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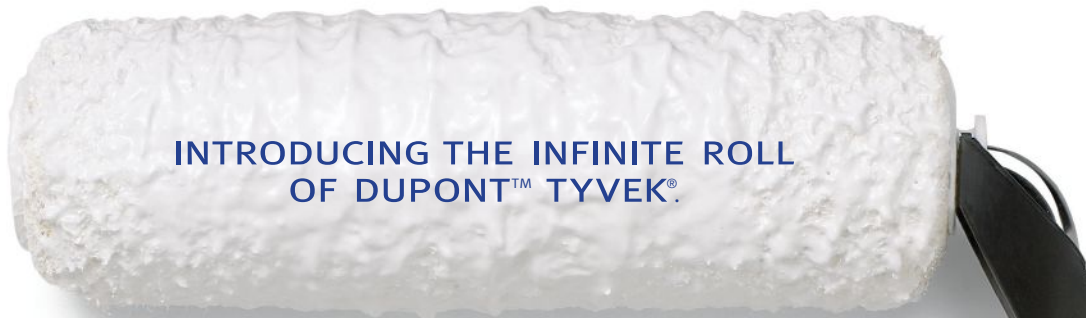
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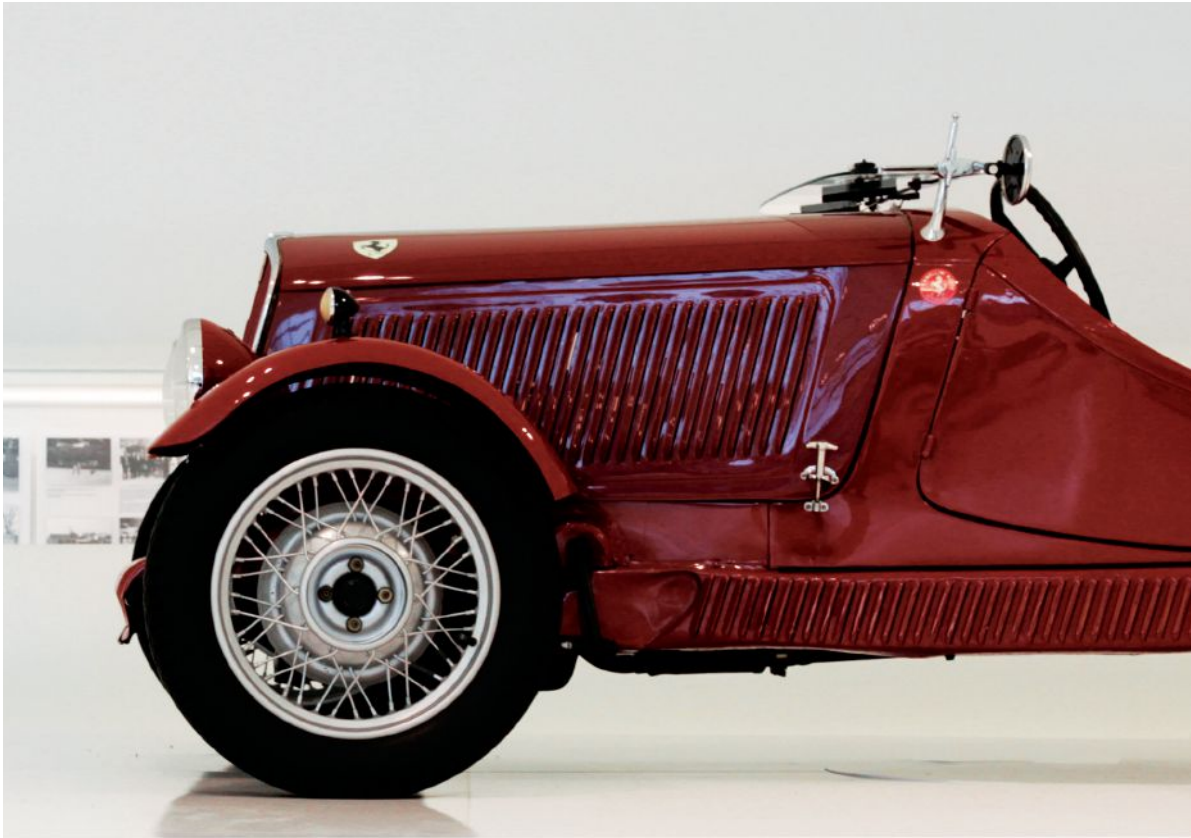
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Marcelo Spina and Georgina Huljich of P-A-T-T-E-R-N-S and Maximiliano Spina of Maxi Spina Architects designed this multifamily mid-rise. It's located in a post-industrial neighborhood of Rosario—the Spina brothers' hometown and one of Argentina's fastest-growing cities.

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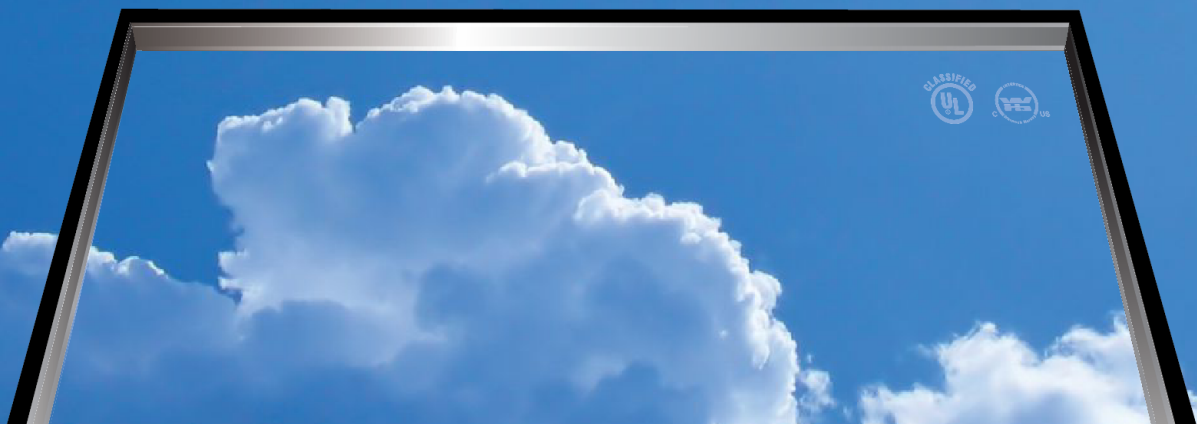
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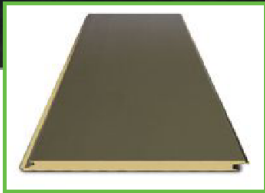
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## DIALOGUE



“GREAT ARCHITECTURE SPEAKS TO THE MIND AS WELL AS THE HEART. TO HEAR THE VOICE OF A VENTURI SCOTT BROWN & ASSOCIATES BUILDING IS RATHER LIKE HAVING OSCAR WILDE WHISPER IN YOUR EAR.”

## AVE ATQUE VALE

HAIL AND FAREWELL TO ARCHITECT ROBERT VENTURI, ON THE OCCASION OF HIS RETIREMENT.

**ONE OF THE BEST PRESENTS** I've ever received is a pair of silver candlesticks that Robert Venturi designed in 1984. My aunt and uncle got them for one of their anniversaries, if memory serves, and having little inclination for postmodern decorative arts, they eventually passed the candlesticks on to me.

Never has there been a finer regift.

The candlesticks sit on a side table in my living room, and I've been obsessing over them since Venturi announced his retirement this summer. The architect and his still professionally active wife and partner, Denise Scott Brown, have been heroes of mine from adolescence, when I bought a copy of Venturi's treatise, *Complexity and Contradiction in Architecture*—mostly because I liked the pictures. The writing proved just as interesting.

Until that point, I hadn't realized that architecture could embody an idea. Feelings, sure, such as the sense of uplift I got as a kid, standing at the base of Eero Saarinen's Gateway Arch, or the solemnity that would wash over me in the sculpture hall of Cass Gilbert's St. Louis Art Museum. But fully baked intellectual concepts? In a building? Who'd have thought?

Great architecture speaks equally to the heart and mind. To hear the voice of a Venturi Scott Brown & Associates building is rather like having Oscar Wilde whisper in your ear. Venturi and Scott Brown are a rare breed: architects whose wit translates intact into built form. If you share their sense of humor—ironic, semantic, cerebral—their buildings have the capacity to make you laugh out loud.

Both Wilde and Venturi are tweekers of convention. The poet and playwright upended Victorian morality with scripts such as *The Importance of Being Earnest*, and he drove his points home with extremely clever wordplay—“Work is the curse of the drinking classes” being one of my favorites. Venturi, for his part, exposed the single-mindedness of postwar, corporatized Modernism in *Complexity* and offered a delicious alternative in 1962, in the form of the house he designed for his mother, with its miscegenistic wedding of Orthodox ribbon window and heretic pitched roof.

Venturi's famous quip “Less is a bore” intellectually justified a career's worth of such architectural conceits. He never hesitated to

reuse the best ones: the split pediment, the familiar pattern applied in a strange context, the silhouette of a traditional form. One can trace a direct line from the squashed Cape Cod elevation of the Vanna Venturi House, through the Georgian silhouettes of my candlesticks, to the sequentially flattened classical façade of the Sainsbury Wing of the National Gallery in London (which Prince Charles derided as “a monstrous carbuncle”). The addition proved to be the high-point of the couple's career.

Alas, in the past decade or so, someone or other decided that the jokes were getting old. The architectural intelligentsia went looking for a shiny new paradigm, another form of complexity. And, just possibly, Venturi wore out his welcome. He and Scott Brown are true gentlefolk, but they've never backed down when they perceived a threat to the integrity of their work. During the course of their careers, they walked away from some seriously plum commissions. The commissions, perhaps as a result, started going to other talents.

Today, Frank Gehry's is the name that leaps to mind in conjunction with the phrase “America's greatest living architect.” Venturi and Scott Brown are of no lesser caliber. Indeed, the two practices are flip sides of the same coin: Venturi and Scott Brown's decorated shed versus Gehry's mighty duck.

Venturi and Scott Brown have had an undeniably profound influence on the subsequent generation, even if the Herzog & de Meurons and OMAs are too hip to acknowledge their indebtedness. But then Venturi himself has an uncertain relationship with the movement he and his wife helped launch, together with their late partner Steven Izenour. Ten years ago, Venturi wrote an essay for me at *Architecture* with the title, “I Am Not Now and Never Have Been a Postmodernist.” History will be the judge of that.

What's certain is that Venturi and Scott Brown fomented a revolution in architecture, one that reawakened the discipline to its long, proud heritage. I'll never stop learning from them, and from their candlesticks.

*Reel Crane*





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# LETTERS



## American Exceptionalism, July, page 12

I appreciate your calling attention to our collective national lack of knowledge of this important pre-Columbian society, its architectural importance, and the reasons for its collapse. The Cahokia developed great architecture while simultaneously exhausting their natural resources.

**WILLIAM MILLER, FAIA, SALT LAKE CITY**

I direct your attention to a book that mirrors your concerns, *Collapse: How Societies Choose to Fail or Succeed* by Jared Diamond.

**DAVID BERKOWITZ, AIA, BOSTON**

You might want to read *1491* by Charles Mann; it is illuminating and upsetting.

**LENORE LUCEY, FAIA, WASHINGTON, D.C.**

Your editorial on the Cahokia is appropriate to us and our times. It's nice to see an intellectual thrust with sustainability at the heart.

**JAMES P. CRAMER, NORCROSS, GA.**

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I had to sort through peripheral, academic, and elitist items about the Cahokia Mounds, women's issues, global warming, architecture as "social agency," and more such slanted rubbish in hopes of finding a practical and helpful article and images of beautiful designs.

**MARK HOPKINS, AIA, ARLINGTON HEIGHTS, ILL.**

## Making the Mold, July, page 35

I have enjoyed the change from *Architectural Record* to ARCHITECT as the magazine of the AIA. But I am disappointed that you would allow Deborah Berke to name Elizabeth Diller as an architect. Diller is not registered. This oversight dilutes the credentials that all registered architects have worked hard to achieve.

**PHILIP MITROPOULOS, AIA, DOUGLASTON, N.Y.**

*Correction: In the June article "Seventeen Days Later," we incorrectly spelled Bill Hanway's name and misidentified his title. He is the executive director for AECOM in the United Kingdom. ARCHITECT regrets the error.*



Deepika Padam  
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Perkins+Will  
@perkinswill\_PHL: Mainstream firms are "strategically integrating #probono design at unprecedented levels." @johnccary via @architectmag: ow.ly/d6pzA

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# CONTRIBUTORS



ROGER K. LEWIS

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

After earning degrees from MIT and working as a Peace Corps volunteer architect in Tunisia, Lewis joined the faculty at the University of Maryland's new School of Architecture in 1968. Simultaneously, he launched a diversified, award-winning architecture and planning practice based in Washington, D.C. For both private and public sector clients, he has designed residential, educational, cultural, and institutional projects. His work has also encompassed community planning and urban design.

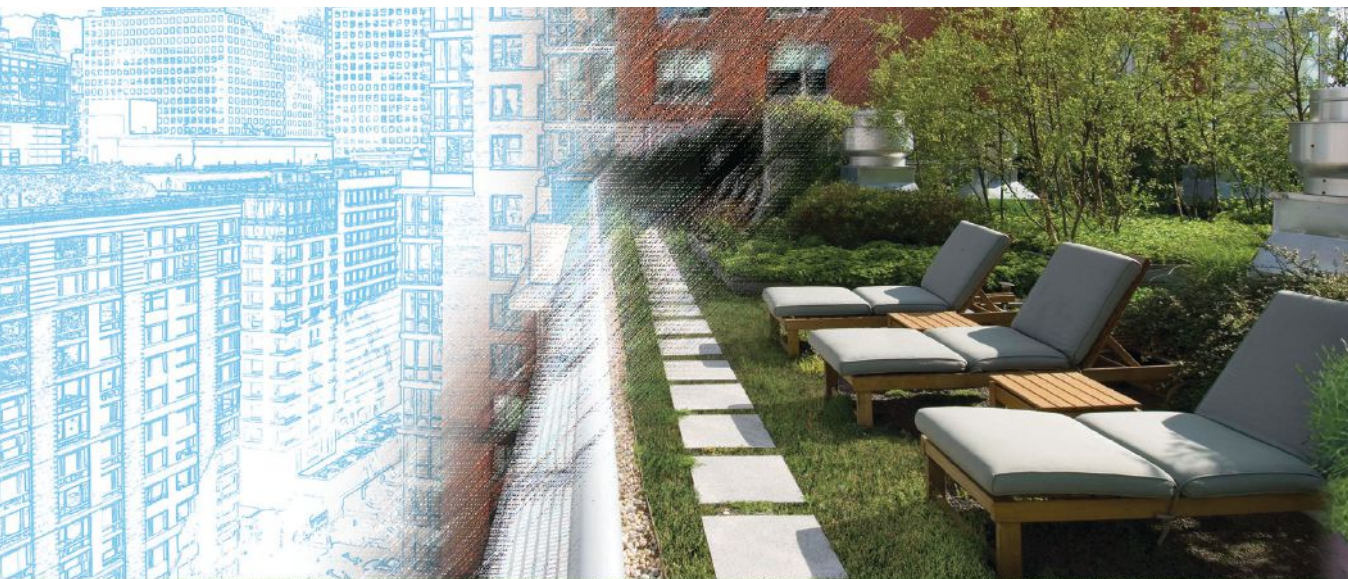
Since 1984, *The Washington Post* has published his illustrated column on architecture and urban design, "Shaping the City." His unique, award-winning columns have been republished nationally and internationally, and his drawings for "Shaping the City" have been widely disseminated and exhibited, including in an exhibition at the National Building Museum

in 1999. Lewis is the author of numerous journal articles and books, among them *Architect? A Candid Guide to the Profession* (The MIT Press) and *Shaping the City* (The AIA Press).

Serving often on design review committees and juries, Lewis has been a professional adviser for numerous national and international design competitions. He is a Design Excellence peer reviewer for the U.S. General Services Administration; a member of the government-appointed Design Review Board for the Carlyle and Eisenhower Avenue districts of Alexandria, Va.; and a design consultant to several other government agencies and private development entities.

Lewis serves as a monthly guest commentator on the *Kojo Nnamdi* show, broadcast by WAMU-FM, the National Public Radio affiliate in Washington, D.C. Currently, Lewis is a National Children's Museum trustee and Building Committee chair for a new museum at National Harbor in Prince George's County, Md., as well as a Peace Corps Commemorative Foundation trustee.

➔ See Lewis's review of the Santiago Calatrava exhibition at Russia's Hermitage Museum on page 66.



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- "I just met my future husband."
- "Global green policies can start at home."
- "Let's design a passive house."
- "More green building practices in healthcare!"
- "I want to see new tech."
- "Resident remodeler works totally home out."
- "Best. Renewable energy. Workshop. Ever."
- "Want to know more about building green?"
- "I'm coming back to exhibit my business!"
- "I'm a volunteer!"
- "Healthier learning environments through green practices."
- "Just became a sustainability mentor."
- "Green homes for everybody"
- "Urban farming is the future!"
- "Promote biomimicry!"
- "I gained new clients."
- "We are demonstrating corporate responsibility."
- "Let's stimulate the economy with green jobs!"
- "I got my first full-time job!"
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- "World, get ready for the launch of my new business."
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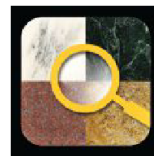
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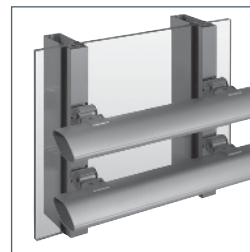




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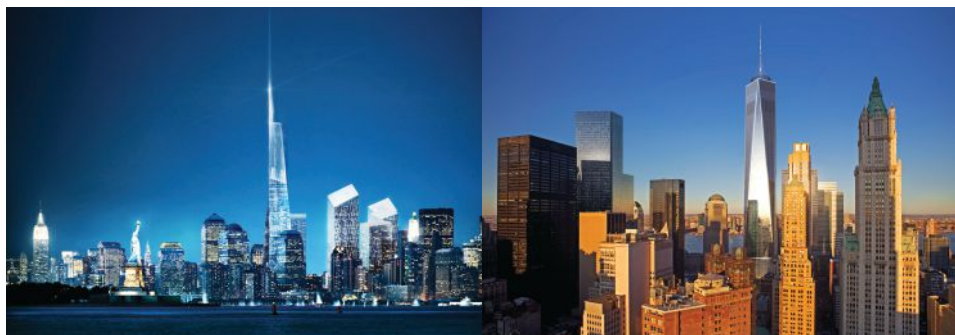




# FRONT

## DESCENT INTO MEH-NESS

ONE WORLD TRADE CENTER IS ONLY WORTHY OF AN INDIFFERENT SHRUG.



**THERE IS NOT** going to be a spire on 1 World Trade Center. Instead, what was once to be the Freedom Tower, twisting itself up to an attempt at symbolism at 1,776 feet above sea level, will now be a tall box with an antenna on top. There could be no better symbolism for both America's and architecture's lack of daring.

When Daniel Libeskind, AIA, won the competition for the redesign of ground zero back in the Stone Age, there was some hope that we would see something inspiring and beautiful. But there were already many questions about whether New York needed or would ever be able to absorb the millions of square feet of office and retail space. There were also questions about how Libeskind's particular vision might develop. It might have been better to think of the area as being a tapered edge to the financial core, effecting the transition to waterfront living that was beginning to rise up from Battery Park to the Lincoln Yards. It might also have been good to fundamentally rethink the relationship between public space and imagery and private construction and use.

The vagaries of insurance settlements, however, combined with Libeskind's inability to control the design's development, and America's wounded pride and sense of bravura led to a call for more of the same—only bigger. Despite

some inventiveness in the original scheme, the results (as yet unfinished) promise to be, more than anything else, blander. Not bad, not good, but just there.

The loss of the spire, which originally twisted out of a tower that worked hard to decompose its massive girth into planes shooting up toward that culmination, speaks of a complete capitulation to both fear and greed. Now the top is to be just another flat buzz cut surmounted by a node in the telecommunications and data empires swirling around us. Perhaps that is appropriate: Modernism at its core wants to be so abstract, so governed by function, so rationalized, and so transparent that it disappears into nothing. All of those forms reduced to their basics, just placeholders for that eventual disappearance.

For now, though, the spire will remind us of nothing so much as the fact that we have given up trying to answer the world of instant-everything-everywhere with monuments or objects of memory. We do not make something out of etherspace, we let it unmake the meaning of our physical world. We would rather have safety than possibilities, anonymity rather than memory, communication rather than vision, and comfort rather than a reminder of what we do not know or cannot yet make. The spire is a beacon in a landscape of meh. AARON BETSKY

### TIMELINE OF COMPROMISE

#### 2001

New York City Mayor Rudy Giuliani and New York Gov. George Pataki create the Lower Manhattan Development Corp. (LMDC).

#### May 2002

The LMDC selects Beyer Blinder Belle and Parsons Brinkerhoff to consult on a planning study for the World Trade Center site.

#### July 2002

The first round of the design competition for a new World Trade Center is launched, but the submissions are roundly criticized.

#### December 2002

Seven semifinalists, including Daniel Libeskind, AIA, emerge from a second-round design competition.

#### February 2003

The LMDC selects Daniel Libeskind to design the World Trade Center site.

#### July 2003

SOM's David Childs, FAIA, is selected to design the Freedom Tower.

#### July 2004

Mayor Michael Bloomberg dedicates the cornerstone of the Freedom Tower.

#### April 2006

Larry Silverstein relinquishes rights to develop the Freedom Tower as ground is broken on its construction.

#### June 2006

Childs presents the final design for the Freedom Tower.

#### March 2009

The Port Authority changes the building's name to 1 World Trade Center.

#### April 2012

The height of 1 World Trade Center passes that of any other building in New York City.



Diller Scofidio + Renfro have released renderings for a new medical and educational facility for Columbia University Medical Center in Upper Manhattan. Designed in collaboration with Gensler, the building will house 100,000 square feet of classrooms and social spaces. These various programs will be connected by a circulation core the architects have dubbed the "Study Cascade," so named for its generous landings that also provide spaces for social interaction and quiet study. The south façade alternates indoor rooms with transparent glazing and open-air terraces along the full height of the building. **DEANE MADSEN, ASSOC. AIA**

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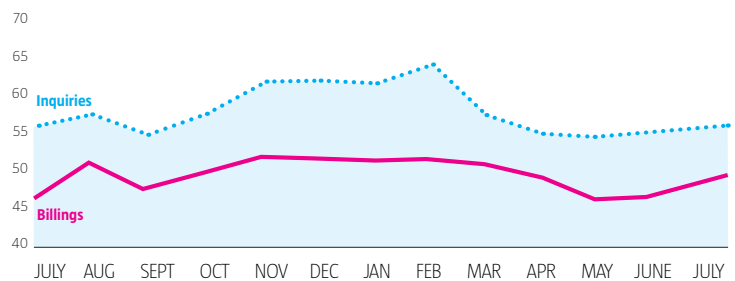
Institutional ↑

49.1

Mixed Practice ↑

51.4

Multifamily Residential ↑



### OK COMPUTER

Researchers at Germany's Fraunhofer Institute and Ireland's MicroPro have collaborated to create a wood-based computer. Although this might at first sound like an awkward replacement for the sleek aluminum or plastic casings of today's devices, the "lameco" computer features an elegant design with a touchscreen interface—and the device boasts a low carbon footprint to boot. **BLAINE BROWNELL**

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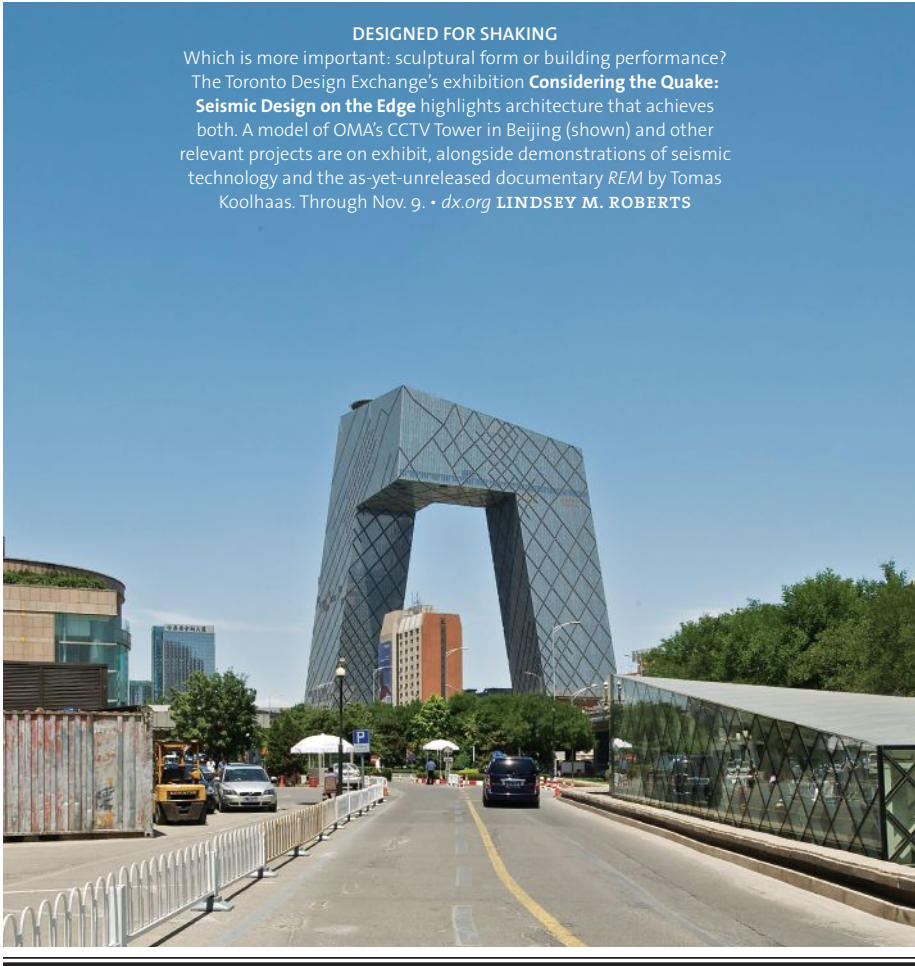


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#### DESIGNED FOR SHAKING

Which is more important: sculptural form or building performance? The Toronto Design Exchange's exhibition **Considering the Quake: Seismic Design on the Edge** highlights architecture that achieves both. A model of OMA's CCTV Tower in Beijing (shown) and other relevant projects are on exhibit, alongside demonstrations of seismic technology and the as-yet-unreleased documentary *REM* by Tomas Koolhaas. Through Nov. 9. • [dx.org](http://dx.org) **LINDSEY M. ROBERTS**

#### GIO PONTI EN POINTE

Like his contemporary, Frank Lloyd Wright, Gio Ponti preferred to design both a house (Milan, 1957) and its furniture—including an **angular upholstered armchair** reissued by Molteni&C and Rubelli in Ponti-designed fabrics (Punteggiato, shown). To look but not buy, see “Vivere alla Ponti: Experiments of Domestic Life and Architecture for Home and Work” at Rubelli's headquarters during the Venice Biennale. Through Sept. 28. • [rubelli.com](http://rubelli.com) **L.M.R.**



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**ARCHITECTS AND BUILDERS**—from tornado-ravaged Joplin, Mo., to waterlogged New Orleans—spec concrete to create disaster-resistant structures. “Many of the construction methods employed in new construction lean toward concrete to meet strength requirements in new codes,” says Pierre Villere, senior managing partner of Allen-Villere Partners in Mandeville, La.

On the other end of the spectrum, there's been an upsurge in decorative concrete finishes that replace materials such as carpet, tile, and VCT. “The concrete structural floor is attractive enough to be the finished product,” explains David Shepherd, AIA, director of sustainable development for the Portland Cement Association. “An additional benefit is [that] the exposed concrete surface is appropriated for radiant-heating, passive-solar, and thermal-mass strategies.”

Concrete itself is becoming more sustainable. “There has been a strong push to develop mix designs that can utilize alternative materials to reduce the extraction of natural resources and minimize environmental impact,” notes Don Brown, manager of Raleigh, N.C.-based Stewart Engineering's construction services department. “Concrete has a long life span and a seemingly infinite number of ways to reuse or recycle it.”

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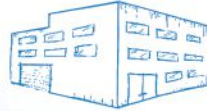
2012: **305** people from over **20** countries, speaking **24** different languages.



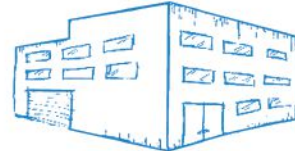
1982 -1500ft²



1990 -12,000ft²



2000 -60,000ft²



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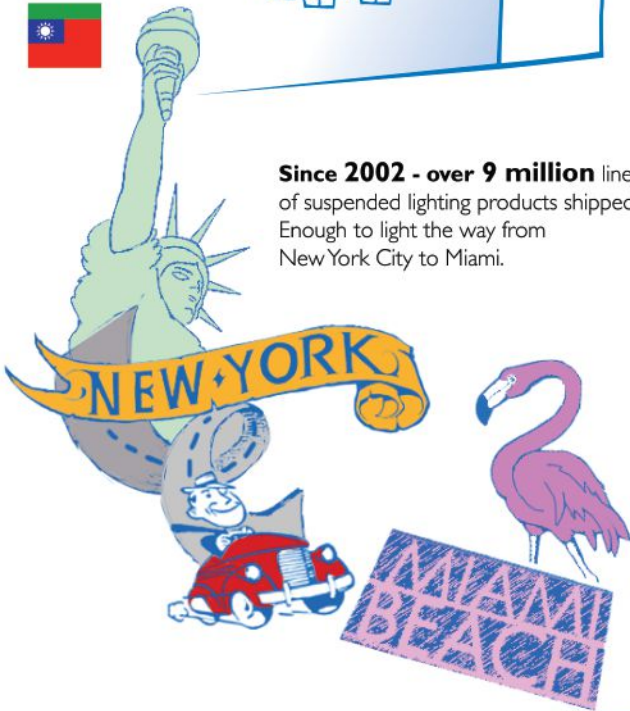
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**TWISTED**

Belgian shock-artist Wim Delvoye found himself in a heap of trouble back in the '00s for tattooing live pigs. The sculptures on view at the Musée du Louvre may not squeal, but they're still provocative. The thing that raises eyebrows in the show, which features Gothic architectural distortions made with laser-cut steel, is the craftsmanship. (That, and the 36-foot-tall sculpture modeled after a suppository.) Through Sept. 17. • [louvre.fr](http://louvre.fr)  
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**THE LIGHTING FACTS LABEL** is a voluntary program that provides basic performance data in a standard format, with products tested to verify product claims. The U.S. Department of Energy's (DOE) Energy Star label identifies LED products that provide equivalent or superior performance to products that also save energy. The DOE's Solid-State Lighting Program offers a number of tools, such as demonstration projects and independent product-testing reports via the CALiPER product-testing program). And the Design-Lights Consortium's Qualified Products List is used by utility companies and energy-efficiency programs as a preapproved list for financial incentives, and covers more categories than Energy Star. CRAIG DILOUÏE

STEP UP, BIG MOVES ON THE CAREER LADDER  
STEP DOWN

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Dean, Illinois Institute of Technology College of Architecture

**Robert Venturi, FAIA**  
Founder, Venturi, Scott Brown and Associates  
↓

↑  
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## TEN YEARS AFTER HIS PLANS FOR GROUND ZERO, LIBESKIND TAKES ON SEOUL

Studio Daniel Libeskind's Archipelago 21 master plan for Seoul, South Korea, covers much of the railyard surrounding Yongsan Station. The area in question is just outside the historic city center on the bank of the Han River, with 40 million square feet of new development in the form of 66 new buildings, 24 of which will be skyscrapers.

The commission for the Yongsan International Business District (YIBD) began with a competition held in 2005 between five shortlisted firms. What distinguished his team's proposal from the rest, says principal Daniel Libeskind, AIA, was that theirs was the only entry that didn't feature a megastructure: "To me, it's more about a city with intimacy and grandeur," he says. "It's not just about creating the tallest building in the world—but we have one of those, too!"

Libeskind's experience with New York's World Trade Center site has informed his subsequent planning projects, including YIBD: "The approach is about human beings, and creating a place with humanistic values," he says. "Ground zero is a very different project, but also a really high-density project ... with hundreds of stakeholders." D.M.

CONTINUING ED

# HOT UNITS

## CEMENTITIOUS MATERIALS IN CONCRETE: PERFORMANCE AND SUSTAINABILITY IN CONSTRUCTION

This course surveys how concrete has been used to support sustainable construction and outlines the manufacturing process and sourcing of cement and other cementitious materials used to make concrete.

