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ARCHITECT

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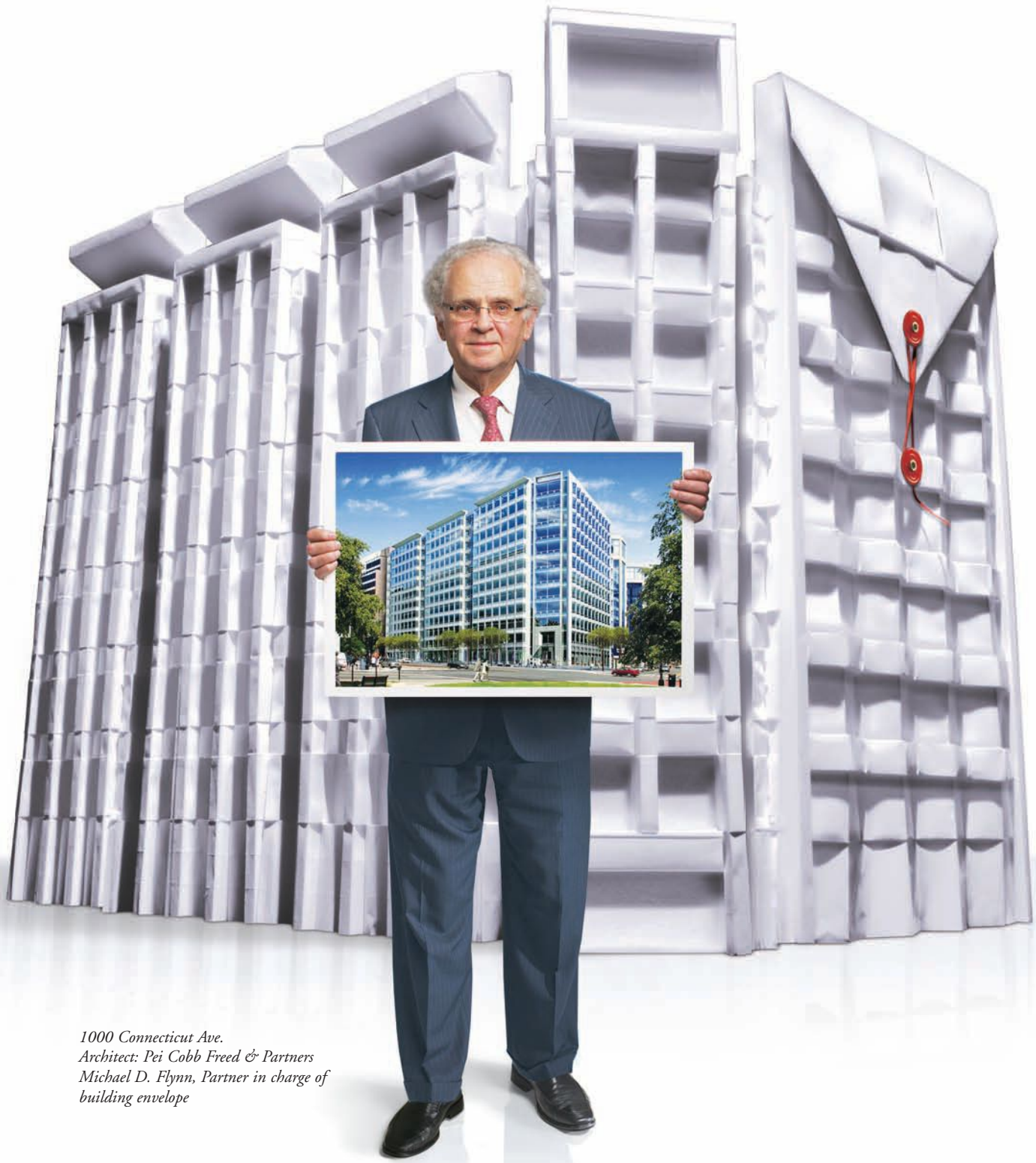
THE SOLAR DECATHLON STARTS GETTING REAL



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VISITORS AT THE 2011 U.S. DEPARTMENT OF ENERGY'S SOLAR DECATHLON, HELD THIS YEAR AT WEST POTOMAC PARK IN WASHINGTON, D.C. PHOTO BY IAN ALLEN.

→ ONLINE

There's more online at architectmagazine.com:

Check out ARCHITECT and ECO-STRUCTURE's extensive coverage of the 2011 Solar Decathlon with profiles of each team, slide shows, and video walkthroughs.

Blaine Brownell's Mind & Matter blog looks at products and materials in development and on the market.

Aaron Betsky's Beyond Buildings blog comments on the impact that design has on our society and culture.

And there are constant updates: breaking news, new products, slide shows, extra images of the projects in the issue, and more ...

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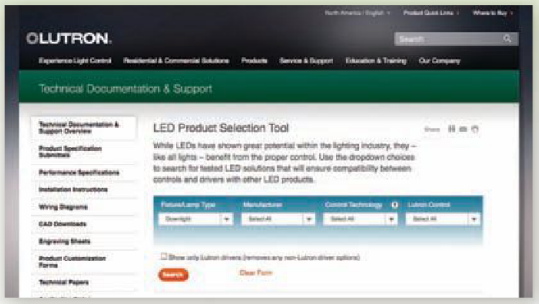

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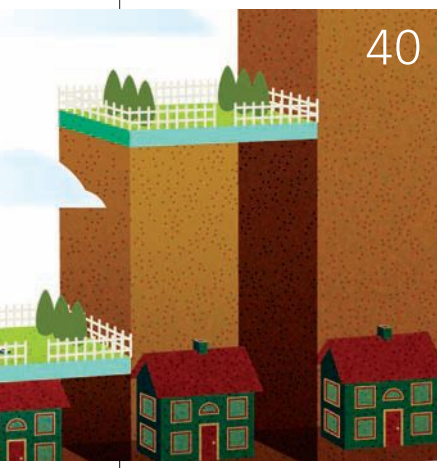

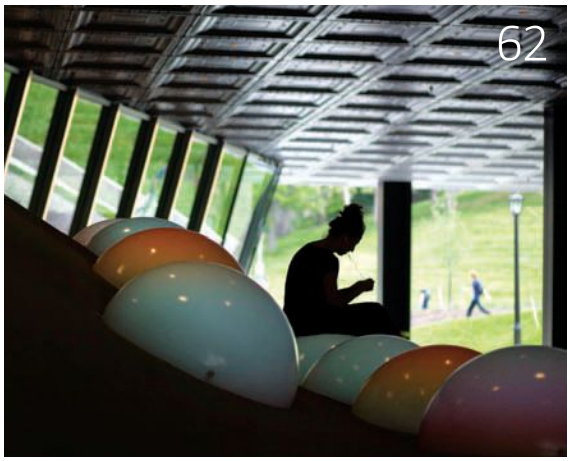

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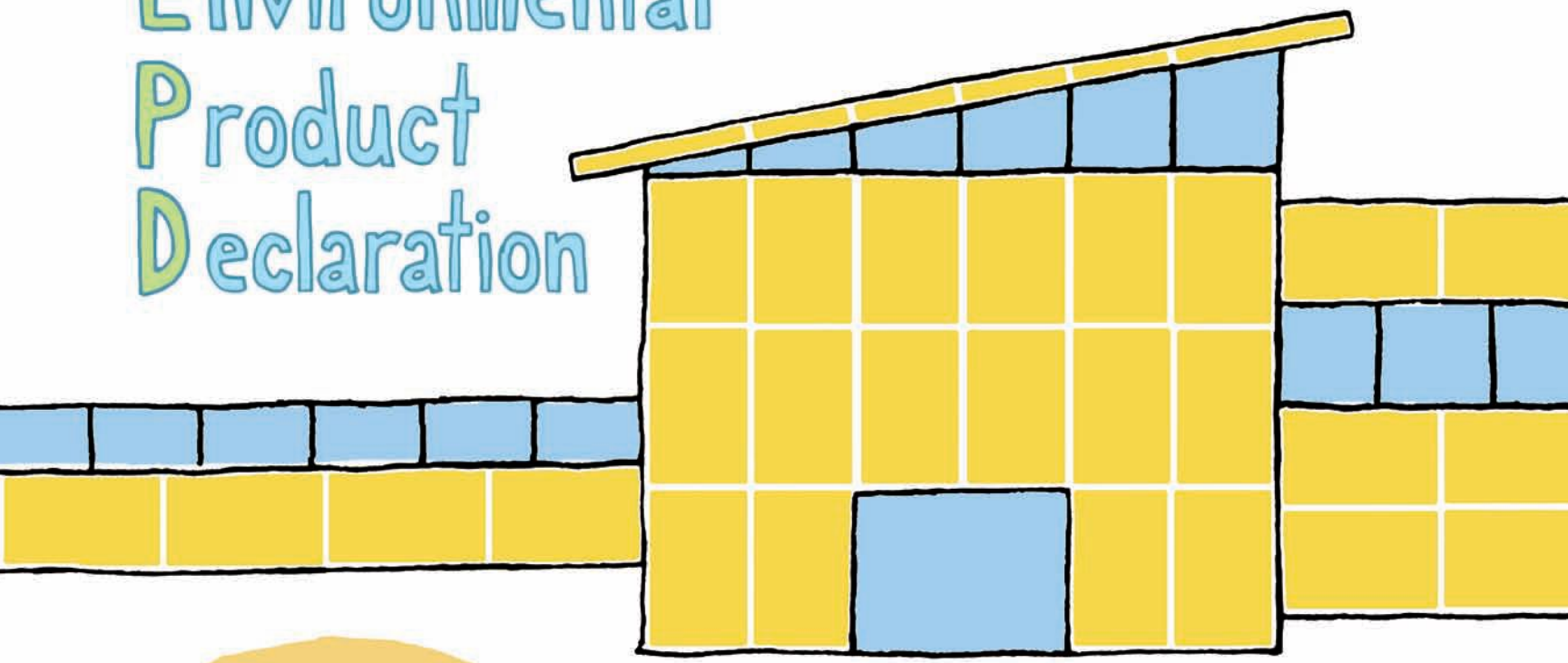
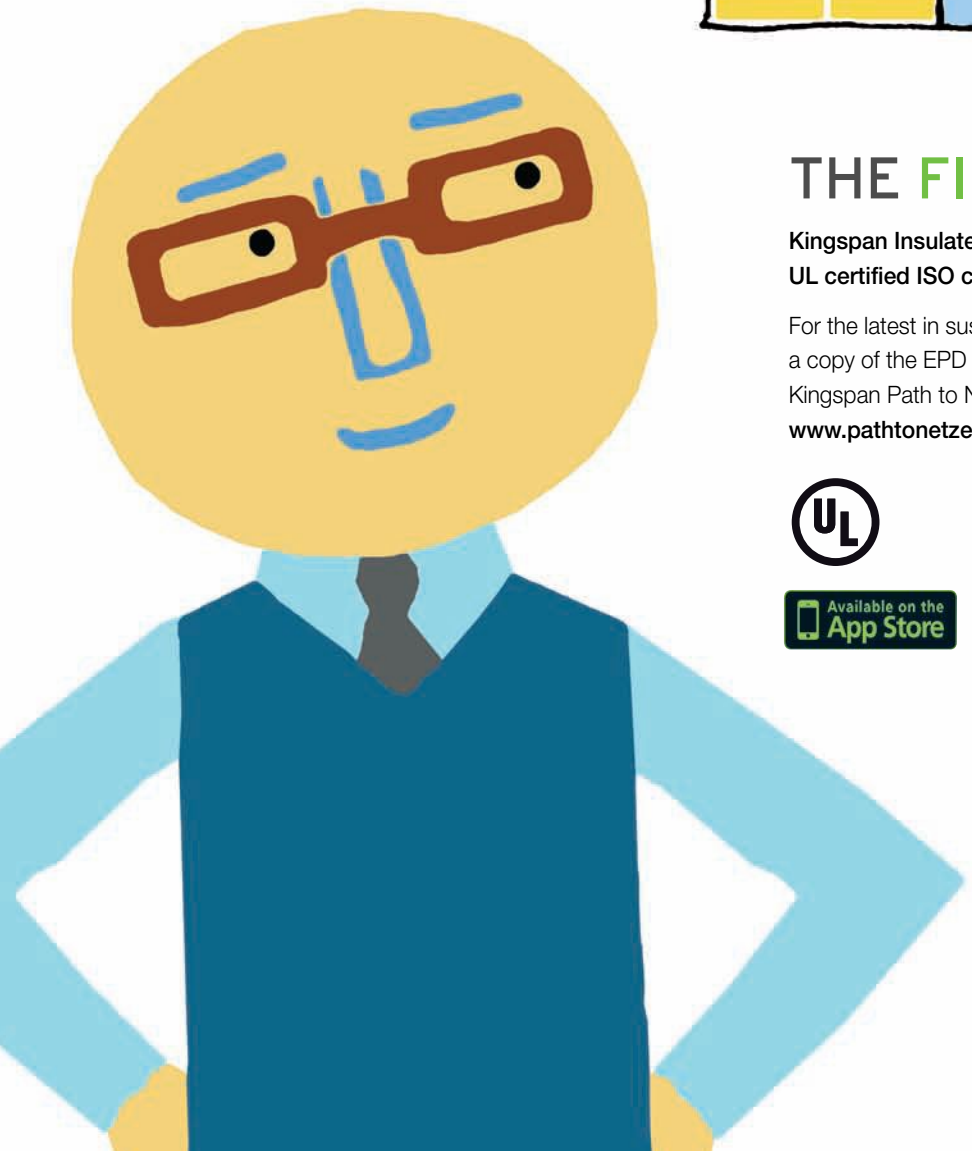
THIS PAGE, CLOCKWISE FROM TOP LEFT: MCKIBILLO; JASON KOSKI, CORNELL UNIVERSITY PHOTOGRAPHY; COURTESY TVSDESIGN

Environmental Product Declaration





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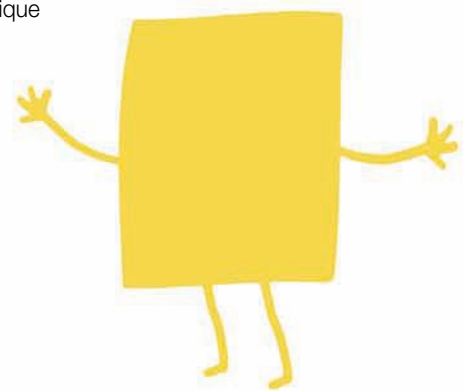

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MIRACLE ON THE POTOMAC

THE MALL GOT ITS LAST FACELIFT SOME FOUR DECADES AGO, AND IT HAS TO WITHSTAND THE USE OF 25 MILLION ANNUAL VISITORS.

SOMETHING STRANGE and wonderful happened in Washington, D.C., last month. Our beleaguered federal government made a decision that's indisputably in the country's best interests. The National Park Service (NPS) announced the short list of designers competing to rework swaths of the National Mall, and there isn't a loser in the bunch.

Teams were chosen through an open RFQ process for what is effectively three separate-but-simultaneous competitions for three different locations on the mall: Union Square, which fronts the Beaux-Arts Ulysses S. Grant Memorial at the base of Capitol Hill; the open-air Sylvan Theater just south of the Washington Monument; and Constitution Gardens, a naturalistic landscape immediately north of the Reflecting Pool.

The competition sponsor, the Trust for the National Mall, is, in its own words, "the official non-profit partner of the National Park Service dedicated to restoring and improving the National Mall." The list's quality demonstrates the value that adviser Donald Stasny, FAIA, brought to the endeavor. And with designers such as Elizabeth Diller and Ken Smith under consideration, the trust's definition of "improvement" is clearly progressive.

Every team includes a landscape architect, which should affirm that profession's recent and well-deserved upsurge in prominence among the allied disciplines. It's satisfying, and perfectly natural, to see great landscape designers play an equal role with architects in the rehabilitation of America's Front Yard.

The trust's triple competition derives from a 2010 NPS master plan for the entire mall (nps.gov/nationalmallplan). Concerned citizens should know that the plan's called-for renovations are far from frivolous. The mall got its last facelift some four decades ago, and it has to withstand the use of 25 million annual visitors.

I have just one reservation about what's happening on the mall. The competition sets an exceptionally high design standard, but the 2010 plan calls for many more interventions, such as restrooms, concession stands, and benches. These may be smaller projects than Union Square, Sylvan Theater, and Constitution Gardens, but when the time comes to select designers for them the NPS and the trust should take just as much care.

In my March 2011 editorial, I suggested that future Solar Decathlons could focus on designing small-scale improvements to the mall, but there are many ways to spread the opportunities equitably, to hard-working and talented designers. Because, like our citizenry, the entire National Mall—from lofty memorial to humble park bench—deserves the Blessings of Liberty.

The Short List(s)

Union Square

Elizabeth Diller of Diller Scofidio + Renfro and landscape architect Walter Hood • landscape architect Kathryn Gustafson and Carl F. Krebs, AIA, of AEDAS • Harry Cobb, FAIA, of Pei Cobb Freed and landscape architect Ken Smith • landscape architect Gary Hilderbrand of Reed Hilderbrand and Alex Krieger, FAIA, of Chan Krieger NBBJ • Rob Rogers, FAIA, and Jonathan Marvel, AIA, of Rogers Marvel and landscape architect Peter Walker • Craig Dykers, AIA, of Snøhetta and landscape architect Roger Courtenay of AECOM

Sylvan Theater

Landscape architect Diana Balmori and Amale Andraos and Dan Wood, AIA, of WORKac • Elizabeth Diller and Walter Hood • Michael Arad, AIA, of Handel Architects and landscape architect Barbara Wilks, FAIA • Michael Maltzan, FAIA, and landscape architect Tom Leader • landscape architect Skip Graffam of OLIN and Marion Weiss, AIA, of Weiss/Manfredi • Enrique Norten, Hon. FAIA, of TEN Arquitectos and landscape architect Andrea Cochran

Constitution Gardens

Landscape architect José Almiñana of Andropogon and Frank Grauman, FAIA, of Bohlin Cywinski Jackson • landscape architect Jeff Lee and Arthur Cotton Moore, FAIA • Ron Kessler, AIA, of McKissack & McKissack and landscape architect Sheila Brady of Oehme Van Sweden • landscape architect Warren Byrd of Nelson Byrd Woltz and Paul Murdoch, AIA • Skip Graffam and Marion Weiss • Rob Rogers and Jonathan Marvel and Peter Walker

LETTERS

September 2011

Two hundred and forty pages with almost no architectural content? It's a shame. You guys used to be great. *Gregory Wharton, AIA, Seattle*

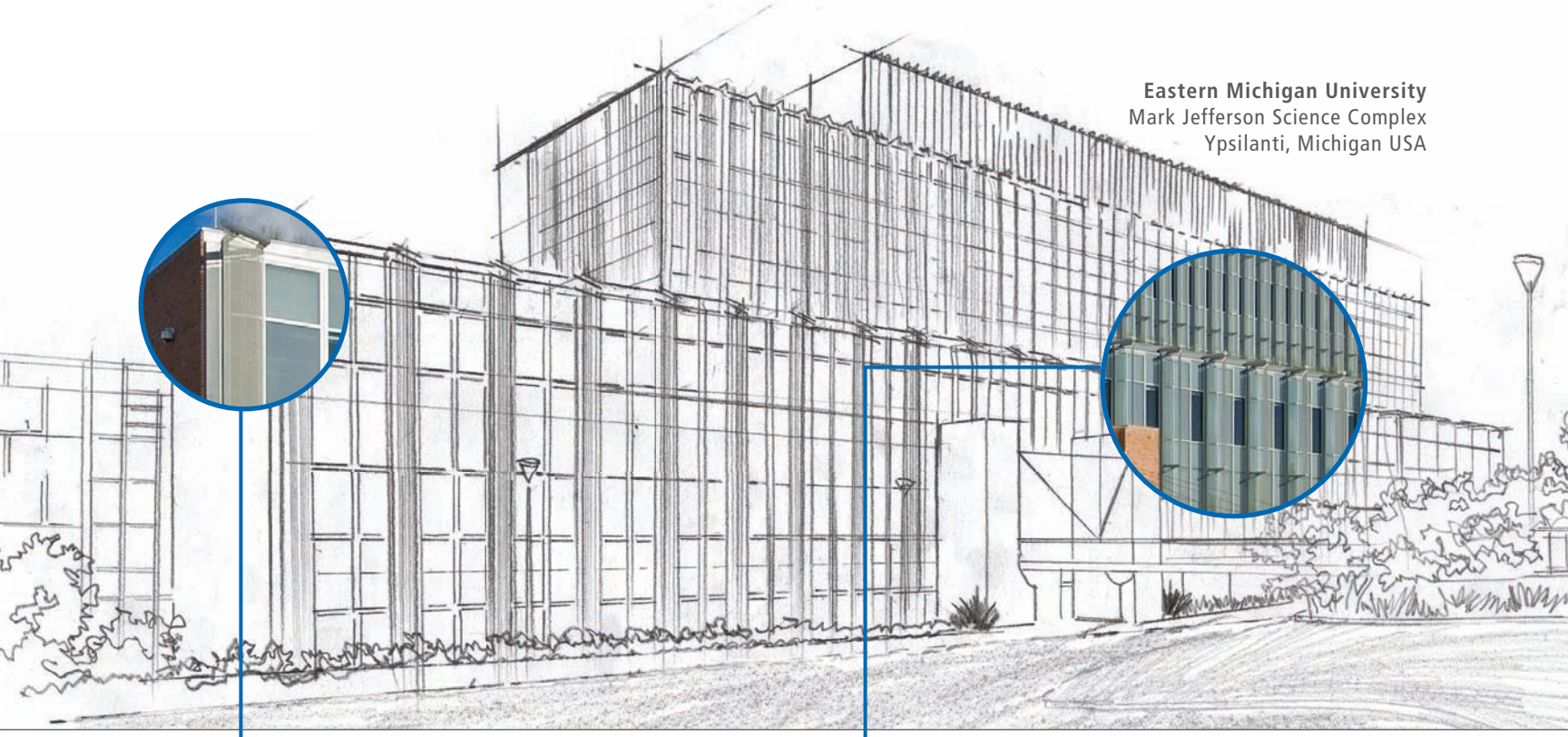
Congratulations on the latest issue of your magazine—it is qualitatively different from its predecessors. I also liked the editorial. *James W. Hadley, AIA, Orleans, Mass.*

Correction

In the September 2011 issue, the profile on Architecture for Humanity misreported the amount that the nonprofit has received from the U.S. government. Architecture for Humanity has received no federal money for its operations in Haiti, though it has received support in the past from the National Endowment for the Arts for other projects.

MIKE MORGAN

YOUR DESIGN
OUR FUNCTION



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Contributors

Ian Allen

Born and raised in Seattle, Wash., Ian Allen relocated at age 20 to New York City to attend the School of Visual Arts, where he studied design. To supplement his studies, he took classes in photography; and to supplement his income, he worked as an assistant to photographers around the city. Allen's photography has appeared in *Wired*, *Esquire*, *New York Magazine*, and other publications. In addition, he has worked with HBO, Cinemax, and MTV on diverse projects. For ARCHITECT, Allen has worked domestically and internationally, shooting in Maine, Connecticut, and Kansas as well as São Paulo and Montreal. His photographs from the Solar Decathlon appear in this issue. Allen travels frequently for his work and rarely keeps a dedicated shooting space, but when he is in New York, he often works from his Clinton Hill, Brooklyn, parlor-floor apartment, where he lives with his girlfriend, Claudia, and French bulldog, Alfonso.

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Kelly Henry, M. Arch, LEED AP
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THE HOLLYWOOD REPORTER

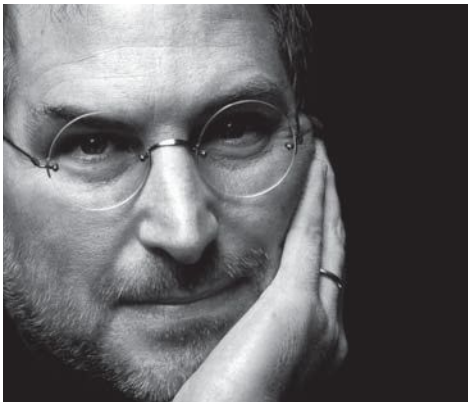
New Eames documentary comes to PBS

Eames: The Architect and the Painter, a new documentary by Jason Cohn and Bill Jersey, investigates the lives and work of husband and wife Charles and Ray Eames.

LOS ANGELES TIMES

California slips in energy efficiency

For the first time, California lost its top billing in the American Council for an Energy-Efficient Economy's state energy-efficiency ratings, yielding first place to Massachusetts.



THE NEW YORK TIMES

Jobs's death felt in architecture

Peter Bohlin's design work on more than 30 Apple stores nationwide testifies not just to Steve Jobs's impact on design, but also to his interest in promoting commercial architecture.

Green Building Globally

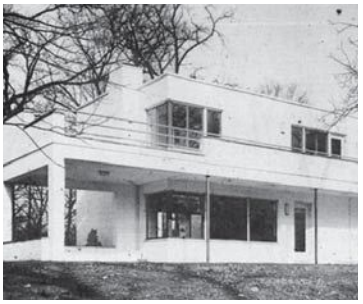
Rick Fedrizzi, president and CEO of the U.S. Green Building Council, will serve as the chair of the World Green Building Council, a coalition of green-building councils from dozens of developed and developing countries around the world.

Fedrizzi, the U.S. Green Building Council's founding chair, succeeds outgoing World Green Building Council chairman Tony Arnel, who is also the chairman of the Green Building Council of Australia. Arnel's three-year tenure as the global council's chairman oversaw growth in the number of green-building councils worldwide as well as the completion of significant LEED-accredited projects, including One Bryant Park—the first LEED Platinum high-rise in New York City.

As the chair of the World Green Building Council, Fedrizzi will preside over a convention of established councils, emerging councils, and prospective councils globally. Nations striving for higher council status are promoted through their demonstration of adherence to international standards for these associations. The organization has grown from eight councils in 2002 to 89 councils today in its effort to promote sustainable building through accreditation and other market mechanisms.

In October, the World Green Building Council convened its second-annual congress in October in Toronto, where it recognized David Gottfried—the founder of the U.S. Green Building Council—with the inaugural World Green Building Council Global Green Building Entrepreneurship Award. KRISTON CAPPS

Saving Ohio Modern



AFTER SITTING VACANT for six years, a landmark 1938 John Becker International Style house built for insurance agent Frederick Rauh and his wife, Harriet, will be renovated by the Cincinnati Preservation Association (CPA). The house was donated—along with funds for a complete renovation—by Emily Rauh Pulitzer, founder and chair of the Pulitzer Foundation for the Arts and daughter of the original owners.

A pupil of Walter Gropius's at Harvard University and a partner in the firm Garriott and Becker, John Becker designed several Cincinnati firehouses and early Modern residences.

Pulitzer lived in the Rauh house until her parents sold it in 1964, after which it changed ownership several times and was eventually abandoned. She was alerted to its derelict condition in 2006, when CPA preservation director Margo Warminski listed the vacant $450,000 property on Preservation 911, the National Trust for Historic Preservation's online message board for endangered historic properties. In 2010, an entity controlled by Pulitzer purchased the house.

Architects Plus has been chosen as the restoration architect, with Milner Carr Conservation Laboratory providing consulting on specialized restoration techniques. The original landscape architecture, designed by A.D. Taylor, will also be re-created.

