the potential of Zumthor's LACMA scheme, which is easily the most exciting piece of architecture proposed for a major site in Los Angeles. But it has convinced me that the LACMA proposal hasn't reached the level

of sublime inevitability that marks the best of Zumthor's completed work. Nearly all of his buildings that I saw—and especially the museums—have a kind of airtight architectural logic to them, even as they are quite different from one another. Though Zumthor likes to point out that he doesn't have a signature style, he does have a signature approach, a philosophy of patient craft and holistic, often slow-moving architecture.

In Bregenz, this approach is evident in a fanatical—and in the end entirely convincing—treatment of light. The glass panels on the exterior and skylights on the roof bounce daylight into plenums on each floor, so that the quality of light is supremely consistent in each gallery, whether you are at the top of the building or on one of the middle levels. At the Kolumba Museum, the light is also unshakably serene. But more striking is the ease with which Zumthor brings together the ruins of a Gothic church bombed during World War II, a postwar chapel on the site by Gottfried Bohm, and his own museum, a collection of blocky towers in light brick—and the way the resulting ensemble sits as an urban object in the middle of old Cologne. Kolumba is a high-wire act masquerading as a walk in the park, the work of an architect operating without apparent strain or doubt at a remarkably high level.

In the LACMA design this sense of one architectural element flowing without friction to the next hasn't quite been achieved. Still, the power of the museum proposal as seen in plan is undeniable, the way it seems to echo both the oozing shape of the tar pits and the designs of Niemeyer and the artist Jean Arp. Govan has already joked about how great that black blob of a form—that inkblot—will look as a LACMA logo, stamped on T-shirts and coffee mugs.

But the very strength of the scheme might be its Achilles heel. The new building would benefit greatly at ground level from a courtyard or other open space; as proposed, the entire boulevard level will be covered by the massive form of the gallery floor above, an unbroken mass of levitating concrete that in winter, even in balmy California, doesn't promise to be a great place to hang out. A couple of courtyards carved out of the mass of the roof would be a useful addition to the proposal, both for what they'd add along the ground and for the new views they'd create from inside the building looking out. But that might undermine the clear graphic appeal of the design in plan. There are no holes in the tar pits, after all. Their slick, black surface is continuous and unbroken, undisturbed by the particular demands, cultural and practical, that can make architecture so tricky.



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## BOOKS

AS HIS UPDATED EDITION OF *ARCHITECT? A CANDID GUIDE TO THE PROFESSION* HITS SHELVES, CRITIC, ARCHITECT, AND EDUCATOR ROGER K. LEWIS, FAIA, HAS SOME POINTED ADVICE FOR EMERGING DESIGNERS.

Photo by Stephen Voss

# DEAR YOUNG ARCHITECT,

**ARE YOU WONDERING** what lies in store for you given the current state of the profession and the recent, profoundly stressful challenges faced by your generation of designers—the Great Recession, work slowdowns, unemployment, stagnant incomes? Beyond economic uncertainties, you face other significant challenges: choosing among ever more diverse career paths and roles; thinking critically about always shifting and often short-lived aesthetic trends, such as ersatz, postmodernist historicism; satisfying increasingly stringent project needs and constraints; and keeping abreast of rapidly evolving, innovative technologies.

Yet the basic mission of architecture, considered the world's second oldest profession, has not changed. Although modern technologies, specialization, and design theories have transformed how architects are educated and practice, most practitioners still do essentially what the Greeks and Romans did: design buildings.

Nevertheless, it's no surprise that in this uncertain age you may be angst-ridden as you ponder your future in the profession. If you are an intern, you may already feel put upon by the ordeal of accumulating thousands of hours of experience and having it validated to satisfy licensing requirements. You may even be considering deferring your path to licensure.

But do not despair. I assure you that despite any frustration or skepticism you may feel, architecture is still an extraordinarily stimulating calling, offering artistic and intellectual fulfillment unmatched by any other profession. Architects not only create visual poetry embodied in beautiful structures and urban settings, they also deal with pressing, real-world issues such as climate change, sprawl, affordable housing needs, and urban revitalization. We always serve two clients: those who hire us and those who inhabit or interact with the architecture we make, and who worry about safety, accessibility, traffic, and aesthetics.

➔ *Architect? A Candid Guide to the Profession* is published by The MIT Press. To see some of Lewis's cartoons, visit [architectmagazine.com](http://architectmagazine.com).

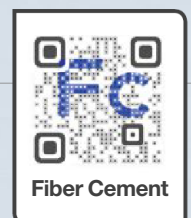
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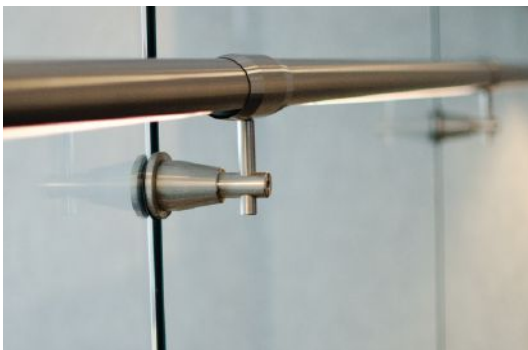
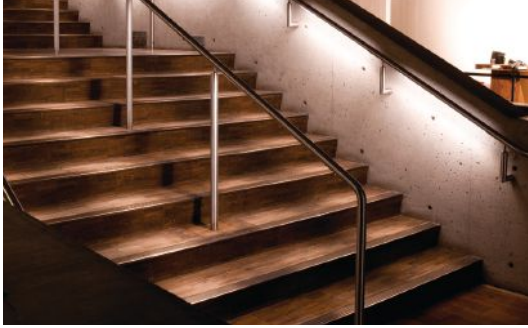
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Of course, some architects seek less altruistic rewards: fame, affluence, social status, political influence, and even immortality. But these rewards are elusive and ephemeral. Responding to the public's appetite for celebrity, the media traditionally focuses on starchitects—Frank Gehry, FAIA, Richard Meier, FAIA, Zaha Hadid, Hon. FAIA—not only because of their exceptional work, but also because they are perceived as aesthetic soloists.

But take comfort: the era of the perceived master architect is fading. Your generation comprehends that architecture is increasingly and inescapably a collaborative art. By understanding the complex process of building, you better appreciate the indispensability of other team members—owners, engineers, specialized design consultants, contractors, attorneys, investors, lenders—and even government regulators and concerned citizens.

During your first few years in the profession, out of necessity, you may work for a firm whose goals, values, and method of operation may be less than appealing or ideal. You may join a service-oriented firm that seeks to get the job done on time and within budget while maintaining profitability, or a design-oriented firm that approaches practice as an aesthetically expressive art and secondarily as a business. You may be employed by a small local office that does mostly custom homes and residential remodeling for household clients, or by a large global firm with hundreds of employees and clients in emerging markets.

Regardless of what kind of clients or projects characterize your firm, your engagement in the process of design will rapidly develop your skills and expand your knowledge. Specific project attributes—location, size, programmatic needs, budget limits, regulatory constraints—will vary greatly, yet the hands-on experience of creating real architecture for a real client and a real site, whether here or abroad, will prepare you for licensure and, when the time comes, for practice on your own.

Although the basic design process remains relatively constant, how your firm is managed nevertheless influences the type of experience you will gain. Many firms, especially small ones, are headed by a single principal responsible for the firm's design or signature style. Larger firms are organized departmentally by function or operate as a collection of studios or discrete project teams led by partners and senior associates. They generally divide up responsibilities such as outreach and

marketing, firm administration, and project design and production.

Working in a small firm, you are likely to interact with clients more frequently, help more often with marketing, and attend more project presentations and review meetings with citizens and government officials. You also may be more involved with all phases of project design, from schematics to construction administration, thereby shouldering more responsibility. Small firms typically are better at exposing interns to the breadth of practice. In a large firm, depth tends to trump breadth. You probably will work on fewer but larger, longer-term projects. You will collaborate with more specialized consultants, acquiring expertise that you might not gain in a small office. But still, each type of experience is worthwhile.

Like professors, practicing architects profess diverse, subjective design principles and theories that you may or may not embrace. Exposed to “-isms” and “-ologies” in school, designers as they start to practice are often drawn to one or more of them, including functionalism, geometric formalism, sustainability, or regionalism. Sociology, psychology, symbology, ecology, and technology can be design drivers. Some architects believe design should be guided solely by problem-solving methodology, not theorizing. As you establish your style and beliefs, beware of short-lived fads, fashions, theories, and trends.

Your generation's concerns encompass but also extend beyond those of my generation. Chances are that you aspire to heal the planet by designing “green,” net-zero projects, whether a bus shelter, a skyscraper, or a college campus. Four decades ago, architects embraced energy conservation, but only as a reaction to a 1970s oil embargo and rising fossil fuel prices. In the 1950s and 1960s, object-fixated architects were future-oriented. Older buildings—or neighborhoods—deemed obsolete merited demolition. Today, your cohort understands that preservation and adaptive reuse of existing structures, historic or otherwise, is a key sustainability strategy and an indispensable cultural objective.

Indeed, in light of demographic shifts and the movement back into cities, coupled with the need to redevelop dysfunctional urban and suburban areas, architects are increasingly engaged in planning and urban design. They design new suburban communities or reshape city neighborhoods for which they devise new circulation and infrastructure networks, new land use and density patterns, and new public spaces and civic amenities. They also may craft urban design and architectural guidelines for buildings and streetscapes. In the 1960s, when I was a student, I never heard the

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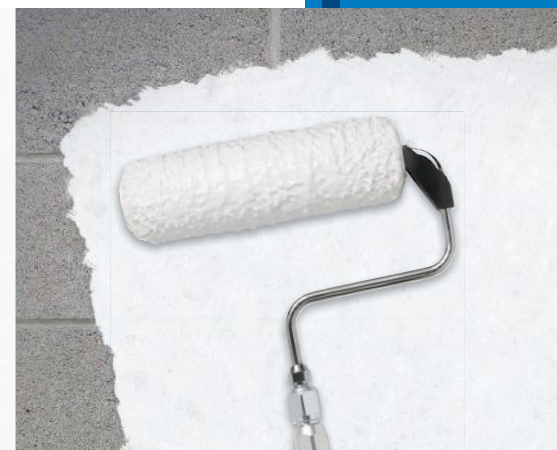
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word “streetscape,” much less “preservation,” “suburbia,” or “sustainability.”

With the scope of the profession growing ever more broad, you may well pursue other activities to advance the cause of architecture. You can help shape the built environment as a volunteer community activist, or by serving on boards and committees concerned with

planning and design. You can assist nonprofit and civic groups to advocate growth policies or to deal with controversial projects. Through media and the Internet, you can report on development that exemplifies design excellence—or the lack thereof.

My career focused on architectural practice and education, but I also spent part

of it in ways that, as a recent graduate, I would never have envisioned. Twenty-nine years ago I pitched an idea for a series of articles about architecture in the nation’s capital to a *Washington Post* editor. My published submissions soon turned into the *Post*’s “Shaping the City” column. It created new and unexpected opportunities: As a journalist as well as a professor and practitioner, I increasingly was invited to write, give talks, consult, advise, testify, serve on committees and boards, and appear regularly on radio. I gained a public voice and was able to reach a much wider audience and expand critical thinking and discourse about urban design and architecture.

Sometimes my commentary affected public policy, such as in the late 1990s, when I joined with other critics in a successful campaign to reduce the technically questionable program scope and overwhelming scale of the initial proposal for the World War II Memorial on the National Mall.

You may wield your influence by working in the public sector as an architect, urban designer, administrator, project manager, or building inspector. In government roles you can help shape land-use policies and master plans, zoning regulations, historic preservation criteria, design and development guidelines, and building codes. One of my former students at the University of Maryland, Peter May, AIA, now heads the regional office of the National Park Service and serves on the National Capital Planning Commission. Another Maryland graduate, Stephen Ayers, FAIA, is Architect of the Capitol.

Some of you eventually may forego architecture practice and public sector roles to pursue work in related fields such as landscape architecture, interior design, furniture design, graphic design, or civil engineering—disciplines for which architects have a natural affinity. You may become a construction contractor or real estate developer, or perhaps you will study business or law. If so, you will have a big advantage: architectural skills, methods, and expertise readily apply to other fields and facilitate switching careers.

In the end, though, I hope you will stick with the art and science of architecture. Despite all that’s new and different in the profession, despite the recent economic pressures, I’m confident that you will find constructive ways to advance the cause of design excellence, whether working for or acting as the client, or managing, regulating, or writing about projects. Every site, client, and project is unique, a prototype inviting imaginative design and problem-solving. This is the source of architecture’s greatest pleasures: the creation of purposeful designs embodying lasting values and principles. It may take a little time to get there, but the rewards will be well worth it.

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Text by **Karrie Jacobs**  
Photo by **Chris Crisman**

**ON THE WEBSITE** for Flexhouse 2, a string of 15 slate-colored row houses designed by Interface Studio Architects of Philadelphia for Ranquist Development of Chicago, there's an unusually compelling bit of marketing-speak: "The Flexhouse is a new type of home that is tuned to the 'new normal' of the twenty-first century." The new normal? What exactly does that mean? "The houses are modest, efficient, urban, and cool," the copy continues, "appealing to urban lifestyles that seek to make sustainable lifestyle choices."

Brian Phillips, the 42-year-old founding principal of Interface Studio Architects (ISA), an eight-person firm, is nothing if not an apostle for the new normal. His ambitious aim: to rethink and maximize the potential of urban-house design for the new city-loving generation.

Phillips, AIA, who made *Philadelphia Magazine's* 2012 list of the smartest people in

town, is tall, soft spoken, somewhat shaggy, and partial to blue jeans, black T-shirts, and sneakers. He grew up in the Lehigh Valley, north of Philly, but attended college at the University of Oklahoma, attracted by that school's meteorology program. He eventually decided he was more interested in buildings than tornadoes, got his master's in architecture at the University of Pennsylvania, and was hired right out of grad school. "I had never worked in a firm, maybe had never set foot in a firm, and I was recruited by Wallace Roberts & Todd (WRT)."

He stayed at the large Philly-based firm for seven years, working as a "utility player," often collaborating on landscape or urban planning projects. But at a certain point he realized that "you either become further entrenched or figure out what you're going to do on your own."

On the day his son was born in 2005, Phillips set up his own shop. Located in the Crane Arts Building north of Center City, ISA's office is shoehorned into a narrow space with

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— BRAD TOMECEK, AIA

**The 32nd Street Modular House, designed by Studio H:T** (the Denver and Boulder, Colo.-based practice of Brad Tomacek, AIA, and Christopher Herr, AIA), used prefabricated wood construction to create an energy-efficient house in the LEED for Homes Pilot Program.

# WOOD'S EMBODIED ENERGY

**Next Progressives** is a monthly presentation in *Architect* of an emerging designer or practice. It is proudly sponsored by reThink Wood.

The reThink Wood initiative is a coalition of interests representing North America's wood products industry and related stakeholders. The coalition shares a passion for wood and the forests it comes from. Innovative technologies and building systems have enabled longer wood spans, taller walls, and higher buildings, and continue to expand the possibilities for wood use in construction.

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no real boundary between architects' individual work areas and the conference zone. There's no reception area or ceremonial space of any kind. It's all architecture all the time.

When Phillips launched the firm (initially in partnership with another WRT staffer, urban planner Scott Page, who now practices separately as Interface Studio), he quickly found residential work. The firm's first built project, a 10-unit condo building for a first-time developer, reflected "the irrational exuberance of the housing bubble," Phillips says. Skypark, as the building is called, is an unremarkable composition of brick and corrugated metal notable for its communal green roof. "We learned about union labor," Phillips recalls with a sigh. "So much we learned ... Philly is a city with very high construction costs and a soft market—the costs of New York and the tenant market of Baltimore."

So it seems fitting that the project that profoundly shaped Phillips's vision and the firm's reputation was about cutting costs to the bare minimum. It began inauspiciously in 2007 when another untested developer, Chad Ludeman, the then-29-year-old founder of a fledgling company called Postgreen, showed up with the idea of building houses that would be appealing and affordable to younger buyers. Specifically, 1,000-square-foot modern homes, with all the features necessary for LEED certification—recycled materials, state-of-the-art insulation, passive solar, and Energy Star appliances—on a construction budget of \$100,000, with a projected sale price in the low \$200s. Small, urban, fashionable, and cheap remained an untested combination in the urban housing market, and Philly, with its overabundance of vacant lots, was the perfect place to do it.

Ludeman said that he'd researched every architecture firm in the city and determined that ISA came closest to sharing his worldview. If that wasn't true at the outset, it certainly was by the time the first house was completed. There was something transformative about the intensity of the work that the two young firms did together. "We went through three or four iterations of what the building would be before we got to the core envelope," says Ludeman, who kept giving Phillips constraints. For starters, the façade had to be incredibly simple. Ludeman describes the rules this way: "No bump outs and just a flat square kind of façade." Next, there couldn't be a lot of surface area devoted to windows, an unusual request for a modern-style home. The windows, according to Ludeman, had to be used sparingly and be "cost effective and energy efficient."

"And then," Ludeman adds, "we limited him to one façade material only, which on the

first couple of projects was fiber cement." As Phillips recalls: "Initially, Chad believed in that flat, single material. If we were really going to hit \$100 a square foot, we had to be really honest and fastidious about how little we were going to do." On one of the later houses, Phillips got clever and offset the flatness by silk-screening a cloud pattern on the exterior.

Ludeman has so far built 15 homes, most a bit larger, somewhat more refined, and more expensive than the original 100K House. All share a stripped down, boxy aesthetic. Today, the East Kensington neighborhood where most of the Postgreen houses have been built—Phillips refers to it as the 100K ghetto—has a dwindling supply of vacant lots. The new homes that seem to stand on every corner weren't all built by Ludeman: His success has spawned knockoffs—smallish, modern, monochrome cement-board townhouses built by other developers. Ludeman, meanwhile, is about to break ground on several larger projects, some 90 units in all, designed by Phillips and other local architects.

The 100K House clearly kicked off a local trend toward modern, green, modest housing, and it also had an impact on Phillips, who was able to refine his architectural philosophy to an unusual degree. He wants to rethink the American dream, to transplant that set of desires that we associate with the suburbs to the city. "We've talked a lot about Generation Y and first-time home buyers, and what ever happened to the starter home. And this idea that when a 30-year-old couple is buying a house, should they be buying their parents' house? Can they have less storage? Can it be more energy efficient? Does it really have to be maxing out the zoning envelope? Can it be appropriately sized for a lifestyle that [embraces a] smaller footprint?"

His vision is the product of a Philadelphia that the demographers haven't quite acknowledged: young, hip, entrepreneurial. The fact that Philly's population curve has turned upward for the first time since the 1950s is generally attributed to an influx of Asian and Hispanic immigrants, but a visit to neighborhoods like Northern Liberties, Fishtown, and East Kensington makes it obvious that one component of that upswing is the familiar scenario of well-educated, relatively affluent 20- and 30-year-old homesteaders transforming the urban landscape, one coffee bar at a time.

**ONE OF THE REASONS** that Ludeman initially approached ISA was a competition that the firm had won in 2006, unbuilt until recently, for a cluster of LEED certified affordable houses. For a nonprofit community developer called



**Previous page:** Brian Phillips (left) and Daryn Edwards of Interface Studio Architects.

**Opposite page, from top:** Flexhouse in Chicago, which ISA designed for the developer Bob Ranquist; Skypark, ISA's first project, designed during the housing boom.