(1 AIA HSW/SD)

## METAL FABRICS IN ARCHITECTURE: FORM AND FUNCTION

An introduction to the use of metal fabrics in architecture, this course looks specifically at different types of materials and attachments available for design solutions. Expect an in-depth look at the applications of metal fabric, design intent, and performance, as well as the overall sustainability benefits. (1 AIA CEH)

## MARVIN'S HARMONIZING WITH HISTORY

This learning unit presents common challenges that architects face for projects requiring historically accurate window design or the replacement of historic windows—or both. Using case studies drawn from U.S. universities, K–12 schools, and municipalities with issues of historic sensitivity, the course reviews a number of considerations for both matching historic styles as well as ensuring modern-day performance. (1 AIA HSW/SD)

## CARPET TESTING METHODS

This is a one-hour course that offers detailed technical information on carpet testing requirements and methods. (1 AIA CEH)

## THE FINE ART OF BLOGGING AND OTHER NEW MEDIA MARKETING STRATEGIES

The best clients are searching for a relationship that clicks, and they vet this judgment increasingly on the cyber persona that a firm projects. This course will discuss new-media strategies for firms that want to put their best digital foot forward. (1 AIA)

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## THE PERILS OF 3D PRINTING



An at-home gunmaker by the name of HaveBlue has created—and fired—what may be the first 3D-printed gun. He used a Stratasys 3D printer, the kind architects might use to print models, to create the lower receiver, then added it to an AR-15 rifle part. He successfully fired more than 200 rounds unscathed. L.M.R.



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## 1. YOUR JOB FUNCTION (circle one letter)

- |  |  |
|--|--|
| A. CEO/Owner/Principal                                 | F. Facility Manager                      |
| B. VP/Department Head/other Executive Level            | G. Developer/Planner/Landscape Architect |
| C. Project/Construction Manager/other Management Level | H. BIM/CAD/IT Manager                    |
| D. Architect/Engineer/Designer/Specifier               | I. Consultant                            |
| E. Contractor/Homebuilder                              | J. Educator/Researcher                   |
|  | K. Product Design/Manufacturer/Sales     |
|  | L. Other _____                           |
- (Please list)

## 2. YOUR FIRM TYPE (circle one letter)

- A. Architectural/Interiors
- B. A/E or E/A, other multi-discipline
- C. Engineering (Environmental/HVAC/Mechanical/Electrical)
- D. Engineering (Civil/Structural/Mapping/GIS)
- E. Engineering (Power/Process/Plant/Utility)
- F. Construction/Homebuilding/Design-Build
- G. Government (Municipal/State/Federal)
- H. Development/Real Estate/Property Management
- I. Planning/Landscape Architecture
- J. Product Development/Manufacturer
- K. Consulting/Professional Services
- L. College/University/Research
- M. Trade/Industry Association
- N. Related AEC Profession

## 3. I AM A MEMBER OF (circle all that apply)

- |           |             |          |
|-----------|-------------|----------|
| A. ABC    | I. BOMA     | Q. IFMA  |
| B. ACEC   | J. b5a      | R. ISI   |
| C. AIA    | K. CMAA     | S. NAHB  |
| D. AGC    | L. CSI      | T. NIBS  |
| E. APWA   | M. DBIA     | U. NSPE  |
| F. ASCE   | N. FLATTECH | V. SAME  |
| G. ASHRAE | O. GBI      | W. USGBC |
| H. ASLA   | P. ICC      |          |
- X. Other: \_\_\_\_\_ (Please list)
- Y. None

## 4. YOUR ROLE IN PURCHASING OR SPECIFYING (circle one letter)

- |                         |                     |
|-------------------------|---------------------|
| A. Final decision maker | C. Specify products |
| B. Recommend decisions  | D. No influence     |

## 5. YOUR FIRM'S/AGENCY'S SIZE (circle one letter)

- |          |            |             |
|----------|------------|-------------|
| A. 1-10  | C. 51-100  | E. 501-1000 |
| B. 11-50 | D. 101-500 | F. 1000+    |

## 6. YOUR FIRM'S/AGENCY'S WORK (circle all that apply)

- |                  |                   |
|------------------|-------------------|
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## Something in the Water

Designed by Chilean firm Panorama, a glass box in the mountains of Patagonia bottles pure glacial runoff.



**DESIGNING A FLOOD-RESISTANT** water-bottling facility might seem like an odd joke, but that's exactly the challenge that Chilean firm Panorama faced. Its recent Glacial Water Bottling Plant, which is sited just outside Queulat National Park in the Patagonia region of Chile, lies adjacent to a glacial waterfall that floods in the winter months.

By resting the building atop a tapered soil base, Panorama hopes to keep the exterior waters at bay. The 324-square-meter (3,888-square-foot) plant reflects its mountainside surroundings with its steel-supported curtainwall of toughened glass, which also withstands a harshly broad spectrum of seasonal climate shifts.

Inside, the bottling process occurs within

a double-height space that allows ample room for equipment. Offices for the plant are opposite the processing zone in single-height, wood-clad spaces with observation areas above. Large windows offer views of the nearby cascades, reminding plant workers of their livelihood's source; its exact location, however, like many natural springs, remains purposely vague. D.M.



**POP-UP PORTOBELLO**  
Seattle firm Olson Kundig Architects was looking for ways to engage the community when 21 nearby shops in its area were boarded up in 2009. Firm principals rented out one and opened the pro bono [storefront] to host exhibitions, design studios, and architectural installations. In "Mushroom Farm" (shown) earlier this year, the firm designed a greenhouse to grow mushrooms on used coffee grounds. Up next: a poetry laboratory. I.M.R.

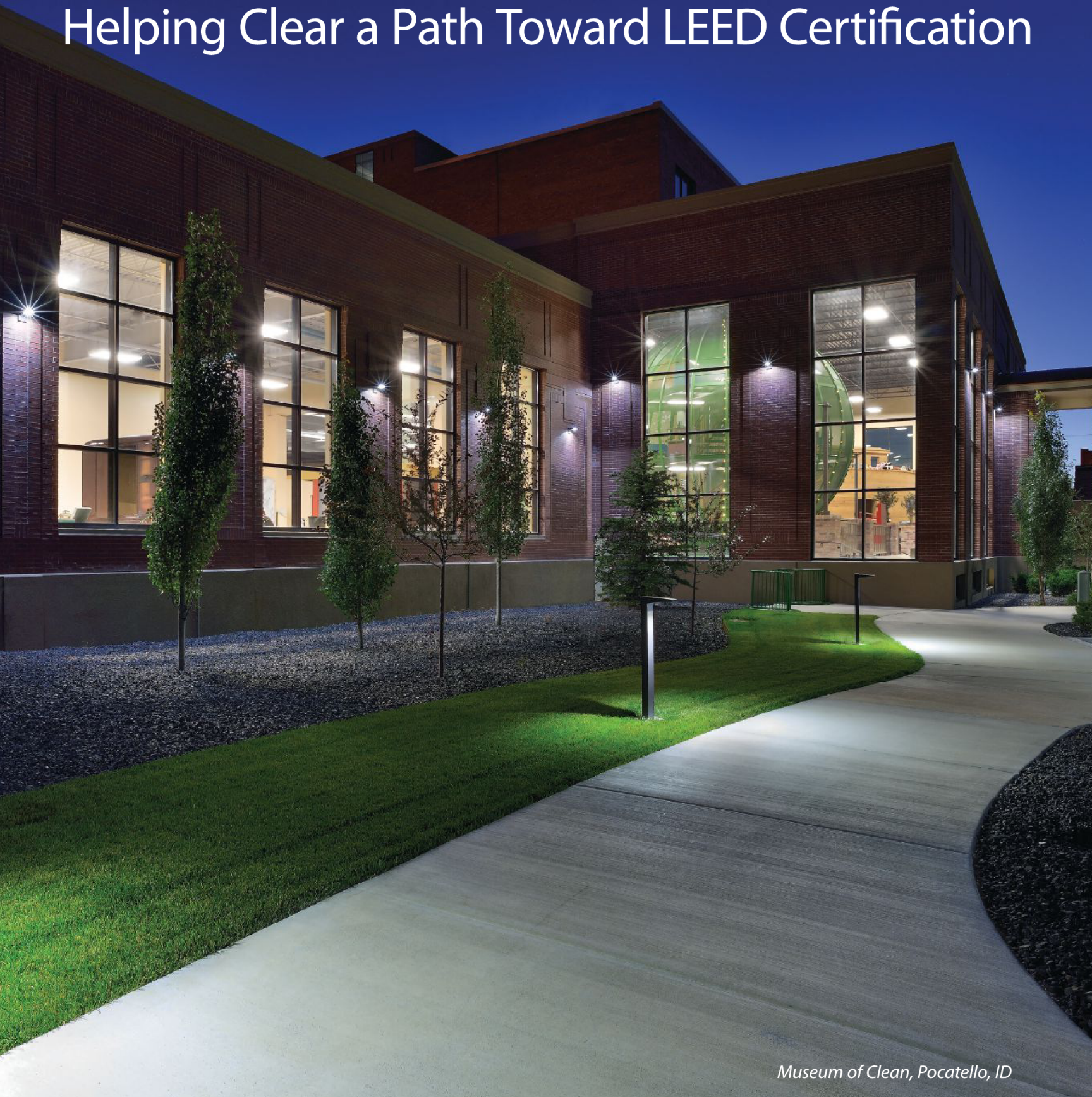
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"TODAY, THERE'S A 40-ACRE LOT WHERE THE TAMPA [HIGH-SPEED RAIL] TERMINAL WOULD HAVE STOOD. AND WHEN REPUBLICANS ARRIVE FOR THEIR NATIONAL CONVENTION IN ABOUT A WEEK AND CATCH A GLIMPSE OF IT, THEY'LL LIKELY SEE A BIG WIN. IN FACT, THE GOP WILL FIND A LOT OF THINGS IN TAMPA THAT EXEMPLIFY THEIR COMMITMENT TO NOT INVESTING IN THE FUTURE."

—WILL DOIG, SALON



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#### NOW BOARDING

Firms can specialize in residential, multifamily, government, or—if you're Denver's Fentress Architects—airports. Six of Fentress's airports (Denver International, shown) are part of *The Architecture of Flight* at the Denver Art Museum. Airports have come a long way from simple grassy bus stops for planes; they can now be points for cities to pivot around, or mini cities in themselves, with retail, hotels, and restaurants. Through Oct. 7 • [denverartmuseum.org](http://denverartmuseum.org) L.M.R.

25,  
000

The number of Ohio workers employed in clean energy, by 400 companies across 22 sectors. This figure is the equivalent of Ohio's employment in agriculture/forestry and mining combined.

SOURCE: ADVANCED ENERGY ECONOMY INSTITUTE

## INTRODUCING THE NATIONAL ACADEMY FOR ENVIRONMENTAL DESIGN

**FREDERICK STEINER** isn't shy about his ambitions for the National Academy of Environmental Design. The dean of the University of Texas at Austin School of Architecture and president of the forthcoming design academy compares it to the National Academy of Sciences or the National Institutes of Health—institutions that drive research in their respective fields.

"The National Academy of Sciences was established during the Civil War to provide a link between science and decision making," Steiner says.

The National Academy of Environmental Design has opened a search for an executive director, who will guide its launch in 2013. Further, the nonprofit organization has signed an agreement with Spotsylvania County, Va., to open a permanent office there, in Ni Village.

"The proximity to Washington is very important," Steiner says. "The commitment to environmentalism is very important. The Center for Green Technology and Sustainability is very important," he says, referring to the building where the new academy will be a tenant. "And the money is important," he adds—Spotsylvania pledged \$500,000 to bring the organization to the county. K.C.

#### BRUTALITY EXPOSED

Gordon Bunshaft's building for the Hirshhorn Museum and Sculpture Garden (pictured) is safe from the wrecking ball poised to destroy so many of its counterparts. Major Brutalist buildings in Chicago, Baltimore, Goshen, N.Y., could all be torn down. Esto photographers make the case for Brutalism in a slide show of historical images that capture the austerity of the buildings. K.C./D.M.

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**ARCHITECT**

## A TALK WITH ... PHIL HARRISON

Perkins+Will CEO Phil Harrison, FAIA, breaks down the latest big merger, with São Paulo's Rocco, Vidal + Arquitetos.



### What is RoccoVidal Perkins+Will?

We are building what we think is the first true global design practice in Brazil.

### Will the merger change the work at Rocco, Vidal + arquitetos?

They [Rocco and Vidal] have their own reputation in the São Paulo region. They're known. It's a union of complementary firms. It will look and feel like a Brazilian company. They'll have access to the full resources of Perkins+Will. We want to be as sensitive as possible to the needs of the market.

### How do you forecast the success of moving into Brazil?

The opportunity is large, but it's potentially risky. We're going in with a very intuitive sense of 200 million people, who have needs for every type of building, every type of planning, every type of urban district. Brazil is in a position to invest in its infrastructure—not nearly with the speed that China is doing, but still. It's a relatively frontier position, with a fairly high degree of risk. Success would be that we would both benefit and grow.

### Who is the Western client base for RoccoVidal P+W?

There's a tremendous amount of global investment in Brazil right now. Thomson Reuters, Goldman Sachs, Microsoft. Virtually every industry is involved in Brazil. Those companies are used to doing business with a certain speed. Companies like Goldman Sachs are much more comfortable working with global design firms. This is a big chunk of our current business and what we expect to be our business as it grows.

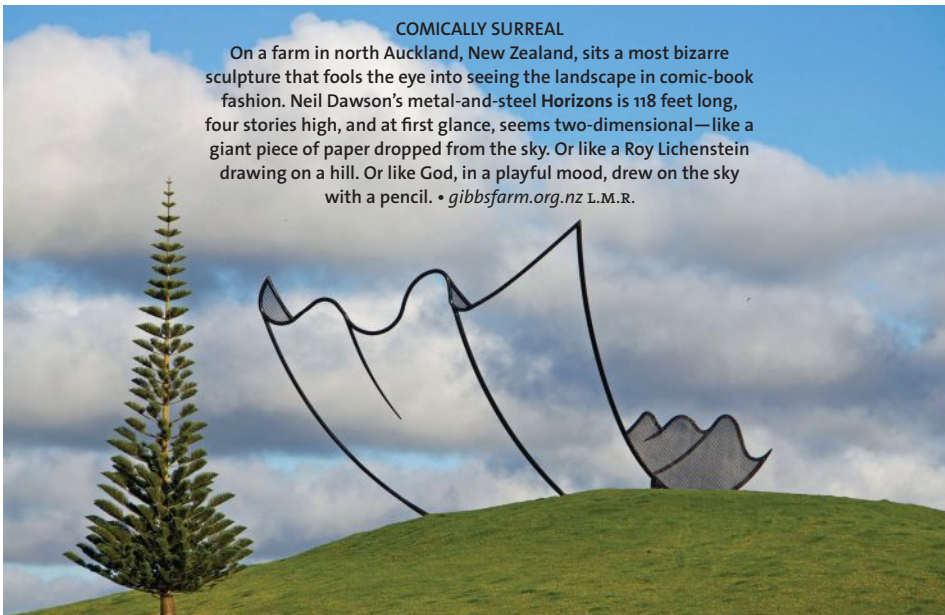
### Why "P+W" and not "Perkins+Will"?

We prefer names instead of acronyms, but [here] we've been advised by a number of people. It [the phrase "Perkins and Will"] has a sound that is displeasing [in Portuguese]. It's just an indication that when you work in a global marketplace, you have to adapt to that marketplace. k.c.

➔ MORE INTERVIEWS AT  
ARCHITECTMAGAZINE.COM

### COMICALLY SURREAL

On a farm in north Auckland, New Zealand, sits a most bizarre sculpture that fools the eye into seeing the landscape in comic-book fashion. Neil Dawson's metal-and-steel *Horizons* is 118 feet long, four stories high, and at first glance, seems two-dimensional—like a giant piece of paper dropped from the sky. Or like a Roy Lichtenstein drawing on a hill. Or like God, in a playful mood, drew on the sky with a pencil. • [gibbsfarm.org.nz](http://gibbsfarm.org.nz) L.M.R.



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Design a facade for Formosa 1140 housing unit that is as bold and unique as its West Hollywood location.

#### SOLUTION

Metal Sales' custom T16E profile utilizing Coronado Red and Raucous Orange draws warmth to the otherwise edgy, industrial landscape – a striking matrix that stirs the imagination.

#### RESULT

"Metal Sales embraced our design, creating a nonstandard wall panel just for this project. The striking nature of the panel, with added benefits of durability, recyclability, and shading creates a smart, stand-out building exterior."

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Sure, installing self-tensioning flexible mesh on a lateral curve had never been done before. But that's exactly the kind of challenge we look forward to meeting every day.



Project: ARIA Resort & Casino

Location: Las Vegas, NV

Architect: Pelli Clarke Pelli Architects, New Haven, CT

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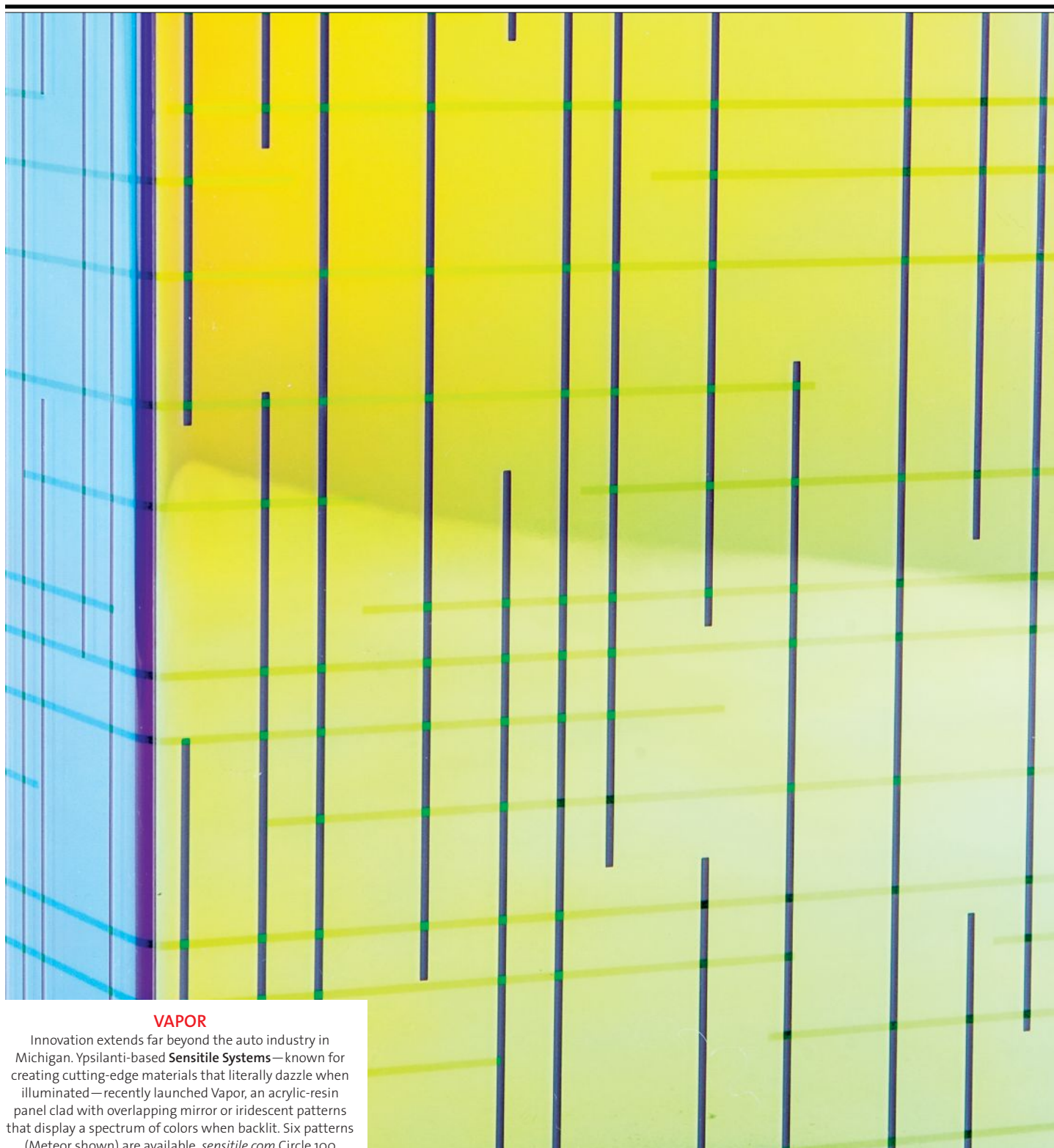
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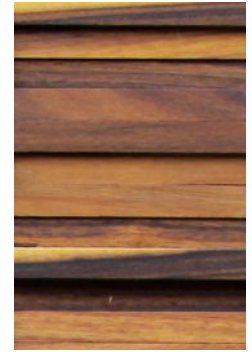
Innovation extends far beyond the auto industry in Michigan. Ypsilanti-based **Sensitile Systems**—known for creating cutting-edge materials that literally dazzle when illuminated—recently launched Vapor, an acrylic-resin panel clad with overlapping mirror or iridescent patterns that display a spectrum of colors when backlit. Six patterns (Meteor shown) are available. [sensitile.com](http://sensitile.com) Circle 100

➔ FOR MANUFACTURER INFORMATION ABOUT ANY OF THE PRODUCTS SHOWN HERE, GO TO [ARCHITECT.HOTIMS.COM](http://ARCHITECT.HOTIMS.COM)



### FUSIÓN WOOD PANELS

Reclaimed wood appeals for its warmth, natural variations, and embedded history. **Architectural Systems** combined wood salvaged from wine barrels with other natural materials to create these 4'-by-8' panels for walls and millwork. [archsystems.com](http://archsystems.com)  
Circle 101



### GREENSTAR BLOX

**Mason Greenstar** combines Texan newspapers, phone books, lottery tickets, cement, and organic additives to create 10"-by-14"-by-4" building blocks that are 65% recycled cellulose. Resistant to fire, water, termite, mold, and ballistics, Blox provides an insulation factor of R3.2 per inch of thickness. With the appropriate finish coat, it can be used indoors and outdoors. [masongreenstar.com](http://masongreenstar.com) Circle 102



### STYLEX BROOKS CHAIR

Office-environment and furniture designer Paul Brooks has created modern seating pieces for many manufacturers. His latest includes this stackable chair for **Stylex**, which has no exposed fasteners and is available upholstered or non-upholstered, and in arm and armless configurations. The Greenguard-certified chair can be recycled. [stylexseating.com](http://stylexseating.com)  
Circle 103

### FLOW I

The shipping container trend has reached wall accessories with **Le Mouton Noir & Co.**'s shelf, whose shape alludes to a ship. Comprising layers of sanded maple plywood, the 48"-by-9"-by-2" shelf turns books and tchotchkes into small-scale freight. [lemoutonnoirandco.com](http://lemoutonnoirandco.com)  
Circle 104







# SOY-BASED ADHESIVES

**Soy delivers lower costs, lower VOCs and higher profits to the wood products industry.**

## THE PRODUCTS

Soy-protein-based wood adhesives have been used for centuries. Since World War II, they have been largely replaced by petroleum-based adhesives with superior performance and economics. Current research is focused on developing and commercializing two soy products.

1. A soy/phenol-resorcinol-formaldehyde (PRF) system for use in oriented strand board (OSB) and plywood.
2. A soy meal/flour formaldehyde-free adhesive to replace UF adhesives.

## EMERGING MARKETS

There appear to be emerging new markets for soy in heat-resistant adhesives, biobased composites and enzymatic processing for new soy hydrolyzates. Soy adhesives do perform very well in high-heat testing of structural engineered wood products like finger joints and I beams. These adhesives have been shown to have superior heat resistance, prolonging the structural integrity of the wood structure in a fire.

Soy proteins are being developed as a binder to provide a renewable, plant-fibers-composite particleboard and medium density fiberboard. These composites could be a cost-competitive, formaldehyde-free solution to traditional wood composite particleboard and medium density fiberboard.

Iowa State University has developed an enzymatic approach to making soy hydrolyzates that can be tailor-made to be used with phenol formaldehyde resins in OSB and softwood plywood. The new approach is more environmentally friendly and less expensive than the traditional use of caustic and high-temperature and high-pressure approaches.

New applications have been found in the construction adhesives and sealants markets. Bondaflex has introduced products that were developed by replacing petrochemical polyols with soy-based alternatives in urethane adhesives. The soy component has been shown to offer improved adhesion on a wide variety of substrates.

## STATE OF THE ART

Most USB-sponsored research has concentrated on either reducing formaldehyde emissions in UF-produced wood composites or reducing the costs of using phenol in structural wood composites such as OSB and softwood plywood.

## RELATIVE ECONOMICS/SUPPLIES

The major adhesive resins used for wood-composite panels contain phenol or urea, plus formaldehyde. Formaldehyde is made from methanol, which is made from natural gas. Phenol is derived from benzene and cumene, which are made from petroleum and propylene, which is made from natural gas in most of the world. Urea is a product of ammonia, which is primarily made from natural gas and carbon dioxide.

Formaldehyde pricing is dependent on methanol, which has fluctuated greatly in the last few years based on shortages worldwide. Urea pricing rose due to increased costs of ammonia then dropped significantly during the economic situation early in 2009. The costs of phenol are attributed to the cost of the base stock petroleum, which has followed the same trends as urea.

Soy meal/flour costs have remained flat for many years, but they recently increased due to increased demand for soy meal/flour. In spite of these recent price increases, soy meal/flour remains an inexpensive raw material for wood adhesives.

## ADVANTAGES AND THE PATH FORWARD

New soy adhesives promise both improved performance and economics to the wood products industry. They also have shown to be excellent alternatives to urea-based products for interior applications where legislation now restricts emissions of formaldehyde.

USB supports research and testing to commercialize these products and ensure they meet industry standards. Working with industry partners, USB helps develop standard industry practices, an infrastructure to supply the products and acceptance of the resulting end products at all levels.

For more information, visit: [soynewuses.org](http://soynewuses.org)



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ARCHITECTS' CHOICE

# Face to Façade

FOR CENTURIES, BUILDING WALLS HAD ONE BASIC PURPOSE: TO HOLD UP A ROOF. THE INVENTION OF THE MODERN GLASS CURTAINWALL IN THE 19TH CENTURY EXPANDED THE CAPABILITIES OF A BUILDING EXTERIOR TO ADDRESS ISSUES SUCH AS SITE CONTEXT, PERFORMANCE, AND AESTHETICS. FOUR ARCHITECTS SHARE THE SYSTEMS THAT HAVE WORKED—OR THAT THEY'VE MADE WORK—FOR THEIR NEEDS.

Text by **Brian Libby**

## BAGUETTES, SHILDAN

Take Bridgewater State College's Marshall Conant Science and Mathematics Building, a Y-shaped facility facing three different contexts: a grassy pedestrian quad, a wooded grove, and an industrial area. Boston firm Payette wrapped the entire building with a glass curtainwall system that stands behind a series of baguette clips made from terra-cotta, metal, or wood depending on the elevation. The baguettes, manufactured by Shildan, act as a sun-shading system, but also helps each façade "reflect the environment it exists in," principal Todd Sloane, AIA, says. "It's a cost-effective solution to solving each façade as a design problem."



## CUSTOM CURTAINWALL, FAR EAST GLASSWARE

Las Vegas firm Friedmutter Group also sought to tweak a conventional curtainwall for its design of the Cosmopolitan hotel and casino on the Strip. "The Cosmo is one of the few casinos that engage the street," says Christopher Knotz, AIA. "It's made of hundreds of glass panels at all different angles." The aluminum mullions of the 80-foot-tall curtainwall, by Far East Glassware, contain steel tubes to meet Seismic Zone 2B requirements. A more typical strategy, Knotz says, would utilize a distinct, secondary steel system behind the curtainwall. "It's rare having steel inside the mullions, but it was required because of how far the panels had to extend."

"IT'S HOW WE APPLY THE TERRA-COTTA, THE WOOD, OR THE CORRUGATED PANELS THAT MADE EACH WING UNIQUE."

—TODD SLOANE, PAYETTE



## GLAZED TILES, METROBRICK AND TRIKEENEN TILEWORKS

AECOM's Minneapolis office also enlivened another longtime cladding material: brick masonry. For the Mercy Health-West Hospital in Cincinnati, AECOM and local firm Champlin Architecture were influenced by Ohio's ceramic-arts tradition and designed a colorful mosaic of glazed brick over an insulated precast panel system. Each of the 160,000 tiles—manufactured in 19 sizes between 2 and 8 inches square by Metrobrick and glazed by Trikeenen Tileworks—is mapped across the façade in a pattern of blue and green hues. "There's a greater playfulness," says AECOM principal Mic Johnson, AIA. "And I've yet to find people who don't like a little bit more color in buildings."



## CEMENTITIOUS RAINSCREEN PANELS, TAKTL, AND PHOTOVOLTAIC PANELS, SANYO

Tradition wasn't enough of a starting point for a new 96-bed dormitory at Chatham University in Pennsylvania. Among the United States's first non-single-family houses to seek Passive House certification, the project was a challenge for Mithun's San Francisco office. Taktl cementitious rainscreen panels clad the double-skin, wood-framed façade. To achieve net-zero energy, the building also features Sanyo's bifacial photovoltaic panels. "The rooftop photovoltaic system folds down and creates a façade layer to the south," says principal Sandy Mender, AIA. "People think of Passive House ... [as] just for houses. But it does make a lot of sense for institutional-scale buildings."



**TODD SLOANE**  
Principal, Payette



**CHRISTOPHER KNOTZ**  
Senior associate architect,  
Friedmutter Group

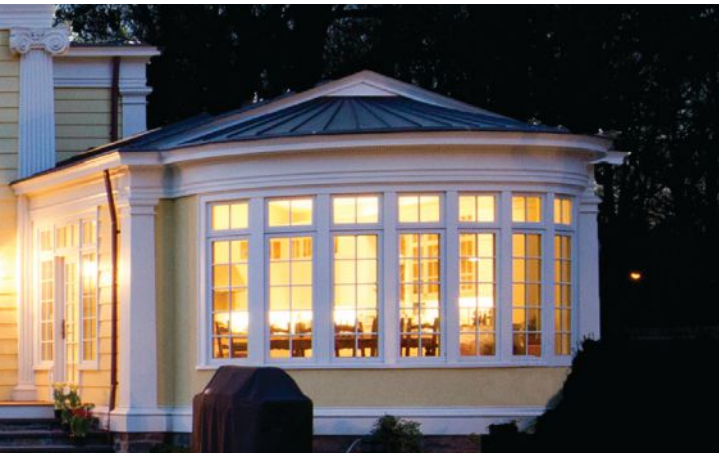


**MIC JOHNSON**  
Principal, AECOM



**SANDY MENDER**  
Principal, Mithun





# MEET THE myMarvin ARCHITECT'S CHALLENGE WINNERS

The myMarvin Architect's Challenge honors the best in architecture and design. Now in its third year, the Architect's Challenge winners represent a variety of architectural styles, both residential and commercial. Marvin® products were showcased in a 19th century barn, a small house designed for energy efficiency, a restored Neoclassical mansion, an elementary school renovation and an Irish school renovated as a residence. Marvin's beautiful products helped make these houses and buildings look great and have better energy efficiency.

Congratulations to the winners of the myMarvin Architects Challenge!

- **Donald Giambastiani of Solomon+Bauer+Giambastiani Architects Inc.**
- **James Estes of Estes/Twombly Architects Inc.**
- **Eric Gartner of SPG Architects**
- **Jon Hensley and Sunny Carroll of Jon Hensley Architecture**
- **Catherine M. Knight, AIA of Knight Architects, LLC**
- **Todd Hansen of Albertsson Hansen Architecture, Ltd.**
- **THA Team of THA Architecture Inc.**
- **Patrick Lennon of Project Architects The Priory**
- **Paul Bedford of Keystone Associates Architects, Engineers & Surveyors, LLC**



To learn more about the winning projects, please visit [Marvin.com/inspired](http://Marvin.com/inspired)

Circle no. 57 or <http://architect.hotims.com>





### MURANO

Murano, Italy, became a glassmaking hub in the 1200s when Venice ordered all glassmakers out of its limits under the guise of reducing fire hazard. Using historical techniques, Miami-based **Surfaces** hand cuts and hand fuses individual glass strands to create wall tiles, which range in size from 2" square to 3" by 12". [surfaces.net](http://surfaces.net) Circle 105

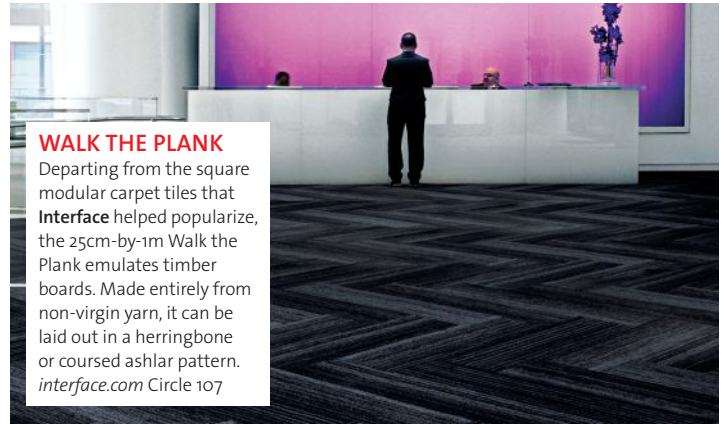
### CLEAR

In classic entrepreneurial fashion, **IdeaPaint** was conceived in a Babson College dorm room in 2002. The coating, which turns wall surfaces into whiteboards, became a reality through the sheer will of 20-somethings, following years of research and failure. Clear turns smooth surfaces into whiteboards or, more accurately, colorboards that allow the surface's original color to show through. [ideapaint.com](http://ideapaint.com) Circle 106



### WALK THE PLANK

Departing from the square modular carpet tiles that **Interface** helped popularize, the 25cm-by-1m Walk the Plank emulates timber boards. Made entirely from non-virgin yarn, it can be laid out in a herringbone or coursed ashlar pattern. [interface.com](http://interface.com) Circle 107



### VECTR FAÇADE AND WALL PANELS

**Taktl's** ultrahigh-performance concrete mixture overcomes conventional concrete's lack of flexural strength and freeze-thaw resistance. Suitable for cladding and rainscreen applications, these 1/2"-thick panels come in eight colors and textures (Reed is shown). [taktl-llc.com](http://taktl-llc.com) Circle 109



### CERAMIC COAL

After researching global design trends, **Amtico International** increased the number of stone and wood patterns in its Spacia vinyl flooring line, which now includes Ceramic Coal. The 12"-square, 18"-square, or 12"-by-18", low-VOC tile can be returned to Amtico for reclamation and recycling at the end of its useful life. [amtico.com](http://amtico.com) Circle 108







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## DETAIL

# Arcade Canopy, Goldman Sachs

TO COVER A GENTLY BENT PASSAGEWAY THROUGH NEW YORK'S FINANCIAL DISTRICT, PRESTON SCOTT COHEN ENVISIONED AN ABSTRACT FORM THAT SOARS IN MANY WAYS.