Upon completion, the house will be opened for tours and lectures. If the building is sold as a private residence, historic-conservation easements guarantee that its architectural integrity will be preserved. ALEX HOYT

TOP LEFT TO RIGHT: FIRST RUN FEATURES; COURTESY CA ENERGY COMMISSION; COURTESY FABIEN EGOT
BOTTOM: CINCINNATI PRESERVATION ASSOCIATION

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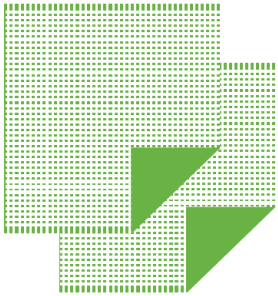

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ENERGY SAVINGS

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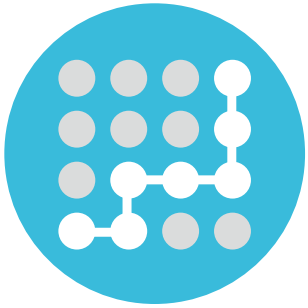

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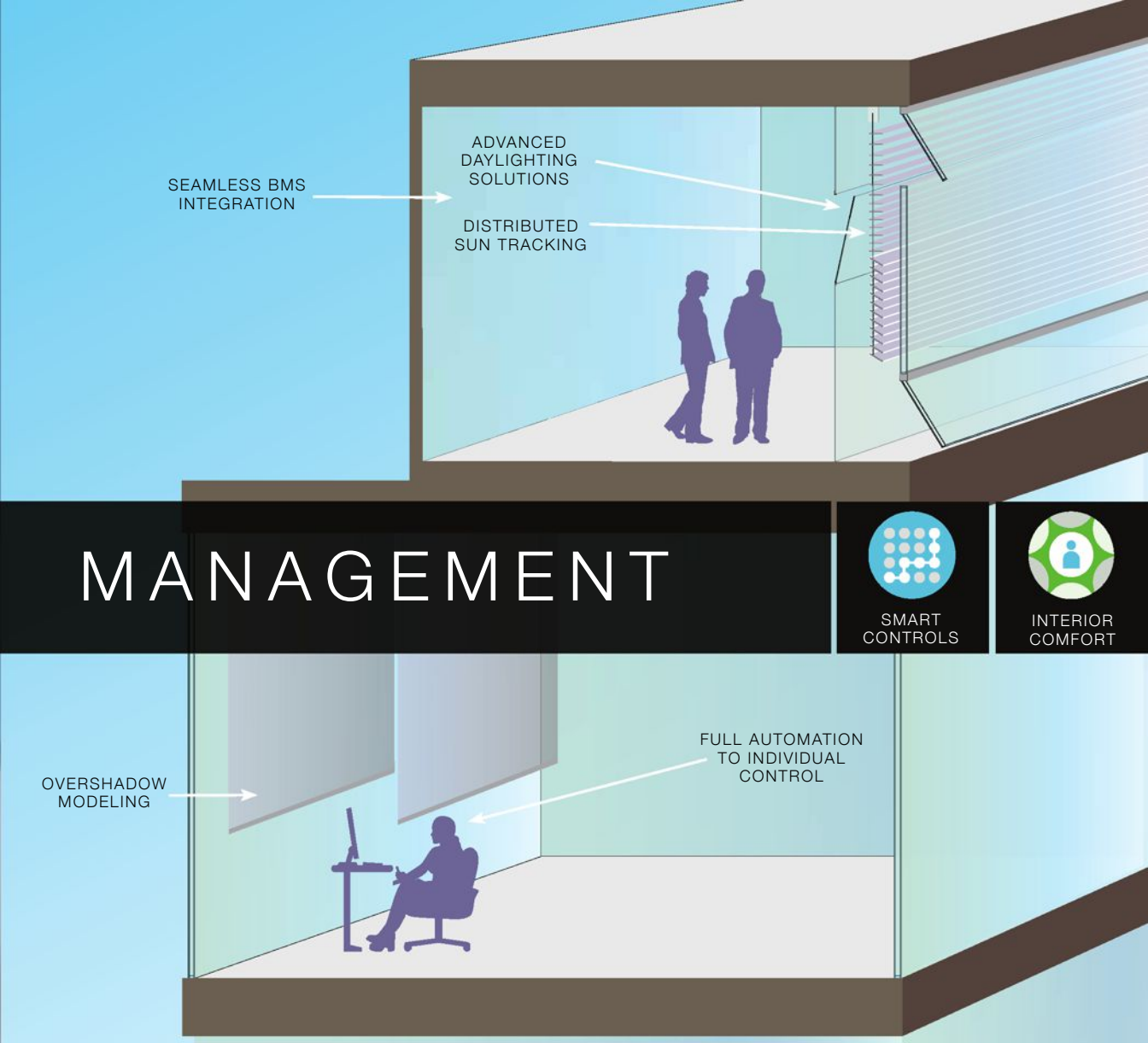

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NUMBER OF CITIES IN 11 NORTHEASTERN STATES THAT APPLIED FOR KROC COMMUNITY CENTER GRANTS

SOURCE: SALVATION ARMY

8

NUMBER OF CITIES IN NORTHEAST SELECTED

SOURCE: SALVATION ARMY

16

SALVATION ARMY KROC COMMUNITY CENTERS ESTABLISHED NATIONWIDE

SOURCE: SALVATION ARMY

10

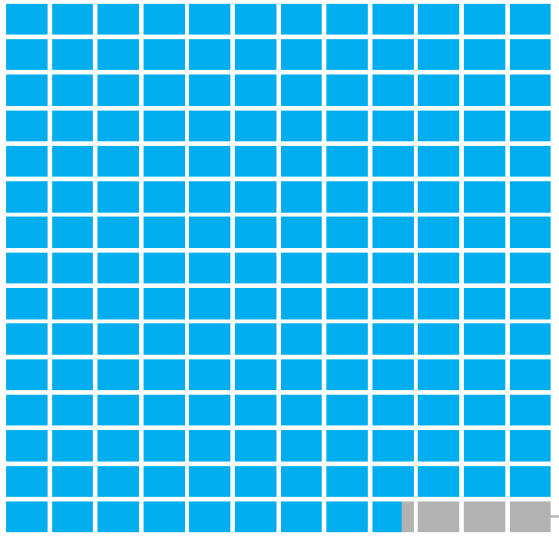
SALVATION ARMY KROC COMMUNITY CENTERS IN CONSTRUCTION AND DEVELOPMENT

SOURCE: SALVATION ARMY

$1.8 BILLION

= $10 MILLION

TOTAL GRANT FOR SALVATION ARMY KROC COMMUNITY CENTERS



SOURCE: SALVATION ARMY

NUMBER OF SALVATION ARMY KROC COMMUNITY CENTERS FUNDED

26

$32 MILLION

AVERAGE SALVATION ARMY KROC COMMUNITY CENTER GRANT

→NUMBERS

Charitable Giving

TEXT BY KRISTON CAPPS
ILLUSTRATIONS BY DAVID FOSTER

THE 2004 GIFT OF $1.5 BILLION from the estate of Joan B. Kroc to the Salvation Army is now coming to fruition, benefitting thousands of people at a time when need is great. The late widow of McDonald's founder Ray Kroc provided for the endowment of 26 Salvation Army Kroc Community Centers, 16 of which have opened nationwide.

Divided between the Salvation Army's four geographic regions in the U.S., the grant (which ballooned to $1.8 billion as the funds were disbursed) has provided on average $32 million in endowment funds for each center, typically with matching construction grants. All centers were required to procure additional matching funds.

The Salvation Army Ray and Joan Kroc Corps Community Center of Philadelphia, which opened one year ago, has enrolled more than 9,200 members. Designed by Philadelphia firms MGA Partners and Andropogon Associates, the 130,000-square-foot building serves some 1,000 people every day, from families making use of the center's abundant recreational activities to members of underserved communities seeking social services.

Kroc Community Center amenities include swimming pools, training kitchens, worship and performing arts stages, and fitness centers. But the centers' most important function may be as family resource centers, extending the charitable mission of the Salvation Army. This year, centers opened in cities including Boston; Green Bay, Wis.; and Biloxi, Miss.—enabling architects to contribute to a national network of buildings devoted to philanthropy. □

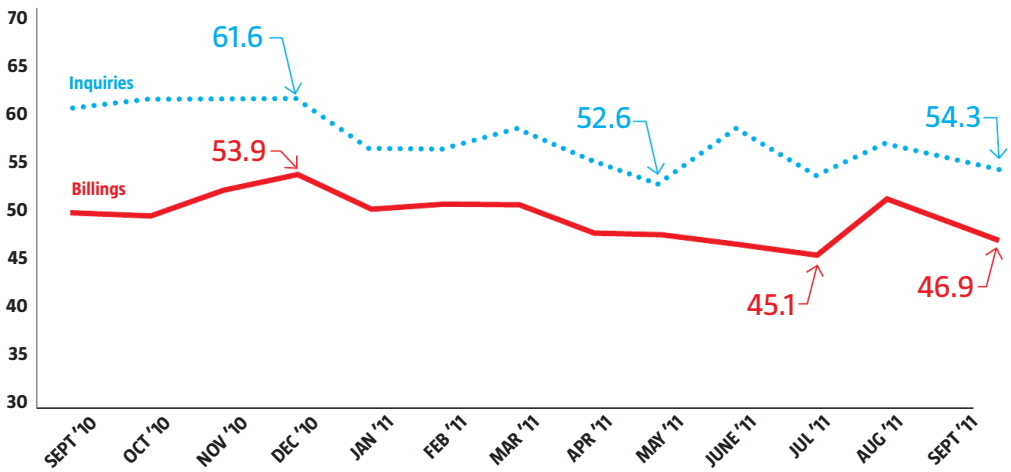
SEPTEMBER 2011 ARCHITECTURE BILLINGS INDEX

46.9

- ↑ 52.4 commercial
- ↓ 48.0 institutional
- ↓ 50.0 mixed practice
- ↑ 46.4 multifamily residential

SOURCE: AIA

BILLINGS AND INQUIRIES INDEXES



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+

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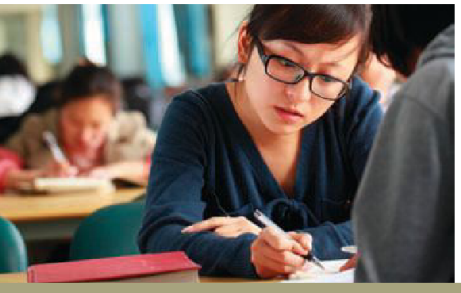
waiting for class to end



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On the Boards

TEXT BY ALEX HOYT

The Curve

BBLUR ARCHITECTURE

Plans are under way for the Curve, a 4,447-square-meter (47,86-square-foot) library and cultural center in the industrial London suburb of Slough. Designed by London-based Bblur Architecture, the complex will contain a library, adult-education facilities, a café, and a performance space. Part of Heart of Slough, an $800 million urban master plan developed by the Slough Borough Council to revitalize 27 downtrodden acres of the city's downtown, the $19.4 million Curve sits adjacent to St. Ethelbert's Church. "The new library 'cuddles and protects' the church and forms a very simple curved backdrop for St. Ethelbert's," says Matthew Bedward, a partner at Bblur, who also notes that the "form of the new library is based on creating a walkthrough between the new crossroads ... [created as part of Heart of Slough] and the main civic square of the town center." The interior's curved floor plates are designed to create intimately scaled learning spaces for users and to maintain sight lines between the two floors under a photovoltaic-studded roof. Bblur is no stranger to the suburb's master plan: its new Slough Bus Station opened in May. Construction on the Curve is set to start in early 2012; the building is slated for completion in 2013.

Miami Central Station

AECOM

Miami Central Station, a new $83 million ground-transportation hub, will integrate the city's rail, bus, and airport shuttle service for the first time. Sited on a 27-acre parcel between Miami International Airport and the Miami River, the station will service local and Greyhound buses, as well as local, regional, and Amtrak rail. Curved canopies over the rail tracks mimic the vaulted concrete ceiling of a pedestrian walkway that spans the various rail services; it also connects the private parking to a light-rail station accessing the airport. "We were constrained by the size of the site," says Marino Llamas, AIA, who is leading the design team at AECOM. "It was difficult, but we managed to consolidate the parking areas as well as the pedestrian areas, and provided space for a future high-speed rail." The station is the centerpiece of the Miami Intermodal Center, a 1.4 million-square-foot transit system being developed by the Florida Department of Transportation that also includes a rental car center, reconstructed access roads, and a 2.4-mile extension of the Metrorail system from Earlington Heights station to the center. Construction on the Central Station began in February and is expected to be completed in 2013.

TOP: COURTESY BBLUR ARCHITECTURE; BOTTOM: COURTESY FLORIDA DEPARTMENT OF TRANSPORTATION AND AECOM


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AIAVOICES

MOVER AND SHAKER

Robert Reed, Assoc. AIA, closed his five-person Atlanta firm, Preston & Reed Sustainability Solutions, in late 2007, at the beginning of what the National Bureau of Economic Research has designated as the start of the recession. Since that time, thousands of small businesses such as Reed's have closed, and thousands more employees have found themselves out of work. However, Reed, a Georgia Tech graduate, is no longer one of them. Using his architecture training and business experience, Reed is now the sustainable communities design director at Southface, an Atlanta-based nonprofit advocacy group for environmental solutions in construction, development, and communities.

The recession was pretty abrupt for our firm. Our client at the time—for which we'd been working on a big project for over a year—was being shut down by more than one creditor, and we realized that we needed to take drastic measures. First, we did not renew our month-to-month lease. Then we moved into the basement of a rental property I owned. Ultimately, though, we closed the doors. My wife, Marci, had worked with Southface at one point in her career, and so I knew of them—and I had also worked with them on a few charrettes. They reached out and asked for my help on a few things in March 2008, and I've been with them ever since.

Southface's executive director, Dennis Creech, has been wise in seeing where thought about sustainability is most needed, but community has always been part of it. Community outreach is something I understood from my former firm's work. Architects, like developers and engineers, hold on to things closely, and sometimes they have trouble sharing. But what I have found is that community outreach makes projects better. It makes for smarter development and a more sustainable solution. More than that, I think the need for transforming land-use rules has not lessened over the last 30 years. We are so far from any form of smart growth, and we need to reconvene that focus.

Energy efficiency is a complicated problem—how do you begin to invest in it? But this is an exciting prospect: finding decentralized power sources. Here in Georgia, we have a monopoly utility, and the inertia of having one big supplier who runs the grid is a big thing to overcome.

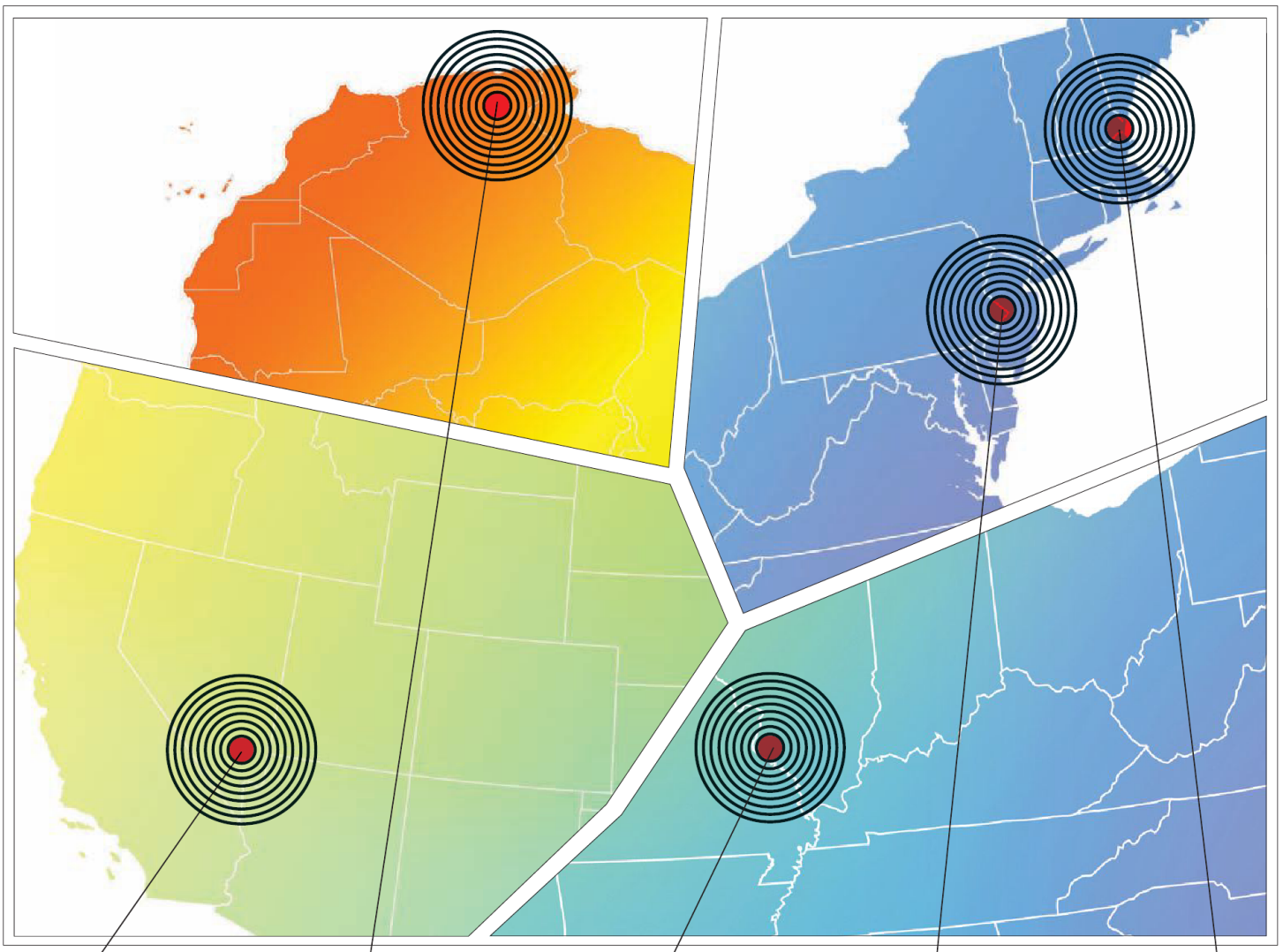
So what is smart growth? Smart growth is a combination of things: acknowledging that placemaking is necessary, acknowledging the proper response to context, and acknowledging that natural resources, a proper street network, and so on are things that need to work, respond, and adapt over time.

Ultimately, we can have green lungs in our cities; we can complete restorative landscapes—and the younger generation of architects sees density and mixed-use with a green connection as a good thing. As a profession, we seem to be focused on high design, and there are missed opportunities in sustainable design, such as natural forces, passive systems, materials, and so on. If architects and eager students could find their forms inside those systems, we'd have a more meaningful architecture. *—As told to William Richards* AIA

↗ To learn more, visit southface.org.

AIANOW

ACROSS THE INSTITUTE



LAS VEGAS

Speaking Engagement

Las Vegas is a city on par with Masdar, United Arab Emirates; Riyadh, Saudi Arabia; Phoenix; and Los Angeles in that it improbably thrives in the desert. It's a place of contradictions as well as innovative design practices. This year, AIA Las Vegas instituted Architects Speak as a forum for local architects to share how *they* thrive in the desert. The monthly lunch-and-learn series also has a special focus on bringing emerging professionals together.

↗ Learn more at aialasvegas.org.

BISKRA, ALGERIA

Ripple Effect

As energy crises go, so goes the global economy. But ingenuity is a renewable resource that can help ameliorate the crunch. On Dec. 4–5, the Biskra Architecture and Sustainability International Conference in Algeria will draw together architects, planners, and ecologists in service of that end. Conference organizers hope to frame a longer view of energy from the 1970s to today by looking at the evolution of sustainability requirements, energy modeling, and ways of thinking about urban and architectural heritage.

↗ Learn more at univ-biskra.dz/basc2011.

ST. LOUIS

Death and Life

Modern architecture suffered a blow in 1972 when the first of Pruit-Igoe's 33 buildings fell to the wrecking ball. The demolition of the St. Louis housing project, designed by Minoru Yamasaki, FAIA, underscored a lingering question: How badly had urban renewal failed America? Pruit Igoe Now, a St. Louis–based nonprofit, hopes to answer it for the 21st-century global city by returning to the brownfield site with a competition for what organizers call a "frontier" between North St. Louis and the Jefferson National Expansion Memorial.

↗ Learn more at pruittigoenow.org.

PHILADELPHIA

Messy Vitality

2011 marks 45 years since Robert Venturi's *Complexity and Contradiction in Architecture* shifted the foundations of architectural theory. The book's virulence toward modern architecture ultimately eclipsed the author's modest claims for a "gentle manifesto." But for many architects, it offered an excuse to be critical of Modernism *and* a way to think outside of it. The Philadelphia architect's legacy is not unlike his argument in the book: to demonstrate that architectural design is really a conversation about incongruent ideas ("both/and") that belie stylistic rules to form a holistic idea.

PORTSMOUTH, N.H.

Live Sustainably or Die

Sustainability is an austerity measure and a framework for communities to thrive for Plan NH, the Portsmouth, N.H.–based nonprofit advocate of smart growth. Plan NH launches the Vibrant Villages New Hampshire campaign this month, funded in part by the New Hampshire Housing Finance Authority, "for ordinary citizens to balance necessary growth with the state's rural character" says Robin LeBlanc, executive director of Plan NH. "We're going beyond 'land use' and 'sprawl' to reframe new ways of thinking about growth."

↗ Learn more at plannh.com

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AIAPRACTICE

LEAN AND GREEN

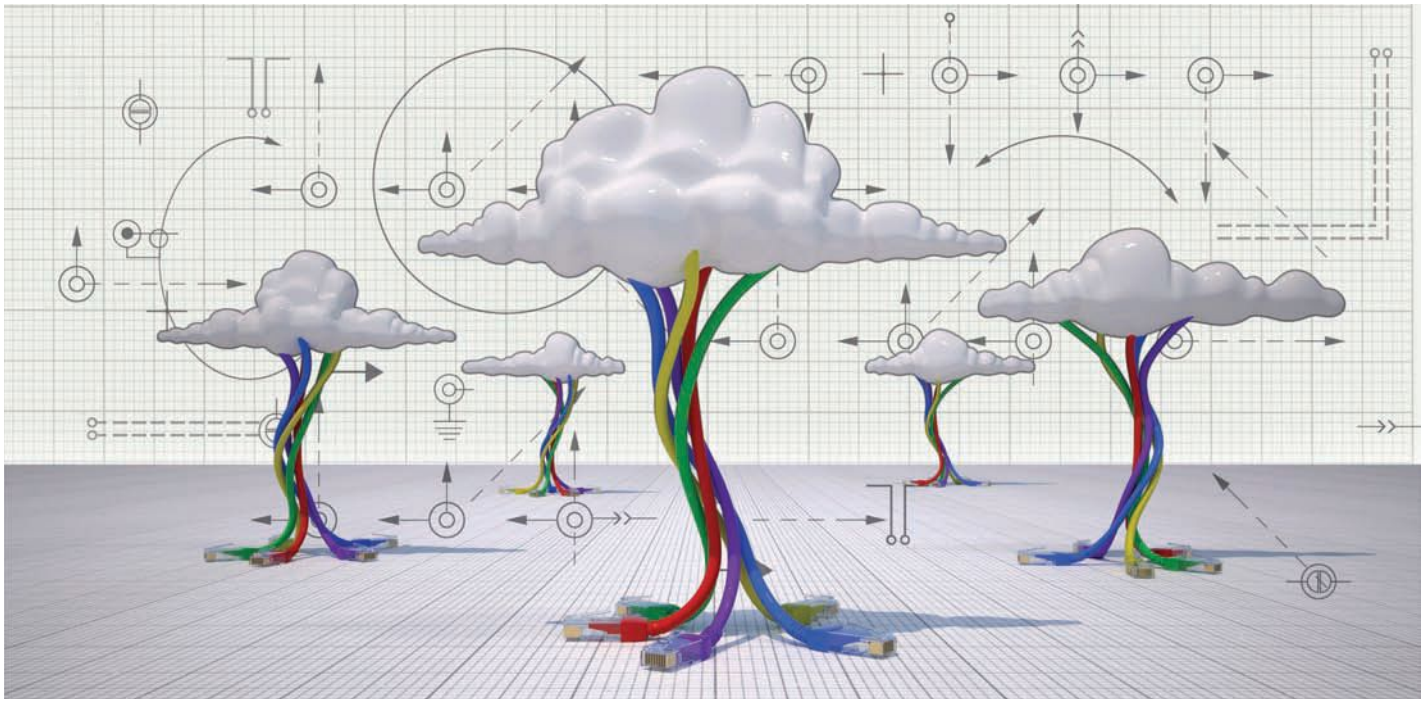


ILLUSTRATION: OLIVER BURSTON

New Web-based and cloud-based tools strip away some of the obstacles to running an efficient practice.

THE PLAINTIVE MANTRA "ON TIME AND ON BUDGET" CAN BE HEARD in the halls of architecture firms across the country. The phrase takes on new meaning in a down economy, where having the ability to work faster and smarter can make the difference between surviving and foundering.

An array of project-management and information-sharing solutions on the market, from the AEC specific to the universal, allows architects to reap new efficiencies. Some are Web-based, some are in the cloud, while others require a a minimum of hardware space.

One criterion for selecting a solution should be how well it facilitates intrafirm collaboration, across offices and at the jobsite. Submittal Exchange (*submittalexchange.com*), created by Matt Ostanik, AIA, of Des Moines, Iowa, is a prime example of a cloud-based system designed to provide architects with enhanced workflows, correspondence tracking, and accountability for the construction communications process.

"It was about eight years ago that I grew frustrated in my work as an architect with all of the submittals and other correspondence during construction," Ostanik says. "It was distracting, and I felt like there had to be a better way to manage that process."

Ostanik's company also offers a product called Submittal Exchange for Design, which can be used for collaboration and information sharing during the design phase of projects, as well as a product called Greengrade, a LEED administration tool that helps manage all of the tasks and documentation involved with LEED green-building certification.

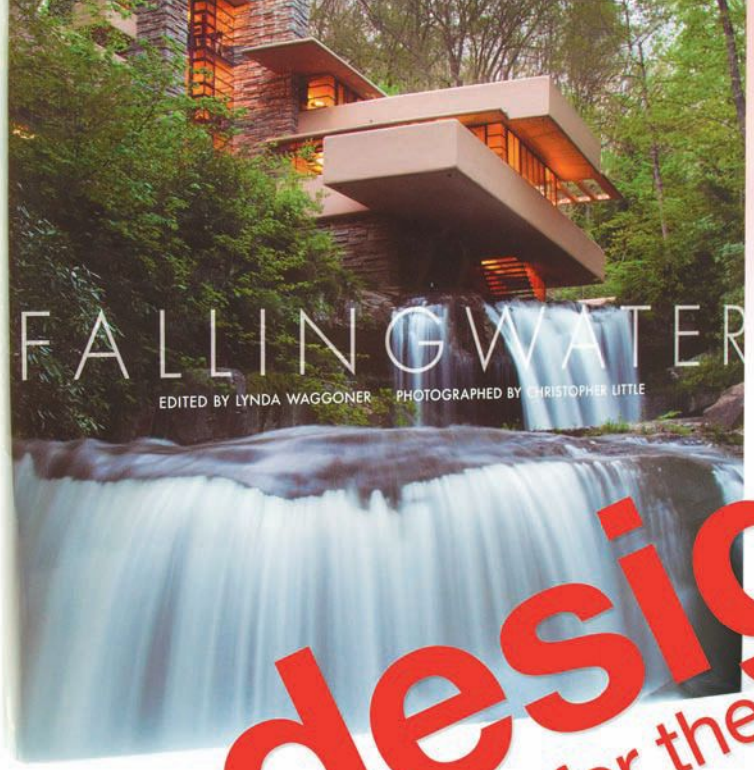
Another company, Newforma (*newforma.com*), offers a toolbox of project-information-management software solutions, including its core offering, Newforma Project Center, which helps architects manage project data and communications across internal and external project teams. Newforma Project Analyzer, an interactive budgeting and planning tool, adds another layer of accountability to the process by bringing financial and project information together so that managers can capture a more complete understanding of how well a project is progressing.

SHW Group, based in Dallas, is a Newforma devotee. "I think the most important thing is providing that common language and process across our firm, where we've really gotten away from multiple spreadsheets that were in the hands of individual project managers," says Bob Rayes, SHW Group's chief information officer. "Being able to pull that information together in a way that's readable by anyone anywhere has definitely increased efficiency."

In terms of available resources, one of the longest serving has been the AIA's Contract Documents, which celebrated 100 years in 2011. To help mark that milestone, Contract Docs will move to the cloud next year with an online portal that will provide access to more than 100 industry-standard contracts and documents (*aia.org/contractdocs*). Architects will be able to purchase one or two contracts in paper format at their local AIA chapter, download documents as needed, and subscribe to unlimited online access.