**This page:** Historic row houses in the foreground frame a cluster of houses that ISA designed on Philadelphia's Sheridan Street; the houses, LEED certified and designed for a nonprofit community developer called Asociación Puertorriqueños en Marcha, sold for a subsidized price of \$150,000 each.





ISA's controversial plan—scuttled by local community groups—for adapting a historic grain storage facility in Philadelphia into a 12-story apartment tower.

Asociación Puertorriqueños en Marcha (APM), ISA designed 13 homes—each 1,350 square feet, with three bedrooms, a small yard, a parking space, a roof deck, a solar array, rain barrels, and energy efficient systems. Built for \$300,000 a piece, they're currently being sold for a subsidized purchase price of \$150,000.

Located along narrow Sheridan Street, the development is startling, in part because the houses, crisp three-story rectangles of white and maroon, look like they've been air lifted in from Scandinavia. Walking up Sheridan, Phillips is delighted by an indication of human habitation (10 of the 13 units have been sold): "I love that little doormat," he says, snapping a photo of a flowery rectangle a new homeowner has slapped directly onto the sidewalk. Equally incongruous is the much larger adjacent development, also by APM, which appears to have been imported from Any Suburb, USA. "There are a lot of funny urban relationships in Philly," he acknowledges.

Rose Gray, APM's senior vice president of community and economic development, sounds lukewarm about the mix of typologies. She

regards the suburban-style houses with their beige siding and generous lawns as what the organization's home buyers "typically" want. "Our community likes the two stories with more of a backyard." And while APM customarily sells its homes to African American and Hispanic families, the Sheridan houses have mostly appealed to single buyers, many of them Asian.

Unlike Gray, Phillips doesn't believe "suburban patterns" make sense in historically dense urban neighborhoods. "The density of Sheridan is more like the existing context of old row homes," Phillips says. "I think when you offer low density in an urban environment, it may awaken an unrealistic expectation in home buyers in what they should expect from city living."

Fortunately, one of Gray's former APM colleagues, Manuel Delgado, now the executive director of the Cramer Hill Community Development Corporation in nearby Camden, N.J., agrees with Phillips. "When you're doing subsidized housing, particularly in urban areas," Delgado says, "architecture firms generally give you an off-the-shelf design. When you go with that approach, it doesn't fit within the context. In Philadelphia, a lot of the stuff that was built, and here in Camden as well, is really suburban-style housing."

ISA designed two sets of 10-unit developments for Camden's Cramer Hill neighborhood, after Phillips participated in a series of meetings "where he just talked with residents about what they'd like to see built next to them or down the street." The participants also discussed how to attract new residents to town. "So he sort of balances both of those, building something that's comfortable for the community but also exciting for new residents," says Delgado.

How do you attract new home buyers to Camden, which currently tops the FBI's list of most dangerous small cities? Delgado believes the prospect of living in a house that supplies all its own energy needs, saving homeowners on utilities, certainly helps. And the shedlike buildings that ISA designed for Cramer Hill—construction is scheduled to start soon—are overtly cheerful: Crayola colored with rear decks and side porches. At about 1,300 square feet, they'll sell for somewhere around \$150,000. Less enticing to newcomers, perhaps, are the project's Metal Houses, which are clad in corrugated metal with front porches that look like sculptural cages. Because of the high crime rate, most Camden residents enclose their porches with security bars. Says Delgado, "We made a really, really conscious effort to make sure the bars were incorporated into the design, and it becomes an attractive feature as you're looking down the street at the houses."

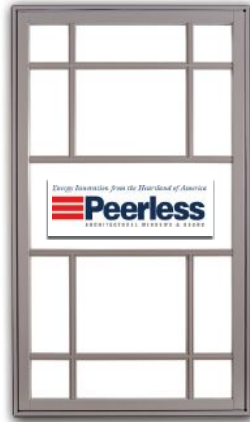
That Phillips can successfully take his scaled-back version of the American Dream down-market isn't surprising, but the approach is also upwardly mobile. That's where the "new normal" comes in. Developer Bob Ranquist, known for planting luxury condos in lately fashionable neighborhoods, hired ISA for his first post-recession project in Logan Square, just northwest of Chicago's boho chic Wicker Park.

The new normal? "To me that means we're designing the homes simpler now. They're not as fussy. They're not as fancy. They're smaller. They're more efficient," Ranquist says. The first Flexhouse project was completed earlier this year, offering home buyers a stripped-down version of the upscale urban townhouse. The approach is "market driven," Ranquist says. "Much of the inventory on the market neglects to address the needs and desires of the young urban couple or family who is willing to live in an up-and-coming area."

Ranquist regards the Philadelphia 100K Houses as "instrumental" in his thinking for the Flexhouse project in Chicago. The row houses, which sell for upwards of \$400,000, have 1,800 square feet on three levels, with no basement. The detailing and finishes are slicker than those favored by Ludeman. The gray-on-gray palette recalls the first 100K House, but the façades are not nearly as flat, with more generous glazing and big protruding stainless steel window frames. Inside, the kitchens clearly feature pricier appliances and finishes than those in Philly, but the minimalistic approach is similar.

**SO FAR, PHILLIPS** has exported what he's learned in Philly to Camden, Chicago, and Boston, where ISA designed four net-positive prototype houses as part of a city initiative. He's also doing some conceptual work in Detroit, trying to figure out if it's possible to sell a low-cost, energy-efficient building envelope that would allow handy home buyers to build out an interior over time. That would be the 10K House. And he's working with a Miami-based community group that's trying to introduce the low-rise apartment block to a city dominated by towers and detached single-family houses. He argues that architects should help serve as "accelerants for conversations, changing the way people perceive what's possible."

To that end, Phillips is using the key question about ordinary housing in this country—why isn't it better?—as a way to change the nature of cities. Philadelphia is still his first and best laboratory: There's room there for "risk and innovation," he says, because Philly remains one of the biggest, poorest, least educated cities in America. In other words, the new normal is about extracting an upside from the downside.



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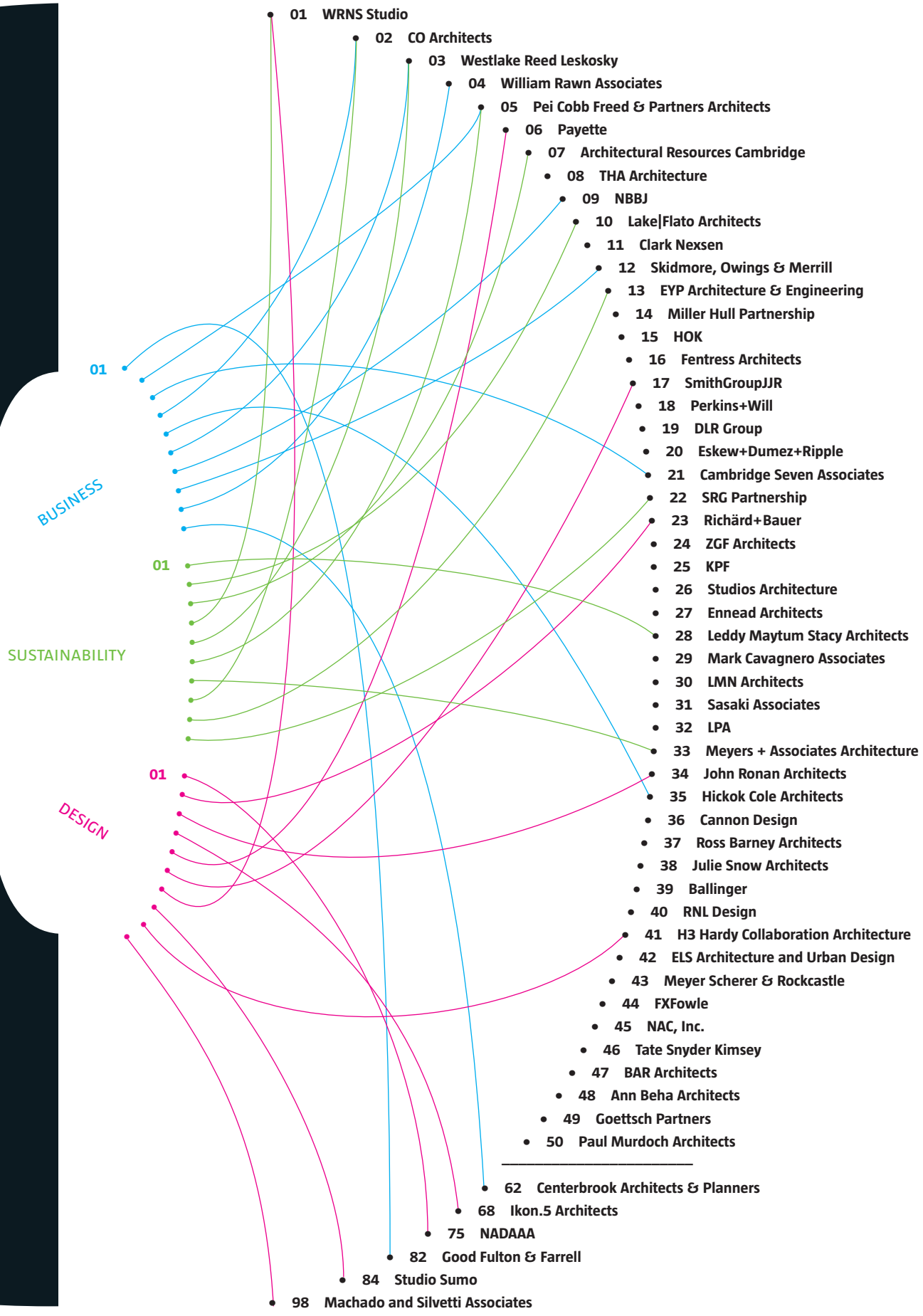
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# THE ARCHITECT

Text by **Eric Wills** and  
**Elizabeth Evitts Dickinson**

**MOST** LISTS of top architecture firms are nothing more than a straight-up ranking of top revenue-producers. Not the ARCHITECT 50. Now in its fifth year, the program aspires to much more: A qualitative look at how firms stack up across a broad range of categories, from business to sustainability to design. We consider net revenue per employee, profits invested in research, and energy-efficiency metrics (how well firms are meeting the AIA's 2030 challenge, for instance). To measure design excellence, we asked firms for the first time to submit project portfolios, and had an esteemed panel of judges score them. The result? This year's list features perennial heavyweights such as Skidmore, Owings & Merrill, but also design darlings like John Ronan and Julie Snow. Paul Murdoch Architects showed that small firms can compete with big multinationals. Turn the page for our methodology and some surprising results. Don't be afraid to tell us what you think.

➔ Find more data, and the complete lists of the top 50 firms in each of the three categories, at [architectmagazine.com](http://architectmagazine.com)



## Methodology

Architect advertised the ARCHITECT 50 program in the magazine and on the website, and sent invitations to firms that requested entries as well as to firms that had been invited in previous years. In all, 152 firms qualified to participate in the ranking.

All data was from the 2012 fiscal year and was self-reported. Projects completed or in progress during the calendar year were included. Data was checked for consistency, and outliers were identified and fact checked. Karlin Associates LLC, a third-party research firm based in New York City, compiled the ranking and assured the confidentiality of the data.

**SCORING** The ARCHITECT 50 ranking is based on scores in three separate categories:

### BUSINESS

- Net revenue per employee (counting only architecture and design-related revenue and staff), which counted for 65 percent of the total category score
- Profitability (positive change in net revenue from 2011): 8 percent
- The percentage of profits invested in research (a discretionary score was also awarded based on a firm's research work): 12 percent
- A firm's commitment to pro bono work, measured by participation in Public Architecture's 1% program and the percentage of a firm's billable hours that were dedicated to pro bono work: 15 percent

### SUSTAINABILITY

- The percentage of gross square footage of a firm's projects that were LEED certified or designed to LEED standards, which counted for 20 percent of the total category score
- The percentage that achieved certification in other sustainability programs, including Energy Star and Living Building Challenge (a discretionary score was awarded for the types and scope of net-zero projects): 15 percent
- The percentage that pursued a potable water reduction beyond what was mandated by code or that incorporated energy modeling, with additional credit being given for the percentage for which energy data was collected: 40 percent
- Participation in the AIA's 2030 program and percentage of the gross square footage of projects that were designed to 2030 standards: 15 percent
- Percentage of a firm's employees with LEED AP or GA credentials: 10 percent

### DESIGN EXCELLENCE

- For the first time this year, the ARCHITECT 50 survey included the submission of a design portfolio. A panel of judges, chosen by ARCHITECT, graded each anonymous portfolio individually to create an overall portfolio score, which counted for 60 percent of the design excellence score.
- The category also measured design awards won, including awards granted by ARCHITECT, the AIA, and ASLA, as well as other urban design and historic preservation awards: 15 percent
- The percentage of total employees who were licensed architects: 10 percent
- A discretionary score for the number and type of teaching positions that a firm's employees held at architecture schools: 15 percent

### TOTAL SCORE

Each data point in the three categories was assigned a weight, formulated after consulting with architects and other industry experts. After the scores were tabulated in each of the three categories, they were rescaled so that the top ranking firm in each category was assigned a score of 100, with the rest of the firms' scores then recalculated as a percentage of the top score.

Finally, a firm's scores in each of the three categories were added together to create the overall ranking. Those scores were also normalized, with the top firm given an overall total of 300, and all the other firms' scores calculated as a percentage of the top score.

Each firm's performance was calculated relative to the performance of other firms. A firm with an overall score of 300, for example, did not necessarily top out on every indicator and category; it accumulated the highest composite score.

### LEGEND

#### EMPLOYEES

- # 1–10
- ## 11–99
- ### 100–499
- #### 500–999
- ##### 1,000+

#### GROSS REVENUE

- \$ Less than 999,999
- \$\$ 1–9.9 million
- \$\$\$ 10–99.9 million
- \$\$\$\$ 100–999.9 million
- \$\$\$\$\$ 1 billion+

## OVERALL

# 1

# WRNS STUDIO

San Francisco | ## | \$\$\$

**OVERALL SCORE: 300.00**

RANK IN EACH CATEGORY

- BUSINESS: 11TH
- SUSTAINABILITY: 4TH
- DESIGN: 7TH

Last year was, without question, a good one for WRNS Studio. The 60-person firm had one of the highest net-revenue-per-employee numbers in this year's survey, but it was the breadth and execution of projects, combined with a strong commitment to sustainability and design excellence, that earned WRNS the overall top ranking. Firm partner Bryan Shiles, AIA, credits the success, in part, to a diversity of typology. "We did well through the recession and last year because our client base is so broad," he says. "We have a robust education and institutional portfolio on one hand, and on the other, we built Adobe, which has been very good in terms of leveraging our cache in the high-tech world."

The project for Adobe Systems—a new 280,000-square-foot office building that opened last fall in Lehi, Utah—was the first time the firm tackled a high-tech facility for a Fortune 500 company.

For a transit center located near Lake Tahoe, Calif., WRNS used the metaphor of a boat hull to create a warm, wood interior evocative of the area's natural and recreational history. "The key to our firm is that we find ways to craft authentic conversations in a lot of contexts," Shiles says.

The design judges noted this careful design approach: "The disposition of each project, particularly through its materiality and form, captures and addresses the specific environment and program, resulting in a delightfully variegated portfolio."

WRNS has signed on for both Public Architecture's 1% program and the AIA's 2030 challenge. "We almost don't talk about sustainability anymore because it's just what we do," Shiles says. "Research and hard data is just embedded in our design process."



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## BUSINESS

# 1 GOOD FULTON & FARRELL

Dallas | ## | \$\$\$

OVERALL RANK: 82ND

RANK IN EACH CATEGORY

- SUSTAINABILITY: 118TH
- DESIGN: 138TH

Duncan Fulton, FAIA, a founding principal and president/CEO of Good Fulton & Farrell (GFF), has a few theories on how his firm took the top slot for business this year. First, he credits the firm's location in Dallas.

"We've got the good luck of being in a part of the country where the recession was milder than other areas," he says. "North Texas, in particular, has benefited from some new technologies for oil production, and while we don't serve that industry directly, all architects are, at the end of the day, influenced by the larger regional economy around them."

This doesn't mean that the firm came out of the recession unscathed. GFF had to let good people go and scale back, but another business choice that buoyed them during these slow billings periods was being debt-free, a strategy that the firm embraced when it was founded in 1982.

"We've been debt free for about 30 years and still are today," Fulton says. "Our attitude is to save nuts for the winter, so we benefitted from that positioning. The recession hit us, and we were affected, but not as badly as others."

Last year, Fulton says, marked the turning point where "it felt like we finally recovered from the recession." He credits the increase in billings, in part, to resurgence in multifamily projects and to the fact that GFF is in the process of ownership transition, which means that 14 of the roughly 100 employees are now principals who can bring in new work.

"As a result, we've got more channels for new projects to come into the firm," Fulton says. "Knowing the firm has enough work is a shared responsibility and in order to be a principal, you have to keep yourself and other people busy."

## 02

**CO Architects**

Los Angeles | ## | \$\$\$

OVERALL SCORE: 292.45

RANK IN EACH CATEGORY

- BUSINESS: 4TH
- SUSTAINABILITY: 8TH
- DESIGN: 11TH

"It is not always easy to design innovative healthcare architecture," said the design judges, "and yet this firm appears to reimagine how to approach the typology, and usually on a modest budget."

## 03

**Westlake Reed Leskosky**

Cleveland, Ohio | ### | \$\$\$

OVERALL SCORE: 281.72

RANK IN EACH CATEGORY

- BUSINESS: 6TH
- SUSTAINABILITY: 5TH
- DESIGN: 43RD

Westlake Reed Leskosky's transformation of the Wayne Aspinall Federal Building and Courthouse in Grand Junction, Colo., may make it the first net-zero energy building on the National Register of Historic Places.

## 04

**William Rawn Associates**

Boston | ## | \$\$\$

OVERALL SCORE: 276.94

RANK IN EACH CATEGORY

- BUSINESS: 9TH
- SUSTAINABILITY: 12TH
- DESIGN: 21ST

Strong financials and commitment to sustainability—86 percent of employees have LEED credentials—aided perennial list-maker William Rawn.

## 05

**Pei Cobb Freed & Partners Architects**

New York City | ## | \$\$\$

OVERALL SCORE: 268.65

RANK IN EACH CATEGORY

- BUSINESS: 2ND
- SUSTAINABILITY: 6TH
- DESIGN: 96TH

Eighty percent of the gross square footage of Pei Cobb Freed's projects in 2012 was designed to meet the targets of the AIA's 2030 challenge, contributing to the firm's high sustainability ranking.

## 06

**Payette**

Boston | ### | \$\$\$

OVERALL SCORE: 262.09

RANK IN EACH CATEGORY

- BUSINESS: 41ST
- SUSTAINABILITY: 19TH
- DESIGN: 5TH

Payette's portfolio of healthcare and education projects, including the Penn State Hershey Children's Hospital and Georgetown's Regents Hall Science Center, impressed the design judges.

## 07

**Architectural Resources Cambridge**

Cambridge, Mass. | ## | \$\$

OVERALL SCORE: 258.76

RANK IN EACH CATEGORY

- BUSINESS: 69TH
- SUSTAINABILITY: 3RD
- DESIGN: 31ST

Architectural Resources Cambridge cracked the top 10 thanks to a strong commitment to energy modeling and water reduction with its portfolio of LEED Gold-certified higher education projects, including the Phillips Exeter Academy's Phillips Hall renovation and addition.