Text by **Wanda Lau**



The slight bend of the passageway on the southern end was “already suggestive of something that would not be able to simply extrude through the space. Rather, it would have to move through the space,” says design architect Preston Scott Cohen. “Being below it, you would experience that transition, and it would be momentous.” Landscape architect Ken Smith designed a granite bench, which has become popular for people-watching.

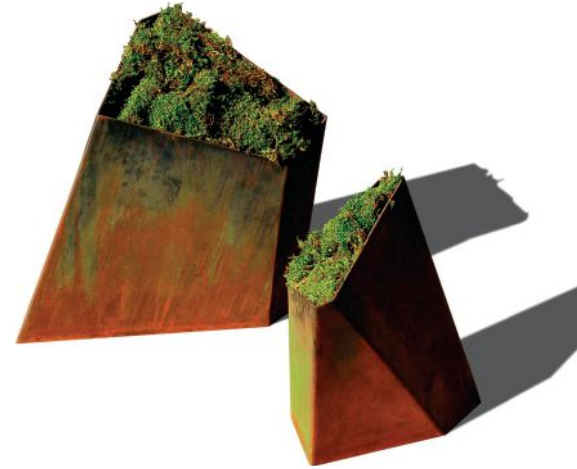
**DESIGNING AN ARCADE CANOPY** may seem like a modest undertaking, but when the client is Goldman Sachs and the site is North End Way—a bustling, 11,000-square-foot pedestrian passageway within blocks of 1 World Trade Center—the stakes quickly become high.

Design architect Preston Scott Cohen anted up with project architect Pei Cobb Freed & Partners (PCFP) and architect-of-record Adamson Associates to create a luminous glass canopy that *The New York Times* architecture critic Michael Kimmelman has heralded to be as inspiring “as the nave of a great Gothic cathedral.”

Opened to the public this spring, the canopy comprises three tilted glass triangles wedged between Goldman's 200 West Street building and the Conrad Hotel. Made from 948 laminated-

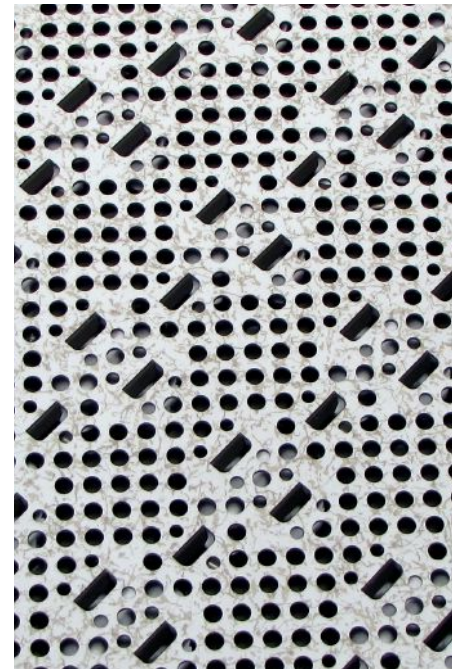
glass lites from supplier J.E. Berkowitz, the double-glazed triangular forms have an upper and lower plane of glass serving as the arcade's roof and ceiling, respectively. The glass surfaces sandwich the canopy's structural and cross-bracing members.

Early design iterations called for only an upper plane of glass, leaving the canopy's structural members exposed from below. “The repetition of those ribs generated the effect of a comb,” Cohen says. “When you looked up, there was too much visual information. Since the three triangles are, in combination, trying to evoke a curve, it was very important for the glass to be as continuous on the surface as possible.”



## ELEMENT

The skewed shapes of **Planterworx's** metal planter series were inspired by ocean jetties that jut audaciously into rough waters. Made from Cor-Ten steel or powdercoated aluminum, Element comes in three polygonal shapes and colors, including Cor-Ten (shown), and stands 16" or 19" tall. [planterworx.com](http://planterworx.com) Circle 110



## DIRECTIONAL PERFORATED ACCESS FLOOR PANEL

For data center ventilation systems that enlist a raised-floor plenum, **Tate Access Floors** created this panel, which can direct 93% of its airflow into the faces of server racks and cool more than 8 kW per rack. [tateinc.com](http://tateinc.com) Circle 111





**Erica**

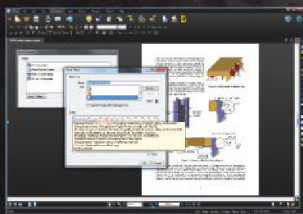
Profession: Architect, Project Manager

Hobby: Photography

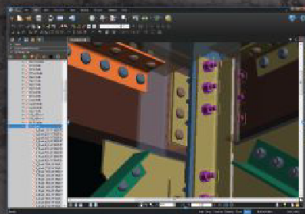
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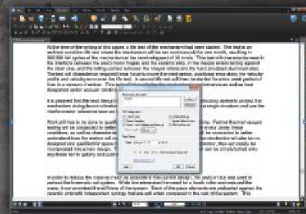
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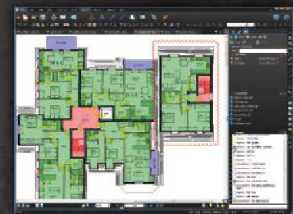
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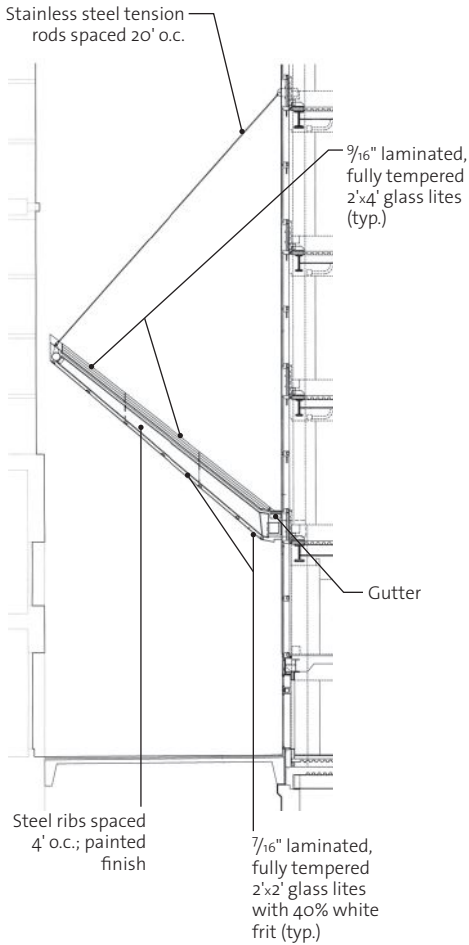
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## SECTION



Sizing and installing the metal structural members were the project's greatest technical challenges, says PCFP partner Michael Flynn, FAIA. Spaced 4 feet on center and varying in length from 19 to 35 feet, the 86 wide-flange members were all custom-made by American Architectural Inc. "The care and precision with which they were made and placed determine the sheerness of the top and bottom surfaces of the glass," Flynn says.

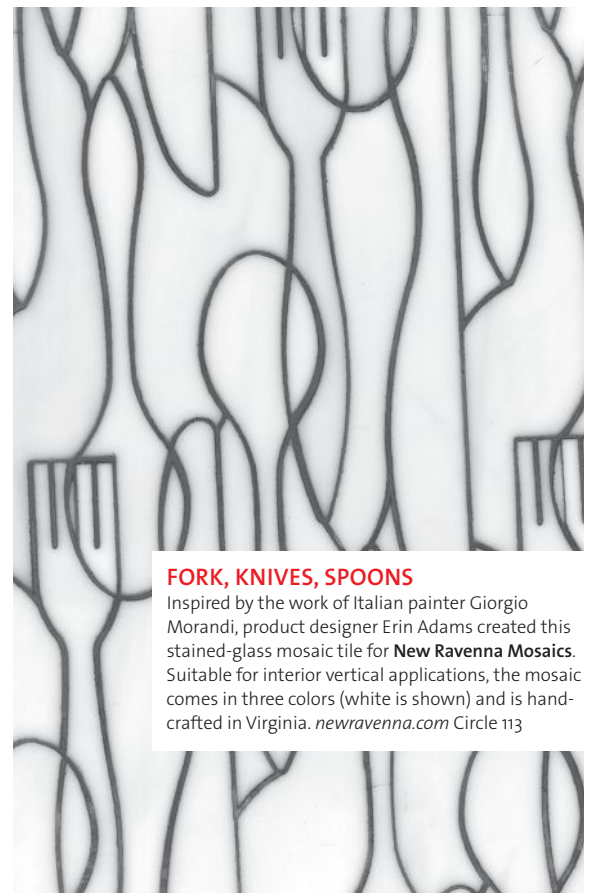
Careful to never touch the Conrad Hotel, the cantilevered edge of the canopy is also stabilized by stainless steel tension rods, while the fixed edge meets the Goldman building at a horizontal level, where a gutter hides above a reveal. "The canopy is separated visually from both buildings in a way, giving it an independent character," Cohen says. "The geometry is really about negotiating the site conditions and creating the effect of movement at the same time."

A frit on the lower glass lites diffuses light and masks the inevitable buildup of dirt, which hasn't diminished the quality of space, Cohen says. "The site requires the canopy to adapt. It has different tempos and different types of use. It's very urban in that sense."



## WEDGE TABLE

In this Ikea-meets-Eames-House-of-Cards piece by Amsterdam-based designer **Andreas Kowalewski**, three interlocking base pieces and a screw-in top surface create a 380mm- or 450mm-tall wood table that can store flat for easy transport or storage. [andreakowalewski.com](http://andreakowalewski.com) Circle 112



## FORK, KNIVES, SPOONS

Inspired by the work of Italian painter Giorgio Morandi, product designer Erin Adams created this stained-glass mosaic tile for **New Ravenna Mosaics**. Suitable for interior vertical applications, the mosaic comes in three colors (white is shown) and is handcrafted in Virginia. [newravenna.com](http://newravenna.com) Circle 113

## TUBE CHANDELIER

Designed in 2002 by London studio **Michael Anastassiades**, the Tube Chandelier illustrates the beauty that can result from reserved gestures and simple forms. Three tilted tube lamps form the profile of the 1m-tall luminaire, which comes in gold (shown) or black-plated stainless steel. [michaelanastassiades.com](http://michaelanastassiades.com) Circle 114





## CALL FOR ENTRIES

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### DETAILS

Projects must have a client and a completion date after January 1, 2013. Judging will take place in November 2012. Winners will be notified in December 2012 and published in the February 2013 issue of ARCHITECT, and honored at a ceremony in New York the same month. For more information and rules and regulations, visit [paawards.com](http://paawards.com)

### DEADLINES

**Regular:** October 26, 2012

**Late:** October 31, 2012 (additional fee required)

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**ARCHITECT**



MIND &amp; MATTER

# Rio Strides in Green



**THIS SUMMER**, several events drew attention to the tropical metropolis of Rio de Janeiro. In June, the Rio+20 conference set out to make progress in global environmental policy. In August, Brazilian entertainers and celebrities previewed the Rio 2016 Olympic Games.

Amidst the hubbub, the inaugural Green Nation Fest—an event organized by the Center for Information, Culture and Environment to promote sustainable community development and living—slipped in. Designers and manufacturers from Brazil and beyond presented a compelling picture of contemporary and environmentally progressive product development. Three pioneering individuals stood out.

Extensive travels in her native country have taken Brazilian artist **Heloisa Crocco** to the Amazon rainforest, where she researched indigenous natural fibers. A student of pre-Columbian art, Crocco makes decorative panels and surface treatments from discarded wood offcuts. Rather than homogenizing the material, in the spirit of engineered lumber, Crocco celebrates the grain and character of each piece, creating richly layered surfaces that she calls **topomorfose**, or transformation of the top cut of timber. An advocate for community-based arts and crafts endeavors, Crocco also cofounded Piracema Design Lab, which brings together design professionals and traditional craftspeople to collaborate on projects.

German microbiologist and fashion designer **Anke Domaske** discussed her method of creating natural textiles entirely from milk. While searching for a fabric alternative for

allergy-prone clients, Domaske developed a process that transforms the casein protein in milk into a bio-compatible textile. Similar in texture to silk, the quick-drying, anti-allergenic, antibacterial, and durable **Qmilch** requires much less energy, water, and human labor than the manufacture of other textiles. Because its fibers can embody different properties and textures, Qmilch is an open platform for future experimentation. Domaske is currently scaling up Qmilch manufacturing to meet increasing demand from the fashion industry.

Also from the world of fashion, New York designer **Elizabeth Olsen** exhibited shoes made from repurposed postindustrial materials. In a heartfelt story about the inspiration behind her **Olsenhaus Pure Vegan** line, Olsen described her obligatory visits to slaughterhouses to select leather and other animal-based materials for shoe manufacture. Appalled by the inhumane conditions that she witnessed, she wrote on her website, “These industries thrive on lies and profit from the suffering of sentient beings.” Making use of materials like recycled polyurethane, rubber, and canvas in place of leather, her collections of shoes are none the worse for the substitute.

These designers have followed less-traveled paths to develop goods that do good and look good. While the Rio+20 talks stagnated, and with Olympic planning hampered by infrastructure challenges, Green Nation Fest emerged as the summer’s most invigorating testament to design and environmental progress in the city.



## GREEN FOR ALL

The first-ever Green Nation Fest, held from May 31 to June 7, featured presentations and debates by speakers in film, new media, fashion, architecture, food, academia, and art. (**Crocco Studio**’s **Aparas** is shown above.) The free event also offered interactive events, including a live quiz show on the environment, a bicycling competition to generate energy, and a weather simulator in which attendees could experience extreme climatic events.

# 1.9

The number, in millions, of metric tons of nonmarketable milk discarded by Germany’s agricultural sector each year—enough to fill roughly 9 million 55-gallon drums

SOURCE: QMILCH



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



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## AIA VOICES

GAME CHANGER | MAKING THE MOST WITH THE LEAST

*While completing his M.Arch. at Washington State University, Scott Jones started the Thrive Project, packing books, computers, tools, and building materials into a 400-square-foot shipping container bound for Eldoret, Kenya. Jones plans to build out the shipping container—and others after it—into a vocational training center. What makes this different from shipping-container initiatives for other countries such as Haiti or Malawi? “Capacity,” says Jones. “You think about what a container is, and there is so much untapped potential to use every square inch.”*

**YOU GO THROUGH CASE STUDIES AND YOU SPEND A LOT OF TIME** understanding the existing paradigms of shipping-container adaptability. I really appreciate the modularity of using them, but there are a lot of unexplored areas with containers in terms of adaptation. Don’t get me wrong—I’m very impressed with what people are doing with containers. But how can the container evolve once more? How much can we feasibly do with a single container? What will have the highest impact for the lowest investment? Finally, how can we create space?

I approached this design problem with a box of Legos in mind. Our site in Kenya is about a mile from the big east-west railroad—so we have a lot of access to containers. The first one will be shipped from the U.S., however, and contain trusses that will span the distance between the container drop site and the building site about

100 yards away. Subsequent containers will fill in the distance, and I’m hoping to use between nine and 15 from in-country. As more containers are secured, they build out from the original container and stack horizontally atop it. Containers can be arranged to maximize otherwise negative space to create outdoor classrooms. But the key is to create a permanent structure—the idea of permanence in Kenya is important because it is a community driver.

With any Third-World project, when complexity goes up, the success rates go down. The projects that are successful are straightforward in nature—not simplistic, but straightforward. So, in moving ahead, it has been important to show a level of confidence in our project, to have a substantial team on the ground in Kenya, and to cultivate a good understanding of Kenyan building culture.

So it’s been a multilateral effort. There are risks and shipping security problems—especially when the container arrives in Kenya. A lot of our equipment is a huge target for theft. So it’s been about finding a balance. This is totally outside the realm of what I thought architecture was. When I finished my undergraduate degree, I traveled around East Africa, and by the time I started my M.Arch., the opportunity to positively impact people seemed clear. I’ve done a lot of work in architecture—from big-box retail to residential design/build—and the thing that drives me is how the end user is impacted.

—As told to William Richards **AIA**

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\*Details on the free convention registration promotion and sweepstakes rules can be reviewed at [www.aia.org/join](http://www.aia.org/join).





# AIA NOW

ACROSS THE INSTITUTE  
Compiled by William Richards

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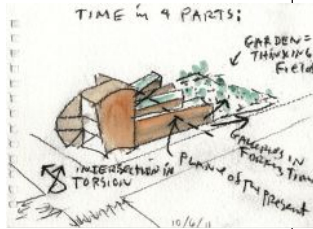


**5 Asbury Park**  
AIA New Jersey  
Sept. 13

**2 New/Old Digs**  
AIA Miami  
Sept. 15

**4 Standard Bearer**  
IDP  
Sept. 24

**6 Seven Billion's  
a Crowd**  
2013 Latrobe Prize  
Oct. 1



**3 Holl Pass**  
AICA  
Sept. 13–Oct. 18



**1 Preservation Nation**  
Conference  
Sept. 30

**1 Preservation Nation.** Can you guess where the nation's first historic district is located? Boston? Washington, D.C.? Chicago? New York? Guess again—it was Charleston, S.C., in 1931. Since then, the "Old and Historic District" has grown to include more than 4,800 contributing structures. Join the Association for Preservation Technology International and the Preservation Trades Network in Charleston for "Cornerstones: Collaborative Approaches to Preservation," which runs from Sept. 30 to Oct. 4. The conference centers on the intersection of preservation technology and art with a series of presentations and tours.

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

**3 Holl Pass.** Virginia Commonwealth University recently announced plans for the Institute for Contemporary Art (ICA)—a state-of-the-art facility designed by Steven Holl Architects. The ICA will serve as a new gateway to the university and bring cutting-edge contemporary art exhibits to the city of Richmond. See Holl's watercolors and more than 30 study models for the project in "Steven Holl Architects: Forging Time" at the Virginia Center for Architecture from Sept. 13 through Oct. 18.

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

**2. New/Old Digs.** Work is under way this month for the new Miami Center for Architecture and Design, which will occupy a downtown post office designed in 1912 by Oscar Wenderoth with Kiehnel and Elliott. This isn't the first time the building has changed its stripes, having once housed a federal courthouse, the first government-chartered savings and loan, and the Miami Weather Bureau. Allan Shulman, FAIA, and his firm, Shulman + Associates, led the center's renovation, which is slated to be completed early next year. The center will include exhibit and retail space as well as the offices of AIA Miami, which was instrumental in the project's planning.

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

**4 Standard Bearer.** Getting your architecture license can seem daunting, but luckily some firms help make it easier through the Intern Development Program (IDP), co-sponsored by the AIA and the National Council of Architectural Registration Boards. Since 1991, the program has recognized shops that are committed to integrating licensure and work culture. Applications for the IDP Firm Awards are being accepted through Sept. 24.

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

**5 Greetings from Asbury Park.** Asbury Park, N.J., has gone through its share of ups and downs since Bruce Springsteen's 1973 debut album put it on the map. Celebrating the boardwalk community's resurgence, AIA New Jersey will host its annual Design Conference there on Sept. 13, and feature a mix of speakers and tours to highlight the Garden State's design ethos.

➔ [Learn more at blog.aia-nj.org](http://blog.aia-nj.org).

**6 Seven Billion's a Crowd.** In March, the U.S. Census Bureau announced that the global population crossed the 7 billion mark—continuing an exponential growth trend. It's no mystery why one of the greatest global challenges in the coming century will be natural resources—and the AIA College of Fellows wants to know how architects can respond in the 2013 Latrobe Prize call for submissions, which will close on Oct. 1. Recipients of the prize will receive \$100,000 to conduct research on the critical issues around resource scarcity and the environment.

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

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# AIA KNOWLEDGE

LINES OF INQUIRY



PHOTO: CHRIS GILES

## An architecture student going where the evidence takes her.

**IT HAS BEEN SAID THAT THE BEST POSSIBLE OUTCOME OF RESEARCH** is to watch two questions grow where only one grew before; to find the possibilities and replace mere notions with points of reference for a fuller understanding.

“If we were to look to research and see what it shows us about how people react to different spaces,” says Erin Costino, the 2012 AIA Academy of Architecture for Justice (AAJ) research scholar, “then slowly but surely, if architecture is done correctly, generationally you would eventually be able to see changes on the macro level.”

The changes she wants to see, though, have to do with a public realm that most people simply don’t see in their everyday lives: courthouses, correctional and detention centers, and law enforcement facilities.

To that end, Costino is currently developing a comprehensive database for AAJ that allows users to search for information, trends, and best practices in the design of those spaces. The database draws from AAJ’s trove of research, much of it published in the AIA Knowledge Community’s annual *Justice Facilities Review*.

For AAJ, it’s a necessary step to streamlining best practice research for architects across the country. For Costino, it’s a natural evolution of her multidisciplinary background, which includes a large-scale research project in the Psychology and Law Research Lab at the University of California, Irvine, where she interviewed inmates who violated their probation. It was during this time that she first became interested in justice design.

In 2011, she completed her M.A. in political science at UC Irvine, which resulted in a study on how the architecture and interior design of city council chambers “influence politically relevant

behaviors, such as participation in local politics and perceptions of government,” she says. Costino believes that architecture, aided by evidence-based design, can assist in changing societies, a view that consistently appears throughout her studies.

Costino, who is now pursuing her M.Arch. at The New School of Architecture and Design in San Diego, has a strong research background. This also helped to make her an impressive candidate, says Jay Farbstein, FAIA, who helps oversee her scholarship work. Her background in the social sciences has also given her a more nuanced, balanced perspective of the practice of justice design. “The reason I went into architecture is because it is the field of application for everything that I’m interested in, and it’s a way for me to explore these sorts of ideas in a very tangible way,” she says.

Costino will wrap up her graduate studies in 2014. Afterwards, she aims to land a job with a firm that specializes in justice architecture—mirroring the hopes that members of AAJ have for her. “Erin is very excited about her growing knowledge of justice facilities, and told me recently that she believes it will be a career-long commitment,” says Farbstein. In the meantime, she continues to sort volumes of data into a robust, practical resource for architects interested in justice planning and design, and participating in the AIA as a student allied member of the San Diego chapter, in which she encourages other students to take part.

“I’ve had an amazing experience so far because I’ve been able to be in contact directly with several people who are doing what I want to do,” she says. “Without getting in touch with the AIA—and AAJ specifically, for me—I would have felt lost, so it’s given me a form of direction.” —Jennifer Pullinger. **AIA**



# AIA FEATURE

ADAPTING PRISONS FOR A CHANGING SOCIAL LANDSCAPE

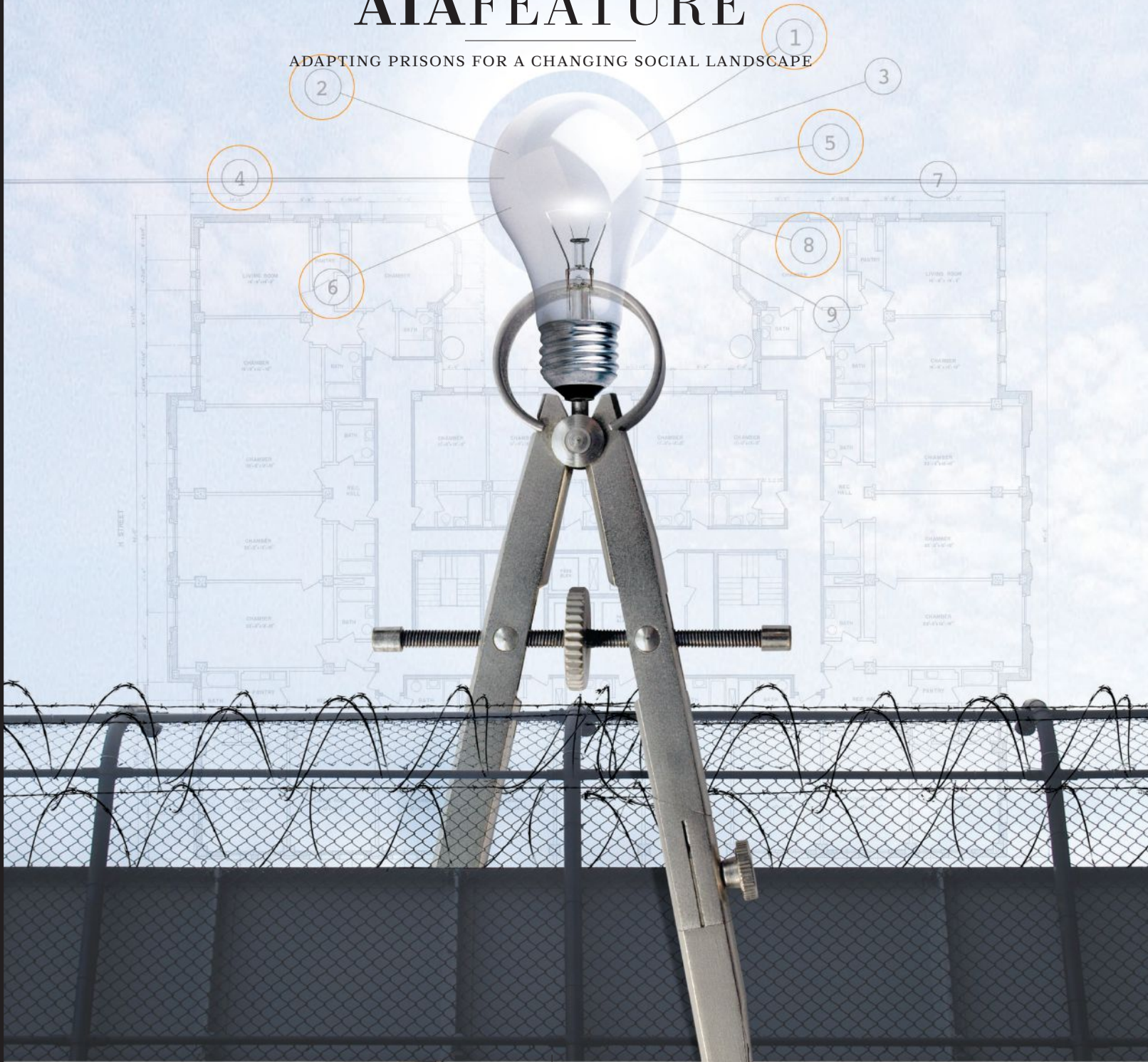
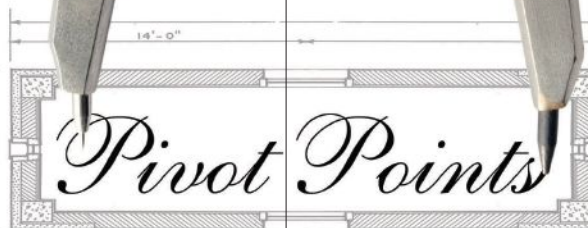


ILLUSTRATION: VIKTOR KOEN

**AS THE U.S. ECONOMY TILTED AWAY** from manufacturing in the last quarter century, it didn't take long for architects and developers to convert factory floors to loft apartments. Another building type which is just as ubiquitous has proven more difficult to reimagine, however. Prisons—both urban and rural—carry a much stronger moral charge than factories in terms of what they represent and their function in society. Prison-reform



politics aside, states increasingly face oversized prison systems. “New York just closed seven; Colorado’s closing two; Michigan in the last decade has closed 22,” says Tracy Huling, a Soros Justice Fellow who helps governments, justice advocates, and rural community leaders identify and spread best practices in closing and repurposing prisons. “Stricter sentencing and other policies made us





## AIAFEATURE

too quick to lock people up,” says Liz Minnis, AIA, a Massachusetts deputy commissioner for planning and design, and chair of the AIA’s Academy of Architecture for Justice (AAJ).

Despite the closings, there are currently more than 2 million Americans behind bars, on parole, or on probation. As prison populations grew in the last decade (Bureau of Justice Statistics notes an average annual increase of the federal prison population of 1.6 percent), larger prisons came along.

“So now,” says Minnis, “as the rate of incarceration is decreasing in many states and the federal government, we have these sites that are hard to redevelop.”

“For the first time in 40 years, the population in prisons has leveled off,” says Stephen Carter, a city planner and president of the CGL Companies Development Services Division, a justice facilities consultancy. Carter, who writes a column for *Correctional News*, says these massive facilities may stay “less crowded” as economic straits and smaller police forces mean fewer arrests. He also points out that the notion that prison is an effective deterrent for crime has slowly shifted. “There has been a gradual adjustment in the attitude of Americans to conclude that incarceration alone has not worked.”

The sites of old prisons are unforgiving. “Supermax prisons,” so-called for their high level of security and 5,000 or more beds, have lost traction in state budgeting over the past few years as governors reassess their costs and scholars reappraise their effects. The culture of crime and punishment now in the U.S. is about re-evaluating the idea of locking up convicts for life in huge rural prisons.

It’s a set of social questions as well as architectural ones. How do new models of prisoner rehabilitation inform the physical form of correctional facilities and their landscapes? If states mothball some of their prisons, can those vast, fortress-like facilities have a new life?

### Good Bones

Incarceration is not a new idea. But the architectural forms it has taken have shifted in the last 200 years. Facilities such as Eastern State Penitentiary in Philadelphia (based on Jeremy Bentham’s “Panopticon”), Sing Sing in Ossining, N.Y. (based on the Auburn system, which favored prisoner isolation), and through the efforts of social reformers like Alexander Paterson (who favored open, community-based arrangements), the dual concepts of punishment and rehabilitation became inextricably linked.

Across the board, architects have strong feelings about the ethics of incarceration, and a majority opposes involving their profession in the design of prisons. But what about the design of prisons for new uses?

Older urban lockups have retained enough of their grandeur to be adapted for today’s downtowns. The handsome granite walls of Boston’s Charles Street Jail, designed by Gridley J.F. Bryant and completed in 1851, now contain the luxe Liberty Hotel (ironically named) with—among other amenities—a bar called Clink. But most of today’s budget-minded prisons—urban or otherwise, built over the last 25 years—are designed with less nobility, Spartan finishes, and humble (if expensive) materials. Carter notes that the biggest conundrum is the often steel-reinforced concrete wall systems, which are not really designed for anything beyond containing bodies securely. Of course, Gridley Bryant might not have envisioned a future hotel space when he designed the Charles Street Jail, but if you start with good bones you have a better chance of adapting them.

If newer supermax prisons go the way of the Liberty Hotel, however, their reuse is more fraught than it might be for historic structures such

as San Francisco’s Alcatraz and Philadelphia’s Eastern Penitentiary. Carter suggests their most obvious adaptation is as a storage facility—as U-Haul and other companies have done with industrial buildings across the country. Another possibility is data-storage or data-processing centers, given the high degree of environmental control that prisons offer. Other options include community colleges (once cells are removed) and artist studios (in which individual cells may be an asset).

### Process-Oriented

Before a programmatic reorientation, though, prisons are subject to economic and social reorientation. Identifying the best possible use of a former prison (in terms of everything from job creation to environmental impact) is a multiyear process that centers on larger questions about private enterprise and the public good.

Tracy Huling speaks admiringly of the mayor of Warwick, N.Y., for creating a citizens’ advisory panel that interviewed everybody from local merchants to police to find a path forward for the Mid-Orange Correctional Facility, which closed in 2011. The closure was part of the state’s \$50 million reinvestment initiative to stoke development around obsolete prison sites. “It’s important to demonstrate that prisons can be closed without destroying communities,” says Huling, noting research showing that—while the presence of prisons does long-term harm—in the short-term, communities are concerned about the loss of jobs and benefits. “In some states, that concern has led to bringing public prisons back on line or selling closed public facilities to for-profit prison corporations, instead of carefully considering non-prison options.”

To date, private prison companies, including Corrections Corporation of America and the GEO Group, operate upwards of 250 facilities across the United States, including existing structures and new buildings. While these for-profit companies can be cheaper alternatives for cash-strapped states, Huling notes that they complicate the question of long-term good for communities. Through her Soros Fellowship, Huling has begun championing a deliberative process for deciding what to do with decommissioned prison property in terms of producing the best possible outcomes for communities economically, socially, physically, and spiritually. She points to the redevelopment of former military bases, and to the work of architects like Raphael Sperry, AIA, another new Soros fellow and principal at San Francisco-based Simon and Associates, as well as of the New Orleans-based planning and design firm Concordia.