Additionally, many architects may already be familiar with the Autodesk Building Design Suite for Building Information Modeling (BIM), as well as its fully integrated, cloud-based companion, Autodesk Buzzsaw. Many of these tools, including Buzzsaw and Newforma, offer ways to access project information via mobile devices. Other all-purpose tools, such as Basecamp (*basecamphq.com*) and Dropbox (*dropbox.com*), grease the wheels of collaboration and communication. Basecamp, while not designed for the architecture industry, still finds use among firms as Web-based project-management software.

Collapsing data into the cloud means less hardware is needed to serve multiple offices, which reduces power consumption and, ultimately, replacement costs over time. "Cloud computing is a really natural fit with architecture, and it can really open up the doors for more collaboration," says Ostanik. *—By Jennifer Pullinger* AIA



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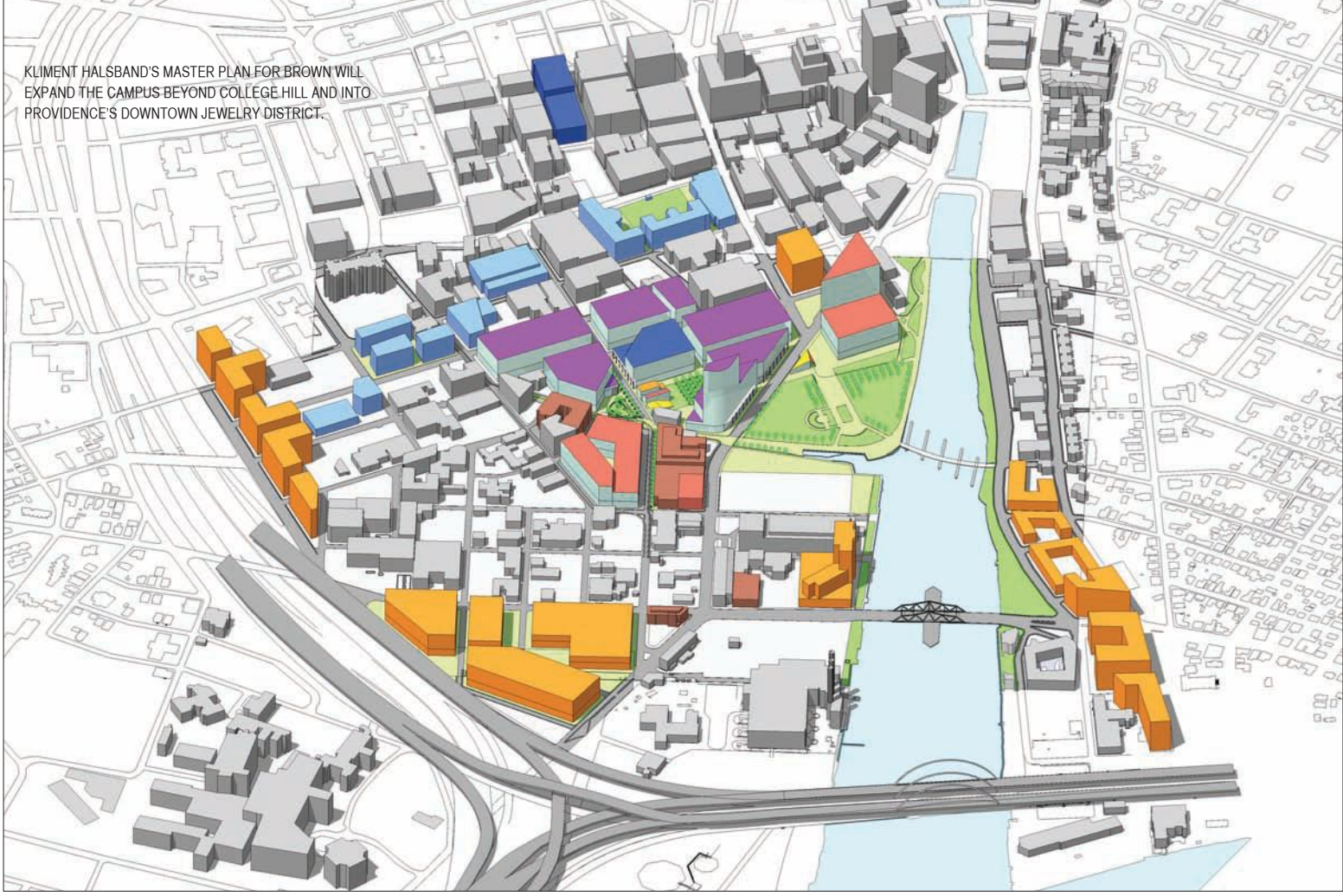


KLIMENT HALSBAND'S MASTER PLAN FOR BROWN WILL EXPAND THE CAMPUS BEYOND COLLEGE HILL AND INTO PROVIDENCE'S DOWNTOWN JEWELRY DISTRICT.

COURTESY OF KLIMENT HALSBAND ARCHITECTS

Figure Ground Relationship

Campus growth has consequences for the wider community. The trick is making sure they're the good kind.

BY MARGARET M. GRUBIAK

IN HIS LANDMARK SURVEY *CAMPUS: AN AMERICAN PLANNING TRADITION* (Architectural History Foundation, 1984), Paul Venable Turner crystallized the paradox that still challenges campus planners: The American campus exists in "a peculiar state of equilibrium between change and continuity." Even if the current clamor over student-loan burden and the value of liberal education to today's job market portends stagnant or lower enrollments, growth pressures remain for the campus as students, their parents, and faculty and researchers require ever-better facilities. At the same time, college and university leaders and campus planners must approach solutions to growth in ways that continue to inscribe educational ideals within the physical campus and foster good relationships with their surrounding communities.

One solution to addressing growth is reimagining the historic campus core. In 2003, the New York firm Kliment Halsband Architects created a master plan for Brown University centered on a rethinking of this core. Brown's historic campus, in the College Hill section of Providence, Rhode Island, had become the "place parents photograph," says Frances Halsband, FAIA. In other words, it was a place that embodied Brown's institutional image, but whose real academic functions were thin.

The master plan encouraged accommodation of new academic uses in the historic core and identified 1 million square feet of possible infill development, as well as 500,000 square feet of space to be renovated in the College Hill campus. Brown's residential neighbors, according to Halsband, "were delighted and relieved to see that the planning principle was to grow inward rather than outward." Additional planning guidelines helped ease the relationship. Appropriately scaled new buildings were to mingle with older structures. And Brown's services buildings were to be masked from the public edge of the campus.

Satellite campuses—those new developments physically separated from the core campus—offer another release valve for growth pressures. Brown officials hope to occupy a site in downtown Providence's Jewelry District, newly available after I-95 (which had

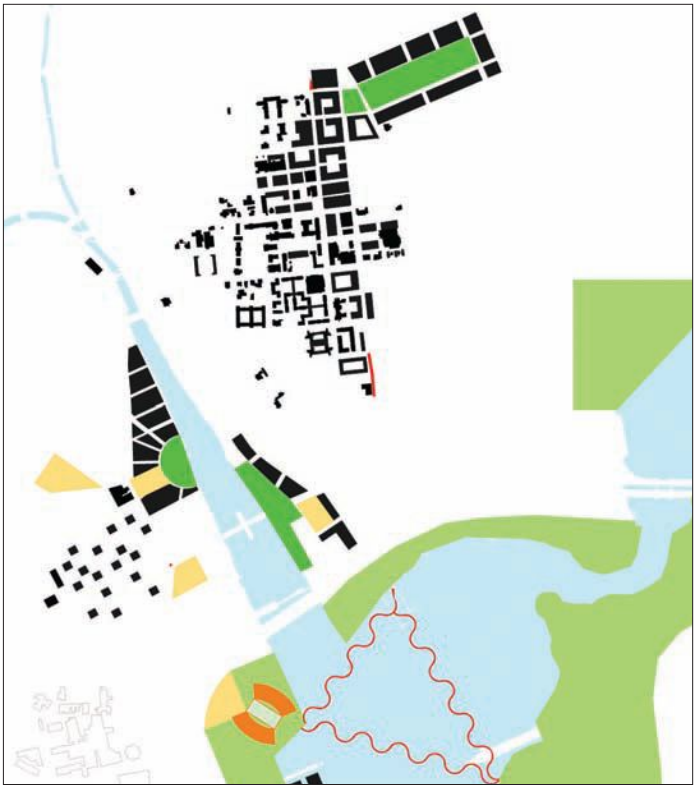
split the city) was rerouted. In New York, Columbia University's new Manhattanville campus, planned by Renzo Piano Building Workshop, Skidmore, Owings & Merrill, and James Corner Field Operations north of the school's Morningside Heights campus, is perhaps the most ambitious in imagining a secondary campus within a dense developed urban core.

While planners consider ways to link such satellite campuses through transportation networks and wayfinding, the challenge of crafting a cohesive identity and sense of community remains.

The University of Texas at Austin is now looking to heal the divide that came with its campus growth in the late 20th century. Whereas UT's west side (designed, in part, by Paul Cret, FAIA) centered on malls and courtyards, the east side of the campus (completed in the 1960s and 1970s) centered on individual buildings. Adding to the schizophrenia, Waller Creek and San Jacinto Boulevard, a major thoroughfare, bifurcated the site. For the school, the next step has to be about reconciliation rather than merely blending.

"To heal the campus divide, the light rail is going in exactly the right place, and that transit hub can become a focus and a real unifier," says Larry Speck, FAIA, W. L. Moody Centennial Professor in Architecture and former dean of UT's School of Architecture, who is working on the plan with Sasaki Associates.

Planning for growth also means fostering a good, and mutually beneficial, town–gown relationship. "A good working relationship between the university and Austin has been essential to the planning and growth of the Austin campus," says Fritz Steiner, FASLA, current dean of the UT School of Architecture. UT's location in the heart of the Texas capital means that the university must work with state constituencies as well as local residents. To that end, the school has implemented institutional relationships for city outreach (through its Office for Diversity and Community Engagement), and its design faculty also has built relationships with the local community.



KLIMENT HALSBAND'S MASTER PLAN ALSO IDENTIFIED MORE THAN 1 MILLION SQUARE FEET OF INFILL OPPORTUNUTIES IN HISTORIC COLLEGE HILL.

THE UNIVERSITY OF TEXAS AT AUSTIN'S CAMPUS HAS BEEN DIVIDED FOR YEARS AND CAMPUS PLANNERS HOPE TO UNITE ITS TWO SIDES.

Design diplomacy, so to speak, has created a working relationship. The school gets to explore its curricular cores of sustainability, preservation, and landscape architecture, and the community reaps the benefit of good design. "It's created a growing interest in things related to how we interface with the city," Steiner says.

A successful planning process (which often includes dozens of public meetings) requires the participation of school officials. Obviously, they benefit from knowing what's going on, but students, faculty, staff, and community members also benefit from knowing that "they were dealing with senior people in charge, and being treated with respect," Halsband says. For the Brown plan, Kliment Halsband stopped counting after conducting 200 campus and community meetings.

In rethinking the historic core, shaping satellite campuses, and building town–gown partnerships, colleges and universities are planning for growth in ways that more sensitively consider their context. In stark contrast to the mid-20th-century attention to individual buildings—what Steiner wryly calls the "tyranny of small decisions"—campus planners are again aiming for visionary plans that consider the real complexity of college and university functions. Linking these plans to a clear notion of the university mission, one that connects with the historic identity but allows for change, is the next challenge for college and university growth. AIA

AIAPERSPECTIVE

THE VALUE OF WHAT WE DO

PHOTO: WILLIAM STEWART

IN HIS BOOK *DOWN DETOUR ROAD*, ERIC J. CESAL SHARES HIS experiences as a young practitioner—or at least his attempts to practice. Like many young and not so young architects, Cesal discovered that in this economy there's far more downtime than work. In fact, the subtitle of his thoughtful book is *An Architect in Search of Practice* (The MIT Press, 2010).

He's acutely aware of the irony of the present situation that the profession finds itself in. Never have the training and creativity of architects been more needed, yet in the very face of this need, many of us are unemployed and those who do have work struggle against being marginalized.

Whether or not you agree with Cesal that architects have played a role in creating the tight place we find ourselves in, you won't argue with the caring and passion that he shows for his profession. Out of work, scrounging for jobs, and angered by what he sees as the commodification of design—none of this has diminished his love of architecture.

Having traveled around the country as AIA president, I've seen a lot of pain. I've also seen courage, creativity, and determination, like that of Cesal, in the face of unprecedented challenges—at least unprecedented for those under 60. The fact is that our profession has been there before. The last time we were whipsawed by the economy, we lost a generation. When things finally turned around, firms found themselves not short of work, but short of the talent to get the job done. That same fear—that we'll lose this generation—grips many of us now. Which brings me to another book that recently came across my desk—Don Peck's *Pinched: How the Great Recession Has Narrowed Our Futures & What We Can Do About It* (Crown Publishing, 2011).

A features writer for *The Atlantic*, Peck takes the long view of the present crisis. Peck's canvas stretches from the Panic of 1893 through the OPEC oil embargo. With the benefit of hindsight, Peck discovers a fairly predictable pattern of boom and bust that is transformational. Those who had been gainfully employed, as well as those just entering or trying to enter the job market, underwent a major shift in values. For example, the generation that grew up during the Depression and World War II practiced recycling long before "sustainability" became a buzzword. Boomers, on the other hand, embraced the disposable razor.

Whenever the economy finally rebounds, Peck argues, we will not simply pick up where we left off; we will be changed as a profession and a nation. Peck doesn't soft-pedal the challenges facing us. What he does say—and this is the real value of his book—is that we don't have to settle for a lesser future. What we choose to do can have an impact on how quickly we recover and what we will look like once the economy turns around. Peck places his bets on the ability of Americans to adapt and reinvent ourselves.

Cesal agrees: The very powers of innovation and creativity that distinguish our profession are our best hope. You may not agree with all or any of the recommendations that both authors advocate for the radical transformation that they see as key to our recovery. However, what's welcome is their faith in their audiences. Not surprisingly, I was especially struck by a letter Cesal wrote to a reviewer of his book: "If we really believe in what we're doing, we should believe in its value and treat it as such."

Currently Cesal lives in Port-au-Prince, Haiti, where he manages and coordinates Architecture for Humanity's design and reconstruction initiatives. Is he simply marking time until he lands "real" work? This is what he says: "[In Haiti] I had found something; a way to practice. A way to understand what architecture was and how to do it." AIA

Clark D. Manus, FAIA, 2011 President

↗ Join our conversation at *aia.org*.

In last month's *Perspective*, I shared a question posed to a class of architecture students. The student who walked away with an "A" wrote:

"Anything built on that site would be inappropriate."

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BUSINESS

→BEST PRACTICES

Death and Taxes

WITH TAXES AT THE HEART OF POLITICAL DEBATES, **DAVID M. SULLIVAN** TALKS ABOUT WHAT THE NEXT ELECTION COULD BRING.

INTERVIEW BY ERNEST BECK
PHOTO BY NOAH KALINA

WITH ELECTION SEASON UPON US, politicians of all stripes are debating the best fixes to get business moving again. While it's uncertain at this stage which party will hold sway and whose policies might be enacted, architecture firms—many of them small, closely held enterprises—are wondering how tax and financial policies might shift in the coming years. It's a critical question for firms struggling in a depressed market for design services. David M. Sullivan, 47, a CPA who serves architecture and engineering clients as a partner in Woburn, Mass.–based DiCicco, Gulman & Co., talks about what to watch for as the debates continue.

"ABOUT TWO-THIRDS OF ARCHITECTURE AND ENGINEERING FIRMS ARE S-CORPORATIONS OR LLCS, WHICH ARE GOOD WAYS TO GO, TAX-WISE, FOR CLOSELY HELD BUSINESSES."

Stay calm.
The Internal Revenue Service recently released a comprehensive advisory memo focusing on architecture and landscape architecture firms. This Audit Technique Guide pinpoints the areas that an IRS agent might probe during an audit. It may sound grim, but an auditor probably won't be knocking on your door tomorrow, Sullivan says. It does suggest, though, that the IRS might be looking at architects more closely.

Take a look.
Given the current political discussions focusing on changes to the tax law, it's a good time to step back and evaluate your firm's tax structure to make sure it aligns with your long-term goals and strategies. Tax structures can be tricky to change, so evaluate what might work best for your firm. "About two-thirds of architecture and engineering firms are S-corporations or LLCs, which are good ways to go, tax-wise, for closely held businesses," Sullivan says.

Plan for changes.
One thing is certain: The Bush administration tax cuts on ordinary income and capital-gain rates will extend through 2012. But unless something changes, there will be a big automatic increase in 2013, Sullivan points out. A tax plan for 2012 should consider all potential future rate changes. "So if you can manage a major financial event, like selling your business, it's best to do it before the end of 2012 from a tax perspective," he says.

Head for the exits.
More than 75 percent of architecture and engineering firm owners are 55 or older, which means that many of these people will be looking to sell their assets and shares as part of a retirement plan. If the capital-gains tax rate, now at 15 percent, rises, then the incentive may be greater for such firm owners who are approaching retirement to cash out. "These people would want to go early and get their money now and pay less tax before it's too late," Sullivan says.

Think green.
Take advantage of current tax credits, such as the energy-efficiency tax deduction. You may be able to take tax deductions for newly constructed buildings for federal, state, or local government clients that meet certain minimum energy requirements. That deduction relates to factors such as the building's envelope and lighting. And it can really add up: for a qualified building with 100,000 square feet of space, a tax deduction of up to $180,000 (at $1.80 per foot) may be available. "Always consider this if you are doing government work," Sullivan says.

Upgrade the office.
You don't have to wait and see what new taxes or cuts the next administration suggests in order to save on taxes. If your office is looking dowdy or you are behind the technological curve, think about investing in new equipment, computers, furniture, and fixtures—to brighten up the office or catch up with the best standards in design software. For qualified assets purchased in 2011, you can expense the first $500,000 of your purchases in one year instead of depreciating those assets over longer periods of time according to accelerated tax depreciation tables.

Do some research.
Tax credits for research and experimentation can apply to architecture and engineering firms when the services involve a process of experimentation. The credit is calculated as a percentage of qualified contract expenses. "It's a dollar-for-dollar tax credit that can create real meaningful cash flow to the business," Sullivan says.

Accept the inevitable.
"We don't know how politics will change the rules of the games," Sullivan says, "but with a big election coming up in 2012, whatever happens, you can be sure the rules of taxation will change in the future." □

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Advanced Individual Company Operations • *Fort Leonard Wood, Mo.* • *U.S. Army Corps of Engineers* • The installation at Fort Leonard Wood contains several different military schools, including the Maneuver Support Center of Excellence. The advanced individual company operations facility is one that supports soldiers as they specialize in career skills.

→TYPOLOGY

Combat Ready

THE U.S. DEPARTMENT OF DEFENSE HAS ADDED A NEW TACTIC TO ITS ARSENAL: SUSTAINABLE DESIGN.

TEXT BY KRISTON CAPPS

WHEN THE U.S. ARMY CORPS of Engineers (USACE) set out to redesign the infrastructure at Fort Leonard Wood, Mo., they shot for the moon. A team of nearly 30 USACE engineers, architects, and scientists from across 18 districts in two countries was given three months to come up with the U.S. Army Installation Management Command integrated living community, a master plan to be implemented in stages by 2030—and a design that was to have the largest impact possible.

It was not designed, however, to be particularly comfortable for the soldiers based there.

"Typically in architecture, you spend a lot of time making the user feel comfortable, feel relaxed. You would look down on something austere and rigid," says Lyndsey Pruitt, sustainability and energy program manager at USACE. One of the two buildings that she and fellow USACE team members designed for the Fort Leonard Wood master plan was a facility for basic training company operations—a soldier's first stop. "The intent of the facility is to give a first impression for soldiers. It needs to say, 'You now have the honor of being a soldier in the U.S. military. Forget about the bad things that have happened to you. Any baggage you have—you're a soldier now.' You do that through control and regimen."

The basic training company operations facility is no typical dorm room, Pruitt says; project designers even shared the charrette for the facility with the drill sergeant for input. In a sense, the design team experienced the reorientation that the building is made to facilitate. "As an architect designing this facility, everything you learn about in architecture school is stripped away," Pruitt says.

The commission stems in large part from the Department of Defense (DOD)'s new orientation toward sustainability. An edict issued by assistant secretary of the Army for installations, energy, and environment Katherine Hammack calls for a number of net-zero energy, net-zero water, and net-zero waste installations by 2020. The Army aims to build or adapt 25 installations by 2030 that achieve net-zero efficiency in all three categories. The USACE team designed the Fort Leonard Wood installation to take it completely off the grid.

The USACE team is coordinating with the installations garrison to implement the first phase of the Fort Leonard Wood redesign, which also includes building an advanced individual company operations facility

COURTESY USACE

→

UNEXPECTED ANGLE

Expanding design possibilities while shrinking their impact on the environment.

The Appaloosa Branch Library in Scottsdale, Arizona is not just a LEED Gold-certified building, it's also a stunning example of how PPG's building products are helping to change the face of modern architecture. To enhance the beauty of the exterior and reduce cooling costs, the library's architect used PPG Duranar® VARI-Cool™ coatings, which reflect the sun's energy and dramatically shift color according to viewing angle. Our Solarban® 60 Atlantica™ low-e glass allowed him to incorporate vast areas of emerald-green glass while reducing the size of the library's HVAC system and its energy bills. These are just two from the wide array of innovative glass, metal coatings, and full line of architectural coating choices you'll find through PPG IdeaScapes™. From building materials to consumer products, automotive to aerospace, marine and protective industrial coatings, we're bringing innovation to the surface. Visit **ppg.com** to learn more.

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Basic Training Company Operations • *Fort Leonard Wood, Mo.* • *U.S. Army Corps of Engineers* • More than a barracks, the basic training company operations building will provide office space, classrooms, and dining facilities for soldiers who have just begun their military careers.

where soldiers receive training specific to their roles in the military. The team is also publishing a book on its work and, moreover, recommending changes to the military's master template for installation design.

The impact of the military's strategic interest in sustainability isn't limited to the warfighter. One of the DOD's major construction missions of the last decade, the 2005 Base Realignment and Closure (BRAC) plan, has resulted in new or consolidated facilities that prioritize energy-efficient design.

The largest BRAC project has effectively doubled the base population at Fort Belvoir, Va. There, the National Geospatial-Intelligence Agency (NGA) consolidated offices from Bethesda, Md.; Reston, Va.; Washington, D.C.; and other locations in a vast new NGA Campus East facility—the third-largest federal facility in the Washington area.

The 2.4 million-square-foot campus is composed of five separate buildings. The 2.1 million-square-foot agency headquarters features two independent office structures connected by an ellipse of curving, low-emissivity glass. In addition, NGA Campus East includes a central utility plant, a technology center (where the agency keeps server farms), visitor control center, and remote inspection facility. Designed jointly by Baltimore's RTKL Associates and Philadelphia's KlingStubbins, the campus achieved LEED Gold certification, exceeding the military's mandate that requires new construction projects to meet LEED Silver energy-efficiency standards.

Aspects of the NGA Campus East design relate specifically to the NGA's mission to provide geospatial

COURTESY USACE

"BECAUSE WE ARE WHO WE ARE, WE HAVE CONSIDERATIONS FOR SAFETY IN CASE THERE WERE A BLAST EVENT. WE ARE A DEFENSE AGENCY, AND POTENTIALLY A TARGET."

— THOMAS BUKOSKI

intelligence (GEOINT) to the White House, Pentagon, intelligence agencies, and other clients. The NGA describes its mission this way: "Everything and everyone is located somewhere on the surface of the Earth, and that's what GEOINT depicts." The agency played a critical role in mapping the Abbottabad, Pakistan, compound where U.S. Navy SEALs killed Osama bin Laden.

"Because we are who we are, we have considerations for safety in case there were a blast event," says Thomas Bukoski, director of the NGA executive secretariat. "We are a defense agency, and potentially a target."

So it was not entirely an aesthetic concern behind the selection of a transparent membrane for the NGA's atrium roof. Ethylene tetrafluoroethylene (ETFE)—the same material used to clad the shimmering Beijing National Aquatics Center—was chosen for the atrium roof for security reasons. "It's simply resilient," says Bukoski, who served previously as the assistant program manager for design and construction for the NGA Campus East. "In order to get light into this atrium, if we were to use glass or plexi, it would be much heavier. And in case of a blast event, this material [ETFE] is very resilient. While it might rupture, it would not shower down on our people."

The NGA Campus East demonstrates the military's commitment to energy efficiency at the largest scale yet. However, the sheer size of military construction projects can directly affect their surrounding communities—in terms of sustainability and in ways that the DOD does not necessarily provide for.

The Fort Leonard Wood net-zero design was motivated in part by a dispute with the installation's energy provider, the Sho-Me Power Electric Cooperative, which announced that it would no longer provide energy to Fort Leonard Wood, a non-co-op customer. Alexandria, Va., has seen a crisis in reverse: The introduction of the Mark Center, the home of the DOD's Washington Headquarters Service, has forced the city to radically revise its municipal planning.

The Mark Center supports 1.7 million square feet of office space for some 6,400 DOD employees—a significant addition to the dense and over-trafficked municipality of Alexandria. In 2009, Rep. Jim Moran (D-Va.) published an editorial in *The Washington Post* asking the DOD to step up its funding of transportation upgrades around the Fort Belvoir BRAC plan (which includes Alexandria's Mark Center).

"We don't have a lot of say-so as to what actually happened on the base property," says David Grover, BRAC coordinator for Alexandria. Grover has worked to coordinate the city's transit response plan. "Once the army acquired the property, they became immune to all local regulations, including the building codes."

Joanne Hensley, USACE New York District chief of project development for BRAC 133 (that is, the Mark Center), says that she anticipates LEED Gold certification for the project. The design team achieved lighting savings of 34 percent, she says, by installing occupancy sensors and LED lights at desks and in fixtures. "We actually recycled or salvaged 88 percent of the construction waste," Hensley notes.

From a sustainability standpoint, some of those savings could be offset by an increase in traffic from thousands of commuters. So the DOD is subsidizing additional city bus routes between nearby Metro rail stations and the Mark Center during peak hours, and, in addition, paying $20 million for local road and intersection improvements. (The Virginia Department of Transportation has spent still more to redesign traffic flow in order to connect a high-occupancy vehicle highway lane to the Mark Center.)

Today's military describes net-zero as a force multiplier. As the DOD continues to shape its sustainability goals, its stance applies not only to combat readiness but to civilian service. One USACE ambition for Fort Leonard Wood, for example, is to develop a net-positive energy stance—so that the installation can supply energy to the larger community in the case of an emergency. □

FINANCIAL CRASH

Fables of the Reconstruction

THE CURRENT BUST IN CONSTRUCTION CAN'T BE EXPLAINED BY A MID-DECADE BOOM IN HOME BUILDING OR HOUSE SIZES.

TEXT BY MATTHEW YGLESIAS
ILLUSTRATION BY MCKIBILLO

WHAT HOUSE-SIZE BOOM?

The increasing size (in square footage) of single-family homes doesn't explain the mid-'00s boom in home prices, as homes have been growing larger as far back as size records go.

1975: **1,535**
1980: **1,595**
1985: **1,605**
1990: **1,905**
1995: **1,920**
2000: **2,057**
2005: **2,227**
2010: **2,169**

SOURCE: U.S. CENSUS

ONE THING EVERYONE KNOWS is that our current economic woes are driven by a precipitous decline in the construction industry, itself a hangover of the enormous boom in construction of the aughts. As the economist Jeffrey Sachs has written, "As the U.S. shed manufacturing jobs in the 1980s and 1990s, the Federal Government and Federal Reserve tried to compensate by boosting jobs in construction and other sectors shielded from international competition." Hence the low interest rates of the Bush years, which drove mortgage lending to new heights and spurred the unprecedented growth in home building that we're now saddled with.

It's a familiar story, but in important respects it's mistaken.