## 08

**THA Architecture**

Portland, Ore. | ## | \$\$

OVERALL SCORE: 257.99

RANK IN EACH CATEGORY

- BUSINESS: 62ND
- SUSTAINABILITY: 11TH
- DESIGN: 14TH

THA impressed the judges with its portfolio of projects, including the University of Oregon's Lewis Integrative Science Building and University of Wyoming Visual Arts Facility, both certified LEED Platinum.

## 09

**NBBJ**

Seattle | ### | \$\$\$

OVERALL SCORE: 251.00

RANK IN EACH CATEGORY

- BUSINESS: 7TH
- SUSTAINABILITY: 33RD
- DESIGN: 35TH

NBBJ's strong financials were aided by its design of Google's headquarters in Mountain View, Calif., which is seeking Living Building certification.

## 10

**Lake|Flato Architects**

San Antonio, Texas | ## | \$\$\$

OVERALL SCORE: 250.96

RANK IN EACH CATEGORY

- BUSINESS: 54TH
- SUSTAINABILITY: 2ND
- DESIGN: 82ND

Lake|Flato debuted on the list thanks to a strong sustainability ranking; the firm's Josey Pavilion project, an education center for the Dixon Water Foundation, aims to be the first Living Building project in Texas.



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## SUSTAINABILITY

# 1 LEDDY MAYTUM STACY ARCHITECTS

in San Francisco is proof that you don't have to be a large firm to make a big impact through sustainable design. With just 16 employees, LMS (ranked 28th overall; see the firm's full listing on the next page) has embedded the ethos of energy efficiency into its entire practice. Fifty-six percent of the gross square footage of the firm's projects met AIA 2030 challenge standards; 100 percent used energy modeling and pursued a potable water reduction beyond what was mandated by code. Fifty-six percent of staffers have LEED credentials. "In some ways, staff are preselected because of our reputation and how much emphasis we put on sustainable design," says Richard Stacy, FAIA, a firm principal. "We don't have to bug people to pursue accreditation; they are self-motivated."

LMS is also proof that you don't have to break the budget to achieve energy efficiency. An affordable senior housing project that the firm designed in Oakland, Calif., was certified LEED Platinum. Last year, the firm completed Sweetwater Spectrum in Sonoma, Calif., a net-zero residential community for autistic adults that was built to LEED Gold standards. "We don't see budget as an excuse not to do sustainable design," Stacy says. "We get creative with taking standard materials like fiber-cement siding and coming up with our own inventive ways to make that into a rainscreen."

Research is another key component of the LMS approach: Several projects, like Sweetwater, are pilot programs that can hopefully be replicated. "We develop our research and our knowledge base primarily by doing research on a case-by-case basis and then sharing that info," says principal Marsha Maytum, FAIA.

Sustainability is such a core value that principal William Leddy, FAIA, believes the descriptor to be superfluous: "We're working hard to get rid of the word sustainability, because we believe good design is good design. You cannot think of it as a separate thing."

## 11

### Clark Nexsen

Norfolk, Va. | ### | \$\$\$

OVERALL SCORE: 250.64

RANK IN EACH CATEGORY

- BUSINESS: 28TH
- SUSTAINABILITY: 22ND
- DESIGN: 25TH

AE firm Clark Nexsen, which merged this year with the Raleigh, N.C.-based firm Pearce Brinkley Cease + Lee, scored well with its portfolio of higher education projects.

## 12

### Skidmore, Owings & Merrill

New York City | ##### | \$\$\$\$

OVERALL SCORE: 249.53

RANK IN EACH CATEGORY

- BUSINESS: 8TH
- SUSTAINABILITY: 38TH
- DESIGN: 30TH

SOM's research credentials were bolstered by its Center for Science and Ecology, a research partnership with Rensselaer Polytechnic Institute, as well as its AIA award-winning Great Lakes Vision Plan.

## 13

### EYP Architecture & Engineering

Albany, N.Y. | ### | \$\$\$

OVERALL SCORE: 247.10

RANK IN EACH CATEGORY

- BUSINESS: 29TH
- SUSTAINABILITY: 9TH
- DESIGN: 67TH

EYP contributed 5 percent of its profits to research, exploring PV technology, net-zero energy design for data centers and labs, and other topics in partnership with the SUNY College of Nanoscale Science & Engineering.

## 14

### Miller Hull Partnership

Seattle | ## | \$\$\$

OVERALL SCORE: 246.84

RANK IN EACH CATEGORY

- BUSINESS: 84TH
- SUSTAINABILITY: 14TH
- DESIGN: 12TH

Miller Hull's Bullitt Center in Seattle, pursuing Living Building certification, boasts energy efficiency 83 percent greater than the city's typical office building.

## 15

### HOK

St. Louis, Mo. | ##### | \$\$\$\$

OVERALL SCORE: 244.68

RANK IN EACH CATEGORY

- BUSINESS: 16TH
- SUSTAINABILITY: 34TH
- DESIGN: 34TH

HOK contributed pro bono services to the USGBC's Project Haiti Orphanage and Children's Center in Port-au-Prince, designed to be net-zero energy.

## 16

### Fentress Architects

Denver | ### | \$\$\$

OVERALL SCORE: 243.42

RANK IN EACH CATEGORY

- BUSINESS: 18TH
- SUSTAINABILITY: 16TH
- DESIGN: 56TH

With such projects as the Tom Bradley International Terminal at LAX and the LEED Gold Sanford Center for Regenerative Medicine in La Jolla, Calif., Fentress scored high in sustainability and business.

## 17

### SmithGroupJJR

Detroit | ### | \$\$\$

OVERALL SCORE: 243.41

RANK IN EACH CATEGORY

- BUSINESS: 86TH
- SUSTAINABILITY: 23RD
- DESIGN: 6TH

"Artful compositions, with a wonderful sense of material and detail," said the judges about SmithGroup's portfolio, which included the LEED Gold Energy Biosciences Building at UC Berkeley.

## 18

### Perkins+Will

Chicago | ##### | \$\$\$\$

OVERALL SCORE 239.04

RANK IN EACH CATEGORY

- BUSINESS: 30TH
- SUSTAINABILITY: 30TH
- DESIGN: 37TH

Perkins+Will invested 10 percent of its profits in research, including microgrants for employees, a technology lab, and a nonprofit public interest research arm.

## 19

### DLR Group

Omaha, Neb. | ### | \$\$\$

OVERALL SCORE: 236.64

RANK IN EACH CATEGORY

- BUSINESS: 37TH
- SUSTAINABILITY: 17TH
- DESIGN: 54TH

DLR formed Area 51, an internal research unit dedicated to technological innovation; the firm has also partnered with the U.S. Department of Energy on a building performance research program.

## 20

### Eskew+Dumez+Ripple

New Orleans | ## | \$\$\$

OVERALL SCORE: 236.37

RANK IN EACH CATEGORY

- BUSINESS: 20TH
- SUSTAINABILITY: 42ND
- DESIGN: 38TH

Eskew+Dumez+Ripple balanced design excellence—the Reinventing the Crescent plan for New Orleans won an AIA Honor Award—with a focus on sustainability: The New Orleans Bioinnovation Center was certified LEED Gold.

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## DESIGN

# 1 NADAAA

Boston | ## | \$\$

OVERALL RANK: 75TH

RANK IN EACH CATEGORY

- BUSINESS: 148TH
- SUSTAINABILITY: 88TH

Flip through NADAAA's 2012 portfolio and you see a practice skilled in designing for all scales. For instance, a 600-square-foot retail space in San Francisco for skin care brand Aesop, in which a seemingly simple wall of randomly stacked recycled boxes utterly transforms a narrow, deep space into a dynamic interior. Or two new schools of architecture in Canada and Australia (the University of Melbourne's Faculty of Architecture, Building, and Planning building shown above), both of which challenge the traditional assumptions of academic buildings with creative uses of material and assembly.

"The work of this firm is fresh and innovative at all scales," said the portfolio judges. "Well detailed and beautifully drawn, the projects are simultaneously adventuresome and controlled within the project language."

This ability to balance adventure with control comes from NADAAA's attention to form and space-making. "Historically, we've been very material focused," says Nader Tehrani, the firm's principal and founder. "We look at material behavior and study the means and methods of how buildings are put together. We are also looking at building typologies and radicalizing the formal, cultural, and organizational possibilities."

NADAAA, hailed for its innovative technology use, tempers design exploration with critical pragmatism, Tehrani says. "In these times it seems you can draw almost anything and you can build almost anything. But we've also witnessed a precipitous fall in judgment," he says. "It's not about what's technically possible, and it's not about the power to do whatever you can. [It's] cultural relevance that makes it smart architecture and urbanism."

## 21

**Cambridge Seven Associates**

Cambridge, Mass. | ## | \$\$\$

OVERALL SCORE: 233.46

RANK IN EACH CATEGORY

- BUSINESS: 3RD
- SUSTAINABILITY: 67TH
- DESIGN: 48TH

Cambridge Seven Associates' commissions from leading U.S. universities, and a series of museum projects in Saudi Arabia, contributed to the firm's strong financials.

## 22

**SRG Partnership**

Portland, Ore. | ## | \$\$\$

OVERALL SCORE: 231.65

RANK IN EACH CATEGORY

- BUSINESS: 78TH
- SUSTAINABILITY: 10TH
- DESIGN: 64TH

Ninety percent of SRG's overall gross square footage of projects in 2012 met the AIA's 2030 standards; its Museum of Flight Space Gallery in Seattle earned LEED Gold certification.

## 23

**Richârd+Bauer**

Phoenix | ## | \$\$

OVERALL SCORE: 231.48

RANK IN EACH CATEGORY

- BUSINESS: 127TH
- SUSTAINABILITY: 31ST
- DESIGN: 2ND

"Simply gorgeous architecture," raved the judges about Richârd+Bauer's design portfolio, which included its College Center project at Central Arizona College. "Highly artful compositions of different contemporary materials."

## 24

**ZGF Architects**

Portland, Ore. | ### | \$\$\$

OVERALL SCORE: 231.27

RANK IN EACH CATEGORY

- BUSINESS: 63RD
- SUSTAINABILITY: 35TH
- DESIGN: 24TH

ZGF's portfolio featured such net-zero energy projects as the Conrad N. Hilton Foundation headquarters in Agoura Hills, Calif., and the J. Craig Venter Institute biology lab in La Jolla, Calif.

## 25

**Kohn Pedersen Fox (KPF)**

New York City | ##### | \$\$\$

OVERALL SCORE: 230.88

RANK IN EACH CATEGORY

- BUSINESS: 17TH
- SUSTAINABILITY: 40TH
- DESIGN: 60TH

KPF's staff size grew larger in 2012 than it was pre-recession, reflecting the firm's healthy portfolio of skyscrapers and mixed-use urban centers for an international clientele.

## 26

**Studios Architecture**

San Francisco/New York City |

### | \$\$\$

OVERALL SCORE: 230.59

RANK IN EACH CATEGORY

- BUSINESS: 25TH
- SUSTAINABILITY: 20TH
- DESIGN: 81ST

Studios' strong financials and commitment to sustainability—60 percent of the firm's gross square footage of projects in 2012 met AIA 2030 standards—secured its spot on the list.

## 27

**Ennead Architects**

New York City | ### | \$\$\$

OVERALL SCORE: 230.22

RANK IN EACH CATEGORY

- BUSINESS: 21ST
- SUSTAINABILITY: 70TH
- DESIGN: 23RD

Ennead Lab, the firm's research initiative, is exploring such topics as bird-safe glass and smart-grid lighting for city athletic fields.

## 28

**Leddy Maytum Stacy Architects**

San Francisco | ## | \$\$

OVERALL SCORE: 228.98

RANK IN EACH CATEGORY

- BUSINESS: 143RD
- SUSTAINABILITY: 1ST
- DESIGN: 44TH

Leddy Maytum Stacy made the list thanks to its number one ranking in the sustainability category.

## 29

**Mark Cavagnero Associates**

San Francisco | ### | \$\$

OVERALL SCORE: 227.70

RANK IN EACH CATEGORY

- BUSINESS: 35TH
- SUSTAINABILITY: 21ST
- DESIGN: 80TH

Mark Cavagnero's portfolio of public, nonprofit, and institutional work was notable for its focus on sustainability, with its San Francisco Jazz Center expected to earn LEED Gold certification.

## 30

**LMN Architects**

Seattle | ## | \$\$\$

OVERALL SCORE: 225.53

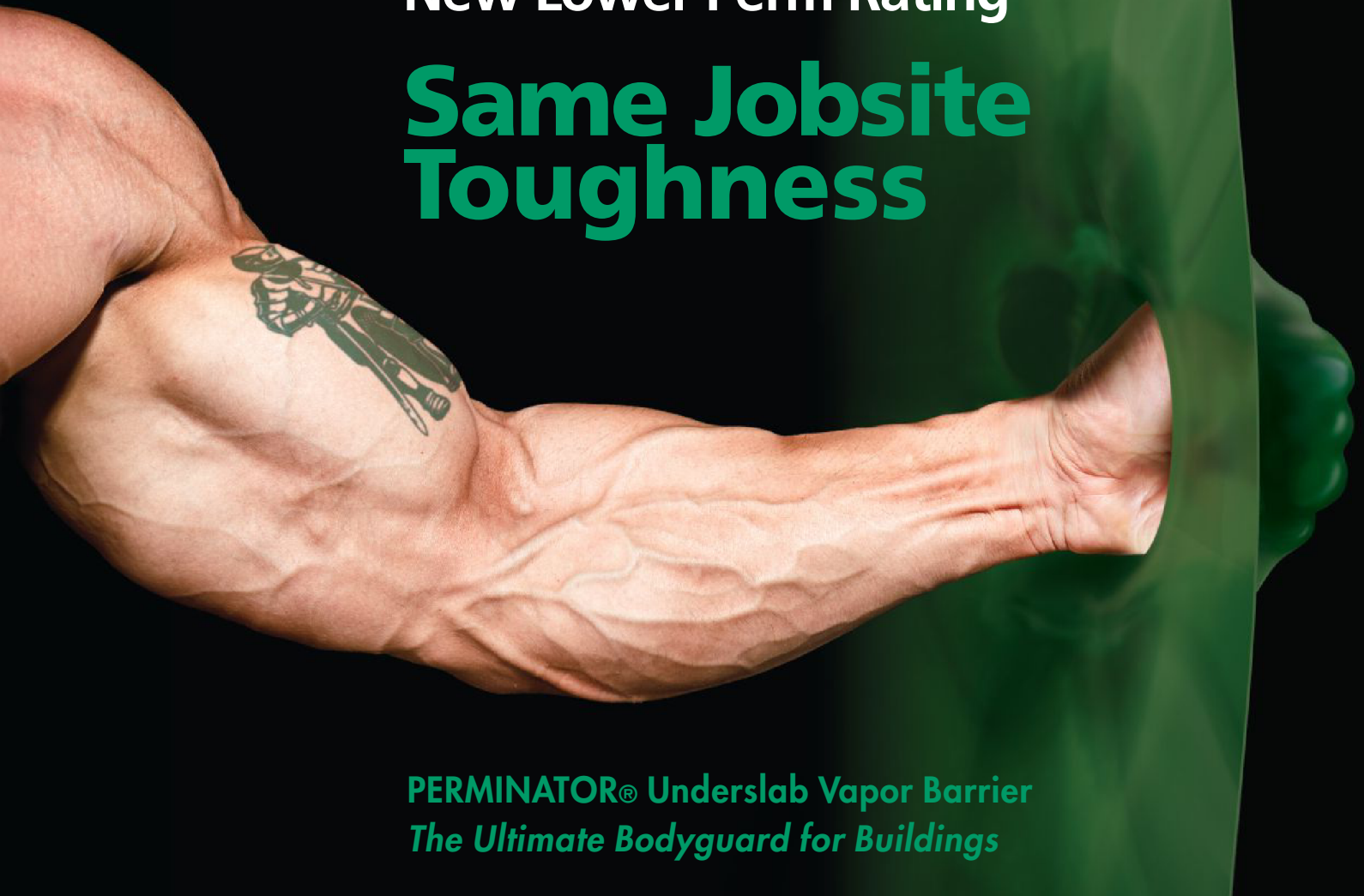
RANK IN EACH CATEGORY

- BUSINESS: 51ST
- SUSTAINABILITY: 60TH
- DESIGN: 15TH

Mid-sized, design-focused LMN shined with its portfolio of institutional projects, including its AIA Honor Award-winning Foster School of Business at the University of Washington.

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## DESIGN

2

Richärd+Bauer



College Center, Central Arizona College

3

John Ronan Architects



Poetry Foundation, Chicago

4

Ikon.5 Architects



E.J. Ourso College of Business, LSU

5

Payette



Regents Hall, Georgetown University

6

SmithGroupJJR



Integrated Education Building, GateWay C.C.

31

## Sasaki Associates

Watertown, Mass. | ### | \$\$\$

OVERALL SCORE: 224.13

RANK IN EACH CATEGORY

- BUSINESS: 48TH
- SUSTAINABILITY: 44TH
- DESIGN: 40TH

Multidisciplinary firm Sasaki embraced energy modeling and water reduction with its portfolio of LEED-certified higher education projects.

32

## LPA

Irvine, Calif. | ### | \$\$\$

OVERALL SCORE: 223.73

RANK IN EACH CATEGORY

- BUSINESS: 31ST
- SUSTAINABILITY: 15TH
- DESIGN: 98TH

LPA's commitment to sustainability is reflected by its employees, 80 percent of whom have LEED credentials; the firm's coLAB studio fosters an integrated and multidisciplinary design process.

33

## Meyers + Associates Architecture

Columbus, Ohio | ## | \$\$

OVERALL SCORE: 222.36

RANK IN EACH CATEGORY

- BUSINESS: 32ND
- SUSTAINABILITY: 7TH
- DESIGN: 129TH

Sixty percent of Meyers + Associates' employees have LEED credentials, and 85 percent of the gross square footage of the firm's 2012 projects was designed to AIA 2030 standards.

34

## John Ronan Architects

Chicago | ## | \$

OVERALL SCORE: 221.39

RANK IN EACH CATEGORY

- BUSINESS: 125TH
- SUSTAINABILITY: 46TH
- DESIGN: 3RD

"An architect's architect," the judges said about John Ronan's design portfolio. "In every case, the firm's projects are rigorously considered in both concept and detail."

35

## Hickok Cole Architects

Washington, D.C. | ## | \$\$\$

OVERALL SCORE: 221.10

RANK IN EACH CATEGORY

- BUSINESS: 5TH
- SUSTAINABILITY: 76TH
- DESIGN: 65TH

Hickok Cole's portfolio of commercial office buildings and multifamily housing projects, highlighted by its design of NPR's global headquarters in Washington, D.C., boosted its strong financials.

36

## Cannon Design

Grand Island, N.Y. | ##### | \$\$\$

OVERALL SCORE: 221.03

RANK IN EACH CATEGORY

- BUSINESS: 49TH
- SUSTAINABILITY: 50TH
- DESIGN: 28TH

Cannon's restoration/renovation of the St. Louis Public Library's Central Library, and its Kaleida Health, Clinical, and Research Building in Buffalo, N.Y., impressed the design judges.

37

## Ross Barney Architects

Chicago | ## | \$\$

OVERALL SCORE: 216.71

RANK IN EACH CATEGORY

- BUSINESS: 77TH
- SUSTAINABILITY: 61ST
- DESIGN: 18TH

Ross Barney's emphasis on design excellence shone through with its striking design for a chiller plant at Ohio State University and the Chicago Transit Authority's glass-and-steel Morgan Street Station.