Still, there seems to be a new opportunity somewhere between privatizing a prison (and conjuring a more robust model of incarceration that centers on rehabilitation) and redeveloping a prison site for other uses. “There are benefits to prerelease counseling and re-entry training,” says Minnis. “And when this is the focus, you want to build more-normative environments, such as storefronts and halfway houses, which is very different from most of what was built in the expansion.” Minnis and her colleagues in the AAJ will take up this theme in next month’s “Community Dialogue,” a conference to be held in Toronto that will focus on how justice facilities hold up a mirror to the societies that build them.

But in the long view for prisons, adaptive reuse is going to be about social reform as much as it will be about planning reform. Just as most people have the capacity to shift gears, most building types—including prisons—have the potential for reinvention. —Alec Appelbaum **AIA**

➔ To learn more about AAJ’s fall conference, visit [aia.org/aaaj](http://aia.org/aaaj).



# AIAPERPECTIVE

REPOSITIONING THE PROFESSION



PHOTO: WILLIAM STEWART

**WHEN I WAS RUNNING FOR AIA PRESIDENT, I SAID THAT GETTING** the word out about what architects do and how architecture affects everyone had to be among the AIA's highest priorities. A conversation earlier this summer with a member of the national staff underscored the challenge we're up against. Her story also points a way forward. She sang in the chorus that concluded last May's convention program honoring America's "Architects of Healing." In addition to their love of music, the singers, she told me, shared something else: None were or had been trained as architects.

Because their part in the program was at the very end, the singers listened to all the presentations. They heard what the rebuilding of the World Trade Center meant to those playing a part in the healing—the memorial, the museum, the individual buildings, the transportation center, and the overall urban design. Those being honored spoke in personal terms about the creative process that guided their design decisions, and pointed to the larger objective—in the place of darkness and despair, renewed life and hope for a better future.

The narrative that afternoon was not about aesthetic abstractions; those who presented spoke about memory, hope, human needs, compassion, and service. They spoke to the core values of our profession.

As the architects told their stories, the singers snapped pictures with their phones and shared them with friends outside the convention center's ballroom. While they were texting, they were listening carefully, very carefully, to what was being said. I know this because the staff member I spoke to told me that singer after singer came up to her and said: "I had no idea this is what architects do." Here was a very small subset of the larger public, and they were moved to a deeper appreciation of the profession.

What I heard confirmed the importance of the Institute's "repositioning" initiative, launched earlier this year. The goal of this initiative is simply stated but powerful in its implications: to help all

of us hear each other better, talk more effectively with one another, and meaningfully engage with the public as well as our collaborators.

The overwhelming response we received from the initial research phase of this project—over 10,000 people took part in last April's online survey—was a clear indication that AIA members wanted to take a fresh look at how we communicate. How do we make the case for the value of architecture? What makes for effective advocacy in the legislative arena? And what should the Institute look like to help the profession do this?

The task is not to change negative perceptions. Rather, we need to work together to figure out how best to initiate and lead the conversation about the impact and benefits of architecture to clients and society. How we do that describes the next phases of the repositioning project. As this information takes shape, it will be shared for your comments. In the meantime, each of us should seize every opportunity to deliver a message about the importance of architecture, such as the story I heard from the Canadian architect Bing Thom. In a conversation, he spoke about a 9-year-old girl whose parents had brought her to an opening of one of his newest projects. When she walked into the large entry space, she stopped, looked around, and—without prompting, but within earshot of the architect—said, "I want to be an architect."

When we talk about architecture, when we tell our stories, when we show our work, we have an opportunity to share the passion for the good we do each day in our communities. Whatever the scale, these are wonderful stories. They speak to why we joined the profession. They're too good to keep to ourselves. **AIA**

➔ Join our conversation at [aia.org/repositioning](http://aia.org/repositioning).

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# CENTER

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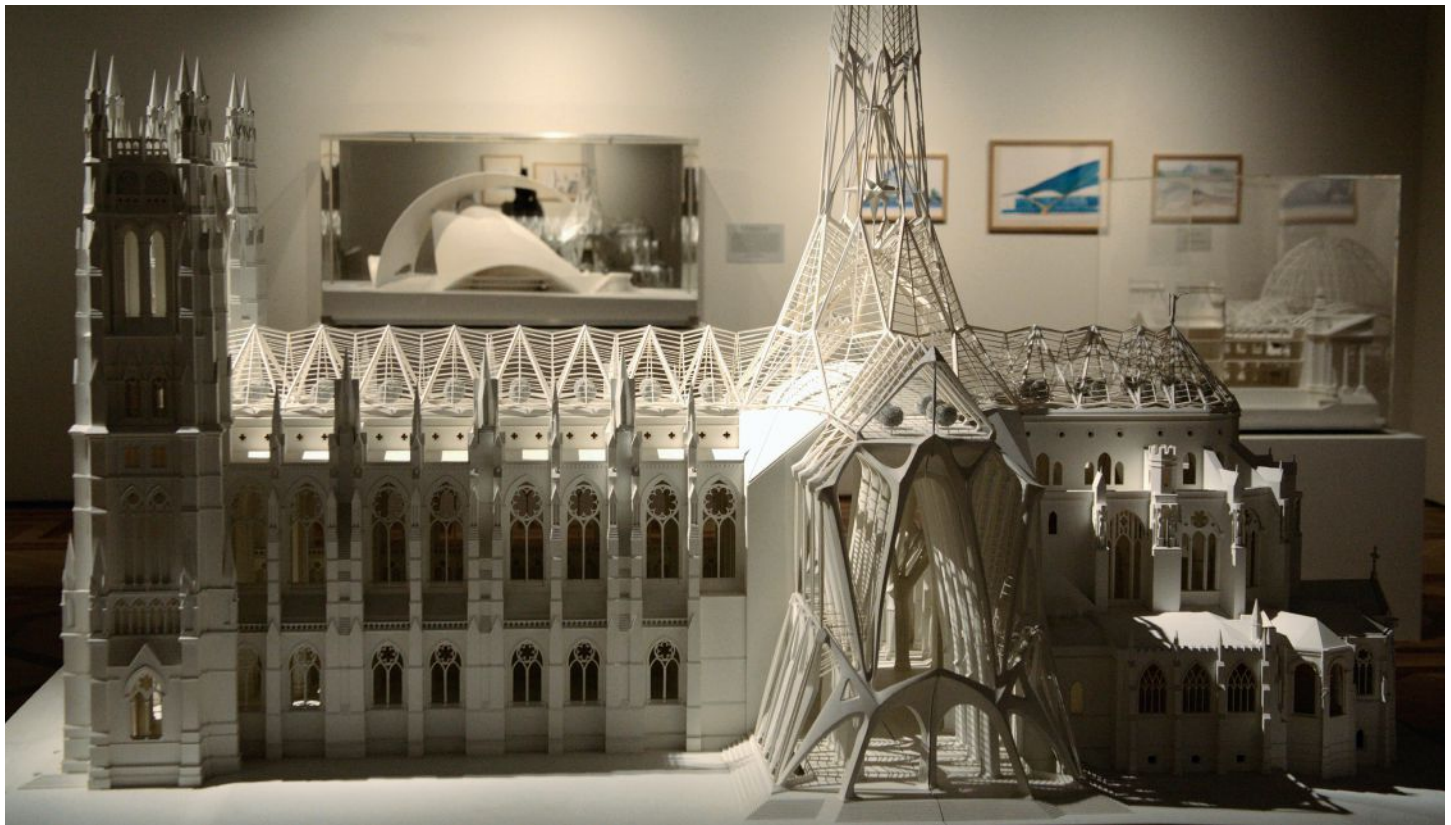
"Pure Geometry," a sculpture from Santiago Calatrava's exhibit in St. Petersburg, Russia.

CRITIQUE

# THE CZAR

THE WORK OF SANTIAGO CALATRAVA FINDS AN OPULENT MATCH IN THE STATE HERMITAGE MUSEUM'S WINTER PALACE IN ST. PETERSBURG, RUSSIA. THERE, AN EXHIBITION OF THE ARCHITECT'S MODELS, DRAWINGS, AND SCULPTURES EXAMINES HIS INVESTIGATIONS OF MOVEMENT AND ORNAMENT—AND REVEALS THE APPROACH TO DESIGN THAT MOTIVATES HIS KINETIC, ORGANIC WORKS.

Text by **Roger K. Lewis, FAIA**



Calatrava donated his model for the Church of St. John the Divine, an unbuilt project for New York, to the permanent collection of the Hermitage, along with several other works.

**PLACING SANTIAGO CALATRAVA'S** work inside Russia's State Hermitage Museum—specifically, inside the Elizabethan Baroque-style Winter Palace, the seat of Russia's czarist Empire—juxtaposes two radically different kinds of architecture. But what a pairing of panache and exuberance. For museum-goers, this unprecedented aesthetic union, between St. Petersburg's ornately wrought Winter Palace and Calatrava's structurally expressive civic projects, is a match made in heaven. For Calatrava's critics, it may seem like the restoration of the czar.

Whatever you think of Calatrava's work, you cannot help being impressed and perhaps seduced by the scope, aesthetic complexity, and extraordinary craftsmanship of the exquisite models installed in the Winter Palace's grand Nicholas Hall. "Santiago Calatrava: the Quest for Movement" is a fitting first contemporary

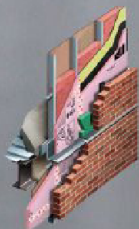
architecture retrospective for the Hermitage. (More are planned.) Indeed, the exhibit's 105 models, sculptures, paintings, and drawings convincingly demonstrate that Calatrava, recipient of the AIA Gold Medal in 2005, is an artistic and technological polymath—architect, structural engineer, sculptor, painter.

Photographs in the exhibit catalog show that Calatrava's railway stations, museums, pavilions, stadiums, and urban towers are all typically monumental in scale and located strategically on sites in or near cities, or, in the case of his bridges, spanning rivers in urban, suburban, and pastoral landscapes. But the exhibit itself does not illustrate context with photographs. Rather, visually and physically dynamic models of Calatrava's built and unbuilt projects fill the galleries. None of the exquisite models, which can be illuminated and put into motion when visitors activate switches, were





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made at Calatrava's Zurich workshop explicitly for the exhibition. Clients lent them.

**OVER AN ENTIRE LIFETIME** of practice, few architects are ever hired to design projects comparable to Calatrava's in scope, budget, visual prominence, or aesthetic potential. During our conversation in St. Petersburg prior to the exhibit's summer opening, Calatrava talked about his work and his process. He acknowledged that he works only for clients, periodically as a result of design competitions, who are strongly committed to acquiring a Calatrava because they love what he does and have the means to pay for it, just as clients hire Richard Meier, FAIA, or Frank Gehry, FAIA, because they admire their aesthetic brands and are willing to buy them. Yet—and this is what so distinguishes Calatrava from his peers—many of Calatrava's clients are public or nonprofit organizations, including government and civic entities. He claims that, notwithstanding perceptions, most of his clients and the projects they sponsor have had "constrained" budgets. Constrained for Calatrava may mean "not unlimited." For most architects, it means something different. Constrained for Calatrava could mean the Winter Palace.

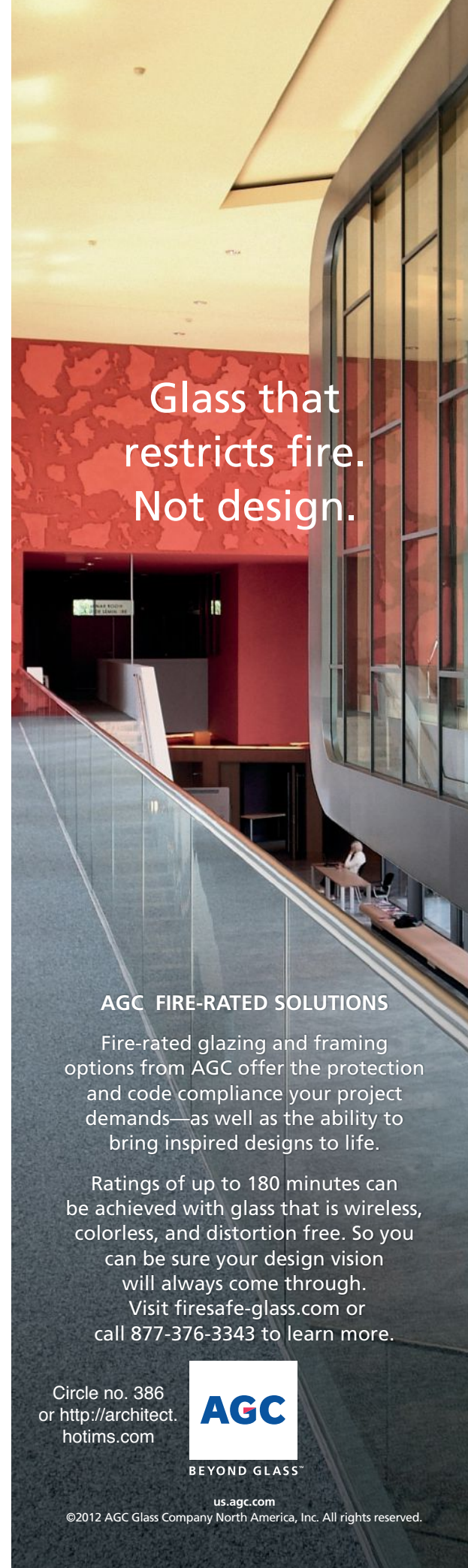
For example, we talked briefly about how he justifies some of his complexly configured, long-span structures, such as the beautifully shaped Liege-Guilleman TGV Railway Station in Liege, Belgium, completed in 2009. The station's soaring, visually powerful column-free span did not need to be completely column-free. He explained that such structures can be justified in part through savings realized by eliminating columns, thereby offsetting the extra expense attributable to roof system complexity. This explanation may convince clients. But architects know that shorter spans with intermediate columns generally cost less than elaborate, long-span roof structures, especially ones that move.

Calatrava stretches credibility when he offers economic justifications for his exotic, technologically sophisticated designs. Any competent civil engineer could design a less expensive, more structurally efficient bridge than a Calatrava bridge. But not any engineer can make a Calatrava—design imagery that has become synonymous with his name. Likewise, given the same site and building program as Calatrava, any competent architect could design a more sustainable project—being green is not a high priority for Calatrava—costing much less and functioning as well as a Calatrava building. But it would not be a Calatrava.

The Quadracci Pavilion addition to the Milwaukee Art Museum, a model of which is in the Hermitage exhibit, demonstrates the costs and benefits of a Calatrava. Designed and



Calatrava sculptures such as "Eye" combine the physical investigation of Kenneth Snelson's tensegrity sculptures with the futurist solutions of Constantin Brâncuși's work.



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## CENTER



A view of the Calatrava exhibit in the Winter Palace's Nicholas Hall, with the model of the World Trade Center Path Terminal, currently under construction, in the foreground. Visible in the background, within the arch, are two egg sculptures: “Almost Spring” (left) and “In Paradise” (right).

built at the edge of Lake Michigan between 1994 and 2001, the pavilion has become an icon for the city. Superimposed on top of the pavilion's sloping glazed roof is a movable sunscreen, known as the Burke Brise Soleil, a curved exoskeleton emulating a bird's paired wings. Comprised of 36 fins and weighing 115 tons, each wing is hinged on an inclined, spine-like axle along the roof centerline, and the two wings can rotate and swing upward. Picture-postcards of the pavilion typically show the wings lifted or in motion through time-lapse photography. The extra cost of this extraordinary sunscreen system undoubtedly ran to seven figures; an equally effective method of solar control would have cost orders of magnitude less. And yet the Quadracci Pavilion's value to Milwaukee is priceless.

**CALATRAVA IS ON FIRMER GROUND** when he sticks to poetic and aesthetic justifications for his work. Artistry of boldly expressed, three-dimensional form, of kinetic composition

offering implied or actual movement, is what he sells successfully. Every remarkable Calatrava bridge or building is unfailingly a giant sculpture rendered in steel, concrete, and glass, and each manifests his personal design philosophy. In fact, seeing the Hermitage exhibition helps to illuminate that philosophy better even than visiting one of his projects. Collectively, the models reveal his primary design motifs and constructional vocabulary.

And among these, organic geometric forms—curvilinear volumes, surfaces, and elements inspired by the natural and structural patterns of animals and plants—are the most apparent. Often in Calatrava's work, symmetrical volumes and spaces are shaped and encompassed by systematized structural skeletons and enveloping surfaces, crafted as grids, lattices, filigrees, and webs. These are assembled rhythmically using nonstandard, sculpted structural members: columns, beams, ribs, fins, braces, bents, buttresses. Tall masts and multiple cables, which marry



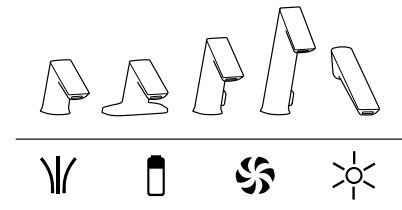
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## CENTER

“Spinning Helmet,” a Calatrava sculpture on display in the exhibit. His work in sculpture merited a stand-alone show at New York’s Metropolitan Museum of Art in 2005.



compression and tension, support and stabilize his structures, frequently with dramatic cantilevers.

Calatrava is fascinated by the way that compressive and tensile forces interact and function in nature, especially in animals. In the human arm, for example, bones (compressive members) work together with muscles, tendons, and ligaments (tensile members), enabling the arm, a long and relatively thin limb, to flex, push, pull, lift, and carry weight; and to rigidly extend straight out from the body. For Calatrava, the arm serves as an organic model suggesting how a large-scale, elegantly proportioned structure could be designed to be load-bearing and stable, yet movable. Similarly, structural characteristics of spines and rib cages, trees, flowers, and seashells suggest how buildings could be shaped and structured.

Limb and spine metaphors are especially apparent in a number of Calatrava’s sculptures on display in the Hermitage exhibit. Seemingly defying gravity, such sculptures—“Beak,” “Cascade,” “Feather”—are stabilized and made

rigid by sometimes invisible rods or wires passing through and firmly connected to the individual segments. Like his project models, Calatrava’s intricately crafted sculptures elicit a “wow”—and then invite closer inspection to understand what keeps them standing.

Tenerife Auditorium, designed and constructed between 1991 and 2003 and among Calatrava’s least rational, most organically symbolic works, solicits the same “wow” by different means. Unlike other edifices on display in the exhibit or pictured in the catalog, the Tenerife’s structure is not legible. No cables, columns, or structural networks appear to be visible. The building is composed to express opacity and mass rather than transparency and skeleton. Cantilevering up and curving outwardly over the collage of rounded volumes enclosing the auditorium is an immense, sharply pointed projection. Like a breaking wave, it hovers threateningly over the complex. Or could it be some creature’s claw or fin? What supports it, and why is it there? The Tenerife design, bizarre as it is, does successfully illustrate one aspect of Calatrava’s “quest for





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movement”: creating visually dynamic forms that don’t actually move.

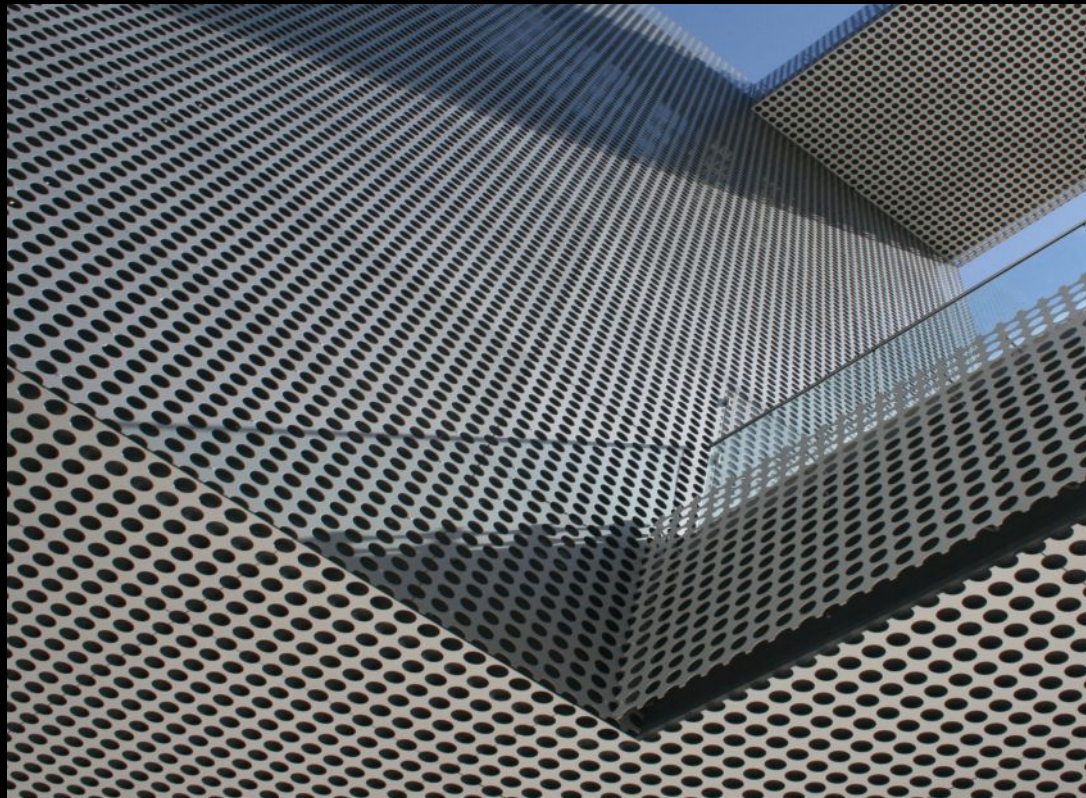
In addition to movement, there is another visual principle in the Hermitage exhibit that characterizes all of Calatrava’s design work: ornament, and its value in making good architecture. Note that he believes profoundly that expressing a building’s inherent structure and structural components, not applying superficial decoration such as that festooning the Winter Palace, is the way to provide all the necessary ornamentation. This is not a new idea. Historic precedents, such as Greek temples and Gothic cathedrals, as well as any number of modern buildings, show how expressed structure can overtly shape architecture. Calatrava said that Ludwig Mies van der Rohe and Eero Saarinen expressed structural patterns and forms: Mies in composing the curtainwalls of the Seagram Building in New York, Saarinen in shaping the Dulles Airport terminal and Yale University hockey rink.

The Hermitage provides few clues about Calatrava’s method of design. When I asked him to describe his approach to a project, he said he visits the project site and talks extensively

with the client. As any good architect does. Then came the answer I sought: Calatrava produces dozens of intuitive gesture sketches—right-brain scribbles and ideograms—made without reference to budgetary objectives or client aspirations. Eventually one appears that captures his fancy, the eureka sketch. Gestating that concept is a job undertaken by his staff, some having been with him for 25 years, who interpret his sketches, nurture the embryonic idea, and generate digital models and drawings that evolve into the final design.

After studying architecture in Spain, Calatrava moved to Zurich, where he earned a Ph.D. in engineering and established his firm. Today his studio and workshop remain in Zurich, although he no longer lives there, for reasons involving a model displayed centrally in the Hermitage exhibit. He and his family reside permanently in New York, allowing him to keep close tabs on his Path Train terminal and transportation center at ground zero. The terminal is still under construction nine years after he designed it. The patience that Calatrava asks of his clients, it would appear, is another of his personal talents.

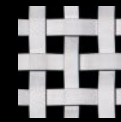
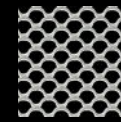
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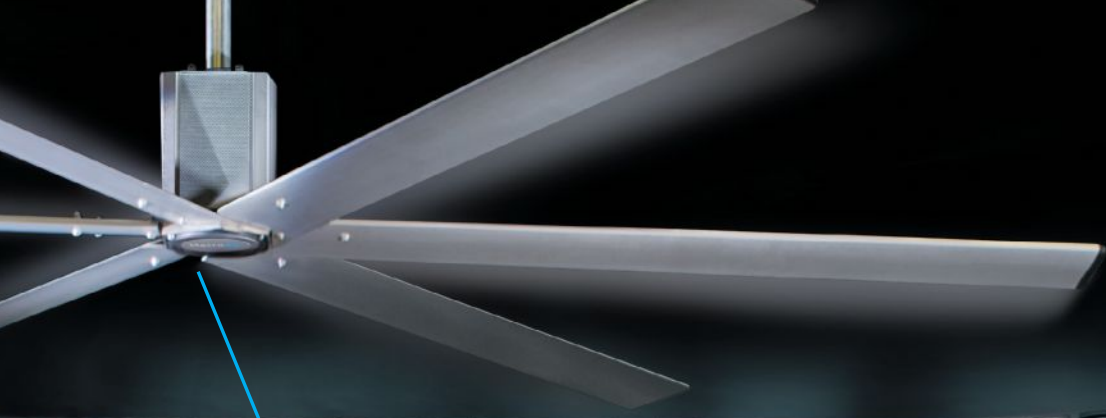
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# DOUBLE WHAMMY

## WOULD THERE BE MORE WOMEN IN ARCHITECTURE IF THERE WERE MORE WOMEN IN DEVELOPMENT?

Text by **Amanda Kolson Hurley**Photo by **Noah Kalina**

Danielle Dignan (left) of DM Development and Anne Fougeron of Fougeron Architecture are an industry rarity: a woman developer and woman architect who are collaborating on a project—a condo-and-retail development in San Francisco's Hayes Valley.

**IT WAS A** brownfield site, an old car dealership in New Orleans's Warehouse District. Five years ago, Angela O'Byrne, AIA, envisioned something more there: a mixed-use, 10-story, carbon-neutral redevelopment, the first of its kind in the city.

She would develop as well as design the project, she decided. Taking on both roles made sense. After all, O'Byrne, president of Perez, a New Orleans-based architectural and engineering firm, had earned a master's in real-estate development at Columbia University and, decades earlier, had developed smaller projects. She also had \$1 million in cash as collateral.

Her architectural, business, and civic bona fides were clear. A past president of AIA New Orleans and founder of the nonprofit City-Works, she was one of the most successful and recognized architects in the city, a Hispanic woman in a profession with no shortage of white men.

Still, the banks weren't inclined to lend her \$40 million for the project, and so she began wooing more established developers, almost all of whom happened to be men. She hit the golf course with one prospect. With another, who had especially good connections in the banking world, she went on an overnight fishing trip. She was the only woman in the group of five—"I didn't even know how to fish," she recalls.

O'Byrne caught the biggest fish ("they were all delighted"), but not the bank loan, despite two years of due diligence. Someone else closed on the property. She is quick to note that her development experience may have been too dated, that she probably hadn't networked long or hard enough with key players. "I had not spent enough time building that network, and then I walked in and wanted to do a [big] deal," she says.



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## COULD THE GREATER INCLUSION OF WOMEN IN REAL-ESTATE DEVELOPMENT FOSTER A MORE INCLUSIVE ARCHITECTURE?

Still, she couldn't help but wonder: Had she lost out because she was a woman?

### The Gender Imbalance

Architecture is a man's game. Only 16 percent of the AIA's membership is female. Forty-nine percent of architecture students and 39 percent of interns are women, but just 17 percent are firm principals and partners, according to a 2012 AIA survey of 2,805 member firms. For some reason, while they're ascending the architectural career ladder, thousands of women hit a glass ceiling, leave the profession, or get pushed out.

Real-estate development suffers from a similar gender imbalance, as O'Byrne discovered firsthand. According to the Commercial Real Estate Women network (CREW), just 30 percent of all development professionals are women. In fact, developers account for only about 4 percent of CREW's 8,000 (mostly female) members around the country and are far outnumbered by lawyers, brokers, and property managers.

Both architecture and development lag behind law, medicine, and accounting in the percentage of women represented in each profession, according to research by Catalyst, a nonprofit that promotes women in business.

There are, of course, prominent women-led architecture firms—including those headed by Julie Snow, FAIA; Andrea Leers, FAIA, and Jane Weinzapfel, FAIA; and Ann Beha, FAIA—all of which have been celebrated for their award-winning cultural and education projects. Yet women architects have had a much harder time landing developers as clients, with Jeanne Gang, FAIA, and her Aqua Tower project in Chicago a notable exception.

Architecture and development are tied together in a close and sometimes uneasy symbiosis. Architects complain that they've ceded the role of master-builder to developers, yet depend on them for work. For developers, the architect is only one performer (albeit a key one) amid a host of contractors. But smart developers know that hiring the right architect can make a project, just as hiring the wrong one can doom it.

Many studies over the years have investigated the gender imbalance in architecture, but few have explored the

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Percentage of architecture firm principals and partners who are women, according to the AIA

potential connections with the male-dominated world of development. Does the prevalence of male developers help perpetuate—subtly or indirectly—the lack of woman architects? Why aren't there more projects led by women developers and women architects? Could

greater inclusion of women within real-estate development, just maybe, foster a more inclusive architecture?

### The Rarest Of Species

As a journalist who has covered architectural practice for several years, I've come across only a handful of women who have been the principal architects on developer projects. It's a stereotype that women architects gravitate toward interiors and custom home design, yet there is also some truth to it, in part because women are often subtly—and not-so-subtly—steered into those specializations.

Bay Area architect Anne Fougerson, FAIA, is, like Gang, one of the few exceptions. Fougerson, who founded her own practice in 1986, recently designed a condo-and-retail project in San Francisco's Hayes Valley for DM Development, headed by Danielle Dignan and Mark McDonald—a project that makes Fougerson that rarest of species: a woman architect who has designed a project for a woman developer. (At press time, the project—called Wavehouse, a joint venture between DM Development and a New York City development firm called DDG Partners—was in CDs.)

Wavehouse was Dignan's first experience working with a female architect as the design lead. She describes Fougerson's architecture as "forward-thinking" and "cutting-edge," and says, "Regardless of whether she was a man or a woman, I would have hired her in a heartbeat."

But she adds, "It's impossible to separate that completely. Here's this fantastic architect doing the exact kind of work we want to do. For me, it's a huge bonus that she's a woman."

Indeed, Dignan clearly grasps the social significance of her collaboration with Fougerson. "I'm glad my daughter gets to see me as the head of a company. If she were a little older, I'd be proud for her to understand what Anne has done, and what we collaborated on. I think role modeling is incredibly important [for young women]."

Social significance aside, such collaborations may also lead to better design work, says Romy Goldman, the founder of Gold Development in New York. Goldman bought land for her first building, in Harlem, in 2005, after a stint consulting for another New York developer and several years at a design/build company in San Francisco, where she ran four projects at a time as a project manager. Her second project at Gold Development was 48 Bond Street, designed by Deborah Berke, FAIA. (The project architect was a woman, too—Chika Yamada of GF55 Associates.)

The idea that women design and respond to spaces differently—that a "feminine architecture" exists, or ought to—remains



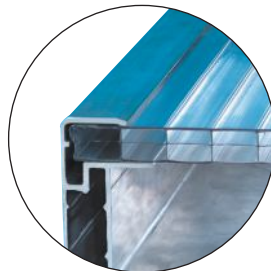
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controversial and difficult to quantify. But Goldman argues that women, because of the attention they tend to give to details that make a place more livable, can make a qualitative difference on a project. Real-estate decisions often come down to stark math: How many units can we fit into this footprint? If there were more women in real estate, "I'm sure we'd have nicer product," Goldman says. For instance, all the bathrooms at 48 Bond have linen closets, which she regards as a selling point; to a male developer, they might seem like wasted square footage.

Yet significant barriers remain for most architects, not to mention women architects, who attempt to land developer projects, says Audrey Matlock, AIA. Matlock designed the Chelsea Modern, an 85,000-square-foot condo building that opened in Manhattan in 2008, for developer client Madison Equities, and also designed the recently sold-out boutique condo at 57 Irving Place, developed by Robert Gladstone. To compete for such work, architects usually need experience designing at the requisite scale. "I believe it's very difficult to make that hurdle into doing larger projects," Matlock says of young architects. "Where do you learn to do them?"

Matlock learned at Skidmore, Owings & Merrill (SOM). During her seven-year tenure at the firm, she also helped with hiring for the design department and made a special effort to recruit female talent. It was tough. "When I'd find someone really good, they wouldn't accept a job," she says. "They saw a big male bureaucracy, and wanted to go somewhere where they'd have more autonomy." Women who shun male-dominated corporate firms, she says, may be inadvertently making it more difficult for themselves to gain the experience they need for developer projects.

That is, if a woman architect is inclined to pursue such projects in the first place. Working for a developer client can entail higher risk than designing for, say, a university or a local government. As the recent recession made clear, when financial markets plunge (or level off), construction financing freezes up, and so can an architect's work. A developer might ask an architect to do preliminary studies for a deal under consideration. Sometimes such work is paid, but sometimes it's not, on the assumption that the architect will be hired if and when a deal is made. The prevalence of spec work, plus higher exposure to the fluctuations of the market, could make developer projects less appealing to designers with certain personality types or personal circumstances—having a young family to support, for instance.