For starters, we should distinguish between a boom in housing construction and a boom in house prices. The purchase of a conventional house combines two things. On the one hand, you have the physical object. On the other hand, you have the land that it sits on. In the niche market for mobile homes, the distinction is clear. You buy the home from one person, and you rent or buy the land to park it on from someone else. People who buy normal houses are making two different transactions simultaneously. But the prices of the two different commodities have different implications for construction and job growth. If demand for mobile homes skyrockets, prices will go up. Since prices go up, the profits in the mobile-home-manufacturing sector also rise, and capital flows to mobile-home makers, which means that they can expand production.

But if everybody decides to drive their mobile homes to Southern California to take advantage of the delightful weather, all that happens is the price of land goes up. We're not going to build more California. Existing landowners simply charge higher rents, or sell the property they already own.

The housing boom, like the housing market itself, had aspects of both a speculative boom in land prices and a boom in house construction. The data show, however, that there was nothing particularly unprecedented about

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→ AT THIS POINT IT SEEMS OVERWHELMINGLY LIKELY THAT EVEN A SMALL INCOME-RAISING ECONOMIC BOOST—EITHER THROUGH THE FEDERAL RESERVE AND MONETARY POLICY OR CONGRESS AND FISCAL POLICY—COULD SPARK A CONSTRUCTION REBOUND AND PUT US INTO SELF-SUSTAINING RECOVERY TERRITORY.

the home-building boom. The really unusual thing is the current massive construction bust.

The federal government keeps data on new housing starts that goes back to 1959. It shows that over the past 50 or so years, the United States has on average added 1.5 million new homes per year. From 1998 through 2006, we managed an impressive nine-year run of above-average home construction. For the majority of those years, however, home building was fairly restrained. It also followed 10 straight years of below-average new starts, meaning that we were largely meeting pent-up demand for new homes. The 2003–2006 period was a bit crazy, with 1.85, 1.95, 2.07, and 1.82 million new starts per year. Still, the total of 7.69 million new starts during this period is by no means the busiest four-year spasm of postwar building. From 1970 to 1973, there were 7.88 million new home starts. That was followed not by a depression, but by a new boom in 1976–79 of 7.22 million new starts. Compare that to the pathetic construction market of the four post-2006 years when we started fewer than 4 million new homes. That's the worst four-year span since record-keeping began. That span includes the only three years in which fewer than 1 million new homes were started. When the 2011 data are available, this year is likely to be the fourth.

What's more, population growth was slower in the past. Between the 1970 and 1980 censuses, the U.S. added about 23 million new people. Between the 2000 and 2010 censuses, however, it was more like 27 million.

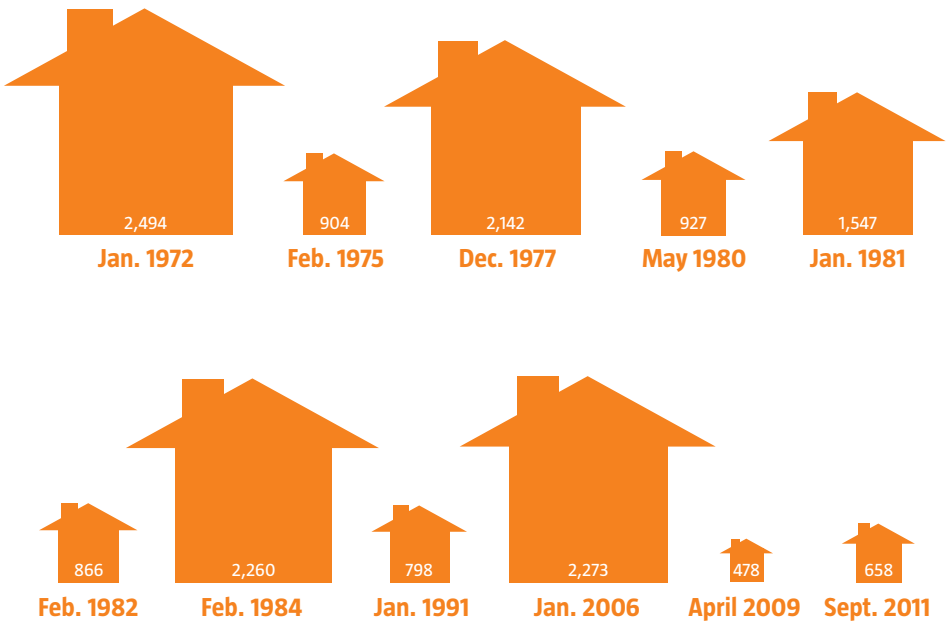
Adjusted for population growth, in other words, what's unprecedented about the construction market of the aughts isn't the boom—it's the bust.

When confronted with this data, many point to ballooning home sizes as their preferred indicator of bloat. And it's true that homes were getting bigger during this period. In 1997, the year before the launch of the housing boom, the median new single-family detached house was 1,975 square feet. By the final boom year, 2006, that was up to 2,248 square feet. But again, there's nothing unprecedented about this. In 1987, the median new single-family home was 1,755 square feet. In 1977, it was just 1,610 square feet. In 1973—the first year for which the U.S. Census Bureau has data—it was 1,525. Bigger houses, in other words, are part of a long-term trend that has nothing in particular to do with the recent house-price boom.

Another way of seeing what's going on here is to look at new household formation. If construction is slow primarily because of past overbuilding, you'd expect to see new household formation occurring at

WHAT HOME-BUILDING BOOM?

The construction boom of the 2000s often cited as the reason for the boom in housing prices doesn't break precedent—or break records. At a time when U.S. population growth was slower, the 1970s saw two housing booms that produced more housing starts than the 2000s. The high points and low points of new housing starts over the last 30 years (listed in thousands) reveal a not-especially remarkable boom in housing construction in the mid-'00s, followed by a severe and prolonged bust.



SOURCE: FEDERAL RESERVE ECONOMIC DATA

a normal pace as people simply move into the existing stock of houses rather than building new ones. Instead, in both 2009 and 2010 we added fewer than 400,000 new households—a low not seen since the 1940s. There was no new building because there were no new households. But the population didn't stop growing. Instead, joblessness has kids living with their parents or struggling families doubling up to save on rent. At this point it seems overwhelmingly likely that even a small income-raising economic boost—either through the Federal Reserve and monetary policy or Congress and fiscal policy—could spark a construction rebound and put us into self-sustaining recovery territory. But convincing policymakers to do either requires first disabusing them of the notion that the current slump is some kind of cosmic payback for past maniacal overbuilding.

None of which is to deny that some overbuilding took place. It's clear that in some specific markets—the Inland Empire of California, the suburbs of Las Vegas, and Phoenix—we really do have too much supply. But the flipside of this is the land-price boom and places where we clearly have too little. Even after the real estate bust, it's very expensive to live in San Francisco or Manhattan or the nice suburbs and neighborhoods of Washington, D.C.

These are great places to live, and lots of people want to live there, bidding up the price of land. If zoning regulations permitted it, developers would respond to those high prices by building denser housing—smaller yards, taller buildings—to accommodate more people. But by and large they don't. This supply restriction is what drove people to the sunbelt boomtowns in the first place. If you want to criticize the housing trends of the early aughts for something, pick that. It's not so much that we built too many houses as that we didn't build them in the most desirable locations. If and when incomes start rising again, household formation will resume, and we'll need to build more homes. But unless we improve rules about where we're allowed to build, we won't gain nearly as much benefit as we could. □

Matthew Yglesias is a fellow at the Center for American Progress.

→LOCAL MARKET

Nashville, Tenn.


1


2


3

NEW PROJECTS

1. MUSIC CITY CENTER
Architect: Tuck Hinton Architects and Moody-Nolan Architects, Nashville; Tvsdesign, Atlanta
Construction Cost: $415 million
Completion: 2013

2. GAYLORD OPRYLAND RESORT
Architect: Tvsdesign Hospitality Studio, Atlanta
Total Cost: $150 million
Completion: 2010

3. W.O. SMITH MUSIC SCHOOL
Architect: Bauer Askew Architecture, Nashville
Total Cost: $5.2 million
Completion: 2008

MARKET STATS

1.81
EXPANSION INDEX VALUE, NASHVILLE METRO AREA
The Expansion Index from Reed Construction Data is a 12- to 18-month look ahead at the construction marketplace. A value of 1.0 or higher signifies growth.
SOURCE: REED CONSTRUCTION DATA

1.6 MILLION
METRO POPULATION, 2010
SOURCE: NASHVILLE AREA CHAMBER OF COMMERCE

1.7 MILLION
PROJECTED METRO POPULATION, 2021
SOURCE: NASHVILLE AREA CHAMBER OF COMMERCE

8.5%
UNEMPLOYMENT, AUGUST 2011
SOURCE: NASHVILLE AREA CHAMBER OF COMMERCE

19.3 MILLION S.F.
CLASS A OFFICE INVENTORY
SOURCE: GRUBB & ELLIS CO. | CENTENNIAL

11.9%
CLASS A OFFICE VACANCY Q3 2011
SOURCE: GRUBB & ELLIS CO. | CENTENNIAL

TEXT BY MARGOT CARMICHAEL LESTER AND CLAIRE PARKER

FOR THE FIRST TWO DAYS OF MAY in 2010, Nashville, Tenn., a city accustomed to being inundated by tourists, was overrun by 13 inches of rain in 36 hours. The Cumberland River reached 12 feet above flood stage, killing 11 people and ruining landmarks including the Grand Ole Opry House and the Gaylord Opryland Resort. The city suffered more than $2 billion in damage to private property alone.

"The flood galvanized our community in ways that make me proud to be a Nashvillian," says local architect David Powell, AIA, principal of Hastings Architecture Associates. AIA Middle Tennessee rose to the occasion "to stabilize the neighborhoods by identifying and assisting the most fragile families with the greatest needs"—typically the elderly, disabled, and low-income families, Powell says.

Community spirit is nothing new in Nashville. Consider the W.O. Smith Music School, housed in a rehabbed tire-service center and completed in 2008. The private, nonprofit school has an all-volunteer teaching staff that offers music lessons for 50 cents per session to more than 400 children per week.

It's fitting that the major catalyst for new construction in Music City is the 1.2 million-square-foot Music City Convention Center. Begun before the flood, it received city-backed revenue bonds funded by room-tax and tax-increment financing. An anchor for downtown, it has spurred mixed-use developments nearby that were slowed by the flood and economic downturn. Some retail space remains vacant, and residential components are being rethought. "The new economy, with more restricted lending, has transformed condominium development into apartment development," says George Thomas Bauer, AIA, founding partner of local firm Bauer Askew Architecture.

"Nashville has a vibrant, multidisciplined economy with tremendous growth potential as an emerging second-tier city," says Gary Everton, FAIA, principal of local firm EOA Architects. "It [Nashville] also has strong medical, insurance, and religious institution headquarters and colleges and universities."

That's helped keep job and per-capita income growth strong and steady over the past two decades, according to Ralph Schulz, president and CEO of the Nashville Area Chamber of Commerce. Per-capita income has increased 28.5 percent over an eight-year period. Issues surrounding transportation and public education nag the city; but with the river back within its banks (and a stronger flood-safety system in place), Music City is aiming again for the top of the charts.

"We understand the constraints of Portland, Ore., and the sprawl of Atlanta, and hope to learn from the lessons of each and plot our own destiny somewhere between," says Seab Tuck, FAIA, owner and principal of Tuck Hinton Architects. "The mayor always says that our best days are before us, and I believe that wholeheartedly." □

CLOCKWISE FROM LEFT: COURTESY TVSDESIGN; COURTESY TVSDESIGN; COURTESY BAUER ASKEW ARCHITECTURE

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TECHNOLOGY

→PRODUCTS

Glass

TEXT BY KATIE GERFEN
PHOTOS BY NOAH KALINA

Vitracolor, a line of back-painted glass from **Skyline Design**, comes in 30 standard colors, plus another 10 selected as 2011 seasonal color trends. A low-VOC, water-based paint is applied to the back of low-iron Starphire glass from PPG Industries. The glass can be specified in 1/4", 3/8", 1/2", or 3/4" thicknesses, in standard sizes up to 74" by 144". Custom color matching is available, as are metallic finishes and custom artwork. • *skydesign.com* • Circle 100

SageGlass is an electronically tintable glass from **Sage Electrochromics**. Double-glazed units (shown, in a Wausau Window and Wall Systems frame) are currently available in sizes up to 40" by 60", but sizes up to 5' by 10' are in development. Sage Glass features an electrochromic coating composed of five layers of ceramic material on the inside face of the exterior lite in a standard argon-filled IGU. Applying electricity darkens the coating to shade the glass; reversing the polarity brings it back to clear. The company claims that the amount of electricity required to operate 2,000 square feet of the glass is less than that required to light a 60W light bulb. Triple-glazed options are also available. • *sage-ec.com* • Circle 101

Solarban 72 Starphire from **PPG Industries** is a low-E solar-control glass that is engineered for high visible-light transmittance. In a 1" IGU, the material allows 71% visual light transmittance, but has a solar-heat-gain coefficient of only 0.30. IGUs feature one uncoated low-iron Starphire glass lite, and another triple-silver coated lite; the combination maximizes clarity and views. • *ppgideascapes.com* • Circle 102

Pilkington Profilit OW is a low-iron translucent linear-channel-glass system from **Technical Glass Products**. Composed of an extruded-aluminum perimeter frame and self-supporting cast-glass channels, the glass can be tempered or filmed, treated with low-E, Antisol, or Amethyst coatings, and be specified with Lumira aerogel for added energy efficiency. Channels can be installed horizontally or vertically and come in standard lengths up to 23'. The glass is available in several profiles, including standard cast, macro cast, and wave (shown), and can be sandblasted. • *tgpamerica.com* • Circle 103

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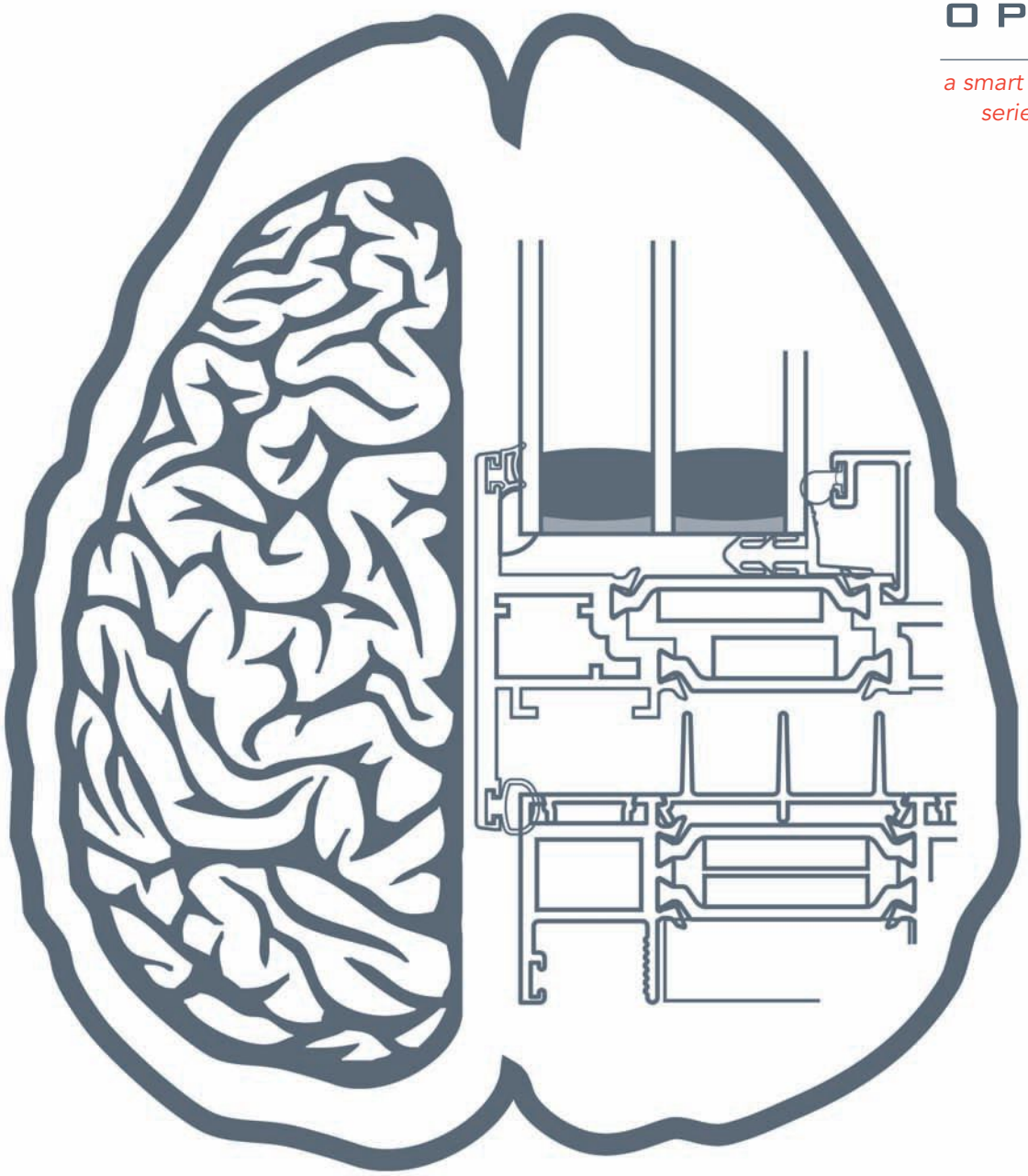

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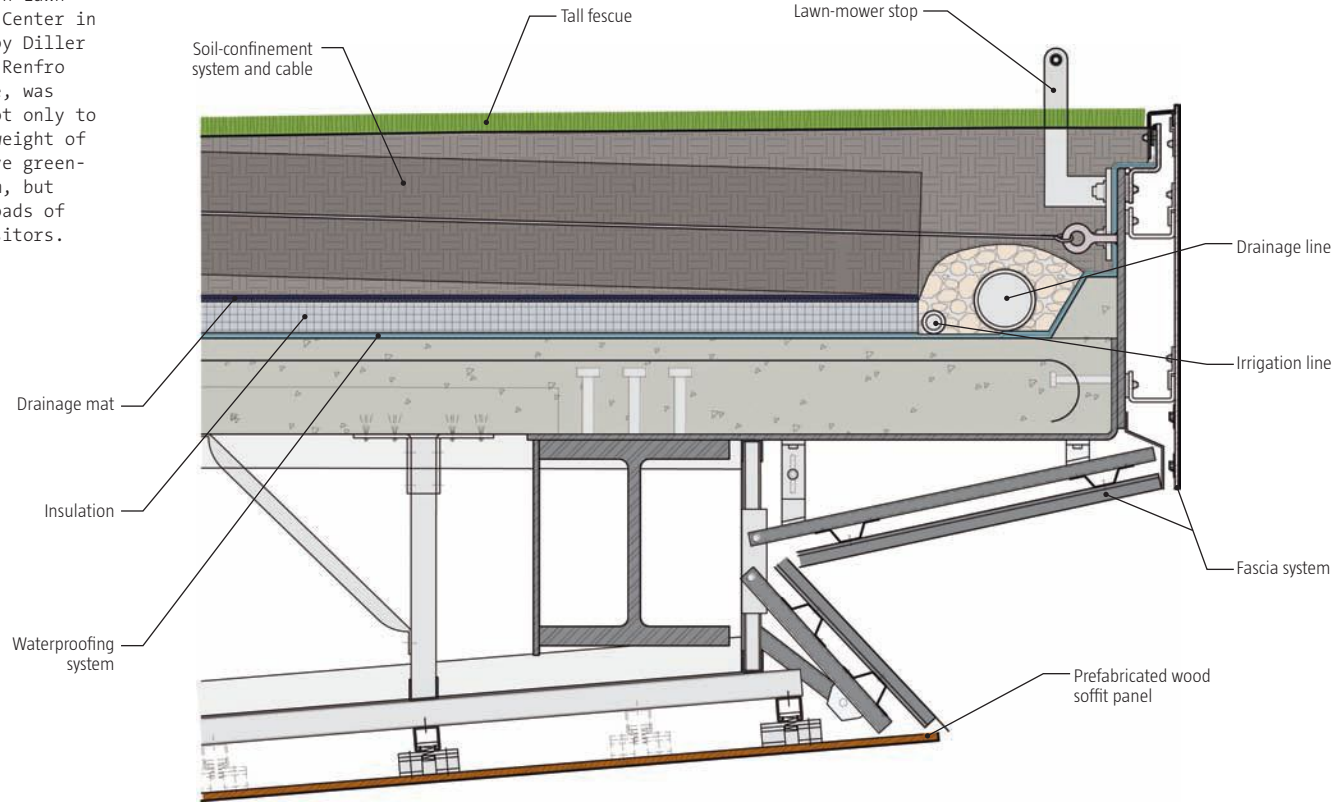
The hyperbolic-paraboloid form of the Laurie M. Tisch Illumination Lawn at Lincoln Center in New York, by Diller Scofidio + Renfro and FXFowle, was designed not only to carry the weight of an extensive green-roof system, but the live loads of walking visitors.

Roof Section



→CONTINUING EDUCATION

The Grass Ceiling

GREEN ROOFS ARE HERE TO STAY. BUT AESTHETICS AND ENERGY SAVINGS MUST BE BALANCED WITH THE PRACTICALITIES OF STRUCTURE, WATER, AND WEAR.

TEXT BY AARON SEWARD

TO SOME EXTENT, green roofs have been around forever. The fabled hanging gardens of Babylon and the still-existent sod roofs of Scandinavia predate recorded history and show that, at least in some places on Earth, humans have always found reasons to grow plants over their heads. The advent of the high-rise took this idea of skygardens to new levels. In the 1930s, elaborate roof gardens were put in place on top of the plaza buildings in New York's Rockefeller Center, and other examples of tower-topping putting greens, herb patches, and sculpted hedges abound. Other than their altitude, these green roofs, known as "intensive" in the industry, differ little from gardens at grade. Almost always installed over waterproofed, reinforced-concrete slabs with drains, they feature soil depths of up to 10 feet, deep enough to grow sizable trees.

Intensive green roofs require a good deal of time and money, both in their design and construction as well as in their upkeep. Their motivating impulse tends to be aesthetic and recreational. However, a newer type of green roof has become more and more prevalent in this country over the past 10 years. Known as an "extensive" green roof, it is a system that has been engineered and developed in Germany since the 1970s, specifically for building performance and environmental sustainability. These roofs manage stormwater runoff, mitigate the heat-island effect, and create habitats for birds, insects, and other critters. They are also known to double the lifetime of a roof by acting as a barrier between the roof's waterproofing layer and the elements.

There are many types of extensive systems, each suitable for a different set of project parameters. What separates them from intensive green roofs is primarily that they tend to feature soil depths of 3 to 6 inches and are lightweight enough to be installed on top of existing structures, opening up the possibility of "greening" vast swaths of the built environment. There are now several companies in North America offering off-the-shelf extensive green-roof systems for building owners looking to meet increasingly stringent stormwater retention codes with a minimum of effort and maintenance. But for those seeking a more holistic approach, there is much to consider.

"You have to decide for your client whether you want a design solution or product solution," explains Ed Snodgrass, a leader in horticultural consulting for green-roof projects and co-owner of Street, Md.–based Emory Knoll Farms, a perennial nursery specializing in green-roof plants. "For a product solution, there are a number of companies that would say, if you want a green roof we've got you covered so you don't have to think about any design questions at all. They will come with a shiny brochure and you pick your option. If you want a design solution, you have to look at all of the layers that make up a green-roof system and decide what is best for your client's objectives."

Analyzing the Layers

The first consideration for any green-roof designer is the loading capacity of the roof itself. This is especially true when the project is to be applied to an existing building, in which case the designer must team with a structural engineer to determine how much weight can be added and where. At Chicago City Hall, which was completed a decade ago as a pilot project to determine the benefits and feasibility of green roofs on city municipal buildings, the Elmhurst, Ill., office of ecological-design firm Conservation Design Forum (CDF) custom-tailored a system to meet the varying capacities of different parts of the historic structure's roof. "Part of our approach on any green roof that we do is to maximize the habitat and therefore the depth of soil," explains David J. Yocca, principal landscape architect at CDF. "In most retrofit projects, such as city hall, we adapted the green-roof system to the characteristics of the structure, varying the thickness of the growing medium based on available loading."

Once a roof's loading capabilities are known, the specifics of the extensive system—which is composed of several layers of materials, each performing a different function—can be determined. The first of these is waterproofing, which is typically either an asphalt derivative, or made from nonasphalt material such as polyvinyl chloride (PVC) or thermoplastic polyolefin (TPO). It is important to understand which material is used because while plants can't consume PVC and TPO, asphalt-derivative products can become food for plants and bacteria. If asphalt is used, then an engineered-fabric root barrier must be added to prevent the roof's living organisms from feeding off of (and in so doing, degrading) the roof's waterproofing.

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TOP: CHRIS COOPER
BOTTOM: COURTESY OF FXFOWLE AND DILLER SCOFIDO + RENFRO

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Learning Objectives

1. Describe the difference between intensive and extensive green roofs.

2. Compare and contrast product solutions and design solutions for green-roofing projects.

3. Describe the purpose and function of each of the four layers of a green roof discussed in this article.

4. List at least two design considerations for a green-roofing project.

→

Leak-detection systems are often incorporated into green roofs so that if a leak does crop up, it can be quickly located and fixed. The most common form of leak detection is electric field vector mapping, which uses a low-voltage current to create an electrical potential difference between the nonconductive waterproofing membrane and a conductive substrate. Water atop the membrane serves as a conductive medium. If there is a leak, the water passes through the medium and onto the substrate, creating a ground-fault connection, or vector. Technicians can detect these breaches with pinpoint accuracy.

The next layer installed after waterproofing is drainage. While part of a green roof's primary function is the retention of stormwater, or at least the slowing of runoff, it must still fundamentally act like a roof, and that means shedding water. There are two types of systems used for this purpose: One, a drain mat, involves plastic or fiber channels that direct water filtering through the soil horizontally to drains in the roof. The other, granular drainage, is made from single-sieve aggregate, basically little stones that are all the same size (generally 1/4-inch in diameter). Each system has its benefits. Granular drainage has better horticultural performance because the plants' roots can get down into it, however it does not move water off the roof as quickly as a drain mat because the grains form a kind of obstacle course; the mat provides direct paths for water to follow to the drains.

Above the drainage layer goes a separation fabric, a nonwoven geo-tech material that lets water pass through, but not soil or growing media. This layer does allow roots to pass through, but does not itself break up or degrade in the process. Its primary function is to keep the growing media from clogging the drainage.

Next comes the engineered growing medium, which is mostly stone and sand aggregate with very little organic matter. In fact, when installed, the surface looks more like a driveway than a garden. There are two main reasons for using this type of material. One, it does not compress like soil, and therefore allows water to drain through. Two, it doesn't dry up, blow away, or decompose as organic soil would. Since the return on investment for a green roof is 20 or 30 years, it pays to use a material that will last. Sometimes irrigation systems are also integrated into the growing medium, either to get a roof through periods of drought or to help it along in its first year of growth.

The final, and most visible, layer of a green roof is the plants themselves. Many factors must be considered when choosing what to grow, including the local climate and the roof's exposure to sun and wind. Those factors will determine what can actually live there. Then there are the client's goals to consider. If they want to establish an ecology, plants must be chosen that have pollen for insects and birds and good structure for spiders. If they care about stormwater retention, then plants must be chosen that behave well for that purpose. If they care about the way it looks, then there are ornamental considerations. And then, perhaps most importantly, there's the question of maintenance. A roof can be planted in a way that will require only a once-per-year checkup to make sure that the drains are clear and the flashing and penetrations are in good condition, but if clients care about maintaining a more complex ecology or a rigorous aesthetic, then they must be prepared to hire someone to weed, mow, and generally ensure the sculpted quality of their roof garden.

There are also different ways of delivering plants to the roof, each with its own level of installation cost. The cheapest is to start with seeds or sedum cuttings, with which you can cover a large area very quickly, though it is difficult to organize them in any precise pattern. The next option is to begin with small starter plants—1-inch-diameter-by-3-inch-deep plugs that include the plant with a bit of

Vancouver Convention Centre

propagation medium. Those can be arranged in whatever pattern you wish, but must be planted one at a time, incurring a higher installation cost. The most expensive option is to start with mats and modules (or trays), which have been grown for a year in a nursery. The preinstallation growing time costs money, but the mats and modules are also more burdensome, and thus more costly, to transport and lift into place. On the other hand, putting in fully grown plants has the benefit of obviating the risk of wind scarification, which can plague freshly seeded soil. This method will also deliver an immediate vegetated roof, an important factor if the project is in the public eye, since in its first year a seeded roof may appear more like a dirt roof than a green roof.