38

## Julie Snow Architects

Minneapolis, Minn. | ## | \$\$

OVERALL SCORE: 213.30

RANK IN EACH CATEGORY

- BUSINESS: 90TH
- SUSTAINABILITY: 53RD
- DESIGN: 20TH

Julie Snow boasted one of the top-scoring design portfolios, featuring the firm's U.S. Land Port of Entry project in Van Buren, Maine, and its Minneapolis Federal Office Building Security Lobby Renovation.

39

## Ballinger

Philadelphia | ### | \$\$\$

OVERALL SCORE: 213.13

RANK IN EACH CATEGORY

- BUSINESS: 50TH
- SUSTAINABILITY: 25TH
- DESIGN: 88TH

This leading healthcare designer collaborates with the Center for Health Design on evidence-based research; 40 percent of firm staff has LEED credentials.

40

## RNL Design

Denver | ### | \$\$\$

OVERALL SCORE: 212.36

RANK IN EACH CATEGORY

- BUSINESS: 87TH
- SUSTAINABILITY: 13TH
- DESIGN: 93RD

Forty-one percent of the gross square footage of RNL's projects in 2012 was designed to meet AIA 2030 standards; the firm's net-zero energy projects included the National Renewable Energy Laboratory Research Support Facility.





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## DESIGN

7

WRNS Studio



Adobe Utah Campus Office Building

8

Studio Sumo



Mizuta Museum of Art, Sakado, Japan

9

H3 Hardy Collaboration  
Architecture

Maritime &amp; Seafood Industry Museum, Biloxi, Miss.

10

Machado and Silveti  
Associates

Ruth and Elmer Wellin Museum of Art, Hamilton Coll.

## DESIGN PORTFOLIO JUDGES

**Stephen Chung, AIA**, is a Boston-based architect. In 2009, Casas Internacional published a monograph dedicated to his residential projects. Chung has taught at such institutions as Syracuse, Cornell, RISD, and Yale. He is the host for a public television series titled *Cool Spaces: The Best New Architecture* (see [coolspaces.tv](http://coolspaces.tv)).

**Merrill Elam, AIA**, is a principal at Atlanta-based Mack Scogin Merrill Elam Architects. She has taught, lectured, and served as a design critic at countless institutions, including Yale, the Harvard University Graduate School of Design, and SCI-Arc. With Mack Scogin, she received the 2012 Cooper-Hewitt National Design Award for Architecture.

**John Peterson, AIA**, is the founder and president of Public Architecture, which mobilizes designers to drive social change. The nonprofit has built a network of over 16,000 design professionals, providing \$45 million of pro bono services annually across the country. The principal of Peterson Architects in San Francisco, he was a Loeb Fellow at the Harvard University Graduate School of Design.

41

**H3 Hardy Collaboration  
Architecture**

New York City | ## | \$\$  
OVERALL SCORE: 211.95  
RANK IN EACH CATEGORY  
• BUSINESS: 26TH  
• SUSTAINABILITY: 114TH  
• DESIGN: 9TH

"Sophisticated interventions at both the building and urban scale," said the judges about H3's design portfolio, which included its Lincoln Center Theater addition in New York City.

42

**ELS Architecture and  
Urban Design**

Berkeley, Calif. | ## | \$\$  
OVERALL SCORE: 211.79  
RANK IN EACH CATEGORY  
• BUSINESS: 60TH  
• SUSTAINABILITY: 39TH  
• DESIGN: 68TH

ELS's integrated design philosophy focuses on sustainability; the firm met the AIA 2030 standards for 50 percent of the gross square footage of its projects in 2012.

43

**Meyer Scherer & Rockcastle**

Minneapolis | ## | \$\$  
OVERALL SCORE: 211.11  
RANK IN EACH CATEGORY  
• BUSINESS: 65TH  
• SUSTAINABILITY: 68TH  
• DESIGN: 26TH

Meyer Scherer & Rockcastle's commitment to design excellence and creative adaptive reuse strategies shone through with its AIA Honor Award-winning transformation of a Walmart store into the McAllen Public Library Main Library in Texas.

44

**FXFowle**

New York City | ### | \$\$\$  
OVERALL SCORE: 211.02  
RANK IN EACH CATEGORY  
• BUSINESS: 27TH  
• SUSTAINABILITY: 71ST  
• DESIGN: 52ND

FXFowle invested 5 percent of its profits into research that focused on parametric modeling and fabrication for the Miami Pavilion and Art Bar at Art Basel, and green roof technology and performance for the Jacob Javits Convention Center.

45

**NAC, Inc.**

Spokane, Wash. | ### | \$\$\$  
OVERALL SCORE: 209.54  
RANK IN EACH CATEGORY  
• BUSINESS: 108TH  
• SUSTAINABILITY: 18TH  
• DESIGN: 63RD

NAC's Carl Sandburg Elementary School in Kirkland, Wash., illustrated the firm's

expertise in education design and its commitment to sustainability.

46

**Tate Snyder Kimsey**

Henderson, Nev. | ## | \$\$  
OVERALL SCORE: 207.88  
RANK IN EACH CATEGORY  
• BUSINESS: 85TH  
• SUSTAINABILITY: 27TH  
• DESIGN: 71ST

Tate Snyder Kimsey's design of the U.S. Bureau of Reclamation's Date Street offices in Boulder City, Nev., an adaptive reuse project on a former brownfield site, is expected to achieve net-zero energy.

47

**BAR Architects**

San Francisco | ## | \$\$\$  
OVERALL SCORE: 207.04  
RANK IN EACH CATEGORY  
• BUSINESS: 14TH  
• SUSTAINABILITY: 43RD  
• DESIGN: 115TH

BAR featured strong financials and a dedication to pro bono work: The firm collaborated with Architecture for Humanity and Haiti Partners on the design of the Children's Academy in Haiti.

48

**Ann Beha Architects**

Boston | ## | \$\$  
OVERALL SCORE: 206.65  
RANK IN EACH CATEGORY  
• BUSINESS: 24TH  
• SUSTAINABILITY: 93RD  
• DESIGN: 27TH

Ann Beha invested 7 percent of its profits in project research for its adaptive reuse and restoration projects at MIT, the University of Chicago, and Cornell.

49

**Goettsch Partners**

Chicago | ## | \$\$\$  
OVERALL SCORE: 204.94  
RANK IN EACH CATEGORY  
• BUSINESS: 38TH  
• SUSTAINABILITY: 29TH  
• DESIGN: 111TH

With clients in China and Abu Dhabi, Goettsch boasted strong financials and a commitment to energy modeling with its portfolio of hotel and high-rise projects.

50

**Paul Murdoch Architects**

Beverly Hills, Calif. | # | \$\$  
OVERALL SCORE: 203.17  
RANK IN EACH CATEGORY  
• BUSINESS: 58TH  
• SUSTAINABILITY: 32ND  
• DESIGN: 99TH

Paul Murdoch Architects snuck onto the list with a portfolio that included the Flight 93 National Memorial in Stoytown, Pa., and a Constitution Gardens plan for D.C.'s National Mall design competition.

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# Class in Session

## WHAT'S NEW IN GREEN SCHOOLS



Figure 1: First day of school in 2009 at Langston Hughes Elementary in New Orleans. Hughes was the first new public building to open after Hurricanes Katrina and Rita. (Credit: Scott Drago, Jacobs Engineering)

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### LEARNING OBJECTIVES

- Understand critical aspects of the current financial and political state of the nation's schools
- Explain key strategies related to energy efficiency in schools
- Examine two new and innovative ideas in green school design
- Identify several pathways to advocate for and act toward green schools in local communities

### CONTINUING EDUCATION

**CREDIT:** AIA/CES 1 hr LU/HSW  
GBCI 1 hr



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By Anisa Baldwin Metzger, Assoc. AIA, LEED AP, Center for Green Schools, U.S. Green Building Council  
Doug Gehley, AIA, LEED AP, Associate Principal, SHW GROUP

In the midst of the flurry of school rebuilding after Hurricanes Katrina and Rita, one of the project managers working to support the Recovery School District in New Orleans snapped a photo on opening day 2009 (figure 1). It's a little off-center, a little blurry, but it is hard to ignore the look of wonder on a young girl's face as she takes her first steps into her new, LEED Silver certified elementary school. At their root, green schools are about this expression of wonder. We communicate value and worth to our children in the quality of the facilities we design and build for them.

Taken broadly, the concept of a green school is not a new one. Since the late nineteenth century, designers and educational professionals have debated the best way to heat, cool, ventilate, and light a school while providing the optimal conditions for learning.<sup>1</sup> What is new, of course, is the impact of new building and classroom technologies on the learning environment and on our ability to make comfortable, healthy spaces that have a reduced impact on the earth and natural resources. Through a deeper understanding of the landscape of the current green schools movement, design professionals can use new strategies and technologies to even more powerful effect in positively transforming school learning environments.

### THE STATE OF GREEN SCHOOLS

#### Organizing Frameworks

When the design community discusses green schools, the conversation is often limited to the school building and the methods for addressing the triple bottom line of sustainability within the realm of the design professional. To understand the full breadth of the green schools movement, it is helpful to know the work that is being done beyond the building to define the full meaning of green schools.

According to the Center for Green Schools at the U.S. Green Building Council, a green school is "a school that creates a healthy environment that is conducive to learning while saving energy, resources and money." The core of this definition is the popular triple bottom line of sustainability: social, environmental and economic. In the conversation around green schools, these three central aspects of sustainability, typically used in the business community, crop up in some unexpected variations. More than in any other building type, the social impact—the message that school environments send and the lessons that these environments teach—becomes even more important to how environmental sustainability is implemented within schools.

In 2011, the U.S. Department of Education launched the Green Ribbon Schools award program,<sup>ii</sup> a monumental step forward for the green schools movement. The Center for Green Schools worked closely with the Department to develop award criteria that would be comprehensive and inclusive. The award application asks schools to demonstrate their progress toward three aspirational goals: zero environmental footprint (including energy, water, waste and carbon), a positive impact on occupant health and performance and all graduates demonstrating environmental literacy. The three pillars—environmental impact, human health and ecoliteracy—act as a simple, elegant organizing principle for schools journeying toward whole-school sustainability (figure 2). As a variation on the typical triple bottom line components discussed earlier, the three pillars match more closely with the intentions of school operations and management.

What does it take to shift the culture of a school to allow for students, parents, faculty, staff and leadership to see these pillars as central, not auxiliary, to their success? Many of the frameworks developed for green schools have focused on outcomes to help schools show their progress. But this approach leaves out a missing piece. In order for the shift to green school practices to truly take root, a



Figure 2: The Center for Green Schools developed this simple way of illustrating the Green Ribbon Schools criteria: lower environmental footprint, positive impact on health and an increased number of environmentally literate graduates. (Credit: Center for Green Schools at USGBC)

change in organizational culture and values must occur as well.

The Institute for the Built Environment at Colorado State University has conducted research over the last several years to clarify the structure behind successful whole-school sustainability efforts.<sup>iii</sup> The team, made up of faculty from the fields of architecture and sociology, has developed a framework based on this research that supports lasting cultural shifts toward healthier, greener schools. Where the Green Ribbon Schools criteria guides and informs a school's roadmap toward sustainability, the "Whole School Sustainability" framework can serve as a compass to stay the course.

### The State of Our Schools

In the midst of working toward healthy, green schools, one ultimately realizes that in order to inspire investment in green school environments, our nation needs to invest much more in school environments as a whole. In the fall of 2012, about 50 million students attended nearly 100,000 public elementary and secondary schools in public school buildings throughout the United States. We have neither national nor comparable state-by-state data detailing the most basic information about these public school facilities. As explained in the Center for Green Schools' 2013 State of Our Schools Report, written in partnership with the 21st Century School Fund, "While some states maintain information on their school facilities, a publicly accessible inventory of the age, number or size of public school buildings and sites does not exist nationally or by states. This information is often difficult to access publicly at the school district level as well."<sup>iv</sup>

The last comprehensive survey and study of the condition of our nation's public schools was

conducted by the Government Accountability Office (GAO) 18 years ago, in 1995. A 2008 study by the 21st Century School Fund used a building industry best practice method to estimate deferred maintenance in the nation's public schools. It compared what school districts had spent since the 1995 GAO study and what they should have been spending to maintain school facilities in good repair. While school districts spent more than the GAO estimated, the ongoing obligations of maintaining, repairing and renewing facilities that serve over 50 million people continued to grow. In 2008, the deferred maintenance load in our public schools was \$271 billion. This deferred maintenance "deficit" represents an estimated \$41 per square foot of building space or, on a per student basis, \$5,450 per student to bring the nation's public schools into good repair.

Bringing schools into good repair, however, does not address the critical need to modernize facilities to meet current health, safety and educational standards. If schools were to be modernized on a 25 year lifecycle—a defensible schedule, given rapid changes in building technology, educational demands and population change—\$542 billion would be required over the next ten years to modernize our Pre-K through 12th grade educational infrastructure. Again, this would not include new construction to accommodate enrollment growth.

At the federal, state, school district and individual school levels, we as a nation lack the information to understand both the current extent of problems in our facilities and the full extent of educational opportunities that high quality school facilities provide. With more knowledge and better understanding, we can invest our limited resources more efficiently, effectively and equitably.<sup>v</sup>

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For more than one third of the schools, over 90% of their new building projects were green, and just under one third report that over 90% of their renovation projects were green over the last three years.

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### The Education Facilities Market Sector

During the fall of 2012, McGraw-Hill Construction released a SmartMarket Research Study examining the changes in green building within the education sector over the last three years. Its 2007 Education Green Building SmartMarket Report had illuminated a growing market, showing at the time that the education sector was the fastest-growing market for green building. When the original study was released, education construction was the largest construction sector by value, at \$53 billion.<sup>vi</sup> Since then, however, the education market has slowed significantly, and the largest construction sector by value today is housing. The latest Dodge Outlook Report from McGraw-Hill, released in October 2012, predicted that "institutional building will level off, following the steep 13% drop estimated for 2012. For educational facilities, K-12 construction will slip further while college and university construction should at least stabilize."<sup>vii</sup>

Within this seemingly gloomy outlook, however, is the news that green building within the education sector has soared. In 2008, McGraw-Hill Construction sized the green building market share at 15% of total construction starts in the education sector by value.<sup>viii</sup> By 2011, that share had grown to 45%, a market valued at \$19 billion—the largest sector for green by value. In McGraw-Hill's most recent 2012 survey of hundreds of K12 administrators, 81% reported doing at least some new green projects, and 84% report doing some green renovations over the last three years. Not only are a large percentage of the respondents doing green work, but green also accounts for a large share of their overall projects. For more than one third of the schools, over 90% of their new building projects were green, and just

**At least six major studies in the last 15 years have concluded that students' ability to hear their teacher clearly, called speech intelligibility, has a substantial impact on their short-term memory and academic performance.**

under one third report that over 90% of their renovation projects were green over the last three years.<sup>ix</sup>

#### MAKING THE CASE FOR SCHOOL FACILITIES INVESTMENT

##### The Case for Green Schools: Occupant Health

Increasing focus in the school building sector has been placed on occupant health and well-being in the last several years. Demonstrating the clear need for more comprehensive research, the U.S. Environmental Protection Agency released a call for proposals in June 2013 for \$6 million in grant funding for research on the topic of "Healthy Schools: Environmental Factors, Children's Health and Performance, and Sustainable Building Practices." While we know quite a bit about how building-related factors such as daylight, CO<sub>2</sub> concentration, background noise and airborne particulates can affect student focus, task speed and attendance, existing research does leave gaps in our understanding of how specific building strategies affect that important but controversial school metric, student test scores.

In scientific terms, it is more difficult than we might think to prove in a clearly quantifiable way that an action taken to improve a school facility has a direct result on student health or learning. Any experienced teacher or parent can tell you that there are a host of influences on a young person's health and learning. And as public health researchers have long known, separating out the many aspects of a child's environment to find the cause of a health problem is a complex and difficult task.

Some of the clearest lines that have been drawn between school buildings and student health and performance have been in the areas of acoustics, daylight and ventilation. At

least six major studies in the last 15 years have concluded that students' ability to hear their teacher clearly, called speech intelligibility, has a substantial impact on their short-term memory and academic performance.<sup>x</sup> Additionally, at least four major studies in the last 15 years have connected access to daylight with students' ability to learn. Two of these studies looked specifically at students' production of hormones that are essential to their ability to focus, retain information and maintain alertness (cortisol and dim light melatonin), and they found that students without access to daylight had disruptions in their production of these important hormones.<sup>xi</sup>

Because air quality testing can be prohibitively expensive and sometimes problematic, many researchers and environmental health advocates use the concentration of carbon dioxide (CO<sub>2</sub>) as a proxy for identifying potential air quality problems. Several studies have linked higher levels of CO<sub>2</sub> in classrooms, caused by recirculating air and low ventilation rates, with lower average daily attendance and with slower task speed. Researchers have also found an increase in respiratory illness in spaces with very low ventilation rates compared to those with ventilation rates more like what is required in LEED certification. These studies found an increase from 50% to 370% in incidence of respiratory illness in the spaces with low ventilation rates.<sup>xii</sup>

##### The Case for Green Schools: Economic

In establishing the case for investment in green schools, the first order of business is to put to rest the claim that green schools cost more. They can cost more, as any choice made in

designing and constructing buildings has the potential to raise or lower the cost. Green schools can also cost at or below regional costs, however, and several cases across the country prove this point. To give just a few examples, River Crest Elementary School in Wisconsin, a LEED Gold school, cost 29% less than regional construction costs to build.<sup>xiii</sup> The last seven schools, all LEED certified at various levels, that have been built in Virginia Beach City Schools cost the district anywhere between 8% and 34% less than regional costs.<sup>xiv</sup> Fossil Ridge High School in Colorado was the third public high school in the country to be LEED certified and was built for \$128/sq ft, among the least expensive schools the district built in 2004.<sup>xv</sup>

Of course, anyone that has been in the environmental sustainability movement for a while knows that the upfront cost of building schools is only a small piece of the equation. By investing in better, more efficient buildings, we create a future of decreased operating expenses and responsible stewardship of funds—in the case of schools, stewardship of the public's trust. Increased productivity, fewer sick days and other factors are also important in determining true life cycle benefits of healthier buildings.

Those advocating for green buildings, motivating owners by citing future low operating costs, have a duty to do everything possible to deliver on these promises. The most successful schools have been those that have been able to weigh the concerns of over-strapped school maintenance staff with the possibilities of new, efficient technologies. The most successful have also been able to create an environment in which every occupant is conscious of his or

#### EDUCATION WEEK: FIVE MOST PRESSING ISSUES IN EDUCATION TODAY

**Charters:** The debate about charter schools and vouchers is still as contentious as it was a decade ago, but additional positioning from the federal government has added a new element. Currently, 66% of the public supports charters (decrease from 2011) and 44% support voucher programs (up from 2011).

**Standards:** With the adoption of the national common core standards, the landscape of curriculum and assessment development has changed markedly. While 71% of teachers think that the Common Core will improve their students' college- and career- readiness, only 26% believe that testing is an accurate measure of their students' achievement.

**Closings:** As school districts face failing student performance scores and budget crunches, school closures can both turn around troubled schools and keep operations costs down. The debate arises over where these schools are shut and whether they had been given the resources to succeed in the first place.