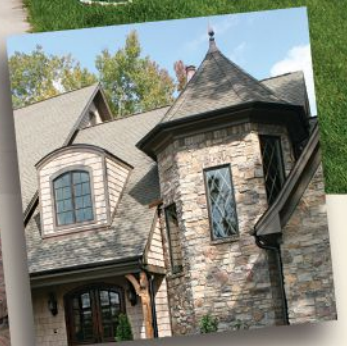
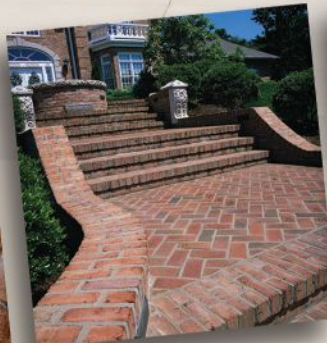
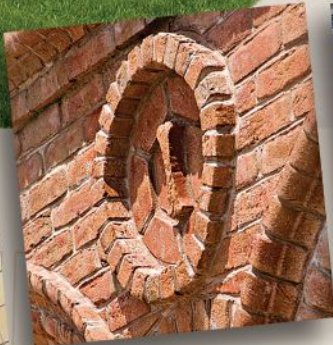
Plenty of critics may question gender-based paradigms, but a number of academic



The percentage of architecture firms that are locally or state-recognized women-owned businesses, according to a 2012 survey of AIA-member firms



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The percentage of all commercial real estate professionals in the United States who are women, according to CREW

studies have found that women are, on the whole, more risk-averse than men. (One commonly cited study with that finding, "Gender Differences in Risk Taking," was published in 1999 in *Psychological Bulletin*.) Development work may favor "certain personalities" better than others, as Romy Goldman puts it. "[You're] on a jobsite with all men; it's dirty; you're not dealing with a formal environment. You have to be very comfortable with risk and the unknown, because that's what it is on a daily basis," she says. Danielle Dignan, for instance, notes that she has always been drawn to high-risk, high-reward pursuits: As a licensed Coast Guard captain, she used to race boats in San Francisco Bay. And though she's hesitant to suggest a correlation, she can't help but wonder if some women are put off by the risk inherent in development.

More important may be the question of access to capital. Abby Hamlin, president of Hamlin Ventures in New York, argues that there's a stubborn cultural bias against lending women money to build, on the assumption that it's "not what women do." There's evidence to

back up the assertion that women have a harder time securing financing. The Ewing Marion Kauffman Foundation, a Kansas City-based nonprofit that supports entrepreneurship, released a study this year titled "A Rising Tide," which was based on a nationwide survey. The study found that men who started businesses raised, on average, about 80 percent more capital in their first year than women did, and were more willing or more able to raise funding from external sources.

There's also the question of the glass ceiling that women face in development. Studies by CREW do report increased gender diversification at real-estate companies, including in development roles. The growing number of women graduates from Master of Real Estate Development (MRED) programs is creating an important pipeline: 30 percent of current MRED students at Columbia University, for example, are women.

But women still are having a difficult time moving up the ladder, much like their counterparts at architecture firms. According to a 2010 CREW study, women are well

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## IF WOMEN AREN'T BECOMING DECISION-MAKERS AND EQUITY-HOLDERS, THEY CAN'T ACT AS INFLUENTIAL MENTORS

represented in junior level development positions, but become scarcer with each step up the pay scale, representing just 9 percent of C-level employees. Women rarely rise to senior executive positions at large real-estate firms—making it difficult for them to gain the experience necessary to strike out on their own.

### Fixing The "Diversity Problem"

If women aren't becoming decision-makers and equity-holders, they can't act as influential mentors. If women entrepreneurs struggle to get financing—whether for a business or a building—they're less likely to strike out on their own as architects or developers, and those who do so could be more vulnerable to market fluctuations.

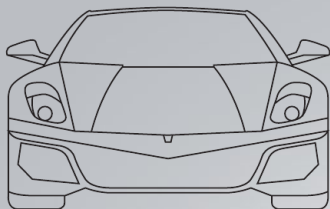
Some of the giants of commercial real estate, such as Forest City Enterprises, have gone public about trying to fix their "diversity problem" by redoubling their recruiting efforts and promoting networking opportunities and workshops that can help recruits make important connections.

Assuming that the development industry can make progress in retaining and promoting mid-career women—a big if—today's pipeline of aspiring female developers could grow and gain better access to capital than ever before. That's good news for women architects. Even if these new developers are largely gender-blind when hiring architects, their arrival would be a wake-up call for design-firm leaders: Retain and promote women designers, or risk losing out to the competition.

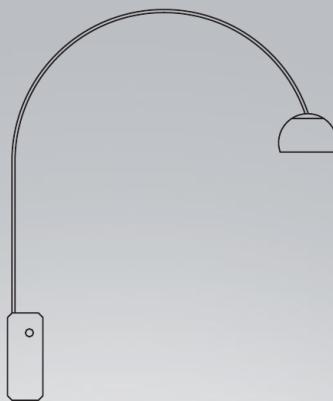
People often feel more comfortable working with others who are like them, notes Rena Klein, FAIA, a management consultant to architects. "Part of the business case for gender diversity in [architecture] firms is that we are going to be seeing more diversity among our clients."

In New Orleans, Angela O'Byrne isn't waiting for that to happen. Still eager to develop her own projects, she's trying again—with one difference. She has hired a male developer with 30 years of experience. "We're going to hatch all sorts of plans," she says. "I figure he will get the financing more easily than I will. He'll be the face of the project."





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Text by Aaron Seward



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2. Describe the building performance benefits of SIPs.
3. Describe the construction benefits of SIPs.
4. Describe how SIPs contributed to the energy performance of the three project case studies.

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**ON THE SURFACE**, a structural insulated panel (SIP) looks quite humble, resembling little more than an oversized ice cream sandwich. However, the engineered building product—which comprises little more than an insulating foam core adhered to two structural facers—can be the key for any architect looking to build a high-performance project on a tight schedule. And, in many cases, a designer doesn't have to sacrifice aesthetics in favor of efficiency.

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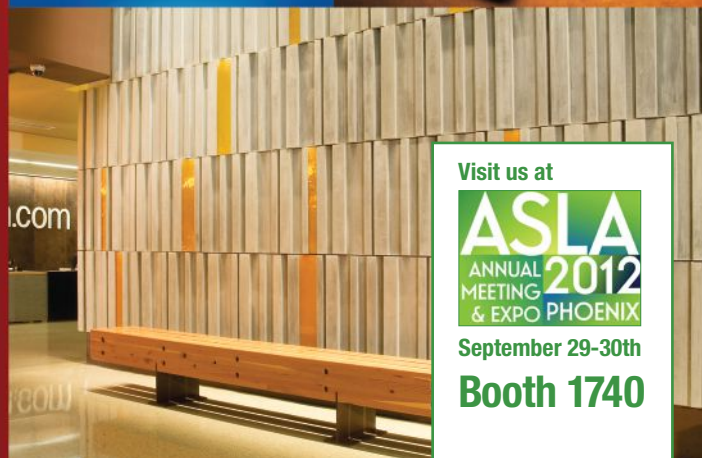
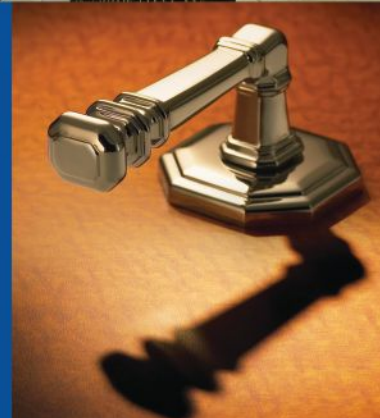
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completely flat systems that are void of the bends and bows that can encumber wood studs. The panels, capable of handling about 10 pounds per square foot (psf) of dead loads and live loads of up to 70 psf, can also be used in roofs and floors, spanning as much as 18 feet without the need for additional structural support.

In spite of these benefits, SIPs have not made significant headway into the framing market. Lumber has remained relatively cheap—between \$15 and \$30 per square foot—and framers aren't all that expensive either. The system's extra up-front cost—up to 20 percent higher than lumber—doesn't help make SIPs an easy sell. "It's not a product you see, so it's not like upgrading to beautiful cabinets," says James Hodgson, general manager of SIP manufacturer Premier Building Systems.

But as the conversation in the building industry turns from initial costs to long-term value, SIPs are garnering more attention from the industry. "The system is a high-performance envelope that will save utility dollars and create a more comfortable environment," Hodgson says. "Now it's becoming more prevalent due to environmental concerns, the reduction of the

carbon footprint, and the rising cost of energy sources." Even in today's uncertain housing market, the SIP industry remains strong. A survey conducted by the Structural Insulated Panel Association (SIPA) in 2011 found that the overall production of SIPs had dropped 4 percent, less than half of the 8.5 percent drop in the number of single-family housing starts, the industry's primary market segment.

Unlike wood or metal studs, which can cause thermal bridging, SIPs are continually insulated walls. They exhibit greater heat resistance and less air infiltration than stick framing with fiberglass batt insulation. According to SIPA, an Oak Ridge National Laboratory study determined that a typical room constructed with 4-inch-thick SIP walls rated at R14 outperformed a similar room built with 2x6 stick-framed walls with R19 fiberglass insulation. Blower door tests revealed that the SIP room was five times more airtight than its stick-framed counterpart—a meaningful metric, considering that as much as 40 percent of a building's heat loss is attributed to air leakage.

Manufacturing SIPs also uses resources efficiently. OSB comes from fast-growing, underutilized, and less valuable trees than are required for dimensional lumber. EPS consists





mostly of air; only 2 percent of the foam is plastic, which can be recycled. Since SIPs come to the jobsite in precut panels that are custom fit to the project, the wastes associated with stick-frame construction are eliminated, leaving almost nothing in the framing process to be trucked to the landfill.

However, before specifying SIPs on their projects, designers should consider several erection and performance issues. While SIPA estimates that a construction team familiar with the system can erect a project in half the time it takes to put up a stick-framed building, workers unfamiliar with the system may be slower. "If this is the first time you're going to erect with SIPs, there is a learning curve," Hodgson says. "It adjusts the way trades work—you're not bringing in a person to cut holes through studs, because the chases are already there. There's no insulation application."

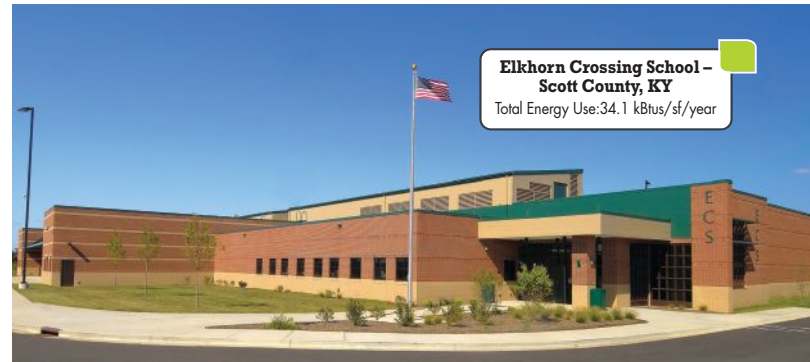
In addition, project design teams must take extra measures to manage air quality and moisture levels in a SIP building. The highly insulated and tight envelope creates an interior condition similar to that of a walk-in cooler; while the enclosure will maintain constant temperatures well, it also needs

The design for Finn Hill Middle School uses a 16-foot SIP module, which also created a uniform approach for Mahlum Architects to size the facility's classrooms.

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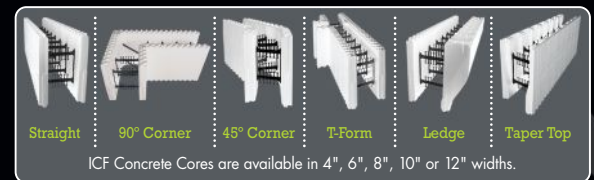
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## CENTER

a robust air-exchange system to keep the atmosphere fresh and reasonably dry. For this reason, SIPA recommends that designers work with qualified HVAC professionals to ensure that the used air—which can contain moisture, fumes from adhesives, and particulates—is exhausted properly during occupancy.

The reasons for specifying SIPs and the benefits for designing and constructing with SIPs can vary widely, as the following three projects illustrate.

### San Luis National Wildlife Refuge Complex

Located in the northern San Joaquin Valley in a vast tract of wilderness outside Los Banos, Calif., the U.S. Fish and Wildlife Service's (USFWS) San Luis National Wildlife Refuge Complex encompasses nearly 45,000 acres of wetlands, grasslands, and riparian habitats, as well as more than 90,000 acres of conservation easements on private lands for the protection and benefit of wildlife. The USFWS wanted to build a new visitors center for the refuge as well as relocate its existing office nearby to the preserve. The agency hired Arizona firm Catalyst Architecture to design the nearly 17,000-square-foot facility, which the agency required to target net-zero energy and LEED Platinum certification.

Catalyst employed a 55-kilowatt, roof-mounted photovoltaic array that—when used

in combination with passive solar measures, strategic use of natural light, energy-efficient mechanical systems, and LED task lighting—delivered a building that goes beyond net-zero energy into net-positive territory by returning more energy to the grid than it consumes.

The project features 12-inch-thick SIPs for the exterior walls and 8-inch-thick SIPs for the flat and sloped roofs. Each panel comprises 7/16-inch OSB facers sandwiching EPS foam. The resulting building envelope achieves an insulation value of R30, which helped the project meet its sustainability target. Catalyst clad some portions of the envelope with weathering steel panels and others with plaster on lathing backed with felt to prevent water infiltration.

The use of SIPs on the project did not come without its complications. In order to open up the facility to views of the wildlife conservation areas, the architects had to orient the building on a north-south axis. As a result, the building's east and west elevations are the longest, a less-than-ideal orientation for controlling solar heat gain. To solve this problem, the designers minimized the amount of glazing on those walls, which are topped with north-facing roof monitors to bring ample indirect natural light into the interior. Not coincidentally, the sloped surfaces of the roof monitors create an ideal south-facing platform for photovoltaic arrays.



To capitalize on views, Catalyst Architecture oriented the San Luis National Wildlife Refuge Complex on a north-south axis, but limited glazing on the longer elevations.



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## CENTER



Finn Hill Middle School employs SIPs in its walls and roofs, creating a tight building envelope that helped the school become 47 percent more energy efficient than targets set by the U.S. Department of Energy's Energy Star program.

The serrated building profile posed problems for the SIP construction. The facility's wall and roof monitors created extra on-site sizing and customization that essentially negated potential efficiencies in erection time. "What we've learned from working with SIPs is that you want to eliminate or reduce the number of jigs and jogs in the envelope," says Catalyst partner Matthew Ackerman, AIA. "In our experience, they're more suited for boxier buildings."

Compounding the complexity of the envelope, the building required additional structural bracing to meet seismic load requirements; the site is located in a liquefaction zone adjacent to a major fault line. The construction team had to carve channels through the SIPs on site to thread steel beams throughout the structure.

"That was a coordination issue," Ackerman says. "If we had been more aware of how SIPs worked, that coordination would have fallen in our lap before it became a problem on site. SIPs were still an excellent choice, given the client's goals; it just takes understanding the product and what its limitations are."

### Finn Hill Middle School

In Kirkland, Wash., the Lake Washington School District wanted to replace Finn Hill Junior High School's multibuilding facility with one single-story building that would become Finn Hill Middle School. The district challenged Seattle-based Mahlum Architects to deliver a new 116,000-square-foot facility capable of accommodating 750 students on the same site as the existing facility.



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Logistically, construction on the new facility would have to wait until after the old school was demolished. Then the project would have to be completed in its entirety within one summer break. The district also wanted the new school to further its goal of becoming the most energy-efficient school

district in the state. These goals led Mahlum to specify SIPs.

To optimize construction efficiency, Mahlum based its design on a 16-foot SIP module, a height that the panels can span without requiring additional structural bracing. The one exception was the school gym's high

ceilings, which called for additional metal-stud support embedded in the walls.

The 16-foot module also created a uniform approach to sizing the classrooms. "One of the cool things about the SIP design process is that you get shop drawings for whole building," says Anjali Grant, AIA, Mahlum's project architect. "It all comes out numbered and panelized. You can see the entire building laid out and see how it will arrive on site."

Given the Pacific Northwest's wet climate, water intrusion was a major concern. "If there is moisture, you don't want it trapped at the sheathing plane," Grant says. "Rainscreens and air barriers are appropriate when cladding this system." Mahlum specified a fluid-applied-membrane air-barrier system clad with painted fiber cement board and concrete masonry units.

Finn Hill's tight envelope helped the school to be 47 percent more energy efficient than targets set by the U.S. Department of Energy's Energy Star program. The facility is set up to be net-zero energy; currently, it is outfitted with 1,452 photovoltaic panels that generate 42 percent of the school's energy needs. The facility has a south-facing roof area that can accommodate more panels to generate the balance of the school's electrical consumption in the future.

#### Chicago Parks District Field House Prototype 1

While OSB SIPs currently dominate the commercial and residential markets, precast-concrete SIPs, which were first produced in the 1960s, are making headway in the industry. Though they employ the same insulating material—typically EPS—as their OSB counterparts, precast SIPs can be used architecturally as well as structurally. They also offer a durability ideal for high-traffic projects, such as public facilities and schools.

"It carries loads, creates a good durable finish, doesn't burn or mold, and the insulation gives you high R-values," says Brian Miller, managing director of business development at the Precast/Prestressed Concrete Institute (PCI), an industry organization based in Chicago. Precast SIPs also possess thermal mass, he says, allowing them to absorb and release energy slowly. While offering R-values similar to those of OSB SIPs, the precast panels' combination of thermal mass and insulation creates a high-performance wall system that can create up to 25 percent savings on heating and cooling costs, according to PCI.

Chicago-based architecture firm Booth Hansen chose precast concrete SIPs for its design of a field-house prototype for the Chicago Parks District, which mandated that the project achieve LEED Silver certification. The 18,000-square-foot facility—designed

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The percentage of potential energy savings generated by building with SIPs due to reduced heating and cooling loads

with the potential to expand another 12,000 square feet—contains administrative and support functions, a gymnasium, and several fitness rooms.

One challenge that the designers faced in using precast SIPs for this project was the looming wall heights—up to 31 feet in the gymnasium. In order to provide adequate structural support within the panels to manage the walls' dead loads, the SIPs were fabricated with concrete-composite ribs that tie together the exterior and interior concrete wythes. Because concrete is a poor thermal conductor, the risk of thermal bridging due to the connectors is not significant.

On the other hand, using precast SIPs allowed for fast erection times—even faster than those possible with conventional OSB SIPs; not only can the structure's precast envelope and insulation be installed in one fell swoop, but precast SIPs can also be prefabricated with interior and exterior wall finishes already applied. The concrete can be molded to resemble brick, wood grain, or nearly any texture the designer can imagine. It can also be embedded with finishes such as brick veneer.

At the Field House Prototype 1, the exterior finish of the precast SIPs is exposed concrete with aggregate; form liners created articulated shadow lines, adding texture and a sense of permanence that is appropriate to a civic building. The finished interior wall, also exposed concrete, provides durability and eliminates the need for painting.

#### Saving Energy and the Environment

Structural insulated panels offer yet another instrument in a designer's toolkit to create high-performance, economically efficient, and environmentally sensitive buildings. Along with creating tighter envelopes than are possible with traditional stick framing, SIPs combine the reliability of an engineered product complete with the waste-reducing benefits of prefabrication.

With the proper coordination and experience among the design and construction teams, SIPs can also lead to significant time savings on site and become a source of long-term energy savings—no small feat for today's budget- and eco-conscious clients.







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# QUIZ

**1. Which of the following materials can be incorporated into structural insulated panels (SIPs)?**

- a. Expanded polystyrene
- b. Extruded fiberglass
- c. Oriented strand board
- d. Precast concrete
- e. Gypsum board

**2. The benefits of prefabricating SIPs include:**

- a. The potential for an expedited construction and assembly process.
- b. Installer certification programs.
- c. Reduced wholesale cost.
- d. Reduced material waste.

**3. What is one hindrance to greater adoption of SIPs?**

- a. Initial cost
- b. Installation cost
- c. Prohibitive building codes
- d. Insufficient use in the industry

**4. Building performance benefits of SIPs include:**

- a. Increased thermal bridging.

- b. Greater heat resistance.
- c. Reduced risk of water damage.
- d. Significantly more airtight construction.

**5. True or False: Though a construction team familiar with the SIP system can erect a project in half the time it takes to erect a stick-framed building, workers unfamiliar with SIPs may be slower.**

**6. True or False: Construction with SIPs can be extremely airtight to the point that architects should consult HVAC professionals to ensure that air is exhausted properly during occupancy.**

**7. The San Luis National Wildlife Refuge (SLNWR) Visitors Center uses SIPs for both \_\_\_\_\_ and \_\_\_\_\_, resulting in an envelope that achieves an insulation value of R30.**

- a. foundation walls
- b. exterior walls
- c. roofing
- d. flooring

**8. Two of the challenges and design considerations related to specifying SIPs at the SLNWR Visitors Center include:**

- a. Seismic loading required channels through the SIPs for steel bracing.
- b. The building design had to be rectilinear rather than curved.
- c. The building had to be oriented on a north-south axis.
- d. The roof slope had to be decreased to incorporate SIPs.

**9. True or False: The tight construction schedule for Finn Hill Middle School discouraged architects from using SIPs.**

**10. Precast concrete SIPs can be used architecturally and structurally. Identify other benefits described in relation to the Field House Prototype 1 project:**

- a. Precast SIPs have a high thermal mass.
- b. Precast SIPs can be installed with wall finish already applied.
- c. Precast SIPs can be erected even faster than conventional OSB SIPs.
- d. All of the above.



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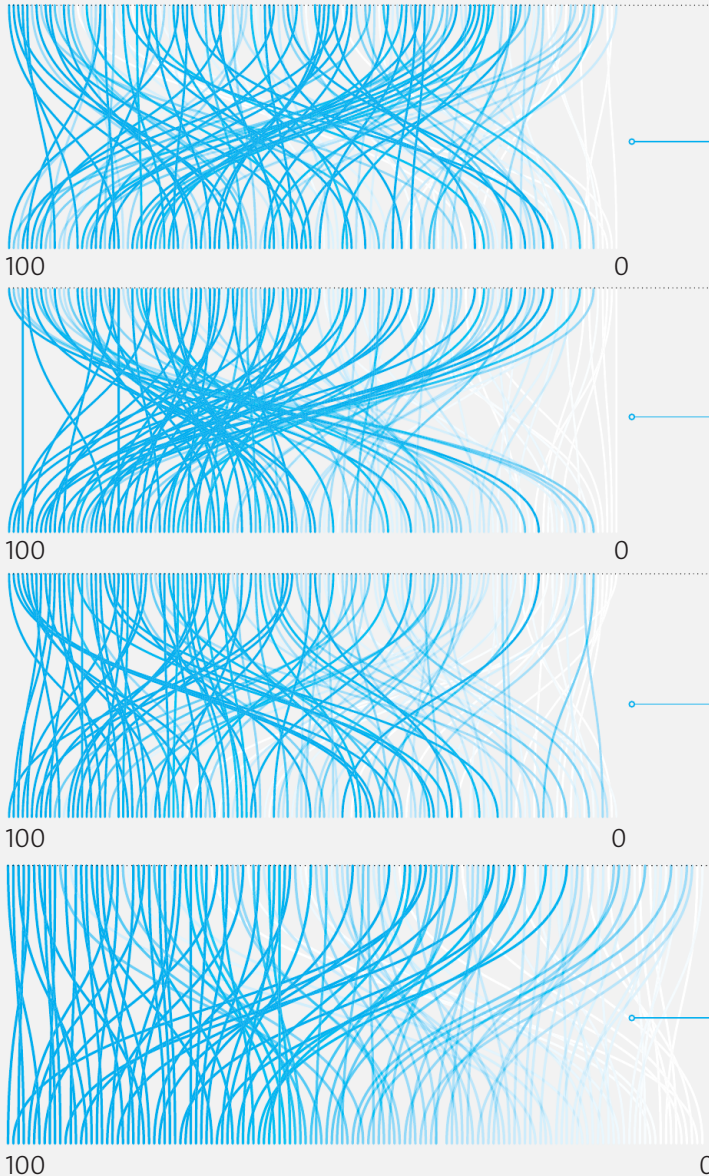
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# THE ARCHITECT 50

THEY ARE THE POWERFUL AND THE PHILANTHROPIC, THE TALENTED AND THE PROFITABLE. OUR FOURTH ANNUAL RANKING OF U.S. ARCHITECTURE FIRMS ANSWERS THE QUESTION: WHO HAD THE BEST YEAR?

Text by **Eric Wills and Kermit Baker**  
Infographics by **Catalogtree**

## THE METHODOLOGY ...



How do we determine who makes the list? Each year, ARCHITECT makes an open call for submissions and sends direct invitations to firms that have requested entries or participated in the past. This cycle, 134 firms submitted valid entries for the 46-question survey, providing data from the 2011 fiscal year. Because the data is self-reported, we check for consistency, identify outliers, and check the facts. Karlin Associates LLC, a third-party research firm based in New York City, compiled the ranking and assured the confidentiality of the data.

### OVERALL SCORE

The overall ranking is based on scores in three separate categories: business, sustainability, and design excellence/pro bono. Questions in each category are formulated in consultation with industry experts and practitioners. Each question is assigned a weight based on its perceived importance and on the distribution of firm responses. Firms earn points per question based on how well they perform relative to their counterparts. The three categories are then scored separately. (A possible score of 100 is assigned to each category based on a firm achieving a perfect score in all of the component questions.) The scores from the three categories are then added up to produce a final tally for each firm. That number is then normalized, with the top firm scoring 100.

### BUSINESS SCORE

The financial category straightforwardly measures a firm's net revenue per employee and change in net revenue from fiscal year 2010.

### SUSTAINABILITY SCORE

The sustainability category measures the percentage of a firms' projects that are LEED certified or designed to LEED standards; that are certified in other design programs, such as Energy Star and Living Building Challenge; that pursued a potable water-use reduction target beyond what is mandated by code; and that incorporated energy modeling, with firms earning extra credit for collecting energy data and investigating discrepancies with the model. Other data points included the percentage of employees with LEED AP and GA credentials; a firm's commitment to sustainability in its own office, such as having a timeline for purchasing 100 percent green power; and participation in the AIA's 2030 program, including the percentage of overall gross square footage designed to 2030 standards.

### DESIGN EXCELLENCE/PRO BONO SCORE

The design excellence and pro bono category measures the awards won by firms, including AIA and ARCHITECT magazine awards, as well as their commitment to pro bono work, measured by participation in Public Architecture's 1% program as well as the percentage of billable hours that were dedicated to pro bono work. Other data points include the percentage of repeat clients, employee benefits such as a defined pension plan and paid family leave, and the scope and range of employees' civic engagement as university professors and board and commission members.



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**Practice Makes Perfect**

Let's be clear: Ranking architecture firms is equal parts art and science. We refine our methodology every year. But the goal of the ARCHITECT 50 remains the same: to reward accomplishment according to the broadest possible criteria.

The list is designed to celebrate practices of all kinds—practices that are as adept with building technology as they are in business, that can win design awards and also give back

to their communities. Indeed, for the first time, this year we included pro bono work and water modeling in the survey. Given the impact that the economy, natural disasters, and drought are having around the country, how firms stack up in those categories seems especially relevant.

The overall winner? A big hand for DLR Group, which drew raves in 2011 for its Joplin Interim High School in tornado-ravaged Kansas.

Other firms that excelled: RBB Architects topped the business category; Westlake Reed

Leskosky ranked first in sustainability; and perennial list-maker Skidmore, Owings & Merrill led the design/pro bono category. Pei Cobb Freed & Partners, meanwhile, was the biggest mover, finishing 5th after missing the top 50 last year. And Frank Harmon Architect showed that firms with only a handful of employees can compete with big multinationals.

We hope this year's list will inspire energetic debates. Dig into the numbers. And don't be afraid to tell us what you think.

**THE LIST ...**

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OVERALL SCORE 100.00

RANK IN EACH CATEGORY

**Business: 41st****Sustainability: 11th****Design/Pro Bono: 5th**

DLR Group's Marysville Getchell High School in Washington state won a James D. MacConnell Award, which honors leading educational design. The firm worked pro bono on an education and Olympic training facility in Kenya.

**2. WILLIAM RAWN ASSOCIATES**

Boston

OVERALL SCORE 99.98

RANK IN EACH CATEGORY

**Business: 4th****Sustainability: 4th****Design/Pro Bono: 81st**

One of the list's smaller firms, William Rawn boasted strong financials and won an AIA Housing Award for Northeastern University's Building F.

**3. HOK**

St. Louis

OVERALL SCORE 99.21

RANK IN EACH CATEGORY

**Business: 25th****Sustainability: 25th****Design/Pro Bono: 4th**

HOK has partnered with the USGBC to build a LEED-certified orphanage and children's center. The firm's King Abdullah University of Science and Technology building in Saudi Arabia won multiple awards.

**4. ZIMMER GUNSUL FRASCA ARCHITECTS (ZGF)**

Portland, Ore.

OVERALL SCORE 99.12

RANK IN EACH CATEGORY

**Business: 49th****Sustainability: 10th****Design/Pro Bono: 2nd**

ZGF excelled in the design/pro bono category, winning an AIA Interior Design award for the John E. Jaqua Center for Student Athletes at the University of Oregon.

**5. PEI COBB FREED & PARTNERS ARCHITECTS**

New York

OVERALL SCORE 96.22

RANK IN EACH CATEGORY

**Business: 20th****Sustainability: 13th****Design/Pro Bono: 21st**

Pei Cobb Freed was honored with the AIA's 25-Year-Award for the Hancock Tower, Henry Cobb's profoundly influential contribution to Boston's skyline.

**6. WESTLAKE REED LESKOSKY**

Cleveland

OVERALL SCORE 95.39

RANK IN EACH CATEGORY

**Business: 59th****Sustainability: 1st****Design/Pro Bono: 27th**

Westlake Reed Leskosky is collaborating with Farshid Moussavi on the Museum of Contemporary Art in Cleveland, and is also developing a public website to showcase its projects' predicted versus actual energy usage.

**7. SKIDMORE, OWINGS & MERRILL**

New York

OVERALL SCORE 93.13

RANK IN EACH CATEGORY

**Business: 16th****Sustainability: 62nd****Design/Pro Bono: 1st**

SOM was awarded the Gold Medal in Architecture by the National Arts Club, honoring the firm's 75-year portfolio of iconic buildings.

**8. PAYETTE**

Boston

OVERALL SCORE 92.61

RANK IN EACH CATEGORY

**Business: 24th****Sustainability: 6th****Design/Pro Bono: 41st**

Payette won a SCUP/AIA-CAE award for Brandeis University's Carl J. Shapiro Science Center, and did pro bono work for the Sustainable Healthcare for Haiti project.

**9. SMITHGROUPJJR**

Detroit

OVERALL SCORE 91.52

RANK IN EACH CATEGORY

**Business: 64th****Sustainability: 15th****Design/Pro Bono: 10th**

SmithGroupJJR, AIA Arizona's Sustainable Firm of the Year, was lauded by the Urban Land Institute for its design of Chandler City Hall in Arizona.

**10. CANNON DESIGN**

Grand Island, N.Y.

OVERALL SCORE 90.93

RANK IN EACH CATEGORY

**Business: 42nd****Sustainability: 30th****Design/Pro Bono: 8th**

Cannon Design converted the Power House, a historic St. Louis building, into the firm's own award-winning LEED Gold-certified office space.



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# BUILDINGS THAT PERFORM LIKE TREES.

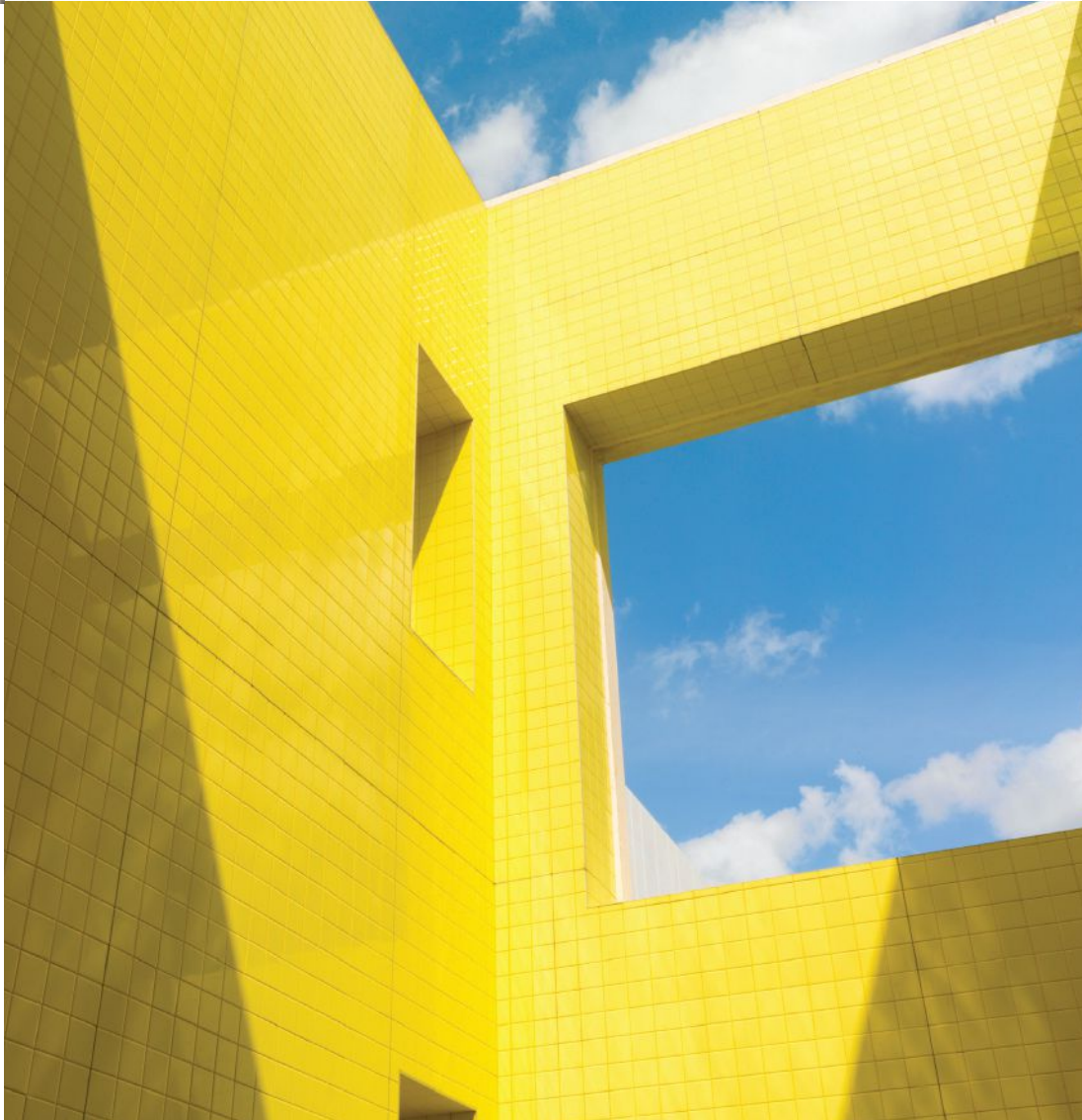
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**11. HDR ARCHITECTURE**

Omaha, Neb.