Learning from Applications

The largest North American green roof of the last five years is that of the Vancouver Convention Centre in Vancouver, British Columbia, Canada. Aside from being very big—261,360 square feet, or six acres, to be exact—the green roof is also integral to the ground-up project's overall ecological mission and LEED-Canada Platinum rating; in essence, it recreates a coastal grassland ecosystem, typical of the Pacific Northwest. "The design of the living roof is ambitious in integrating into the broader ecology and landscape of the Vancouver waterfront," says Mark Reddington, FAIA, of design firm LMN Architects. "It's big enough to house an ecosystem. There are a number of different local plant types, as well as birds, field mice, and other creatures who live there. It's also home to 250,000 bees in hives, whose honey is harvested and served in the building."

The roof, which undulates in elevation based upon the needs of the interior space it shelters, features a number of custom-designed aspects, many of which were locally sourced by PWL Partnership Landscape Architects. The plants, for example, were derived from seeds, sedum cuttings, and plugs that were collected from Pacific Northwest grasslands. It was the first time that many of these were ever grown commercially in a nursery, or used for a green-roofing application. In all, the project used 400,000 plugs, 108 kilograms (238 pounds) of seeds, and 80,000 sedum plants. The growing medium—which was applied 8 inches deep across the roof and settled to 6 inches deep—was also locally sourced and engineered from sand dredged from the nearby Frazer River, organic matter, and lava rock. The project also employs a mat drainage system, the better to contend with Vancouver's wet winters, and a triple-ply liquidized-rubber waterproofing layer topped with a granulated cap sheet for protection during construction.

The Vancouver Convention Centre system was designed to impose no more than 39.6 pounds per square foot upon the roof. But at the Target Center in Minneapolis, Kestrel Design Group was asked to deliver a system on top of an already existing building that would impose no more than 17.4 pounds per square foot. While that is an unusually low number for a public building, the arena's original designers never expected the roof to have to bear anything other than snow, and so delivered the barest minimum of structure to serve that purpose. But when it came time to replace the roof, Minneapolis's sustainable-minded city council members wanted to go green. "Some city council members strongly encouraged putting on a green roof for stormwater management," says Kestrel designer Nathalie Shanstrom. "If we had any less loading capacity at all, though, they would not have considered it."

To minimize weight, Kestrel kept the growing medium as thin as possible—2 3/4 inches deep in the middle of the roof and 3 1/2 inches deep at the perimeter. They also added a thin layer of a recycled geo-tech material designed to retain water and a drip irrigation system to give the plants the most favorable conditions possible in the meager soil. The plants were delivered with the medium in pregrown vegetation mats that included basic green-roof sedum augmented with plugs of

→

COURTESY PWL PARTNERSHIP LANDSCAPE ARCHITECTS

COURTESY THE KESTREL DESIGN GROUP, INSPEC, AND LEO A DALY

20 native prairie species adapted to shallow soil, drought, and windy conditions. The mats were pregrown in a nursery for two years, instead of the usual one—long before work began on replacing the roof's waterproofing membrane—in order to ensure a solid green cover the moment they were installed. Beneath the plants, medium, and water-retention layer, the project features a mat drainage layer, PVC waterproofing, and a leak-detection system.

While weight was of paramount concern at the Target Center, in calculations for the roof of the Laurie M. Tisch Illumination Lawn at Lincoln Center in New York, the weight of a different variable had to be accounted for: people. Diller Scofidio + Renfro and FXFowle wanted to encourage visitors to walk on top of the hyperbolic-paraboloid-shaped grass lawn set atop a restaurant. Making this green roof fit for occupancy began with the roof itself, a 6-inch-thick concrete-on-metal deck slab that is rated for the dead load of the roof system and a live load of 100 pounds per square foot. Atop this substrate is a 14-inch-thick roofing system that includes a green roof.

The system features a waterproofing membrane sheet, a 1-inch-thick root barrier, 4 inches of insulation, and a 1/2-inch-deep drainage mat with filter fabric. The

growing medium itself is 8 1/2-inches deep. Since the lawn is at a significant slope, between flat and a 1:8 pitch, the growing medium incorporates an integrated cellular confinement system, basically an expanded plastic mesh that keeps the soil from rolling down the hill. "We tested a lot of different grasses, looking at things like durability, appearance, water retention," says FXFowle partner Heidi Blau, AIA. "We wanted something that would be green as long as possible during the year and also comfortable under a bare foot." They ended up choosing a blend of tall fescue and Kentucky Blue grasses.

While it's durable enough, the lawn has attracted more visitors than expected and within the first couple of weeks the grass got trampled. To prevent a dirt trail from forming at the favored entry spot, the designers worked with Lincoln Center to set up barriers to change this entry point from time to time, thus giving the grass time to recover. "Grass is a natural material," Blau says. "It can get destroyed. Lincoln Center is learning as each season goes by how to care for it."

Measuring the Benefits

As with any piece of building technology or infrastructure, the feasibility of installing a green roof—whether on a new building or as a retrofit—comes down to cost-benefit analysis. One problem with conducting this analysis, however, is that there are no well-defined metrics for understanding the performance characteristics of these systems. For example, green roofs are often cited for improving an enclosure's insulation values. In reality, you cannot apply an R-value to them because, while a green roof may deliver some insulation when dry, when wet, temperature will move right through. On the other hand, studies at Chicago City Hall have determined that the greening of the roof lowered the air temperature on the roof in summer to 85 F as compared to 110 F on a typical black-tar roof. That means that intake air has to be cooled that much less by the building's air-conditioning system. "Green roofs will have an ecological benefit from an aggregation of services; there are very few discrete services that will justify the cost," says horticultural consultant Snodgrass. "Those are things that are hard to calculate. The formula is so long and difficult that engineers just don't want to think about it."

Perhaps the easiest way to measure the cost-benefit of green roofs is the extra life they lend to the integrity of the shelter. "We did a life-cycle cost analysis of a green roof versus a regular roof," says Shanstrom of the Target Center project. "It ended up being very close in cost when you considered the extra life span the green roof gave to the roofing membrane. Actually, the green roof was a bit more favorable." □

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→MIND & MATTER

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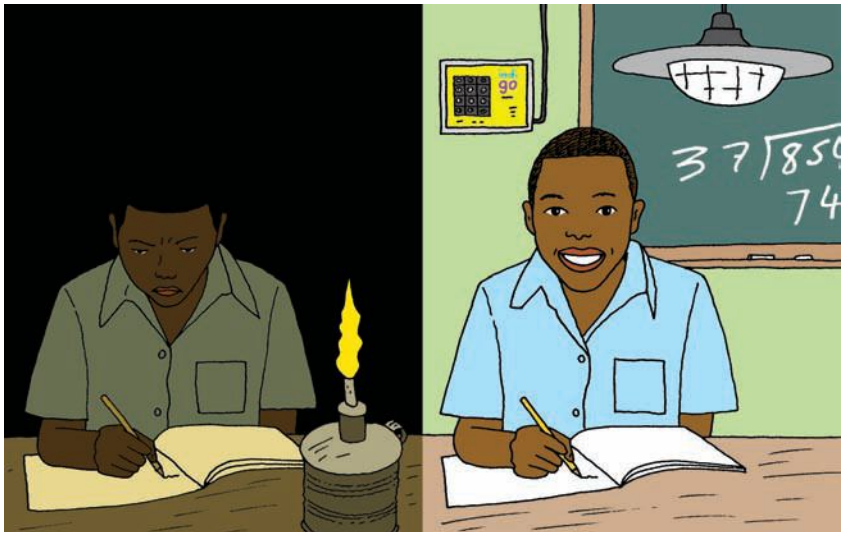

15

PERCENTAGE OF SUNLIGHT CONVERTED TO ELECTRICITY BY PHOTOVOLTAICS READY FOR LARGE-SCALE PRODUCTION

SOURCE: SOLAR ELECTRIC LIGHT FUND

ONE CRITICISM of new technologies is that only affluent individuals can afford them. And one solution to this problem is also new technologies—specifically, in adapting them to bridge quality-of-life disparities.

The combination of solar power and low-energy LED lighting, for example, is capable of delivering positive lifestyle changes to people lacking easy access to electrical lighting. Approximately 1.6 billion people—more than one-fifth of the global population—turn to sources other than electricity for nighttime illumination, such as kerosene. The Solar Electric Light Fund, Kennedy & Violich Architecture, and other organizations are integrating new and existing technologies in order to deliver safe, carbon-free sources of light to remotely located communities around the world. But the costs of deployment and service still present some challenges.

In September, U.K.-based solar energy company Eight19 unveiled a pay-as-you-go system for families based in Kenya. The product, called IndiGo, is a 2.5-watt flexible photovoltaic panel that charges a battery. The panel uses organic photovoltaic technology (OPV) developed by Cambridge University. OPVs are thin films made of multiple layers of semiconducting materials, and compare favorably to conventional thin films in terms of production cost and resource availability. A single day's charge is enough to deliver five hours of illumination via a high-efficiency LED lamp, while a USB connector also enables phone charging.

Despite the economic benefits of OPVs, however, the technology is still too costly for widespread adoption in emerging economies. But instead of purchasing the equipment outright, users can simply rent the IndiGo system—for less than the cost of kerosene. Users deposit credit on the device using a scratch card, which is confirmed via text message on a conventional cell phone. The system costs $1 per week to run, which is less than the $3 to $5 per week that families currently spend on kerosene. And IndiGo doesn't produce dirty emissions or present health hazards.

Now in trial mode in Kenya, the system will be tested over the next three months in Malawi, Zambia, and India. Eight19 plans to make the product commercially available in early 2012. Ideally, Eight19 will present a rent-to-own option, granting customers the possibility of overcoming the need to pay for lighting and mobile-phone charging altogether. Otherwise, the IndiGo system would present yet another form of long-term economic dependency. Maintenance costs for the system are another consideration.

Still, Eight19's clever marriage of new technologies and a viable economic platform represent an incredibly timely idea. "The peak energy gap in India is set to grow as average electricity consumption doubles over the next five years," says company CEO Simon Brasfield-Garth. "Much of the gap is currently filled by expensive and polluting local diesel generation, with a significant impact both on carbon footprint and, because most [fuel] is imported, future energy security." □

TEXT BY BLAINE BROWNELL, AIA
ILLUSTRATIONS BY PETER ARKLE

→ Read more of Blaine's reports on cutting-edge tech at ARCHITECT's Mind & Matter blog: go.hw.net/brownell.

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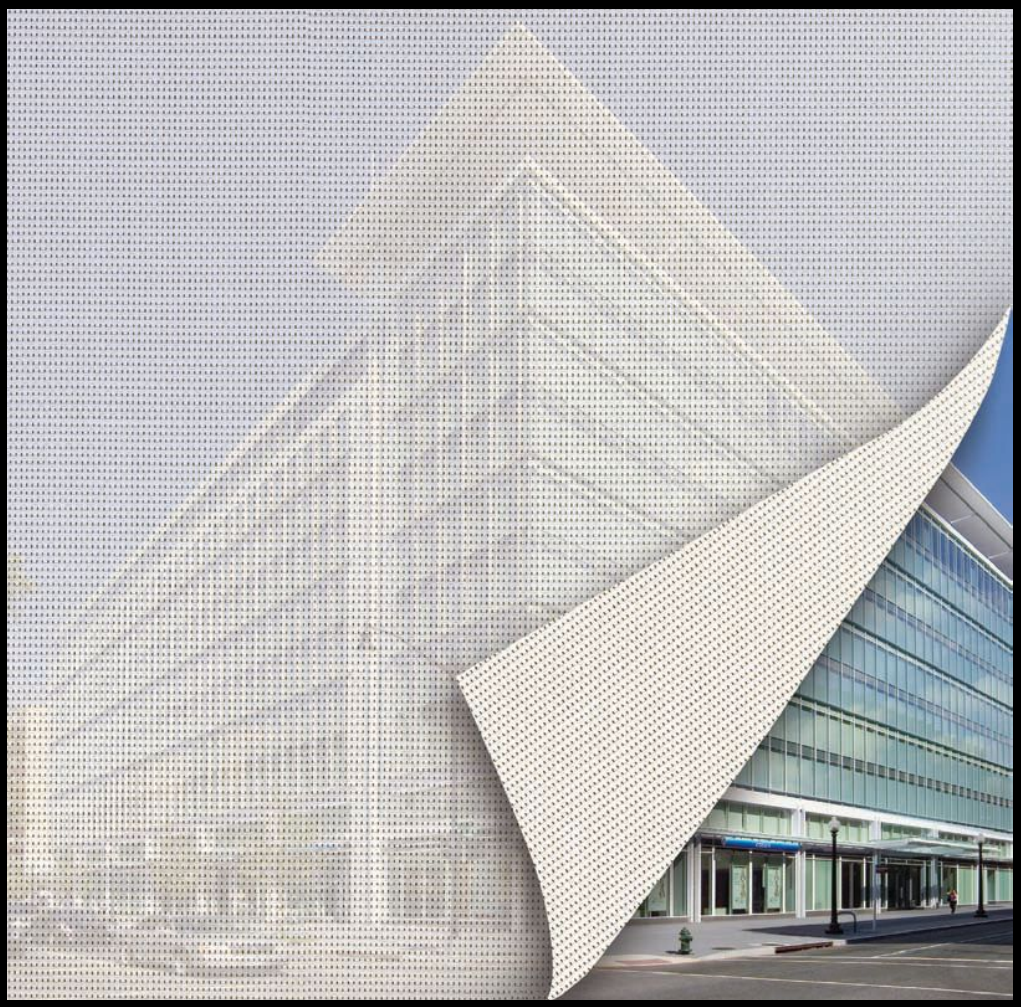

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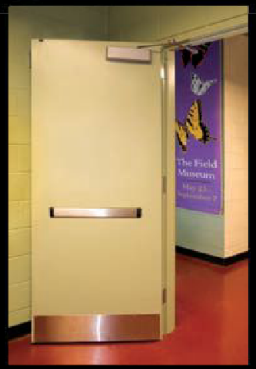

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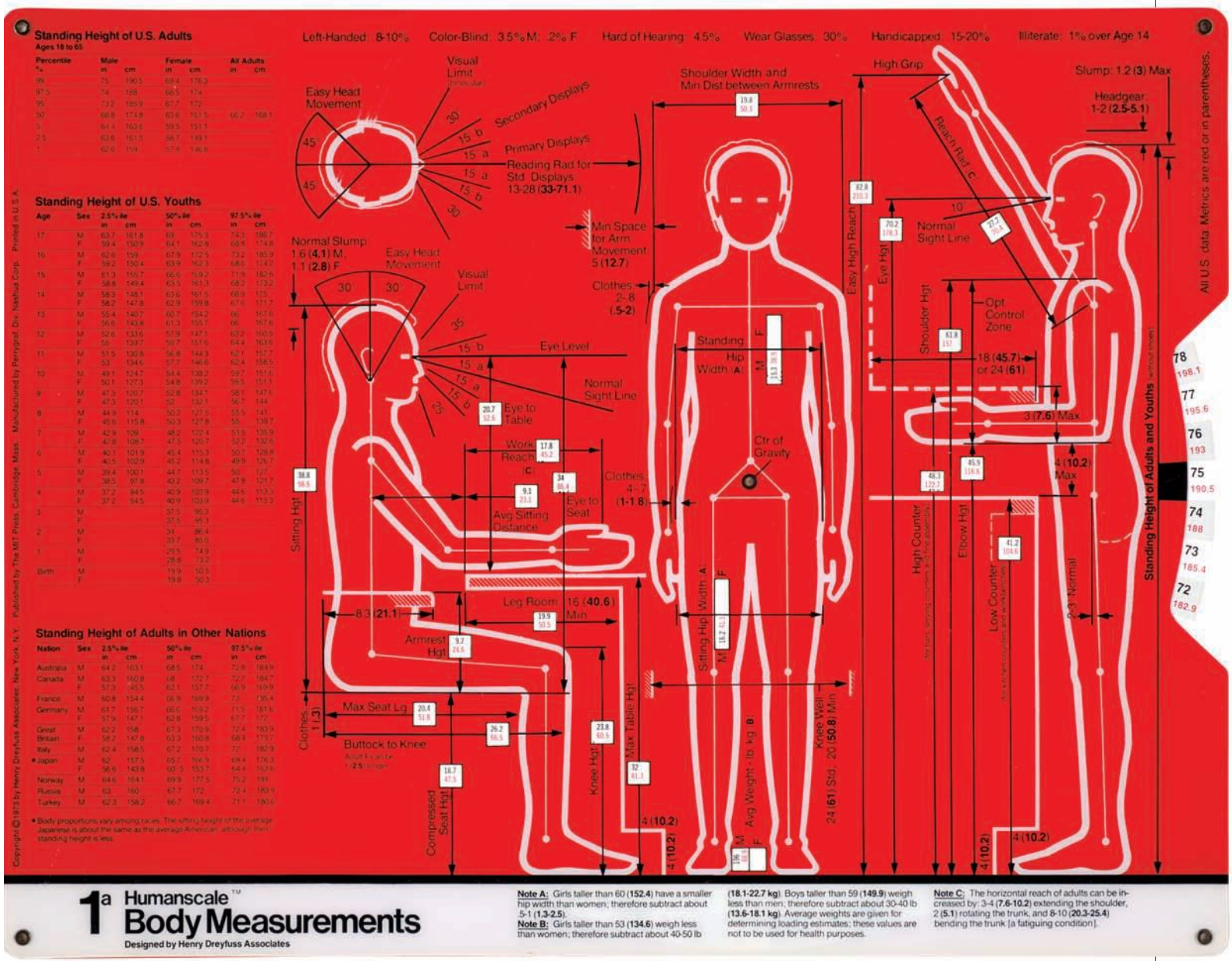
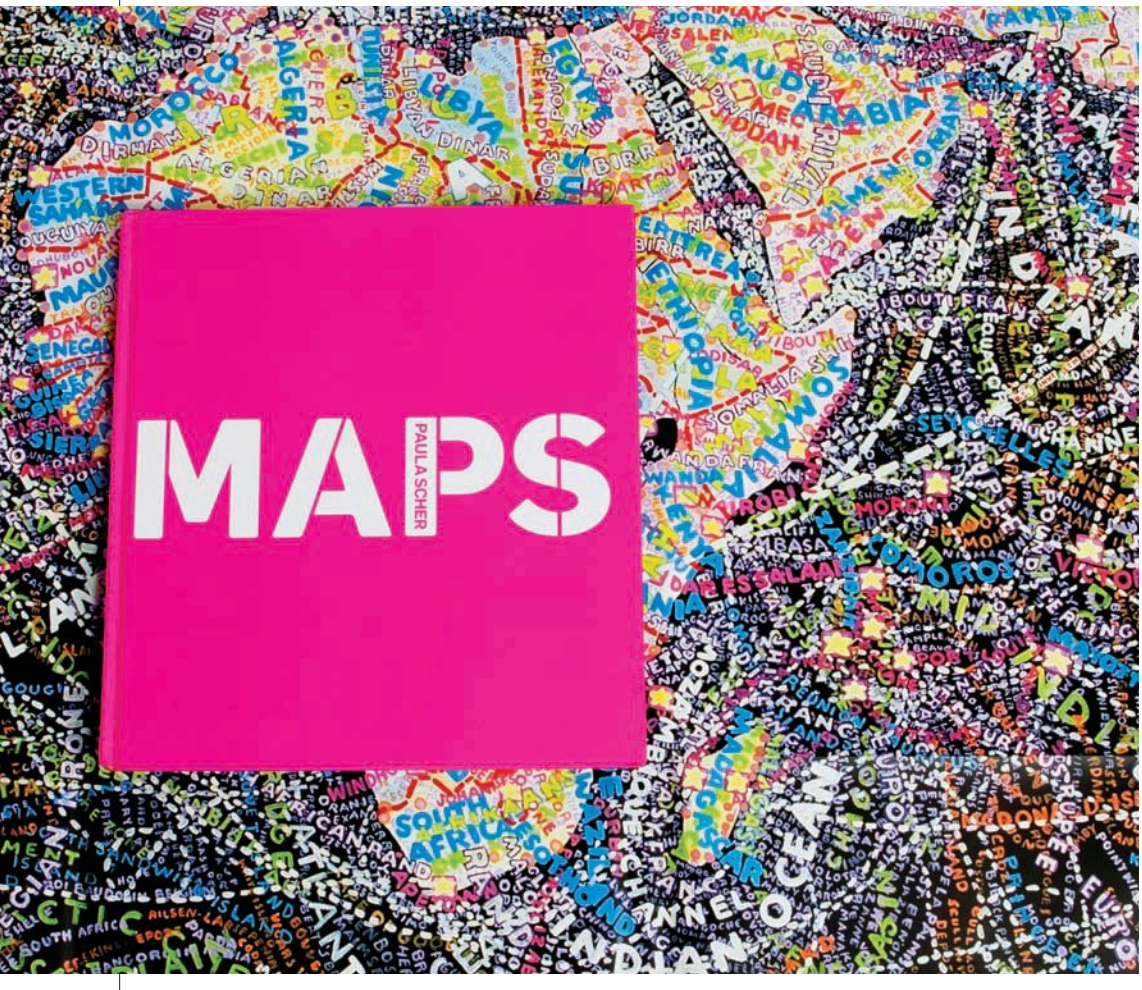


→EXHIBIT

"Is health an individual responsibility or a public concern?" asks **Imperfect Health: The Medicalization of Architecture**, an ongoing exhibition at the Canadian Centre for Architecture in Montreal. The curators lean toward the latter; on display are representations of the myriad examples of how we've been harmed and healed by our built environment, including a Web-based model that maps levels of pollutants, pollen, and pathogens onto a cityscape of Budapest, Hungary. As a solution to such contamination, the curators cite a building by architect François Roche with a skin that attracts dust. Also on view is a sliding Humanscale chart (above) that calculates the most ergonomically beneficial postures for desk-workers' health, right down to armrest height and eye-to-table angle. Through April 1. • *cca.qc.ca*

→INSTALLATION

In 1949, on a bluff in Los Angeles, Charles and Ray Eames built the experimental Case Study No. 8. Commissioned by *Arts & Architecture* magazine in a scheme to promote affordable postwar housing, the structure features a steel-and-glass Mondrian-like exterior and an eclectic interior. Eames heirs maintain the property as a sometime residence, but the 17-foot-tall living room is currently empty—its furnishings loaned to a replica of the room at **California Design, 1930-1965: Living in a Modern Way**, an exhibit at the Los Angeles County Museum of Art. On display are Eames chairs built with same plywood technology that the couple used in 1943 to make splints and stretchers for the Navy. Through June 3, 2012. • *lacma.org*

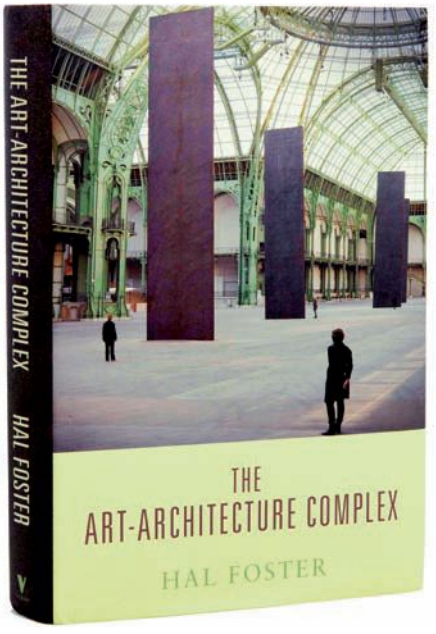


→BOOK

Though we treat them as indisputable fact, all maps are biased depictions of the world. Mapmakers must make choices that reveal individual preferences: deciding between competing place names, for instance. (Not to mention how 2D maps inevitably distort our 3D world.) In **Maps**, graphic designer Paula Scher showcases her creative take on "opinionated" cartography with a collection of 39 paintings made of place names. The lauded Pentagram partner (whose work is in the MoMA) paints "eye of tsunami" in the Indian Ocean and the New York City subway map over Manhattan, among other whimsies. But from an arm's length, country and continent outlines are clear. Though the genesis of the 20-year project was Scher painting maps for fun, the assemblage highlights the Postmodern maxim that truth is hard to find. In another creative twist, the book's cover itself is a map that can be taken off and framed. • $50; Princeton Architectural Press, October 2011.

→BOOK

The 20th century witnessed a slow creep of art into architecture (and vice versa), from Vladimir Tatlin's famous unbuilt monument to Constructivism to Dan Flavin's fluorescent monument to Tatlin. In **The Art-Architecture Complex**, Princeton University art theorist Hal Foster surveys the culmination of diverse design fields into a "global style" epitomized by such firms as Herzog & de Meuron and Renzo Piano Building Workshop. To emphasize the point, Foster contributes a lengthy interview with artist Richard Serra exploring the collapse of Minimalist sculpture, contemporary architecture, and even film into a singular formal narrative about structure and space. • $26.95; Verso, October 2011



PREVIOUS PAGE: HENRY DREYFUSS ASSOCIATES
TOP TO BOTTOM: COURTESY MUSEUM ASSOCIATES/LACMA; NOAH KALINA; NOAH KALINA

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Back to School

A COMMISSION WITH A TROUBLED HISTORY, OMA'S DESIGN FOR MILSTEIN HALL AT CORNELL UNIVERSITY REVEALS AND RELISHES IN THE PROBLEM OF CREATING ARCHITECTURE ABOUT ARCHITECTURE.

TEXT BY THOMAS DE MONCHAUX

Architect and writer Thomas de Monchaux was the inaugural recipient of the Winterhouse Award for Design Writing & Criticism. He teaches at Columbia University.

IN THE PUNISHING HISTORY of higher education in architecture, the first decade of the 21st century may be remembered as something of a respite. This is not thanks to any maturation of a pedagogy in which the necessary routine of critique is all too often abused as an opportunity for ritual bullying.

It's because drawing got more digital, and digital projectors got more affordable. A student narrating a slide presentation of computational renderings from the back of a cinematically darkened room stands shoulder to shoulder with his or her critics and colleagues, addressing the image of the work in collaboratively parallel gaze. The student's back is neither figuratively nor literally up against the wall on which the paper (and the student, like a butterfly) is pinned. The darkness and displacement of a projected review eases the spatial positioning and social hierarchy that—in acute combination—have earned such crits, and their associated spaces, such nicknames as the Shooting Gallery, the Execution Chamber, and the Kill Floor.

Today, the new affordability of big, bright, liquid-crystal-display flat screens may be shifting the dynamic back, returning the student to the front of the room and the line of fire. This was the setup I saw during a recent visit to Milstein Hall, a $52 million, 47,000-square-foot addition to Cornell University's College of Art, Architecture & Planning in Ithaca, N.Y., completed in October by Rem Koolhaas, Shohei Shigematsu, and Ziad Shehab of OMA. The addition incorporates the architecture school's historic home in the scruffy but sturdily Sullivanesque Rand Hall, confirming the firm's stated new interest in what Koolhaas, in a recent lecture

JASON KOSKI, CORNELL UNIVERSITY PHOTOGRAPHY

at Cornell, called, "not-exactly-preservation, [and] in performance more than shape."

The new addition features some 25,000 square feet of uninterrupted studio space in an airy Miesian box, about 150 feet wide, elevated and cantilevered 48 feet toward an adjacent gorge. This structure is supported largely by steel hybrid truss systems that appear to bulge blobbishly up from the seeming ground plane below, like a stray piece of late Corbusian roofscape. Those flat-screen crits take place in a circular arena directly inside the mound, the outer slopes of which accommodate the steep pitch of a 275-seat auditorium. Complex spatial overlaps, formal excisions, and glassy openings at the intersection of box and blob accommodate a constellation of primary circulation and secondary assembly and display spaces, as well as the many surprising oblique sight lines between them.