**Evaluations:** A majority of the public, 52%, believes that student assessment scores should factor into teacher evaluations. Teachers unions do not agree and cite the disturbing fact that only 32% of teachers are "very satisfied" with their jobs, down 23 percentage points since 2008.

**Technology:** The use of educational technology has transformed the classroom within a decade. Blended learning and multimedia textbooks are becoming more commonplace, and a full 89% of teachers would choose to spend \$200 per student for an Internet-connected device over \$200 per student for new science textbooks.

Source: "Education Debates: A Breakdown," Published 8 May 2013 by EdWeek. Online at <http://www.edweek.org/ew/section/multimedia/education-debate-by-issues.html?intc=EW-DPCT13-EWH>



her contribution to the utility usage within the building—through cultural norms, constant school-level reporting and/or a visible dashboard tool for occupants.

### BEST PRACTICES FOR ENERGY-EFFICIENT SCHOOLS

#### Delivering on the Promise: Energy Efficient Schools

Schools can be energy efficient through one or more of at least three methods: 1) innovative design and technologies; 2) proactive management by the school or school district; and 3) school culture and occupant behavior.

You may have heard that the money you save on energy can be used to pay teacher salaries, but that is not always the case. Salaries, school equipment and operation dollars are often separate silos of money, and the crossover from one ledger to another is not always possible. What is possible, however, is to add dollars saved through energy efficiency to the maintenance program to keep custodians on the job and to keep equipment running as efficiently and cleanly possible. James Meikle, Director of Maintenance Services at Arlington Public Schools, directed a small study to determine the indoor air quality benefits of a coil and filter maintenance program in 10 school buildings. Measurements showed an increase in ventilation rates between 102 to 344 CFM, and an



This article continues at <http://go.hw.net/AR0913Course1>. Go online to read the rest of the article and complete the corresponding quiz for credit.

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#### QUIZ

- What is the EUI of a building measured in?
  - BTU/ cf/year
  - kBTU/sf/day
  - kBTU/sf/year
  - BTU/sf/year
  - kBTU/cf/day
- The energy dollars saved in a green school will most likely go to obtain what?
  - A new math teacher
  - A raise for the principal
  - Deferred maintenance on an older school
  - New books for the library
  - Replacement sedum for a green roof
- How many students go to U.S. public schools every day?
  - 5 million
  - 15 million
  - 40 million
  - 50 million
  - 55 million
- When was the last national, comprehensive study of school facilities completed by the General Accounting Office?
  - 1995
  - 1997
  - 1999
  - 2001
  - 2003
- The production of which hormones in children have been shown to be negatively affected by lack of daylight in classrooms?
  - Insulin and cortisol
  - Melatonin and estrogen
  - Cortisol and thyroxine
  - Insulin and thyroxine
  - Cortisol and melatonin
- According to CBECS, a school building meeting code and the baseline requirements of ASHRAE 90.1 in the U.S. should have an EUI of:
  - 25
  - 50
  - 75
  - 100
  - 110
- What reduction over baseline EUI are architecture firms supposed to have achieved in their projects by 2010 if they committed to the AIA 2030 Challenge?
  - 30%
  - 40%
  - 45%
  - 50%
  - 60%
- Which school was the first net-zero school in the country?
  - Lady Bird Johnson Middle School
  - Richardsville Elementary
  - River Crest Elementary
  - Center for a Sustainable Future
  - Locust Trace Elementary
- A good designer will reduce which of the following first if he/she wants to attain a net-zero school?
  - Energy use intensity
  - Playgrounds
  - Non-native landscaping
  - Green roofs
  - Photovoltaic racks
- According to Education Week, which of the following is not considered one of the top five most pressing issues in education today?
  - Charter schools
  - School closings
  - Teacher evaluations
  - Facilities funding
  - Common core standards



**E**  
HUMAN RIGHTS CAMPAIGN

**POP-UP SHOP**  
FIRE ISLAND PINES

LOCATED AT  
THE BOTEL  
NEXT TO THE  
BLUE WHALE

**OPEN**  
AUGUST  
9TH - 19TH

**E**  
HUMAN RIGHTS CAMPAIGN

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**OPEN**  
AUGUST  
9TH - 19TH

Fire Island Pines  
**WELCOME BAR**  
Open  
Everyday  
10am-10pm

# FIRE ISLAND PINES PAVILION

AFTER A FIRE DESTROYED THE PAVILION NIGHTCLUB IN 2011, NEW YORK-BASED HWKN WAS TASKED WITH CREATING A NEW SOCIAL HUB FOR THE SUMMER SEASON ON FIRE ISLAND.



Text by **Philip Nobel**  
Photos by **Michael Moran**

**OUT ALONG THE** Atlantic coast east of New York City, off the south shore of Long Island, beyond the reach of the suburbs and the exurbs and not quite yet at the Hamptons, you can find one of the country's truly special places. Fire Island is a collection of a few dozen settlements—some still little more than camps, some almost now becoming real towns—dotted out for 30 miles along the pine-covered dunes of the barrier island. There is no access by car except for the few that crawl over from time to time along the beach from Robert Moses State Park (his plan for a highway through the island was never realized), and in most towns the thoroughfares are no more than graying wooden boardwalks, along which residents tote their supplies home in little wagons from the ferry docks.

Not unlike some other East Coast islands—Martha's Vineyard, for example, where every one of the little villages has a unique personality—Fire Island is a collection of very different places: shingly, family-oriented Saltaire; the almost-hopping, almost-downtown Ocean Beach; the exclusive Point O' Woods; honky-tonk Ocean Bay Park. And then there's the Pines: The woody, beachy getaway that is New York's gay capital of summertime leisure-by-the-sea. Elegant by day, devil-may-care by night.

Fire Island as a whole is a vulnerable place, little more than a sandbar really, and from time to time hurricanes and winter storms will punch through the few hundred yards between the ocean and the bay. Because she made landfall just to the west, last year's Superstorm Sandy did not entirely wash away Fire Island, though it did significant damage. But about a year before, there was another disaster—an off-season fire that gutted the old Pavilion nightclub that was the beating heart of life in the Pines, and one of the liveliest spots on the island.

"It could have been a lot worse," says Matthias Hollwich, partner at New York firm HWKN and chief designer of the new building that has risen up from the ashes. "If the wind had been blowing the other way, they could have lost the whole town."

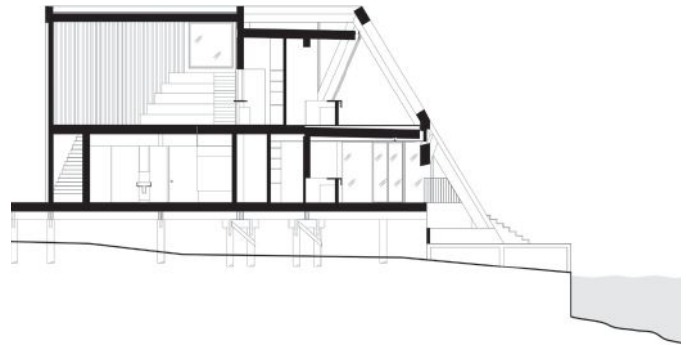
When you arrive at the little harbor at the Pines after a half-hour trip across the Great South Bay, what you see are some houses—surprisingly modern (many designed by the likes of Horace Gifford, Arthur Erickson, Harry Bates, and Andrew Geller); some boats (among them on the day I visited was a 40-foot sloop called, unforgivably, "Untidaled"); one short five-building row of shops and hotels; and at the end of the line, at the head of the harbor where the ferry docks, the Fire Island Pines Pavilion.

It's the heart of the town, with its club and bars and shops, and the focus of after-hours revelry that starts early on summer weekend nights. "It had to be iconic as a program," HWKN's other founding partner, Marc Kushner, AIA, says. The fabled "high tea"—a weekly dance party, cousin to the "low" and "middle" teas held elsewhere down the strip—had for years taken place on the old Pavilion's second-story deck, overlooking the harbor and the town. When it burned, in November 2011, that beloved ritual was interrupted. There was enormous pressure to bring the building right back. And to bring it back right. And that meant a lot of very interested parties—including the owners of each of the Pines' 700 homes.

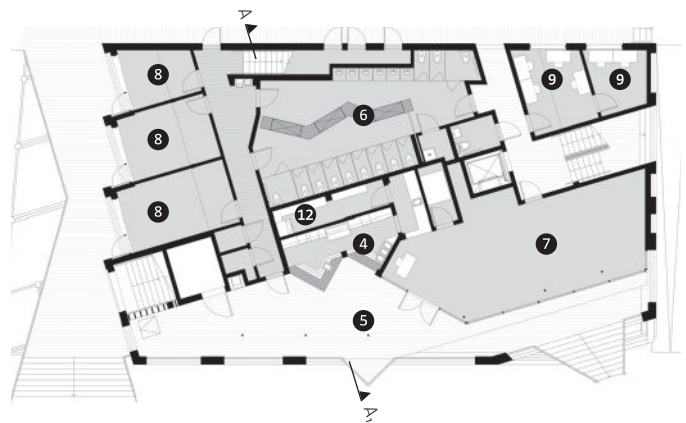
"It's a very difficult assignment, in a way," says developer Matthew Blesso, one of the property's owners and operators, about the marching orders he gave his architects. "There's no program for: How do you design a gay nightclub at a seasonal gay beach community? It's not like you can look elsewhere and see how it has been done. The Pines is not Mykonos. It's not South Beach."

The community took the result of the fire as an opportunity to rethink the commercial strip, engaging Diller Scofidio + Renfro to design a master plan. The new Pavilion, which opened in time for this summer season, is a lynchpin, and looking at the structure that HWKN raised at the end of the harbor, there is no doubt that it is pure Pines: elegant, bold, and a little rough around the edges.

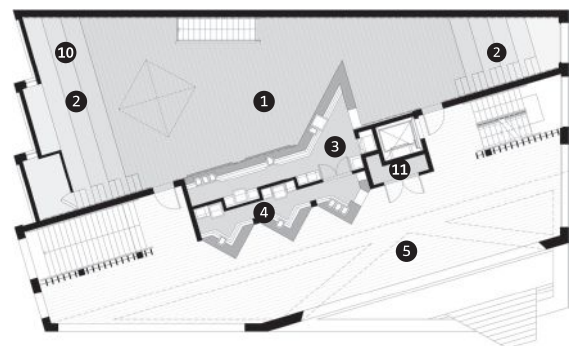
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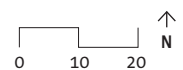
### First-Floor Plan



### Second-Floor Plan



- |                |               |
|----------------|---------------|
| 1. Dance floor | 7. Gym        |
| 2. Bleachers   | 8. Retail     |
| 3. Indoor bar  | 9. Office     |
| 4. Outdoor bar | 10. DJ stand  |
| 5. Terrace     | 11. Storage   |
| 6. Bathrooms   | 12. Prep room |





**Above:** The first-floor terrace, with its outdoor bar, is lined with cedar on the floor, ceiling, and walls. A glass-enclosed gym overlooks the harbor.  
**Right:** The north façade is lined with an inset pattern of Hardie Board panels.  
**Far Right:** The western end of the building is anchored by three retail venues that open out onto the board-lined walkways of the Pines.







The takeaway from the community's commentary, heard directly at several public meetings, Hollwich says, was that the previous building—a typical clapboard seaside shack—was “too neutral, too generic.” The residents wanted the new building to be “supercharged,” he says. Music to the ears, no doubt, of an architect at an emergent New York firm (designers of the epically successful spiky blue folly named “Wendy,” the 2012 installment of the MoMA/P.S.1's Young Architects Program) who spent four years working in Rotterdam at OMA.

And there is something of Rem in the Pavilion, an attitude toward the frank disposition of materials—in this case, cedar, everywhere—that, like the spaces at OMA's Illinois Institute of Technology (IIT) Student Center in Chicago, still manages to border on the effete. And then there's the countervailing bold gesture, as in the train tube at IIT. In the Pavilion, this takes the form of an exaggerated, not-quite-structural trestle across the front of the simply supported, two-story structure. The Parallam beams are dexterously exposed throughout, as are the cedar joists (on only 15-inch centers to better fit the controlling dimensions). And the beautiful railings that final touch—in OSB, God's very own favorite sheet material, of course, but not quite the thing for a building left out to weather by the sea.

And the building is already weathering, as planned, toward the stone gray that will fit it even better into the ocean-beaten context of the town. The building is well thought-out for its purpose, from the clever steps and walkways leading from the board-paved plaza where the ferry lands, to some of the most elegant public bathrooms imaginable (gender-non-specific and cheekily free of mirrors), all the way up to the operable skylight in the top-floor dance hall that makes it a very pleasant place to be, even during the day. The building works. But it is the delicate disposition of its almost-brutal materiality, that bold new face for the Pines, that makes it a true success: It gives Fire Islanders once again a proper place to dance away the night. The feel of the building, its elegance, its boldness, and its roughness, more than any single decision or detail, is what makes it so right.

“Historically, you have a group of men who have two lives,” Blesso explains. “Life in the city, then life in the Pines. There's a freedom for people to really be themselves in a way maybe they can't be elsewhere. It's a place where people can really express themselves—and you see that architecturally as well. It's normal there to go over the top a little and be a little flamboyant. But at the same time it's a really casual place.

“We needed architecture that really embodied both of those things: It needed to be warm, but also strong. And I think the design is very masculine. Which is fitting.”



**Top:** The Pavilion's second-level terrace overlooks the harbor. Temporary OSB guardrails will be replaced by steel balustrades that will line the front of the deck. **Bottom:** The dance floor is often packed full during weekend parties in the summer season. But, flanked by bleachers on both ends, the cedar-lined space can also double as a performance venue.





# EDITH GREEN— WENDELL WYATT FEDERAL BUILDING

CUTLER ANDERSON AND SERA ARCHITECTS REINVENT A 1970S OFFICE BUILDING IN PORTLAND, ORE., AS A METAPHOR FOR SUSTAINABLE AND TRANSPARENT GOVERNMENT.

Text by **Brian Libby**  
Photos by **Nic Lehoux**

**ON A WARM LATE-SUMMER AFTERNOON**, the view from the Edith Green–Wendell Wyatt Federal Building’s 18th and highest floor is a remarkable spectacle: Portland, Ore.’s City Hall and downtown skyscrapers rise to the west, the Willamette River and snow-capped Mt. Hood to the east. It’s the kind of office space the private sector would pay top-dollar for, should the U.S. General Services Administration (GSA), which owns and operates the building, ever decide to part with it.

Until recently, however, this level was filled by a different kind of tenant: mechanical equipment.

Thanks to the radical transformation of the 1970s concrete box of an office building by James Cutler, FAIA, and SERA Architects—which traded massive forced-air fans and vents for radiant heating and cooling—the majority of the penthouse level can now be used as offices for one of the building’s 16 residing federal agencies. “This is the difference between a forced-air building and a radiant building,” says Patrick Brunner, who oversaw the project’s construction for the GSA. Clearing away the 18th-floor equipment and recladding the entire structure in a curtainwall that hangs 22 inches beyond the perimeter of the existing building yielded an additional 33,000 square feet of space.

Initially approved in 2005 but subsequently shelved by Congress, the Portland Federal Building’s renovation has undergone a lengthy gestation—it was restarted in 2009 as a shovel-ready project eligible for financing from the American Recovery and Reinvestment Act. And with its slanted roof calibrated to maximize the effectiveness of the solar panels

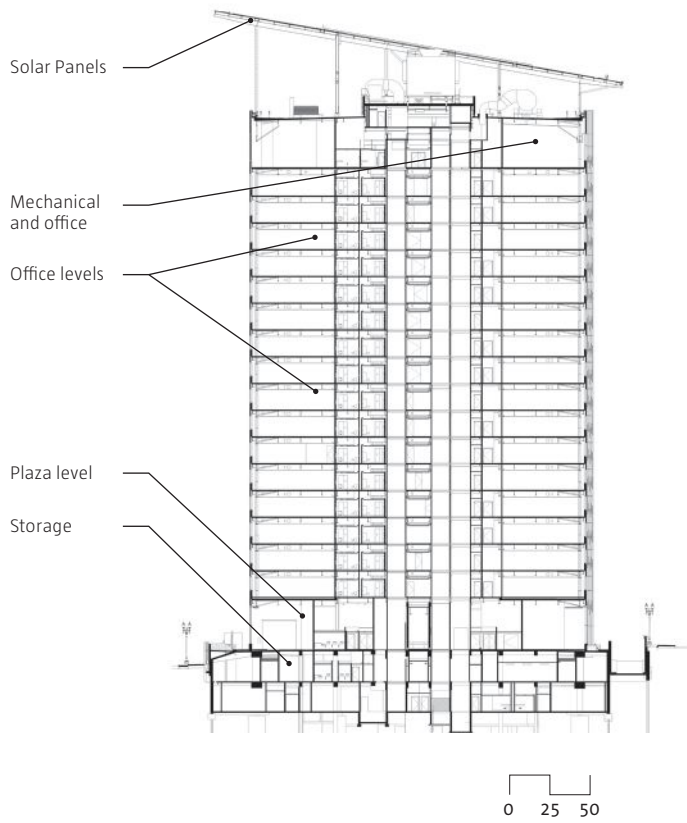
and striking west façade of thin, reedlike aluminum screens, the transformed structure is an eye-catching addition to Portland’s skyline.

What’s more, Cutler’s form-making isn’t just for show, but works toward the project’s ambitious efficiency goals: The renovated building is 55 percent more energy efficient than the original, which was designed by Skidmore, Owings & Merrill. A new rainwater harvesting system, which provides water for flushing toilets and irrigation, has enabled a 60 percent reduction in the use of potable water below what is required by Oregon code. Solar thermal panels provide 30 percent of the building’s hot water. And the elevator bank was reduced from eight cars to six due to the installation of a smarter demand-dispatch system that collates riders going to nearby floors.

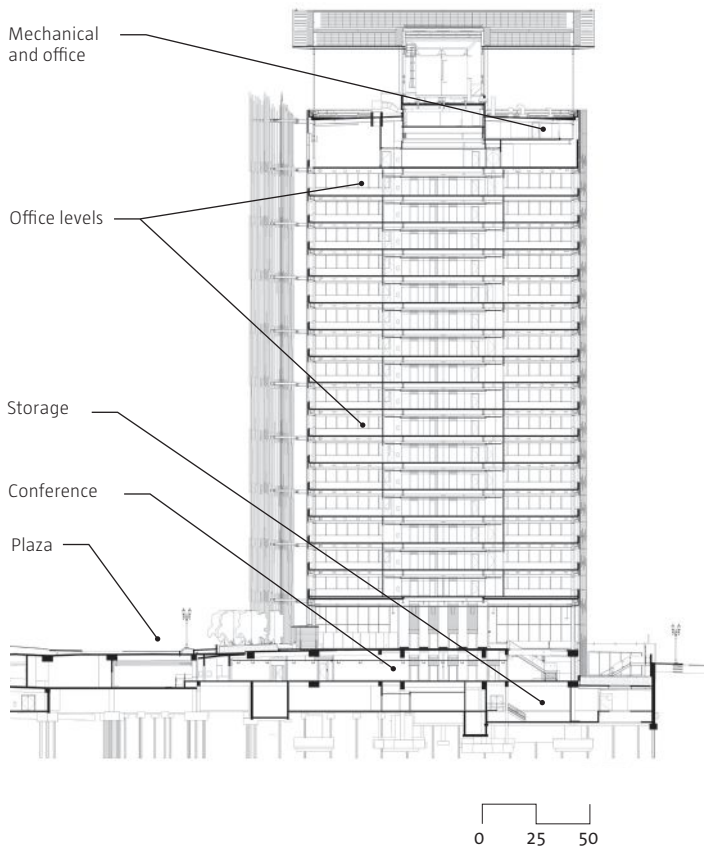
More broadly, Cutler’s design, which is targeting LEED Platinum, embodies the interlocking GSA goals of commissioning visually compelling architecture while advocating leading-edge sustainability. This is not architecture as sculpture, but with a racecar-like beauty rooted in function.