OVERALL SCORE **90.92**

RANK IN EACH CATEGORY

**Business: 23rd****Sustainability: 46th****Design/Pro Bono: 9th**

HDR's pro bono group Design 4 Others, with more than 100 volunteers firmwide, works on critical-needs facilities for poor communities.

**12. KAPLAN MCLAUGHLIN DIAZ ARCHITECTS (KMD)**

San Francisco

OVERALL SCORE **90.29**

RANK IN EACH CATEGORY

**Business: 5th****Sustainability: 22nd****Design/Pro Bono: 94th**

KMD designed the Bertschi School Living Science Building in Seattle as a pro bono research project for the Living Building Challenge.

**13. CENTERBROOK ARCHITECTS AND PLANNERS**

Centerbrook, Conn.

OVERALL SCORE **89.80**

RANK IN EACH CATEGORY

**Business: 19th****Sustainability: 43rd****Design/Pro Bono: 14th**

Centerbrook won multiple awards for its restoration and expansion of the Addison Gallery of American Art at the Phillips Academy in Andover, Mass.

**14. PERKINS+WILL**

Chicago

OVERALL SCORE **89.43**

RANK IN EACH CATEGORY

**Business: 51st****Sustainability: 31st****Design/Pro Bono: 6th**

Perkins+Will demonstrated its commitment to sustainability with its new Atlanta offices, designed as a green laboratory.

**15. PEARCE BRINKLEY CEASE + LEE**

Raleigh, N.C.

OVERALL SCORE **89.12**

RANK IN EACH CATEGORY

**Business: 32nd****Sustainability: 31st****Design/Pro Bono: 80th**

Pearce Brinkley Cease + Lee had good showings in the business and sustainability categories, winning a COTE award for the Park Shops at NC State University.

**16. BNIM**

Kansas City

OVERALL SCORE **87.45**

RANK IN EACH CATEGORY

**Business: 118th****Sustainability: 8th****Design/Pro Bono: 3rd**

BNIM earned the AIA Architecture Firm Award, which honored its pioneering work in, and continued dedication to, sustainable building practices.

**17. FRANK HARMON ARCHITECT**

Raleigh, N.C.

OVERALL SCORE **87.34**

RANK IN EACH CATEGORY

**Business: 103rd****Sustainability: 7th****Design/Pro Bono: 12th**

Smaller firm Frank Harmon excelled in the design category, winning awards for its pro bono JC Raulston Lath House at NC State University.

**18. HGA ARCHITECTS AND ENGINEERS**

Minneapolis

OVERALL SCORE **85.46**

RANK IN EACH CATEGORY

**Business: 47th****Sustainability: 26th****Design/Pro Bono: 22nd**

HGA won awards for such projects as the Minnesota Zoological Garden, Target Field in Minneapolis, and the Napa Valley College Performing Arts Center.

**19. MARK CAVAGNERO ASSOCIATES ARCHITECTS**

San Francisco

OVERALL SCORE **85.41**

RANK IN EACH CATEGORY

**Business: 31st****Sustainability: 49th****Design/Pro Bono: 16th**

Mark Cavagnero's renovation of the 1969 Oakland Museum of California won a Chicago Athenaeum Museum International award.

**20. RNL**

Denver

OVERALL SCORE **83.79**

RANK IN EACH CATEGORY

**Business: 76th****Sustainability: 5th****Design/Pro Bono: 46th**

RNL scored well in

## HOW DID YOUR FIRM'S NET REVENUE CHANGE IN 2011 COMPARED TO 2010?

HOW THE TOP 50 FIRMS RESPONDED



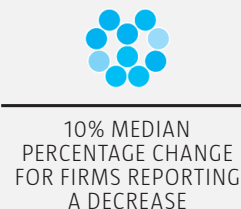
28% SAID DECREASE



6% SAID NO CHANGE



66% SAID INCREASE



10% MEDIAN PERCENTAGE CHANGE FOR FIRMS REPORTING A DECREASE



12% MEDIAN PERCENTAGE CHANGE FOR FIRMS REPORTING AN INCREASE

sustainability, winning a COTE award for its Research Support Facility at the National Renewable Energy Laboratory.

**21. EINHORN YAFFEE PRESCOTT ARCHITECTURE & ENGINEERING (EYP)**

Albany, N.Y.

OVERALL SCORE **83.15**

RANK IN EACH CATEGORY

**Business: 67th****Sustainability: 20th****Design/Pro Bono: 25th**

EYP boasted multiple education projects, such as the LEED Gold Integrated Science Complex at the College of the Holy Cross.

**22. EHDD**

San Francisco

OVERALL SCORE **82.61**

RANK IN EACH CATEGORY

**Business: 69th****Sustainability: 2nd****Design/Pro Bono: 86th**

EHDD excelled in the sustainability category, its award-winning Marin Country Day School the first net-zero-energy classroom in North America.

**23. ESKEW+DUMEZ+RIPPLE**

New Orleans

OVERALL SCORE **82.40**

RANK IN EACH CATEGORY

**Business: 57th****Sustainability: 42nd****Design/Pro Bono: 15th**

Eskew+Dumez+Ripple has ramped up its pro bono work post-Katrina, and won an AIA National Housing Award for its 930 Poydras Street project.



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**24. NBBJ**

Seattle



\$\$\$\$

OVERALL SCORE **82.27**

RANK IN EACH CATEGORY

**Business: 11th****Sustainability: 61st****Design/Pro Bono: 33rd**

NBBJ is collaborating with the University of Washington's Integrated Design Lab on a notable study to find ways to reduce hospital energy use nationwide.

**25. SASAKI ASSOCIATES**

Watertown, Mass.



\$\$\$

OVERALL SCORE **81.94**

RANK IN EACH CATEGORY

**Business: 37th****Sustainability: 54th****Design/Pro Bono: 18th**

Sasaki's Urban Fabric research initiative is exploring ways to revitalize former textile industry hubs in the U.S.

**26. THE MILLER HULL PARTNERSHIP**

Seattle



\$\$\$

OVERALL SCORE **81.40**

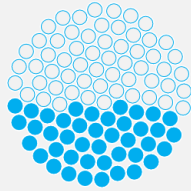
RANK IN EACH CATEGORY

**Business: 89th****Sustainability: 9th****Design/Pro Bono: 34th**

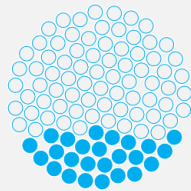
Miller Hull is designing a prototype net-zero-energy home for Habitat for Humanity, and was honored by COTE for its LOTT Clean Water Alliance Regional Services Center.

**SUSTAINABILITY**

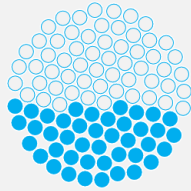
MEDIAN ANSWERS SUPPLIED BY TOP 50 FIRMS TO THE FOLLOWING QUESTIONS



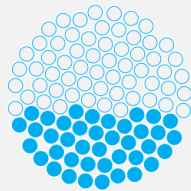
WHAT PERCENTAGE OF YOUR EMPLOYEES ARE LEED AP OR GA? 42%



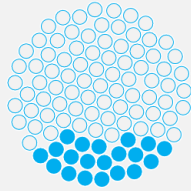
FOR WHAT PERCENTAGE OF PROJECTS IN THE LAST TWO YEARS DID YOUR FIRM COLLECT ENERGY DATA? 25%



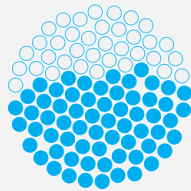
WHAT PERCENTAGE OF YOUR FIRM'S PROJECTS WERE LEED CERTIFIED? 42%



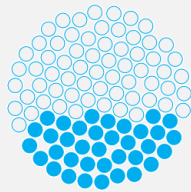
DOES YOUR FIRM HAVE A POLICY FOR PURCHASING RENEWABLE ENERGY? 40% SAID YES



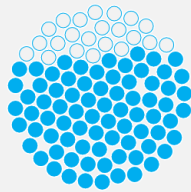
HAS YOUR FIRM ESTABLISHED A TIMELINE FOR PURCHASING 100% GREEN POWER? 20% SAID YES



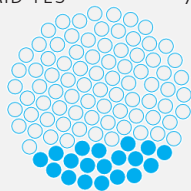
HAS YOUR FIRM BUILT OR RENOVATED OFFICES TO LEED STANDARD OR HIGHER? 64% SAID YES



HAS YOUR FIRM CREATED A POLICY FOR OFFSETTING FIRM TRAVEL? 36% SAID YES



HAS YOUR FIRM SIGNED THE AIA 2030 COMMITMENT? 78% SAID YES



IF YOU SIGNED THE AIA COMMITMENT, WHAT PERCENTAGE OF YOUR WORK (ON GROSS SQUARE FOOTAGE BASIS AND FOR PROJECTS IN PROGRESS OR COMPLETED IN 2011) WAS DESIGNED TO MEET THE ENERGY TARGETS OF 2030 CHALLENGE? 19%

**27. AECOM**

Los Angeles



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OVERALL SCORE **80.97**

RANK IN EACH CATEGORY

**Business: 50th\*****Sustainability: 63rd****Design/Pro Bono: 7th**

AECOM got global attention for its Olympics master plan, designed to revive an impoverished London neighborhood.

**28. LORD AECK & SARGENT**

Atlanta



\$\$\$

OVERALL SCORE **80.56**

RANK IN EACH CATEGORY

**Business: 114th****Sustainability: 12th****Design/Pro Bono: 19th**

This firm boasted numerous award-winning historic building projects, including the SCAD Museum of Art expansion.

**29. H3 HARDY COLLABORATION ARCHITECTURE**

New York



\$\$\$

OVERALL SCORE **80.48**

RANK IN EACH CATEGORY

**Business: 28th****Sustainability: 34th****Design/Pro Bono: 55th**

The firm's LEED Platinum Botanical Research Institute of Texas is a pilot project for Sustainable Sites, a new landscape design rating system.

**30. RBB ARCHITECTS**

Los Angeles



\$\$\$

OVERALL SCORE **79.88**

RANK IN EACH CATEGORY

**Business: 1st****Sustainability: 117th****Design/Pro Bono: 74th**

Healthcare specialist RBB led the business category and contributed pro bono design work for an East Los Angeles health center.

**31. LMN ARCHITECTS**

Seattle



\$\$\$

OVERALL SCORE **79.56**

RANK IN EACH CATEGORY

**Business: 79th****Sustainability: 21st****Design/Pro Bono: 28th**

LMN's Vancouver Convention Centre West was honored by the COTE Top Ten and AIA Interior Architecture awards.

**32. RICHÄRD+BAUER**

Phoenix

\$\$

OVERALL SCORE **79.14**

RANK IN EACH CATEGORY

**Business: 87th****Sustainability: 19th****Design/Pro Bono: 30th**

Smaller firm Richard+Bauer impressed with its award-winning South Mountain Community Library in Phoenix.

**33. LEDDY MAYTUM STACY ARCHITECTS**

San Francisco



\$\$\$

OVERALL SCORE **78.60**

RANK IN EACH CATEGORY

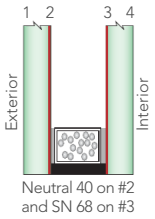
**Business: 85th****Sustainability: 24th****Design/Pro Bono: 31st**

The firm's Ed Roberts Campus in Berkeley, Calif., an independent-living facility for the disabled, won an Urban Land Institute Global Award.



# How Guardian SunGuard helps improve patient care and recovery. With light.

Well-daylighted hospitals with outdoor views enhance patient care and recovery. That's why HKS specified Guardian SunGuard glass for



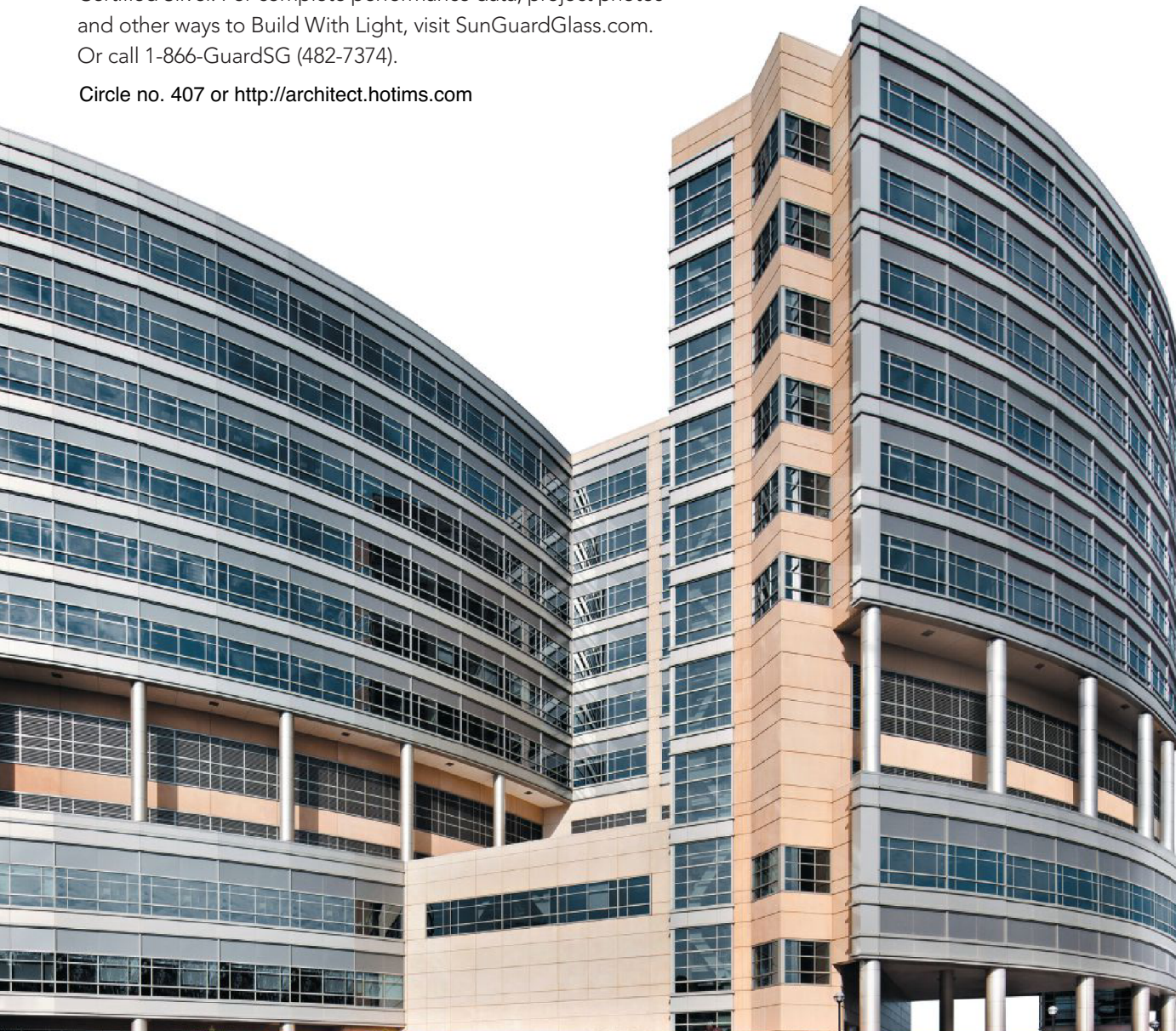
the C.S. Mott Children's Hospital, in Ann Arbor, Michigan. The combination of Neutral 40 and SuperNeutral 68 in an insulated glass unit delivers plenty of visible light and a low, 0.25 solar heat gain coefficient, all with lower reflectivity than previously possible, so patients

can easily see outside. HKS's selection of SunGuard products also improved the building's energy efficiency and created a comfortable setting for children and families. The building is LEED Certified Silver. For complete performance data, project photos and other ways to Build With Light, visit [SunGuardGlass.com](http://SunGuardGlass.com). Or call 1-866-GuardSG (482-7374).

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Neutral 40 on clear and  
SuperNeutral 68 on clear



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Please order glass samples for  
accurate color evaluation.

**34. GOETTSCH PARTNERS**

Chicago



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OVERALL SCORE **77.55**

RANK IN EACH CATEGORY

**Business: 6th****Sustainability: 68th****Design/Pro Bono: 98th**

Bolstered by strong financials, Goettsch Partners also collected an AIA Chicago award for 300 East Randolph, a 57-story office building.

**35. ADRIAN SMITH + GORDON GILL ARCHITECTURE**

Chicago



\$\$\$

OVERALL SCORE **77.48**

RANK IN EACH CATEGORY

**Business: 46th****Sustainability: 28th****Design/Pro Bono: 67th**

Adrian Smith + Gordon Gill won an AIA Honor Award for Regional and Urban Design for its Chicago Central Area DeCarbonization Plan.

**36. LPA**

Irvine, Calif.



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OVERALL SCORE **77.28**

RANK IN EACH CATEGORY

**Business: 65th****Sustainability: 35th****Design/Pro Bono: 36th**

LPA made a commitment to sustainability: Its projects in 2011 were on average 25 percent more efficient than California's energy code requires.

**37. HKS ARCHITECTS**

Dallas



\$\$\$\$

OVERALL SCORE **77.25**

RANK IN EACH CATEGORY

**Business: 38th****Sustainability: 52nd****Design/Pro Bono: 39th**

HKS's proposal to renovate an existing GSA building in Los Angeles to achieve net-zero energy usage earned an AIA Washington Unbuilt Award.

**38. RATCLIFF ARCHITECTS**

Emeryville, Calif.



\$\$\$

OVERALL SCORE **76.79**

RANK IN EACH CATEGORY

**Business: 63rd****Sustainability: 37th****Design/Pro Bono: 43th**

Ratcliff supported a pro bono hospital project in Haiti and won a SCUP/AIA-CAE award for its University of California at Berkeley Law South Addition.

**39. STUDIOS ARCHITECTURE**

Washington, D.C.



\$\$\$

OVERALL SCORE **76.54**

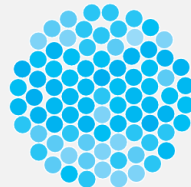
RANK IN EACH CATEGORY

**Business: 45th****Sustainability: 40th****Design/Pro Bono: 49th**

Studios' notable projects included 200 Fifth Avenue, a New York office building, and its pro bono office designed for Kiva, a nonprofit that uses microloans to combat poverty.

**WHAT TYPES OF PROJECTS DID YOUR FIRM COMPLETE IN 2011?**

MOST POPULAR RESPONSES BY TOP 50 FIRMS



84% SAID EDUCATION PROJECTS



66% SAID OFFICE BUILDINGS



66% SAID GOVERNMENT/CIVIC PROJECTS



52% SAID URBAN/MASTER PLANNING PROJECTS

## AIA FIRM SURVEY

**DATA FROM THE DECLINE REVEALED**

IN RECENT MONTHS, most U.S. architecture firms have had their revenues stabilize, one of many signs that the steep construction downturn may finally be ending. The past few years have been extremely challenging for most firms, however, as the AIA's 2012 "The Business of Architecture Report," which surveyed 2,805 AIA-member architecture firms, shows all too clearly.

Total construction spending levels, which exceeded \$1 trillion in 2008, fell to under \$800 billion by 2011. With less construction came less building design. Moreover, many owners and developers more aggressively managed design and construction costs of the projects that were built, creating pressure on design fees and construction bids. As a result, gross revenue at architecture firms declined 40 percent between 2008 and 2011, from more than \$44 billion to \$26 billion, according to the firm survey, last conducted in 2009.

Such a significant revenue drop produced a comparable reduction in employment. Between 2007 and 2011, construction industry payrolls declined by more than 2.1 million—almost 28 percent—double the number of positions added during the 2003–2007 upturn. Architecture firms experienced a similar employment loss: Between 2007 and 2011, more than 28 percent of positions disappeared, a share that greatly exceeded the gains during the earlier upturn.

The average number of payroll employees at a typical firm fell from 10.3 in 2008 to 8.8 in 2011. Currently, according to AIA estimates, almost a quarter of architecture firms nationally are sole practitioners, and more than 60 percent have fewer than five employees on their payrolls. Net revenue per employee averages almost twice as much at large firms than at small firms. In part this difference reflects the greater use of part-time staff at small firms, but it also most likely reflects higher fees charged at large firms, as well as higher levels of staff productivity due to generally greater capital investments.

Despite having fewer employees, the typical firm expanded its design services during the downturn in the pursuit of new work. Indeed, a higher number of firms reported that they offered such services as sustainable design, planning, interior design, and space planning. KERMIT BAKER

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The Center for Green Schools at the U.S. Green Building Council presents

# GREEN APPLE™ DAY OF SERVICE

Sept  
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2012

Does anyone have extra rain barrels for my #greenapple project? @mygreenschools

I just did a #greenapple project on my campus with @ashley123! Great way to spend a Saturday.

2 much litter! Picking up trash at my bro's elementary school. #greenapple

For one day, tens of thousands of volunteers from across the country and around the world will show their support for healthy, sustainable schools by taking real action in their communities.

## How will you participate?

As a LEED credential holder, you can earn two GBCI CE hours by organizing a project.

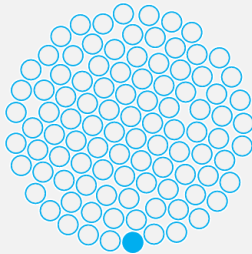


Learn ways you can participate and pledge your support:

[mygreenapple.org](http://mygreenapple.org)

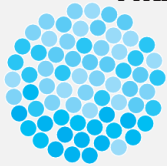
## WHAT PERCENTAGE OF YOUR FIRM'S BILLABLE HOURS WERE DEDICATED TO PRO BONO PROJECTS?

RESPONSES BY TOP 50 FIRMS



1% = MEDIAN ANSWER

## WHAT TYPES OF PRO BONO PROJECTS DID YOUR FIRM WORK ON?



70% SAID CIVIC BUILDINGS



32% SAID AFFORDABLE HOUSING



6% DID NOT WORK ON ANY



60% SAID OTHER



28% SAID HEALTHCARE FACILITIES

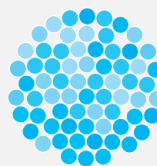


2% NO ANSWER

## HAS YOUR FIRM SIGNED ON TO PUBLIC ARCHITECTURE'S 1% PROGRAM?



30% SAID YES



68% SAID NO



2% NO RESPONSE

### 40. LITTLE DIVERSIFIED ARCHITECTURAL CONSULTING

Charlotte, N.C.



\$\$\$

OVERALL SCORE 76.24

RANK IN EACH CATEGORY

Business: 120th

Sustainability: 17th

Design/Pro Bono: 17th

Little scored well in the design/pro bono category, volunteering on multiple projects in the local community.

### 41. EHRlich ARCHITECTS

Culver City, Calif.



\$\$

OVERALL SCORE 75.15

RANK IN EACH CATEGORY

Business: 43rd

Sustainability: 23rd

Design/Pro Bono: 108th

Steven Ehrlich received AIA California's Bernard Maybeck Award, honoring his career portfolio.

### 42. GOOD FULTON & FARRELL

Dallas



\$\$\$

OVERALL SCORE 74.94

RANK IN EACH CATEGORY

Business: 8th

Sustainability: 89th

Design/Pro Bono: 54th

Solid financials and an award-winning master plan for Caruth/Bush Station in Texas helped this firm make the list.

### 43. ROBERT A.M. STERN ARCHITECTS

New York



\$\$\$

OVERALL SCORE 73.78

RANK IN EACH CATEGORY

Business: 21st

Sustainability: 67th  
Design/Pro Bono: 59th

Robert A.M. Stern was awarded the Richard H. Driehaus Prize for Classical Architecture.

### 44. ROSS BARNEY ARCHITECTS

Chicago



\$\$

OVERALL SCORE 73.31

Business: 111th

Sustainability: 27th

Design/Pro Bono: 26th

Ross Barney won a SCUP/AIA-CAE award for its James I. Swenson Civil Engineering Building for the University of Minnesota.

### 45. TSOI/KOBUS & ASSOCIATES

Cambridge, Mass.



\$\$\$

OVERALL SCORE 73.14

Business: 35th

Sustainability: 47th

Design/Pro Bono: 77th

This firm's notable projects included the University of Minnesota Amplatz Children's Hospital.

### 46. FXFOWLE

New York



\$\$\$

OVERALL SCORE 73.13

Business: 61st

Sustainability: 41st

Design/Pro Bono: 52nd

FxFowle's King Abdullah Financial District Mosque in Saudi Arabia won a Chicago Athenaeum International Design Award.

### 47. ARCHITECTURAL RESOURCES CAMBRIDGE (ARC)

Cambridge, Mass.



\$\$\$

OVERALL SCORE 73.00

RANK IN EACH CATEGORY

Business: 74th

Sustainability: 16th

Design/Pro Bono: 97th

ARC earned accolades for its Rochester Institute of Technology Global Village.

### 48. ANN BEHA ARCHITECTS

Boston



\$\$

OVERALL SCORE 72.91

RANK IN EACH CATEGORY

Business: 36th

Sustainability: 72nd

Design/Pro Bono: 42nd

Ann Beha's major pro bono project transformed a water treatment plant into the headquarters for Boston nonprofit Emerald Necklace Conservancy.

### 49. PBK ARCHITECTS

Houston



\$\$\$

OVERALL SCORE 71.19

RANK IN EACH CATEGORY

Business: 17th

Sustainability: 59th

Design/Pro Bono: 104th

PBK made the list thanks to a strong showing in the business category.

### 50. CLARK NEXSEN

Norfolk, Va.



\$\$\$

OVERALL SCORE 71.01

RANK IN EACH CATEGORY

Business: 58th

Sustainability: 36th

Design/Pro Bono: 93rd

This firm will compare energy-modeling data and actual energy usage, studying the discrepancies, for its series of Old Dominion University dormitories.



# ANNUAL DESIGN REVIEW

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

### ELIGIBILITY

Projects must have been completed after June 30, 2011, and must have been built in the United States or designed by a U.S. firm.

### PUBLICATION

Winners in each category (selected by a jury) will be published in the December 2012 issue of ARCHITECT.

### CATEGORIES

**WORK** Office, Government, and Commercial Mixed-Use

**PLAY** Sports, Hospitality, and Retail

**LIVE** Multifamily Housing, Single-Family Housing, and Residential Mixed-Use

**GROW** Education, Science, and Healthcare

**MOVE** Infrastructure and Transportation

**BOND** Institutional, Cultural, and Religious

### EXTENDED DEADLINES

**September 21, 2012:** regular submission deadline (postmark)

**September 26, 2012:** late submission deadline (postmark, additional fee required)

### FEES

**First entry:** \$295

**Additional entries:** \$195 per entry

**Late entries:** \$50 additional fee per entry by September 26

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**ARCHITECT**

# JUJUY REDUX

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MARCELO SPINA AND GEORGINA HULJICH OF P-A-T-T-E-R-N-S AND MAXIMILIANO SPINA OF MAXI SPINA ARCHITECTS INFLUENCED DEVELOPERS AND PUSHED CONTRACTORS TO REALIZE A DISTINCTLY MODERN MULTIFAMILY MID-RISE. IT'S LOCATED IN A POSTINDUSTRIAL NEIGHBORHOOD IN MARCELO AND MAXI'S HOMETOWN OF ROSARIO—WHICH HAPPENS TO BE ONE OF THE FASTEST-GROWING CITIES IN ARGENTINA.

Text by **Ian Volner**

Photo by **Gustavo Frittegotto**

**MARCELO AND MAXI SPINA WERE BORN AND raised**—and studied architecture—in the town of Rosario, Argentina, which is about 200 miles west and north of Buenos Aires. Today, the brothers are based in Los Angeles: Maxi, 36, at the head his eponymous practice, Maxi Spina Architects, and Marcelo, Intl. Assoc. AIA, 42, as principal of design firm P-A-T-T-E-R-N-S. Together, *los hermanos* Spina have teamed up for a number of projects, and their collaborative approach starts from a shared sense of architectural invention. “Our working method is one that seeks for areas ... in which we can innovate,” Maxi says, and sometimes the greatest opportunities lie in situations “where we need to accept convention.”

Their latest joint venture, undertaken with Marcelo's partner in P-A-T-T-E-R-N-S, Georgina Huljich, is a residential mid-rise in Rosario that demonstrates exactly how the team

effects a balance between novelty and custom. Jujuy Redux, so named because it is the team's second project on Jujuy Street, is an eight-story, 13,500-square-foot luxury apartment building located in the former industrial district of Pichincha. The area is seeing an influx of new residents, while the city as a whole is undergoing a boom in construction as local investors look for safe bets in an uncertain economy.

Jujuy's creamy, contemporary exterior is certainly in line with one's expectations for a speculative development in an emerging neighborhood: The modern aesthetic and on-site facilities—a sleek rooftop sundeck and marble floors among them—provide all the trimmings of a tony urban shelter geared toward young and youthful cosmopolitans. Yet it is one of the building's ostensibly more banal amenities that makes it really stand out.

Balconies are common enough in residential buildings worldwide—they're especially popular in Argentina, observes Marcelo, where

the “climate tends to be super, super hot” in the summer—but the designers wanted the balconies connected to Jujuy's 13 apartment units to be different. It was here, they felt, that they had their opportunity to innovate.

With the somewhat wary blessing of their client, the architects deployed a unique construction system that made the balconies an integral part of the structure, rather than mere appendages to it. Extruding the floor plate outside the building envelope, the team equipped the cantilevers with struts that both support them and provide a sort of peek-a-boo effect. The residual triangular openings reveal or conceal residents, depending on where they stand.

It wasn't the simplest solution, but the Spina brothers say it's what gives the project the feeling of potential that drives them. “Our interest wasn't just to create high value real estate,” Maxi says. “It was to create a new look for urban living for young people who want to enjoy what the city has to offer.”













**Left:** The eight-story Jujuy Redux apartment building is located in the formerly industrial Pichincha district of Rosario, which is Argentina's third largest city. **Previous spread:** The building's eye-catching balconies were achieved with a series of diagonal steel-reinforced concrete trusses supporting cantilevers, with on-site formwork by Aserradero Soldini and concrete from local company Tecbeton.



## BALCONY CONSTRUCTION

The team at D.R.S. Construcciones, which served as both developer and builder on the project, had reason to trust their architects' judgment—after all, they bought the property on Jujuy Street at the Spinás' suggestion, and had worked with the duo previously on an adjacent parcel. Still, they had some concerns.

"Our experience with concrete in previous work ... was limited within conventional structures," says D.R.S. partner Mario Cina. The architects were calling for balconies with repeating, hyperboloid concrete structures, replete with chamfers and diagonal branches—and they were insistent that no exposed columns could project to the lower-most floors. The complex system would have to be self-supporting.