A student's first clients are, conversationally and judgmentally, his or her teachers. And in this sense, to be commissioned to design an architecture school is to be sent back to the Kill Floor. This may explain why Milstein Hall looks a little like a student project with something to prove: a brilliant big idea, its resolutely off-the-shelf parts contrasting with feverishly fussy features. Consider the auditorium's semi-robotic armchairs.

OMA's usual *jolie laide* here becomes a kind of didactic precocity, as with the deep hybrid-Warren-and-Vierendeel trusses whose webs progressively tilt toward the studio box's periphery to accommodate moment load—as if someone dropped the model on the way to the crit and decided it worked.

This back-to-school dynamic may also explain some of the troubled history of the Cornell project. It began with a 1997 reprimand from the National Architectural Accreditation Board for inadequate facilities, a 1999 gift of $10 million from developer Paul Milstein, and an aborted addition and renovation by Boston firm Schwartz/Silver Architects. There followed a competition to replace Rand Hall.

The contest garnered an icy palisade from Peter Zumthor and a lead zeppelin from Thom Mayne, FAIA, among other entries; Stephen Holl won in April 2001 with a $25 million incised cuboid. A year later, Holl was off the job, releasing a colorful statement that, "Like a brain surgeon operating on his own brain, making architecture for an architecture school is a peculiarly difficult challenge. I've been involved in the process of five different architecture schools over the past 13 years and believe it is one of the most difficult architectural commissions."

There followed an unbuilt and unlovable 2002 design by Barkow Leibinger Architects, a serviceable bar building in the vein of the industrial structures in which the then relatively obscure Berlin firm specialized. Even after the commission of Koolhaas in early 2006, all was not settled. OMA's initial scheme underwhelmed both avant- and derrière-gardes, and its fate became embroiled in local and academic politics, with the usual questions of context and taste compounded by the effect on endowed institutions of the ongoing financial crisis. Only a further NAAB caution in 2008 and a dramatic university vote in early 2009 ultimately tipped the scales.

Cornell's saga was perhaps unusually public, but not unusual: architecture-school buildings are legendarily tricky, suffering either from excessive effort, or recessive deference, by designers and clients. Where they succeed, it's through monomaniacal zeal, as at Paul Rudolph's Art+Architecture Building at Yale University, or serendipitous adaptive reuse of existing structures, as at London's Architectural Association. Or at Cornell, strangely, through a touch of both.

In architecture, profession and academy are mutually complicit through the intricate politics of both as well as through the Beaux-Arts ideal of the atelier: architects of substance are generally expected to teach, and employees are, under internship and registration rubrics, expected to go on learning. And the schools are where, in Holl's acute metaphor, architecture goes to perform brain surgery on itself.

Cornell occupies a notable position in the history of that surgery. It's the home of the lively *Cornell Journal of Architecture*, recently revived; it's the alma mater of Peter Eisenman, AIA, a prominent practitioner who is largely responsible for the consensus that architects, whatever else they're guilty of, should think. (Or at least read.) Koolhaas himself, another noted architect-as-public-intellectual, famously studied there for a few semesters in 1972 and 1973, at the hands of Oswald Mathias Ungers, then department chair, and the canonical theorist Colin Rowe—whose own interests in urbanity and transparency became those of a generation of designers and critics.

During a recent walk around the new building, I asked Koolhaas what he learned as a student at Cornell. "I learned listening," he said. He was referring to the philosopher Michel Foucault, who was visiting Cornell at the time when Koolhaas studied, at work on what would become his most directly architectural project, 1975's *Discipline and Punish: The Birth of the Prison*, a study of the spatial structures of power (and vice versa),

→

→ A STUDENT'S FIRST CLIENTS ARE, CONVERSATIONALLY AND JUDGMENTALLY, HIS OR HER TEACHERS. AND IN THIS SENSE, TO BE COMMISSIONED TO DESIGN AN ARCHITECTURE SCHOOL IS TO BE SENT BACK TO THE KILL FLOOR.

that featured the Panopticon prison of Jeremy Bentham.

Asked later what Cornell's current students might have learned during his return, Koolhaas speculated that they may have been reminded that "they're on ground where warfare has been played out." He was referring not to the usual skirmishes of construction management, but to Cornell's own past, during his student semesters, as a cauldron of architectural discourse and discord—largely between Ungers's maddening method and Rowe's methodical madness.

At its rare best, the violence at any architecture school reflects these moments of theoretical urgency and anxiety in the field. The intimacy and immediacy of design teaching enlists students, in a glorious absence of condescension, into the essential battles of their day. At its very worst, this violence turns a school into a prison worthy of Foucault: an isolated and self-regarding enclosure that enforces habitual hierarchy and ritual conformity; that reinforces the great embarrassments of a profession whose offices are known for their screamers and chest-beaters. In this sense, Koolhaas may have given Cornell a building to live up to—as the subversive subtleties of its section continually offer its students a means of spectacular or speculative escape and escapade, a means for bearing witness and listening in, a means for experiencing adjacent events and outside worlds.

It's a built form of accountability: that central circular crit space, lined by LCD-screens and students, could easily have become a prison yard like that of the Arnhem Koepel Panopticon prison in the Netherlands speculatively renovated by OMA in 1980. But to lean your back against its wall is to liberatingly occupy sight lines to simultaneous spaces and events, from the familiar luminous ceiling of the studio glimpsed through a stairwell, to the nearby skateboarder enjoying the slope outside. It is to experience something of a heteropticon or peripateticon, in which moving eyes and feet on nearby bridge and stair and elevator all offer felicitous encounter and interrupting incident.

Milstein Hall invites the notion that architecture is, in our current political language, more occupation than discipline. The building enables, perhaps demands, a transparency of action and an urbanity of event that would gratify both Foucault and Rowe. As both would attest, the names that we give places matter. It's encouraging that during their first fall there, students have dubbed a favorite pin-up spot, perched at the far edge of a cantilever under the moody Ithaca sky, not a familiar architecture-school nickname borrowed from the language of incarceration, but something altogether lovelier: the Dance Floor. □

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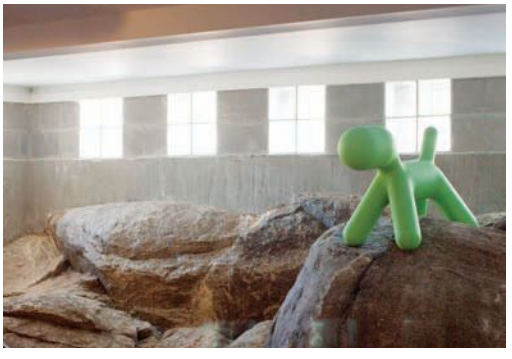
→STUDIO VISIT

Salmela Architect

DAVID SALMELA HAS LIVED IN MINNESOTA HIS ENTIRE LIFE. THE LANDSCAPE AND HISTORY OF HIS HOME ARE CRITICAL INFLUENCES ON HIS PROUDLY REGIONAL DESIGN. THE ARCHITECT EXPLAINS WHY PLACE MATTERS.

TEXT BY KRISTON CAPPS
PHOTOS BY JASON FULFORD



David Salmela, FAIA, has lived and worked in his studio residence in Duluth, Minn., for the last 20 years. "Early on, rather than try to become an international architect, or even a national architect, my goal was more of a regional architect," he says.

"I've lived in Minnesota all my life. I've traveled, but the circumstances were never to leave," says Salmela, who is 66. His studio and residence look out over Lake Superior, and he credits the landscape of the Canadian Shield as a major influence on his work. "Certainly I would have had a choice to go probably anywhere, I guess, but I like the climate and the terrain where we live here. It's a rugged land. It's close to the wilderness."

"Vernacular is the most logical way of building something at the time," he says, discussing the blend of architectural styles in Minnesota. "But that logic is always changing. It doesn't always create architecture, but it does become something of the culture."

Salmela is presently working with three project architects: one in his Duluth studio, one based in Fargo, N.D., and one working from Minneapolis. His workdays are routine. "We certainly put in a consistent amount of time," he says, "but we don't crash on projects."

A great deal of Salmela's work can be found in Minnesota and Wisconsin, states that share a history and landscape. "The goal is to try to create this architectural understanding specific to my area, rather than to try to go all over the country to design things in places I don't understand," Salmela says. "Then our architecture becomes something that is influential, rather than singular, prima donna–style structures."

Paolo Baratta oversaw a 31 percent increase in visitors to the Architecture Biennale from 2008 to 2010.

COURTESY LA BIENNALE DI VENEZIA

→BEYOND BUILDINGS

Bunga Bungle

BERLUSCONI SACKS PAOLO BARATTA, THE TALENTED CHAIRMAN OF THE VENICE BIENNALE.

IN A DECISION that is producing outrage in Italy and around the art and architecture world, Italian Prime Minister Silvio Berlusconi has ousted Paolo Baratta, the chairman of the Venice Biennale. Berlusconi wishes to replace him with a food-industry executive, Giulio Malgara, who has shown no previous interest in the arts and whose main asset seems to be his friendship with the satyr-like prime minister.

Baratta, an urbane and extremely intelligent former bank president and politician, has for the last four years made the Biennale a professional and effective organization. He has streamlined its operations, presented extremely successful programs in all of the areas in which it operates (art, architecture, film, theater, and dance), created new space for its archives, and in general, made the case for the importance of the Biennale as the central arts festival in the world. As director of the 11th Architecture Biennale in 2008, I benefited from the strength of his leadership, and have enjoyed every event that he has managed since then.

The Cambridge-educated Baratta is extremely knowledgeable about the arts, and I found that I could discuss every aspect of culture with him, enjoying his thoughtful opinions and clear analysis. Once convinced of the importance of a project, he is forceful in his support. His ability to navigate the often complex intersection of politics, economics, governance, and culture that marks Italy is unsurpassed.

It was fantastic to tour around buildings or art exhibitions with Baratta, as I did when he joined me on a whistle-stop tour to promote the 2008 Biennale around Europe and the United States. He seemed to enjoy most those architects who could make strong statements that they could back up with an equally clear theoretical position, such as Kazuyo Sejima, whom he selected to direct the 2010 Architecture Biennale.

When I arrived at the Biennale in 2008, the institution was still recovering from a previous bout of governance by political hacks. Several people, including the Yale School of Art dean Robert Storr, who had directed the 2007 Art Biennale, warned me not to become involved because of the resulting chaos. Baratta, who had served a previous stint as president, changed all that in a few months.

Luckily, there is still some hope. My contacts tell me that the outrage this move by Berlusconi has produced is so intense that a usually routine procedure to validate the prime minister's choice might offer chances for reversal. A petition circulated by one of the local newspapers has garnered thousands of signatures. Finally, Berlusconi's government might fall before 2013, when Berlusconi's term is officially up. In the meantime, I can only thank Paolo Baratta for advancing the cause of thoughtful, open architecture, and hope that the Venice Biennale's long traditions and achievements will allow it to survive Berlusconi. □

TEXT BY AARON BETSKY
ILLUSTRATION BY PETER ARKLE

→ **Read more of Aaron's design observations at ARCHITECT's Beyond Buildings blog: go.hw.net/betsky.**

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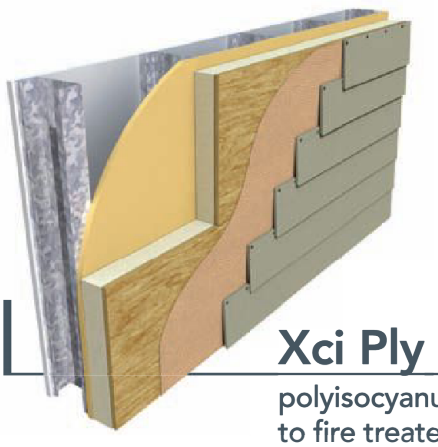

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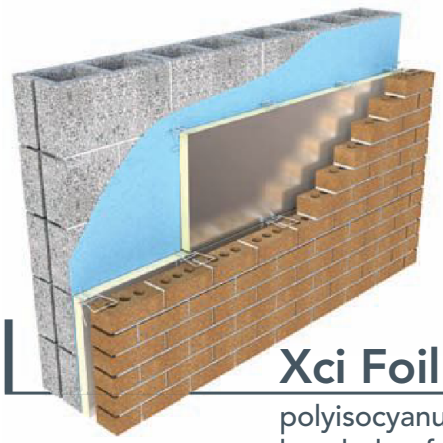

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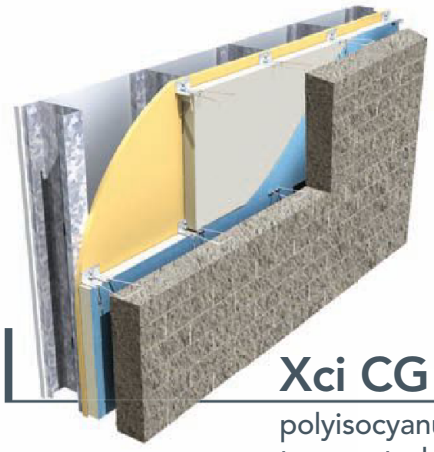

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LESS IS MORE?

THE STUDENTS AT THIS YEAR'S SOLAR DECATHLON TACKLED A NEW CHALLENGE AS PART OF THE BIENNIAL COMPETITION: DESIGNING THEIR ENERGY-EFFICIENT HOUSES FOR $250,000 OR LESS. SOLUTIONS INCLUDED SOME POINTEDLY AVANT-GARDE DESIGNS. YET SOME STUDENTS AND FACULTY ADVISERS WORRY THAT THE DECATHLON'S NEW EMPHASIS ON AFFORDABILITY WILL DETER INNOVATION AND LEAD TO THE CONSTRUCTION OF MORE-PEDESTRIAN HOMES. OTHER PARTICIPANTS FOUND FAULT WITH THE SYSTEM FOR ESTIMATING COSTS. NEVERTHELESS, A FEW ENTRIES SUCCEEDED IN MAKING A SIGNIFICANT POINT: GOING GREEN CAN HAVE MASS-MARKET APPEAL.

TEXT BY BRAD GRIMES AND VERNON MAYS
PHOTOS BY IAN ALLEN

THE DECATHLON IS OVER. NOW WHAT?

BY LAWRENCE BIEMILLER

HUNDREDS OF THOUSANDS of people have toured Solar Decathlon houses since the U.S. Department of Energy first held the contest in 2002, challenging college students to pair cutting-edge energy systems with architectural appeal and mass-market potential. The houses have been a huge hit in Washington, D.C., and have been installed permanently in locations from Darmstadt, Germany, to Beijing. But how much influence the decathlon has had on architecture or sustainable technology is more difficult to gauge—certainly it's harder to measure than the houses' kilowatt output.

Architects have admired the ingenuity with which many of the decathlon teams solved the challenges inherent in creating houses that not only power themselves but also are easy to transport. Perhaps because they're so cutting-edge, though, none of the home designs has yet wowed builders into offering them on a wider scale, even though marketability is one of the 10 contests included in decathlon scoring. Housing markets, it seems, are more conservative than the student decathletes: Mike and Pete McKechnie, brothers who run a West Virginia green-energy company called Mountain View Solar & Wind, bought the University of Massachusetts at Dartmouth's 2005 decathlon house and moved it to Berkeley Springs, W.Va., to use as a residence and demonstration home—but only after they added a second story and made the house look much more conventional.

The competition has, however, produced at least a couple of technological advances that have shown promise. The students who built Santa Clara University's 2007 house worked with a civil-engineering professor, Mark Aschheim, to fabricate I-beam joists out of compressed bamboo floorboards. The innovation led to a 2010 paper in the *Journal of Structural Engineering* (published by the American Society of Civil Engineers), and it has encouraged Aschheim's research in both sustainable construction materials and earthquake-resistant design. Meanwhile, successive University of Maryland teams have been perfecting an innovative dehumidifying system.

Indeed, the students participating in the competition have learned plenty while working on the homes. "These students live and breath this for two years," says Richard King, who directs the decathlon program for the Energy Department. "The energy, the passion, the interest that they develop is not going to go away. You feel so much hope that they're going to go on and change the world."

The decathlon houses "all have some impact locally when they continue to be displayed and used," King says; some are open for regular tours at science museums or on the campuses where they were built. The most famous is Virginia Tech's 2009 Lumenhaus, which features a modular design in which a core unit equipped with solar panels and smart technology can be supplemented with inexpensive expansion modules as a family grows. The house, equipped with computer-controlled perforated-grid shade screens, was displayed this past summer beside the Farnsworth House, which Virginia Tech cited among its inspirations.

Rice University's 2009 team created a contemporary solar-powered house that was designed to be moved to Houston's Third Ward, a historic black neighborhood

cont. on page 76

2011 WINNERS

Overall
University of Maryland

Architecture
University of Maryland

Market Appeal
Middlebury College

Engineering
New Zealand

Affordability
Parsons NS Stevens, Team Belgium

Energy Balance
New Zealand, Purdue, Tennessee, Florida International, Maryland, Illinois, SCI-Arc/Caltech

For a complete list of winners, profiles of all 19 entrants, and additional coverage and photographs of the houses, visit achitectmagazine.com.

Southern California Institute of Architecture and California Institute of Technology

It's part astronaut suit, part thermos. CHIP—as the California team called its entry—has an otherworldly appearance that belies its grounding in mainstream technologies. The house (whose acronym stands for Compact Hyper-Insulated Prototype) features an exterior skin made of 14 to 16 inches of denim batt insulation wrapped with a low-cost, engineered, vinyl-coated polyester fastened with zip ties, dowel rods, and lag screws. "Aesthetically, we are trying to convey the idea that solar housing isn't just about putting solar panels on your roof. It's also about how you conserve the energy once you harvest it," say Robert Gilson, a student at SCI-Arc. CHIP unabashedly shows off "the thick insulation that it takes to conserve your energy and use it responsibly." A key aspect of the energy conservation plan was to separate inside and outside air. The dwelling incorporates a whole-house fan that performs a complete air change in less than 20 minutes, with fresh air intake above the west entrance and exhausts in the collars surrounding the large openings. California's spiraling land costs and urban sprawl helped influence CHIP's compact design, which at less than 800 square feet is suited to infill development or neighborhoods zoned for shared lots. "What helped us with affordability is the assembly removes a roofing contractor from the picture, and it removes a siding and finishing contractor," Gilson says. "One single membrane takes care of all the waterproofing." V.M.

Estimated cost: $262,495.11

Estimated cost: $345,610.36

Team China: Tongji University

With its Y Container home, Team China took a radical approach to affordability: It designed a house around six recycled shipping containers. “The price of six recycled containers is only $6,000, so the main structure and the water-proofing system are really cheap,” says Hua Guodong, the team’s lead student architect. Each arm of the house is composed of two side-by-side containers, joined together in the middle. “The Y shape gives the interior a more spacious feeling,” Hua says. A substantial 8.8-kilowatt photovoltaic system includes a single inverter and 42 panels, installed on two of the structure’s three roof areas. As part of the design, the team’s engineers integrated the house’s HVAC and hot-water system. “Designers need to learn more about how mature energy technology works in the finished project and embed it into their houses at the start of the design process,” Hua says. Heat generated by the Y Container’s HVAC system can be used to help heat water. And when domestic hot-water demand is met, a solar thermal collector on the roof stores heat in order to warm a series of small water tubes under the floor for thermal radiation. B.G.

Purdue University

The Purdue team designed INhome (short for Indiana home) to appeal to "a typical Midwestern consumer." The engineer-driven project—Purdue has no school of architecture—was intended to show that energy-efficient homes can be easy to live in and construct. "We would like a contractor to be able to walk in and say, 'I know how to build this and make a profit,'" says Bill Hutzel, a professor of mechanical engineering technology. Purdue took a simple approach to controlling up-front costs by using off-the-shelf materials. The house is made of SIPs, with long-lasting, low-maintenance HardiePlank applied to the exterior. The roof features sun-reflective cool-roof shingles. The project also includes an innovative biowall, an air-purifying system based on NASA research that studied how plants can purify air in space. V.M.

where it now houses artists-in-residence for Project Row Houses, an arts and cultural nonprofit. The team's commitment to affordability impressed decathlon visitors and officials, particularly after the 2007 and 2009 competitions were won by sleek but very costly houses from the Technical University of Darmstadt in Germany. Partly because of the Rice team's influence, decathlon officials adopted the affordability contest this year.

A few of this year's teams also derived inspiration from Rice's example of designing its house with a low-income community in mind. Purdue's house will become home to a family in Lafayette, Ind., and the Parsons/Stevens team worked with Habitat for Humanity to relocate their house to Washington, D.C.'s Deanwood neighborhood. Those projects will certainly help the competition affect more real-world change.

Indeed, it's the decathlon houses that are being lived in that serve as proof of the concept—and create the most effective and enthusiastic evangelists. Rex Barrick, physical-plant manager at the University of Texas at Austin's McDonald Observatory in Fort Davis, rescued the university's forgotten 2007 house and installed it on an old radio-telescope pad. The reliability of the electrical components, he says, "has given me a tremendous insight into being off the grid." The students "did a tremendous job," even though he's had to complete a few projects they didn't have time to finish. "An astronomical research facility is a great place for a house that runs off the sun," he says. "I couldn't think of anything more appropriate."

Woody Woodroof, founder and executive director of the Red Wiggler Community Farm, lives with his partner in the 800-square-foot house that Maryland students designed for the 2005 competition. The house generates enough electricity to also power equipment for the farm. "We live in the house no differently than any other house that we've lived in, except that we're much more mindful of the energy that we're using," Woodroof says. He admits to watching the house's meter religiously.

cont. on page 81

University of Maryland

Maryland's WaterShed house was not a leader in affordability but nevertheless took top honors in the overall competition. The home's internal liquid desiccant waterfalls, which were originally developed by Maryland's 2007 team, received an upgrade this year. The waterfalls consist of a high-saline liquid solution that absorbs humidity from the air, reducing the load on the mini-split air conditioners, says Amy Gardner, associate professor at Maryland's School of Architecture, Planning & Preservation. WaterShed features a green-roof system with 156 modular trays for growing sedum plants, and a 42-panel, 9.2-kilowatt PV array with individual microinverters. A Crestron Electronics control system processes data from 40 different sensors in the house, so that homeowners could monitor and control everything from lights to overall energy usage. B.G.

Estimated cost: $336,335.89

Ohio State University

Ohio State's entry, dubbed enCORE, was partly inspired by Ohio's recent economic decline. "It was important for us to show how Ohio still has manufacturing and technologies that are about the future," says faculty architecture adviser Keoni Fleming. The house incorporated a thin-film array manufactured in Toledo and an Ohio-made solar array and doors. To keep costs down, the team chose inexpensive materials and common building techniques. "The house is standard platform framing with 2x6s, but we used advanced framing techniques," Fleming says. "The prefabricated roof trusses line up with the wall studs, allowing a top plate to be eliminated. The windows use metal brackets, so you don't need double studs at the openings. It minimizes materials." The house employs low-cost passive measures and innovative technology, such as a solar thermal hot-air system incorporating a desiccant wheel that can lower humidity. A sliding polycarbonate screen provides privacy and sun protection, a bioremediation system filters rainwater, and the dynamic plan extending from a consolidated building core provides ample living space. "The house is sized to work for a family with a child," Fleming says. "The last time we came to the Solar Decathlon, you'd hear a lot of people say, 'Wow this is great. But I could never see myself living here.' I think what we wanted to show this time is, well, actually you could." V.M.

Estimated cost: $285,982.23


404

Team New Jersey: Rutgers University and New Jersey Institute of Technology
The first thing you notice about Team New Jersey's ENJOY House is that it's concrete—almost entirely concrete. "One of our strategies was to show the public that although the wood industry has greatly reduced costs in the housing industry, there are other technologies, such as precast concrete, available," says team leader Jennifer Switala. "Precast concrete is durable, more sustainable, mold resistant, and lasts longer than your typical stick-frame house." The ENJOY house features a large, dramatic roof (which weighs 200,000 pounds and measures exactly 18 feet at its highest point—the competition's maximum), which was angled to create an inverted hip for collecting rainwater. The home also makes use of a large 40-panel, 8.8-kilowatt PV array, with one microinverter per panel. A separate 30-tube solar collector heats water for domestic use and for the home's hydronic radiant floor. The structure was among the competition's priciest, but Switala says that a production house could be built for less than $200,000. Intended mainly for retirees along the New Jersey shore, ENJOY was designed to be extremely low-maintenance and ADA-accessible. B.G.

Estimated cost: $389,303.55

Team Belgium: Ghent University

Team Belgium aimed for simplicity with E-Cube, a modular house that's stripped of nonessential components and finishes, leaving the plywood-sandwich façade exposed inside. The house was conceived as an affordable building kit that can be assembled in just days. A boltless, pallet-rack system forms the main structure, with technical systems grouped together in a small compartment. The open plan can be expanded by adding floor panels to the existing beams. "The pallet rack is so flexible—it just clicks together," says recent graduate Charlotte Vyncke. Team Belgium tied for first in affordability, the team's success aided by the ease of construction. "In calculating the labor cost, they took into account if the labor was skilled or not," Vyncke says. "Our house did not require a lot of skilled labor, and I think that's why we won." V.M.

Woodruff says the house has been changed only a little since the decathlon—its batteries were disconnected and it was instead hooked up to the power grid. Excess power generated during the day is sold to the local utility. "We make more power than we use," he says, though not by much—meaning, he says, that the students designed an appropriately sized solar-powered system for the house.

Daniel Oerther, a professor of environmental engineering at the Missouri University of Science and Techology, shares a 2007 decathlon house on the university's campus with his wife and their year-old son. The house, about 800 square feet, is located in a "solar village," sitting beside the university's other three entries. Two of those are rented to students, while the third is used as an office by students hoping to design the university's next decathlon contender.

"The house has so much technology that you have to make conscious choices about how you use it," Oerther says. "Are you trying to let light and heat in, or keep it out? Even when it's freezing outside, it will get to 85 degrees inside just because of solar gain." Paying such close attention to the house in turn "causes us to adjust the other things in our lives as well." He and his wife have given up one of their two cars, eat less meat than they used to, purchase food locally when they can, and try to avoid toxic household cleaning products.

"I'm an environmental engineer," Oerther says, "but I've always had a strong interest in our choices around where we live. We want to make choices with intention." That doesn't always mean they make good choices, he says, but at least they're choosing, rather than being overwhelmed by the forces of marketing, peer pressure, and habit—forces that, he notes, have helped the average American house swell by about 500 square feet since 1980. "Solar-house living and small-home living are so much about intentional choices," he says. "I think that's what's so powerful about the Solar Decathlon." □

Lawrence Biemiller is a senior writer at The Chronicle of Higher Education.

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DESIGN

ARCHITECTUS AND INGENHOVEN ARCHITECTS 84
SMITHGROUP 90
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1 BLIGH STREET

SYDNEY
ARCHITECTUS AND INGENHOVEN ARCHITECTS

TEXT BY CHARLES D. LINN, FAIA
PHOTOS BY H.H. ESCH, HENNEF

ONE OF SYDNEY'S business ambitions is to attract the best talent and enterprises in the world. Starting with the Sydney Opera House, completed in 1973, locals recognized that world-class architecture could make the city a destination. Today, its planning authority, the Central Sydney Planning Committee (CSCP) requires that developers hold competitions for major buildings, and encourages local architects to partner with the stars. An independent design panel makes a nonbinding recommendation for the best solution for each contest, but the CSPC makes the final decision on approval.

It seems to be working. Sydney's newest tower, 1 Bligh Street, is the result of a 2006 competition won by the team of Ingenhoven Architects from Düsseldorf, Germany, and local firm Architectus. Within a couple of blocks are buildings by Foster + Partners, Rogers Stirk Harbour + Partners, and Kohn Pederson Fox Associates. These join a few of the best '60s and '70s Modernist office towers built anywhere, designed by the late Sydneysider, architect Harry Seidler.

Australia's Dexus Property Group put on the contest for 1 Bligh Street. "Our competition brief was very prescriptive," says head of development Tony Gulliver. "Among other things, we spelled out it would be a highly sustainable building, with a high-quality indoor environment, minimum distances to daylight, and very large floor plates." There were also city requirements for a podium, a conservative floor-to-area ratio, and for preventing the new building from casting a shadow over a nearby square.