The design philosophy comes from an unexpected source. Cutler, 63, studied under Louis Kahn at the University of Pennsylvania, and he since has amassed a portfolio of restrained, yet elegant, houses and small-scale public buildings. Through projects like the Maple Valley Library outside Seattle and the Purchase Residence outside New York City, Cutler’s Bainbridge Island, Wash.–based firm, Cutler Anderson Architects, is known for its use of soaring wood roof lines and wide

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



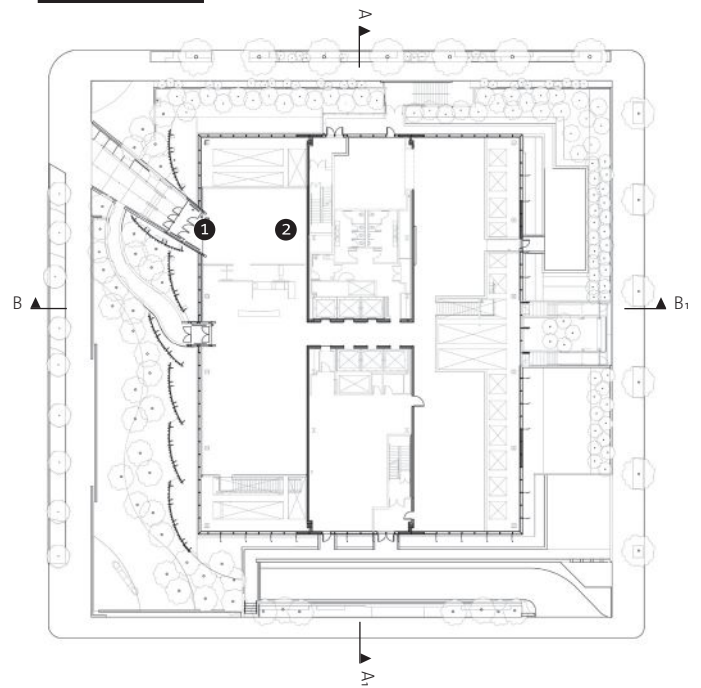
**Section B-B<sub>1</sub>**



**Ground-Level Plan**



**Plaza-Level Plan**



**Office-Level Plan**



- 1. Main entrance
- 2. Lobby
- 3. Conference
- 4. Office
- 5. Open office
- 6. Elevators

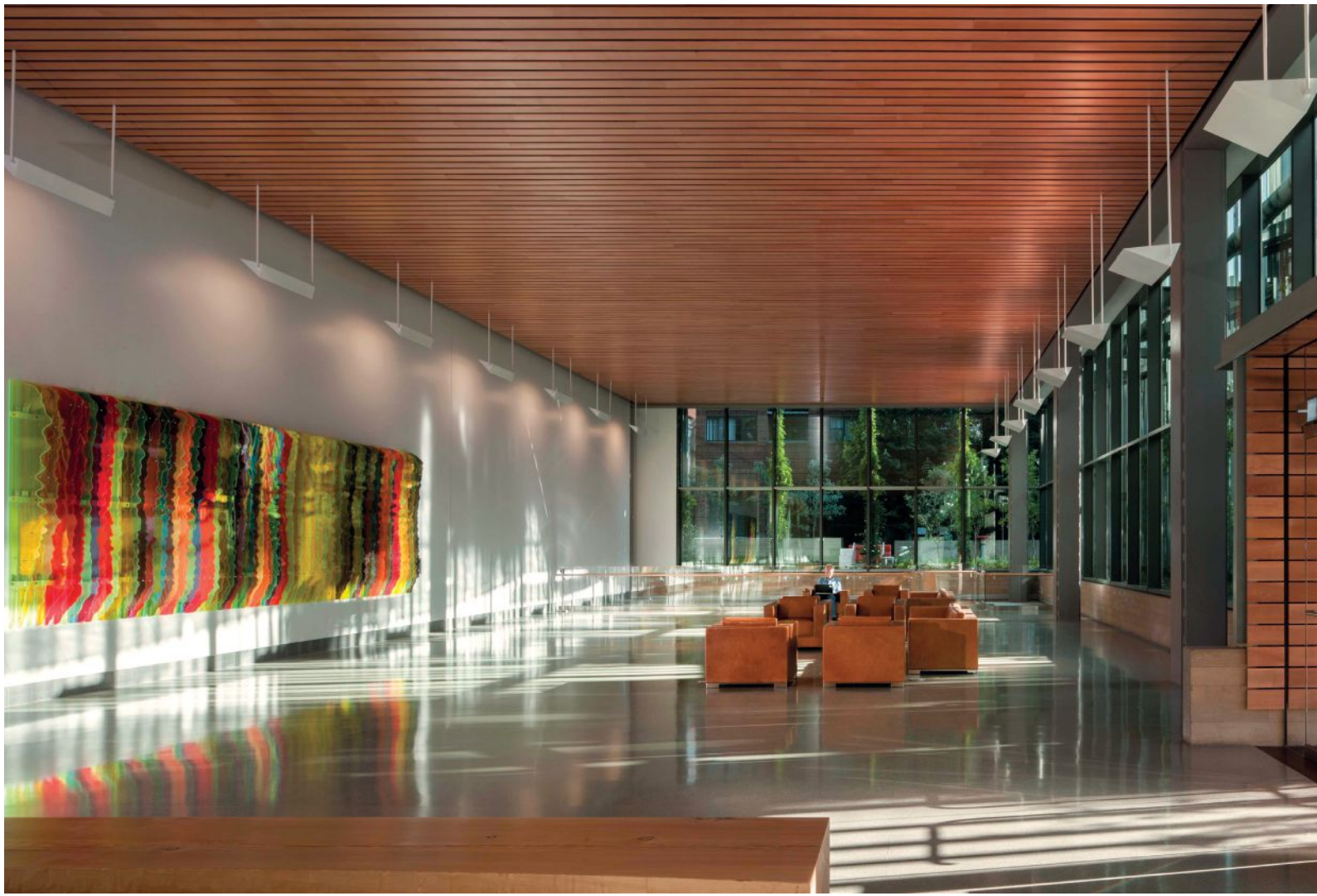


**Previous spread:** The Edith Green–Wendell Wyatt Federal Building is capped by a slanted roof clad in photovoltaics from Solar World. The angle was determined by solar studies to maximize the efficiency of the array. **This image:** The west façade is clad in a series of aluminum “reeds,” which shade the building from the strongest direct sun. The curtainwall from Benson Industries is more visible on the south façade, where fixed sunshades mitigate glare and solar gain.



UNITED STATES OF AMERICA  
BARACK OBAMA  
OFFICE  
1220

1220



expanses of glass. The aesthetic has garnered the firm six national AIA Honor Awards.

Cutler sees the Federal Building as a potential career turning point: At 525,000 square feet and \$139 million, it's the largest and most expensive project he's ever done. It has already earned praise from Cutler's toughest audience: his friend and longtime mentor, AIA Gold Medal winner Peter Bohlin, FAIA, of Bohlin Cywinski Jackson. Cutler recalls a recent conversation with Bohlin: "I said, 'I think it's at least an eight and a half.' Peter's usually been my worst critic, but he said, 'No Jimmy, it's an 11. ... It's shocking because everybody thinks of you as nuts and berries, this wood stuff. This is a totally different realm.'"

The project, completed this year, is the end result of a multiyear evolution. The design originally called for the west façade to be clad in vegetated screens, which would shed their leaves in winter to admit more light, and grow lush again in summer to keep out glare from the afternoon sun. The experimental solution attracted political pressure from Sens. John McCain (R-Ariz.) and Tom Coburn (R-Okla.), who included the Wyatt on a list of projects ostensibly wasting stimulus money. Another, more important reason for switching to aluminum screens, Cutler says, was that the plants would have taken about three years to grow in. (In a note of compromise, vegetation will still grow up the first three floors, wrapping around the aluminum reeds.)

To make the aluminum screens work entailed a three-way push-pull, in which Cutler would craft a design, SERA would study its metrics and daylighting ramifications, and curtainwall contractor Benson Industries would weigh in on its constructability. "We didn't want to have an evenly spaced series of reeds," explains SERA Architects' Lisa Petterson, AIA, who helped develop the project's daylighting scheme. "We needed something more biophilic and rhythmic." The design team also crafted a series of vertical and horizontal exterior shades for the building's other three sides.

In the end, for all of the building's transformative new looks, Cutler's design also highlights the original building. On the ground level, for example, the architects removed large sections of the floor plate, revealing the old concrete structure and bringing light to a formerly windowless basement level. There is also a new entry sequence that smartly takes advantage of the building's position on a sloping site. The east and west entrances are on two different floors, and meet in a double-height space that offers gracious access to a highly trafficked IRS Taxpayer Assistance Center as well as to new conference space.

"It's a question of what feels generous, what feels gracious, and what feels appropriate in terms of scale," Cutler says. But he notes that pragmatism also plays a central role. "I want to make things pretty, but it's always generated by tangible reality."

**Opposite page:** The aluminum "reeds" on the west façade are attached to a steel structure that shades the curtainwall to mitigate heat gain. Vegetation is being trained to grow around the frame to the height of the third floor. **Top:** The lobby, with its terrazzo floors and ceilings from 9wood, is lined with floor-to-ceiling glazing from Viracon.





With entrances on two levels, there was an opportunity to create a double-height public space at the base of the building. Sections of the existing floor slab were removed to bring daylight from the upper, plaza level to the lower, ground level, which has been reconfigured with conference space.

# HEYDAR ALIYEV CULTURAL CENTER

THE ZAHA HADID-DESIGNED COMPLEX IN BAKU,  
AZERBAIJAN, CHALLENGES NOTIONS OF GEOMETRY  
AND GRAVITY—WITH NARY A RIGHT ANGLE IN SIGHT.



Text by **Joseph Giovannini**

**ZAHA HADID ARCHITECTS'** light-as-air Heydar Aliyev Cultural Center in Baku, Azerbaijan, seems to be all form and no structure, but its swooping shapes mask extreme engineering. A very nimble two-layer space frame plays supportive bridesmaid to the double envelope that curves smoothly along the top and bottom of the exterior shell, hiding the skeletal frame and emphasizing surface rather than structure, as though the building were all effect and no cause. The 619,000-square-foot cultural center—for which the client, DIA Holding, also served as the design/build contractor—manifests the lightness of a handkerchief billowing in free fall.

You can't miss it. Anyone coming into Baku's city center from the outlying airport passes the cultural center, sited as it is along the main trunk road. Even taxi drivers turn their heads because its forms curve and churn, its undulating shapes morphing from every vantage point.

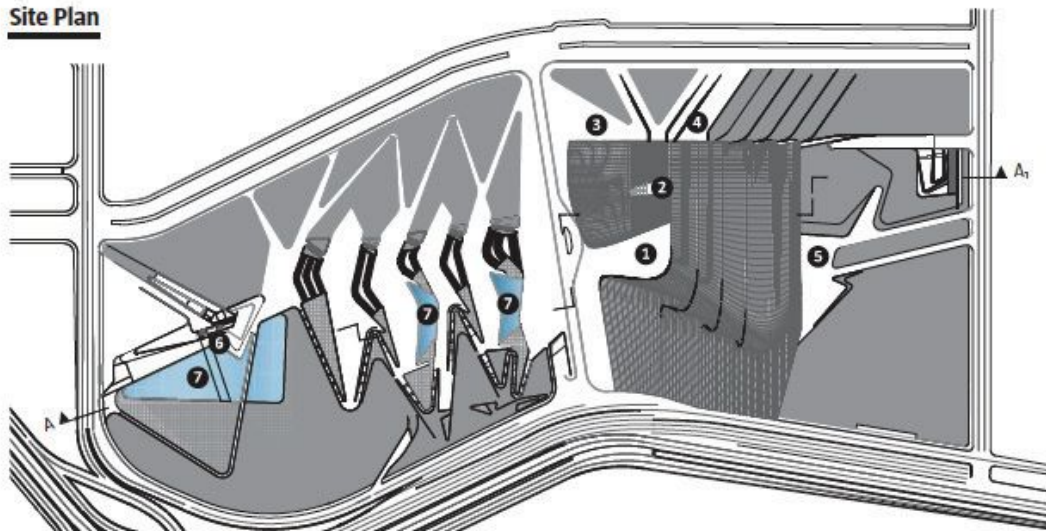
The front crests in a balletic sweep, alighting *en pointe* in what the architects call a "Nureyev moment," only for the back to sheer off like a cliff. The building—whose smooth, distorted grid of glass-fiber-reinforced polyester panels has no visible connections—looks less as though it was actually built, and more as though it landed.

Eventually, after a planned subway line connects to the site, visitors will approach the building through a long, sloping park that leads them to the building at the crest of a gently rising hill. Zaha Hadid, Hon. FAIA, with her partner Patrik Schumacher and project architect Saffet Kaya Bekiroglu, has extrapolated the fluidity of the center's forms into the site itself, with a series of terraces interlaced with reflecting pools and waterfalls. From the start, Hadid immediately takes you under her spell, like a master storyteller, working in space rather than in words:

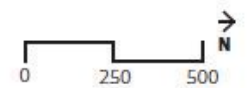




### Site Plan



1. Main entrance
2. Courtyard
3. Book store/gift shop
4. West entrance
5. VIP entrance
6. Café entrance
7. Reflecting pool



**Previous spread:** The GFRP-clad exterior of the Heydar Aliyev Cultural Center hides a complex space frame structure.

**This image:** The building's program is expressed in its form, with galleries housed in the foremost volume, and a multistory library in the tower at the rear.



Visitors must suspend disbelief as they step into an abstract and hyper-modern world of her creation. The journey along the zigzag path that climbs through the site culminates in a plaza of white concrete squares; this turns up seamlessly to start the contours of the exterior shell of the cultural center itself, on which Hadid operates like a Bauhaus student with scissors and a sheet of paper, cutting and bending, opening the roof for apertures and entrances. A canyon cutout at the front of the shell leads up to a bank of glass doors that opens into a hall of whiteness.

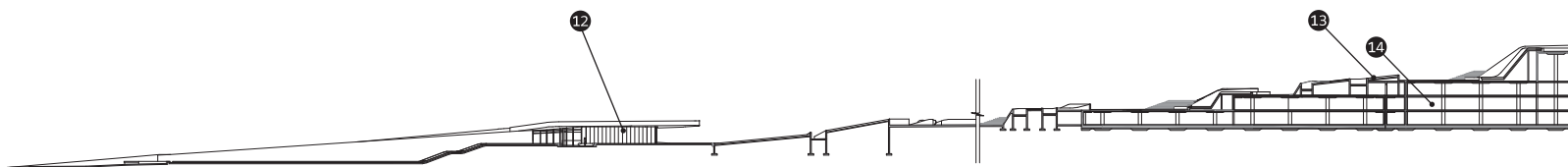
Starting with this welcome hall, the building's interior continues the theme of merging object and field into continuous surfaces. Hadid's floors turn into ramps and walls, twisting into soffits and ceilings, only to then turn further and move out of sight, forming white vistas without end: The forms recall the shell of a brilliant precedent, the TWA terminal at JFK, about which its architect, Eero Saarinen, said: "It's all one thing." Hadid's structure is also about the variations within its oneness. With a design continuously self-transforming in all directions, there is little sense of boundary and no indication of terminus: It's an immersive bath of space. The immateriality of a building that varies between white, whiter, and whitest—depending on how the sun strikes its radial surfaces—seems weightless, releasing visitors from gravitational obligations. As an object, the building is subjective, provoking strong feelings cued by the physics of suspending gravity.

The building's form does not originate with Euclid, but rather is influenced by mathematically continuous topological surfaces: In Baku,

the architects have transformed the principles behind the Möbius strip and the related Klein bottle into real, habitable space. "We wanted to take the plaza and shape it into an architectural environment, to create a continuous flow between inside and outside, to create a certain infinity," Hadid says. "You don't know where it all starts and ends."

The voluminous main hall, an interior landscape of many levels and ramps, serves as a public plaza for the cultural institution's tripartite program of museum, library, and conference center. "The three parts fusing around a central atrium and around a courtyard meant three different shell-like protrusions," says Hadid, who describes the requirements, and the effect they had on the structure's form, with surprising practicality. "Each program has a different look because of its required height: The tall one at the back is the library, with its many floors, and the rise to the side accommodates the conference center, with the auditorium's fly tower." (That fly tower supports a 1,000-seat performance space that is designed with overlapping, curving, backlit lamellae of oak that lick the hall like flames, perhaps an evocation of religious traditions from the region's Zoroastrian past.)

"The three programs merge toward the center, which becomes the lobbies, which can handle several events at the same time," Bekiroglu says. These events are supported by a large, open banquet space between the library and conference area. "The rest becomes a cascading landscape, parts melting into each other fluidly and seamlessly, until the building eases into the ground," Bekiroglu adds. "The idea was to



## TOOLBOX: STRUCTURAL FRAME

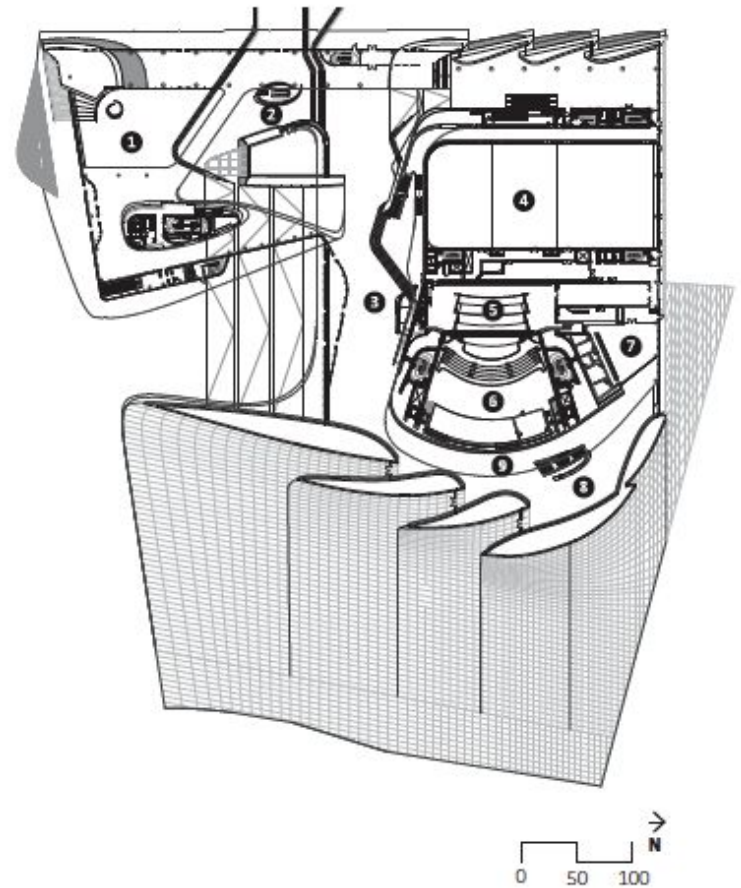
Zaha Hadid Architects (ZHA) developed the free-form curves of the Heydar Aliyev Cultural Center using Rhinoceros 3D, assuming that the compound curves would be built with a combination of steel trusses and beams. The Azerbaijan-based client and contractor, DIA Holdings, contacted a German engineering and fabricating firm, MERO-TSK International of Würzburg, who advised that a conventional steel structure would be complicated, and require considerable field welding. The company instead suggested using their eponymous spherical-node space frame, an 85-year-old system that connects tubular steel struts of varying diameters and lengths, with bolts, to spherical connectors.