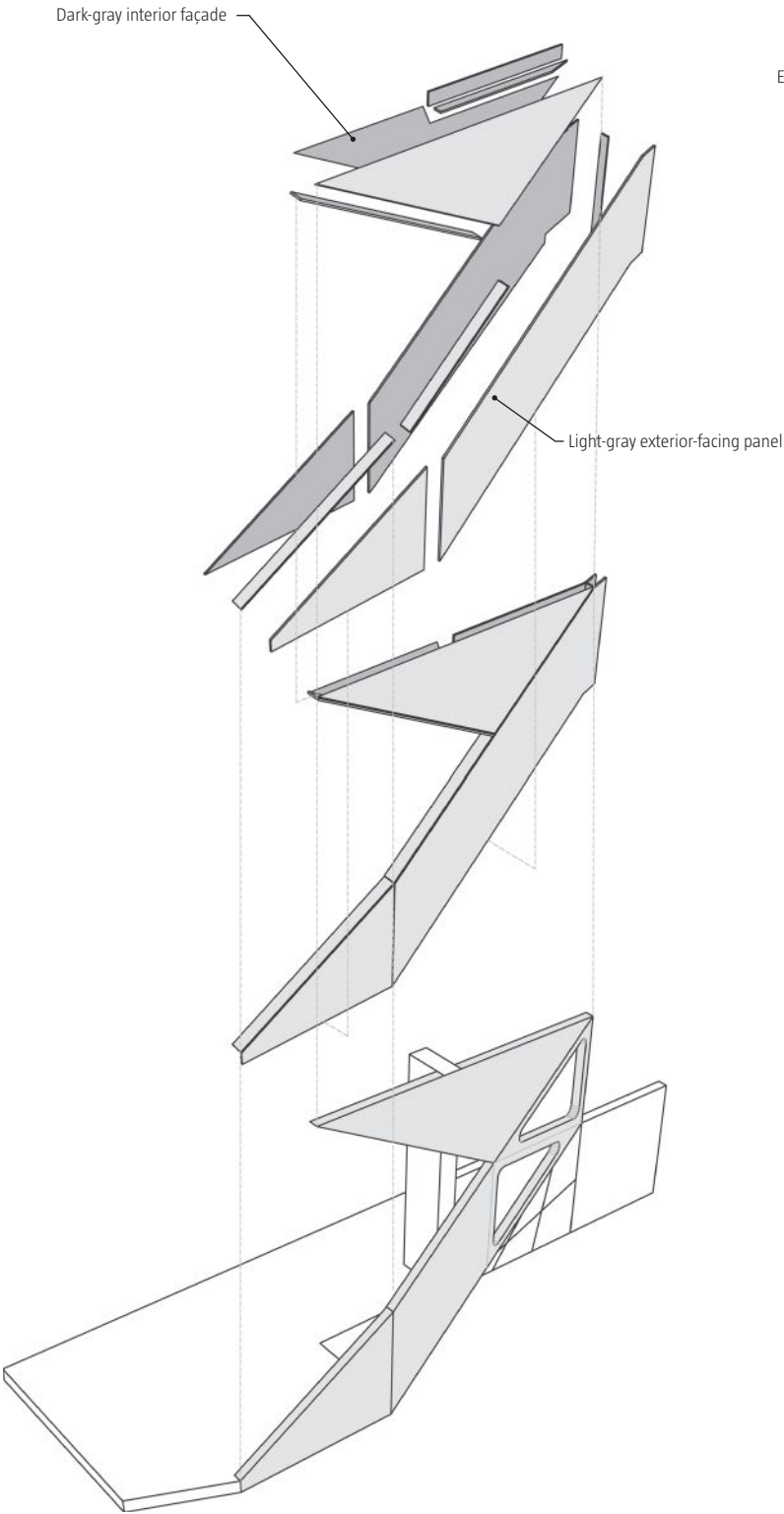
The builders contemplated prefabricating the units, but opted instead for on-site formwork, using a composite material to articulate the surfaces. "The logic was similar to the construction of a ship," Cina says. "We welded metal faces in place, then covered them with a layer of fiberglass and resin." The casting of the rest of the concrete structure took place simultaneously, giving the cantilevers added support from inverted columns in the rooms below.

Cina says his company—which rarely does residential projects—was a good match for the architect's ambitions: "We have an unorthodox view of [housing]. That allowed us to tackle the project from a fresh viewpoint."

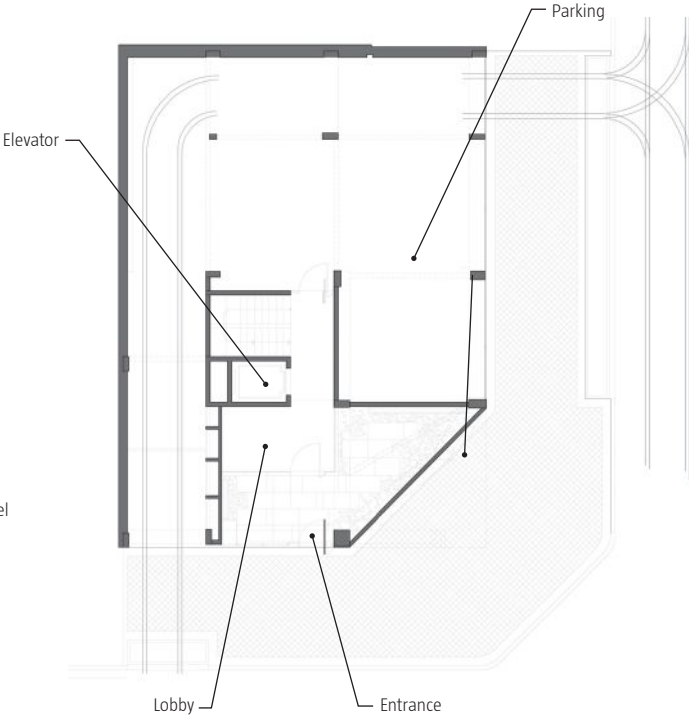




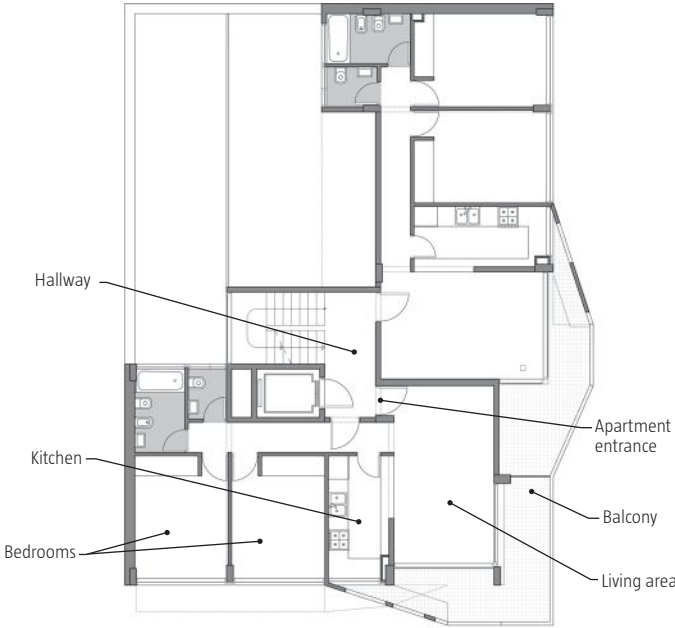
**Balcony Exploded Axonometric**



**Ground-Floor Plan**



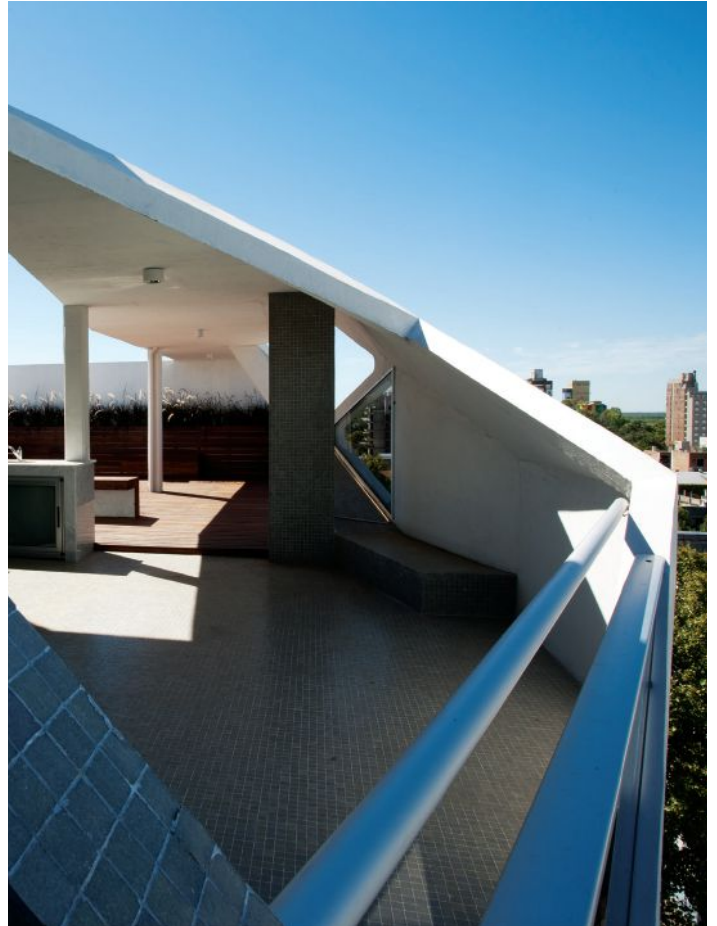
**Typical Apartment-Level Plan**



**This image:** Triangular cutouts in the concrete structure are visible from within the marble-floored lobby. **Facing page, top left:** The north face of the building is strictly orthogonal in its design, and will likely be occluded by future development in the neighborhood. **Top right:** Each of the 13 units includes a balcony, with more of the cutouts visible through sliding glass doors from CNP Sistemas de Aluminio. **Bottom left and right:** The geometry continues on the rooftop sundeck, with its wooden decking and tile floors.









# BROOKLYN NAVY YARD CENTER

WORKSHOP/APD AND BEYER BLINDER BELLE RESTORED  
AN 1857 COMMANDANT'S HOUSE AND ADDED A SLEEK  
NEW ADDITION, BREATHING NEW LIFE INTO THE DISUSED  
INDUSTRIAL SITE ON THE BROOKLYN WATERFRONT.









Text by **John Gendall**  
 Photos by **Chuck Choi**

**SINCE ITS 1966 DECOMMISSIONING**, the Brooklyn Navy Yard has largely resisted urban renewal, hemmed in as it is by stone walls, its crumbling structures visible through barbed wire. But a champion has emerged in the form of the Brooklyn Navy Yard Development Corp.—a nonprofit spurred by the successful reuse of other forlorn swaths of the city. Now the Yard is being re-invented as an enclave of modern industry.

Appropriate to the site's changing identity, the Brooklyn Navy Yard Center, designed by New York firms Workshop/apd and Beyer Blinder Belle, combines old and new: The restored 9,500-square-foot Building 92, built in 1857 and used as the Marine Commandant's House, is connected to a new 24,500-square-foot addition by a three-story lobby. Like so many other Navy Yard facilities, Building 92 had fallen into extreme disrepair. "There were holes through the floors, holes in the walls, and the entire southeast corner had settled," says Elizabeth Leber, AIA, a partner at Beyer Blinder Belle. "It was really just a shell." In an effort to resuscitate the brick-and-wood joist structure, the architects inserted drilled displacement piles and grade beams to give the building a stable foundation, and stainless steel helical ties and grout injection helped shore up the shell. Working from historical documents, the architects preserved as many original architectural details as possible.

While most of the historic building is designated for gallery space with exhibits touting the history of the site, the addition to the north adds meeting and education areas, as well as leasable office space to bring more businesses to the Yard. The new wing also features a rooftop café, terrace, and green roof. The glass-and-steel structure injects a distinctly modern aesthetic into the historic property. "We wanted a contrast between old and new," notes Workshop/apd partner Matthew Berman, Assoc. AIA.

The architects clad the addition's north and east elevations in corrugated metal, tying it into the site's industrial vernacular. On the south, a glass curtainwall shrouded by a perforated metal screen offers views to a forecourt designed by Julie Bargmann of D.I.R.T. Studio and to the city beyond. The screen provides a defense against solar gain (the architects are targeting the project for LEED Platinum certification), but the laser-cut perforation pattern, derived from an abstracted 1936 photograph of the U.S.S. Brooklyn, also offers a contemporary response to the original building's historic ornamentation. "We wanted the new building to act in deference to the historic one," Berman says. "The metal screen is almost like a theater curtain, pulling back to reveal the old Commandant's house."

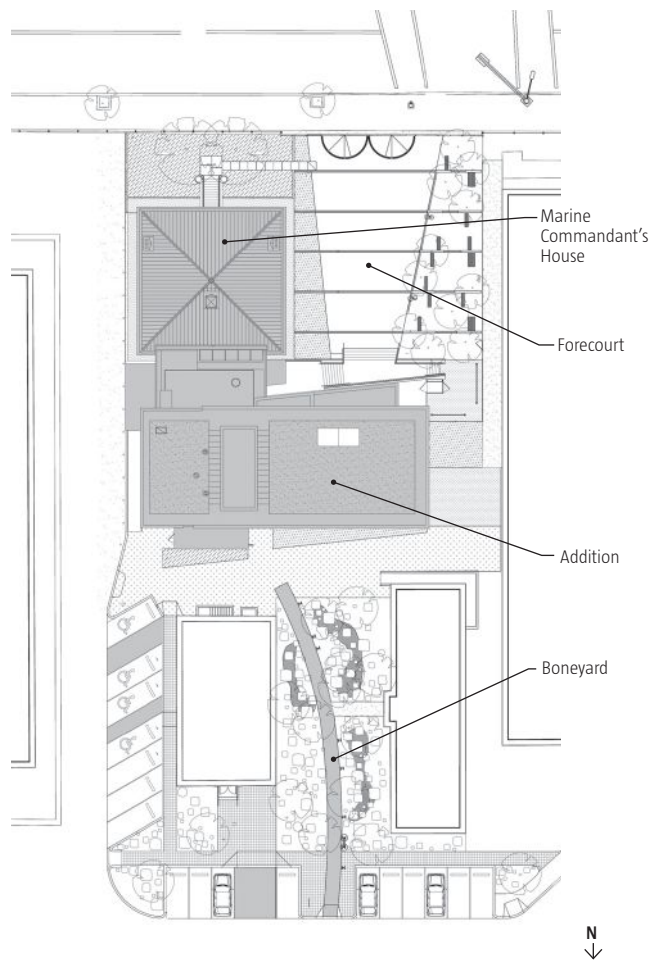






**Previous spread:** The architects restored the 1857 Marine Commandant's House (also known as Building 92) and connected it to a new 24,000-square-foot addition behind. The southern façade's perforated metal screen, manufactured by Airflex Industries, covers a curtainwall by Kalwall. **This image:** The north and east faces are clad in Morin Corp. metal panels in a nod to the building's industrial environs.





## CONTEXT

Historical accounts of New York's land use often begin in 1811, when city commissioners dreamed up a grid that would blanket Manhattan. Like a Big Bang theory of urban design, the rest of the city, we are left to assume, bursts forth from this germinal moment of genius. But this premise ignores the specific patterns of development in the far larger outer boroughs, which then were independent municipalities.

The Brooklyn Navy Yard offers a telling counterpoint to the 1811 narrative, highlighting the evolution and conflicts of the borough's development. Ten years before the auspicious meeting of commissioners, the U.S. government bought the land that would become the Yard. Emblematic of urban design in the industrial age, the 300-acre parcel, located directly on the waterfront, was devoted to a single industry—

shipbuilding—and created manufacturing jobs for tens of thousands of local residents. Thus the Yard's decommissioning in 1966 created a dire economic and urbanistic void in the borough.

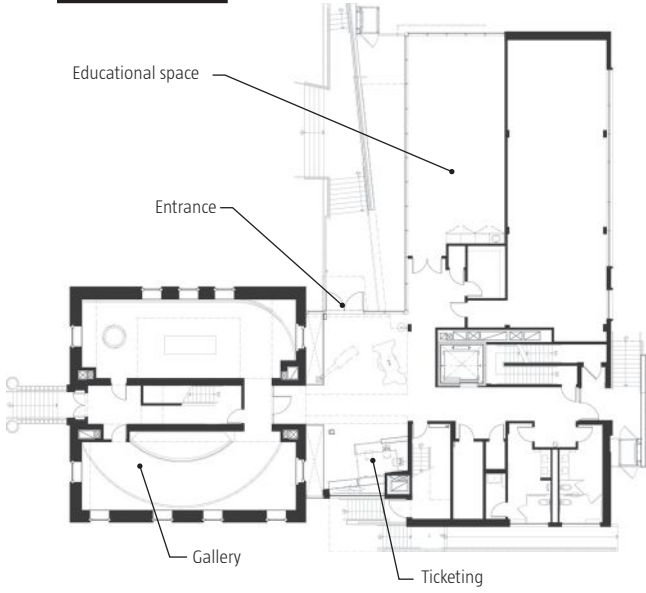
Today, the Michael van Valkenburgh–designed Brooklyn Bridge Park to the south of the Yard has activated a long stretch of the East River. To the north, the Williamsburg waterfront has developed apace with residential towers and pocket parks. But sandwiched between these two changing areas, the Navy Yard has, until now, struggled to instigate its own renaissance. The Brooklyn Navy Yard Development Corp. has set out to transform the hulking district into a 21st century exemplar of U.S. manufacturing. Unlike the monolith of the past, today's Navy Yard is filled with a bevy of smaller, diverse practices. Outfits that produce sugar packets and subway signs are

interspersed with areas for filming movies and even a handful of architectural offices.

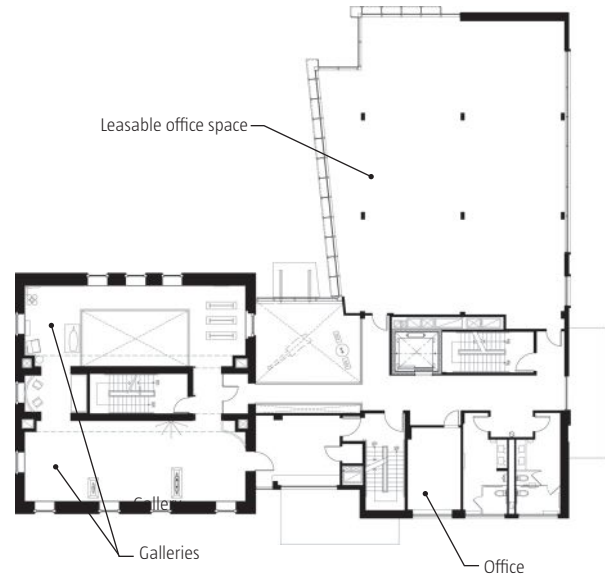
Building 92 has been the pivot for all of this change. Positioned along Flushing Avenue, a busy thoroughfare, the structure is sited at one of the Yard's closest points to the creative-class enclaves of Fort Greene and DUMBO. And its combination of cultural programming and leasable space for business can be a model for future development. With the Navy Yard Center, the neighborhood has become publicly—and unprecedentedly—accessible.



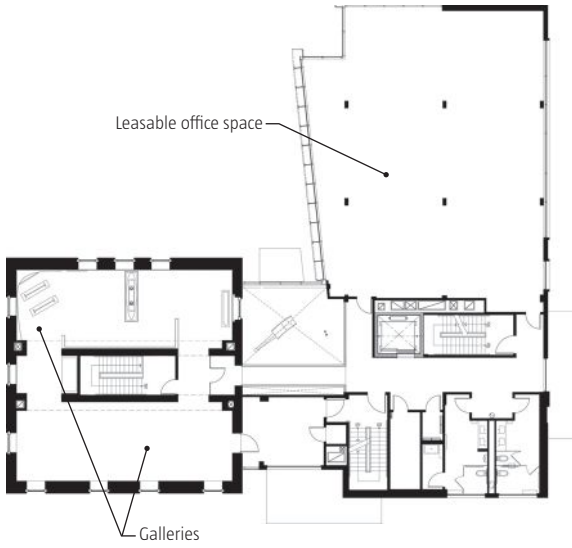
**Ground-Floor Plan**



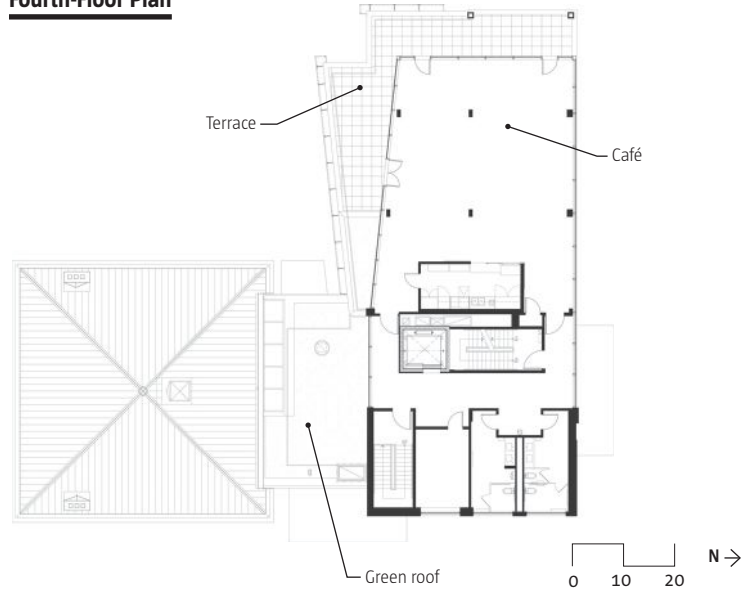
**Second-Floor Plan**



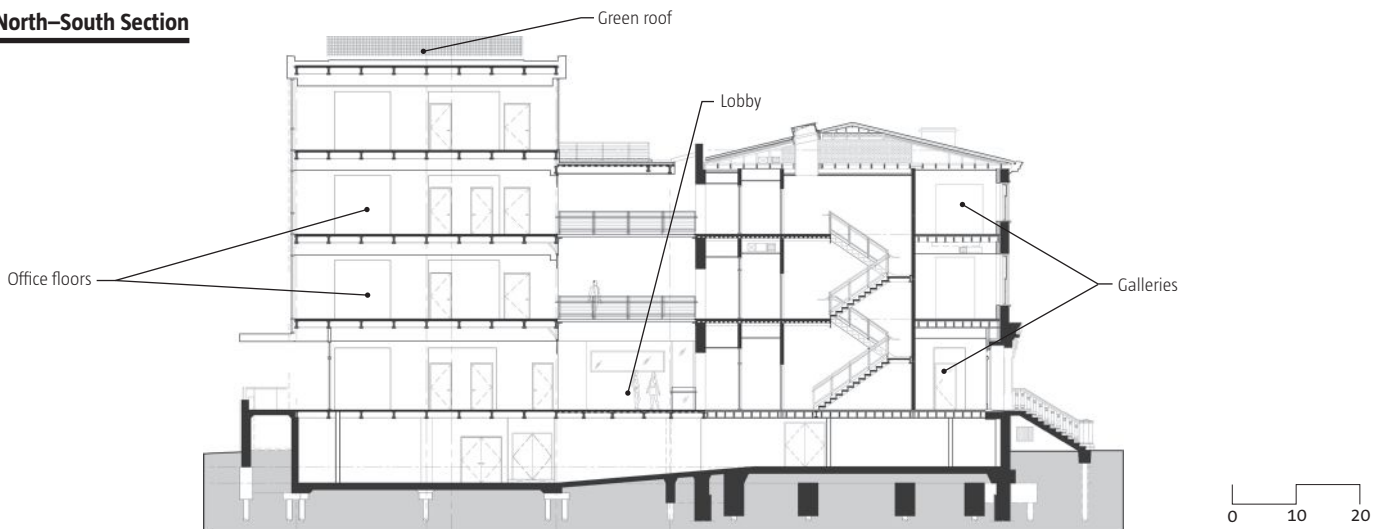
**Third-Floor Plan**



**Fourth-Floor Plan**



**North-South Section**











**Opposite:** Connecting the exhibition space in the historic building to the services and leasable office space and other venues in the addition is a three-story volume, spanned by bridges that feature railings from FMB. The brick on the 1857 building was restored by King's County Waterproofing Corp. **Above:** Relics from the site's naval past fill the lobby; tickets for the galleries can be purchased at the front desk, which was fabricated by Ferra Designs, the same firm responsible for the Cor-Ten benches in the forecourt.





## LANDSCAPE

Even with a great demand for more space on the site, the architects at Beyer Blinder Belle and Workshop/apd were determined to avoid overwhelming the historic structure with a new building, choosing, instead, to keep the footprint small, relative to the available property. “We had this reverence for the site and its history, but we also had a reverence for this little building,” explains Workshop/apd partner Matthew Berman. By placing the addition at the rear of the site, away from Flushing Avenue, the design team cleared out an amply sized forecourt. Working with landscape architect Julie Bargmann, the principal of New York’s D.I.R.T. Studio, the designers were able to transform the entire site

into an active landscape, including a forecourt on the Flushing Avenue side of the site (above). “The forecourt had to really multitask,” Bargmann says. “It needs to work for both on a small, intimate scale, but it also needs to accommodate large groups,” she adds, citing the building opening overseen by New York City Mayor Michael Bloomberg. Small tables and benches—supported by reclaimed steel and shaded by river birch trees—divide the plaza into smaller sections.

Behind the Navy Yard Center, and connecting the new space with the rest of the yard, Bargmann designed what she calls a “rough-and-tumble” landscape (opposite), densely planted with native species, and meant to acknowledge

the site’s own gritty history and its decades of neglected overgrowth. Known as the “bone-yard,” it’s meant to contrast with the refined public-facing forecourt.

But the landscape is not just for gathering. In keeping with Bargmann’s longstanding design philosophy, it does some environmental heavy lifting, too. Designed to be as permeable as possible, the site mitigates runoff, and native plants reduce irrigation demands. Reused materials—steel and concrete—come directly from demolitions on the site. “These urban, industrial sites are like archaeological digs,” Bargmann says. “It’s one thing to be sustainable, but it’s another to have the landscape be literally of the place.”









# Enzo Ferrari Museum

A NEW MUSEUM IN MODENA, ITALY, EXEMPLIFIES THE PARADOXICALLY ORGANIC YET TECHNICAL VISION OF THE LATE JAN KAPLICKÝ OF FUTURE SYSTEMS.













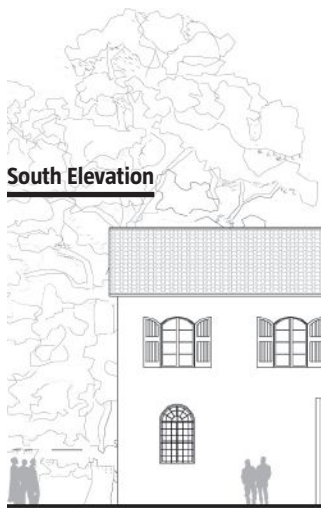
**Left:** The vivid yellow shell of the new Enzo Ferrari Museum is made from 5,000 extruded aluminum pieces, fitted together with tongue-and-groove joinery by shipbuilders—the same way one would assemble the hull of a ship. The shell is pierced by 10 fins to create computer-controlled skylights that vent warm air during the day. **Previous spread:** Inside, the ceiling plane is far less brightly hued: White PVC fabric is stretched taut over web trusses, akin to the ceiling of a car.

LEFT: STUDIO CENTRO29;  
PREVIOUS: ANDREA MORGANTE

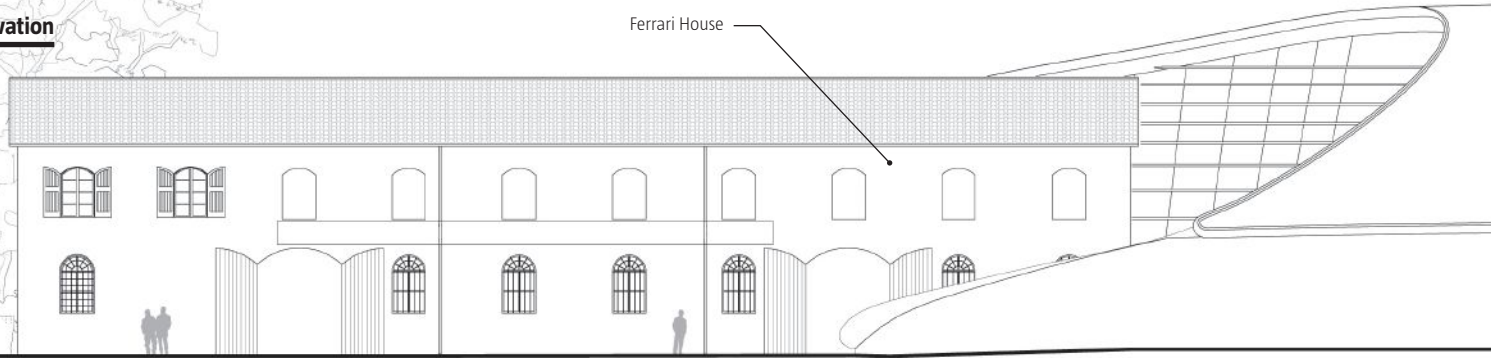
Text by **Richard Ingersoll**

**ITALY IS A LAND** of contradictions: While it appears profoundly conservative on many levels, it often produces surprisingly vivacious technical and cultural vanguards. A prime example is Enzo Ferrari (1898–1988), founder of the eponymous sports car enterprise, who lived an apparently conventional private life but produced some of the most audacious speed machines of the 20th century. The city of Modena, proud of its famous native son, decided in 2004 to turn his birthplace into a museum and chose, in a competition, a truly radical solution. (This perhaps compensates for the same city's decision in 1999 to reject a new gateway by Frank Gehry, FAIA.) Flanked by a set of train tracks, the 19th-century house and attached workshop—used by Ferrari's father to fabricate panels for the trains—have been renovated and framed by a strident yellow carapace. Designed by the late Jan Kaplický, the Czech-born founder of Future Systems, this colossal aluminum hood rises to the same height as the historic buildings. Its bulging crest is slit by 10 protruding gills, evoking the molded metal skin and air vents of car bodies without making literal reference to them. Despite the new structure's extroverted form, color, and technology, Kaplický conceived it as a passive addition, like an open hand protecting the L-shaped complex of original buildings. It is parked discretely, like a very expensive car, in the background.