"We had a lot of restrictions and we did not stick to any of them," says Martin Reuter, project architect for Ingenhoven. "Well, we did respect the building setback lines, but otherwise we decided to give something better to the city than a podium and a tower. And then we would explain to the planning board what we did." Luckily, the planning board agreed with their proposal, and the podium requirement was waived.

The sloping rectangle-shaped site is located on the corner of an awkward three-block parcel, which is cocked at a 45-degree angle from the rest of the downtown's street grid; a remnant of a failed Colonial-era attempt at city planning. One advantage of the site is its commanding view of the Sydney Bridge and harbor to the north. After considering a number of schemes, the architects adopted an elliptical plan, with its long side facing toward the harbor. The ellipse gives each office space floor-to-ceiling panoramic views. The building's post-tensioned-concrete structure is composed of beams that cantilever out from the columns on every floor, minimizing the interior structure; for much of the floor plate, the view is interrupted only by narrow curtainwall mullions.

"The problem," says Ray Brown, a principal at Architectus, "is that in this part of the world the heat load comes from the north. The challenge is preserving the view without resorting to black glass. That meant coming up with a high-performance façade." Arup's Sydney office designed a practically clear, double-walled façade with automated blinds (see Toolbox, page 88) that has a net shading coefficient of 0.15.

The architects chose to limit the enclosed area at the ground floor to about 40 percent of the tower's footprint, with the upper floors cantilevering out to form a protective overhang. This yields covered space for an outdoor café, an outdoor play area for the building's childcare center, and curving stairs that cascade down to the street. On warm days the steps have become public space, a haven for brown baggers.

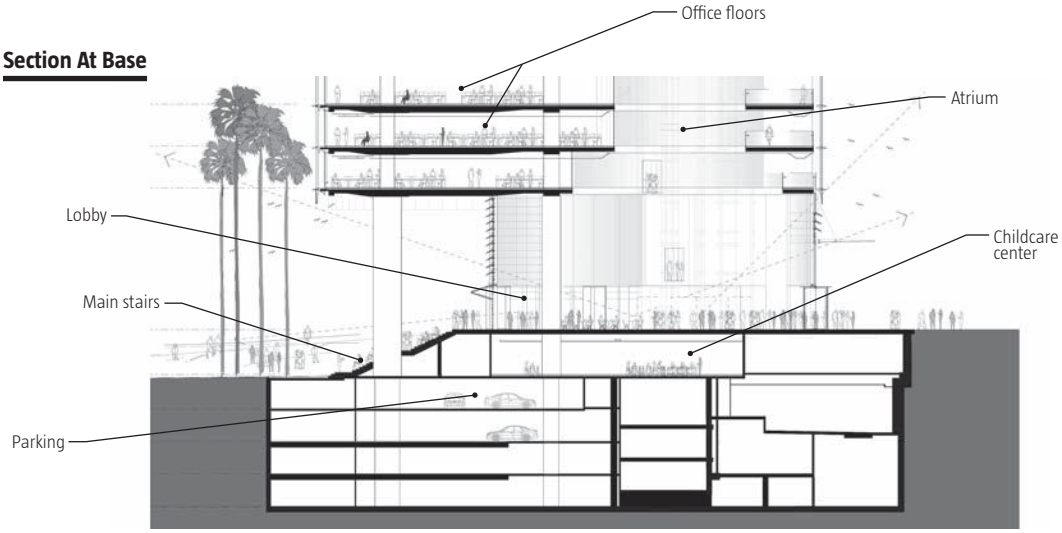
Inside, a skylit atrium, trimmed in glass and aluminum, rises the full height of the building. Air flows through the lobby's entry doors and through open glass louvers in the exterior walls, so that balcony corridors on each floor can be naturally ventilated. The building is equipped with a trigeneration plant that provides heating, cooling, and power. A blackwater harvesting system processes over 20,000 gallons of water daily, sourced from Sydney's sewer systems for use in flushing the building's toilets and in the building's cooling tower.

The building is packed with costly finishes and many sustainable features, but Gulliver explained that law and boutique finance firms are willing to pay for them: The building officially opened in late August and only has nine floors (out of 28) left for leasing. And in contrast to American developers who build and flip, he says, "It's a different ownership profile … [in Australia]. Dexus will have this building in our portfolio for decades."

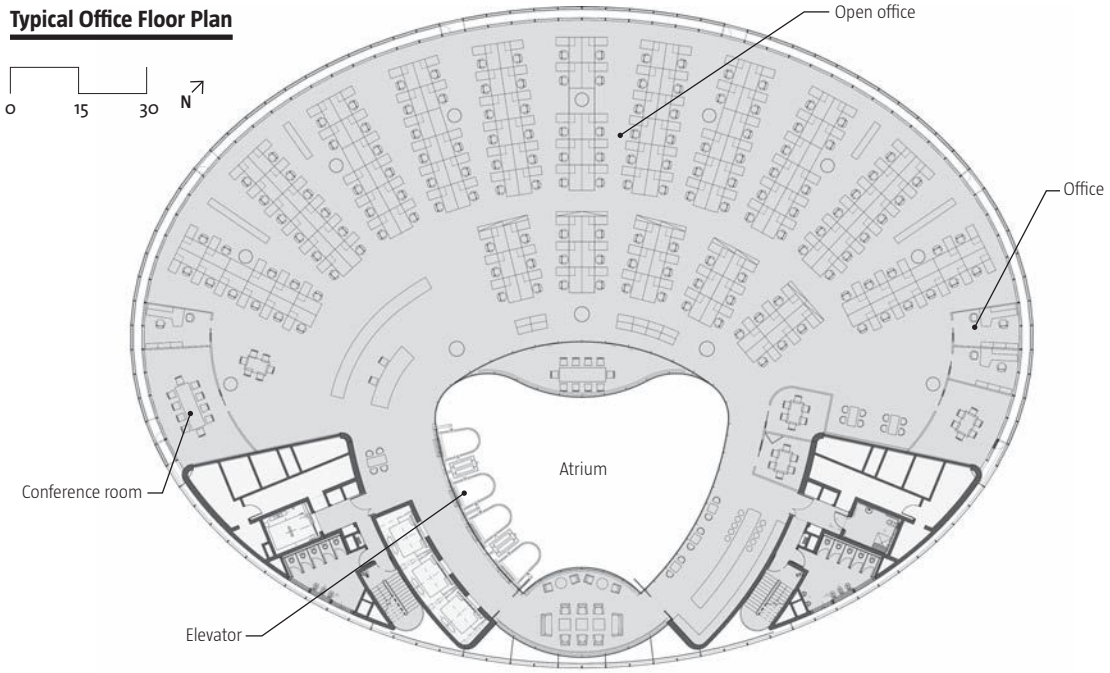
The CSCP was happy too. It decided that the project's design excellence merited a 10 percent floor-to-area ratio bonus.

The orientation of the new 1 Bligh Street tower means that the building not only features panoramic views, but it also occupies a prominent spot in the Sydney skyline (previous spread). The building has a roof deck on level 28 (opposite), solar thermal panels, and a grid-shell skylight that tops the glass-and-aluminum-lined central atrium (this image). Air enters the building through doors in the lobby, the café (opposite bottom), and louvers in the ground-floor curtainwall, and flows up through and is vented up and out the top of the atrium to naturally ventilate the public spaces.

Section At Base



Typical Office Floor Plan



TOOLBOX: DOUBLE-WALLED FAÇADE

As sustainable features go, double-walled façades are frequently discussed, but not always well understood. Kerryn Coker, the façade engineer in charge of the 1 Bligh Street façade for Arup says, "The interior wall of the façade is a double-glazed insulating [glass] unit with a very high-performance low-E coating. It has a visible light transmittance (VLT) of about 60 percent. Most commercial office buildings in Sydney have a VLT of about 35 to 40 percent."

The outer wall of the façade is composed of a single layer of uncoated, but laminated, low-iron glass. Though double-walled façades in cold climates often have operable louvers that can be closed during the winter months, the skin at 1 Bligh was engineered to allow the louvers to stay open all year long. The double-skin assembly protects the computer-controlled venetian blinds which, despite the elliptical form of the building, are actually standard flat assemblies. The curve of the building is so slight that the blinds do not need to have a radius designed into the individual units.

These blinds can be activated either by the building-management system or by photosensors. "If the building had flat walls," Coker says, "the blinds would be down all day. But, because it is hemispherical the shades come up on the east side as the sun moves toward the west."

The curved wall is always ventilated, however, by louvers at the edge of each floor slab. "These openings are important so heat does not build up in the cavity," Coker continues, and thus into the building itself. Using computational fluid dynamic modeling, the shape of each of the louver's fins was designed to function as an airfoil. This is so that hot air exiting the top of one cavity is not drawn into the cavity above it, and so that passing breezes cannot easily enter the cavity and disturb the venetian blinds during the course of the day.

Project Credits

Project 1 Bligh Street, Sydney, New South Wales, Australia
Owners Dexus Property Group; Dexus Wholesale Property Fund; Cbus Property
Architects Architectus, Sydney—Ray Brown (director); Mark Curzon (associate); Ingenhoven Architects, Düsseldorf, Germany—Christoph Ingenhoven (director); Martin Reuter (project architect)
M/E/P and Fire Engineer Arup
Quantity Surveyor Rider Levett Bucknall
Sustainability Consultant Cundall
Structural Engineer Enstruct Corp.
Project-Cost Assessor Davis Langdon
Hydraulics and Fire Consultant SPP Group
Elevator Consultant Norman Disney & Young
Art Consultant Barbara Young
Public Art James Angus
General Contractor Grocon
Project Manager APP
Size 41,806 square meters (450,000 square feet) net leasable area
Cost $667 million Australian (U.S. $712.69 million)(total project cost including site acquisition, demolition, and construction)

Materials and Sources

Ceilings SAS International (office ceiling panels) sasint.co.uk
Façade G.James (double-wall façade system, louvers) gjames.com.au; Viracon (insulated glass units) www.viracon.com
Glass Sharvain Balustrading (lobby glass walls, glass balustrades) sharvainbalustrading.com.au
HVAC Hastie Group (chilled beams) hastiegroup.com.au
Skylights Sharvain Balustrading (atrium skylight) sharvain balustrading.com.au
Vertical Transport Otis Elevator Co. (elevators) otis.com
Water Management Aquacell (blackwater-filtration system) aquacell.com.au

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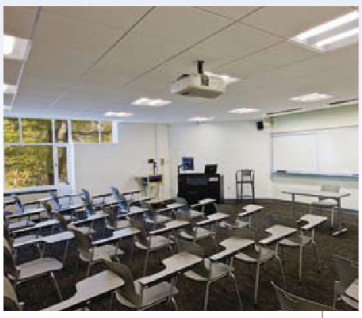

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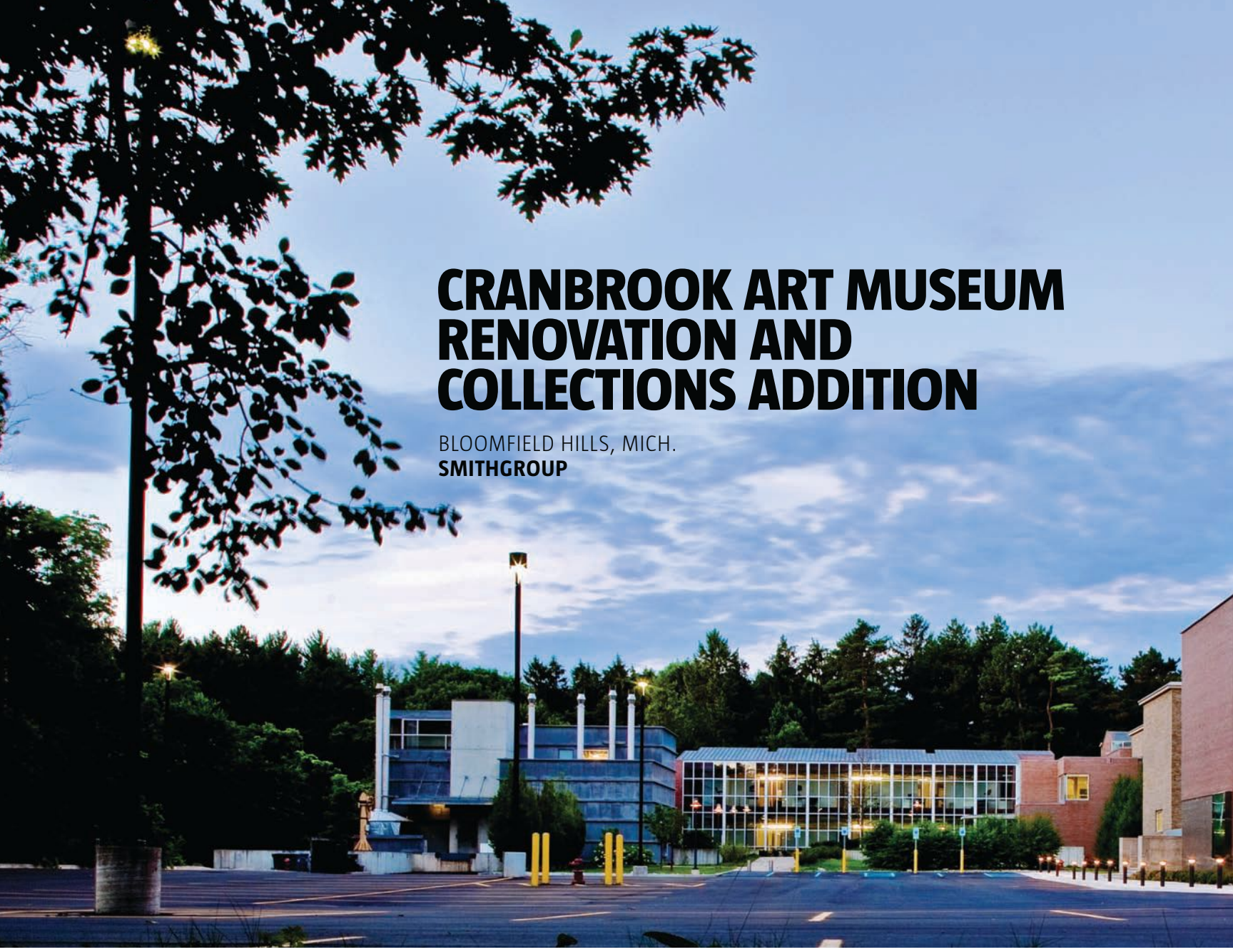


CRANBROOK ART MUSEUM RENOVATION AND COLLECTIONS ADDITION

BLOOMFIELD HILLS, MICH.
SMITHGROUP

TEXT BY IAN VOLNER

EERO SAARINEN WAS scarcely 18 when his architect father, Eliel, tasked him with some detail work for a new educational campus under way in a suburb of Detroit. Saarinen the Elder, at the behest of client-founders George and Ellen Booth, was to head the Cranbrook Academy of Art when it opened 1932, and had moved his family to the site—320 wooded acres near Bloomfield Hills—to command the artisan team whose decorative handiwork makes the Cranbrook complex a treasure of 20th-century American design. Young Eero's contributions were minor, but indicative: one, an ornate wrought-iron dragon on the gate of a private enclosure, seems to portend something of his own expressive masterworks, still some 30 years ahead of him.

"The character of the architecture here is timelessly beautiful," says Reed Kroloff, the seventh to follow Saarinen Sr. as Cranbrook Academy director. Besides the occasional ornamental dragon, the Arts and Crafts–derived studios and schools of Cranbrook boast an array of eclectic columns and carvings that "does something that … [Eliel] Saarinen is very much a practitioner of: It says that history is not something to be avoided, but for God's sake it's not to be copied," Kroloff says.

That credo, slightly modified, has been the watchword for the architects of the newest addition to the campus, an extension and renovation of Eliel Saarinen's 1942 Cranbrook Art Museum. Modified,

because now it's the Saarinens who are the history, not the practitioners; and their legacy couldn't be avoided; it had to be met head-on.

The museum is the last building that Saarinen designed on campus, and one of the most impressive. The structure is half of an austere, symmetrical composition mirrored by the academy library and centered on a monumental staircase and portico. Paul Urbanek, AIA,whose Detroit–based SmithGroup office oversaw the expansion, admits the challenge of working amidst so much history: "My first thought when getting asked to work on the project … [in 2008] was the awesome responsibility of putting a building next to Saarinen's masterpiece."

Daunting as it may have seemed, the new project was a necessary one, since history itself had caught up with Saarinen. Says Rick Nahm, president of the Cranbrook Educational Community (of which the academy and museum are core constituents), "I knew 10-and-a-half years ago that there was an issue with the exhibit space, with climate control, and with appropriate and proper storage."

"It was like keeping art in your grandma's basement," Urbanek says: Sixty-five Michigan winters had taken their toll, and the building's poor insulation and substandard ventilation meant that the 6,000-piece collection—a veritable cross section of modern art and design, from Ludwig Mies van der Rohe to Frank Stella—was at risk.

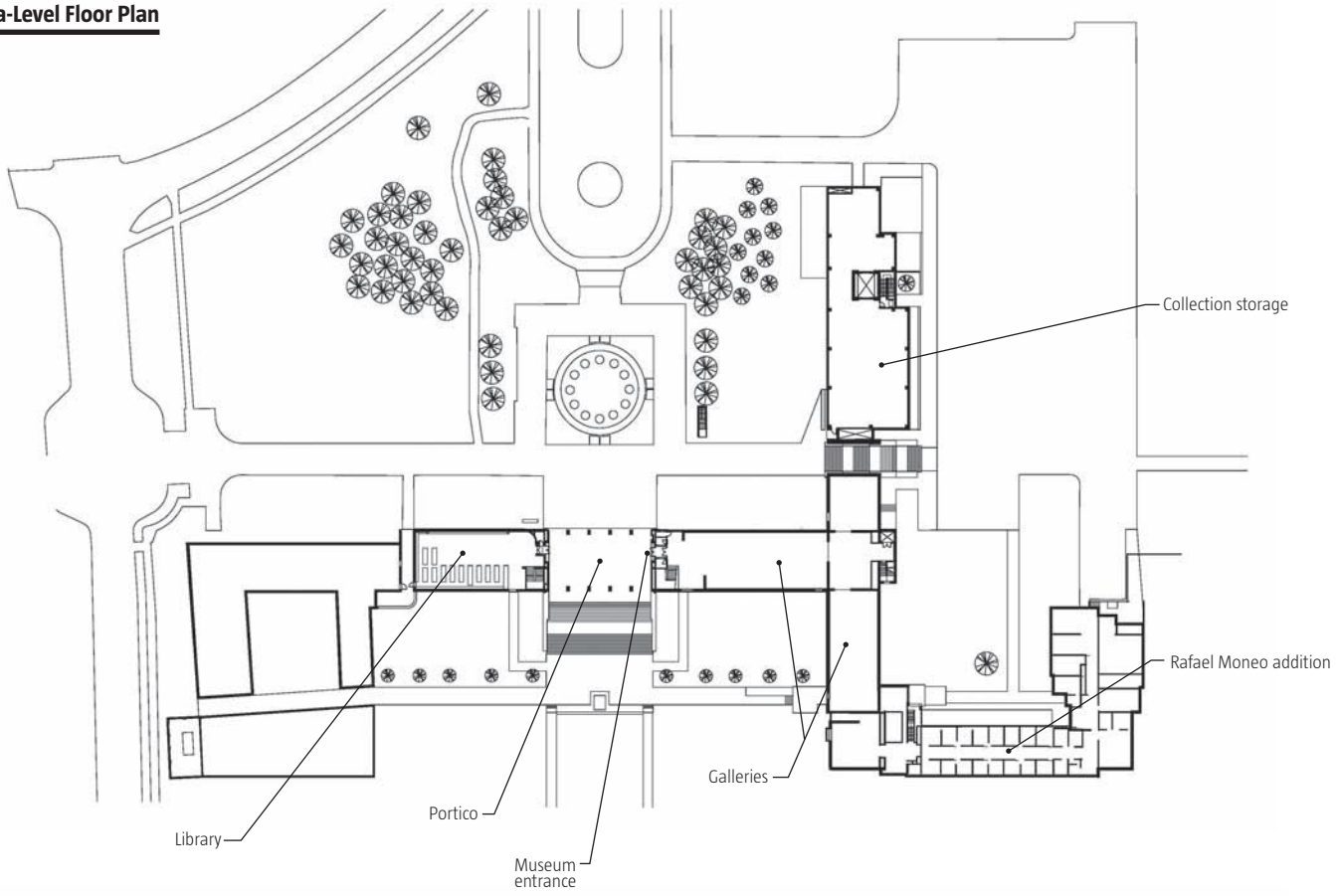
So was the institution's standing with the American Association of Museums, which threatened to withhold accreditation unless steps were taken. With a 1999 master plan by Rafael Moneo, Hon. FAIA, in hand, the envelope for the 20,000-square-foot extension was already blocked out, and SmithGroup could focus on the complex interior scheme. Connecting old building and new via an underground corridor for staff and art, the architects relocated the mechanical plant for the museum and library into the new Collections Wing, freeing up space on the original lower floor for galleries and archives. Inside the addition, within a 45-foot-wide footprint, comparable to that of its conjoined twin, the architects wedged a massive program, including a loading dock, seminar space, and open storage that puts the complete collection on view for the perusal of Cranbrook's interdisciplinary scholars.

Not to say that SmithGroup's job was all technical. In a subtle contextual turn, the extension's plain, windowless western façade sports clear-glazed brick paneling that not only complements Eliel's work, but speaks to Eero's as well: even as they were at work on Cranbrook, Urbanek explains, SmithGroup was designing a renovation for the General Motors Tech Center by Saarinen *fils* in nearby Warren, Mich. "The glazed brick at Tech was actually designed by ceramic artists from Cranbrook." SmithGroup's design brought it all full circle.

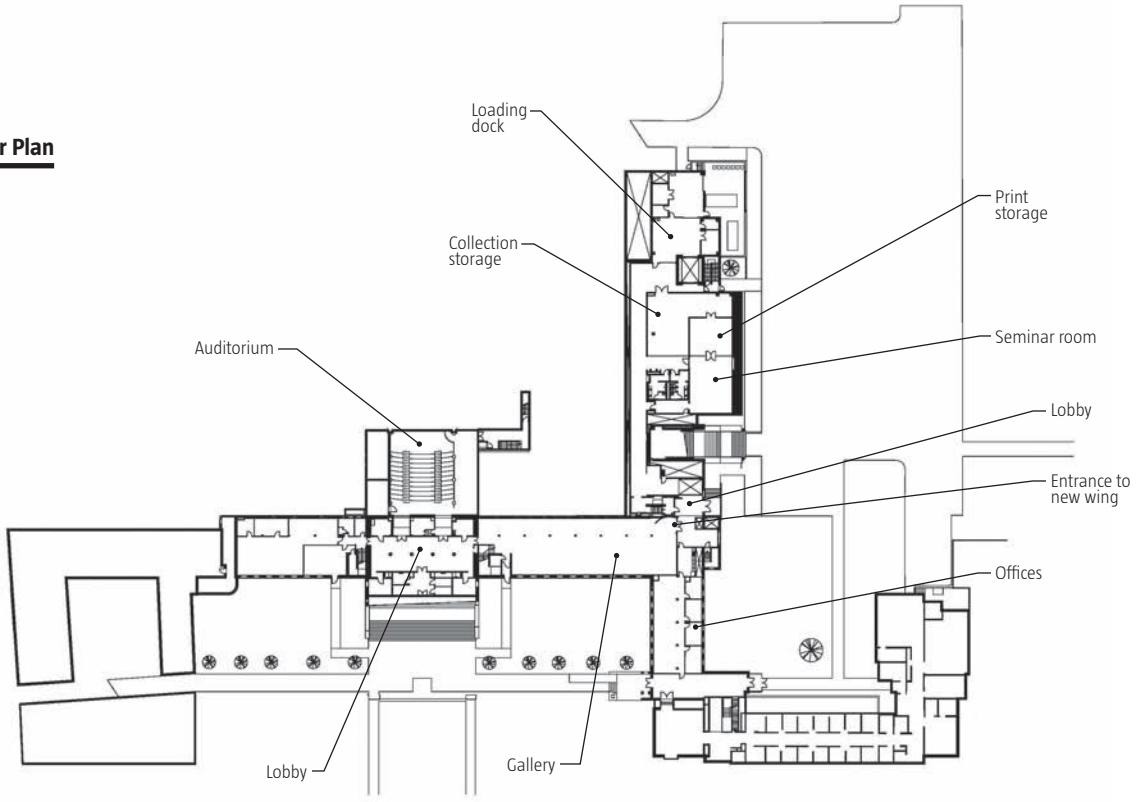
DESIGN→ **SMITHGROUP**

The new Collections Wing is clad in clear-glazed red brick that references the masonry work of the original Eliel Saarinen building. Above grade, the two volumes are connected via a thin joint of concrete block (this image) clad in galvanized metal. This joint hides the ductwork that feeds the new building. An interior passage between the old and new occurs below the stairs.

Plaza-Level Floor Plan



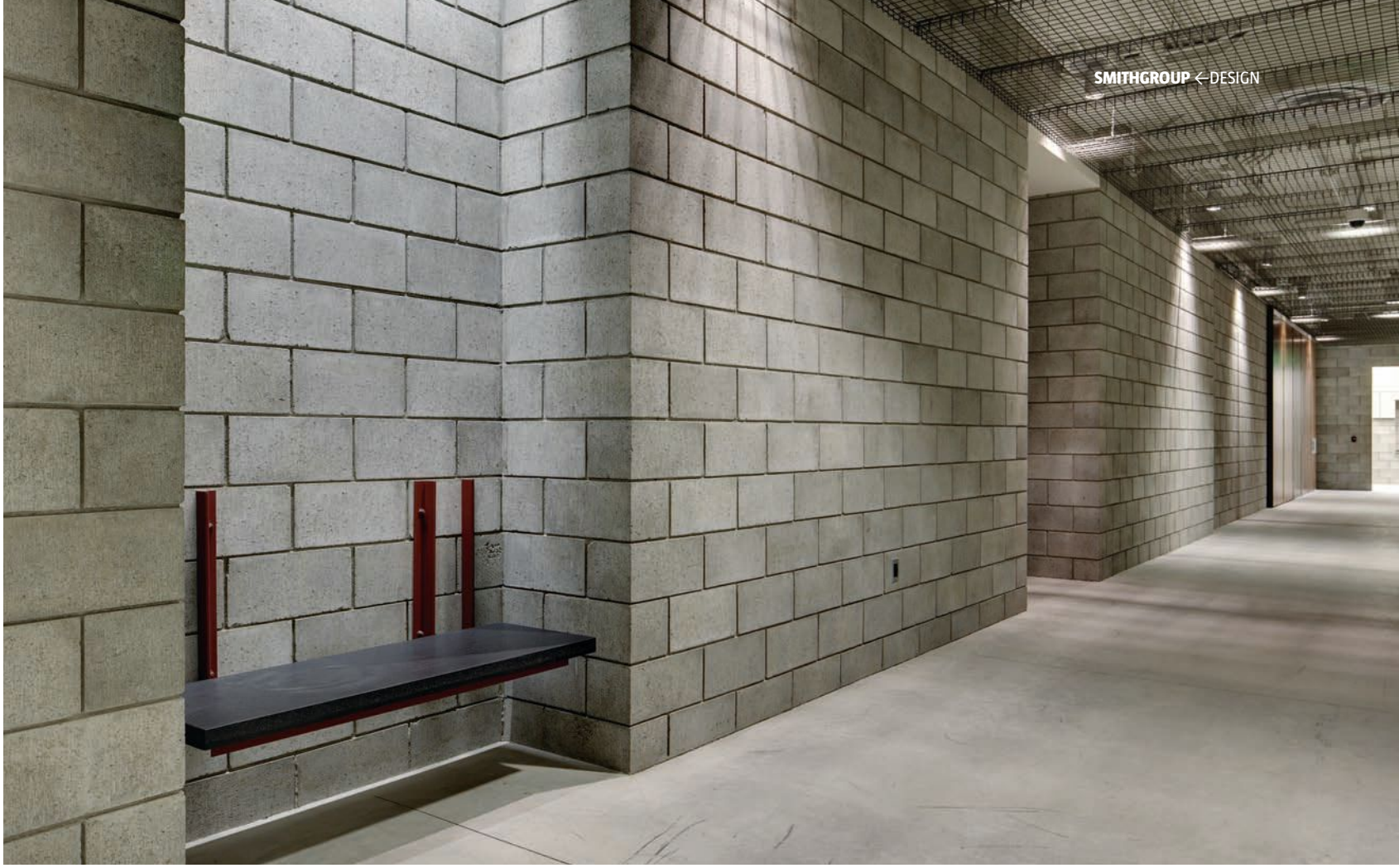
Loading-Dock-Level Floor Plan



PREVIOUS SPREAD: JUSTIN MACONOCHIE; LEFT: JIM HAEFNER

Eliel Saarinen's original main galleries at the Cranbrook Museum of Art (above) are newly renovated and climate-controlled. At the east end of a ground-level gallery (right), a sliding metal door opens into the cool, cellarlike confines of the new Collections Wing. The wing's main corridor (opposite top and bottom) is flanked by art-bearing niches and heavy Sapele-wood-plank doors that lead to offices, collections areas, and a seminar room. The ceiling is lined by the wire-and-aluminum ganglia of the massive HVAC system. Located at the rear of the complex, the system stretches through sub-basement corridors, up into the display areas, and across to the library.