The company's proprietary software can modify the system for unique applications, and ZHA's Rhino model served as the basis for developing the system for the project in Baku. For the cultural center, the idea was not to standardize the parts, but rather to customize and produce each unique member efficiently. MERO's role was to complete the structural design (taking into account the high wind loads in Baku), fabricate and deliver the space frame, and then supervise its installation.

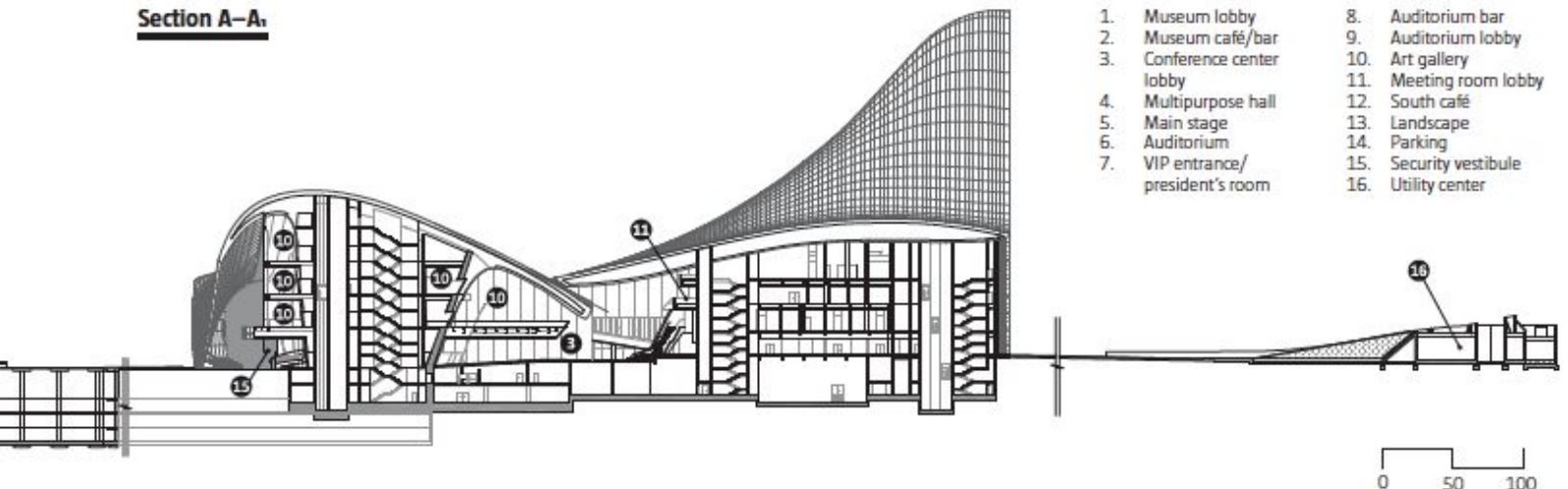
In the final design, some 30,000 hollow steel tubes of different thickness, diameter, and length are connected by 7,800 nodes; each component is unique. The longest tube is 5 meters, and each tube has a bolt at either end. Each hole of the solid steel spherical nodes is set at a different angle to receive the struts.

The final structure is a two-layer space frame that supports the building's double envelope. MERO estimates that a conventional truss-and-beam steel structure would have weighed 4,000 tons. At 1,100 tons, the MERO system was much lighter and was installed more quickly.

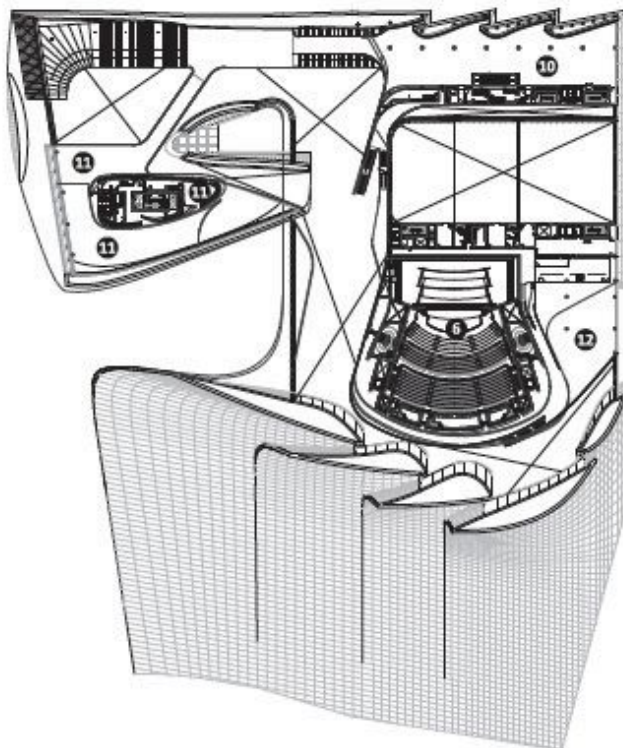
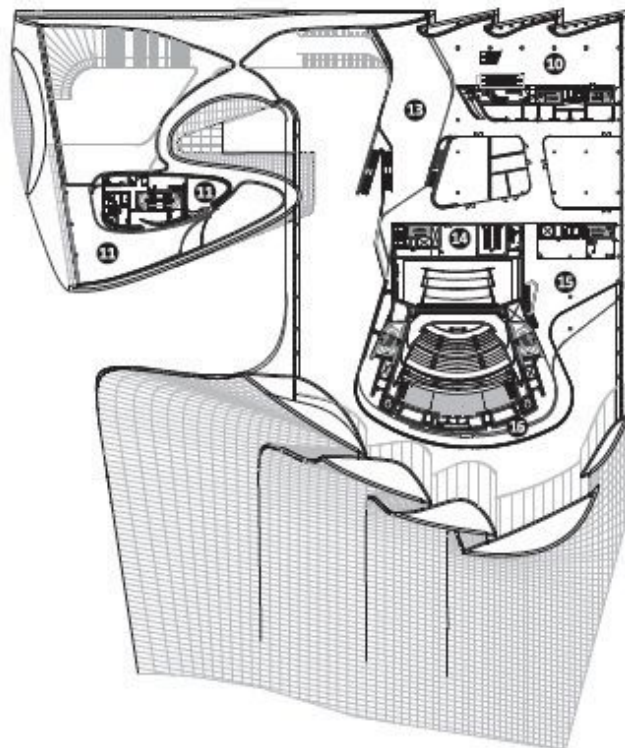
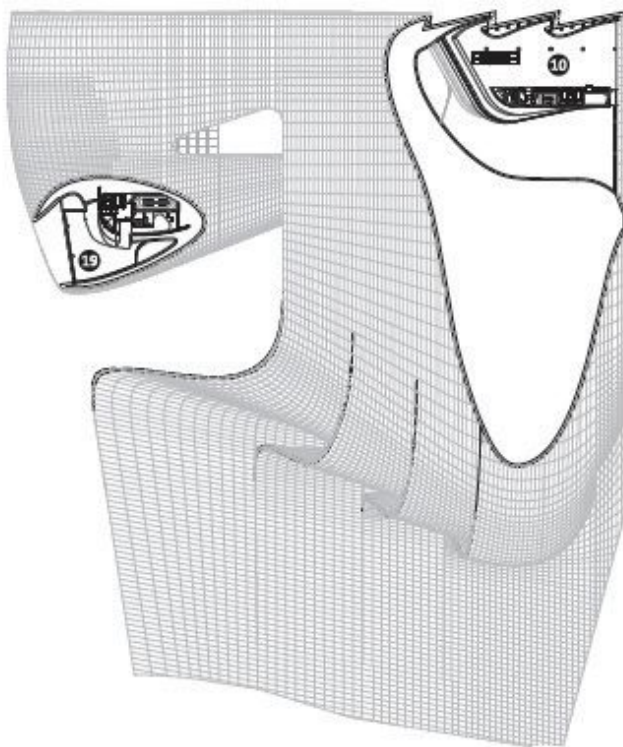
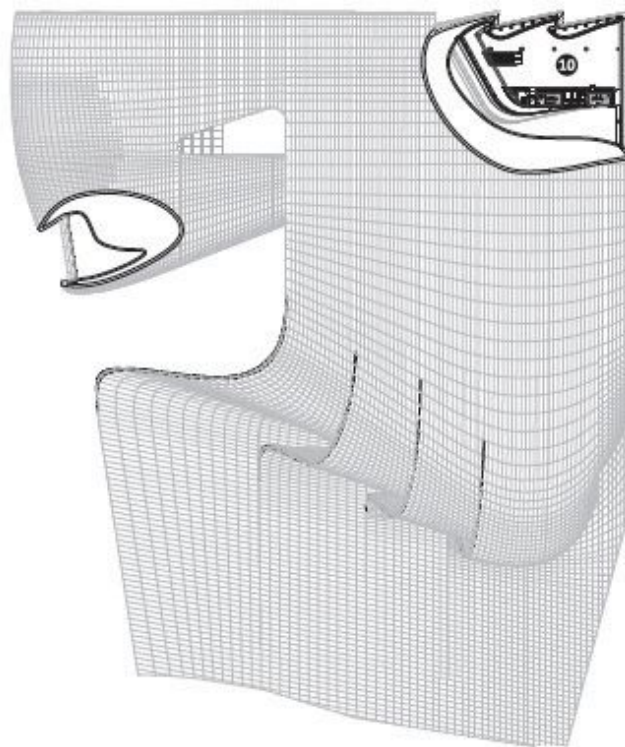
## Ground-Floor Plan



## Section A-A



- |                                  |                        |
|----------------------------------|------------------------|
| 1. Museum lobby                  | 8. Auditorium bar      |
| 2. Museum café/bar               | 9. Auditorium lobby    |
| 3. Conference center lobby       | 10. Art gallery        |
| 4. Multipurpose hall             | 11. Meeting room lobby |
| 5. Main stage                    | 12. South café         |
| 6. Auditorium                    | 13. Landscape          |
| 7. VIP entrance/president's room | 14. Parking            |
|                                  | 15. Security vestibule |
|                                  | 16. Utility center     |

**First-Floor Plan****Second-Floor Plan****Fifth-Floor Plan****Sixth-Floor Plan**

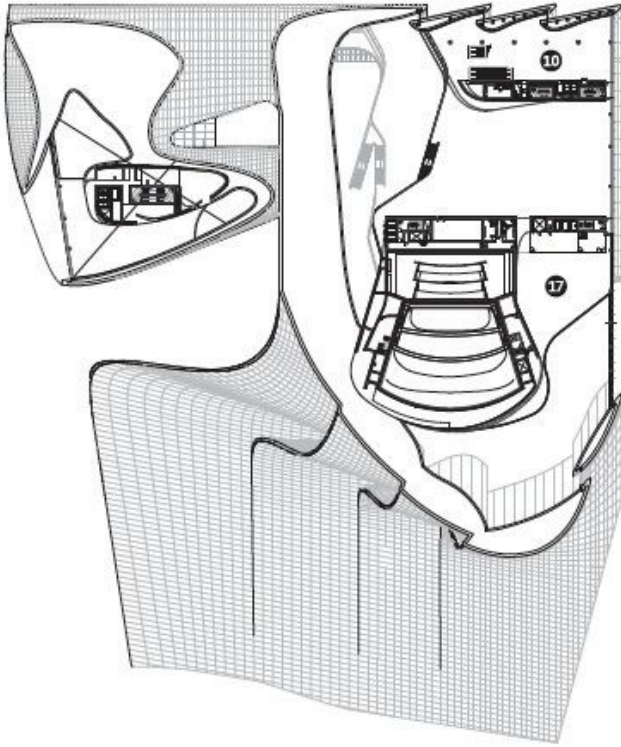
1. Museum lobby
2. Museum café/bar
3. Conference center lobby
4. Multipurpose hall
5. Main stage

6. Auditorium
7. VIP entrance/president's room
8. Auditorium bar
9. Auditorium lobby
10. Library

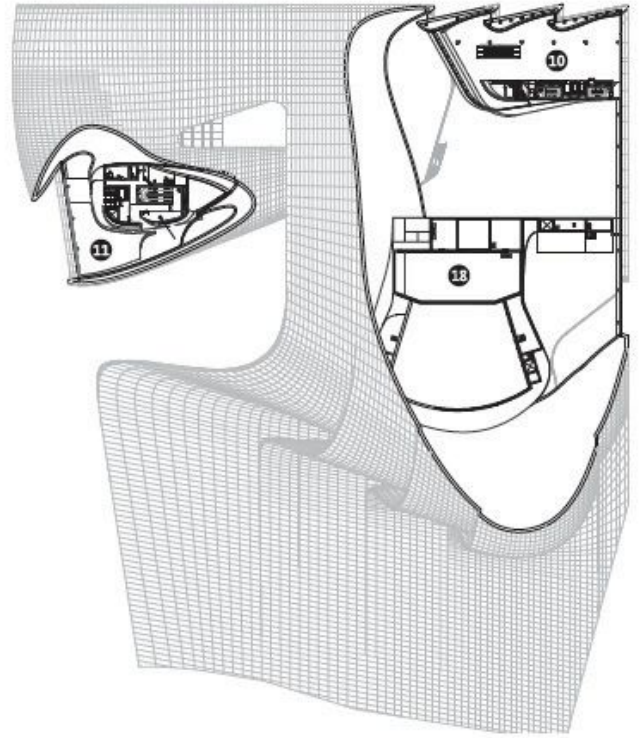
11. Gallery
12. Restaurant
13. Meeting room lobby
14. Meeting room
15. Mezzanine café

16. Auditorium entrance hall
17. Office
18. Stage system steel platform
19. Presidential suite
20. Kitchen

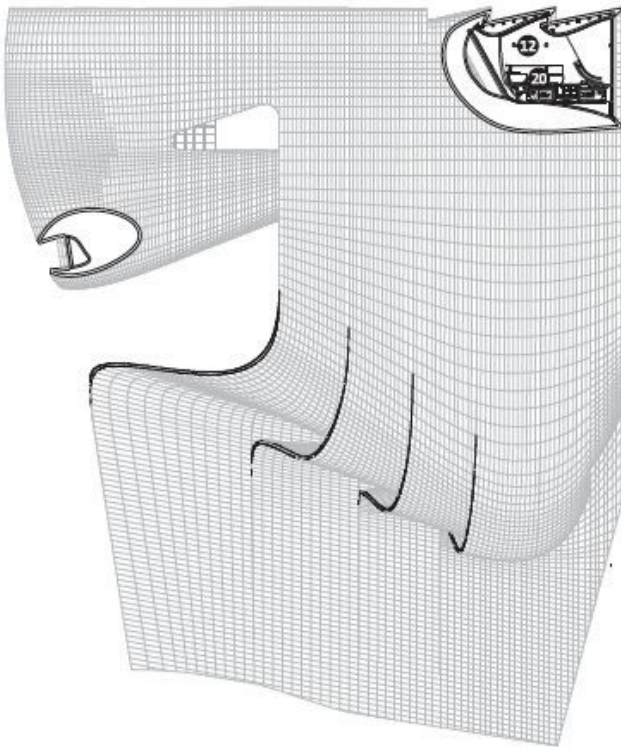
**Third-Floor Plan**



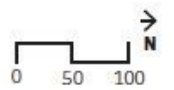
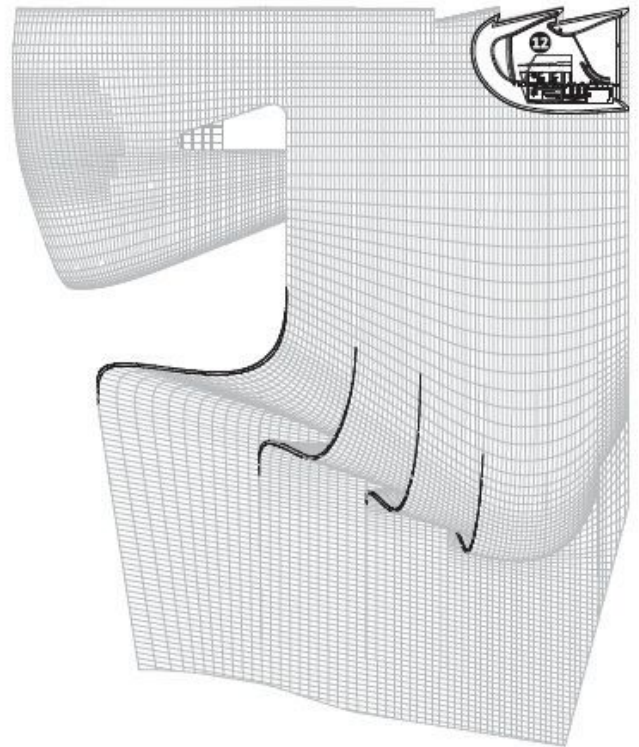
**Fourth-Floor Plan**



**Seventh-Floor Plan**



**Eighth-Floor Plan**





The sweeping, multiheight public spaces are criss-crossed with a series of bridges to transport visitors from one part of the center to another.





fuse the three institutions in a seamless figure with three identifiable parts, blending inside and outside. It's a single surface working as an entire architectural landscape."

The core of the building, then, is the public space, and the celebration of public life in an atrium that acts as what the Russian Constructivists called "a social condenser." As in the Paris Opera, in Baku, the show starts in the public spaces of the building, and like the Opera, the center's architecture dignifies and dramatizes the public life inside, giving it civic value rather than acting simply as a stage set. The atrium is a shared public event.

Hadid has said that she does not want to repeat her successes of the 1980s, and indeed her oeuvre overall has been surprisingly varied: The apparent complexity of fragmentation from her first, angular, designs has transformed into the apparent simplicity of curves in her buildings in more recent years. Although her early work anticipated the computer, the calculus of computer programs has, over the last decade, liquefied form and space—she has smoothed the three-dimensional force fields of exploded forms into flow fields. The cultural center is the latest in a series of related designs that includes last summer's London Aquatics Centre for the London Olympics and, at a different scale, even her flowing Aqua table.

The remarkable beauty of Hadid's buildings has often invited the accusation of formalism. The aesthetic can send the senses into

overdrive, understating the complex infrastructure of ideas that consistently sustains her buildings. But she does build theory—in this case a spatial theory of flows. For many years, Hadid has worked with the idea of blurring object and field, foreground and background, and the sheer scale of the center and diversity of its programs has given Hadid the opportunity to prove her ideas of working the ground and building together. The experience of the building is immersive because it is environmental—physically buoyant rather than simply retinal.

The impressive beauty of what is essentially a *gesamtkunstwerk* only augments the interior's success as a public forum linking the museum, library, and auditorium. The plan pools people as they circulate on three-dimensional *promenades architecturales* that recall the Piazza di Spagna in Rome.