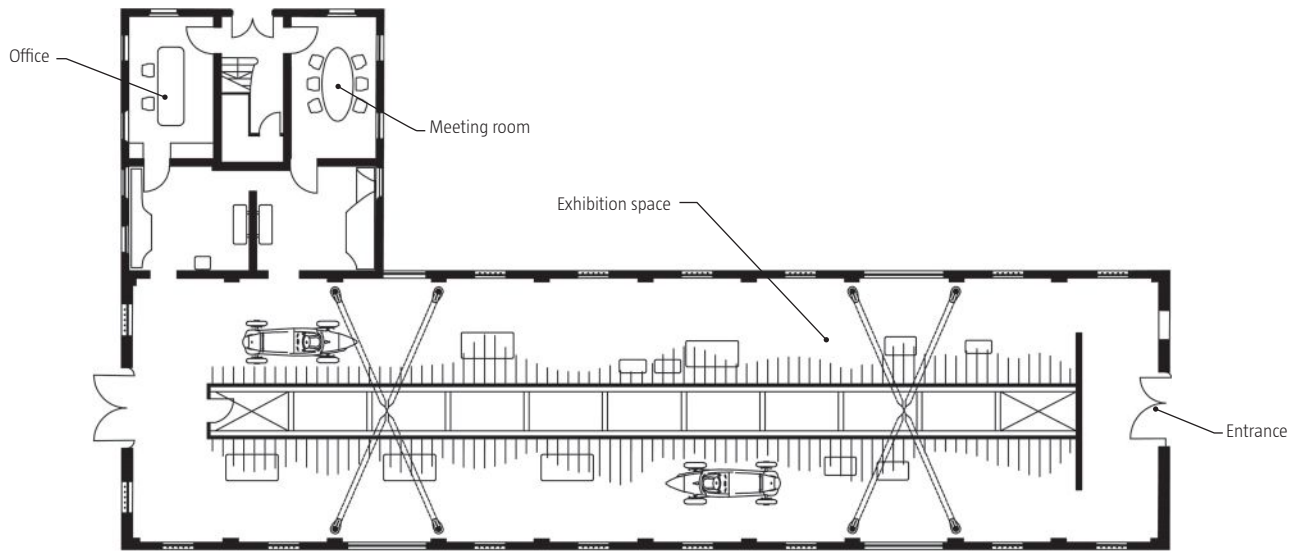
That the new museum will attract car enthusiasts goes without saying, yet one can imagine its greater appeal as a pilgrimage site for architects, curious to witness one of the handful of projects attributable to Kaplický. After his untimely death in 2009, the commission, which was won in competition, was faithfully stewarded by Andrea Morgante, an Italian architect who worked at Future Systems during the last five years of its existence, and now heads his own firm, Shiro Studio, in London. True to



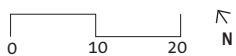
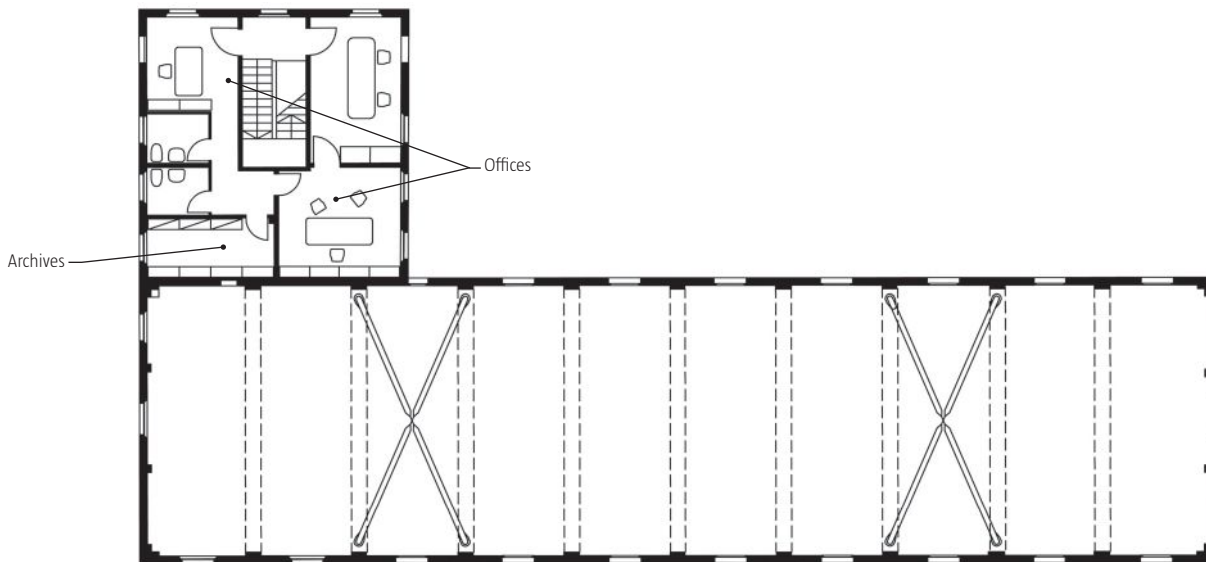
**South Elevation**



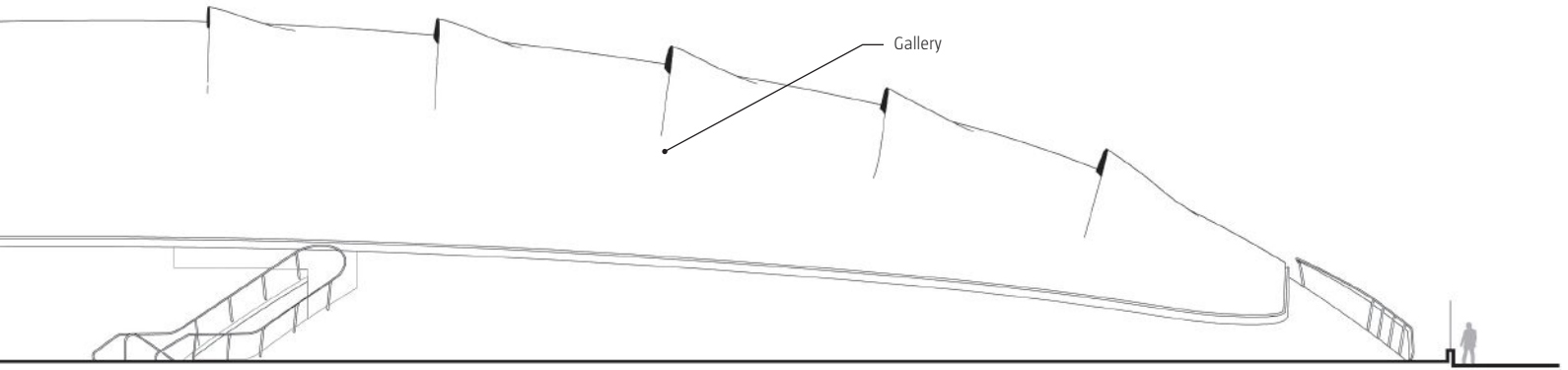
**Ferrari House Ground-Floor Plan**



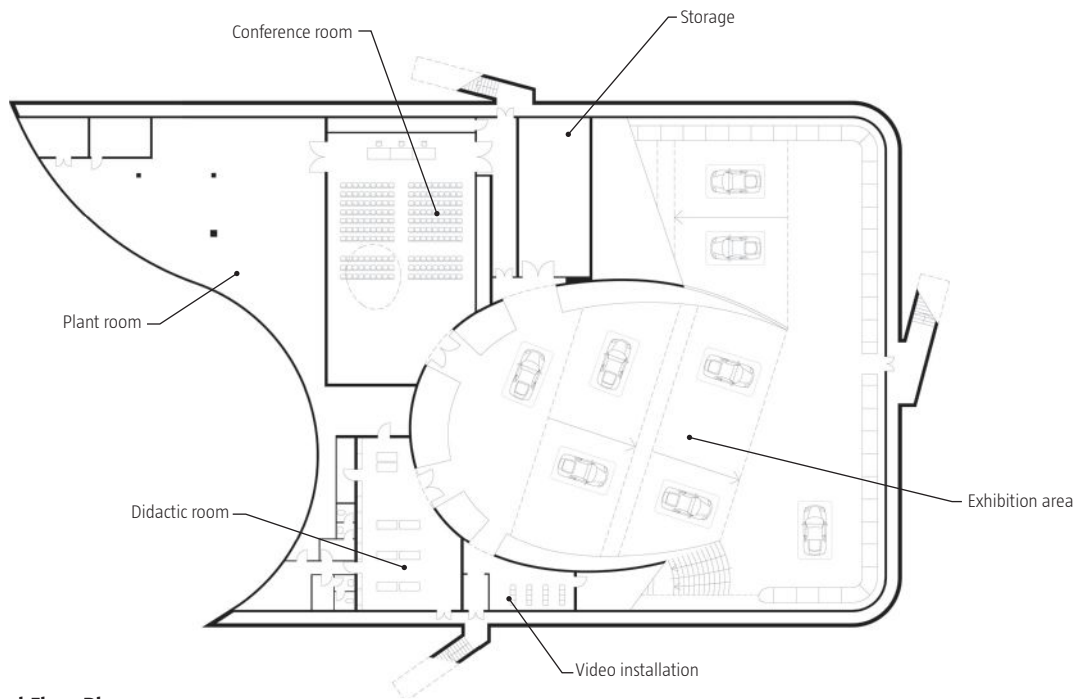
**Ferrari House Second-Floor Plan**



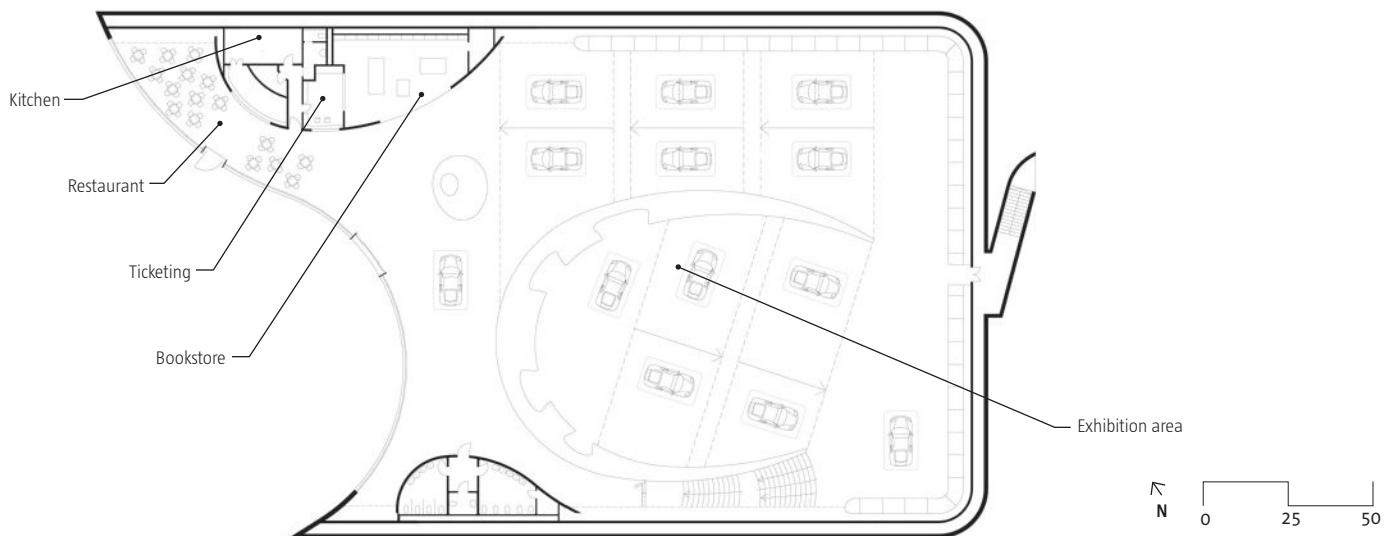




**Gallery Lower-Level Plan**



**Gallery Ground-Floor Plan**

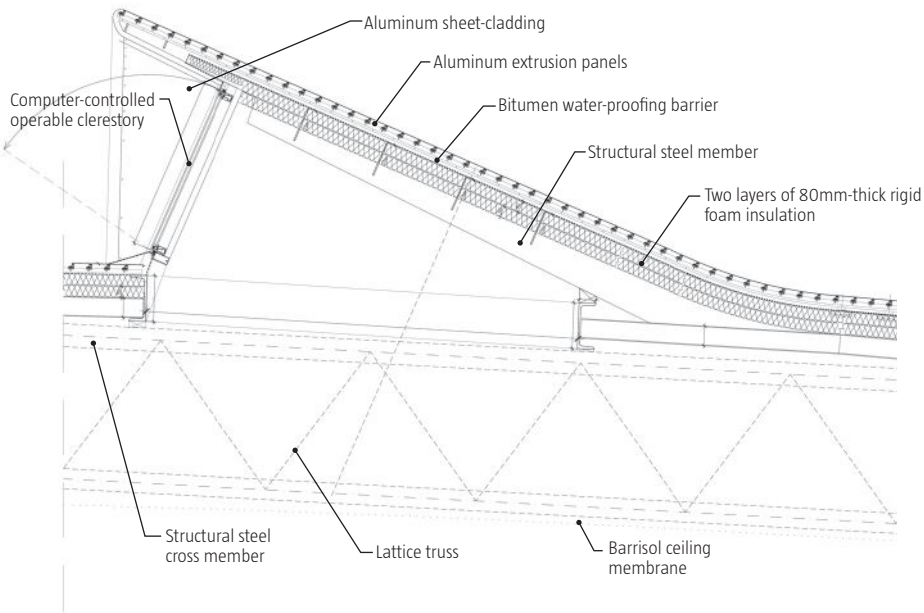




**This image:** The yellow of the building exterior reappears inside on the volumes that enclose ticketing and restrooms. **Opposite bottom:** Café tables sit along the curving glazed curtainwall on the eastern façade. **Opposite middle:** The exhibit floor slopes down more than 16 feet, and specially designed stands elevate the cars 1.6 feet above the ground.



## Skylight Section



LEFT: STUDIO CENTRO39; RIGHT: ANDREA MORGANTE

Kaplický's ideals, the new structure appears as a smooth and sensuous object charged with a high level of technical bravura and innovation. Future Systems, which until 2006 included Kaplický's partner and ex-wife Amanda Leveté, had teased architectural culture during the last two decades of the 20th century with alien visions of high-tech organic shapes that seemed culled from science fiction comic books. Pioneers in parametric design and great believers in programming sustainable performance into structures, Kaplický and Leveté finally proved their worth with the free-form Selfridges Building in Birmingham, England, completed in 2004, which is one of the most iconic works of the 21st century. The new museum in Modena, while less intrusive, presents a similarly surprising image, living up to the Future Systems's ethic of organic form that synthesizes technology.

Like so many breakthrough structures in modern design, the Enzo Ferrari Museum received technology transfers from naval architecture while harking back to Paleolithic typologies. The 5,000 aluminum panels that form the roof surface were crafted by boatbuilders using a technique of tongue-and-groove joinery suitable for the hulls of ships. The 3,300 square meters (35,521 square feet) of the double-curved roof rest on a vaulted steel space-frame poised at the higher, glazed Eastern end on two colossal forks that absorb the load of a serpentine steel anchoring tube running above the length of the glass entry façade. The 10 roof vents serve as computer-controlled monitors, allowing hot air to discharge during the day. The long rectangular structure sinks into the ground like a primeval dugout, and the roof appears to sit over an excavated void. The long flanks and rear of the structure have a few tangential concrete buttresses sunk into earthen berms that line the north and south sides of the building, providing grass-covered thermal mass.

The interior ceiling covers the unified space with long 2-meter-wide strips of cream-colored PVC fabric that has been stretched taut. The thinness of these uncanny bands can be observed through the 4-centimeter gaps left between each one, making way for pendant light fixtures and other systems. The museum's undulating glazed façade cuts a sinuous oblique to open up the rectangular volume and admit daylight into the interior. Here the technology reaches its apex with the glass panels tilting 12.5 degrees inward as they rise, attached at their corners to a custom-designed joint that, on the interior surface, slips around a vertical, pre-tensioned steel cable, like those used on suspension bridges. On the exterior, the same joint sustains rows of black aluminum louvers that help reduce glare.

The impressive span of the Ferrari Museum's roof shelters a single basilicalike room with a few subordinate pods. Like the crystalline façade, all of the elements, such as the enclosure for the bar and giftshop, and that for the toilets, follow aerodynamic curves. The room slopes



5 meters (16.4 feet) from front to rear, allowing the visitor to descend a gently sloping floor that continues to a lower level within a tear-shaped cut through the ground-level floor. A small theater and a conference hall occupy the areas on this basement level directly beneath the entrance. The constant slope helps to offset the podia for the 19 automobiles on display (the exhibition will be changed periodically with loans from private collections). Each car has been set on a rectangular plate balanced on a half-meter-high drum so that they do not appear to be parked but indeed resemble sculptures.

Aside from the passive thermal advantage of sinking the building into the ground, the Ferrari Museum became the first in Italy to exploit geothermal energy for heating and cooling, with 24 wells drilled 130 meters (426.5 feet) into the earth. A cylindrical structure that houses the technical equipment is set in the parking lot and carries solar panels for hot water. The institution also uses off-site photovoltaics as an additional alternative energy source and in all has reduced

its energy costs by 50 percent over a comparably sized building with conventional systems.

Andrea Morgante, who faithfully completed Kaplický's design of the new building according to the latter's drawings, took personal responsibility for the display area in the historic buildings. Here, he inserted majestic X-shaped steel braces on slender spider-leg poles beneath the timber beams of the shed for seismic protection (recently put to the test with the region's earthquakes in early May). He divided the long room with a narrow technical chamber for multi-image projectors and hung off of it dozens of differently curved flanges, supposedly suggesting the pages of the biography of Enzo Ferrari, although they seem more like the rhythmic legs of a giant centipede. While consistent with the organic impulses of his precursor, these forms seem more for effect than as the integral effects of technology. The carefully crafted new museum, like Ferrari's products, enhances the reputation of Modena, its famous carmaker, and the designers, occupying a class of its own.





Inside the Ferrari House next door to the new Future Systems building is a double-height exhibit space designed by one of the firm's former associates, Andrea Morgante of Shiro Studio. **This image:** A finned structure houses projectors for multimedia displays. **Opposite:** The fins incorporate photographs of Ferrari, as well as relics such as notebooks and vintage brochures.

# Project Credits

## Jujuy Redux

**Location** Rosario, Argentina

**Client** D.R.S. Construcciones

**Architect** P-A-T-T-E-R-N-S + MSA, Los Angeles—Marcelo Spina, Intl. Assoc. AIA, Georgina Huljich, Maximiliano Spina (principals-in-charge); Rick Michod, Nathaniel Moore, Giuliana Haro, Daniele Profeta, Mike Wang (project team)

**Interior Designer/Landscape Architect/Lighting Designer** P-A-T-T-E-R-N-S + MSA

**Mechanical Engineer** Juan Carlos Vaz, Alfa Ascensores; Ingeniero Daniel Leon

**Structural/Civil Engineer** Jose Orengo Ingenieros

**Electrical Engineer** Osvaldo Cichirillo

**Construction Managers** Marcelo and Maximiliano Spina

**General Contractor** D.R.S. Construcciones

**Code Consultants** Oscar Coniglio and Martín Gascón

**Lighting Consultant** Lorena Beltran, Serra Luz Rosario

**Landscape Consultant** Estilo Natural

**Window Consultant** Carlos Piro

**Fabrics Consultant** Emanuel Presas

**Signage Consultant** Liliana Silvano, Letreros Silvano

**Furniture Consultants** Forcén Design—Juan Angel Forcén; Nosten—Juan Ignacio Forcén, Javier Forcén

**Stone Consultant** José María Liebanas

**Metal Consultant** Fabián Aimino

**Size** 13,500 square feet

**Cost** \$1.65 million

## Materials and Sources

**Ceilings** La Yesera Rosarina layeserarosarina.com

**Concrete** Tecbetón tecbeton.com.ar; Aserradero Soldini (formwork) aserraderosoldini.com.ar

**Fabrics** Rosario Cortinas y Sistemas cortinasy sistemas.com.ar

**Flooring** Accesaniga S.A accesaniga.com.ar; Maderera Sorrento de Carlos Lovell

**Furniture** Forcén Design; Nosten

**Glass** CNP Sistemas de Aluminio cnpaluminio.com

**Lighting** Serra Luz serraluz.com; Serra Electricidad (controls) www.electricidadserra.com.ar

**Masonry and Stone** Ladrillos Chacabuco ladrilloschacabuco.com.ar; Marmolería San Luis

**Metal** Fabián Aimino

**Paints** Grupo Paraná Pinturerías & Decoración

**Plumbing and Water System** Alberdi Sanitarios

**Structure** Acindar, Grupo ArcelorMittal www.acindar.com.ar; Berardi y Compañía (steel)

**Various Materials** Alberdi Sanitarios

**Windows and Doors** CNP Sistemas de Aluminio cnpaluminio.com

## Building 92: Brooklyn Navy Yard Center

**Location** Brooklyn, N.Y.

**Client** Brooklyn Navy Yard Development Corp.

**Architect** Beyer Blinder Belle Architects & Planners, New York—Elizabeth Leber, AIA (partner-in-charge); Jean Campbell, AIA (project manager); Michael Tucker (project architect)

**Architect** Workshop/apd, New York—Matthew Berman, Assoc. AIA (partner-in-charge); Andrew Kotchen, Assoc. AIA (partner); James Krapp (project manager); J. Tyler Marshall (project designer)

**Audiovisual** Jaffe Holden

**Mechanical/Electrical Engineer** AKF Group

**Structural Engineer** Robert Silman Associates

**Civil/Geotechnical Engineer** Langan Engineering and Environmental Services

**Geothermal Consultant** P.W. Grosser Consulting

**Construction Manager** Plaza Construction Corp.

**Landscape Architect** D.I.R.T. Studio

**Lighting Designer** Tillett Lighting Design

**Exhibition Consultant** Exhibition Art & Technology

**Size** 34,000 gross square feet

**Cost** \$25.6 million

## Materials and Sources

**Building Management System** Automated Logic Corp. automatedlogic.com

**Carpet** Interface interfacefor.com

**Ceilings** Armstrong armstrong.com

**Concrete** Get Real Surfaces (architectural interior concrete) getrealsurfaces.com; Urban Foundation Engineering (exterior architectural concrete and foundations); Capsys Corp. (modular concrete structural slabs) capsyscorp.com

**Exterior Wall Systems** Morin Corp. (metal wall panels) morincorp.com; Kawneer North America (curtainwall) kawneer.com; Airflex Industries (exterior panels, curtainwall, and custom sunshade) airflexind.com

**Finishes** IceStone (countertops) icestoneusa.com

**Flooring** PlanetReuse (reclaimed wood) planetreuse.com; DuroDesign (cork) duro-design.com

**Glass** Airflex Industries airflexind.com

**Gypsum** USG Corp. usg.com

**HVAC** FHP-Bosch Group (geothermal) fhp-mfg.com

**Insulation** Thermafiber thermafiber.com

**Lighting Controls** Lighting Control & Design

lightingcontrols.com

**Masonry** Kings County Waterproofing Corp. (masonry restoration); ZHN Contracting (interior CMU and

structural) zhncontracting.com

**Metal** Ferra Designs (front desk, CorTen exterior benches, and signs) ferradesigns.com; Airflex Industries (custom perforated sunshade) airflexind.com; FMB (railings, stairs, structural steel) fmbsteel.com

**Millwork** Bien Hecho bienhechobklyn.com; Southside (exhibit millwork)

**Paint** Benjamin Moore & Co. benjaminmoore.com; Tnemec tnemec.com

**Photovoltaics or Other Renewables** Rheem Manufacturing Co. (solar hot-water heater); Aspro Mechanical Contracting (graywater and plumbing)

**Roofing** Sika Sarnafil usa.sarnafil.sika.com; Peterson Aluminum Corp. pac-clad.com

**Signage** Signs+Decal Corp. signsanddecal.com

**Site and Landscape** Unilock Pavers, part of Hengestone Holdings (pavers) unilock.com; Invisible Structures (Gravelpave) invisiblestructures.com; Southside (reclaimed teak benches)

## Enzo Ferrari Museum

**Location** Modena, Italy

**Client** Fondazione Casa Natale Enzo Ferrari

**Architect** Future Systems—Jan Kaplický

**Project Architect** Shiro Studio, London—Andrea Morgante

**Competition Team** Jan Kaplický, Andrea Morgante, Liz Middleton, Federico Celoni

**Project Team** Andrea Morgante, Søren Aagaard, Oriana Cremella, Chris Geneste, Cristina Greco, Clancy Meyers, Liz Middleton, Itai Palti, Filippo Previtali, Daria Trovato (Preliminary, Detailed, Construction, 2005–2007)

**Art Direction** Andrea Morgante (2009–2012)

**Exhibition Design** Jan Kaplický, Andrea Morgante (gallery); Andrea Morgante (Enzo Ferrari House)

**Structural/Environmental Services** Arup (competition)

**Project Management and Site Supervision** Politecnica—Francesca Federzoni (disciplines integration); Fabio Camorani (structures and site supervision); Francesco Frassinetti (electrical); Paolo Muratori (building site supervision); Stefano Simonini (health and safety)

**Structural/Mechanical/Electrical Design, Environmental Impact Assessment, Health & Safety** Politecnica (preliminary, detailed, and construction stages)

**Quantity Surveying** Politecnica (design and construction)

**Contractor** Società Consortile Enzo; CCC soc. coop. (Leader), Ing. Ferrari, ITE Group, CSM.; Giuseppe Coppi (technical director, CdC—Modena)

**Size** 5,200 square meters (55,972 gross square feet)

**Contract Value** €14.2 million (\$17.6 million)

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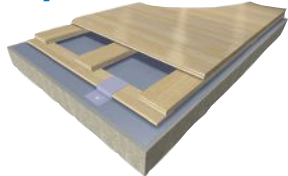
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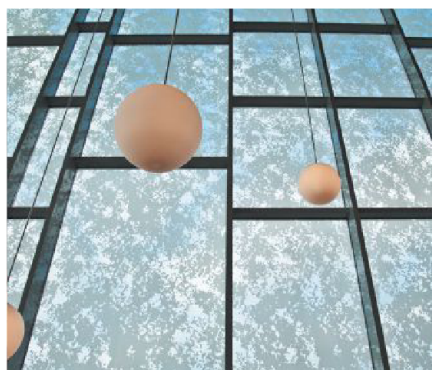
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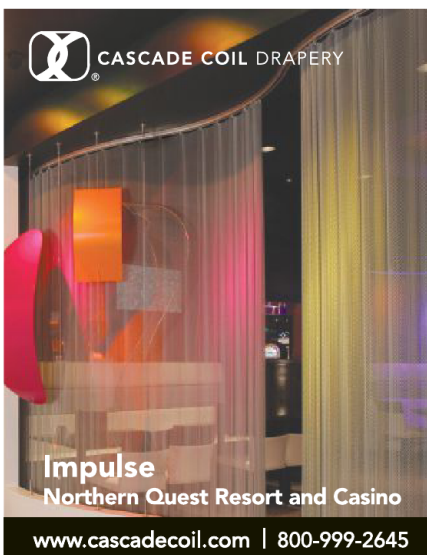
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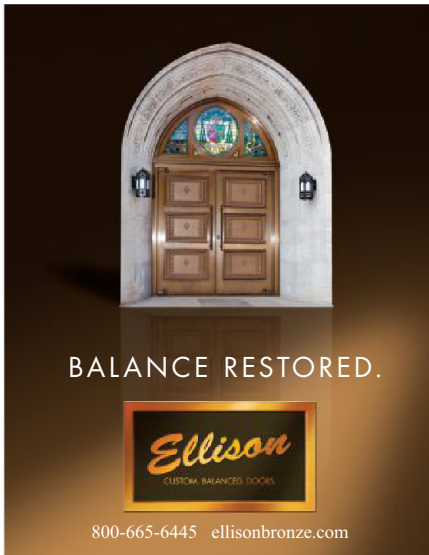
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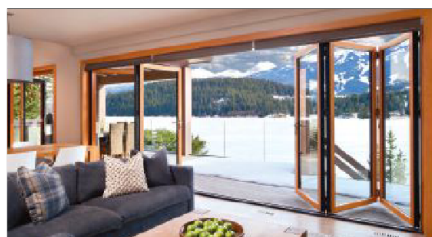
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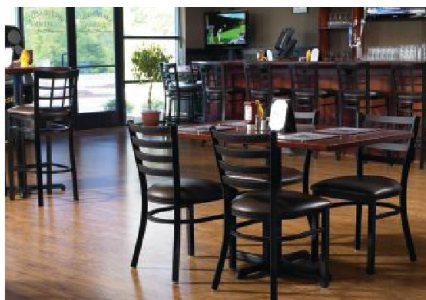


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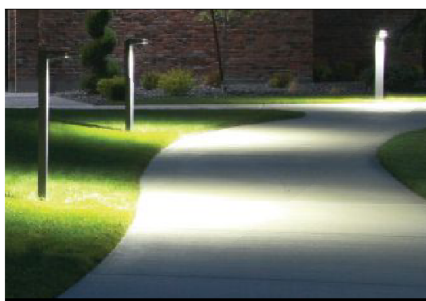
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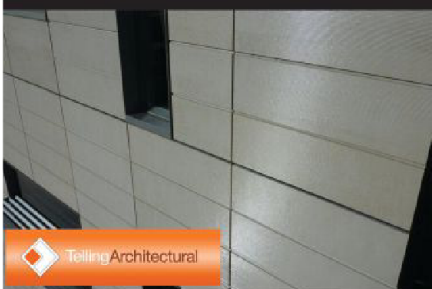


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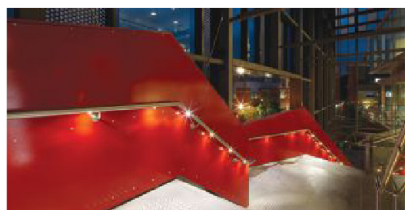
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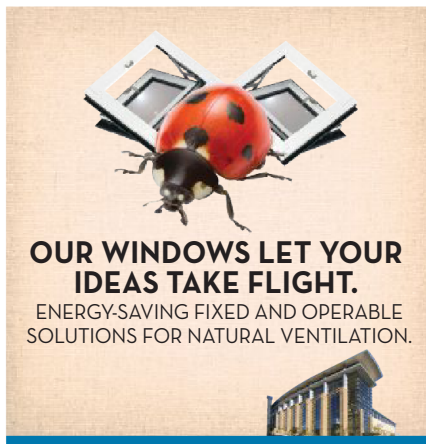


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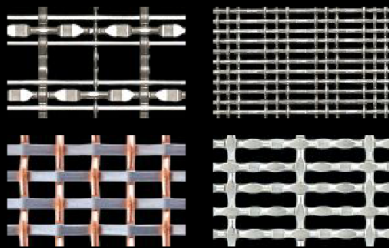
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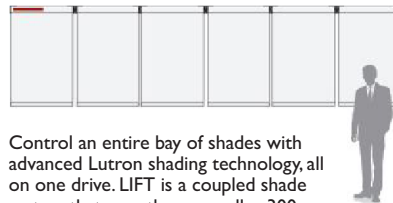
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Architect Magazine*	37	–	architectmagazine.com	
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Metal Sales	39	444	metalsales.us.com	800.406.7387
Metal-Span	31	208	metalspan.com/innova3	877.585.9969
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ModularArts	72	–	modulararts.com	206.788.4210
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Oldcastle BuildingEnvelope	2-3	52	oldcastlebe.com	866-OLDCASTLE
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\*issue mailed in regional editions

# PAST PROGRESSIVES



## JURY

### 1957 P/A Awards Jury

Marcel Breuer  
Gordon Bunshaft  
Huson Jackson  
Emil Praeger  
Harry Weese

## 1957 P/A AWARD CITATION

# Behind the Big Screen

DESIGNED BY CURTIS AND DAVIS, NEW ORLEANS'S MAIN LIBRARY SHOWS HOW A CLASSIC MODERN BUILDING CAN ADAPT TO CHANGING NEEDS.

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

**IN THE MID-1950S**, New Orleans firm Curtis and Davis won several P/A Awards, including two in 1957. One of these, the New Orleans Main Library, captured the essence of that firm's response to the city's hot, humid climate with a three-dimensional aluminum screen that wraps the top two floors, shading the glass walls from Louisiana's intense sun. Screen walls had become a cliché and, as one P/A juror said, a way "to cover up bad design," but the subtleties of this library show that such screens could also be used effectively in good design.

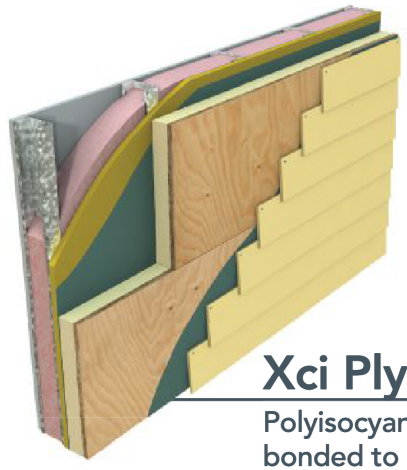
A simple, rectangular box, angled slightly to respect the view of City Hall from Elk Place, the library encloses a spatially rich interior. Entered through a circulation vestibule that projects below the screen, the library has a flexible plan

of open public areas, glass-walled mezzanines, and services along the blank back wall. The vitality of the building occurs in section, with two-story reading rooms and a two-story "bridge" above that brings daylight deep into the building from third-floor patios. While that openness to the sky somewhat counters the efforts to shade the exterior, it does create an inviting interior that encourages patrons to "shop" for books, as Arthur Davis said.

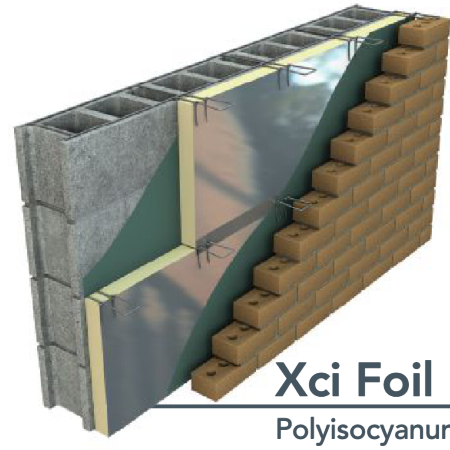
Amid a library building-boom in New Orleans, the city now has a new main library on its wish list. But losing this iconic modern building—now somewhat hidden behind another screen, this time made of trees—would be a shame. It served the city well for more than 50 years and deserves to do so for many more.



# Hunter Panels Introduces Energy Efficient Xci Polyiso



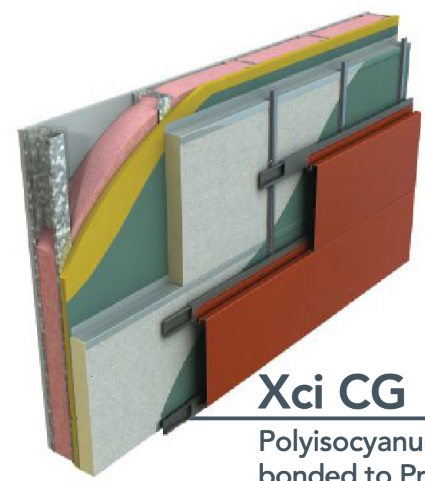
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# Lutron systems help the Empire State Building achieve sustainability goals.

Lutron lighting controls and sensors **save up to 65% of lighting energy.\***

- **Wireless** – simplifies installation and minimizes disruption
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- **Expandable** – add to a system or reconfigure at any time

“Lutron products are state-of-the-art, cost effective, and architecturally beautiful. We worked with Lutron to develop wireless solutions for the Empire State Building — now you can buy our choice for energy-saving light control.”

**Anthony Malkin**  
Empire State Building Company

## Empire State Building sustainability goals

Building energy reduction	38%
Building carbon emission reduction (over the next 15 years)	105,000 metric tons
Annual building energy bill reduction	\$4.4 mil
<b>Lutron contributions toward overall goals</b>	
<b>Projected lighting energy reduction</b>	<b>65%</b>
<b>Projected lighting controls installed payback</b>	<b>2.75 years**</b>

For more information please visit [www.lutron.com/esb](http://www.lutron.com/esb) or call 1.800.523.9466 for 24/7 support.

\* Compared with manual (non-automated) controls, up to 65% lighting energy savings is possible on projects that utilize all of the lighting control strategies used by Lutron in the ESB project (occupancy sensing, high-end trim, and daylight harvesting). Actual energy savings may vary, depending on prior occupant usage, among other factors.

\*\* Estimates based on Lutron controls installed in ESB pre-built tenant space. Payback claims assume 65% reduction in energy costs and energy rates of 22 cents per kwh. Actual payback terms may vary.

The Empire State Building design is a registered trademark and used with permission by ESBC. Empire State Building sustainability goals are provided by ESBC and contain energy saving strategies in addition to lighting control.

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