ABOVE AND OPPOSITE: JIM HAEFNER;
RIGHT: JUSTIN MACONOCHIE


SMITHGROUP ←DESIGN

TOOLBOX: SYSTEMS & OPEN STORAGE

Gregory Wittkopp, director of the Cranbrook Art Museum, stands in the middle of a wonderland of Modernist goodies: Eames shelving, Florence Knoll sofas, some of the only surviving models from Eero Saarinen's office. "In most museums, the vault belongs to the rarified world of the curator," Wittkopp says. But not so at Cranbrook. Here, the Collections Wing puts storage on display.

For years, on-site storage was limited to a cramped vault and ad hoc spaces in the older building, conceived when the collection was a fraction of its present size. The pieces were even worse off when on display. "Whatever happened outside ... that was the environment inside," says Kevin Shultis, who leads the cultural studio in SmithGroup's Detroit office: if it was humid in Bloomfield Hills, it was humid in the museum. Veneer on old furniture would peel, paintings would grow discolored. "It created a problem with other institutions," Wittkopp says, since peer museums were hesitant to lend works.

Two-thirds of the project's $22 million budget was given over to the renovation and climatization of the old building. Saarinen's ceiling-mounted vents for forced air were replaced with continuous slots, providing uniform airflow to the museum walls. A new vestibule prevents outside air from affecting interior conditions; triple-glazed windows and a vapor barrier fill the much-thickened wall cavity. The result is a constant 70 F and 50 percent humidity in the galleries, no matter the weather.

Behind a sliding door, the museum's vast archive is on display, some behind glass walls. Academy director Reed Kroloff came on board while the project was already in the works, but the pedagogical possibilities of the new wing have him anticipating this month's opening. "The client—us—wanted to change what a storage building is," he says. At once warehouse, living library, and historical candy store, the museum's new wing puts Modernism's attic on display.

Project Credits

Project Cranbrook Art Museum Renovation and Collections Addition, Bloomfield Hills, Mich.
Client & Owner Cranbrook Educational Community and Cranbrook Academy of Art & Art Museum
Architect SmithGroup—Paul Urbanek, AIA (project designer); Kevin Shultis, AIA (project manager); Ryan Smith, AIA (project architect); Darin Daguanno, AIA, Terry Guitar, AIA, Frank Muehlenbein, Frank Weber, AIA, Mark Goyette, Ben Motyl, Tom O'Connor, FAIA, Jared Lawrence, AIA, Andrew Dunlap, AIA, Meredith Steckling, AIA, Jerry Carter (design team)
Interior Designer SmithGroup
Mechanical Engineer SmithGroup—Brian Noonan, Curt Songer
Structural Engineer SmithGroup—Andrea Reynolds, Michael Skalsky
Electrical Engineer SmithGroup—Lokman Abbas
Civil Engineer Spalding deDecker Consulting Engineers
Construction Manager Frank Rewold & Sons
Landscape Architect SmithGroup
Lighting Designer SmithGroup—Jeff Gerwing, Matt Alleman
Size 37,000 square feet (Collections Wing); 60,000 square feet (museum renovation)
Cost $22 million

Materials and Sources

Glass and Windows Edwards Glass Co. edwardsglass.com
HVAC Bumler Mechanical bumlermech.com
Lighting Bega bega-us.com; **Lighting Services Inc.** lightingservicesinc.com; **Philips Color Kinetics** colorkinetics.com
Metal Van Dam Iron Works vdiw.net; **Ross Structural Steel** rosssteel.com
Walls Grand Blanc Cement Products grandblanccement.com

TOP: JUSTIN MACONOCHIE; BOTTOM: JIM HAEFNER

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SOUTH MOUNTAIN COMMUNITY LIBRARY

PHOENIX
RICHÄRD+BAUER

TEXT BY KATIE GERFEN
PHOTOS BY BILL TIMMERMAN
(UNLESS OTHERWISE NOTED)

ACADEMIC LIBRARIES and public libraries have very different missions. The first are the home of term papers and cramming for final exams, the latter have story time and need to stock the latest John Grisham novel. They even "tend to be very different in what materials they collect and how they go about things," says James E. Richärd, AIA, of Phoenix-based architecture firm Richärd+Bauer, down to the fact that "academic libraries do everything on the Library of Congress system, and the public libraries use the Dewey Decimal system." But in Phoenix, the two have been combined in a new joint venture between the South Mountain Community College and the Phoenix Public Library system.

The 54,000-square-foot South Mountain Community Library, which was designed by Richärd's firm and opened this fall, is located on the eastern edge of the college's campus. The two-story structure is clad in a copper rainscreen and capped by five glazed volumes that serve as lanterns after sunset. "From the site perspective, the library needed its own identity," Richärd says, "a place where the public could come and not feel like they were being buried in the middle of campus." To that end, the library is sited just off 24th St. and is oriented so that the public can approach without ever entering campus proper.

The vertically striated skin—the pattern of which was influenced by the look of a bar code—is more than just a pretty face. The active rainscreen hides integrated gutters and downspouts to shed water runoff

and all of the building's lateral bracing. As it weathers, it will retain its metallic tone. In many climates, copper would weather to green, but in Arizona, Richärd says, "it patinates to a soft, dirty penny kind of a color." And though based on a square volume, "at the edges we pull, push, and plug in different elements to attenuate the basic building block for views, for access, and for ... [onsite] courtyards."

Inside, the program had to be carefully distributed to serve both the students and the area residents. Public-library functions—including a children's area, teen area, and multipurpose room—are confined to the first floor. The community-college functions—100 computer terminals, periodicals, and research stacks, along with multimedia classrooms and a digital-production studio—are upstairs. The goal was not to duplicate functions, but to create an integration between the academic and public library spaces—"a permeability to the floors," Richärd says.

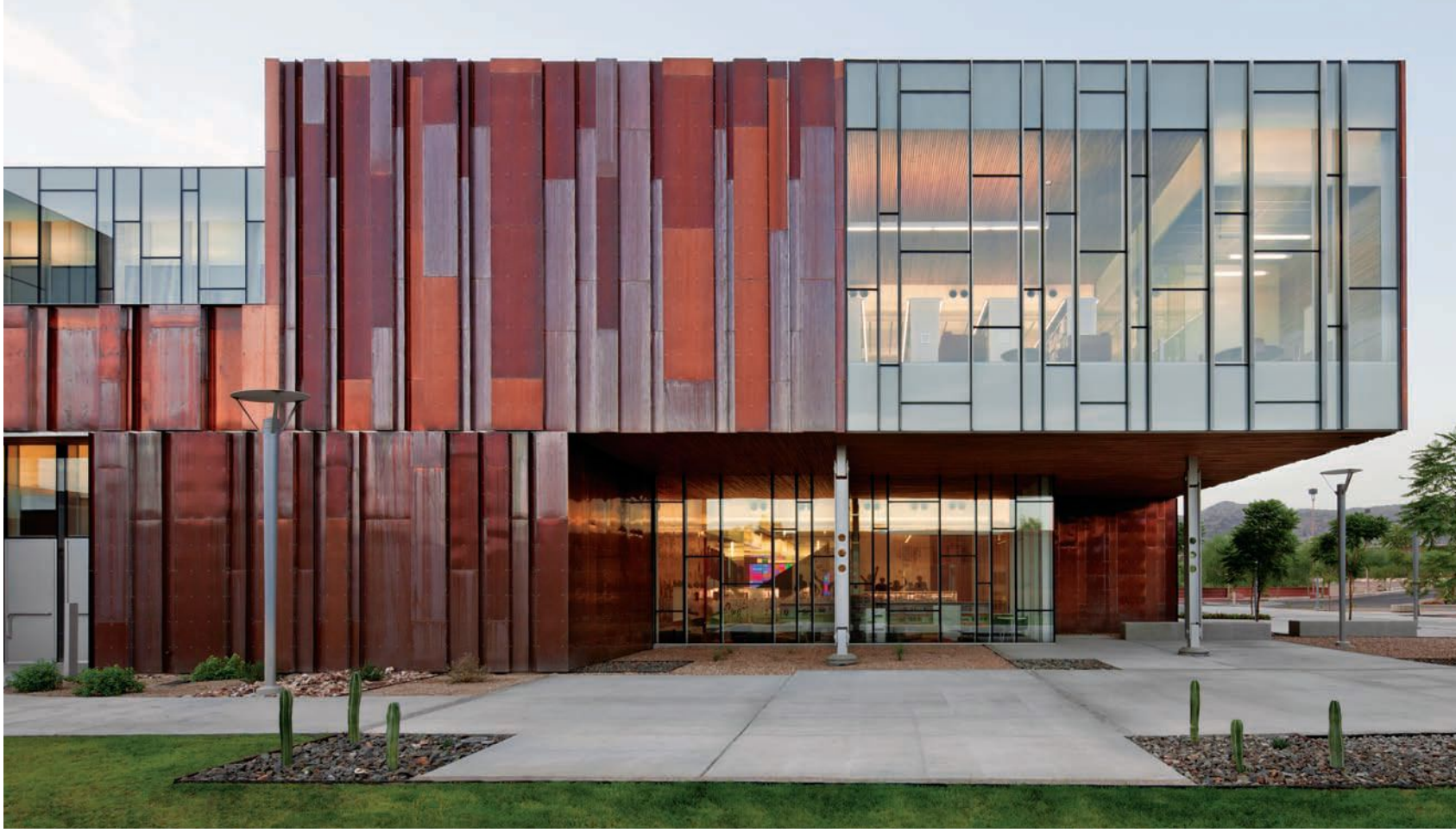
There are two main entrances, one through the public façade, the other on the campus side. The copper skin continues inside to mark the vestibules, and the floors are polished terrazzo with crushed mirror aggregate that reflects the sunlight that enters through shaded widows. Four large staircases—with mill-finished steel panels supporting the handrails—mark the quadrants of the building. Starting at the landings, water-jet-cut aluminum panels overlay the steel, with a different pattern for each stair. The four motifs are abstractions of asters, citrus, sorghum, and cotton, the four major crops grown in the area's not-too-distant agricultural past. The patterns continue on the glazed balustrades of each quadrant of the second level as transparent vinyl appliques.

To bring warmth to the largely glass-and-metal interior, the designers introduced a wood ceiling. Small wood planks of varying thicknesses and depths are nailed individually to the ceiling—"It's easy to make something random," Richärd says, "it would be a lot more difficult if we were asking someone to create a slick surface"—and spaced slightly to expose an acoustic material that allows the sculptural ceiling to double as a sound-soak. Snaking across the ceiling plane is a light trough that contains all of the utilities for the building, including mechanical, electrical, and data. Fluorescent strip lights are directed to bounce off of the ductwork. This creates a diffuse glow that filters through frosted panels and provides all of the library's ambient light.

Daylight filters through the lantern volumes overhead. Triple-glazed frosted panes allow daylight in without contributing to glare; the system also ventilates hot air to minimize heat gain.

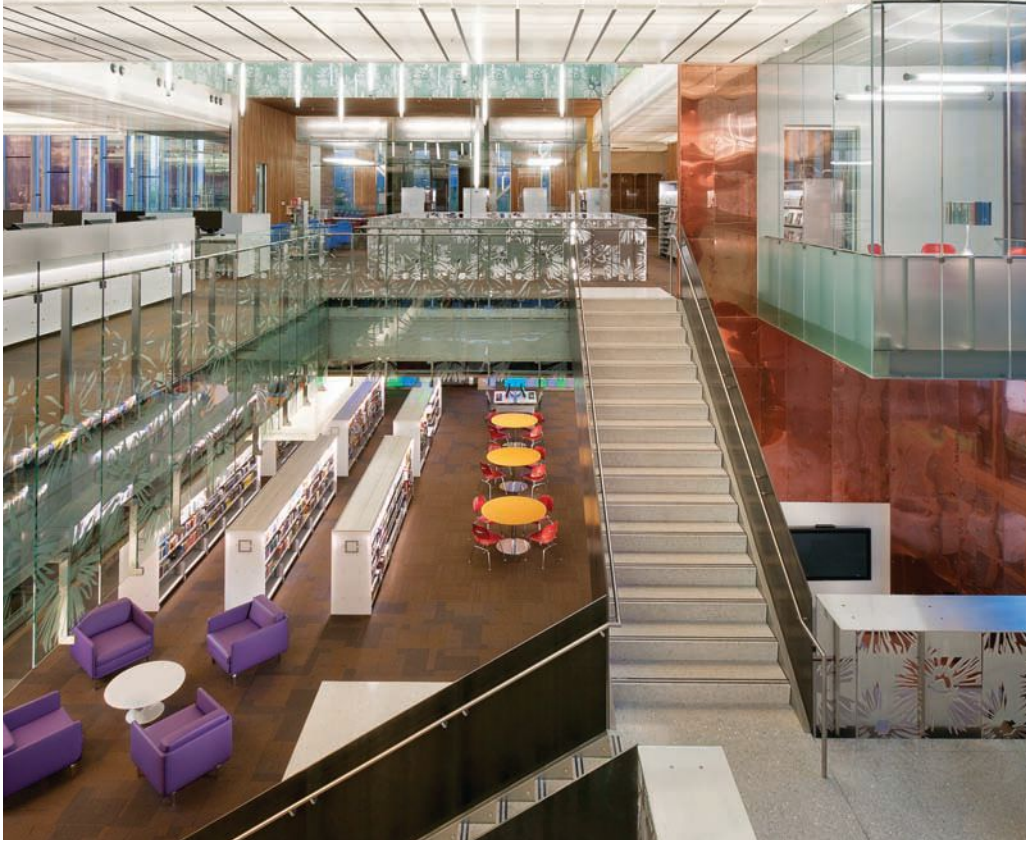
The layering of function and space works: Children lining up for story time don't bat an eye at students hunkered down in group study rooms. And while the combination of library functions may be unique, at its core, the building "is about providing the spaces for people to interact," Richärd says, "both with each other and with information."

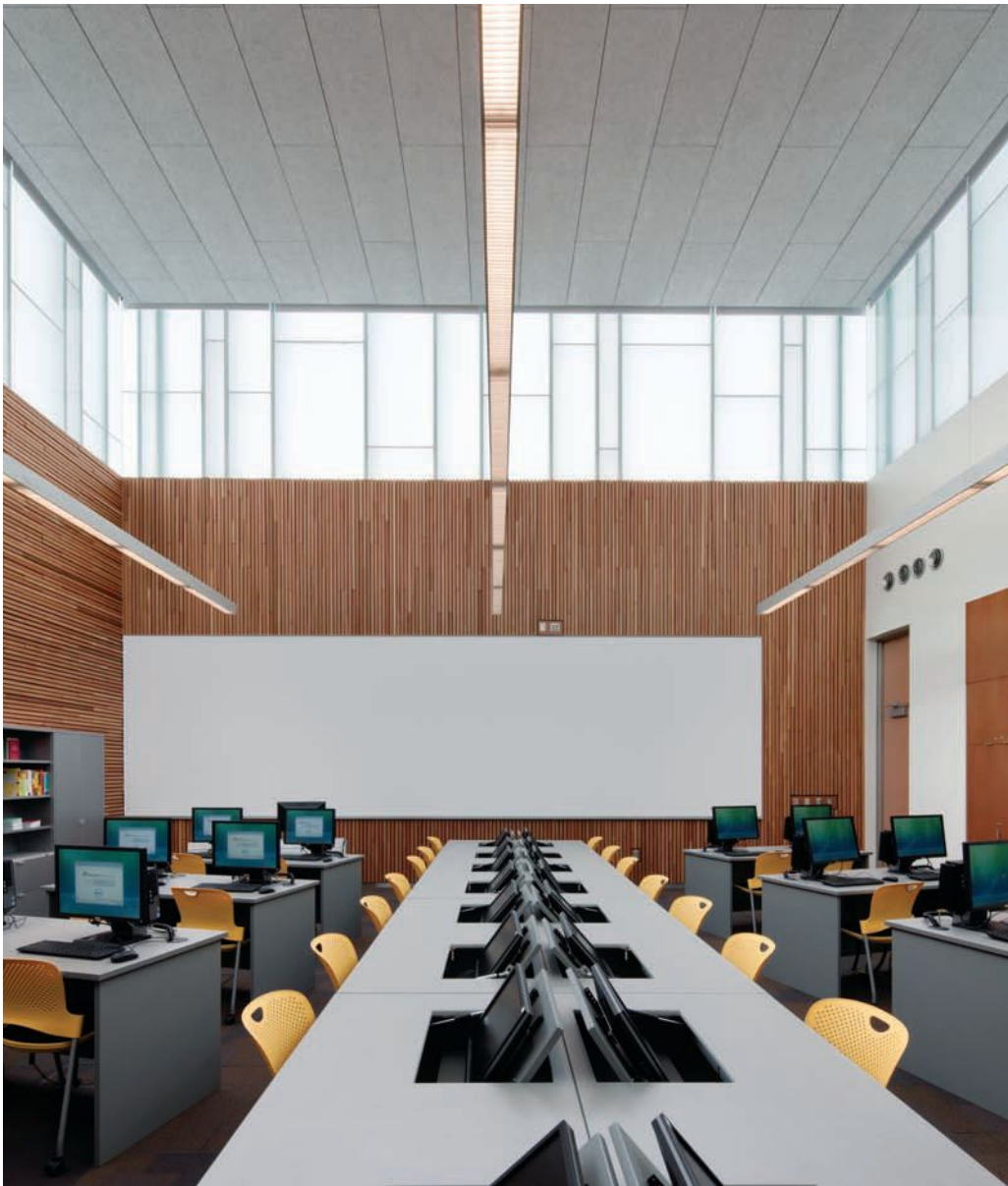
The copper-clad South Mountain Community Library is capped by five glazed volumes that admit daylight and serve as lanterns at night (previous spread). The copper rainscreen (this image) incorporates downspouts to manage water runoff, and it conceals the structure that supports the building's lateral loads. Expansive glazing admits light through the north façade (opposite top). Canopies over the entrances, including the one into the children's courtyard (opposite bottom), provide shade to soften the transition between the harsh Phoenix sunlight and the building interior.



The warm wood confines of the archive room (this image) fill the south corner of the building's second floor, but fully glazed interior walls connect it to the main library space (opposite top). The public library that occupies the ground level is capped by the second-level college library. The two are connected with stairs clad in water-jet-cut aluminum. The glazed volumes that top the building illuminate the main reading rooms as well as some enclosed spaces, including a classroom (opposite bottom).

THIS IMAGE AND TOP RIGHT: MARK BOISCLAIR





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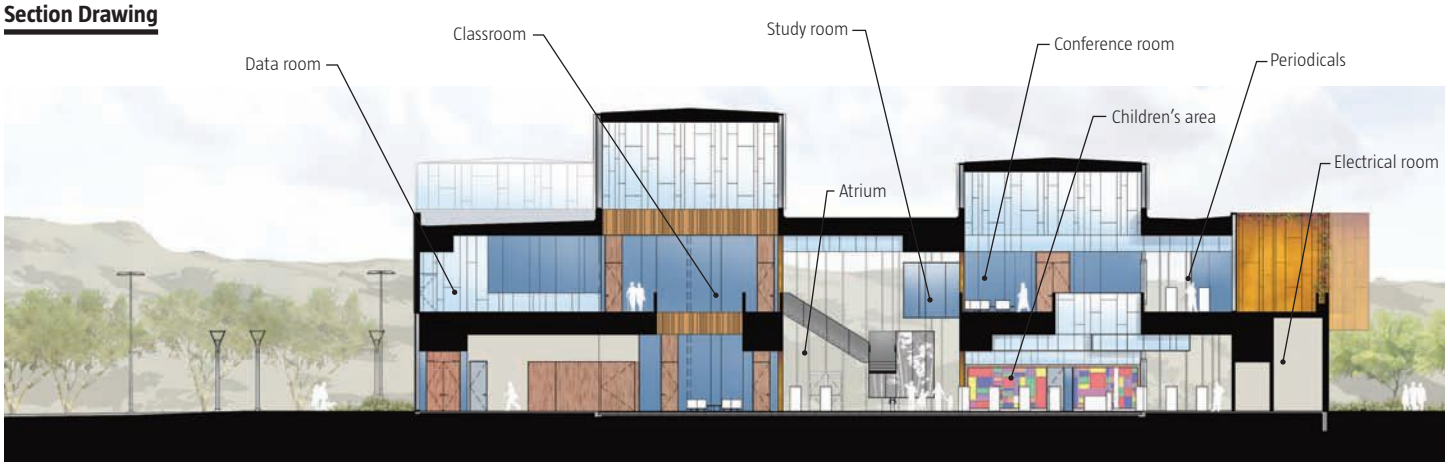

Project Credits

Project South Mountain Community Library
Client Maricopa County Community Colleges District and Phoenix Public Library
Owner Representative Arlen M. Solochek, AIA
Architect Richärd+Bauer, Phoenix—James E. Richärd, AIA (designer and principal-in-charge); Kelly Bauer (project manager and interior design); Steve Kennedy, AIA, Andrew Timberg (project architects and construction administration); Will Craig (construction administration); Mark Loewenthal, Brant Long, Lee Swanson, AIA, Alex Therien (staff architects); Stacey Crumbaker (interior design and signage); Claudia Saunders (interior design); Melissa Pulsifer (graphic design and signage)
M/E/P Engineer Energy Systems Design
Structural Engineer Rudow + Berry
Civil Engineer Dibble Engineering
General Contractor Haydon Building Corp.
Landscape Architect Kimley-Horn and Associates
Acoustical Consultant McKay Conant Hoover
Lighting Design Roger Smith Lighting Design
Library Building Consultant Drew Harrington Associates
Size 54,000 square feet
Cost $16.2 million

Materials and Sources

Building Management Systems Johnson Controls johnsoncontrols.com
Ceilings Stradlings Fine Cabinetry stradlings.com; **American Acrylic Corp. (Lumasite)** americanacrylic.com
Copper Skin Progressive Roofing progressiveroofing.us
Glass ACI Glass Products vitroamerica.com; **Arch Aluminum & Glass** archaluminum.net
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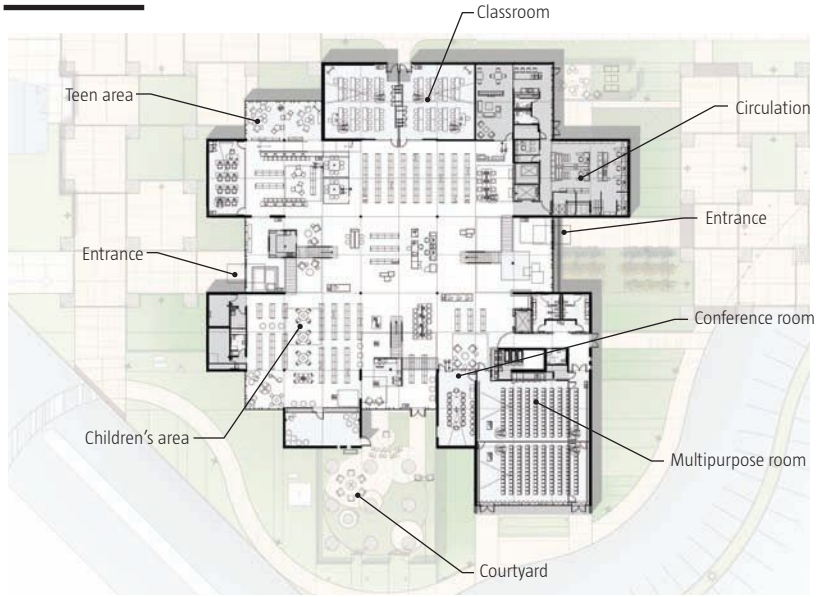
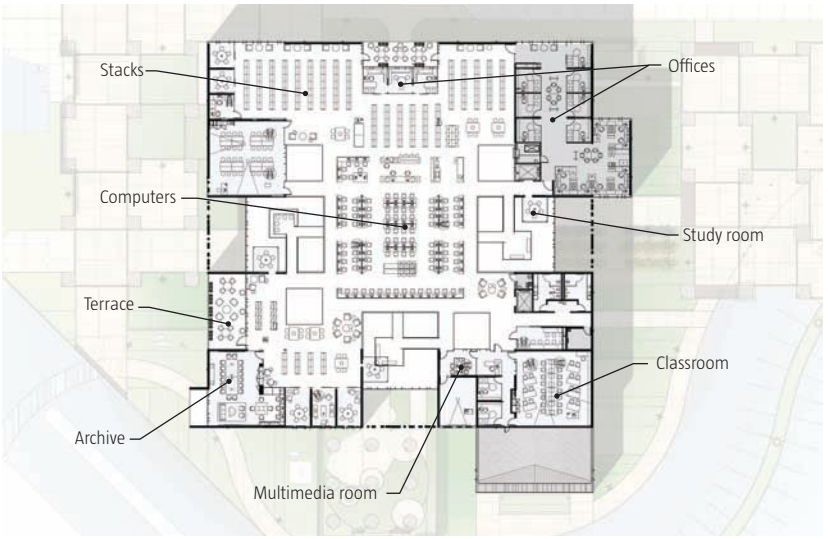


Second-Floor Plan



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→1960 P/A AWARD CITATION

PRAGMATIC ARCADIA

BAY AREA IMAGERY MEETS MODERNIST RATIONALITY IN FOOTHILL COLLEGE, WHICH REMAINS A PARAGON OF CAMPUS DESIGN.

TEXT BY JOHN MORRIS DIXON, FAIA

FOOTHILL COLLEGE ARCHIVES

1960 P/A Awards Jury
William W. Caudill
Louis I. Kahn
Ralph Rapson
José Luis Sert
Lyndon Welch

IN THE 1950S, California's system of community colleges was expanding as the first wave of baby boomers approached college age. Chosen in 1958 to design Foothill College in Los Altos Hills was Ernest J. Kump, with associate architects Masten & Hurd. Working closely with landscape architects Sasaki Walker & Associates, the team produced a memorable learning environment.

The 122-acre site allowed the college to occupy a modest plateau, with the necessary parking dispersed at lower elevations. To emphasize the unity of the school and permit program flexibility, the architects devised a set of one-story building types based on function, with no distinction between academic departments. Classrooms are in rectangular buildings with hipped roofs and walls of redwood siding and glazing; lecture halls are in distinctive hexagonal structures in the same design vocabulary; faculty offices are in linear flat-roofed buildings with brick walls. A larger scale identifies facilities of campuswide importance such as the library, student union, and gymnasium.

All academic buildings are assembled of structurally and mechanically self-sufficient 60-by-68-foot modules. Structural support is concentrated in exterior concrete columns that project beyond exterior infill walls, and interior partitions can be located freely on 4-foot modules. Shingled roofs with deep eaves are topped with parapets that conceal projections of the mechanical systems housed in the ample attics.

Completed in 1962 in accordance with the P/A Award–winning design, Foothill College remains remarkably intact today—with only a few sensitive additions—and it continues to serve its original purpose with distinction. □


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