Built by the Republic of Azerbaijan—with strong support from the country's controversial first family, including the culturally motivated first lady, Mehriban Aliyeva—the building may be a monument to a region, and a symbol of an emergent national culture of a newly liberated country, but even more immediately, it is a great gift to the public. Throughout Baku, Beaux-Arts architects at the turn of the last century created civic spaces through the language of classicism. More than a formal exercise, the center treats people, both as individuals and as crowds, with enormous respect. Hadid's design creates civic space of an entirely different, original, and unexpected order.





**Opposite page:** The ground floor has several lobby spaces intended to create public venues for uniting the different aspects of the center's program. **This image:** The backlit oak panels in the conference center's 1,000-seat auditorium bring warmth to the otherwise vividly white interior.

## Fire Island Pines Pavilion, Page 104

**Project** Fire Island Pines Pavilion, Fire Island Pines, N.Y.

**Client** FIP Ventures

**Architect** Hollwich Kushner (HWKN), New York

**Mechanical Engineer** Buro Happold Consulting Engineers

**Structural Engineer** Experion Design Group

**Electrical Engineer** Buro Happold Consulting Engineers

**General Contractor** Ross Brothers Construction

**Developer** Blesso Properties

**Foundation Contractor** Chesterfield Associates

**I.T. Contractor** Innovative Sensory Technologies

**A/V Consultant** DNA Lighting & Sound

**Size** 8,000 square feet

**Cost** Withheld

### Material and Sources

**Ceilings** Exposed structural framing

**Exterior Wall Systems** Western Red Cedar siding; James Hardie [jameshardie.com](http://jameshardie.com)

**Flooring** Treated lumber decking; engineered hardwood flooring

**HVAC** Trane [trane.com](http://trane.com); Daikin [daikin.com](http://daikin.com)

**Metal** Custom galvanized and stainless steel

**Paints and Finishes** Benjamin Moore & Co. [benjaminmoore.com](http://benjaminmoore.com)

**Plumbing and Water System** Kohler [kohler.com](http://kohler.com)

**Roofing** EPDM

**Structural System** Wood framing

**Wallcoverings** Custom cedar paneling

**Walls** Wood framing; concrete masonry units

## Edith Green–Wendell Wyatt Federal Building, Page 110

**Project** Edith Green–Wendell Wyatt Federal Building Modernization, Portland, Ore.

**Client** U.S. General Services Administration (GSA), Region 10—Pat Brunner (contracting officer)

**Design Excellence Architect** Cutler Anderson Architects, Seattle—Jim Cutler, FAIA (design architect); David Curtin, AIA

**Executive Architect** SERA Architects, Portland, Ore.—Don Eggleston, AIA (partner-in-charge); Jennifer Taylor, AIA, Stuart Colby (project managers); Jim Riley (project architect); Suzanne Blair (T.I. project architect); Gauri Rajbaidya (job captain); Clark Brockman, AIA, Lisa Petterson, AIA, Kate Turpin, Jessica Gracie-Griffin, Priya Premchandran (high-performance green building/LEED specialists); Natasha Koiv, Elizabeth Johnson, Carissa Mylin, Craig Rice, AIA, Roberta Pennington (interiors

team); Timothy Richard, Nick Mira, Cathy Ballensky, Matt Piccone, Sara Vonde Veld, Crawford Smith, Margo Rettig, Travis Dang, Kristie Morrison, Liatt Braun, Fernand Banna, Tuan Vu, Jessamyn Griffin, Erin Hastings, Andrea Schultz-Winter, Jon DeLeonardo (design team); Anneliese Sitterly, Russell L. Pitkin, AIA, Audrey Craig, Trevor Elvey (team support)

**Interior/Lighting Designer** SERA Architects (tenant improvements)

**Mechanical Engineer** Stantec Consulting

**Plumbing Engineer** Interface Engineering

**Structural/Civil Engineer** KPFF Consulting Engineers

**Electrical Engineer** PAE Consulting Engineers

**Construction Manager** GSA Region 10—Pat Brunner (project executive)

**General Contractor** Howard S. Wright Constructors, a Balfour Beatty Company

**Landscape Architect** Place Studio

**Environmental Graphic Design** Mayer/Reed

**Acoustics** Charles M. Salter Associates

**Life Safety** Aegis Engineers

**Blast Engineer** Weidlinger Associates

**Commissioning** Glumac

**Curtainwall Subcontractor** Benson Industries

**Mechanical Subcontractor** McKinsty

**Electrical Subcontractor** Dynalectric

**Size** 536,260 square feet

**Cost** \$137 million (construction cost, including T.I.s)

### Material and Sources

**Acoustical System** Grabber Construction Products [grabberman.com](http://grabberman.com); Hilti [hilti.com](http://hilti.com)

**Adhesives, Coatings, and Sealants** Dow Corning Corp. [dowcorning.com](http://dowcorning.com)

**Building Management Systems** Delta Controls [deltacontrols.com](http://deltacontrols.com)

**Carpet** Shaw Contract Group [shawcontractgroup.com](http://shawcontractgroup.com)

**Ceilings** Armstrong [armstrong.com](http://armstrong.com); gWood [gwood.com](http://gwood.com); Steel Ceilings [steelceilings.com](http://steelceilings.com)

**Concrete** Ross Island Sand and Gravel

**Curtainwall** Benson Industries [bensonglobal.com](http://bensonglobal.com)

**Flooring** Terrazzo; Johnsonite [johnsonite.com](http://johnsonite.com)

**Glass** Viracon [viracon.com](http://viracon.com)

**Gypsum** CertainTeed [certainteed.com](http://certainteed.com); USG [usg.com](http://usg.com)

**HVAC** Alliance Air Products [allianceairproducts.com](http://allianceairproducts.com);

SPX [spxcooling.com](http://spxcooling.com); Hydrotherm [hydrotherm.com](http://hydrotherm.com); Carrier [carrier.com](http://carrier.com)

**Insulation** Thermafiber [thermafiber.com](http://thermafiber.com)

**Lighting Controls** nLight [nlightcontrols.com](http://nlightcontrols.com)

**Lighting** Acuity Brands/Peerless Lighting [peerlesslighting.com](http://peerlesslighting.com); Acuity Brands/Lithonia Lighting [lithonia.com](http://lithonia.com); Focal Point [focalpointlights.com](http://focalpointlights.com);

Bega [bega-us.com](http://bega-us.com); Isolite Corp. [isolite.com](http://isolite.com);

B-K Lighting [bklighting.com](http://bklighting.com); the Lighting Quotient [thelightingquotient.com](http://thelightingquotient.com)

**Metal** Clark Dietrich Building Systems [clarkdietrich.com](http://clarkdietrich.com)

**Millwork** Turtle Mountain [turtlemt.com](http://turtlemt.com);

Fuller Cabinets [fullcab.com](http://fullcab.com)

**Paints and Finishes** Miller Paint [millerpaint.com](http://millerpaint.com);

Rodda Paint [roddapaint.com](http://roddapaint.com)

**Photovoltaics or other Renewables** SolarWorld [solarworld-usa.com](http://solarworld-usa.com)

**Plumbing and Water System** Zurn [zurn.com](http://zurn.com);

American Standard [americanstandard-us.com](http://americanstandard-us.com);

Jay R. Smith Mfg. Co. [jrsmith.com](http://jrsmith.com)

**Roofing** T Clear [tclear.com](http://tclear.com)

**Site and Landscape** Valley Growers [valleygrowers.com](http://valleygrowers.com)

**Structural System** Alliance Cos. [alliance-industrial.com](http://alliance-industrial.com)

**Wallcoverings** Fabricmate [fabricmate.com](http://fabricmate.com)

**Walls** Cascade Acoustics [cainc.biz](http://cainc.biz)

**Wayfinding** Sign Wizards [signwizards.com](http://signwizards.com)

## Heydar Aliyev Cultural Center, Page 118

**Project** Heydar Aliyev Cultural Center, Baku, Azerbaijan

**Owner** Republic of Azerbaijan

**Client** DIA Holding

**Architect** Zaha Hadid Architects, London—Zaha Hadid, Hon. FAIA, Patrik Schumacher (design); Saffet Kaya Bekiroglu (project and design architect); Sara Sheikh Akbari, Shiqi Li, Phil Soo Kim, Marc Boles, Yelda Gin, Liat Muller, Deniz Manisali, Lillie Liu, Jose Lemos, Simone Fuchs, Jose Ramon Tramoyeres, Yu Du, Tahmina Parvin, Erhan Patat, Fadi Mansour, Jaime Bartolome, Josef Glas, Michael Grau, Deepti Zachariah, Ceyhun Baskin, Daniel Widrig, Murat Mutlu (project team)

**Local Architect/Main Contractor** DIA Holding

**Structural Engineering** AKT; Tuncel Engineers; MERO

**Façade Consultant** Werner Sobek

**Mechanical Engineering** GMD Engineers

**Acoustical Consultant** Dbkes, Mezzo Studio

**Lighting Consultant** MBLD

**Fire Consultant** Etik Engineering

**Exterior Skin Panel Contractor** Arabian Profile

**Auditorium Fabricator** Sanset-Ikoor

**Multipurpose Hall Contractor** Betako

**Interior Skin Contractor** Lindner Group

**Prefabricated Roofing Panel System Contractor** Limit

**Façade Contractor** Dekoral Aygun

**Pool Consultant** Wet Design

**Size** 57,519 square meters (619,129 square feet)

**Cost** Withheld

➔ For more materials and sources, visit [architectmagazine.com](http://architectmagazine.com)

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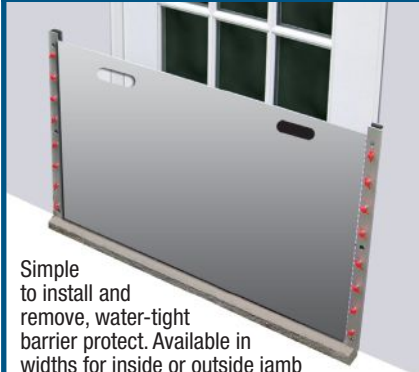


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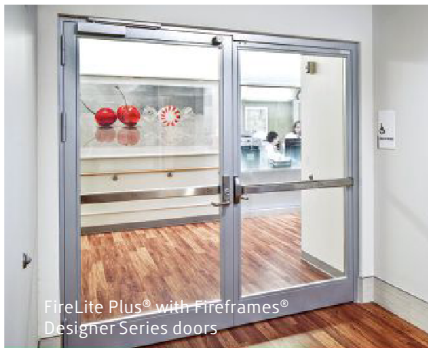
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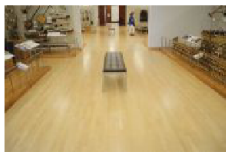
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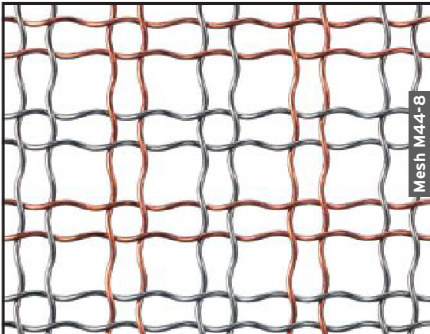
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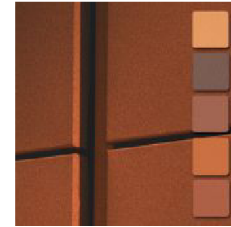
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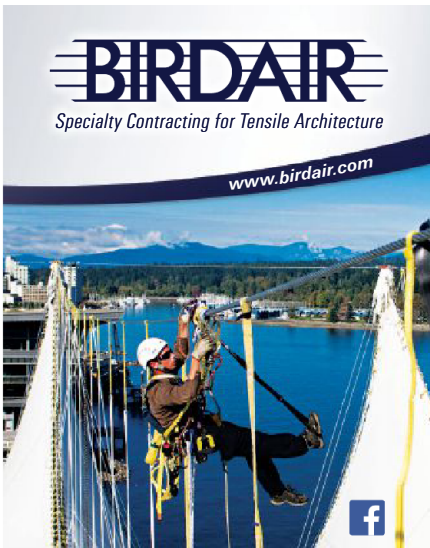

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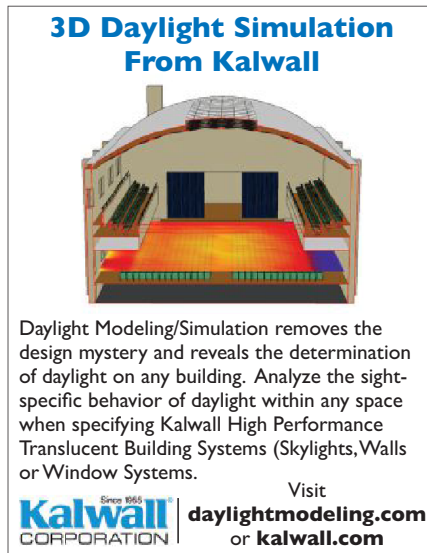
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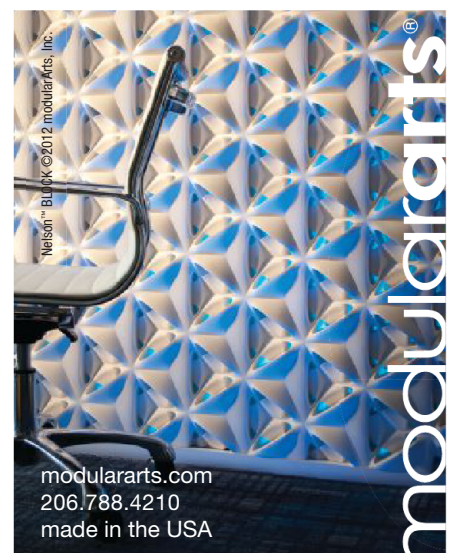


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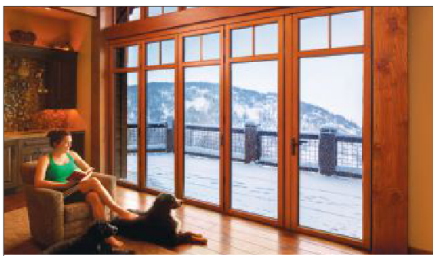
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1955 P/A Awards Jury  
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## 1955 P/A AWARD CITATION

# Landmark With Growth Potential

EERO SAARINEN'S MILWAUKEE WAR MEMORIAL CENTER INCLUDED AN ART MUSEUM THAT LATER SPROUTED AN ADDITION BY SANTIAGO CALATRAVA.

by John Morris Dixon, FAIA

**THE JURORS FOR** the second P/A Awards, for the 1955 honors, set the tone for all subsequent juries by agreeing that their task was to identify “advance, or points of departure,” rather than “mere competence, or points of arrival.”

One project representing such a “point of departure” was Eero Saarinen & Associates’ War Memorial Center for Milwaukee, Wis. Saarinen was widely noted for his sharply different approach to each of his commissions, and here he opted for right-angled forms executed in muscular, exposed concrete. His proposal responded to its setting on a bluff overlooking Lake Michigan with rectangular volumes cantilevering out 30 feet in three directions from hefty columns that surround an open, central court. While the courtyard and the cantilevered blocks accommodated the war memorial and meeting rooms, the two-story

podium below the court provided new quarters for the Milwaukee Art Museum in spacious galleries that opened to lakeside terraces.

The citation-winning design was completed in 1957, and the building was enlarged in 1975, when the museum floors were expanded toward the lake.

In 2001, the museum completed a larger addition southward along the bluff, designed by Santiago Calatrava, Hon. FAIA, which included modest new gallery spaces, along with a lobby, café, and gift shop. Calatrava addressed the museum’s desire for its own visible identity, after decades of near invisibility in the War Memorial podium. He raised a conspicuously sculptural volume at the far end of his addition, which is seen by some as a worthy complement to Saarinen’s work, and by others as an ostentatious rival.

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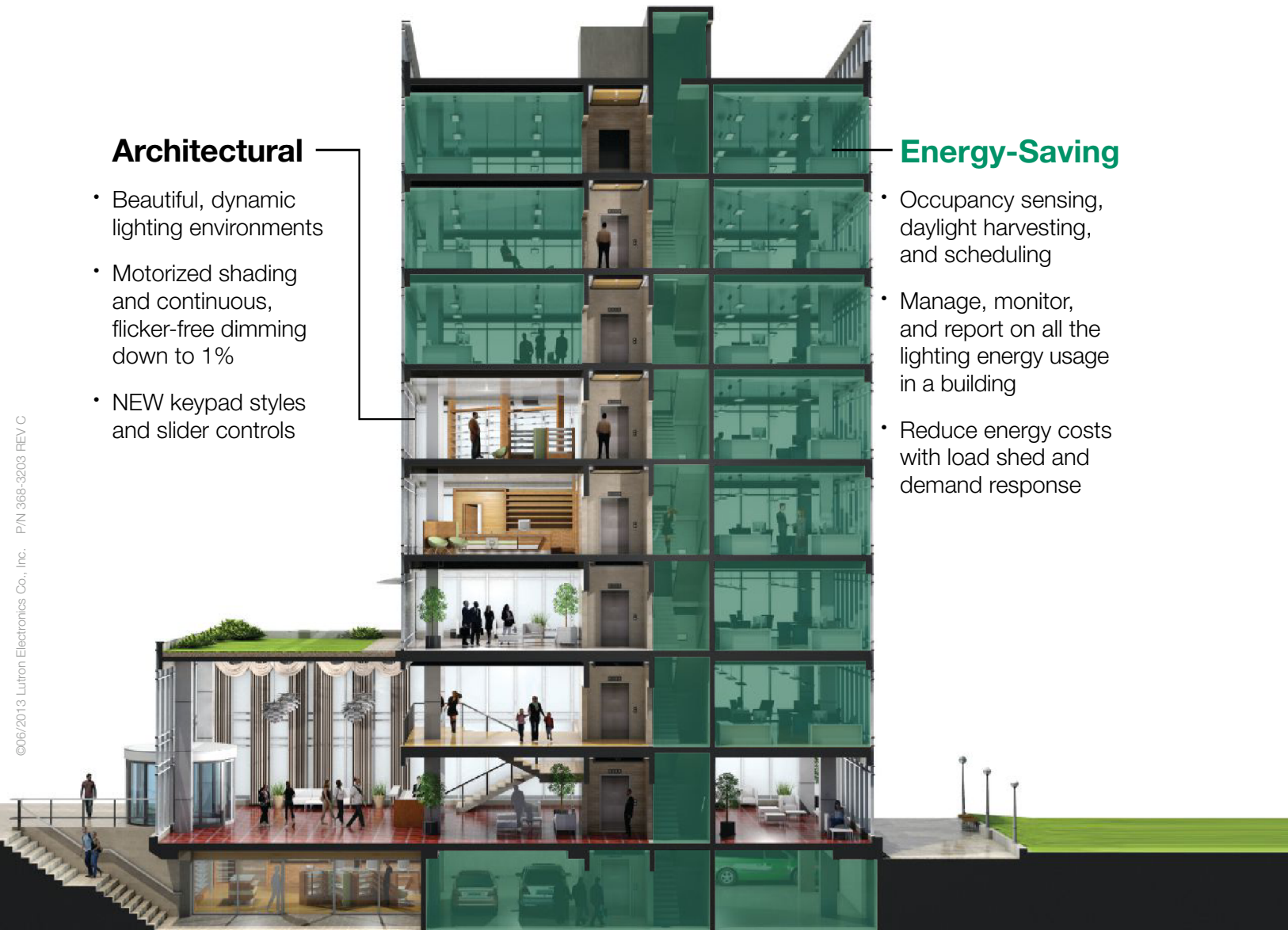
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